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- Read overviews about support services and programs that BMC offers
- Find the most current information about BMC products
- Search a database for issues similar to yours and possible solutions
- Order or download product documentation
- Download products and maintenance
- Report an issue or ask a question
- Subscribe to receive proactive e-mail alerts when new product notices are released
- Find worldwide BMC support center locations and contact information, including e-mail addresses, fax numbers, and telephone numbers

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Before contacting BMC

Have the following information available so that Customer Support can begin working on your issue immediately:

- Product information
  - Product name
  - Product version (release number)
  - License number and password (trial or permanent)
- Operating system and environment information
  - Machine type
  - Operating system type, version, and service pack or other maintenance level such as PUT or PTF
- System hardware configuration
- Serial numbers
- Related software (database, application, and communication) including type, version, and service pack or maintenance level

- Sequence of events leading to the issue
- Commands and options that you used
- Messages received (and the time and date that you received them)
  - Product error messages
  - Messages from the operating system, such as file system full
  - Messages from related software

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About this guide

Conventions used in this guide

Notational conventions that may be used in this guide are explained below.

Standard keyboard keys

Keys that appear on the standard keyboard are identified in boldface, for example, Enter, Shift, Ctrl+S (a key combination), or Ctrl S (a key sequence).

The commands, instructions, procedures, and syntax illustrated in this guide presume that the keyboards at your site are mapped in accordance with the EBCDIC character set. Certain special characters are referred to in this documentation, and you must ensure that your keyboard enables you to generate accurate EBCDIC hex codes. This is particularly true on keyboards that have been adapted to show local or national symbols. You should verify that:

- $ is mapped to x'5B'
- # is mapped to x'7B'
- @ is mapped to x'7C'

If you have any questions about whether your keyboard is properly mapped, contact your system administrator.

Preconfigured PFKeys

Many commands are preconfigured to specific keys or key combinations. This is particularly true with regard to numbered PF keys, or pairs of numbered PFKeys. For example, the END command is preconfigured to, and indicated as, PF03/PF15. To execute the END command, press either the PF03 key or the PF15 key.

Instructions to enter commands may include

- only the name of the command, such as, enter the END command
- only the PF keys, such as, press PF03/PF15
- or both, such as, press PF03/PF15, or enter the END command

Command lines and option fields

Most screens contain a command line, which is primarily used to identify a single field where commands, or options, or both, are to be entered. These fields are usually designated COMMAND, but they are occasionally identified as COMMAND/OPT or COMMAND/OPTION.

Option field headings appear in many screens. These headings sometimes appear in the screen examples as OPTION, or OPT, or O.
Names of Commands, Fields, Files, Functions, Jobs, Libraries, Members, Missions, Options, Parameters, Reports, Subparameters, and Users

The names of commands, fields, functions, jobs, libraries, members, missions, options, parameters, reports, subparameters, users, and most files, are shown in standard UPPERCASE font.

User Entries

In situations where you are instructed to enter characters using the keyboard, the specific characters to be entered are shown in this UPPERCASE BOLD text, for example, type EXITNAME.

User entries

In situations where you are instructed to enter characters using the keyboard, the specific characters to be entered are shown in this UPPERCASE BOLD text, for example, type EXITNAME.

Syntax statements

In syntax, the following additional conventions apply:

- A vertical bar ( | ) separating items indicates that you must choose one item. In the following example, you would choose a, b, or c:
  a | b | c
- An ellipsis ( . . . ) indicates that you can repeat the preceding item or items as many times as necessary.
- Square brackets ( [ ] ) around an item indicate that the item is optional. If square brackets ( [ ] ) are around a group of items, this indicates that the item is optional, and you may choose to implement any single item in the group. Square brackets can open ( [ ) and close ( ] ) on the same line of text, or may begin on one line of text and end, with the choices being stacked, one or more lines later.
- Braces ( { } ) around a group of items indicates that the item is mandatory, and you must choose to implement a single item in the group. Braces can open ( { ) and close ( } ) on the same line of text, or may begin on one line of text and end, with the choices being stacked, one or more lines later.

Screen characters

All syntax, operating system terms, and literal examples are presented in this typeface. This includes JCL calls, code examples, control statements, and system messages. Examples of this are:

- calls, such as
  CALL 'CBLTDL'
- code examples, such as
  FOR TABLE owner.name USE option, . . . ;
control statements, such as

```
// PRDSYSIN DD * USERLOAD PRD(2) PRI NT
```

- system messages, both stand-alone, such as You are not logged on to database database_name, and those embedded in text, such as the message You are not logged on to database database_name, are displayed on the screen.

**Variables**

Variables are identified with italic text. Examples of this are:

- In syntax or message text, such as Specify database database_name

- In regular text, such as replace database database_name1 with database database_name2 for the current session

- In a version number, such as EXTENDED BUFFER MANAGER for IMS 4.1.xx

**Special elements**

This book includes special elements called notes and warnings:

Notes provide additional information about the current subject.

Warnings alert you to situations that can cause problems, such as loss of data, if you do not follow instructions carefully.

**Part 1 Installation and Customization Engine (ICE)**
Installing INCONTROL products with ICE

This chapter describes the INCONTROL Installation and Customization Engine (ICE). ICE is an ISPF application used to install and maintain INCONTROL products. It consists of a set of menus and dialogs that provide a simplified method of specifying data and creating installation jobs to install INCONTROL products.

Loading ICE

Load ICE from one of the following sources:

- The BMC Software Electronic Product Distribution (EPD) site
- CD

Throughout this guide, references to data retrieved from the EPD site also means data retrieved from the CD.

To load ICE:

1. Prepare your system.
   
   For information about the space requirements, see the INCONTROL for z/OS release notes that accompany this release. The DCB information for the image file is as follows:
   
   RECFM=FB, LRECL=1024, BLKSIZE=6144

2. Transfer the image file to the mainframe as a binary file, by doing one of the following actions:
   
   - Download INCONTROL for z/OS from the EPD site at [https://webapps.bmc.com/signon/content/logon.jsp](https://webapps.bmc.com/signon/content/logon.jsp).
   - Copy the file from the product CD.

3. Uncompress the image file.

   The image file is compressed using the IBM TRSMAIN program. If you do not have TRSMAIN on your system, instructions for downloading and installing it can be found at the following URL:
   

   a. Once the image file has been downloaded to your system, make the necessary changes in the following UNTERSE job.
In this job, `basepref` represents your choice of prefix for the base libraries, which are described in `INSTxxx` libraries (on page 32). This parameter must be specified again later in the installation process.

`ppp,ss,dd` represents the space requirements for the `basepref.XMITLIB` library. For the required values, refer to the INCONTROL for z/OS release notes that accompany this release.

b. Submit the job.

c. Verify that the job completes with a return code of 0.

4. Load the LOAD and INSTALL libraries.

   a. Load the INSTALL and LOAD libraries to disk using the `$LOADICE` member in the PDS created in step (basepref.XMITLIB).

   b. Use the base library prefix (`basepref`) as the prefix for the INSTALL library.

   c. Supply a fully qualified data set name (`steplib`) for the LOAD library.

   d. Make the changes described in the member and submit the job.

   e. Verify that the job completes with a return code of 0.

Working with ICE

The following sections describe the main parts of ICE, how to navigate between the various screens, and how to obtain help.

Commands and PFKey settings

- Data entry, confirmation, saving and entry cancellation are primarily executed through the use of PF keys, as shown in the following table:

<table>
<thead>
<tr>
<th>PF key</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter</td>
<td>Accept and check the changes in the current screen</td>
</tr>
<tr>
<td>PF1</td>
<td>Help</td>
</tr>
<tr>
<td>PF3</td>
<td>Save and exit</td>
</tr>
<tr>
<td>PF4</td>
<td>Exit without saving</td>
</tr>
</tbody>
</table>
### PF key Usage

<table>
<thead>
<tr>
<th>PF key</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF10</td>
<td>Save and go to previous screen</td>
</tr>
<tr>
<td>PF11</td>
<td>Save and go to next screen</td>
</tr>
</tbody>
</table>

- CANCEL (or CAN) is a primary command that returns you to the previous panel without saving changes in the open panel.
  - ICE functions may be lost if you change the settings of the ICE PF keys.
- ICE screens can be displayed in ISPF split screen mode like any other ISPF application.
  - Do not use split screen mode to show more than one ICE session, as the results are unpredictable.

## Getting online help

The following types of online help are available in ICE:

- **General help** – displays general information about an entire screen. To display the help for the current screen, press the Help key (PF01/PF13).

- **Contextual help** – displays information that is specific to an installation step or a field in a screen. Type "? " (question mark followed by a space) in the selection (Sel) column of the step or in a parameter value field to display the help.
  - Scroll the help using the standard scrolling keys.
  - To return to the previous screen, use the END command or press the PF03/PF15 key.

- **Parameter cross-reference help** – displays a list of ICE parameters and their characteristics and related information. Under normal circumstances, the VREF facility is not used. However, if required (that is, if BMC Software Customer Support has requested ICE information), the VREF facility can be used.
  - The VREF command is available only when performing a customized installation. It is not available when performing an Express installation.
  - Specify VREF in the ICE screen to display the variables list. The list is displayed in ISPF browse mode, in the following format:
To see the details of the variables, enter S in the Opt field to the left of the variable name, and press Enter.

The details of variables are displayed in the following format:

Figure 2  **ICE Variables cross-reference screen-Zoom Screen**

```
Command ===>-- VARI ABLE: #SYSRT  WM0652: # OF TIMES TO RETRY READ SYSOUT

<table>
<thead>
<tr>
<th>PROD ID</th>
<th>MAND</th>
<th>CUSTOMIZED</th>
<th>CCID</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTM</td>
<td>M</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>ICE ID</td>
<td></td>
<td></td>
<td>CTM 901</td>
</tr>
</tbody>
</table>

Default Value: 20

Install Step: 1.7

Maintenance Step: YES

Cloning Step: YES

Variable Type: N

Variable Length: 1-3

Variable Value: 20
```

You may use the VREF facility outside of ICE by entering the command TSO EX in the selection line to the left of the IOAVREF member in the BASE INSTALL library. The following panel will be issued in response:
Figure 3  List of Environments

To display the list of variables of the selected environment, enter S in the Opt field.

The following primary line commands are available when you use the VREF command:

<table>
<thead>
<tr>
<th>Command</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find</td>
<td>F</td>
<td>Enables finding a required string in the list of variables.</td>
</tr>
<tr>
<td>View</td>
<td>V</td>
<td>Enables viewing a filtered list of variables or data.</td>
</tr>
<tr>
<td>Reset</td>
<td>R or Res</td>
<td>Enables clearing the results of the last find command.</td>
</tr>
<tr>
<td>&gt;Rfind</td>
<td>PF key PF5</td>
<td>Enables performing a repeat find of the last searched string.</td>
</tr>
<tr>
<td>&gt;Help</td>
<td>PF key PF1</td>
<td>Enables showing the help of the VREF facility.</td>
</tr>
</tbody>
</table>

Installing with ICE

ICE provides you with the following installation paths:

- The Express installation process includes default values for many of the ICE installation parameters, providing a simplified method for you to install INCONTROL products. Details for this installation path are provided in Express install (on page 17).

- The customized installation process (also called the detailed installation process) requires that you provide information during installation for each of the INCONTROL products that you are installing. Details for this installation path are provided in the installation processes described for each specific product.

- The cloned installation process enables you to duplicate a currently existing installation, and then customize the environment. Details for this installation path are provided in Cloning an IOA environment (on page 441).

The installation process that is performed online in the INCONTROL Installation and Customization Engine (ICE) is organized sequentially and is displayed in the IOA Installation screens. The general ICE installation workflow is as follows:
INCONTROL for z/OS Installation Guide: Installing

- Defining and creating the IOA environment
- Expanding the files from the installation media
- Installing the IOA infrastructure
- Installing each Control-x product

If you are planning to clone the installed environment in the future, it is important that you understand the requirements and limitations of the cloning process before you begin the installation process. For more information, see Limitations (on page 441).

You can access ICE with the following TSO command:

EX 'basepref.INSTALL(IOAICE)'

In this example, basepref is the base libraries prefix.

When you enter ICE, the INCONTROL Installation options screen is displayed in the following format:

Figure 4 INCONTROL Installation Options screen

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>INCONTROL Installation Options</th>
<th>(0.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>---------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>I I I I I</td>
<td>C C C C C C C C</td>
</tr>
<tr>
<td></td>
<td>I I I I I</td>
<td>C C C</td>
</tr>
<tr>
<td></td>
<td>I I</td>
<td>C C C</td>
</tr>
<tr>
<td></td>
<td>I I</td>
<td>C C C</td>
</tr>
<tr>
<td></td>
<td>I I I</td>
<td>C C</td>
</tr>
<tr>
<td></td>
<td>I I I I I</td>
<td>C C C C C C C</td>
</tr>
</tbody>
</table>

INCONTROL Installation And Customization Engine (ICE)

Logging : Y

Y/N (Log changes of PARM members)

- Installation
- Customization
- Uninstallation
- Maintain your Environment
- Clone, Deploy IOA Environment
- Express Upgrade
- Exit

Enter S in the field to the left of the option name, and press Enter.
The main panel includes the options shown below:

<table>
<thead>
<tr>
<th>Option name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logging</td>
<td>Enables logging of all changes to any PARM members when you save a xxxPARM member.</td>
</tr>
<tr>
<td>Installation</td>
<td>Enables the Express or customized installation process</td>
</tr>
<tr>
<td>Customization</td>
<td>Enables post-installation customization</td>
</tr>
<tr>
<td>Uninstallation</td>
<td>Removes IOA and INCONTROL products</td>
</tr>
<tr>
<td>Maintain your Environment</td>
<td>Enables the application of software maintenance procedures</td>
</tr>
<tr>
<td>Clone, Deploy IOA Environment</td>
<td>Enables use of the current IOA environment as the basis of a new environment</td>
</tr>
<tr>
<td>Upgrade</td>
<td>Enables use of the Express Upgrade process</td>
</tr>
<tr>
<td>Exit</td>
<td>Enables you to leave the installation process</td>
</tr>
</tbody>
</table>

Exiting ICE
Pressing PF3 exits the installation process, and returns you to the IOA Installation window as shown in Installing with ICE (on page 14).

Part 2 Express installation
Express install

The Express installation process is recommended when you want to complete an installation in the quickest and simplest manner.

- **Overview** (on page 17)
- **Getting started** (on page 18)
- **Post installation** (on page 18)

**Overview**

The Express installation process is recommended when you want to complete an installation in the quickest and simplest manner.

The Express installation is performed through ICE (for detailed information about ICE, see Installing INCONTROL products with ICE (on page 10)). If necessary, it is always possible to perform customization through ICE after the Express installation process has been completed.

If you want to perform a customized installation, with user input required at each step, use the installation process described for each specific product.

If you have begun an Express installation, you can still switch over to the customized installation process. The major steps that were completed during the Express installation are marked with an asterisk (*) in the customized installation. The minor steps that were completed during the Express installation are marked “COMPLETED” in the customized installation.

However, once you have begun the customized installation process, you cannot switch in the middle of it to the Express installation.

An IOA environment must exist before you can proceed with the product installation. If no IOA environment exists, the Express installation begins with Navigating within ICE (on page 23).

If you are planning to clone this environment in the future, it is important that you understand the requirements and limitations of the cloning process before you begin the installation process. For more information, see Limitations (on page 441).

- Products not licensed for your installation are not available for installation.
- Control-M/Links for z/OS is a separately licensed product that enables customers to use Control-O functions to assist with Control-M operations. To install Control-M/Links follow the instructions for installing Control-O.

The Express installation can be implemented by either of the following modes:

- interactively
- from a file

In situations where many similar installations are required, you can perform the first installation interactively. You can afterwards use the file-controlled mode for the other installations. To use the file-controlled mode, you must first modify the IOAFLINS file, which Express automatically generated during the first installation, with the correct prefixes for the new installation.
Since the Express installation is designed to be a highly automated process, based on best practices, it only requires the following minimum amount of information:

- specify the IOA environment name
- select the INCONTROL products that you want to be installed
- select how much capacity you need for the INCONTROL products
- specify a data set name format

You have the option of specifying other parameters, but you can proceed with the installation using the defaults provided.

For installation planning sheets for the Express installation, see Express installation sheet (on page 516).

**Getting started**

To start the Express installation:

1. On the main ICE panel, select Installation.
2. When prompted, select or create an environment.
3. When prompted, select Express installation.

Details about the Express installation procedures are provided on the Express installation panels and in the online Help.

**Post installation**

The following mandatory post-installation activities are required regardless of which implementation mode is used:

- APF authorization
- application of security to INCONTROL products
- specification of passwords for INCONTROL products
- definition of a VTAM application for the online monitors

**Part 3 Customized installation**
Performing tasks common to all product installations

Tasks common to all product installations are described in the following topics:

- **Introduction** (on page 19)
- **Navigating within ICE** (on page 23)
- **Post-installation customization** (on page 29)
- **Infrastructure activities performed by ICE** (on page 29)
- **Terminology** (on page 33)

**Introduction**

When you enter ICE, the INCONTROL Installation Options screen is displayed, as shown in Installing with ICE (on page 14).

1. If you currently have more than one environment managed by ICE, make sure that the environment that you want to use as a target for the installation process is selected as the current one. To do this:
   
   a. Select Installation.
   
   b. Select Environment Details.
   
   c. Select the environment, by entering S (Select Environment for Processing) next to the environment in the list.

   If you want to examine the values of an environment, enter B (Browse Environment Details) next to the environment and view the details in the IOA Installation - Environment definition screen, as follows:

   ![Figure 5 IOA Installation – Environment definition screen, with values](image)

   **COMMAND**

   Environment Name ==> R900XX Will be used also as the IOA QNAME
   Description ==> 

   Installation Libraries
   Prefix (ILPREFA) ==> IOAE. R900
   Unit ==> 3390
   Volser ==> IOAZ06
   SMS Classes: Data: Management: Storage:

   LOAD library DNAME ==> IOAE. R90XXX LOAD
   Reference Libraries Prefix ==> IOAE. R900PRD
   Insert reference into current values ==> N (Y or N)

   Product Status IOA: I CTB: CTD: CTM: I CTO:
   CTR: I CTV: CTT:

   If you are planning to clone the installed environment in the future, it is important that you understand the requirements and limitations of the cloning process before you begin the installation process. For more information, see Limitations (on page 441).
The following table describes the environment values to define on the IOA Installation — Environment definition screen.

**Table 1  Environment values in the Environment definition screen**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Name of the environment, for example, TEST1, PROD9. Maximum length: 8 characters and must begin with a letter.</td>
</tr>
<tr>
<td>Description</td>
<td>Free text description of the environment. Maximum length: 35 characters.</td>
</tr>
<tr>
<td>Prefix (ILPREFA)</td>
<td>High level qualifiers (prefix) of the environment-specific installation libraries. For example, for the IOA.TEST1.INSTALL installation library, specify IOA.TEST1.</td>
</tr>
<tr>
<td>Unit (ILUNITA)</td>
<td>Disk unit on which the environment-specific libraries are allocated. Specify a generic unit, such as 3390.</td>
</tr>
<tr>
<td></td>
<td>Note: You must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.</td>
</tr>
<tr>
<td>Volser (ILVOLA)</td>
<td>Volume serial number on which the environment-specific libraries are to be allocated.</td>
</tr>
<tr>
<td></td>
<td>Note: You must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.</td>
</tr>
<tr>
<td>SMS Classes</td>
<td>One of following classes:</td>
</tr>
<tr>
<td></td>
<td>▪ Data</td>
</tr>
<tr>
<td></td>
<td>▪ Management</td>
</tr>
<tr>
<td></td>
<td>▪ Storage</td>
</tr>
<tr>
<td>LOAD Library DSNAME</td>
<td>The data set name of the IOA LOAD library loaded from the installation media.</td>
</tr>
<tr>
<td>Reference Libraries Prefix</td>
<td>High level data set name qualifiers (prefix) of the installation libraries to be used as reference libraries.</td>
</tr>
<tr>
<td>Insert reference into current values</td>
<td>One of following values:</td>
</tr>
<tr>
<td></td>
<td>▪ Y - get reference values and insert into current values</td>
</tr>
<tr>
<td></td>
<td>▪ N - get reference values but do not insert into current values</td>
</tr>
<tr>
<td>Product Status</td>
<td>This field indicates if the IOA installation or INCONTROL product installation is complete.</td>
</tr>
</tbody>
</table>
2. Select Customized installation in the IOA Installation window, as follows:

**Figure 6  IOA Installation window**

```
------------------- INCONTROL Installation Options -------------------
COMMAND =

+--------------------- INCONTROL Installation Options ---------------------(0.0)
COMMAND =

   I I I I I      C C C C C C C C   E E E E E E E E

--------------------- IOA Installation -------------------- |
Please choose the required installation type |
|     _ Express installation                        |
|     _ Customized installation                     |
|     _ Environment Details                         |
| Log   PF3: Return to previous screen              |
S  - I  COMMAND ===>                               |
S - C +-------------------------------------------------------------+

_  - Uninstallation                  Removes IOA and INCONTROL products
_  - Maintain your Environment       Maintenance, ad hoc fixes & ICE refresh
_  - Clone, Deploy IOA Environment   Clone new IOA environment or deploy changes
_  - Express Upgrade                Upgrade using original DB and OPR libraries
_  - Exit                          EXIT, Leave the Installation Process
```

The IOA Installation – Main Menu screen is displayed in the following format:

**Figure 7  IOA Customized Installation - Main Menu screen**

```
------------------- IOA Customized Installation - Main Menu ------------------
OPTION =

Environment ID:  DOC900D
Product ID ===>  IOA        Enforce Step Order ===> NO  (Yes/No)
Reference Libraries Prefix: IOAP.V900

1  INSTALL IOA  - Install and Customize IOA
2  INSTALL CTx - Install and Customize an INCONTROL Product
X  EXIT         - Leave the Installation Process
```

**IOA Installation – Main Menu**

Each activity in the installation menu is invoked by selecting a product ID and an option number. Before selecting an activity, type the product ID value of the product you want to install in the Product ID field in the Main Menu screen. Valid values for the Product ID field are shown in the following table:
Table 2  Product ID Field – Valid Values

<table>
<thead>
<tr>
<th>Value</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTB</td>
<td>Control-M/Analyzer</td>
</tr>
<tr>
<td>CTD</td>
<td>Control-D</td>
</tr>
<tr>
<td>CTM</td>
<td>Control-M</td>
</tr>
<tr>
<td>CTO</td>
<td>Control-O</td>
</tr>
<tr>
<td>CTR</td>
<td>Control-M/R</td>
</tr>
<tr>
<td>CTT</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>CTV</td>
<td>Control-V</td>
</tr>
<tr>
<td>IOA</td>
<td>IOA</td>
</tr>
</tbody>
</table>

Type a number in the OPTION field to indicate the required activity, and press Enter to display the menu for the selected activity.

The following activities are available from the Main Menu:

Table 3  Main Menu activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTALL IOA</td>
<td>Option 1 in the Main Menu. This activity is used to install IOA. IOA installation must be completed before installing or customizing an INCONTROL product.</td>
</tr>
<tr>
<td>INSTALL CTx</td>
<td>Option 2 in the Main Menu. Before selecting this activity, verify that a Product ID is specified.</td>
</tr>
<tr>
<td>EXIT</td>
<td>Option X in the Main Menu. This option is used to quit ICE.</td>
</tr>
</tbody>
</table>

ICE step sequences
ICE requires that you perform all steps sequentially within an activity, except in the following cases:
INCONTROL for z/OS Installation Guide: Installing

- When an optional step is marked as excluded, it can be bypassed.
- When steps are browsed, they can be browsed in any order.
- When a CUSTOMIZE activity step is selected, the "Enforce Step Order" attribute is not activated between the major steps. For details about major steps, see "Navigating within ICE" on page 58. Any major step in the CUSTOMIZE activity can be selected without requiring a previous step to be completed.
- When the value of the Enforce Step Order field is set to NO, steps can be taken in any order. This value should only be set to NO if you are advised to do so by BMC Software Customer Support. Type YES in the Enforce Step Order field in the Main Menu before you proceed with the IOA installation process.

ICE activities

Installation activities that are performed online in ICE are organized hierarchically and are displayed in the IOA Installation—Main menu. Each activity is a key task related to installing and maintaining IOA and INCONTROL products:

- The "INSTALL IOA" activity installs IOA.
- The "INSTALL CTx" activity installs each INCONTROL product.
- The "EXIT" activity enables you to leave the installation process.

Each activity is organized as a list of major steps. Each major step consists of one or more minor steps. Each minor step performs tasks such as parameter specification, submission of jobs or other installation processes.

Reference values

Values from a previous installation can be used in the current installation. Using the Reference Libraries Prefix field in ICE, you can retrieve parameter values from a previous installation. For each parameter, you can select the default provided by ICE, select the reference value, or specify a new value.

For instructions for performing upgrades from previous versions and converting a test installation to a production installation, see the INCONTROL for z/OS Upgrade Guide for the relevant version.

Navigating within ICE

Once a major installation activity is selected from the Main Menu, secondary screens are displayed, listing all major and minor steps associated with the selected activity. The paragraphs below describe how to navigate within the various ICE screens.

Major steps

Once the environment is selected, you can begin IOA installation. IOA must be installed before any INCONTROL product can be installed.

Select option 1, INSTALL IOA, from the Main Menu. The Major Steps Selection screen is displayed:
All major steps for IOA installation are displayed in the Major Steps Selection screen. Optional steps are indicated by the value Y in the Optional (Opt) column.

Steps that contain the letter R in the Opt column must be performed once. Afterwards, they become optional steps. Once this type of step is performed, the value in the Opt column changes from R to Y. This indicates that the step is no longer mandatory.

The Status column in this screen indicates whether a step was previously selected (indicated by an asterisk sign), completed (indicated by COMPLETE), or excluded (indicated by an X).

The following actions can be applied to major and minor steps:

<table>
<thead>
<tr>
<th>Sel</th>
<th>Step</th>
<th>Status</th>
<th>Opt</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
<td>Planning</td>
</tr>
<tr>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
<td>Parameters for File Allocation</td>
</tr>
<tr>
<td>.</td>
<td>3</td>
<td></td>
<td></td>
<td>Load IOA Libraries</td>
</tr>
<tr>
<td>.</td>
<td>4</td>
<td></td>
<td></td>
<td>Specify IOA Parameters</td>
</tr>
<tr>
<td>.</td>
<td>5</td>
<td></td>
<td></td>
<td>Specify Target Configuration Parameters</td>
</tr>
<tr>
<td>.</td>
<td>6</td>
<td></td>
<td></td>
<td>Customization Process</td>
</tr>
<tr>
<td>.</td>
<td>7</td>
<td></td>
<td></td>
<td>Set Global Variables Database</td>
</tr>
<tr>
<td>.</td>
<td>8</td>
<td>Y</td>
<td></td>
<td>Install ISPF Support</td>
</tr>
<tr>
<td>.</td>
<td>9</td>
<td></td>
<td></td>
<td>Install IOA Subsystem</td>
</tr>
<tr>
<td>.</td>
<td>10</td>
<td>Y</td>
<td></td>
<td>Install IOA Online Monitor</td>
</tr>
<tr>
<td>.</td>
<td>11</td>
<td></td>
<td></td>
<td>Adjustments</td>
</tr>
<tr>
<td>.</td>
<td>12</td>
<td></td>
<td>Y</td>
<td>IOA Customization</td>
</tr>
</tbody>
</table>
### Table 4  Actions for major and minor steps

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Selects the step and displays the associated list of minor steps. If you return to the Major Steps Selection screen, an asterisk in the Status column indicates that this step has been previously selected. If all the associated minor steps are marked complete, the major step status changes to complete.</td>
</tr>
<tr>
<td>C</td>
<td>Marks the step complete in the Status column. When a step is successfully completed, mark the step complete. If the step is a minor step, it can be marked complete, unless the step being performed is a Process step, which is automatically marked complete when the process ends successfully.</td>
</tr>
<tr>
<td>B</td>
<td>Displays the list of associated minor steps in ISPF browse mode.</td>
</tr>
<tr>
<td>R</td>
<td>Resets the status of one or more steps. Specify &quot;R&quot; to mark any step that is to be reset.</td>
</tr>
<tr>
<td>X</td>
<td>Indicates that a step should be excluded from the installation procedure. This option is valid only for optional steps. Excluded steps are handled as complete steps whenever the &quot;Enforce Step Order&quot; feature is applied.</td>
</tr>
<tr>
<td>?</td>
<td>Displays online help for the selected step.</td>
</tr>
</tbody>
</table>

**Minor steps**

Once a major step is selected, by typing S in the Sel - Selection - column and pressing Enter, a list of associated minor steps is displayed. A Minor Steps Selection screen is displayed:
Figure 10  Minor Steps Selection screen

```
COMMAND ===> SCROLL ===> CSR
Environment: INCPRD Product: IOA
Major Step: 2 Parameters for File Allocation
Sel values: S Select step  C Mark step as completed  R Reset status
           B Browse Step  X Mark step as excluded  ? Help
PF7/PF8 To scroll through all Steps
```

<table>
<thead>
<tr>
<th>Sel</th>
<th>Step</th>
<th>Status</th>
<th>Type</th>
<th>Opt</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>1</td>
<td>Data</td>
<td>Workunit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>2</td>
<td>Data</td>
<td>Jobcard Parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>3</td>
<td>Data</td>
<td>Operation and Maintenance Libraries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>4</td>
<td>Process</td>
<td>SMP CSI Configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>5</td>
<td>Data</td>
<td>SMP Datasets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>6</td>
<td>Data</td>
<td>Define IOA LOADE (PDSE) lib. parameters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Certain minor steps are not mandatory. Minor steps that are optional (indicated by a Y in the Opt column) do not require an indication that they are completed steps.

The Major or Minor Steps Selection screens sometimes change dynamically, depending on the values specified for certain parameters.

All actions described above for major steps also apply to minor steps. The result of a minor step selection or browsing action differs according to the type of step chosen. The types of minor steps are

- Data
- Data(*)
- Edit
- Process
- External
- Job
- View

Each step type is described in Data steps (on page 26).

Data steps

When a minor step is selected, a Parameter Data Entry screen is displayed as follows:
Figure 11  Parameter Data Entry screen

----------------------------- Parameter Data Entry ------------ Row 1 of 1

Product: IOA    Major Step: 2    Parameters for File Allocation
Environment: INCPRD  Minor Step: 1  Workunit

Codes in the VALUE field:
= Insert from Reference                PF7/8  Scroll through all parameters
/ Insert from Default                  PF3/End Exit and Save
? Display Help                         Cancel Exit without Save

----------------------------- > End of Parameters <-----------------------------

Variable    Value        Reference        Description
============ ============= ============= ===========
WORKUNIT   SYSALLDA                      Unit for temporary files

COMMAND ===>                                                    SCROLL==> CSR

In this screen, a value can be specified for each parameter. In addition, each of the following symbols (when followed by a blank) can be used to specify values:

Table 5  Symbols for specifying values

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>Copies the reference value from the Reference field into the Value field in the data entry screen. This value is retrieved from the previously defined reference library. Note: If the reference value is empty (null), the null value will be copied.</td>
</tr>
<tr>
<td>/</td>
<td>Sets the parameter value to the default.</td>
</tr>
<tr>
<td>?</td>
<td>Displays online help for the selected variable.</td>
</tr>
</tbody>
</table>

Certain parameters are not mandatory. If, however, a value is not found for a parameter that requires a value, a message is displayed. The error message lists all the mandatory parameters for which values are missing.

To view all parameters in the data entry screen, scroll through the parameters until the "End of Parameters" line is visible on the screen.

Certain parameters, such as job card parameters, require values that are longer than the maximum number of characters that can be entered in the first type of parameter data entry screen. Therefore, another type of data entry screen is displayed for these parameters, as follows:
Figure 12    Parameters Data Entry screen

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Entry</th>
<th>Row 1 to 3 of 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product:</td>
<td>IOA</td>
<td>Major Step: 2</td>
</tr>
<tr>
<td>Environment:</td>
<td>INCPRD</td>
<td>Minor Step: 2</td>
</tr>
<tr>
<td>Codes in the VALUE field:</td>
<td>Function keys and Commands:</td>
<td></td>
</tr>
<tr>
<td>= Insert from Reference</td>
<td>PF7/8 Scroll through all parameters</td>
<td></td>
</tr>
<tr>
<td>/ Insert from Default</td>
<td>PF3/End Exit and Save</td>
<td></td>
</tr>
<tr>
<td>? Display Help</td>
<td>Cancel Exit without Save</td>
<td></td>
</tr>
</tbody>
</table>

Variable  --> JOBNAME  Jobname prefix
Value     >>> I700IN
Reference -->

Variable  --> JOBCARD  Jobcard data
Value     >>> ,IOA700, MSGCLASS=X, CLASS=A
Reference -->

Variable  --> JCL1  First additional JCL
Value     >>> //*
Reference -->

COMMAND  --> SCROLL ➞ CSR

Edit steps

Edit steps are used to edit certain IOA installation members. A standard ISPF EDIT screen is displayed.

Special edit steps – DATA(*)

A Data(*) minor step is used to specify values for installation parameters and macros that can extend beyond a single line, and therefore cannot be specified in the parameter data entry screens.

This type of step displays a special screen that enables you to edit the specific lines associated with the parameter. When you exit this screen, the lines are saved into the target member in the selected environment.

This type of step is useful, for example, when you want to use attributes specified in a previous installation. In this case, you must edit the reference member after specifying the appropriate names in the Reference Library and Reference member fields. When the required lines are edited and the member is saved by pressing the PF03/PF15 key, the edited lines are saved in the target member in the selected environment.

When parameters extend beyond a single line, specify an asterisk (*) in column 72, and continue specifying the parameters on the second line in column 16.

Multiple macro invocations should not be separated by an asterisk in column 72.

Process steps

Process steps perform an internal ICE process. Once successfully completed, these steps are indicated as complete. Non-process steps must be explicitly marked complete by the installer.
External steps

External steps are performed manually and not through ICE. Each external step provides detailed instructions about how to complete the step. Once an external step is completed, the installer should mark it complete.

View steps

View steps are used to display explanatory text for the step being performed or for subsequent steps.

Job steps

Job steps require the installer to submit installation jobs. The jobs are usually ready to run, but some jobs require modifications before submission. Necessary changes are indicated by specific comments in the job.

For a Job type step, do one of the following:

- Enter S in the Sel column to rebuild the job from the skeleton, starting from scratch
- Enter U in the Sel column to update the previously saved job (if it exists)

After making the changes, submit the job using the SUBMIT command, or the equivalent standard at your site.

After running the job, check the job output. If the job was successful, the job step must be marked complete, using the "C" option described above, in order to proceed with the next step of the installation procedure.

Post-installation customization

Once a basic installation is completed, certain modifications to the operational parameters may be required. Other post-installation activities may also be required. For more information about customization, see INCONTROL for z/OS Installation Guide: Customizing.

Infrastructure activities performed by ICE

This section discusses the activities ICE performs while building its infrastructure.

Location of procedures

Procedures are located in the following libraries (low-level qualifiers):
Table 6  Procedure libraries

<table>
<thead>
<tr>
<th>Library</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCLIB</td>
<td>All the procedures to be used in jobs.</td>
</tr>
<tr>
<td>PROCJCL</td>
<td>All the started tasks.</td>
</tr>
</tbody>
</table>

PROCLIB library

Because most procedures are not copied to the PROCLIB library of a site, the following JCL statements are included in the jobs in various JCL libraries:

```
// JCLLIB ORDER=ilprefa.PROCLIB
// INCLUDE MEMBER=IOASET
```

The IOASET member of the IOA PROCLIB library is built by ICE and contains the values for all the parameters used in procedures and jobs.

IOAENV is another important member built by ICE in the IOA PROCLIB library. This member specifies the libraries in DD statements STEPLIB and DAPARM. Using this member, you can concatenate additional libraries in a site to both DD statements.

During the installation process, a small set of procedures from the PROCLIB library can be copied (and optionally renamed) to a procedure library of the site, by entering a data set name into the SITEPROC ICE variable, so that it can be used in the jobs at the site without the need to add JCLLIB and INCLUDE statements. It is therefore not necessary to change the jobs of an existing site that were used in earlier versions of IOA.

To eliminate the AbendAid dump, after IOA installation is complete, add the following line to the IOAENV member in the IOA PROCLIB library:

```
//ABNLIGNR DD DUMMY
```

PROCJCL library

Do one of the following:

- Concatenate the PROCJCL library to the IEFJ OBS DD statement in the MSTJCLxx member of the SYS1.PARMLIB library.
- Copy the started tasks, renaming if necessary, to an existing site library, concatenated to the IEFJ OBS DD statement.

The data set name of the site library is entered into the PROCLIB ICE variable during the installation process.

Propagation

Propagation is the process of copying from base libraries, tailoring, and resolving members. Only the following libraries require propagation as part of applying maintenance:
The PROCJCL library.

- The ilprefix.JCL library (where x is the product letter).

**IOA.PARM library**

The DAPARM DD statement in the IOAENV member of the IOA PROCLIB library points to the following libraries.

<table>
<thead>
<tr>
<th>Table 7 Parameter libraries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Library</strong></td>
</tr>
<tr>
<td>IOAENV</td>
</tr>
<tr>
<td>PARM</td>
</tr>
</tbody>
</table>

The IOAENV library contains the following members:

- Global profile variables in member $PROFILE
- IOA WISH – in source format, located in the IOADFLT member
- IOADSN – contains the list of all data sets and their DD statements that will be dynamically allocated

The PARM library contains few members when supplied. It is populated during ICE with parameter members, such as IOAPARM, CTMPARM, and so on. These parameter members are in source format.

The following members, populated during installation, are important for making local changes at your site. These members are not overwritten when maintenance is applied; instead, their contents override the supplied defaults.

- Use the IOADSNL member to make local changes to the list of data sets that are supplied in the IOADSN member.
- Use the IOADFLTL member to make local changes to defaults in the IOADFLT member.
- Use the $PROFMOD member to make local changes to profile variables in the $PROFILE member.

**Source parameters**

All parameter members are supplied in source format. The parameter members are built and placed in the IOA.PARM library by ICE and have the following structure.

All installation parameters for which no explicit default values are mentioned are mandatory and must be supplied during the ICE definition process.

The ICE parameter repository is based on the source parameter members; that is, if a parameter member is modified directly, the changes are applied to the ICE tables. Because verification checks are performed on the ICE table, you should make all parameter changes using ICE.

- **BLK1**  BLK1_PARM1=xxx,
- **BLK1**  BLK1_PARM2=xxx,
The parameter members must follow these rules:

1. A source parameter member is divided into blocks. Each block begins at position one (for example, BLK1).
   This step must be performed if CMEM is to be installed at your site. Add the SCHED00 sample member from the INSTCTO library to the SCHEDnn member in the SYS1.PARMLIB library. To protect CMEM control blocks, the PPT entries listed below must be added to the SCHEDnn member, where nn is the number specified in the IEASYSnn member in the SYS1.PARMLIB library, or defaults to 00 if not specified in IEASYS.
   To activate the new PPT definitions without performing an IPL, issue the following command:
   ```
   T SCH=(nn,L)
   ```
   where nn is the suffix of member SCHEDnn

2. Each block has its own unique parameter. The parameter names are unique and there are no duplicate names in the source parameter member.

3. At least one blank space is required before the parameter name.

4. The comma (',') character is a continuation character that is used when a block spans more than one line.

5. The block ends after the parameter with a value that does not contain the comma (",") character.

6. A Comment line starts with an asterisk ('*') at position one.
   BMC Software recommends you use ICE to update the source parameters to maintain the integrity of the parameter members.

Operation libraries

The operation libraries, which are those libraries with high-level qualifiers of OLPREFx, are site libraries. This means that these libraries are populated once during installation, and are not affected by the maintenance process.

INSTxxx libraries

These libraries, used in the installation process, are considered base libraries and are not resolved. Each job submitted during the installation process is tailored as needed. The tailored member is saved in a new library, ilprena.INSTWORK. A job can be tailored again, reflecting the updated parameter values, by selecting the ICE step, or by using the TAILOR JOB option in the INCONTROL Installation and Customization Engine (ICE), available by selecting Maintain your Environment => ICE refresh.
   Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprena.INSTWORK library unless specified otherwise.
Customization activities affecting all products

The customization activity from the ICE main menu includes a wide range of activities. The following IOA customization activities affect all INCONTROL products:

Table 8  Customization activities affecting all INCONTROL products

<table>
<thead>
<tr>
<th>Customization activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Variables</td>
<td>Sets global values for profile variables. The updated values are saved in the $PROFMOD member.</td>
</tr>
<tr>
<td>User EXITs Installation</td>
<td>Adapts sample exits to your local site requirements and prepares the necessary SMP/E USERMODs to apply the exits.</td>
</tr>
<tr>
<td>Customize IOA Defaults</td>
<td>Sets product defaults. The updated defaults are saved in the IOADFLTL member in the IOA.PARM library.</td>
</tr>
<tr>
<td>Install National Language Support</td>
<td>Installs support for languages other than English. For further information see I National Language Support facility (on page 511).</td>
</tr>
</tbody>
</table>

Terminology

Whenever the terms volume serial number or serial number of volume are used in this manual, the maximum number of characters in this field is 6.

Unless otherwise specified, whenever the terms unit name or disk unit are used in this manual, the maximum number of characters in this field is 8.
Installing IOA

This section describes the steps required to install IOA. The installation procedure contains step-by-step detailed instructions that correspond to the Major and Minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the IOA installation below.

Before you begin

Before you start to install IOA, verify that the following hardware and software prerequisites are met.

Supported hardware

- Processors
  INCONTROL products operate on any OS/390 or zX processors (and other fully-compatible processors) that are supported by the z/OS versions listed in Supported software (on page 34).

- Disk storage
  The database of the INCONTROL products can reside on any disk that is supported by z/OS. For example, the following IBM disk types are supported: 3390, 3380, and so on. Fully-compatible disks are also supported. This support is transparent.

- EPD or CD installation
  You can download this installation from the BMC Software Electronic Product Distribution (EPD) site.

- Tape drives
  From version 7.0.00, the IOA installation process does not require a cartridge or tape drive since the IOA installation is performed only from EPD or CD.

Supported software

- Operating System
  The Job Entry Subsystem can be either JES2 or JES3. MVS version z/OS 1.12 or later is required.

- Required Programs
  The following products (or any functionally equivalent products) are usually required:
  - ACF/VTAM—to support the various environments under which the IOA Online facility can be invoked.
  - TSO/E version 2—to support TSO CLISTs and REXX execs.
  - ISPF and ISPF/PDF version 3 and above are required for installation using ICE, and for product use if the IOA ISPF Online facility will be used.
Assembler H or High Level Assembler to support Assembler exit code.
- DF/SORT—required for some INCONTROL product reports.
- SMP/E version 31.30 or above.

ICE application
Verify that you have installed and entered the ICE application, and defined the IOA environment, as describe in Performing tasks common to all product installations (on page 19).

Prepare to install IOA
To prepare for the IOA installation, do the following:

1. If you currently have more than one environment managed by ICE, make sure that the environment that you want to use as a target for the customization process is selected as the current one. To do this:
   a. Enter ICE and select Installation.
   b. Select Environment Details.
   c. Select the environment.

2. Select Customized installation. The IOA Customized Installation—Main Menu is displayed.

3. Type IOA in the Product ID field.

4. Type 1 in the OPTION field to select option 1, “INSTALL IOA”, and press Enter.

The Major Steps Selection screen for IOA is displayed, as shown in the following figure. You are now ready to install IOA using ICE.

Figure 13   Major Steps Selection screen

<table>
<thead>
<tr>
<th>Sel Step</th>
<th>Status</th>
<th>Opt</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Planning</td>
</tr>
<tr>
<td>2</td>
<td>*</td>
<td></td>
<td>Parameters for File Allocation</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Load IOA Libraries</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Specify IOA Parameters</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Specify Target Configuration Parameters</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>Customization Process</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>Set Global Variables Database</td>
</tr>
<tr>
<td>8</td>
<td>Y</td>
<td></td>
<td>Install ISPF Support</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Install IOA Subsystem</td>
</tr>
<tr>
<td>10</td>
<td>Y</td>
<td></td>
<td>Install IOA Online Monitor</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>Adjustments</td>
</tr>
<tr>
<td>12</td>
<td>Y</td>
<td></td>
<td>IOA Customization</td>
</tr>
</tbody>
</table>
IOA Installation step checklist

The following list is a summary of the steps required to install IOA. Detailed step-by-step instructions follow.

- Step 1 – Planning (on page 37)
- Step 2 – Parameters for File Allocation (on page 37)
- Step 3 – Load IOA Libraries (on page 43)
- Step 4 – Specify IOA parameters (on page 44)
- Step 5 – Specify target configuration parameters (on page 53)
- Step 6 – Customization process (on page 63)
- Step 7 – Set Global Variables database (on page 67)
- Step 8 – Install ISPF support (optional) (on page 86)
- Step 9 – Install IOA subsystem (on page 86)
- Step 10 – Install IOA online monitor (optional) (on page 86)
- Step 11 – Adjustments (on page 90)
- Step 12 – IOA customization (optional) (on page 91)
- Step 13 – Setting up functional monitors (optional) (on page 92)
- Step 14 – Install IOA CICS support (optional) (on page 94)
- Step 15 – Install IOA IMS/DC support (optional) (on page 98)
- Step 16 – Install IOA VTAM Support (optional) (on page 99)
- Step 17 – Install IOA COM-PLETE support (optional) (on page 101)
- Step 18 – Install IOA IDMS/DC support (optional) (on page 102)
- Step 19 – Install IOA ROSCOE support (optional) (on page 103)
- Step 20 – Install IOAGATE (optional) (on page 105)
- Step 21 – Install Control-M Application Server (on page 135)
- Step 22 – Install KOA and IOA routes (optional) (on page 140)
- Step 23 – Support for other products (optional) (on page 149)
- Step 24 – Installation conclusion (on page 150)

Installation steps

Follow the major and minor steps below to install IOA using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.
Step 1 – Planning

Follow these general planning steps.

Plan the installation process carefully. The IOA installation sheet (on page 534) will help you determine the items you should consider before installing IOA.

Determine whether you will require assistance from system programmers, security administrators, or other personnel at your site. Check if any system changes are necessary, as special authorizations and processing may be required. Verify that the necessary configurations are known and planned for in advance.

Proceed to Step 2 – Parameters for File Allocation (on page 37) only when you have completed reviewing the planning sheet.

Step 1.1 – Is the planning sheet complete?

This step verifies that you have filled in the IOA planning sheet.

When you have done so,

1. press PF03/PF15 to exit this screen
2. type C in the Sel field
3. press Enter

The step will be marked as completed.

Step 2 – Parameters for File Allocation

Select major step 2 in the Major Steps Selection screen and follow these steps to specify values for the loading parameters.

Step 2.1 – Workunit

Select minor step 1 in the Minor Steps Selection screen and insert values for the IOA work unit parameters, as shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORKUNIT</td>
<td>Unit for temporary files (such as SYSDA or SORTWORK).</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 8.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: SYSALLDA.</td>
</tr>
</tbody>
</table>
### Step 2.2 – Jobcard parameters

Select minor step 2 in the Minor Steps Selection screen and insert values for the IOA jobcard parameters, as shown in the following table:

**Table 10  IOA Jobcard parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **JOBNAME** | Job name, from 1 through 8 characters, to be used for jobs submitted during the IOA installation process. The jobname cannot be the same as the TSO userid. Note: This is the full Jobname, and not a prefix.  
  - Mandatory |
| **JOBCARD** | Job statement data to be used for all jobs submitted during the IOA installation.  
  - Mandatory  
  - Maximum length: 43 characters  
  Example  
  JOBNAME=IOAINS  
  JOBCARD=,IOAINST,CLASS=A,MSGCLASS=X  
  Resulting job statement:  
  //IOAINS01 JOB,IOAINST,CLASS=A,MSGCLASS=X |
| **JCL1** | First additional JCL. Can be used as a continuation of the job statement.  
  If this parameter is used as a continuation, the job statement parameter must end with a comma.  
  - Mandatory  
  - Maximum length: 60 characters  
  - Default: /**.  
  Note: The JCL1 and JCL2 parameters affect the installation jobs. These parameters can be used, for example, for a multiline job statement. Do not use JCL1 or JCL2 for a JCLLIB statement, because all installation jobs already contain JCLLIB. |
| **JCL2** | Second additional JCL. Used for any general purpose. Compare with JCL1, in this table.  
  - Mandatory  
  - Maximum length: 60 characters  
  - Default: /**. |
Step 2.3 – Operation and Maintenance Libraries

Select minor step 3 in the Minor Steps Selection screen and insert values for the IOA operation libraries parameters, as shown in the following table:

When specifying values for parameters or subparameters that include both unit and volume (volser) fields, you must either define both fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 11** Operation and Maintenance Libraries

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLPREFA</td>
<td>High level data set name qualifiers (prefix) of the IOA Operation libraries.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 27</td>
</tr>
<tr>
<td>OLUNITA</td>
<td>Unit of disk on which IOA Operations libraries are placed. Specify a generic unit (for example, 3390—not SYSDA).</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 8</td>
</tr>
<tr>
<td>OLVOLA</td>
<td>Serial number of volume on which IOA Operations libraries are placed.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 6</td>
</tr>
<tr>
<td>MLPREFA</td>
<td>High level data set name qualifiers (prefix) of the IOA Maintenance libraries.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 27</td>
</tr>
<tr>
<td>MLUNITA</td>
<td>Unit of disk on which IOA Maintenance libraries are placed. Specify a generic unit (for example, 3390—not SYSDA).</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 8</td>
</tr>
<tr>
<td>MLVOLA</td>
<td>Serial number of volume on which IOA Maintenance libraries are placed.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 6</td>
</tr>
</tbody>
</table>
Step 2.4 – SMP CSI configuration

Select minor step 4 in the Minor Steps Selection screen to display the SMP CSI configuration screens.

**Figure 14     SMP CSI Configuration screen**

```
---------------------------- SMP CSI Configuration -------------------------
COMMAND ===>
Select the desired configuration number ==> 1

1. A new CSI:
   - Create a CSI containing Global, Target and Distribution Zones for IOA.

2. An existing CSI:
   - Add IOA definitions to an existing Global Zone.
   - Define new Target and Distribution Zones for IOA in this existing CSI.

3. Separate CSIs for each zone:
   - Add IOA definitions to an existing Global Zone
   - Create new CSIs for the IOA Target and Distribution Zones
```

Create a new CSI

This step specifies the creation of a CSI with global, target, and distribution zones for IOA.

Select 1 to display the SMP CSI Parameters screen for a new CSI:

**Figure 15     SMP CSI Parameters screen 1 (new CSI)**

```
---------------------------- SMP CSI Parameters ----------------------------
COMMAND ===>
Selected configuration:
A new CSI:
   - Create a CSI containing Global, Target and Distribution Zones for IOA.

PF3/END: Save and exit                 Cancel: Exit without Save

Specify IOA CSI DSNAME Prefix (e.g for A.B.CSI enter A.B) and Volume
Prefix (SPCPREF) ==> IOAP.V900
Volume (SPCVOL)  ==> NDS901

Specify IOA Target Zone Name       ==> IOA7TZN
Specify IOA Distribution Zone Name ==> IOA7DZN
```

Insert values for the required parameters and press Enter.

Add IOA Definitions to an Existing CSI

This step specifies adding IOA definitions to an existing global zone, and the definition of new target and distribution zones for IOA in the CSI.

Select 2 to display the SMP CSI Parameters screen for an existing CSI:
Figure 16  SMP CSI Parameters screen 2 (existing CSI)

--- SMP CSI Parameters ---

**COMMAND ==>**

Selected configuration:

- An existing CSI:
  - Add IOA definitions to an existing Global Zone.
  - Define new Target and Distribution Zones for IOA in this existing CSI.

**PF3/END: Save and exit**  **Cancel: Exit without Save**

---

Specify Existing CSI DSNAME Prefix (e.g. for A.B.CSI enter A.B)  
Prefix (SPCPREF) ==> IOAP.V900

Specify IOA Target Zone Name  ==> IOA7TZN
Specify IOA Distribution Zone Name  ==> IOA7DZN

Insert values for the required parameters and press Enter.

Add and create separate CSIs for Each Zone

This step specifies adding IOA definitions to an existing Global Zone, and the creation of new CSIs for the IOA Target and Distribution Zones.

Select 3 to display the SMP CSI Parameters screen for an existing CSI and create separate CSIs for each zone:

Figure 17  SMP CSI Parameters screen 3 (separate CSIs)

--- SMP CSI Parameters ---

**COMMAND ==>**

Selected configuration:

- Separate CSIs for each zone:
  - Add IOA definitions to an existing Global Zone
  - Create new CSIs for the IOA Target and Distribution Zones

**PF3/END: Save and exit**  **Cancel: Exit without Save**

---

Specify Existing CSI DSNAME Prefix (e.g. for A.B.CSI enter A.B)  
Prefix (SPCPREF) ==> IOAP.V900

IOA Target CSI  
Prefix (SPCPREFT) ==> IOAP.V900T  
Volume (SPCVOLT) ==> 

IOA Distribution CSI  
Prefix (SPCPREFD) ==> IOAP.V900D  
Volume (SPCVOLD) ==> 

---

**COMMAND ==>**

Insert values for the required parameters and press Enter.

Step 2.5 – SMP data sets

Select minor step 5 in the Minor Steps Selection screen and insert values for the SMP data sets parameters, as shown in the following table:
When specifying values for parameters or subparameters that include both unit and volume (volser) fields, you must either define both fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 12  **SMP data sets parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| SPDPREF   | High level data set name qualifiers of the SMP/E Distribution libraries.  
  - Mandatory  
  - Maximum length: 35 |
| SPDUNIT   | Unit of the disk on which the SMP/E Distribution libraries are to be placed. Specify a generic unit (for example, 3390—not SYSDA).  
  - Maximum length: 8 |
| SPDVOL    | Serial number of the volume on which SMP/E distribution libraries are to be placed.  
  - Maximum length: 6 |
| SPAPREF   | High level data set name qualifiers (prefix) of the SMP/E Auxiliary data sets, that is, SMPPTS, SMPMTS, SMPSTS, SMPLTS, SMPSCDS.  
  - Mandatory  
  - Maximum length: 35 |
| SPAUNIT   | Unit of the disk on which the SMP/E Auxiliary (SMPPTS, SMPMTS, and so on) data sets are to be placed. Specify a generic unit (for example, 3390—not SYSDA).  
  - Mandatory  
  - Maximum length: 8. |
| SPAVOL    | Serial number of the volume on which the SMP/E Auxiliary data sets (SMPPTS, SMPMTS, and so on) are to be placed.  
  - Mandatory  
  - Maximum length: 6 |
Step 2.6 – Define IOA LOADE (PDSE) library parameters

Select minor step 6 in the Minor Steps Selection screen and insert values for the IOA LOADE (PDSE) parameters, as shown in the following table:

When specifying values for parameters or subparameters that include both unit and volume (volser) fields, you must either define both fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 13 IOA LOADE (PDSE) library parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEPLIBE</td>
<td>Full name of IOA LOADE (PDSE) library. The name must be different from the name of the IOA LOAD (PDS) library.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 44</td>
</tr>
<tr>
<td>PDSEUNIT</td>
<td>Unit of the disk on which the IOA LOADE library is to be placed. Specify a generic unit (for example, 3390—not SYSDA).</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 8</td>
</tr>
<tr>
<td>PDSEVOL</td>
<td>Serial number of the volume on which the IOA LOADE library is to be placed.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 6</td>
</tr>
</tbody>
</table>

Step 3 – Load IOA Libraries

Follow these steps to build IOA libraries.

Step 3.1 – Save Specified Parameters

This step saves all the parameters specified in ICE. Wait until processing completes. The step is automatically marked complete.

This step customizes the DEFPARM member in the IOA.PARM library of the current IOA environment.

Step 3.2 – Allocate IOA libraries

This step builds the ALLOCIOA job in the IOA INSTWORK library. This job allocates all the IOA libraries. Submit the job and verify that all steps ended with a completion code of 0.
Step 3.3 – Load IOA libraries

This step builds the INSTALLJ job in the IOA INSTWORK library. This job populates the IOA libraries allocated in the previous step.

Submit the job and verify that all steps ended with a completion code of 0.

Step 4 – Specify IOA parameters

Follow these steps to insert values for the IOA parameters.

Step 4.1 – Site software environment

Modify the values for parameters related to the software at the site.

**Table 14 Site software environment parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| ASSEMBLR  | Name of the Assembler program.  
  ▪ Maximum: 8 characters  
  ▪ Default: ASMA90. |
| JESTYPE   | Type of JES in use at your site.  
  Valid values are:  
  JES2  
  JES3  
  ' ' (Blank). ICE automatically determines whether IOA is being installed at a JES2 or JES3 site. Default.  
  Insert a value for this parameter only if your JES subsystem name is not JES2 or JES3. |

Note: If you have installed, or intend to install, Control-O, and you plan to start Control-O during IPL, you must specify a value for the JESTYPE parameter. Do not leave it blank.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| JESREL | JES version at your installation. Valid values are:  
- nnn, where nnn is a 3-digit number  
- ' ' (Blank). Default. Insert a value for this parameter only if the JES version at the site is different than the MVS version. |
| JESCHAR | This parameter is used by all INCONTROL products as the JES command character when issuing JES commands.  
- Mandatory  
- Default: $  
Note: Most characters specified for this parameter are specified as is (for example, JESCHAR=$). However, certain characters must be entered in a special format. To specify /, =, or & as the value for the JESCHAR parameter, specify '/', '=', or '&&', respectively. Under JES2, this parameter is also used:  
- by all INCONTROL products, when issuing MVS commands to another system ($NnMm or $Mm commands)  
- by the Control-M Event Manager (CMEM) facility, to identify messages issued by the primary JES  
- by Control-O, to identify messages for CMEM processing  
- by messages, for tracking NJE communication  
- for releasing jobs under CMEM control  
- under Control-M, for starting STCs or sending Shout messages to remote machines or nodes. |
| JES3CMD | Method of issuing JES3 commands. Valid values are:  
- ' ' (Blank) – For running the Control-M, Control-D or Control-O monitor, or any combination of these, on the global processor. Default.  
- GE220L – For running the Control-M, Control-D or Control-O monitor, or any combination of these, on a local processor. |
Step 4.2 – IOA operational parameters

Insert values for the following IOA operational parameters:

### Table 15  IOA operational parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| INSTID    | 2-character ID of the IOA installation.  
   This ID is for distinguishing between different IOA installations using the same libraries (that is, PROCLIB).  
   - Default: Blank. |
| SSNAME    | 4-character name of the IOA subsystem.  
   - Mandatory  
   - Default: I000 |
| SSALLOC   | Controls dynamic definition of the IOA subsystem, Control-D Compressed Access Method (CDAM) subsystem, IOA Archive Server subsystem, Control-O subsystem, Control-M Event Manager subsystem, and optionally the IOA Online Monitor subsystem.  
   For more details about subsystem definition, see H Defining subsystems (on page 509)  
   - Mandatory  
   Valid values are:  
   - Y – Allow dynamic definition of the subsystem. If the subsystem does not exist, it is dynamically defined. Default.  
   - N – Prevents dynamic definition of the IOA subsystem. If the subsystem defined in the SSNAME parameter does not exist, the subsystem initialization fails. |
| LANG      | 3-character language code used for messages and screens.  
   - Mandatory  
   Four languages are supported, that is, elements in the installation are provided for these languages.  
   Valid codes are:  
   - ENG (English) – default  
   - FRA (French)  
   - GER (German)  
   - JPN (Japanese) |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODPAGE</td>
<td>The code page used to translate text data from other platforms. Text data arriving from other platforms may be encoded in Unicode or ASCII. Before such data can be analyzed, it must be converted into the coding used by the current system. Usually, that is one of the EBCDIC code pages. This parameter is used to define the code page that is used.</td>
</tr>
<tr>
<td></td>
<td>• Mandatory</td>
</tr>
<tr>
<td></td>
<td>• Valid values are from 1 through 12 characters.</td>
</tr>
<tr>
<td></td>
<td>• Default: IBM-1140</td>
</tr>
<tr>
<td></td>
<td>Example: Control-D decollates an XML document that is encoded in UTF-8. The decollation definition contains strings encoded in EBCDIC, code page IBM-1140. In order to be handled correctly by the decollation mission, the processed document must be translated from UTF-8 to IBM-1140.</td>
</tr>
<tr>
<td>QNAME</td>
<td>Specifies a name for ENQ requests to IOA Core and Repository files that have a QNAME, such as the IOA Log file, IOA Conditions file, Control-M Active Jobs file, Control-M Resources file, and the Control-D Active Missions file. IOA uses an enqueue mechanism to enable multiuser access to these files.</td>
</tr>
<tr>
<td></td>
<td>• Mandatory</td>
</tr>
<tr>
<td></td>
<td>• Maximum: 8 characters</td>
</tr>
<tr>
<td></td>
<td>• Default: The environment name</td>
</tr>
<tr>
<td></td>
<td>IOA issues the MVS ENQ request using the SYSTEMS option. When working in a multiple computer environment, an additional product, such as GRS, MIM, SDSI, SUPER-MSI, or a similar enqueue manager, is required to allow synchronized update of the IOA Core from multiple computers. Otherwise, the IOA Core can be updated from one computer only, although data retrieval from other computers is still possible. In a multiple computer environment, for example, when using CTMPLEX, you must add the IOA QNAME to the enqueue manager product parameters, as a QNAME to be handled for multi-computer synchronized access.</td>
</tr>
<tr>
<td></td>
<td>The Control-M, Control-D, or Control-O monitors should not be started during IPL until after the enqueue manager has finished its initialization.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Note:</strong> At certain sites, Control-O is started at the early stages of the IPL process to start other address spaces. If Control-O is started before activating the enqueue manager product at your site, verify that the enqueue manager is completely initialized before attempting to update the IOA Core, by issuing rule statements such as DO COND, DO RESOURCE, DO FORCJOB or DO SHOUT to the IOA LOG. Otherwise, the integrity of the IOA files can be affected.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CTTQNAM</strong></th>
<th>Specifies a special ENQ name to be used by all IOA environments to access the Control-M/Tape repository.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Control-M/Tape repository is protected by an ENQ name specified in member IOAPARM. The same ENQ name must be specified for the Control-M/Tape repository in each environment that accesses this database. This allows different IOA environments to access the Control-M/Tape repository from various systems in the complex.</td>
<td></td>
</tr>
<tr>
<td>Each IOA environment has its own IOAPARM member containing a QNAME parameter (used for ENQ requests on the IOA Core). If the value of QNAME is identical in all environments, there is no need to specify a CTTQNAM parameter. Do not add this parameter or specify a null value. This enables various IOA components to use the value specified for the QNAME parameter.</td>
<td></td>
</tr>
<tr>
<td>If the value of QNAME is not the same in all the IOA environments, a value must be specified for the CTTQNAM parameter.</td>
<td></td>
</tr>
<tr>
<td>- Valid values are alphanumeric characters and special characters ($, #, and @).</td>
<td></td>
</tr>
<tr>
<td>- Maximum: 8 characters.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> CTTQNAM must be specified in the IOAPARM member in all IOA environments that share the same Control-M/Tape Database.</td>
<td></td>
</tr>
<tr>
<td>If a value is specified for CTTQNAM, Control-M/Tape issues the ENQ with the systems option. In multiple computer installations, an additional enqueue manager product (such as GRS or MIM) may be required to allow synchronized update of the database from multiple computers. If such a product is not active at your site, activate Control-M/Tape support of the MVS RESERVE facility, by setting the CTTRSRV parameter to Y.</td>
<td></td>
</tr>
<tr>
<td>If an additional enqueue manager is in use at your site, you may need to add the value of the CTTQNAM parameter to the product parameters as a QNAME to be handled for multi-computer synchronized access.</td>
<td></td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
CTTRSRV | Whether Control-M/Tape Reserve support is activated.
  | ▪ Mandatory
  | ▪ Valid values are:
  | ▪ Y – Activate Control-M/Tape Reserve support.
  | ▪ N – Do not activate Control-M/Tape Reserve support. Default.
If you operate a multi-computer site without an enqueue manager product (such as GRS or MIM) and several computers share the same Media Database, activate Control-M/Tape support of the MVS RESERVE facility by specifying Y for this parameter.

IOAID | Identification number assigned by IOA to the SYSPLEX member on which the IOA installation is running.
  | ▪ Mandatory
  | ▪ Valid values: 1 through 15
  | ▪ Default: 1
The value 1 indicates that the installation defined with that value is the primary installation.
This identification number is used:
  | ▪ by IOA to identify the SYSPLEX member where the IOA Conditions (CND) file is located
  | ▪ by Control-M to identify the SYSPLEX member where the Control-M Resources (RES) file is located
When more than one IOA installation must access a common CND or RES file, each of these installations must have a distinctive IOAID.

SHRQNAM | QNAME used for shared ENQ requests for the IOA Conditions file (CND) and the Control-M Resolutions (RES) file.
The value of this parameter must be the same in all IOA and INCONTROL installations that must access a common CND or RES file. To enable multiuser access to its database, IOA uses the ENQ mechanism.
  | ▪ Maximum: 8 characters.
### Parameter | Description
--- | ---
Note: If any of the following are true, ignore the steps that follow this Note, and continue with DATETYP, the following parameter in this table:

- Your site does not have a multiple computer environment.
- IOA is installed on only one computer in your environment.
- Neither the IOA Conditions file nor the Control-M Resources file is shared by multiple IOA installations at your site.

If more than one IOA installation is sharing a Condition and Resource file, do the following to define that file:

If the resource file is shared:

Define the primary IOA installation by assigning a value of 1 to the IOAID parameter in that installation.

Define the additional systems by assigning consecutive numbers (2, 3, and so on) to the IOAID parameter in each additional installation.

Specify the same value for the SHRQNAM parameter on all IOA systems that share the CND file and RES file. If specified, the value of SHRQNAM should be propagated by GRS, MIM, SDSI, SUPER-MSI, and so on (see below.)

Make sure that the value of QNAME is different than the value of SHRQNAM.

Manually change all the allocations to refer to the shared CND and RES files.

IOA issues an ENQ with the SYSTEMS option. When working in a multiple computer environment, an additional product may be required to allow synchronized updating of the database from multiple computers. If such a product does not exist, the CND and RES files can be updated from one computer only.

Formatting the CND file can only be done by the primary IOA installation.

Note: If a product such as GRS, MIM, SDSI, or SUPER-MSI is installed at your site, you may need to add the value of SHRQNAM to the product parameters as a QNAME for handling multi-computer synchronized access.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **DATETYP** | Date format used at the site:  
| | ▪ Mandatory  
| | Valid values are:  
| | ▪ W - ddmmyy (default)  
| | ▪ A - mmddyy  
| | ▪ J - yymmdd  
| | If the DATETYP parameter value is changed post-installation, it must be modified via the ICE interface (and not simply by editing the IOAPARM member in the IOA PARM library) to properly propagate the new value to any IOA/Control-M ISPF utilities which are dependent on the site date formats. |
| **SWEEK** | Starting day of the week.  
| | This value is used for the Date Scheduling parameters Ln, -Ln, Dn, -Dn, DnP, -DnP, LnP, -LnP, DnWm. For more information, see the W DAYS parameter in the INCONTROL product you are installing.  
| | ▪ Mandatory  
| | Valid values are:  
| | ▪ MON – Monday (default)  
| | ▪ SUN – Sunday  
| | BMC Software recommends that you do not change this parameter once Control-M has been in operation in a production environment, or you might introduce unwanted shifts in scheduling. |
| **SWEEK1** | Specify starting day of week.  
| | This value is used for the date scheduling formats n, -n, +n, >n, and <n. For more information, see the description of the W DAYS parameter in the guide for the INCONTROL product you are installing. If a blank is specified for this parameter, the value is taken from the SWEEK parameter.  
| | Valid values are:  
| | ▪ MON – Monday  
| | ▪ SUN – Sunday  
| | ‘ ’ (Blank) – Value taken from the SWEEK parameter (default)  
| | Note: Duplication of the SWEEK and SWEEK1 parameters exists to provide compatibility with previous versions of INCONTROL products. Under normal circumstances, leave the SWEEK1 parameter blank. |
### Parameter | Description
--- | ---
**DAYTIMEI** | The start time of the work day at your site. 
- Mandatory 
The start time defines the beginning of a new work day when Control-M is not installed. When Control-M is installed, parameter DAYTIMEM will be in effect. The format is: 
DAYTIMEI = +hhmm or -hhmm 
where:
- + is after midnight 
- - is before midnight 
- hhmm is the time, in hours and minutes format 
- Default: +1200.

**TABUADT** | Audit tables update to the IOA LOG file. 
- Mandatory 
Valid values are:
- Y – Write to the IOA LOG any table updates. Messages IOAE38I or IOAE7HI may display. 
- N – No. Default.

**ONLTRC** | Enable online users to turn on Trace. 
Valid values are:
- Y – Allow. Default. 
- N – Do not allow.

---

**Step 4.3 – IOA compatibility mode**

This step defines the compatibility mode for each product. 
Valid values are:
- 630 – IOA version 6.3.xx mode.
- 700 – IOA version 7.0.xx mode.
- 800 – IOA version 8.0.xx mode. Default. 
Each product has its own parameter.
Table 16  IOA compatibility modes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Compatibility mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEIOA</td>
<td>IOA Running compatibility mode</td>
</tr>
<tr>
<td>MODECDAM</td>
<td>CDAM compatibility mode</td>
</tr>
<tr>
<td>MODECTM</td>
<td>Control-M compatibility mode</td>
</tr>
<tr>
<td>MODEASM</td>
<td>Control-M AS compatibility mode</td>
</tr>
<tr>
<td>MODECTB</td>
<td>Control-M/Analyzer compatibility mode</td>
</tr>
<tr>
<td>MODECTR</td>
<td>Control-M/Restart compatibility mode</td>
</tr>
<tr>
<td>MODECTT</td>
<td>Control-M/Tape compatibility mode</td>
</tr>
<tr>
<td>MODECTD</td>
<td>Control-D compatibility mode</td>
</tr>
<tr>
<td>MODEASD</td>
<td>Control-D AS compatibility mode</td>
</tr>
<tr>
<td>MODECTV</td>
<td>Control-V compatibility mode</td>
</tr>
<tr>
<td>MODECTO</td>
<td>Control-O compatibility mode</td>
</tr>
<tr>
<td>MODEASO</td>
<td>Control-O AS compatibility mode</td>
</tr>
</tbody>
</table>

Step 4.4 – Parameters for "MAIL" and "SNMP" options

This step enables you to specify values for IOA Shout facility parameters. The modified values are saved in the IOAPARM member in the IOA PARM library.

For more information about the IOA Shout facility parameters, see the chapter about IOA administration in the *INCONTROL for z/OS Administrator Guide*.

Step 5 – Specify target configuration parameters

Insert values for the following parameters by performing the following steps.

Step 5.1 – IOA datasets characteristics

Familiarize yourself with the following data set characteristics to determine the appropriate space calculation for each data set.
IOA Conditions file

The IOA Conditions file consists of:

- 1 physical record for synchronization purposes
- 32 logical records for prerequisite conditions
  - 31 logical records; one for each day of the month
  - 1 logical record for STAT conditions

Each prerequisite condition requires 24 bytes. Therefore, the number of prerequisite conditions that can be stored for each day of a month is 1/24th of the value specified for the record size in the IOA Conditions file, which is 32 KB.

Due to MVS access method limitations, a maximum of 32 KB can be specified for the record size, subject to any disk block size limitation. This default allows a maximum of 1365 prerequisite conditions to be stored in each physical record of the IOA Conditions file.

The CNDREC# parameter, described in Parameters (on page 55) specifies the number of physical records in a logical record.

If your site uses a large number of prerequisite conditions, such as OUT conditions created by Control-M, and you require more than the maximum 32 KB for each record in the IOA Conditions file, additional space can be provided by increasing the value of the CNDREC# parameter.

Use the following formula to calculate the region size needed for the IOA Conditions file:

\[ 32760 \times ((32 \times \text{CNDREC#}) + 2) \]

Examples

For CNDREC#=1, about 1.11 MB of virtual storage is needed to load the IOA Conditions file.

For CNDREC#=2, about 2.16 MB of virtual storage is needed to load the IOA Conditions file.

The entire conditions file is loaded by the Control-M, Control-D, or Control-O monitors into its address space.
Parameters

Table 17  IOA Conditions file space calculation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| CNDREC#   | Specifies the number of physical records in a logical record. Number of conditions per day (meaning, number of records allocated for each day of the month in the IOA Conditions file). This parameter defines the number of records in each slot on the file. Each slot can contain any number of records from 1 through 255.

Prerequisite conditions in the IOA Conditions file are held in 32 slots. The first 31 slots contain only conditions that have a date reference to a specific day of the month. For example, the condition JOBA-OK 0303 belongs to the slot for the 3rd day of the month. The 32nd slot is used for prerequisite conditions that contain the STAT attribute instead of a date. Since each prerequisite condition occupies 24 bytes (48 bytes for long conditions), each record can contain a maximum of 32760 / 24 = 1365 prerequisite conditions (32760 / 48 = 682 if all the conditions are long conditions).

Usually, a value of 1 or 2, which provides 1365 or 2730 conditions per day, is sufficient.

- Mandatory
- Maximum: 255.
- Default: 1.
The following parameter is relevant to calculating the space for the IOA Manual Conditions file:

**Table 18 Calculating the size of the manual conditions file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRSREC#</td>
<td>This parameter defines the number of records in one slot in the IOA Manual Conditions file per day. Each slot can contain any number of records between 1 and 255. Conditions in the Manual Conditions file are held in 32 slots. The first 31 slots contain only conditions that have a date reference to a specific day of the month. For example, condition JOBA-OK 0303 belongs to the slot for the 3rd day of the month. The 32nd slot is used for conditions that contain the STAT attribute instead of a date. Since each manual condition occupies 25 bytes (50 for long conditions), each record can contain a maximum of $32760 / 25 = 1310$ manual conditions ($32760 / 50 = 655$ for long manual conditions).</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 255</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 1</td>
</tr>
<tr>
<td></td>
<td>Usually a value of 1 is sufficient.</td>
</tr>
</tbody>
</table>
Mirror file for IOA conditions

Specify whether mirror files are to be created and maintained.

**Table 19 Additional parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DUALDB    | Whether an IOA Mirror Conditions file is maintained.  
           | ▪ Mandatory  
           | Valid values are:  
           | ▪ Y – Mirror IOA Conditions file is maintained.  
           | ▪ N – Mirror IOA Conditions file is not maintained. Default.  
           | IOA mirror files are useful for overall disaster recovery planning. A site can recover quickly and easily from a disk crash involving the regular IOA shared files if a mirror image of those files is maintained on another disk.  
           | Note: The setting of this parameter also determines whether the dual Active Jobs File of Control-M is maintained. |
| CNDLOG    | Setting determines whether condition changes are logged, and if so, the destination where logging occurs.  
           | Valid values are:  
           | ▪ No—No logging required.  
           | ▪ IOALOG — Log all condition changes to the IOA LOG. Default.  
           | ▪ SYSLOG — Use WTO to log all condition changes to the system SYSLOG. |
Step 5.2 – IOA Core

Enter values for the IOA Core configuration parameters shown in the following table.

Table 20  IOA Core configuration parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DBPREFA   | High level data set name qualifiers (prefix) of the IOA Core (IOA Log file, IOA Conditions file).  
  ▪ Mandatory |
| DBUNITA   | Unit name for IOA Core. Specify a generic unit (such as 3390—not SYSDA). |
| DBVOLA    | Volume serial number for IOA Core. |
| DUALUNIT  | Unit name for IOA Conditions mirror file.  
  The dual file should be placed on a different disk and (preferably) on a different disk controller than the rest of the IOA Core. |
| DUALVOL   | Volume serial number for IOA Conditions mirror file.  
  The dual file should be placed on a different disk and (preferably) on a different disk controller than the rest of the IOA Core. |
| LOGUNIT   | Disk unit on which the IOA LOG file is placed.  
  Specify a generic unit (for example, 3390—not SYSDA).  
  The default is the value specified in the Environment Table screen. |
| LOGVOL    | Volume serial number of the IOA Log file.  
  BMC Software recommends that you place the IOA Log file on a different disk than the rest of the IOA Core. |
| LOGIUNIT  | Disk unit on which the IOA LOG Index file is placed.  
  Specify a generic unit (for example, 3390—not SYSDA).  
  The default is the value specified in the Environment Table screen. |
| LOGIVOL   | Volume serial number of the IOA Log Index file.  
  BMC Software recommends that you place the IOA Log Index file on a different disk than the rest of the IOA Core. |
### EAVUSE#A


Valid values are:
- **OPT**: Allows allocation on EAV. Default.
- **NO**: Prevents allocation on EAV.

When specifying values for parameters or subparameters that include both unit IOA Core and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

---

**Step 5.3 – MVS procedures**

Insert values for the following MVS procedure library configuration parameters.

#### Table 21 MVS procedure parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROCLIB</strong></td>
<td>Name of the MVS library to which IOA started tasks (from the PROCJCL library) are to be copied.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- <code>data_set_name</code> – Name of the library to which IOA started tasks are to be copied. This library should be in the concatenation of DDNAME IEFJ OBS that is specified in the MSTJ CLxx member of the SYS1.PARMLIB. Verify the suffix in the MSTRJ CL parameter is xx in the IEASY00 member in the SYS1.PARMLIB library.</td>
</tr>
<tr>
<td></td>
<td>- DONTCOPY – Do not copy the IOA started tasks to a site library. Default.</td>
</tr>
<tr>
<td></td>
<td>Note: If the PROCLIB parameter is set to DONTCOPY, you must copy the modified procedures to the site procedure library.</td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
**SITEPROC** | Site procedure library to which several IOA procedures (from the IOA PROCLIB library) will be copied.  
- Mandatory  
Valid values are:  
- `data_set_name` – Name of the procedure library to which IOA procedures are to be copied.  
- `DONTCOPY` – Do not copy the IOA procedures to a site library. Default.  
Note: If the SITEPROC parameter is set to DONTCOPY, you must copy the modified procedures to the site procedure library.

Warning! If the SITEPROC parameter is set to DONTCOPY, you must copy a modified version of the CTRTROLR procedure to a site procedure library. For more information, see Step 2.1 – Control-M/Restart operational parameters (on page 208).

**PROCPRFA** | First three characters of the IOA JCL started tasks and procedures, after they are copied to the MVS procedure library.  
- Mandatory  
- Default: IOA  
If both the PROCLIB and SITEPROC parameters are set to DONTCOPY, this parameter must be set to the default value.  
The value specified for this parameter must be different than the PROCPRFx parameter (PROCPRFM in Control-M, and so on) of all INCONTROL products.
Step 5.4 – MVS classes

Specify the following parameters for MVS class configuration.

Table 22 MVS Class Configuration Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPFSTAT</td>
<td>Specifies whether ISPF statistics (last change date, and so on) are to be generated when a member (for example, a Control-M scheduling table; Control-D mission; or Control-O, Control-M/Analyzer, or Control-M/Tape rule) is modified and saved. SPFSTAT also specifies whether ISPF statistics are displayed when a list of members displays.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Display and maintain ISPF statistics. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not display and maintain ISPF statistics.</td>
</tr>
<tr>
<td>HOLDCLS</td>
<td>Held output class, for Control-M/Analyzer. This is used when a TSO user on a system running under JES3 wants to view output by means of ISPF Option 3.8.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are: 1 character</td>
</tr>
<tr>
<td></td>
<td>▪ Default: X</td>
</tr>
<tr>
<td>DUMPCLS</td>
<td>Output class, for dumps, debug snaps, and printouts. Should usually go to a dummy sysout class, or to a hold-class that is cleaned automatically each day (if not printed).</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are: 1 character</td>
</tr>
<tr>
<td></td>
<td>▪ Default: X</td>
</tr>
</tbody>
</table>
Step 5.5 – IOA log file space calculation

The IOA LOG File Space Calculation screen (shown in the following figure) enables you to specify values to calculate the required space allocation.

The IOA LOG file is a wrap-around file. Failure to allocate the Log with sufficient space may cause essential messages to be overwritten and lost. For example, if SPY281 messages are lost, then the Control-M Statistics file may be missing the statistics for the most recent job occurrences.

**Figure 18  IOA LOG File space calculation screen**

```
--------------------------------- IOA LOG File space calculation ---------------------------------
COMMAND ===>  
Enter or change values and press Enter. 
Examine the resulting space requirements. 
Use this space allocation in subsequent installation steps? === (Y/N) 
Numbers specified must conform to your site’s peak workload. 

---------------------------------------
Number of days to retain LOG records ===> 7 
CTM CTR Maxium Number of jobs per day ===> 10000 
CTD Maxium Number of jobs per day ===> 100 
CTO CMEM Number of rules ORDERED per day ===> 1000 
CTB Number of rules invoked per day ===> 20 
---------------------------------------

Enter the Block Size to be used for the IOA LOG file, Valid values are: 
6200 The standard block size prior to version 6.2.00 
23400 The optimum block size for 3380 DASD devices 
27800 The optimum block size for 3390 DASD devices 

Allocation : Number of blocks = 130000 (ILBLKNO) 
Number of records = 224200 (LOGSIZE) 
Block Size = 27800 (ILBLKSZ) 
3380 Tracks = 130000 3390 Tracks = 65000
```

You can choose the block size of the IOA LOG file. Also, if you choose a large block size you will increase performance when accessing the IOA LOG file.

If you are going to install Control-M, Control-M/Restart or Control-D, specify the maximum number of jobs to be submitted each day.

If you are going to install Control-M/Analyzer, Control-O or the CMEM facility of Control-M, specify the maximum number of Control-M/Analyzer, Control-O or CMEM rules to be processed each day.

These values should meet the requirements of INCONTROL products that you plan to install in the future, using the same IOA environment.
The following parameters are calculated by ICE using the numbers specified:

**Table 23  IOA LOG file space calculation procedure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILBLKNO</td>
<td>Number of blocks to be allocated for the IOA LOG file.</td>
</tr>
<tr>
<td>LOGSIZE</td>
<td>Number of records of the IOA LOG file.</td>
</tr>
<tr>
<td>ILBLKSZ</td>
<td>IOA LOG block size. Setting a large block size improves the IOA LOG performance, as well as DASD utilization. Choose a block size according to the DASD type that will be used.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>3380 Tracks</td>
<td>Number of 3380-type tracks for the IOA LOG file.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Number of 3390-type tracks for the IOA LOG file.</td>
</tr>
</tbody>
</table>

**Step 6 - Customization process**

The following steps let you customize your IOA installation.

**Step 6.1 – Parameter verification**

In addition to the validation checks that are performed during the data entry phase, this step runs a program to verify that various installation parameters do not contain conflicting values. For example, the prefix of the IOA Installation libraries is checked to verify that it is not the same as other INCONTROL product prefixes.

If the step completes successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list displays the current values of the conflicting parameters and required corrective actions.

**Step 6.2 – Save parameters into IOA libraries**

This step saves all the parameters specified in ICE. Wait until processing completes. The step is automatically marked complete.

This step customizes the DEFPARM and IOAPARM members in the IOA.PARM library of the current IOA environment.

**Step 6.3 – Specify IOA computers (optional)**

This step is used to list, define and characterize the IOA computers. This step must be performed if either Control-O or Control-M are to be installed.
For detailed information about the parameters you can set, see the following table.

Table 24  IOA computer parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTM2SBS</td>
<td>Name of the file enabling the Control-M monitor to communicate with CMEM and Control-O monitors. The name of the file must be unique, and cannot be the same as any of the names specified in the SBS2CTM parameter, described in this table. This file is allocated and formatted later. If neither CMEM nor Control-O is in use, leave this value blank.</td>
</tr>
</tbody>
</table>
| Use System Logger (SYSTLOGR) | Mandatory  
Valid values are:  
▪ Y – Use the System Logger.  
▪ N – Do not use the System Logger. Default. |
| Sel             | Operation to perform on the computer.  
Valid values are:  
▪ A – Add a computer.  
▪ D – Delete a computer. |
| ID              | The CPUID number, as follows:  
▪ Under JES2, use the JES system ID, as defined in the JES installation parameters. You can use the $D MEMBER command to retrieve this information.  
In a single-computer environment, set ID to 1.  
This information is used by programs running under IOA when trying to send a Shout message to a different computer in a Multi-Access Spool (MAS).  
▪ Under JES3, number the computers sequentially.  
Valid values are: 1 through 99  
The ID parameter is also used in the Control-M CTMJ SA utility (Statistics accumulation) to determine the CPU ID of the computer for jobs for which statistics are calculated. See the Control-M for z/OS User Guide for details. |
### Parameter | Description
--- | ---
SYSTEM | Name of the MVS system, as specified in the SYSNAME parameter of the IEASYSxx member in the SYS1.PARMLIB library.
SMFID | MVS SMF ID of the computer, as specified in the SID parameter of the SMFPRMxx member in SYS1.PARMLIB.
SIZE | Number of records in the communication file specified in the SBS2CTM parameter.
   This number is the maximum number of requests that can be queued when the Control-M monitor is down, without losing information. If more requests are passed and the Control-M monitor did not read the oldest request, the oldest request is overwritten and an error message is issued. For information about how to increase the size of subsystem-to-monitor files, see Increasing the size of a subsystem-to-monitor file (for non-Sysplex environments) (on page 204).
   If neither CMEM nor Control-O is in use, leave this value blank.
   Note: After a change in the list of communication files, you must shut down and then restart the Control-M monitor and either the CMEM or Control-O monitor. You must also reformat the communication files.
SBS2CTM | Name of the cyclic communications file used by CMEM (or Control-O) to pass requests to the Control-M monitor.
   Each computer that will be monitored by CMEM or Control-O should have its own file. Specify a unique data set name for each computer. The file is allocated and formatted later.
   If the CMEM communication vehicle at your site is the MVS System Logger and not communication files, specify the DSN of each computer as SYSTEM.LOGGER. For more information, see CMEM considerations (on page 196).
   If neither CMEM nor Control-O is in use, leave this value blank.

---

**Step 6.4 – Before you proceed**

You have just finished entering values for ICE parameters. The next step submits a job that allocates data sets and tailors members in several libraries. After this job completes, changes to parameters defined in previous steps may require extensive manual modifications or may require restarting the installation process.
Step 6.5 – Resolve IOA libraries
The IOARSLV job resolves symbolic parameters with the installation values entered. Submit the job and verify that the step completes with a condition code of 0.

Step 6.6 – Format IOA data sets
The FORMIOA job formats the IOA Core. The following data sets are created and formatted:

Table 25  IOA data sets created and formatted

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG</td>
<td>IOA Log file and Log Index file</td>
</tr>
<tr>
<td>CND</td>
<td>IOA Conditions file</td>
</tr>
<tr>
<td>NRS</td>
<td>IOA Manual Conditions file</td>
</tr>
<tr>
<td>NSN</td>
<td>IOA Synchronization file of the Manual Conditions file</td>
</tr>
<tr>
<td>ALTCND</td>
<td>IOA Mirror Conditions file</td>
</tr>
</tbody>
</table>

Note: This file is only formatted if the DUALDB IOA installation parameter is set to Y.

Submit the job. All steps must complete with a condition code of 0.

Step 6.7 – Copy IOA started tasks into site library
The COPYIOAP job copies IOA started tasks from IOA PROCJCL library into the site library according to values specified earlier. Submit the job and verify that the step completes with a condition code of 0.

Step 6.8 – Copy several procedures to site library
This step customizes and copies a small set of selected procedures to the procedure library at the site, that is, the library that was specified in the SITEPROC IOA parameter. This prevents having to add the JCLLIB statement to existing jobs at the site.
Step 7 – Set Global Variables database

Perform this step to set up the Global Variables database.

If this is the first time you are calculating the space for the Databases file, or if you do not have the necessary information available, perform these steps using the default values. Otherwise, review the guidelines for calculating the disk space required for the IOA Variable Database facility in the INCONTROL for z/OS Administrator Guide.

Step 7.1 – Space calculation for databases file

Specify the values shown in Step 7.2 – Space calculation for columns file (on page 67) to calculate the required space allocation for the Variable Database Definition file.

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

Step 7.2 – Space calculation for columns file

Insert values for the parameters shown in the following table.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

Table 26 Calculating the space allocation for the variable database columns file

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of Variable Databases to be defined</td>
<td>The maximum number of IOA variable databases to be defined.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Average number of columns per Variable Database</td>
<td>The average number of columns for each IOA variable database.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the Variable Database Columns file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by IOA with the contents of the primary Variable Database Columns file. Use of the dual file provides data recovery capabilities if the primary Variable Database Columns file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Allocate a dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- N – Do not allocate a dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- N – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST – Whether IOA performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N – Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Index Comp</td>
<td>Index component of the Variable Database Columns file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by IOA with the contents of the primary Variable Database Columns file. Use of the dual file provides data recovery capabilities if the primary Variable Database Columns file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Allocate a dual (mirror) image Variable Database Columns file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>- N – Do not allocate a dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- N – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Columns file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST – Whether IOA performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N – Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The primary data component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

Step 7.3 – Space calculation for variables file

Insert values for the parameters shown in the following table.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 27 Calculating the space allocation for the variable database variables file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of Variable Databases to be defined</td>
<td>The maximum number of IOA variable databases to be defined.</td>
</tr>
<tr>
<td></td>
<td>Maximum: 9 digits.</td>
</tr>
<tr>
<td>Average number of columns per Variable Database</td>
<td>The average number of columns for each IOA variable database.</td>
</tr>
<tr>
<td></td>
<td>Maximum: 9 digits.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Average number of rows per Variable Database</td>
<td>The average number of rows for each IOA variable database. The average number of columns multiplied by the average number of rows equals the average number of variables for each variable database.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the Variable Database Variables file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by IOA with the contents of the primary Variable Database Variables file. Use of the dual file provides data recovery capabilities if the primary Variable Database Variables file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Allocate a dual (mirror) image Variable Database Variables file.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not allocate a dual (mirror) image Variable Database Variables file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Variables file.</td>
</tr>
<tr>
<td></td>
<td>- N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Variables file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST - Whether IOA performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Index Comp  | Index component of the Variable Database Variables file. This parameter has the following subparameters:  
  ▪ DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by IOA with the contents of the primary Variable Database Variables file. Use of the dual file provides data recovery capabilities if the primary Variable Database Variables file becomes damaged or inaccessible. Valid values are:  
    ▪ Y – Allocate a dual (mirror) image Variable Database Variables file. BMC Software recommends that you do not use a dual file for the Index Component.  
    ▪ N – Do not allocate a dual (mirror) image Variable Database Variables file.  
  ▪ DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:  
    ▪ Y – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Variables file.  
    ▪ N – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variable Database Variables file.  
  ▪ DUALST – Whether IOA performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:  
    ▪ Y – Perform timestamp checkpoint processing.  
    ▪ N – Do not perform timestamp checkpoint processing. |
| Main Data   | The primary data component.  
  This parameter has the following subparameters:  
  ▪ Unit type – The unit type to which data should be allocated.  
  ▪ Volser – Up to six volsers can be specified. |
### Parameter | Description
--- | ---
**Main Index** | The primary index component. This parameter has the following subparameters:
- Unit type – The unit type to which data should be allocated.
- Volser – Up to six volsers can be specified.

**Dual Data** | The dual data component. This parameter has the following subparameters:
- Unit type – The unit type to which data should be allocated.
- Volser – Up to six volsers can be specified.

**Dual Index** | The dual index component. This parameter has the following subparameters:
- Unit type – The unit type to which data should be allocated.
- Volser – Up to six volsers can be specified.

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

### Step 7.4 – Format the global variables database

The IOADBGLV job defines the IOA Variables Database file, Columns file and Variables file. Submit the job and verify that all steps complete with a condition code of 0.

### Step 7.5 – Load Sample Database

The IOADEMOD job reformats the IOA access method files (DBS, COL, VAR), including the indexes. After formatting, the job loads a few databases for demonstration purposes. Submit the job. All steps of this job must complete with a condition code of 0.

### Step 7.6 – IOAPLEX considerations (optional)

The XES AutoEdit facility (XAE) allows you to resolve AutoEdit expressions on a Sysplex-wide level, based on the utilization of Coupling Facility structures. These structures provide the required data sharing mechanisms among the different monitors participating in the Sysplex. These facilities together are called IOAPLEX.

When the XAE facility is active and running, IOAPLEX communicates and validates shared Variable Database variables (in E/CSA memory) registered as such during Control-O or CTMCMEM monitor startup.
Before implementing the XAE facility, do the following:

1. Understand the different types of AutoEdit XAE databases in order to be able to plan for the size of the required Coupling Facility structures.
   For details, see Types of XAE databases (on page 75).

2. Plan for the size of the required Coupling Facility structures.
   Use the default values for the first (test) installation. This is described in Step 7.7 – Structure size calculation (optional) (on page 75).

3. Set up the parameters that enable XES processing and XAE processing.
   This is described in Step 7.8 – IOAPLEX parameters (optional) (on page 78).

4. Add the appropriate CMEM or Control-O (or both) structures to your Coupling Facility resource manager (CFRM) policy.
   This is described in Step 7.10 – Adding IOA structures to the CFRM (optional) (on page 82).
   All monitors that will share Variable Databases must be of the same INCONTROL version.
Types of XAE databases

There are two types of XAE databases, named Type 1 and Type 2:

**Table 28  XAE Database Types**

<table>
<thead>
<tr>
<th>Database Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>When using XAE Type 1 databases, the entire database is seen by the user, but the database is actually composed of the different groups of variables in the different computers. Each computer updates its own variables in memory in E/CSA memory. But all other computers can see these values because a checkpointed copy of the same variables exists in the Coupling Facility. For example, assume that each computer has its own JES2 status variable that it can update. However, the operator can see all these JES2 status variables in the Sysplex from a single screen, and CMEM rules, or Control-O rules, for example, can resolve these values from computers other than the one in which the rule is triggered. This kind of database is useful when the application does not really share data across computers, but a single point of management for the entire Sysplex is required.</td>
</tr>
<tr>
<td>Type 2</td>
<td>When using XAE Type 2 databases, all components in a Sysplex, that is, computers, rules, jobs, and so on, share the same image of the database. If one computer updates the object, all other computers share the update. For example, if computer A increments an event count by one, and then computer B increments the same event count by one, the shared counter is incremented by two, and is seen and accessible by both computers.</td>
</tr>
</tbody>
</table>

The XAE databases are only available if Control-O is installed at your site. CTMCMEM users can define XAE databases for AutoEdit usage in jobs, but CMEM rules cannot access them.

**Step 7.7 – Structure size calculation (optional)**

Familiarize yourself with the following description of structures, and then insert values for the parameters described in the following section:

- Structures (on page 76)
- List structure (on page 76)
- Cache structure and Lock structures (on page 77)
- Reserving Additional Space for LOADGLOBAL operations (on page 77)
- Parameters (on page 78)
Structures

To keep the CMEM and Control-O shared variables and perform Sysplex-wide variable processing, CMEM and Control-O require a list, a cache, and a lock structure.

IOA allows you either to externally specify the space required for the structures by using the CFRM Administrative utility provided by IBM, or to let IOA internally calculate how much space will be required and then pass the calculated value to the IXLCONN service of MVS.

During space calculations and settings, note that different XES components use different units of allocation for calculation. For example, the STRSIZE parameter of the MVS macro IXLCONN specifies the size of the structure in units of 4 KB (4096 bytes) blocks while the INITSIZE(initsize) or SIZE(size) used by the Administrative utility of the CFRM specifies the size of the structure in 1 KB (1024 bytes) blocks.

Therefore a structure allocated by the IXLCNON service that specifies STRSIZE=256 requires 1 MB (256 x 4 KB) of Coupling facility storage while the same structure space can be allocated with an INITSIZE of 1024 (1024 x 1 KB).

List structure

The list structure stores the actual shared variables across the Sysplex environment. The list structure requires from 0 through 4096 bytes per database row, depending on row contents. Each non-null column in a row requires 24 bytes of control information plus n bytes for the value itself. The maximum row length (the larger record in the Coupling Facility) is 4096 bytes.

The following formulas illustrate how to calculate the space requirements for the List structure:

- \[ \text{total\_bytes} = \text{total\_number\_of\_variables} \times 32 \times 2 \]
  
  Where

  \[ \text{total\_number\_of\_variables} = \text{rows1} \times \text{cols1} \times \text{LPARs} \times \text{db1} + \text{rows2} \times \text{cols2} \times \text{db2} \]

  and the values of rows, cols, and db are according to the number of rows, columns, and databases of Type 1 and Type 2.

  The required storage for each Type 1 list structure database is directly proportional to the number of LPARs (because there is a separate Type 1 database for each LPAR) and to the number of rows and columns.

  The required storage for each Type 2 list structure database is directly proportional only to the number of rows and columns.

  The number of variables in a database is equal to the number of columns times the number of rows.

  The total number of variables in all databases is equal to the sum of the variables in all Type 1 databases, plus the variables in all Type 2 databases.

  The total number of variables in all databases is multiplied by 32 because it is assumed that the average size of a variable is 32 bytes.

  The result is multiplied by 2 because each database needs temporary space for holding the entire database when a LOADGLOBAL operation is performed. See explanation below.

- \[ \text{blocks} = \frac{\text{total\_bytes}}{1024} \text{ (rounded up to a multiple of 4)} \]

  The result is divided by 1024 and then rounded up to next multiple of 4, since the space requested by CFRM policy is in units of 1 Kbytes, while the space required by Control-O/CMEM on startup is in units of 4Kbytes.
The definition of the maximum number of rows can be changed in the IOA ON-LINE PRIMARY OPTION MENU via the IV screen in ADMIN mode, with the U option for the database. The number of columns can be seen in the IV screen in ADMIN mode when selecting the database (pool).

Cache structure and Lock structures

The cache structure together with the lock structure are used to implement a directory-only caching mechanism at the row level, to allow IOA to speed up the resolution of shared Type 2 database variables directly from the ECSA, without the need to get the last value from the Coupling Facility.

The following formulas illustrate how to calculate the space requirements for the Cache structure:

- \[ \text{total\_bytes} = \text{total\_number\_of\_variables} \times 64 \times 2 \]
  - Where \( \text{total\_number\_of\_variables} = \text{rows}2 \times \text{db}2 \)
  - and the values for rows and db are according to the number of rows and databases of Type 2.
  - Type 1 databases do not require cache or lock storage, because there is no need to validate records.
  - Type 2 databases require cache and lock storage that are directly proportional to the number of rows in the database.

The result is multiplied by 64 because it is assumed that on the average 64 bytes are required per row.

The result is multiplied by 2 because each database needs temporary space for holding the entire database when a LOADGLOBAL operation is performed. See explanation below.

- \[ \text{blocks} = \text{total\_bytes}/1024 \] (rounded up to a multiple of 4)
  - The result is divided by 1024 and then rounded up to next multiple of 4, since the space requested by CFRM policy is in units of 1 Kbytes and the space required by Control-O/CMEM on startup is in units of 4Kbytes.

The Lock structure exists for Type 2 databases only and the space calculations are the same as for the Cache structure.

The definition of the maximum number of rows can be changed in the IOA ON-LINE PRIMARY OPTION MENU via the IV screen in ADMIN mode, with the U option for the database. The number of columns can be seen in the IV screen in ADMIN mode when selecting the database (pool).

Reserving Additional Space for LOADGLOBAL operations

When IOA executes an F CONTROLO,LOADGLOBAL=XAEdatabase command, or an F CTMCMEM,LOADGLOBAL=XAEdatabase command, it starts loading a fresh copy of the database contents. However, the old variable database contents apply up to the moment the database has been completely loaded, when it is possible to switch from the old variables to the new ones. This increases the space requirements, which means that during a LOADGLOBAL, twice the amount of space is required per loaded database. If you set LOADGLOBAL to ALL, twice the total space used is required.
Parameters

Insert values for the following parameters to calculate the size of the IOAPLEX structures. Then press Enter to calculate the space needed for the IOAPLEX structures, and press PF03/PF15 to exit from this screen.

Fields relating to Type 2 files are only available if Control-O is installed at your site.

### Table 29 Parameters for IOAPLEX structure size

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CPUs</td>
<td>Number of Type 1 and Type 2 computers at the site that will be running under IOAPLEX.</td>
</tr>
<tr>
<td>Number of DataBases</td>
<td>Number of Type 1 and Type 2 IOA Variables Database components that will be running under IOAPLEX.</td>
</tr>
<tr>
<td>Number of Columns</td>
<td>Number of Type 1 and Type 2 IOA Variables Database Column components that will be running under IOAPLEX.</td>
</tr>
<tr>
<td>Number of Rows</td>
<td>Number of Type 1 and Type 2 IOA Variables Database Row components that will be running under IOAPLEX.</td>
</tr>
<tr>
<td>Structure LIST Size</td>
<td>Calculated size of the structure list in kilobytes, displayed after Enter is pressed.</td>
</tr>
<tr>
<td>Structure CACHE Size</td>
<td>Calculated size of the structure cache in kilobytes, displayed after Enter is pressed.</td>
</tr>
<tr>
<td>Structure LOCK Size</td>
<td>Calculated size of the structure lock in kilobytes, displayed after Enter is pressed.</td>
</tr>
</tbody>
</table>

**Step 7.8 – IOAPLEX parameters (optional)**

Modify the IOAPLEX parameters according to the descriptions below:

The XAELKNM, XAELKDS, XAECANM, XAECADS, XAELSNM, XAELSDS, and XAECBLF parameters in the IOAPLEX may be set to their default values at the initial (test) installation, and customized as required later.

Insert values for the following IOAPLEX parameters:
### Table 30  IOAPLEX parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENABXES</strong></td>
<td>Whether to enable XES processing on the XES portion of IOAPLEX.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Enable. For IOAPLEX to work, this parameter must be set to Y.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not enable.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: N</td>
</tr>
<tr>
<td><strong>XAECON#</strong></td>
<td>Number of connectors (Control-O or CMEM monitors) that will connect to the Coupling Facility structures.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are: 2 through 32.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 2.</td>
</tr>
<tr>
<td></td>
<td>Note: Add at least one additional connector to the number of connectors that will be actually connected. This is because if a new Control-O or CMEM monitor is started, the old monitor continues running until startup of the new monitor is complete, as in the Recommended Organization method of Control-O or during a monitor abend. Therefore, the possibility exists that one additional connector will exist in the system.</td>
</tr>
<tr>
<td><strong>ENABXAE</strong></td>
<td>Whether to enable the XAE Database facility processing on the XAE portion of IOAPLEX.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Enable. For IOAPLEX to work, this parameter must be set to Y.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not enable. Default.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| XAELKDS   | Default size of the XAE/XES required lock structure.  
                         - Mandatory  
                         Valid values are numbers, as follows:  
                         - > 0 - The XAE/XES lock structure size, in 4KB blocks, will be specified as input to the IXLCONN service.  
                         - 0 - The XAE/XES lock structure size is internally estimated by IOA, and the resulting calculated size is passed to the IXLCONN service. Default.  
                         - < 0 - A value of 0 will be passed by the STRSIZE parameter to the IXLCONN service. This means that the size of the structure will be determined by the INITSIZE and SIZE parameters in the CFRM policy.  
                         BMC Software recommends an initial value of the size calculated by Step 7.7 - Structure size calculation (optional) (on page 75). |
| XAECADS   | Default size of the XAE/XES required cache structure.  
                         - Mandatory  
                         Valid values are numbers, as follows:  
                         - > 0 - The XAE/XES cache structure size, in 4KB blocks, will be specified as input to the IXLCONN service.  
                         - 0 - The XAE/XES cache structure size is internally estimated by IOA, and the resulting calculated size is passed to the IXLCONN service. Default.  
                         - < 0 - A value of 0 will be passed by the STRSIZE parameter to the IXLCONN service. This means that the size of the structure will be determined by the INITSIZE and SIZE parameters in the CFRM policy.  
                         BMC Software recommends an initial value of the size calculated by Step 7.7 - Structure size calculation (optional) (on page 75). |
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XAELSDS</td>
<td>Default size of the XAE/XES required list structure.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are numbers, as follows:</td>
</tr>
<tr>
<td></td>
<td>- &gt; 0 - The XAE/XES list structure size, in 4KB blocks, will be specified as input to the IXLCONN service.</td>
</tr>
<tr>
<td></td>
<td>- 0 - The XAE/XES list structure size is internally estimated by IOA, and the resulting calculated size is passed to the IXLCONN service. Default.</td>
</tr>
<tr>
<td></td>
<td>- &lt; 0 - A value of 0 will be passed by the STRSIZE parameter to the IXLCONN service. This means that the size of the structure will be determined by the INITSIZE and SIZE parameters in the CFRM policy.</td>
</tr>
<tr>
<td></td>
<td>BMC Software recommends an initial value of the size calculated by Step 7.7 - Structure size calculation (optional) (on page 75).</td>
</tr>
<tr>
<td>XAELKNM</td>
<td>Name of the XAE/XES required lock structure.</td>
</tr>
<tr>
<td></td>
<td>If blank, defaults to ioaqname_XAELOCK, where ioaqname is the value of the QNAME parameter specified in the IOAPARM member. The value of ioaqname is padded with underscores if the length of the QNAME value is less than 8 characters.</td>
</tr>
<tr>
<td></td>
<td>- Default: Blank.</td>
</tr>
<tr>
<td>XAECANM</td>
<td>Name of the XAE/XES required cache structure.</td>
</tr>
<tr>
<td></td>
<td>If left blank, defaults to ioaqname_XAECACH, where ioaqname is the value of the QNAME parameter specified in the IOAPARM member. The value of ioaqname is padded with underscores if the length of the QNAME value is less than 8 characters.</td>
</tr>
<tr>
<td></td>
<td>- Default: Blank.</td>
</tr>
<tr>
<td>XAELSNM</td>
<td>Name of the XAE/XES required list structure.</td>
</tr>
<tr>
<td></td>
<td>If blank, defaults to ioaqname_XAELIST, where ioaqname is the value of the QNAME parameter specified in the IOAPARM member. The value of ioaqname is padded with underscores if the length of the QNAME value is less than 8 characters.</td>
</tr>
<tr>
<td></td>
<td>- Default: Blank.</td>
</tr>
</tbody>
</table>
### Step 7.9 – Build the IOAPLEX member (optional)

This step saves the IOAPLEX parameters in the IOAPLEX member in the IOA.PARM library. Wait until processing completes. The step is automatically marked complete.

### Step 7.10 – Adding IOA structures to the CFRM (optional)

To maintain shared variables and perform Sysplex-wide AutoEdit processing, IOA requires list, cache, and lock structure entries in the CFRM policy couple data set. These entries define IOA structure information to the Coupling Facility.

Although this chapter explains the basic steps involved, for detailed information on the configuration of the XAE facility as a Coupling Facility application, see the IBM document z/OS V1Rx MVS Setting Up a Sysplex.

After preparing the space requirements for the list, cache and lock structures, you can add IOA structures to the CFRM policy. To do so, perform the following:

1. Ensure slots are available for adding IOA structures to the policy.
2. Verify that the available Coupling Facility storage space is large enough to contain the maximum size for the structure data.
3. Create and run the JCL to add the IOA structures to the policy, meaning, to update the policy data set.

These steps are described in the following topics.

IOA Coupling Facility structures do not support ALTER or REBUILD processing.

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XAECLBF</td>
<td>XAE control block factor. For problem resolution only, in case there is a need to preallocate a different number of internal control blocks. Do not modify this value unless instructed by BMC Software Customer Support.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Default: 0.</td>
</tr>
</tbody>
</table>
Ensuring policy slot availability for IOA structures

To add the three IOA structure entries, three structure slots must be available in the CFRM policy couple data set. To determine the availability of the structure slots, check the ITEM NAME(STR) NUMBER(xx) parameter, which is used to initialize the CFRM couple data set. This parameter defines the total number of structure slots you can include in your CFRM policy.

To check this structure slot parameter, review the control cards you submitted when you ran the format utility for CFRM couple data sets. If those control cards are unavailable, run the report utility to display the contents of the CFRM couple data set. For the names of these utilities, see the IBM document z/OS V1Rx MVS Setting up a Sysplex. Compare the structure slot parameter number to the number of structures you included in the CFRM couple data set. If you have three additional structure slots, you can continue with Checking Coupling Facility space usage (on page 83).

If you have fewer than three structure slots, use one of the following methods to create additional slots in the policy for IOA structures:

- Delete the required number of unused, existing structure entries from the policy.
- Using the format utility for CFRM couple data sets, create a new couple data set with a larger structure slot parameter, and activate it.

Checking Coupling Facility space usage

In addition to the structure slot availability requirement, you must have enough storage space in your Coupling Facility to support the maximum size you specify for the IOA structures. Total the planned size for the list, cache, and lock structures. If your coupling facility does not have enough storage space available, try specifying structures with a smaller maximum size.

To check available Coupling Facility storage space, enter the following command from the MVS console:

```
DISPLAY CF
```

An example of the display output is shown below. The FREE SPACE statistic shows the current storage available in each partition of the Coupling Facility.
Figure 19   Checking Coupling Facility storage space

D CF
I XL150I  10.35.43  DLISPLAY CF  906
COUPLING FACILITY 009674.IBM.02.00000040087
PARTITION: 1 CPCID: 00
Control UNIT ID: FFFE

D CF
I XL150I  10.35.43  DLISPLAY CF  906
COUPLING FACILITY 009674.IBM.02.00000040087
PARTITION: 2 CPCID: 00
Control UNIT ID: FFF9

NAMED CFPART02
COUPLING FACILITY SPACE UTILIZATION
ALLOCATED SPACE
STRUCTURES: 602368 K DUMP SPACE: 2048 K
FREE SPACE: 411648 K TOTAL SPACE: 1016064 K
FREE DUMP SPACE: 2048 K TABLE COUNT: 0
TOTAL DUMP SPACE: 2048 K STRUCTURE DUMP TABLES:
VOLATILE: YES MAX REQUESTED DUMP SPACE:
STORAGE INCREMENT SIZE: 256 K
CFLEVEL: 3

COUPLING FACILITY SPACE CONFIGURATION
IN USE FREE TOTAL
Control SPACE: 604416 K 411648 K 1016064 K
NON-Control SPACE: 0 K 0 K 0 K

SENDER PATH PHYSICAL LOGICAL STATUS
68 ONLINE ONLINE VALID
69 OFFLINE ONLINE NOT OPERATIONAL

COUPLING FACILITY DEVICE SUBCHANNEL STATUS
FFF0 0DE0 OPERATIONAL/NOT IN USE
FFF1 0DE1 OPERATIONAL/NOT IN USE
FFF2 0DE2 OPERATIONAL/IN USE
FFF3 0DE3 OPERATIONAL/IN USE

COUPLING FACILITY 009674.IBM.02.00000040087
PARTITION: 2 CPCID: 00
Control UNIT ID: FFF9

For XAE Variable Databases, it is important to specify enough storage space to keep the structures from filling up, but not so much storage that Coupling Facility resources are wasted. If either structure reaches its storage limit, XAE processing may be unsuccessful.

Updating the Policy data Set

To add the IOA structure entries to your CFRM policy, submit JCL that runs the administrative data utility that updates your policy data set. Include the syntax for the IOA entries in this JCL. A sample of these IOA entries follows. A copy of it can be found in the IOAXAESD member in the INSTWORK library.
Specify structure size for the IOA structures in 1 KB blocks.

**Figure 20  Adding IOA Structure entries to a CFRM policy**

```
STRUCTURE_NAME(ioaqname_XAELIST)
  SIZE(size1)
  INITSIZE(initsize1)
  PREFLIST(cf01, cf02, cf03)
  DUPLEX(DISABLED)

STRUCTURE_NAME(ioaqname_XAECACH)
  SIZE(size2)
  INITSIZE(initsize2)
  PREFLIST(cf02, cf03, cf01)
  EXCLLIST(ioaqname_XAELIST)
  DUPLEX(DISABLED)

STRUCTURE_NAME(ioaqname_XAELOCK)
  SIZE(size3)
  INITSIZE(initsize3)
  PREFLIST(cf03, cf02, cf01)
  EXCLLIST(ioaqname_XAECACH, ioaqname_XAELIST)
  DUPLEX(DISABLED)
```

ioaqname is the value of the IOA QNAME parameter specified during IOA installation.

XES does not accept embedded blanks in structure names. If the value of ioaqname is not eight characters in length, the default value will be the value of ioaqname padded with underscores (_) up to 8 characters. Adapt the structure name in your definitions accordingly.

You specify this name through ICE panels. If you want to use a name for a structure different from the default name, you will need to change the XAESNM, XAECANM, and XAEKNM parameters in the IOAPLEX member.

For detailed information about the syntax of policy entries and the procedure to use when submitting JCL for policy updates, see the IBM document z/OS V1Rx MVS Setting Up a Sysplex. Your site may have specification conventions different from those shown above.

Consider the following when specifying your policy:

- To change structure size, you must first stop all CONTROLO and CTMCMEM monitors in the IOA installation. Make the appropriate policy change and then restart Control-O or CMEM on each IOA computer in the Sysplex belonging to this IOA installation.
- It is worthwhile to put the structures in different Coupling Facility units. This allows for a maximum degree of request parallelism among the different tasks and avoids overloading structures.

**Control-O/CMEM support of Coupling Facility Structure Rebuild**

Control-O/CMEM supports only System-Managed Rebuild and System-Managed Duplexing Rebuild. The original coupling facility must be available for the system to be able make a copy using the System-Managed Rebuild or the Duplexing Rebuild method. The system maintains a hot copy of a Duplex structure in real time on another coupling facility after the Rebuild.

In System-Managed Duplexing Rebuild the Rebuild takes place immediately after the initial creation of the structures and enabling for smooth recovery. The failover of the structures to the alternate copy occurs without any disruption of work for the connectors that are on the non-failed systems.
User-Managed Rebuild and Duplexing Rebuild enables recreating a new copy of the structure on an alternate coupling facility without the availability of the original coupling facility. This is accomplished by making use of the data available to the connectors and requires the implementation of a synchronization protocol between the connectors. This Rebuild process takes place after the failure and causes an interruption to the normal work during the rebuild processing.

Control-O/CMEM does not support User-Managed Rebuild and Duplexing Rebuild, since the User-Managed Rebuild and Duplexing Rebuild require more complex support by the connectors (Control-O/CMEM Monitors), and provide less availability than the System-Managed Duplexing Rebuild.

To provide for smooth recovery and failover of the structures used by Control-O/CMEM in case of a coupling facility failure, Control-O/CMEM structures must be defined as Duplex and not as Simplex.

Step 7.11 – Calculation of required ECSA (optional)
For information on calculating the amount of ECSA needed to store the IOA variables, see the discussion of that topic in the IOA chapter in the INCONTROL for z/OS Administrator Guide.

Step 8 – Install ISPF support (optional)
Perform this step if you want to install the IOA ISPF interface support. When completed, mark this step complete.
After installing all the required products, you will find that there are only two ISPF skeletons shipped:
- The CTMPSIMS member in the CONTROL-M JCL library
- The CTDCCHNAM member in the CONTROL-D JCL library.
Depending on the product installed, concatenate its JCL library to the ISPSLIB DD statement.
The installation screen for Step 8 contains all necessary information if you choose to install optional ISPF support.

Step 9 – Install IOA subsystem
This step installs the IOA subsystem. When completed, mark this step complete.
For details on installing subsystems, see H Defining subsystems (on page 509).

Step 10 – Install IOA online monitor (optional)
The IOA Online monitor must be installed if the IOA Online facility is activated from CICS, IMS/DC, VMON (an IOA VTAM monitor application), IDMS/DC, COM-PLETE, TSO (through cross-memory) or ROSCOE (through cross-memory).

Step 10.1 – Set IOA online monitor parameters
This step specifies parameters for IOA Online monitors and for routing user transactions to monitors. The parameters are saved in the IOAXPRM member in the IOA.PARM library.
Parameters are displayed on the screen and described below according to category:
Figure 21  The Update IOA Online Monitor Parameters screen

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SCROLL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update IOA Online Monitor Parameters</td>
<td>Row 1 of 2</td>
</tr>
</tbody>
</table>

**Codes in the Sel field:**
- D Delete Monitor
- A Add Monitor
- ADD Add Monitor
- CANCEL Exit without Save
- PF3/End Exit and Save

**Subsystem name** ➞ **Dynamic definition** ➞ (Y/N)
**VTAM Application** ➞ **VTAM generic resource** ➞
**Default transaction** ➞
**Balance** ➞ Y (Y/N)
**Session timeout** ➞

<table>
<thead>
<tr>
<th>Sel</th>
<th>MONITOR</th>
<th>Max. Ses</th>
<th>Transactions</th>
<th>Timeout</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D62OMON*</td>
<td>50</td>
<td>DOLV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A62OMON*</td>
<td>10</td>
<td>*</td>
<td>1</td>
</tr>
</tbody>
</table>

Global parameters section

The following parameters relate globally to all online monitors you are defining.

**Table 31  Global parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsystem name</td>
<td>Name of the subsystem to be used by the Online monitor.</td>
</tr>
<tr>
<td></td>
<td>If the parameter is not specified or is null, the value specified in the</td>
</tr>
<tr>
<td></td>
<td>SSNAME IOA installation parameter is used.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: ' ' (Blank).</td>
</tr>
<tr>
<td>Dynamic definition</td>
<td>Allows or prevents dynamic definition of subsystems used by the Online Monitor. For more details about subsystem definition see H Defining subsystems (on page 509).</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ ' ' (Blank) – The value is taken from the SSALLOC IOA installation parameter.</td>
</tr>
<tr>
<td></td>
<td>▪ Y – If the subsystem name does not exist, the IOA Online monitor dynamically defines one.</td>
</tr>
<tr>
<td></td>
<td>▪ N – If the subsystem name does not exist, the IOA Online monitor fails on initialization.</td>
</tr>
<tr>
<td>VTAM Application</td>
<td>VTAM application name of 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>This parameter is used by the IOA VTAM interface. You should specify this value in the VTAM logon command LOGON APPLID(CTMS).</td>
</tr>
<tr>
<td></td>
<td>▪ Default: CTMS.</td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
VTAM generic resource | VTAM generic resource name of 1 through 8 characters. This parameter is used by the IOA VTAM interface.
Default transaction | User-defined or IOA predefined default transaction name.  
- Maximum: 4 characters.  
- Default: ' ' (Blank). When left blank, this parameter automatically defaults to IALL, meaning that all products are installed.
Balance | Determines how to balance the workload of two or more IOA Online monitors of the same group that match the mask specified in a single MONITOR definition.  
When a user specifies the IOA transaction code, the IOA CICS (or IMS/DC, VTAM, and so on) application must select the monitor under which the user will work from that group of monitors, which contain the transaction code. The process of choosing the monitor depends on the value of this parameter.  
- Mandatory  
Valid values are:  
- Y – Users are uniformly distributed among all active IOA Online monitors with a matching name or mask. Default.  
- N – Users are allocated to the primary IOA Online monitor until that monitor has the maximum number of users, as defined in the Max.Ses parameter, which is described in Monitor parameters section (on page 89). Users are then allocated to IOA Online monitor #2, and so on.  
Assume that a site has two IOA Online monitors from the same group, and the first users are logging on.  
If BALANCE is set to Y, the first user is logged on to Server 1, the second user is logged on to Server 2, and so on.  
If BALANCE is set to N, users are logged on to Server 1 until the maximum number of users is reached, at which point additional users are logged on to Server 2.
Session timeout | Time in minutes before an inactive IOA Online monitor user is terminated. If TIMEOUT is set to 100, timeout checking is not performed.  
- Maximum: 1440 (minutes).  
- Default: 10 (minutes).
Monitor parameters section

The following parameters relate to the online monitors you are defining. If required, you can specify several monitor definitions.

**Table 32  Monitor parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONITOR</td>
<td>Name or mask of the Online monitor.</td>
</tr>
<tr>
<td>Max.Ses.</td>
<td>The maximum number of users that can work concurrently under each IOA Online monitor address space.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 10</td>
</tr>
<tr>
<td></td>
<td>Note: The value specified for this parameter may be influenced by the storage requirements for various groups of users. For example, an IOA Online monitor accepting Control-D Online viewing users, using tranid DOLV, may be limited to a maximum of approximately 50 users. If Control-V is installed, this maximum should be decreased to 25. An IOA Online monitor accepting users who use all the options of all INCONTROL products may be limited to a much smaller number of users (usually not more than 10).</td>
</tr>
<tr>
<td>Transactions</td>
<td>List of transaction ID names or masks.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: IALL</td>
</tr>
<tr>
<td>Timeout</td>
<td>Specific timeout for this monitor.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>If you enter 0 or leave this parameter blank, the session timeout will be used.</td>
</tr>
</tbody>
</table>

All parameters mentioned above and in **Global parameters section** (on page 87) reside in the IOAXPRM member in the IOA.PARM library.

Considerations

Consider the following when defining IOA online monitors:

- The monitor name and the transactions can be specified literally, that is, as a complete name, or can include mask characters. The asterisk (*) represents any number (including 0) of characters. The question mark (?) represents a single character.
- Transactions are associated with a given monitor or a group of monitors as follows:
  - The transaction name specified by the user is matched against the values in all existing monitor definitions until a match is found. The transaction is routed to one of the active monitors that matches the monitor name, based on the method specified in the BALANCE parameter.
Step 11 – Adjustments

Follow the steps below to perform adjustments to the IOA installation.

Step 11.1 – IOA LOAD library

Add the IOA LOAD, IOA LOADE and CTRANS libraries to the authorized Libraries list. To permanently define them as authorized, edit the IEAAPxx member or the PROGxx member in SYS1.PARMLIB (where xx is the number specified in the IEASYSxx member in SYS1.PARMLIB).

Add the IOA LOAD, the IOA LOADE, and CTRANS libraries and their volumes to the list. The libraries will be authorized after the next IPL.

Dynamically add the APF libraries using the following MVS commands:

SETPROG APF,ADD,DSN=IOA steplib library,VOLUME=volume
SETPROG APF,ADD,DSN=IOA LOADE library,VOLUME=volume
SETPROG APF,ADD,DSN=ilprefa.CTRANS,VOLUME=volume

If you have a product that can dynamically add libraries to the authorized Libraries list, such as RESOLVE, you can add a library to the list online and not wait for an IPL. However, the library remains authorized only until the next IPL.

Step 11.2 – Site’s multiple access control (optional)

When working in a multiple computer installation, adjust any multiple computer access control products, such as GRS, MIM, SDSI, or SUPER-MSI, that are in use at your site. For more information, see “QNAME” and “CTTQNAME” in Step 4.2 – IOA operational parameters (on page 46).

If the SHRQNAM parameter is specified, it should also be defined to the multiple computer access control product in use at your site.

Step 11.3 – Linklist considerations (optional)

If you choose to place the IOA LOAD, IOA LOADE, or CTRANS libraries in the LNKLIST, add their names to the LNKLSTxx member or the PROGxx member in SYS1.PARMLIB.

If you have a product that can dynamically add libraries to the Linklist, such as RESOLVE, you can add them to the list online and not wait for an IPL. However, the library remains in the LNKLIST only until the next IPL.

For information about adding IOA LOAD libraries to the LNKLIST, see the IOA Planning Sheet in K Installation guide planning sheets (on page 516).

Step 11.4 – TSO logon procedure (optional)

The IOA LOAD, IOA LOADE, and CTRANS libraries must be added to the STEPLIB DD statement of the TSO logon procedure of users who should be allowed to use the IOA Online facility.
INCONTROL for z/OS Installation Guide: Installing

Step 11.5 – Prepare to start IOAOMON after IPL (optional)
If you plan to start the IOA Online monitor after IPL, add the following command to the COMMNDxx member in SYS1.PARMLIB:

S IOAOMON1

Step 12 – IOA customization (optional)
After the IOA environment is installed, some customization may be required. Exclude any customization step that does not apply to your site.

Step 12.1 – Extended color support (optional)
When IOA Online facilities are activated from a screen with extended 7-color support, the INCONTROL products make extensive use of the color attributes of the screen. For information about how to customize colors in IOA, see the INCONTROL for z/OS Administrator Guide.

Step 12.2 – Underscore suppression (optional)
Most PC 3270 emulators do not support underscoring (underlining). When a field contains an underscore attribute, it may appear as reverse video on the screen. In some screens, this results in a cluttered appearance.

The USCORE IOA Profile variable controls whether underscoring is used.

- If USCORE is set to NO, underscore is suppressed where specified. Default.
- If USCORE is set to YES, underscore is applied where specified.

You can change the setting of this parameter as follows:
1. In the ICE main window, select Customization.
2. Set the product ID to IOA.
4. Select option 3, Profile Variables, and press Enter.
5. Select option 6, Miscellaneous, and press Enter.
Reset the value of USCORE, then press PF03/PF15 repeatedly to exit these menus.

Step 12.3 – Modify INCONTROL product defaults (optional)
After one or more INCONTROL products are installed and running for a period of time, certain defaults can be modified within the product. For example, you can increase the number of Control-M attempts to read a job sysout.

The IOADFLTS documentation member in the IOA DOC library describes the defaults that can be modified for IOA.

For the procedure for changing these defaults, see “Customize IOA defaults” in INCONTROL for z/OS Installation Guide: Customizing.
Step 12.4 – Security (optional)
This step is relevant if you plan to implement the IOA security interfaces, and your site is using RACF, CA-ACF2, or CA TOP SECRET.

➢ To activate the Security option under ICE
1. Select Customization from the Main ICE menu.
2. Select Product: IOA or CTx

Step 12.5 – Exits (optional)
There are various User Exits that can be used to modify IOA operations to your needs. For more information, see the Exits chapter in the INCONTROL for z/OS Administrator Guide.

Step 12.6 – National Language Support (optional)
If you plan to implement the IOA National Language Support (NLS) for French, German, or Japanese, do the following:
1. In the ICE main window, select Customization.
2. Set the product ID to IOA and press Enter.
For further information see I National Language Support facility (on page 511).
BMC Software recommends that you install the NLS support immediately after completing the IOA Installation.

Step 13 – Setting up functional monitors (optional)
Perform this step if you want to set up functional monitors.

Step 13.1 – Functional monitor considerations
The functional monitor is used for

- communication between Control-M/Tape and other INCONTROL products that use IOA conditions and AutoEdit variables
  
  This communication is achieved using the DO parameters that call IOA functions, such as DO COND, DO FORCEJOB, DO RESOURCE and DO SET.
- the user notification facility (DO SHOUT)
- communication between Control-M/Tape and
  - automated tape libraries
  - virtual tape servers
Multi-computer and Multi-IOA considerations

Functional monitors can be configured for a variety of combinations of IOA environments and Control-M/Tape installations, as follows:

- **Single IOA Environment**
  
  Only one functional monitor is activated regardless of the number of computers where Control-M/Tape is running in a single IOA environment. The functional monitor must be activated on the computer that has access to all the required files, libraries, and automated tape library interface.

- **Multi-IOA Environment**
  
  - A functional monitor must be activated in each IOA environment that communicates with Control-M/Tape.
  
  - If Control-M/Tape is installed in each IOA environment, follow the procedure for a single IOA environment.
  
  - If you have only one Control-M/Tape installation and you have multiple IOA environments, certain members need to be manually updated in each environment in which you set up a functional monitor. For details, see Adjust related members to other IOA environments (on page 93).
  
  - Each functional monitor distributes IOA functions, such as DO COND, to the IOA environment in which it is defined.
  
  - Exit IOAX038 can be used to specify the monitor to be used for each IOA function. This exit is particularly relevant for sites that include a single installation of Control-M/Tape and multiple IOA environments.

For more information about Exit IOAX038, see the Exits chapter in the INCONTROL for z/OS Administrator Guide.

If your site has only one Control-M/Tape installed and multiple IOA environments, verify that the CTTQNAM parameter, which supports the sharing of the Control-M/Tape Database among IOA environments, is defined correctly. For more information about this parameter, see Step 4.2 – IOA operational parameters (on page 46).

Adjust related members to other IOA environments

If your site has multiple IOA environments and only one Control-M/Tape installation, perform the following steps for each functional monitor that is not in the environment in which Control-M/Tape is installed:

1. Edit the IOAFMON procedure to the relevant environment. Modify the IOAFMON procedure to point to the IOA files and libraries for this environment.
   
   In the STEPLIB DD statement, verify that the IOA LOAD library for the environment in which you set up a functional monitor is specified before the IOA LOAD library for the environment in which Control-M/Tape is installed.

2. Edit the ALCFMON member in the IOA.PARM library, and modify it to point to appropriate files and libraries.

3. Use the INSTFMON job to allocate a different checkpoint file for each functional monitor. For further instructions, see Step 14.3 – Copy load Modules to DFHRPL (on page 95).
Determining the execution environment

By default, each functional monitor can perform IOA events triggered, for example, by Control-M/Tape DO statements. However, you can use Exit IOAX038 to control which monitor performs specific events. For more information, see the sample exit in the IOAX038A member in the IOA SAMPEXIT library. This exit allows each functional monitor to handle only requests that were created on the computer in which it is running.

IOA Dynamic Destination table

One of the facilities that uses the functional monitor is the Shout facility. It allows the user to specify messages to be sent to various destinations upon occurrence of various execution events.

Destinations in a production environment are not necessarily fixed. For example, the TSO user ID of the Shift Manager might be different in every shift. The Dynamic Destination table allows the user to specify a group name destination and the final destinations indicated by the name. A group destination name can also be defined to distribute information to multiple destinations.

Before using the IOA Shout facility services, you must build and define the parameters in the IOADEST sample member in the IOA PARM library. For more information about the Dynamic Destination table and its parameters, see the Dynamic Destination Table section in the INCONTROL for z/OS Administrator Guide.

Step 13.2 – Allocate functional monitor checkpoint file

The INSTFMON job creates the functional monitor checkpoint file. Do not modify the space definitions. Submit the job. The job step must end with a condition code of 0.

Step 13.3 – Start the functional monitor

Start the functional monitor using the S IOAFMON operator command. This command must be issued for each monitor defined in the above steps.

The IOA functional monitor can be started only after you complete the installation of Control-M/Tape.

To start the IOA functional monitor after each IPL, specify the S IOAFMON operator command in the COMMNDxx member in SYS1.PARMLIB.

Step 14 – Install IOA CICS support (optional)

Follow the steps below if you want to install IOA CICS support. This provides an interface to the IOA Online monitor.

When completed, mark each step complete.

The IOA Online monitor must be installed before proceeding with this step.
Step 14.1 – IOACICS source customization

Review the IOACICS module in the IOA CICSSAMP library. Verify that the following IOACICS customization options meet site requirements:

1. Exit program using the Clear key.
2. Suppress "end" message CTM013I.
3. Bypass the READ-PARTITION-QUERY command.
4. Bypass COLOR support.
5. Use NATURAL/CICS or the user menu to invoke IOACICS from other CICS applications.
6. Check SYSLIB, SYSLIBA, and other libraries to ensure that they match the specifications for your site.

Step 14.2 – Compile and link CICS program

The IOACICSJ job assembles and links the IOACICS module. This module performs all the CICS-related functions under the CICS interface. Due to CICS version dependencies, which are changes in CICS basic commands, the IOACICS module must be assembled using the DFHEITAL procedure or equivalent. This procedure executes the CICS pre-processor and assembles and link-edits the module. The IOACICS module resides in the IOA CICSSAMP library. Customization instructions are provided in the module.

While in ICE, modify any necessary JCL statements, as instructed in the jobs, and submit the job. Verify that the preprocess, assemble and link-edit steps complete successfully.

Repeat this step whenever the CICS version is changed.

Step 14.3 – Copy load Modules to DFHRPL

Check the DFHRPL DD statement of the CICS procedure used at your installation. The following load modules must be copied from the IOA LOAD library to one of the libraries allocated to the DFHRPL DD statement in the CICS procedure:

- IOACICS
- IOAX037
- IOAX009
- IOASE09
- CTMSUSIE
- IOACICNV
- IOAPED
- CTMCINT
- IOAENV

For information about Exit IOAX009, see the Exits chapter in the INCONTROL for z/OS Administrator Guide. For information about the IOASE09 security module, see the INCONTROL for z/OS Security Guide.
Step 14.4 – Add resource definitions

Add a TRANSACTION entry for each transaction type.

**Figure 22 Adding resource definitions example - TRANSACTION**

```
DEFINE TRANSACTION (transaction_name)
  GROUP (IOA)
  DESCRIPTION (IOA TRANSACTION)
  PROGRAM (IOACICS)
  SPURGE (YES)
  TPURGE (YES)
  TWASIZE (0)
  TASKDATALOC (ANY)
  TASKDATAKEY (CICS)
  ISOLATE (NO)
```

MRO is supported in the following way: The DOLV transaction is pseudoconversational. The first DOLV a user issues can be routed to any AOR. In this AOR a session is established with a specific IOAOMON and the user must be routed back to the same IOAOMON. Therefore all subsequent DOLV instances after the first one is a specific session must be routed back to the same AOR. Such support is possible when DOLV is defined in CICS as an AFFINITY GROUP with relation of LUNAME and lifetime of PCONV.

Add the following program definitions:
### Figure 23  Adding resource definitions example - program definitions

<table>
<thead>
<tr>
<th>Definition</th>
<th>GROUP</th>
<th>DESCRIPTION</th>
<th>LANGUAGE</th>
<th>EXECKEY</th>
<th>DATALOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFINE PROGRAM (IOACICS)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>CICS</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (IOACICNV)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>CICS</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (IOAX009)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>USER</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (IOASE09)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>USER</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (IOAX037)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>USER</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (CTMSUSIE)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>USER</td>
<td>ANY</td>
</tr>
<tr>
<td>DEFINE PROGRAM (IOAJPED)</td>
<td>(IOA)</td>
<td>IOA PROGRAM</td>
<td>ASSEMBLER</td>
<td>USER</td>
<td>BELOW</td>
</tr>
</tbody>
</table>

The program definition (CTMSUSIE) is mandatory. If you intend to install French, German, or Japanese language support, you must also add one or more of the following program definitions:
French language support

**DEFINE PROGRAM** (CTMSUSIF)
GROUP (IOA)
DESCRIPTION (IOA PROGRAM)
LANGUAGE (ASSEMBLER)
DATALOCATION (ANY)
EXECKEY (USER)

German language support

**DEFINE PROGRAM** (CTMSUSIG)
GROUP (IOA)
DESCRIPTION (IOA PROGRAM)
LANGUAGE (ASSEMBLER)
DATALOCATION (ANY)
EXECKEY (USER)

Japanese language support

**DEFINE PROGRAM** (CTMSUSIJ)
GROUP (IOA)
DESCRIPTION (IOA PROGRAM)
LANGUAGE (ASSEMBLER)
DATALOCATION (ANY)
EXECKEY (USER)

In some versions of CICS, you may need to shut down CICS to update the PPT and PCT. In later versions, the update can be performed online using CEDA if they are new. If they are old, a NEWCOPY is enough.

If security for CICS system programmer commands is in use, add the IOACICNV load module to the CICS PLT table.

**Step 14.5 – Required IOA libraries**

1. Add the following DAPARM DD statement to the CICS procedure:

   ```
   //DAPARM DD DISP=SHR,DSN=ilprefa.PARM
   // DD DISP=SHR,DSN=ilprefa.IOAENV
   ```

   In this statement ilprefa is the IOA installation libraries prefix.

2. If the IOA LOAD library is not included in the linklist, add it to the list of STEPLIB libraries.

**Step 15 – Install IOA IMS/DC support (optional)**

Follow the steps below if you want to install IOA IMS/DC support. This provides an interface to the IOA Online monitor.

When completed, mark each step complete.

The IOA Online monitor must be installed before proceeding with this step.

**Step 15.1 – Link IMS/DC routine**

The LINKIMS job links IMS/DC code.

Modify the IMS RESLIB library name, and submit the job. All job steps must complete with a condition code of 0.
As a result, linkage for IMS/DC version-dependent routines is performed. This step should be repeated whenever the IMS/DC version is changed.

Step 15.2 – Define transaction codes and PSB
Define a special PSB for IOA IMS/DC support. The PSB must contain only one IOPCB. The following is an example of PSB parameters:

```
//S1       EXEC PSBGEN,MBR=IOAIMS
//C.SYSIN  DD *
            PSBGEN LANG=ASSEM,PSBNAME=IOAIMS,CMPAT=YES
          END
```

Define the IOA transaction codes using the following parameters:

```
APPLCTN PSB=IOAIMS,PGMTYPE=TP
TRANSACT CODE=transaction-name,
MSGTYPE=(SNGLSEG,RESPONSE,2),
INQUIRY=(YES,RECOVER),
MODE=SNGL,
SPA=(12000,DASD,FIXED)
```

For a valid transaction_name, see the description of the TRANID parameter in the INCONTROL for z/OS Administrator Guide.

Step 15.3 – Required IOA Libraries
1. Add the following DAPARM DD statement to the IMS/DC procedure:

```
//DAPARM     DD DISP=SHR,DSN=ilprefa.PARM
// DD DISP=SHR,DSN=ilprefa.IOAENV
```

   In this statement ilprefa is the IOA installation libraries prefix.

2. If the IOA LOAD library is not included in the linklist, add it to the list of STEPLIB libraries.

Step 16 – Install IOA VTAM Support (optional)
Follow the steps below to install the IOA VTAM support. When completed, mark each step complete.
The IOA Online monitor must be installed before proceeding with this step.
Step 16.1 – Define a VTAM Application

The IOA VTAM Online facility must be defined in the VTAM definition library (SYS1.VTAMLST). It requires only one VTAM application ID, and can be defined as an independent MAJOR NODE or as a MINOR NODE. The VTAM application name should be the same as the value of the ACBNAME, which is defined in the IOAXPRM member. For details, see Step 10 – Install IOA online monitor (optional) (on page 86).

The following is an example of a MAJOR NODE definition:

```
IOAAPPL     VBUILD     TYPE=APPL
CTMS        APPL       EAS=200,ACBNAME=CTMS,AUTH=(SPO,ACQ)
```

In this example 200 is the number of buffers.

Define the application to VTAM by creating a member named IOAAPPL in the SYS1.VTAMLST library based on the above example.

Step 16.2 – Activate the VTAM Application Definition

The VTAM application should always be active; therefore, it should be defined in the ATCCONxx member in the VTAM definition library.

To activate the VTAM application manually, use the following VTAM command:

```
VARY NET,ACT,ID=IOAAPPL
```

If the VTAM application is defined as a MINOR NODE in a different MAJOR MODE, use the appropriate MAJOR NODE name in the VARY command.

Step 16.3 – Start the IOA VTAM Monitor

To start and test the IOA VTAM monitor, at least one INCONTROL product, such as Control-M or Control-D, must be installed. After an INCONTROL product is installed, start the IOA VTAM monitor by using the following system command:

```
S IOAVMON
```

To test the facility, specify the following LOGON command:

```
LOGON APPLID(CTMS) DATA(xxxx)
```

APPLID should have the same value that is specified in the ACBNAME parameter in the IOAXPRM member. The DATA parameter represents the transaction name.

If the DATA parameter is not specified, it defaults to the application ID assigned to the DEFTRAN parameter in the IOAXPRM member.

To access the IOA VTAM facility from the main VTAM menu, modify the standard USS table, or create a special USS table.

The USS table should contain command entry codes, such as DMAN, TMND, and DOLV. Define each new command in the USS table as follows:
Figure 24  New Commands in the USS Table

trans-name  USSCMD CMD=command-name, REP=LOGON
USSPARM PARM=P1, REP=APPLID_DEFAULT=acb-name
USSPARM PARM=P2, REP=LOGMODE

The default for REP=APPLID should have the same value that is specified in the ACBNAME parameter in
the IOAXPRM member. For details, see Step 10 – Install IOA online monitor (optional) (on page 86).

The entry command names should conform to the standards and conventions used. Duplicate the four
lines shown above for each transaction code used at your site.

To accept the modified USS table, the VTAM VARY command can inactivate (INACT) and then activate
(ACT) the local node.

Step 16.4 – Modify the USS Table

To access the IOA VTAM facility from the main VTAM menu, modify the standard USS table or create a
special USS table.

The USS table should contain command entry codes, such as IALL and DOLV. Define each new command
in the USS table as shown in Step 16.3 – Start the IOA VTAM Monitor (on page 100).

The default for REP=APPLID should have the same value as specified in the ACBNAME parameter in
IOAXPRM. For details, see Step 10 – Install IOA online monitor (optional) (on page 86). The default
parameter for DATA represents the transaction name.

The entry command names should conform to the standards and conventions used at your site. Duplicate
the four lines shown in Step 16.3 – Start the IOA VTAM Monitor (on page 100) for each transaction code
used at your site. To accept the modified USS table, the VTAM VARY command can inactivate (INACT)
and then activate (ACT) the local node.

Step 17 – Install IOA COM-PLETE support (optional)

Follow the steps below to install IOA COM-PLETE support. When completed, mark each step complete.
The IOA Online monitor must be installed before proceeding with this step.

Step 17.1 – Compile and link COM-PLETE program

The IOACPLJ job assembles and links the IOACPL module. This module performs all the COM-PLETE
related functions under the COM-PLETE interface. Due to COM-PLETE version dependencies (that is,
changes in COM-PLETE basic commands), the IOACPL module must be assembled and linkeded.

While in Edit, modify any necessary JCL statements, and submit the job. All steps must complete with a
condition code of 0.

For users who use SMP/E:

- Step CPLSMP will RECEIVE and APPLY a USERMOD CPL0001 to implement COM-PLETE support.
- Program IOACPL has several aliases. For details, see Step 17.2 – Catalog the IOA programs (on page
  102).

This step should be repeated whenever the COM-PLETE version is changed.
Step 17.2 – Catalog the IOA programs

Catalog the programs in COM-PLETE as privileged programs. Specify a region size of at least 100 KB for IOACPL.

Verify that the following modules can be accessed from the COM-PLETE address space:

- IOACPL
- IOAX009
- IOASE09
- IOAX037
- CTMSUSIE
- IOACICNV
- IOAPED

For information about Exits IOAX009 and IOAX037, see the Exits chapter in the INCONTROL for z/OS Administrator Guide. For details about the IOASE09 security module, see the INCONTROL for z/OS Security Guide.

Step 17.3 – Required IOA libraries

1. Add the DAPARM DD statement to the COM-PLETE procedure:

   ```
   //DAPARM DD DISP=SHR,DSN=ilprefa.PARM
   //        DD DISP=SHR,DSN=ilprefa.IOAENV
   ```

   In this statement ilprefa is the IOA installation libraries prefix.

2. If the IOA LOAD library is not included in the linklist, add it to the list of STEPLIB libraries.

Step 18 – Install IOA IDMS/DC support (optional)

Follow the steps below to install IOA IDMS/DC support. When completed, mark each step complete.

The IOA Online monitor must be installed before proceeding with this step.

Step 18.1 – Compile and Link IDMS/DC program

The IOAIDMS job assembles and links the IOAIDMS program. This module performs all the IDMS/DC-related functions under the IDMS/DC interface. Due to IDMS/DC version dependencies (that is, changes in IDMS/DC basic commands), the IOAIDMS module must be assembled and linkededited.

While in Edit, modify any necessary JCL statements, and submit the job. All steps must complete with a condition code of 0.

**SMP/E Users:**

Step IDMS001 will RECEIVE and APPLY a USERMOD IDMS001 to implement the IDMS/DC support. This step should be repeated whenever the IDMS/DC version is changed.
Step 18.2 – Modify IDMS/DC SYSGEN

1. Add a task to the IDMS/DC SYSGEN for each task type.
   ADD TASK task-name INVOKES IOAIDMS INPUT

2. Add the following programs, using the specified SYSGEN definition statements:

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD PROGRAM IOAIDMS</td>
<td>ISA SIZE 512 LANGUAGE ASSEMBLER</td>
</tr>
<tr>
<td>ADD PROGRAM IOAPARM</td>
<td>ISA SIZE 512 LANGUAGE ASSEMBLER</td>
</tr>
<tr>
<td>ADD PROGRAM IOAX009</td>
<td>ISA SIZE 512 LANGUAGE ASSEMBLER</td>
</tr>
<tr>
<td>ADD PROGRAM IOAX037</td>
<td>ISA SIZE 512 LANGUAGE ASSEMBLER</td>
</tr>
<tr>
<td>ADD PROGRAM IOASE09</td>
<td>ISA SIZE 512 LANGUAGE ASSEMBLER</td>
</tr>
</tbody>
</table>

Step 18.3 – Required IOA libraries

1. Add the following DAPARM DD statement to the IDMS/DC procedure:
   ```
   //DAPARM DD DISP=SHR,DSN=ilprefa.PARM
   //        DD DISP=SHR,DSN=ilprefa.IOAENV
   ``
   In this statement ilprefa is the IOA installation libraries prefix.

2. If the IOA LOAD library is not included in the linklist, add it to the list of STEPLIB libraries.
   Turn off storage protection for the IOAIDMS module. This is necessary due to the method by which
   the IDMS/DC address space (through the IOAIDMS module) interacts with the IOA Online Server.

Step 19 – Install IOA ROSCOE support (optional)

Follow the steps below to operate the IOA Online facility under ROSCOE.
When completed, mark each step complete.
The IOA Online monitor must be installed before proceeding with this step.

Step 19.1 – Copy ROSCOE RPFs

The ROSLB library contains ROSCOE RPFs and panels.

1. Copy the ROSLB library to a work library and resolve the symbolic parameters with the IOAINSJ job in
   the IOA JCL library.

2. Copy the resolved members to the appropriate ROSCOE libraries.
Step 19.2 – Verify that ROSCOE/ETSO is installed

Verify that the ROSCOE/ETSO feature is installed and active. Define the IOA LOAD library in the ETSOLIB DD statement in the ROSCOE JCL.

Step 19.3 – Define IOA programs in eligible program list

Define the following IOA online programs in the eligible list of the ROSCOE/ETSO:

- CTDBRQ
- CTMJ0B
- CTMTJRQ
- CTDPRQ
- CTMCTSO
- CTDRRQ
- IOASE09
- CTDSRQ
- IOATBMN
- CTMAES
- IOAX037
- CTMCND
- IOAX009
- IOALOC
- IOALLOC
- IOAENV

This list usually resides in the RO.ETSOPGMS member and must be sorted by program name in ascending order.

Define these programs with at least 1 MB of memory, although they usually require much less. Do not define these programs as Command Processor (CP).

Set the maximum number of allocations of an ETSO program to at least 50, using the ETSALLOC global ROSCOE parameter. For example, type ETSALLOC=50

Step 19.4 – Set up IOA SHOUT facility

If IOA Shout messages (notifications) are used for ROSCOE users, verify that the ROSCOE initialization deck contains the NOTIFY=xxxx statement (or ROSID=xxxx in newer versions). xxxx usually defaults to ROSC.

Regular IOA SHOUTs can then be defined to the destination TSO xxxxpp. In that destination
INCONTROL for z/OS Installation Guide: Installing

- xxxx is the name that is specified as NOTIFY=xxxx (or ROSID=xxxx) in the ROSCOE initialization deck.
- pp is the ROSCOE user’s prefix (not key). The prefix consists of two or three characters.

Step 19.5 – Required IOA libraries

Add the following DAPARM DD statement to the COM-PLETE procedure:

```
//DAPARM DD DISP=SHR,DSN=ilprefa.PARM
//        DD DISP=SHR,DSN=ilprefa.IOAENV
```

In this statement ilprefa is the IOA installation libraries prefix.

Step 20 – Install IOAGATE (optional)

This major step consists of a series of minor steps that install the IOA Gateway. Perform the steps below. As you complete each step, mark it complete.

Step 20.1 – Installation considerations

Read B 101 IOAGATE installation and configuration considerations (on page 465) for a complete explanation of IOAGATE, its components and its configuration. This section also includes information on all aspects of IOAGATE installation and configuration.

For information about installing the Control-M Configuration Manager Application Server (CTMCAS), see Step 21 – Install Control-M Application Server (on page 135).

The following is a general overview of the components of IOAGATE.

IOAGATE is a mainframe software communications gateway (middleware) that enables IOA mainframe applications to communicate with other mainframe and non-mainframe applications over the network.

The Application Server is a separate address space distinct from the IOAGATE address space. It is started by IOAGATE according to IOAGATE parameters. The responsibility of the Application Server is to handle the application logic, while IOAGATE performs the actual communications and passes the messages between the clients and the Application Servers.

Client applications access INCONTROL products through an IOAGATE Application Server. Each Application Server address space communicates with its corresponding INCONTROL product either directly or by means of files.

IOAGATE does not support access to INCONTROL products from 3270-mode terminals or 3270-mode terminal emulation.
The following INCONTROL products are supported:

**Table 34  INCONTROL products supported by IOAGATE**

<table>
<thead>
<tr>
<th>INCONTROL application</th>
<th>Short code</th>
<th>Application server address space procedure</th>
<th>Client side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-D/Page on Demand (POD)</td>
<td>D</td>
<td>IOAAS</td>
<td>Control-D/ WebAccess Server</td>
</tr>
<tr>
<td>Control-D File Transfer Option (FTO)</td>
<td>F</td>
<td>IOAAS</td>
<td>Control-D Session Manager</td>
</tr>
<tr>
<td>Control-M</td>
<td>C</td>
<td>CTMCAS</td>
<td>Control-M Configuration Manager</td>
</tr>
<tr>
<td>Control-M</td>
<td>M</td>
<td>CTMAS</td>
<td>Control-M/ Enterprise Manager</td>
</tr>
<tr>
<td>Control-O</td>
<td>O</td>
<td>CTOAS</td>
<td>Control-O</td>
</tr>
</tbody>
</table>

IOAGATE supports multiple concurrent application servers of different applications and their clients. A single IOAGATE can support all the Application Servers shown above.

When you have read **B IOAGATE installation and configuration considerations** (on page 465) mark this step complete.
Step 20.2 – Configure IOAGATE parameters

Multiple IOAGATEs can be started concurrently.

The parameters of each IOAGATE are defined in the ECAPARMx member of each IOAGATE in the IOA.PARM library, where x is a unique 1-character suffix to the member name. The specific ECAPARM member to be loaded and used by a specific IOAGATE is specified by the PSFX parameter at IOAGATE startup. For example, PSFX=X is used with the ECAPARMX member.

When this option is selected, the IOAGATE Parameters Menu is displayed:

**Figure 26  IOAGATE Parameters Menu**

```
<table>
<thead>
<tr>
<th>Option</th>
<th>Parameter Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ECAPARMx - Select the ECAPARMx (x=suffix)</td>
</tr>
<tr>
<td>1</td>
<td>Application - Define/Update Application Server</td>
</tr>
<tr>
<td>2</td>
<td>Channel - Define/Update Channel</td>
</tr>
<tr>
<td>3</td>
<td>Global - Global IOAGATE Parameters (Optional)</td>
</tr>
<tr>
<td>4</td>
<td>Build - Build the Parameter Member</td>
</tr>
</tbody>
</table>
```

1. Select option 0, ECAPARMx, to specify the name of the ECAPARMx member you want to edit. Type the name and press Enter. The parameter member name you specified is displayed at the top of the IOAGATE Parameters Menu screen.

2. Select option 1, Application, to create or update application servers. This is where you specify the application servers in use at your site, meaning, Control-D/Page On Demand and Control-D File Transfer option, Control-M, Control-O, or any of these. The Create/Update Application Server screen is displayed:

**Figure 27  Create/ Update Application Server screen**

```
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>Create/ Update Application Server</th>
<th>SCROLL</th>
</tr>
</thead>
</table>
```

Codes in the Sel field:
- D Delete Application Server
- A Advanced Parameters

Command and Keys:
- Add To Add an application server
- PF3/ End Exit

Sel  Appl  Channel  Procname
---  -----  ------  --------

From this screen you can add a new application, by typing Add in the COMMAND field and pressing Enter. You can also type the options shown in the following table to perform the actions shown in the table.

**Table 35  Options in the Create/ Update Application Server screen**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Delete an application server. For more information, see Delete an application server (on page 110).</td>
</tr>
<tr>
<td>A</td>
<td>Insert values for advanced parameters. For more information, see Advanced parameters (on page 110).</td>
</tr>
</tbody>
</table>
Add a new application server

When you type Add in the COMMAND field, the Add New Application Server screen is displayed:

**Figure 28  Add New Application Server screen**

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>Add New Application Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>D Control-D/POD M Control-M O Control-O</td>
</tr>
<tr>
<td>F Control-D/FTO C Control-M CM</td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>Defaults: IOAAS - for Application D/F</td>
</tr>
<tr>
<td>CTMAS - for Application M</td>
<td></td>
</tr>
<tr>
<td>CTQAS - for Application O</td>
<td></td>
</tr>
<tr>
<td>CTMCAS - for Application C</td>
<td></td>
</tr>
</tbody>
</table>

For each application server you want to add, insert values for the parameters shown in the following table and press Enter.

Note: A multiple number of application server definitions can be created in one ECAPARM member. Each ECAPARM APSERVER statement generated by the Add function defines one Application Server address space. The maximum number of application server address spaces per channel is 8.

If the Control-M Application Server (CTMAS) or the Control-M Configuration Manager Application Server (CTMCAS) are to be used, Control-M/Enterprise Manager 6.3.xx must already be installed and running on either the UNIX or the Windows side of the connection. For more information, see Step 21 – Install Control-M Application Server (on page 135).

The Control-D/Page On Demand (D) application supports multiple Application Server address spaces for the same application.

For a large number of concurrent connections (100 or more), it is recommended that at least 4 application servers be defined.
### Table 36  Parameters for the Add New Application Server screen

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>1-character code for the Application Server to be added.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ C - Control-M Configuration Manager</td>
</tr>
<tr>
<td></td>
<td>▪ D – Control-D/Page On Demand</td>
</tr>
<tr>
<td></td>
<td>▪ F – Control-D File Transfer option</td>
</tr>
<tr>
<td></td>
<td>▪ M – Control-M</td>
</tr>
<tr>
<td></td>
<td>▪ O – Control-O</td>
</tr>
<tr>
<td>Channel</td>
<td>Two alphanumeric characters that serve as an ID to designate the channel</td>
</tr>
<tr>
<td></td>
<td>for the application server being added. This ID is referred to when the</td>
</tr>
<tr>
<td></td>
<td>channel is defined.</td>
</tr>
<tr>
<td>Procedure</td>
<td>Name of the procedure that IOAGATE must run when it starts the application</td>
</tr>
<tr>
<td></td>
<td>server.</td>
</tr>
<tr>
<td></td>
<td>The following default values will be used if none is coded:</td>
</tr>
<tr>
<td></td>
<td>▪ CTMCAS for application C</td>
</tr>
<tr>
<td></td>
<td>▪ IOAAS for application D</td>
</tr>
<tr>
<td></td>
<td>▪ IOAAS for application F</td>
</tr>
<tr>
<td></td>
<td>▪ CTOS for application O</td>
</tr>
<tr>
<td></td>
<td>▪ CTMAS for application M</td>
</tr>
</tbody>
</table>

**Notes:**

- The default procedure cannot be used if you have changed any of the default prefixes IOA, CTO or CTM. In such a case, you must specify the new name by substituting the new prefixes for IOA, CTM or CTO, as appropriate, in the default values. For example, if the default prefix CTM has been changed to XYZ, you must specify XYZAS instead of CTMAS.

- Do not be concerned if the following message is displayed next to your application server:

  Channel xx is not defined

- You can use the Channel parameter to define channels.

- When you have finished adding new Application Servers, press PF03/PF15. The Create/Update Application Server screen reappears, with the new Application Server displayed.
Delete an application server

Type D in the Sel field of any row containing an Application Server, and press Enter. The Application Server definition is deleted.

Advanced parameters

To insert values for advanced parameters, type A in the Sel field of any row containing an Application Server. The following screen is displayed:

**Figure 29 Application Server Advanced Parameters screen**

<table>
<thead>
<tr>
<th>Application name: M</th>
<th>Channel: O1</th>
<th>Procname: CTMAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Swappable........(NONSWAP)</td>
<td>(YES/NO)</td>
<td>Non-Swappable........(NONSWAP)</td>
</tr>
<tr>
<td>Compression..............(COMPRESS)</td>
<td>(YES/NO)</td>
<td>Compression..............(COMPRESS)</td>
</tr>
<tr>
<td>No. of server tasks......(NUMSRV)</td>
<td>(1-200 For Appl=D,F only)</td>
<td>No. of server tasks......(NUMSRV)</td>
</tr>
<tr>
<td>Automatic recoveries.....(MAXRECOV)</td>
<td>(0-99)</td>
<td>Automatic recoveries.....(MAXRECOV)</td>
</tr>
<tr>
<td>Encryption...............(ENCRYPT)</td>
<td>(NO,YES) for Appl=D</td>
<td>Encryption...............(ENCRYPT)</td>
</tr>
<tr>
<td>Enable/Disable...........(SERVER)</td>
<td>(Enable/Disable)</td>
<td>Enable/Disable...........(SERVER)</td>
</tr>
<tr>
<td>Time intervals</td>
<td></td>
<td>Time intervals</td>
</tr>
<tr>
<td>Server wait interval.....(SLEEPINT)</td>
<td>(3-30 sec)</td>
<td>Server wait interval.....(SLEEPINT)</td>
</tr>
<tr>
<td>Server timeout...........(TIMEOUT)</td>
<td>(1-7200 sec)</td>
<td>Server timeout...........(TIMEOUT)</td>
</tr>
<tr>
<td>Warning repeater.........(NWARNING)</td>
<td>(0-99 SERVDUR interval)</td>
<td>Warning repeater.........(NWARNING)</td>
</tr>
<tr>
<td>Startup duration.........(STRTDUR)</td>
<td>(30-999 sec)</td>
<td>Startup duration.........(STRTDUR)</td>
</tr>
<tr>
<td>Abnormal status duration.(STATDUR)</td>
<td>(0-7200 sec)</td>
<td>Abnormal status duration.(STATDUR)</td>
</tr>
<tr>
<td>Busy duration threshold..(BUSYDUR)</td>
<td>(0-999 m)</td>
<td>Busy duration threshold..(BUSYDUR)</td>
</tr>
</tbody>
</table>

The parameters in this screen have defaults that generally need not be changed. First-time installers should refrain from changing them.
### Table 37  Application Server Advanced Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| NONSWAP   | Whether the Application Server address space is non-swappable. Valid values are:  
  - YES – The Application Server address space is non-swappable. Default.  
  - NO – The Application Server address space is swappable. |
| COMPRESS  | Whether the Application Server messages are compressed. Valid values are:  
  - YES – Application Server messages are compressed.  
  - NO – Application Server messages are not compressed.  
  The default depends on the application code, as follows:  
  - C - YES  
  - D – NO  
  - M – YES  
  - O – NO (YES is not supported)  
  - F – NO (YES is not supported) |
| NUMSRV    | The number of identical Application Server tasks that can be attached within the application server address space.  
  This parameter is used by the Control-D Page On Demand and the Control-D File Transfer options.  
  The number of Application Server tasks that can be specified and attached primarily depends upon the specific application.  
  Each Application Server task can serve multiple clients serially. It is allocated to a specific client only for the duration of the exchange of a single request or response.  
  - Valid values are: 1 through 200.  
  - For a large number of concurrent Control-D/WebAccess connections (100 or more), a value of 25 or higher is recommended.  
  - Default: 10. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Note:** In practice the upper limit may be lower than 200 due to resource constraints, such as lack of storage in the IOAGATE address space or in the application server address space or in both. As a general rule, avoid exceeding a value of 50. If you require more than 50 servers, define additional Application Server address spaces.  
The combined number of application address spaces per IOAGATE is 99. The maximum number of application server address spaces per channel is 8. BMC recommends not exceeding a total of 500 application server tasks in all application address spaces combined. | |
| **MAXRECOV** | The maximum number of permitted subsequent automatic recoveries.  
For more information about the interval between recovery attempts, and what constitutes a new failure, see "RECVRSET" in Global IOAGATE parameters (on page 128).  
Valid values are 0-99.  
Default: 3.  
If MAXRECOV is set to 0, automatic recovery is disabled for this Application Server address space. |
| **ENCRYPT** | Whether data transfer encryption is performed with Control-D/WebAccess Server.  
Valid values are:  
- **NO** – no encryption is performed. Default.  
- **YES** – encryption is performed. |
| **Notes:** |  
- This parameter can only be used if APPL is set to D.  
- The setting of this parameter must match the encryption set in Control-D/WebAccess Server. |
Beginning with version 6.1.00, IOAGATE enables data transfer encryption with Control-D/Web Access Server version 3.2.00 installations.

The encryption process requires a KEYS file. This KEYS file is generated on the Control-D/WebAccess Server installation by means of the BMC-ECA-KEYGEN.EXE application.

Use FTP and ASCII mode to transfer the generated KEYS file to the z/OS installation where IOAGATE is running.

The name of the KEYS file must comply with the following rules:

- When ENCRYPT is set to a value other than NO, IOAGATE automatically allocates the DD name DAKEYS to include the keys used for encryption and decryption.
- DAKEYS is defined in IOADSN as
  DSN=%OLPREFA%.KEYS
  For example, if %OLPREFA% is set to IOAP.V900, DAKEYS has the data set name IOAP.V900.KEYS.

If the default name is unsuitable, you can define another name, using one of the following methods:

- Define the DAKEYS file in the IOADSNL member of the IOA.PARM library.
- Allocate the DAKEYS file explicitly in IOA PROC JCL.

You must protect the KEYS file from access by unauthorized users, but IOAGATE must have authorized READ access to the KEYS file.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVER</td>
<td>Enable or disable the Application Server indicator during this IOAGATE run. Valid values are</td>
</tr>
<tr>
<td></td>
<td>ENABLE - Use the current Application Server declaration. Default.</td>
</tr>
<tr>
<td></td>
<td>DISABLE - Ignore the current Application Server declaration.</td>
</tr>
<tr>
<td>SLEEPINT</td>
<td>The sleep time interval for Application Server tasks, in seconds. The Control-M Application Server uses this parameter. Valid values are: 2 through 30 (seconds). Default: 6.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| **TIMEOUT** | Sets the application server timeout (in seconds). The function of the parameter is determined by the application. This parameter is used only by the Control-D (and Control-D File Transfer Option) Application servers to determine the user inactivity period. After that period has elapsed, the server will log the user off automatically if another user logs on.  
  - Valid values are: 1-7200 seconds.  
  - Default: 1800 |
| **SERVDUR** | Sets the allowable interval (interval) of any service (transaction), in seconds. When a service exceeds this interval, a warning message is issued. When SERVDUR is set to 0, the check is disabled.  
  - Valid values are: 0-3600 seconds.  
  - Default: 60 |
| **NWARNING** | Controls the frequency of reporting about long running transactions using message ECAB43W, which is described in the INCONTROL for z/OS Messages Manual. When a transaction runs longer than the threshold defined by the SERVDUR parameter, IOAGATE does one of the following:  
  - Issue a single warning (when NWARNING = 0).  
  - Issue a periodic warning (when NWARNING > 0). The value of NWARNING sets the number of SERVDUR interval periods before a second or subsequent ECAB43W warning message is issued. Valid values are from 0 through 99. The default depends on the application code, as follows:  
  - C - 0 (ECAB43W message is issued only once)  
  - D – 1 (ECAB43W message is issued every SERVDUR interval)  
  - M – 0 (ECAB43W message is issued only once)  
  - O – 0 (ECAB43W message is issued only once)  
  - F – 0 (ECAB43W message is issued only once) |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| STRTDUR   | Sets the maximum duration of the Start or Recovery process of an Application Server address space or application server, in seconds. When the Start or Recovery duration exceeds this value, a warning message is issued.  
  - Valid values are: 30-999 seconds.  
  - Default: 60 |
| STATDUR   | Sets the maximum duration for an Application Server task in an abnormal status before a warning message is issued.  
  - Valid values are: 0-7200 seconds.  
  - Default: 60  
  Note: There can be several abnormal statuses such as: PENDING, SUSPEND, WAIT.  
If STATDUR is set to 0, no warning is sent. |
| BUSYDUR   | Sets the maximum duration of Busy status for an application server task.  
If an application server task remains in Busy status longer than the BUSYDUR value, the server task is presumed to be hung, and it is recycled. Valid values are: 0-999 minutes  
The default depends on the application code, as follows:  
  - C - 0 (disabled)  
  - D - 15  
  - M - 0 (disabled)  
  - O - 5  
  - F - 15 |

When you have finished inserting values for advanced parameters, press Enter to save these values, and then press End to return to the Create/Update Application Server screen.
Creating/Updating Channels

1. Select option 2, Channel, to create and/or update channels.
2. The Create/Update Channel screen displays.

**Figure 30  Create/ Update Channel screen**

<table>
<thead>
<tr>
<th>COMMAND</th>
<th>SCROLL</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete Channel</td>
<td>Add To Add a Channel</td>
<td>PF3/End Exit</td>
</tr>
<tr>
<td>Advanced Parameters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From this screen you can add a new channel, as described in the following section, Adding Channels (on page 117).

You can also type the options shown in the following table to perform the actions shown in the table.

**Table 38  Options in the Create/Update Channel screen**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Delete an existing channel. For more information, see Deleting an existing channel (on page 119).</td>
</tr>
<tr>
<td>A</td>
<td>Insert values for advanced parameters. For more information, see Specifying advanced channel parameters (on page 119).</td>
</tr>
</tbody>
</table>
Adding Channels

Type Add in the COMMAND field in the Create/Update Channel screen, and press Enter.

The Add New Channel screen is displayed.

Figure 31 Add New Channel screen

Type Add in the COMMAND field in the Create/Update Channel screen, and press Enter.

Press PF3 to exit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel ID</td>
<td>A unique 2-character (alphanumeric) channel identifier.</td>
</tr>
<tr>
<td></td>
<td>This must be identical with the identifier specified in the Channel parameter in the Add New Application Server screen.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>Communication Model</td>
<td>The channel communication model.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>Communication Protocol</td>
<td>This parameter is always set to:</td>
</tr>
<tr>
<td>TCP/IP port number</td>
<td>- DC for Control-M/EM</td>
</tr>
<tr>
<td>VTAM LU6.2 APPL ID</td>
<td>- MC for Control-M Configuration Manager</td>
</tr>
<tr>
<td>IP Addresses Validation</td>
<td>NO</td>
</tr>
<tr>
<td>ECAI PLS Member Name suffix</td>
<td>(Yes/No)</td>
</tr>
</tbody>
</table>

PORT specification:
The following default IOAGATE ports are defined on the desktop side:
2370 for CTMAS communications with CTM/EM
2369 for CTMCAS communications with CTM/CM
If you want to use the desktop defaults then specify these ports accordingly here.

For each channel you want to add, do the following:

- Insert values for the parameters shown in the following table.
- When you have finished entering values for the parameters of that channel, press Enter.

Table 39 Parameters for adding a new channel
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Protocol</td>
<td>The communication protocol used by this channel.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>This parameter is always set to TCP.</td>
</tr>
<tr>
<td>TCP/IP port number</td>
<td>TCP/IP port number. This parameter determines the communication port number used by the channel to listen for connections. A Dual Connection Model channel uses two ports: the specified port and the one following it.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory when TCP/IP is the protocol used.</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are: An integer, from 1024 through 65534.</td>
</tr>
<tr>
<td></td>
<td>▪ Default number for Control-M Configuration Manager: 2369</td>
</tr>
<tr>
<td></td>
<td>▪ Default number for Control-M/EM: 2370</td>
</tr>
<tr>
<td></td>
<td>▪ Default number for Control-D/Application Server: 2368</td>
</tr>
<tr>
<td></td>
<td>▪ Default number for Control-D/File Application Server: 2367</td>
</tr>
<tr>
<td></td>
<td>Note: Verify that the port number is available before continuing with the installation procedure.</td>
</tr>
<tr>
<td>VTAM LU6.2 APPLID</td>
<td>VTAM LU6.2 application ID used by this IOAGATE to communicate over the SNA (APPC) network.</td>
</tr>
<tr>
<td></td>
<td>This parameter can be used only with a SNA protocol and when a Multiple Connection Model is used.</td>
</tr>
<tr>
<td>IP Addresses Validation</td>
<td>An optional member name in IOA PARM including a list of valid IP addresses from which IOAGATE should accept connection established requests (IP list). Valid member name is ECAIPLSx.</td>
</tr>
<tr>
<td>ECAIPLS Member Name suffix</td>
<td>The following steps must be performed to validate an incoming IP address:</td>
</tr>
<tr>
<td></td>
<td>Create an IP list. For more information, refer to the ECAIPLS member in the IOA SAMPLE library, and to Validation of an incoming IP address (on page 493) for coding guidelines.</td>
</tr>
<tr>
<td></td>
<td>Insert the created IP list into the IOA.PARM library under the name ECAIPLS. In this syntax x is a one character optional suffix.</td>
</tr>
<tr>
<td></td>
<td>Specify IPLIST=ECAIPLSx channel parameter in ECAPARM. Both the MC and DC TCP/IP channel of IOAGATE accept the IPLIST parameter.</td>
</tr>
</tbody>
</table>

When you have finished adding new channels, press PF03/PF15. The channels will be displayed on the Create/Update Channel screen.
Deleting an existing channel

Type D in the Sel field of any row containing a channel and press Enter. The channel defined in that row is deleted.

Specifying advanced channel parameters

To specify advanced parameters, do the following:

1. Type A in the Sel field of any row containing a channel.
2. Insert values for the advanced parameters you want to specify.
3. Press Enter to save these values.
4. Press End to return to the Create/Update Channel screen.

Different advanced parameters are displayed according to the type of channel you are updating. The following table contains an inclusive list of all the advanced parameters that can be specified:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| TCPVENDR  | TCP/IP software vendor. Determines whether communication is effected over either the IBM TCP/IP software or the CA SNS/TCPaccess software. You can only enter a value for this parameter if you are using TCP/IP. Valid values are:  
  - IBM (default)  
  - CA |

Note: All TCP channels used by a specific IOAGATE must have the same vendor.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| LOGINMSG  | This parameter controls the destinations where ECAG62I messages will be sent. The ECAG62I message indicates that a user successfully logged on to IOAGATE over a multiple connection (MC) TCP channel. Valid values are:  
  - YES – The ECAG62I message is issued to LOG (DAIGLOG) and WTO  
  - NO – The ECAG62I message is issued to LOG (DAIGLOG) only  
  - OFF – The ECAG62I message is not issued  
  - WTO – The ECAG62I message is issued to WTO only  
  - LOG – The ECAG62I message is issued to LOG (DAIGLOG) only  
  - LOG+WTO – The ECAG62I message is issued to both LOG (DAIGLOG) and WTO  
  - WTO+LOG – The ECAG62I message is issued to both LOG (DAIGLOG) and WTO  
  Default: LOG (DAIGLOG)  
  Note: You can display and modify LOGINMSG parameter values as follows:  
  - To show the current values of the LOGINMSG parameter in all MC channels, enter the following command:  
    `F ioagate,LOGINMSG=SHOW`  
  - To dynamically override the value of the LOGINMSG parameter in all MC channels to one of the values listed above by entering the following modify command:  
    `F ioagate,LOGINMSG=value`  
  - To dynamically override the value of the LOGINMSG parameter in a specific MC channel by entering the following modify command:  
    `F ioagate,LOGINMSG=value,CHAN=channel-id` |
| SUBSYSTM  | Subsystem name for SNS/TCPaccess.  
  Determines whether the channel should use a non-default subsystem name for the CA SNS/TCPaccess software. Can be used only if the protocol used is TCP/IP, the software vendor used is CA and a non-default subsystem name for SNS/TCP access is required. Valid values are: 4 alphanumeric characters of the subsystem name.  
  Note: There is no need to specify the default subsystem name (ACSS) for SNS/TCPaccess. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMTASK</td>
<td>Number of TCP/IP communication tasks to be attached to establish the multiple connection model channel. Can be used only if the protocol used is TCP and a multiple connection model is used. Valid values are: 1 through 100. Default: 4. Note: For application C, COMTASK is always set to 1. Also see below, the note for COMTASK and UPERTASK.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| UPERTASK  | Maximum number of users per communication task. Can be used only if the TCP/IP protocol and a multiple connection model is used. Valid values are: 1 through 500. Default: 200. Note: For application C, UPERTASK is always set to 1. Note for both COMTASK and UPERTASK: The maximum values of 100, for COMTASK, and 500, for UPERTASK, are theoretical maximums. It is possible to define thousands of connections for supporting Control-D/WebAccess. The practical maximum of connections per IOAGATE is determined by tuning, which is dependent upon the capacity of the application servers (IOAAS address spaces). This capacity depends on the usage profile, which is defined by the activities of the users and transactions, and the frequency of the transactions. By rule of thumb the following limits exist for supporting Control-D/WebAccess users:  
  - One IOAGATE can support 8 IOAAS address spaces  
  - Each IOAAS can support 40 transactions concurrently (NUMSRV=40).  
  - Each IOAAS can support 800 logged on users. 
  The above yields 8 x 800 = 6400 connections per IOAGATE. The 6400 connections can be supported by 16 communication tasks, each with 400 connections (COMTASK=16, UPERTASK=400). If more than 16 processors exist on the LPAR, then the number of communication tasks can be increased to the number of processors (and the number of connections per communication task can be reduced accordingly). For a large number of concurrent connections (100 or more), it is recommended that UPERTASK be at least 200. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **SOCKIMP** | If integrated sockets are in use.  
Valid values are:  
- OE – Integrated sockets are in use.  
- COM – Non-integrated sockets are in use.  
- ' ' (Blank) – If you do not set a value for SOCKIMP, the program sets the default according to the system in use, as follows:  
  - For IBM TCP/IP, the default setting is OE.  
  - For TCPAccess, the default setting is COM.  

Note: If TCPAccess is in use, and you have set it up to run with OMVS(OE), you must set SOCKIMP to OE. For more information, see Step 20.6 – Set up IOAGATE to support TCPAccess (optional) (on page 134). |
| **CHANNEL** | Enable or disable channel indicator.  
Determines whether the entire current CHANNEL declaration should be used or ignored in this current IOAGATE run. Valid values are:  
- E (Enable) – Use the entire current CHANNEL declaration. Default  
- D (Disable) – Do not use the entire current CHANNEL declaration. |
| The following channel parameters are relevant only for channels used by Control-O: |
| **NODE** | Node ID.  
Determines the NODE ID that identifies this IOAGATE. Must correspond to a NODE parameter defined in the network map specified by the NETWMAP parameter.  
- Mandatory if you are using Control-O. |
| **NETWMAP** | Network map to be used in the node.  
Determines the name of the member in the IOA.PARM library that describes an IOAGATE communication network map that allows one IOAGATE to communicate with another. Any IOAGATE that belongs to this Network must use the same network map.  
- Mandatory if you are using Control-O. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| ALLOCINT  | Interval between allocation attempts, in seconds.  
  Sets a time interval between persistent allocation attempts that IOAGATE performs against its other IOAGATE partners specified in the network map.  
  Valid only for SNA and Control-O.  
  - Valid values are: 1 through 3600 (seconds).  
  - Default: 60. |
| LOGMODE   | Default Logmode to be used in allocations.  
  Determines the default Logmode to be used when establishing communication with a partner specified in the network map.  
  Valid only for SNA and Control-O.  
  - Default: MODE4D62. |
| BIND      | IP address that IOAGATE must use to listen for incoming connections. If you want IOAGATE to listen on a specific IP address, such as a DVIPA assigned for IOAGATE, use this parameter to identify that IP address.  
  Use the following syntax:  
  `BIND=INADDR_ANY | IP_address | hostname`  
  where  
  - `INADDR_ANY` instructs IOAGATE to listen for incoming connections from any IP address (adapter) on the system.  
  - `IP_address` or `hostname` indicates that IOAGATE BINDs to either the given `IP_address` or the `IP_address` after `hostname` resolution.  
  - Default: `INADDR_ANY` |

**Notes:**  
- This parameter is relevant for configurations with a DVIPA address assigned to IOAGATE. For more information, see B IOAGATE installation and configuration considerations (on page 465).  
- If you specify an IPv4 address or the hostname is resolved to an IPv4 address then the channel will not accept connections from IPv6 addresses. For examples of IPv6 addresses, refer to message ECAP9UE.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| ESOCKAPI | TCP/IP socket API type. Valid values:  
  - IBM (default)  
  - SAS  
  When SAS is specified, IOAGATE uses SAS/C written modules and TCP/IP support is the same as for INCONTROL version 8.0.00 (IPv6 not supported) for this channel. The ESTACK parameter is ignored. When IBM is specified or implied, IOAGATE uses IBM C-written modules and support IPv6 and dual TCP/IP stacks for this channel. SOCKIMP, SUBSYSTM, and TCPVENDOR parameters are ignored. |
| ESTACK | TCP/IP stack name. This is the started task name of a TCP/IP stack that is active on the z/OS system. If specified, IOAGATE will establish stack affinity to this stack. Default: The z/OS system's default TCP/IP stack is used. Note: If the z/OS system is not configured for dual stack mode, then the parameter is ignored. But if it is and the stack is not running, then the IOAGATE channel will be disabled. Warning: Specifying a stack may affect connectivity and hostname resolution. Consult your network administrator. |
| IPVMODE | TCP/IP protocol implementation level. Valid values:  
  - DUAL (default)  
  - IPV4  
  When IPV4 is specified, IPv6 is not supported. |

The following parameters are relevant for SSL support.

| SSL | Determines whether SSL support is required. SSL can be specified when the value of PROTOCOL is TCP for both MODEL=DC and MODEL=MC channels. Valid values are:  
  - Yes  
  - No. Default  
  Note: You must enter the same SSL support value (either SSL=YES or SSL=NO) when communicating with both Control-M/EM and Control-M/CM even when not in the same IOAGATE. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes:</td>
<td>▪ SSL support in IOAGATE requires z/OS V1R4 or higher.</td>
</tr>
<tr>
<td></td>
<td>▪ When SSL is used, the following library must be added to the LINKLIST or STEPLIB of IOAGATE:</td>
</tr>
<tr>
<td></td>
<td>▪ hlq.SGSKLOAD (z/OS version 1, release 4 and 5)</td>
</tr>
<tr>
<td></td>
<td>▪ hlq.SIEALNKE (z/OS version 1, release 6 or later)</td>
</tr>
<tr>
<td></td>
<td>▪ IBM LE runtime CEE.SCEERUN and CEE.SCEERUN2 must also be available in the LINKLIST (or in IOAGATE STEPLIB).</td>
</tr>
<tr>
<td></td>
<td>▪ SSL support for Control-D/WebAccess Page On Demand is not included in the current version.</td>
</tr>
<tr>
<td></td>
<td>▪ Turn on Program control for hlq.SGSKLOAD in RACF. (hlq is the high level qualifier for your system installation, for example, SYS1) by the following command:</td>
</tr>
<tr>
<td></td>
<td>RALTER PROGRAM * ADDMEM('hlq.SGSKLOAD'//NOPADCHK) UACC(READ) SETROPTS WHEN(PROGRAM) REFRESH</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| KEYRING   | SAF name (RACF or compatible) of a KEYRING associated with IOAGATE.  
|           | • Mandatory when the value of the SSL parameter is Yes.  
|           | Valid values are in a string not longer than 47 characters, in the following formats:  
|           | • `<userid>/ <keyring value>`  
|           | • `<keyring value>`  
| Notes:    | • The slash character ( /) is allowed only between `<userid>` and `<keyring value>`  
|           | • `<userid>` must be uppercase and have a maximum of 8 characters  
|           | • `<keyring value>` cannot contain blanks  
|           | • The current IOAGATE userid is used if the userid value is omitted.  
|           | • The user must have IRR.DIGTCERT.LISTRING resource READ access in the FACILITY class when using a SAF key ring owned by the user.  
|           | • The IOAGATE user ID must have Control access to IRR.DIGTCERT.GENCERT in order to access the certificate private key.  
|           | • Certificate private keys are not available when using a SAF keyring owned by another user; therefore, if a user ID is specified, it must be the IOAGATE user ID. |
| KEYRLAB   | KEYRING label. The LABEL (ID) of the IOAGATE certificate.  
|           | Optional parameter. Specifies the label of the key used to authenticate IOAGATE. The default key will be used if a key label is not specified.  
|           | Valid values are in a string not longer than 32 characters. Blanks are allowed inside the string, but if blanks are used the string should be closed with apostrophes. |
Parameter | Description
---|---
CLIAUTH | CLIENT AUTHENTICATION. Determines whether client authentication is required. Optional parameter.

SSL client authentication enables a server application (IOAGATE) to confirm the identity of the client application (such as Control-M/EM). The server application verifies that the client certificate and public key are valid and has been signed by a trusted certificate authority (CA) that is known to the server application.

Note: In order to be able to perform this verification, the certificate of the CA that has signed the certificate of the client must be added to the KEYRING.

Valid values are:
- Yes
- No. Default.

When CLIAUTH=No, only server authentication is performed by the client.

Global IOAGATE parameters

In the IOAGATE Parameters Menu screen, option 3, Global, updates global IOAGATE parameters. This step is optional.

Type 3 in the OPTION field and press Enter. The Parameter Data Entry screen is displayed.

The parameters of the Parameter Data Entry screen have defaults that generally need not be changed. First-time installers should refrain from changing them.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAYUP</td>
<td>Whether IOAGATE should stay up when all application server address spaces have failed. Determines whether IOAGATE should continue running when all application server address spaces failed and cannot be recovered.</td>
</tr>
</tbody>
</table>

Valid values are:
- Yes (default)
- No
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| SLEEPINT  | IOAGATE sleeping interval in seconds. The sleeping time interval defines for how long the main task of IOAGATE will relinquish control when it is inactive.  
|           |   - Valid values are: 2 through 30 (seconds).  
|           |   - Default: 6. |
| NONSWAP   | Whether the IOAGATE address space is non-swappable. Valid values are:  
|           |   - Yes – The IOAGATE address space is non-swappable (default).  
|           |   - No – The IOAGATE address space is not non-swappable. |
| RECVRSET  | Recovery reset time interval, in seconds. The RECVRSET works in conjunction with the MAXRECOV parameter. MAXRECOV limits the number of automatic recovery attempts of an application server address space or an application server task failure. This limits the number of attempts to restore the same application server address space failure or task recurring failure, but allows recovery attempts of new failures. The value assigned to the RECVRSET parameter distinguishes between another recovery attempt for the previous failure and a recovery attempt for a new failure. A recovery attempt with an interval greater than this recovery rate value is not considered a subsequent recovery attempt, but rather, a new failure.  
|           |   - Valid values are: 3 through 300 (seconds).  
|           |   - Default: 60. |
| STAT      | Whether statistics collection should be initiated at IOAGATE startup. Valid values are:  
|           |   - Yes – statistics collection is initiated at IOGATE startup.  
|           |   - No – statistics collection is not initiated at IOGATE startup (default)  
|           |   - Note: It is also possible to manually start statistics collection at any time by using the STATON modify command. |
### Parameter | Description
--- | ---
STATINTR  | Sets the statistics collection time interval, in minutes. Statistics are summarized in STATINTR periods. IOAGATE keeps only the last 6 periods in memory.  
- Valid values are: 1 through 250 (minutes).  
- Default: 10.

ARMELEM  | The name that represents IOAGATE as an element of Automatic Restart Management (ARM).  
When this parameter is enabled, the operating system automatically restarts IOAGATE after an unexpected failure, using ARM.  
When specifying an element name, apply the following rules:  
- The name can be from 1 through 16 characters.  
- The name must be unique across the Sysplex.  
- Valid characters are uppercase alphabetic characters, the digits 0 through 9, and the following symbols: $, #, @ and underscore (_).  
- The first character may not be a number.  
- Element names that start with A through I, and SYS, are reserved for use by IBM.  
Valid values are:  
- N or NO – ARM is not enabled. The operating system does not attempt to restart IOAGATE if it fails unexpectedly. Default.  
- policy_name – Name of the ARM Policy.  
This element name must exactly match the ELEMENT ARM policy parameter, or the operating system will use the default policy. For more information, see B IOAGATE installation and configuration considerations (on page 465) and the section on Automatic Restart Management support in the Control-M chapter of the INCONTROL for z/OS Administrator Guide.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HANGDINT</td>
<td>Hanging detection time interval. The hanging detection mechanism detects hanging situations where the application server, or IOAGATE itself, or the channel, seems to be hanging. The detection principle is based on checking whether messages are being accumulated for the application server, but those messages are not actually being passed to the server. Checking also involves determining whether messages are being accumulated to be passed to a channel, but are not passed to the channel. Hanging detection is activated once each number of HANGDINT seconds. A warning is issued when a hanging situation exists for the last HANGDNIN intervals of HANGDINT seconds.</td>
</tr>
<tr>
<td>HANGDNIN</td>
<td>Number of hanging detection intervals. This parameter is used to determine the number of consecutive HANGDINT intervals, in which a hanging situation has been detected, that may occur before a warning message is issued.</td>
</tr>
<tr>
<td>ASINTDUR</td>
<td>The interval during which IOAGATE waits silently for at least one Application Server task to be ready. The following message is issued when this time interval expires. ECAE53W NO APPLICATION SERVER HAS BECOME AVAILABLE to IOAGATE in the last &lt;n&gt; minutes</td>
</tr>
<tr>
<td>ASINTWRN</td>
<td>The interval between the first time the ECAE53W message is issued and the subsequent occurrences, while IOAGATE waits for an Application Server task to be ready.</td>
</tr>
</tbody>
</table>

If errors occur while building ECAPARM, the errors are displayed. Correct the errors and select this option again.

When you are satisfied with the values that are displayed, press PF03/PF15. This will save the parameters and exit this screen to the IOAGATE Parameters Menu.
This step will automatically be marked complete.

Special global IOAGATE parameters

Certain IOAGATE parameters cannot be set by means of ICE. You can only set these special IOAGATE parameters by adding them manually to the GATEWAY section of ECAPARM.

<table>
<thead>
<tr>
<th>Table 42 Special CCM parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td>MAXNOSIB</td>
</tr>
<tr>
<td>SELFTEST</td>
</tr>
<tr>
<td>RECVTEST</td>
</tr>
</tbody>
</table>
**Parameter** | **Description**
---|---
TRACE | This parameter is for use in tracing IOAGATE initialization on request by BMC Customer Support. Valid values are:
- PARM – For tracing IOAGATE processing of ECAPARM during initialization.
- MAP – For tracing IOAGATE processing of the network map during initialization.
- NO – No tracing is performed during initialization in relation to either ECAPARM or the network map. Default.

---

**Step 20.3 – Set up IOAGATE procedure(s)**

A default IOAGATE procedure is provided in the PROCJCL library. This IOAGATE procedure is configured to use the ECAPARM member in the IOA.PARM library. This ECAPARM member does not exist until it is built with a blank suffix. The ECAPARM member that is to be loaded and used by an individual IOAGATE is identified by the value x specified in PSFX=x in the procedure used for IOAGATE startup.

For example, the expression PSFX= (with no value), is associated with the ECAPARM member and the expression PSFX=X is associated with the ECAPARMX member.

If more than one IOAGATE will be started, corresponding, unique ECAPARM members must be created, each differentiated by a unique 1-character suffix in the member name. An individual procedure must be created for each IOAGATE, by duplicating and renaming the provided default procedure. Each procedure must specify its corresponding ECAPARMn suffix in the PSFX parameter.

After you have set up the IOAGATE procedures, mark this step complete.

**Step 20.4 – Specify TCPDATA (TCP/IP only) (optional)**

**Defining the TCP/IP data file**

From the MVS TCP/IP perspective, IOAGATE is one of its client applications. As such, IOAGATE needs a client profile data set, hlq.TCPIP.DATA, which is specified using the //SYSTCPD DD statement.

This is the main resolver configuration data set that contains information on the host name, domain origin, and so on. In addition, this data set also contains the TCPIPJOBNAME parameter that identifies the TCP/IP stack to use.

For more information on this data set, see the z/OS V1Rx Communications Server IP Configuration Reference.

When the //SYSTCPD DD statement is not specified, the standard client searches for hlq.TCPIP.DATA in the following sequence:

1. jobname.TCPIP.DATA for batch jobs and started tasks
2. SYS1.TCPPARMS(TCPDATA)
3. TCPIP.TCPIP.DATA

The default hlq distributed with TCP/IP is the string TCPIP. When found, the data set is dynamically allocated.

If the client profile data set name does not conform to the conventions described above, and as a result cannot be found using the standard search order, the data set should be allocated by the //SYSTCPD DD statement. Otherwise, the DD statement can be omitted.

The issue should be discussed and agreed upon with the local MVS/TCP system network staff.

To assign the proper SYSTCPD data set, use the TCPDATA parameter in the IOAGATE member of the PROCJCL library.

When you have specified the TCPDATA, mark this step complete.

Step 20.5 – Specify OMVS RACF segment (TCP/IP only)

Users of z/OS version 1.1 and later, with TCP/IP 3.4 and later, must define a proper OMVS RACF segment for the user ID and Group ID associated with the IOAGATE started task.

For details on defining an OMVS RACF segment, see the appropriate IBM documentation for this topic.

Users of TOP/SECRET or ACF/2 should refer to their specific product documentation for details about the equivalent definitions in their environment.

Step 20.6 – Set up IOAGATE to support TCPAccess (optional)

You only need to do the actions described in the following paragraphs if you use TCPAccess at your site.

How you set up IOAGATE to support TCPAccess depends on whether TCPAccess is set up to run with OMVS(OE).

When TCPAccess has been set up to run with OMVS(OE)

1. Before setting up IOAGATE, ensure that CA Service Pack SP0112 (or later) for TCPAccess has been applied.
2. For security purposes, define a valid OMVS RACF segment for the user ID and Group ID associated with the IOAGATE started task.
3. Configure IOAGATE as follows:
   a. Use the CTRANS parameter in the IOAGATE PROCCL to define the CTRANS library provided by BMC Software with INCONTROL version 6.1.xx and above. Do not use SASLNIK provided by the manufacturers of TCPAccess in IOAGATE.
      The default CTRANS value is the same as that used by IOAGATE when working with IBM TCP/IP.
   b. Use the TCPDATA parameter to define the appropriate SYSTCPD file in the IOAGATE PROCCL.
      The SYSTCPD must include a valid definition for TCPIPJOBNAME.
   c. In each channel definition in ECAPARM, define SOCKIMP=OE.
When TCPAccess has not been set up to run with OMVS(OE)

Use the CTRANS provided by BMC Software. Do not use SASLINK provided by the manufacturers of TCPAccess in IOAGATE.

Use the LSCNCOM member provided by the manufacturers of TCPAccess in the SASLINK library.

You can do this, by the following steps:

1. Allocate a PDS library.
2. Ensure that the new PDS library is APF-authorized.
3. Copy into the new library the LSCNCOM member provided by the manufacturers of TCPAccess.
4. Concatenate this library in front of the CTRANS library.

Step 20.7 – Specify VTAM definitions for SNA multiple connection channels (optional)

Multiple connection channels can only be specified for the Control-O and Control-D/Page On Demand application servers.

For an explanation of how to specify the channel connections, see Multiple connection channels using SNA session support (on page 470).

When you have specified VTAM Definitions for SNA, mark this step complete.

Step 21 – Install Control-M Application Server

This step installs the Control-M Application Server. When completed, mark each step complete.

Before proceeding with this step, consider the following:

- Control-M Application Server can only run if Control-M is installed. If you have no intention of installing Control-M, skip this step.
- Information relevant to the administration and customization of Control-M Application Server is described in the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Step 21.1 – Installation considerations

Relationship between Control-M and Control-M/Enterprise Manager

Control-M/Enterprise Manager (Control-M/EM) is a software product that runs on UNIX and Microsoft Windows workstations to provide centralized control of the job scheduling production environment for the entire enterprise. Control-M/EM advanced graphical user interface provides enhanced perception of production flows throughout the entire active environment.

Control-M/EM works in conjunction with Control-M Production Control Systems and the Control-M/Restart Automated Job Restart System.

One Control-M/EM network has the ability to control multiple Control-M installations on various types of platforms. The following example illustrates communication between Control-M on a z/OS platform with Control-M/EM (using IOAGATE and CTMAS).
Configuring Control-M/CM application server (CTMCAS) (Optional)

The Control-M Configuration Manager application server (CTMCAS) is an optional feature which supports Control-M Configuration Manager on Windows.

Control-M Configuration Manager (CCM) enables you to manage all of the administrative tasks of Control-M from one focal location. Using Control-M Configuration Manager you can perform various tasks and configure elements within Control-M.

One of the elements that you can configure is Control-M for z/OS, including the Control-M application server (CTMAS).

CTMCAS together with IOAGATE functions as the Control-M administration agent on z/OS.

It is possible to either dedicate one IOAGATE for CTMCAS and another IOAGATE for CTMAS, or include them both in the same IOAGATE (possibly with other applications).

If the Control-M Configuration Manager does not display updated data about a specific application that you have installed, restart the Control-M Application Server.

When a Control-M for z/OS datacenter is defined in Control-M Configuration Manager, the user can specify either discovery mode or direct mode.
• Discovery mode means that CCM will discover the existence of CTMAS by establishing a connection with CTMCAS via IOAGATE and retrieving configuration parameters from it. The port configured in CCM in this case is the port on which IOAGATE listens for CCM connections to CTMCAS. The main configuration parameter retrieved from CTMCAS by discovery mode is the port on which IOAGATE listens for the Control-M/EM connection to CTMAS. Please note that these ports are not the same.

• Direct mode means that the port configured in CCM, in this case, is the port on which IOAGATE listens for CONTROL-M/EM connections to CTMAS. Control-M/EM will directly connect to this port for communications with CTMAS.

The Control-M Configuration Manager application server reports the status of the following Control-M components:
• IOAGATE
• Control-M application server
• Control-M monitors (global and locals)
• Control-O or CMEM monitors.

The Control-M Configuration Manager application server can also be configured to change the status of the Control-M monitor that it controls according to the Desired State set in the CCM.

The Control-M Configuration Manager application server can either issue a message whenever the actual status of the monitor is different from the desired status, or it can issue an MVS START or STOP command to start or stop the Control-M monitor whenever it needs to be started or stopped.

Software requirements and compatibility

To use Control-M Application Server (CTMAS), Control-M/Enterprise Manager must be from the same version and release, or later, as Control-M for z/OS. The version and release are indicated by the vv.rr.mm (version.release.maintenance) format of the product description.

In case there is a need to work with an earlier release of Control-M/Enterprise Manager, such as during a testing period, the parameters MODECTM and MODEASM in IOAPARM member must be set to the version of the Control-M/Enterprise Manager. For example, if the Control-M/Enterprise Manager is in V8 and the IOA is in V9, the setting of MODECTM=800 and MODEASM=800 must be used. Setting the value would restrict the functionality of the Control-M for z/OS to the features and parameter values that were in effect in the specified version. See the section on the parameters MODECTM/MODEASM for more detailed explanation on the values and the accompanied restrictions.

Note that BMC does not recommend that this mode be used for a long period of time, but should be limited to only upgrading and testing periods.

If you have any questions, please contact BMC Customer Support.

Step 21.2 – Shout to Control-M/EM parameters

When a Shout message from Control-M is destined for Control-M/EM, the Shout message is written to the M2G file and distributed to Control-M/EM by the Control-M Application Server. To achieve this, you must insert values for the parameters in the following table:
Table 43  Shout to Control-M/EM parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECSDEST</td>
<td>Default destination for Shout messages sent to Control-M/EM.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Default: ECS</td>
</tr>
<tr>
<td>UECS2ECS</td>
<td>Whether Shout messages with the DEST destination parameter set to U-ECS should also be sent to Control-M/EM. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Send messages destined for U-ECS to Control-M/EM. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not send messages destined for U-ECS to Control-M/EM.</td>
</tr>
<tr>
<td>OPER2ECS</td>
<td>Whether Shout messages whose DEST destination parameter is set to OPER or OPER2 should also be sent to Control-M/EM. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Send messages destined for OPER or OPER2 to Control-M/EM.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not send messages destined for OPER or OPER2 to Control-M/EM.</td>
</tr>
<tr>
<td>OPER2CON</td>
<td>Whether Shout messages with the DEST destination parameter set to OPER or OPER2 should also be sent to the console. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Send messages destined for OPER or OPER2 to the console. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not send messages destined for OPER or OPER2 to the console.</td>
</tr>
<tr>
<td>M2GSIZE</td>
<td>Size, in blocks, of the Shout to Control-M/EM file, which is also known as the M2G file.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 1000.</td>
</tr>
</tbody>
</table>

Step 21.3 – Remote force job Control-M/EM parameters

When a DO REMFORCE request from Control-M is destined for Control-M/EM, the request is written to the M2F file and distributed to Control-M/EM by the Control-M Application Server.
When a DO REMFORCE request is sent from a remote CONTROL-M via CONTROL-M/EM, the request ID is written to the REQFRC file for tracking purposes.

To achieve this, you must insert values for the parameters in the following table.

**Table 44 Remote force job Control-M/EM parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2FSIZE</td>
<td>Size, in blocks, of the Remote Force Job Request file, which is also known as the M2F file. Default: 1000.</td>
</tr>
<tr>
<td>REQFRCSZ</td>
<td>Size, in blocks, of the Remote Force job Requests LOG file, which is also known as the REQFRC file. Default: 1000.</td>
</tr>
</tbody>
</table>

Step 21.4 – Set ECS to Y in IOAPARM

This step changes the value of the ECS installation parameter to Y. This indicates that the Control-M Application Server is installed. When the process completes, this step is automatically marked complete.

Step 21.5 – Format the Shout data set

The FORMM2G job formats the data sets that communicate with the ESCGATE and transfer Shout messages.

Submit the job and verify that all job steps end with a condition code of 0.

Step 21.6 – Minimum security authorizations

1. Control-M Application Server can be installed without setting up special security requirements, except as noted below for RACF, CA-ACF2 and CA-TOP SECRET.

   If you are using RACF, ACF2 or TOP SECRET, define the started task Control-M/EM as a valid started task under the relevant security system.

2. All Control-M functions that the user specifies by Control-M Application Server are performed in Control-M by Control-M Application Server.

   To enable Control-M Application Server to perform these functions as required, provide Control-M Application Server with READ and UPDATE authority for all data sets for which the Control-M monitor is authorized.

3. When authorized, users of Control-M Application Server have the option of performing the Edit JCL function. This function is executed by Control-M Application Server. Accordingly, Control-M Application Server should have UPDATE authority for all JCL libraries for which any Control-M Application Server user has EDIT authority.
4. Control-M Application Server performs actions on jobs that are contained in the Active Jobs file and that are displayed in the Active Environment screen (Screen 3). The CTMSE08 Control-M security module verifies a user’s authorization to perform actions on these jobs.

If security for Control-M is enabled, you must authorize Control-M Application Server to perform all operations in Control-M Screen 3.

For more information about the CTMSE08 module, see the Control-M chapter in the INCONTROL for z/OS Security Guide.

5. The following special users must be authorized.
   - User GCSERV: When global conditions are added from the Control-M/EM Global Conditions Server, they are added under user ID GCSERV. The GCSERV user therefore must be defined in security. The GCSERV user is the user ID of the Control-M/EM Global Conditions Server that distributes global condition transactions from any data center to another. This user should have the authorization to access IOA Condition file facilities. This user ID must be GCSERV, specified with uppercase letters.
   - User CTMAS: The user ID that was assigned to the CTMAS monitor that actually performs all Control-M/EM requests in the mainframe data center. This user ID is not necessarily CTMAS, but whatever user ID the system assigns to the CTMAS monitor. This value can be changed.
   - User CTMSYNC: The user ID through which Control-M/EM requests automatic synchronization between the folder libraries in Control-M (specified by SYNCLIBS for synchronization) and the Control-M/EM database. This user must have authorization to access the libraries specified in the SYNCLIBS parameter member. Note that CTMSYNC is the default user name which is customizable in Control-M/EM, so if it changed the new user name must be authorized in this step.
   - User BIMUSER: BMC Batch Impact Manager requires a user name to connect to Control-M/EM. In Control-M for z/OS, you must add a user that will be used by BMC Batch Impact Manager. By default, BMC Batch Impact Manager uses the BIMUSER user name.

Ensure that the BIMUSER user name has the following privileges:
   - Order
   - Force
   - Rerun
   - Hold
   - Log
   - Zoom-and-Save
   - Kill job

For information on setting the privileges for the user name, see the INCONTROL for z/OS Security Guide.

Step 22 – Install KOA and IOA routes (optional)

This step is intended for users who need to install the IOA KeyStroke OpenAccess (KOA) facility that allows logon to VTAM applications.
Step 22.1 – Set Logical Terminals and Routes

Select this step to start a process that defines (or updates) the Logical Terminals and Routes for KOA.

The Logical Terminals and IOA Routes Menu screen is displayed:

Figure 33 Logical Terminals and IOA Routes Menu screen

-------------------- Logical Terminals and IOA Routes Menu -------------------

Parameter Member: IOAKPRM

1  Global       - Global Parameters
2  Terminals    - Define/Update Logical Terminals
3  Routes       - Define/Update IOA Routes
4  Build        - Build the Parameter Member
X  Exit         - Leave the Process

Global parameters

Select option 1, Global, and the Parameter Data Entry screen is displayed:

Figure 34 Parameter Data Entry screen

Insert values for the parameters described in the following table. All but the first are Logon Mode parameters.
Table 45  Global KOA and IOA Routes parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOATIME</td>
<td>Time in minutes before a logical terminal is terminated. If Timeout is set to 100, timeout checking is not performed.</td>
</tr>
<tr>
<td>LTYP2</td>
<td>LOGMODE for Model 2 SNA terminals.</td>
</tr>
<tr>
<td>LTYP2XT</td>
<td>LOGMODE for Model 2 SNA terminals that support extended data stream.</td>
</tr>
<tr>
<td>LTYP3</td>
<td>LOGMODE for Model 3 SNA terminals.</td>
</tr>
<tr>
<td>LTYP3XT</td>
<td>LOGMODE for Model 3 SNA terminals that support extended data stream.</td>
</tr>
<tr>
<td>LTYP4</td>
<td>LOGMODE for Model 4 SNA terminals.</td>
</tr>
<tr>
<td>LTYP4XT</td>
<td>LOGMODE for Model 4 SNA terminals that support extended data stream.</td>
</tr>
<tr>
<td>LTYP5</td>
<td>LOGMODE for Model 5 SNA terminals.</td>
</tr>
<tr>
<td>LTYP5XT</td>
<td>LOGMODE for Model 5 SNA terminals that support extended data stream.</td>
</tr>
</tbody>
</table>

When you are satisfied with the values you have entered, press PF03/PF15 to exit this screen. The Logical Terminals and IOA Routes Menu screen is displayed again.
Define/update Logical Terminals

Select option 2, Terminals, and the Update IOA Logical Terminals (KOA) screen is displayed:

**Figure 35** Update IOA Logical Terminals (KOA) screen

From this screen you can add a new logical terminal to KOA, by typing Add in the COMMAND field and pressing Enter.

You can also using the options shown in the following table to perform the actions shown in the table.

**Table 46** Options in the Update IOA Logical Terminals (KOA) screen

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Deletes an existing logical terminal. For more information, see Add a Logical Terminal (on page 143).</td>
</tr>
<tr>
<td>A</td>
<td>Adds a logical terminal for KOA. This code performs the same function as the ADD command. For more information, see the following section, Add a Logical Terminal (on page 143).</td>
</tr>
</tbody>
</table>

Add a Logical Terminal

When you type Add in the COMMAND field, or A in the Sel field, the Add Logical Terminal (KOA) screen is displayed:

**Figure 36** Add Logical Terminal (KOA) screen

For each logical terminal that you want to add, insert values for the parameters shown in the following table:
Table 47 Parameters in the Add Logical Terminal (KOA) screen

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFID</td>
<td>MVS SMFID of the computer.</td>
</tr>
<tr>
<td>PREFIX</td>
<td>A 4-character common prefix for the KOA logical terminals. Each computer must have a unique prefix.</td>
</tr>
<tr>
<td>TERM#</td>
<td>Number of KOA terminals defined under VTAM for the computer.</td>
</tr>
</tbody>
</table>

When you are satisfied with the parameter values, press Enter to return to the Update IOA Logical Terminals (KOA) screen, from which you can repeat this procedure to add another logical terminal.

When you are satisfied with the values you have entered, you can either
- type Cancel in the COMMAND field and press Enter, to exit the Update IOA Logical Terminals (KOA) screen without saving
- press PF03/PF15 to save the defined logical terminals and exit this screen

The Logical Terminals and IOA Routes Menu screen is redisplayed.

Delete a Logical Terminal

Type the letter D in the Sel field of any row containing a logical terminal, then press Enter. The logical terminal definition is deleted.

When you have deleted the logical terminals you wished to delete, press PF03/PF15 to exit this screen.

Define/update IOA Routes

Select Option 3, Routes, and the Update IOA Routes screen is displayed:

Figure 37 Update IOA Routes screen

From this screen you can add a new route for KOA, by typing Add in the COMMAND field and pressing Enter.

You can also using the options shown in the following table to perform the actions shown in the table.
Table 48  Options in the Update IOA Routes screen

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Deletes an existing route. For more information, see Delete an IOA Route (on page 145).</td>
</tr>
<tr>
<td>A</td>
<td>Adds a route for KOA. This code performs the same function as the ADD command. For more information, see Add Route (on page 145).</td>
</tr>
</tbody>
</table>

Add Route

When you type Add in the COMMAND field, or A in the Sel field, the Add IOA Route screen is displayed:

Figure 38  Add IOA Route screen

For each IOA route that you want to add, insert values for the parameters shown in the following table:

Table 49  Parameters in the Add IOA Routes screen

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFID/System</td>
<td>MVS SMFID of the computer</td>
</tr>
<tr>
<td>Application</td>
<td>A 4-character common prefix for the KOA logical terminals. The prefix must be unique for each computer.</td>
</tr>
<tr>
<td>Node</td>
<td>Number of KOA terminals defined to VTAM for the computer.</td>
</tr>
</tbody>
</table>

When you are satisfied with the parameter values, press Enter to return to the Update IOA Routes screen, from which you can repeat this procedure to add another IOA route.

When you are satisfied with the values you have entered, press PF03/PF15 to save the defined IOA routes and exit this screen. The Logical Terminals and IOA Routes Menu screen is redisplayed.

Delete an IOA Route

In the Update IOA Routes screen, type the letter D in the Sel field of any row containing an IOA route, then press Enter. The IOA route definition is deleted.
When you have deleted the IOA routes you wished to delete, press PF03/PF15 to exit this screen. The Logical Terminals and IOA Routes Menu screen is redisplayed.

Build the parameter member

Select Option 4, Build, and the values you have inserted are saved in the IOAKPRM member in the IOA.PARM library.

You can then press PF03/PF15 to exit the Logical Terminals and Routes Menu screen.

Step 22.2 – Define KOA logical "Terminals" in VTAM

KOA runs as a VTAM application that simulates a terminal. KOA terminals, which are actually VTAM applications, are defined in VTAM in the same way as other logical units in the SNA network. A pool of KOA terminals must be defined for each computer in which KOA scripts can run.

The number of KOA logical terminals defined in VTAM should be greater than the maximum number of KOA scripts that can run in parallel. For example, if 19 KOA scripts are to be run in parallel, you must define at least 20 KOA logical terminals.

MAJOR NODES member in the VTAM definition library, which is usually called SYS1.VTAMLST. In the MAJOR NODES member, there is a separate library definition for each computer.

Within the terminal pool, each terminal name must consist of a prefix comprised of 1 through 4 characters, followed by a 4-digit index.

Example

Assume that the site has two computers with MVS SMF IDs SYSX and SYSY.

The KOAAPLX member in the SYS1.VTAMLST library in SYSX defines a pool of 50 KOA logical terminals, as follows:

KOAAPLX VBUILD TYPE=APPL
KOAX0001 APPL EAS=1,ACBNAME=KOAX0001
KOAX0002 APPL EAS=1,ACBNAME=KOAX0002
...
KOAX0050 APPL EAS=1,ACBNAME=KOAX0050

The KOAAPLY member in the SYS1.VTAMLST library in SYSY defines a pool of another 20 KOA logical terminals, as follows:

KOAAPLY VBUILD TYPE=APPL
KOAY0001 APPL EAS=1,ACBNAME=KOAY0001
KOAY0002 APPL EAS=1,ACBNAME=KOAY0002
...

KOAY0001 APPL EAS=1,ACBNAME=KOAY0001,

The MTABKOA member in the INSTWORK library contains a sample MODETAB definition.

The following IBM LOGMODEs are available in the default ISTINCLM table supplied with VTAM:

<table>
<thead>
<tr>
<th>Logmode Name</th>
<th>Terminal Type</th>
<th>Screen Size</th>
<th>Extended Data Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4A32782</td>
<td>2</td>
<td>24 x 80</td>
<td>No</td>
</tr>
<tr>
<td>SNX32702</td>
<td>2</td>
<td>24 x 80</td>
<td>Yes</td>
</tr>
<tr>
<td>D4A32783</td>
<td>3</td>
<td>32 x 80</td>
<td>No</td>
</tr>
<tr>
<td>SNX32703</td>
<td>3</td>
<td>32 x 80</td>
<td>Yes</td>
</tr>
<tr>
<td>D4A32784</td>
<td>4</td>
<td>43 x 80</td>
<td>No</td>
</tr>
<tr>
<td>SNX32704</td>
<td>4</td>
<td>43 x 80</td>
<td>Yes</td>
</tr>
<tr>
<td>D4A32785</td>
<td>5</td>
<td>27 x 132</td>
<td>No</td>
</tr>
<tr>
<td>SNX32705</td>
<td>5</td>
<td>27 x 132</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Step 22.4 – Activate VTAM definitions

VTAM definitions must be active before a KOA script can be used.

To activate the definitions manually, use the following VTAM command:

V NET,ACT,ID=major_node_name

Issue this command in each computer where the definitions should be active. For example, in SYSX:

V NET,ACT,ID=KOAAPLX

To activate the definitions permanently, modify the ATCCONxx member (used when VTAM is initialized) in the VTAM definition library of each computer. For example, the ATCCONxx member in SYSX contains the MAJOR NODE name KOAAPLX.

Step 22.5 – CICS considerations (optional)

CICS requires that each terminal or terminal type that communicates with it must be defined to CICS before a connection can be established. From the CICS point of view, there is no difference between a real LUTYPE2 terminal and a KOA terminal. Therefore, the KOA terminals must be defined in the same way as all the other terminals are defined. There are several methods for defining a terminal to CICS:

- Auto-Install program
- RDO – Resource Definition Online
- TCT

The best method for defining KOA terminals is Auto-Install. This is the most flexible method, since there is no need to define each individual terminal and the characteristics of the terminal, such as screen size, can be different in each session. A corresponding TYPETERM and terminal MODEL should exist to reflect all different KOA terminals, LUTYPE2 models 2, 3, 4, and 5, with or without extended data stream. At logon, the CICS Auto-Install program chooses a corresponding terminal model according to the LOGMODE supplied by KOA.

Other methods, such as RDO and TCT, can be used, but they are not as flexible. Each KOA terminal should be defined and the characteristics of the terminal should be specified. The LOGMODE parameters that were supplied during session initiation are ignored. This means that KOA is not able to specify the characteristics of the terminal according to script commands such as SCREENSIZE and COLOR.

Step 22.6 – IMS/DC considerations (optional)

IMS/DC requires that each terminal used to communicate with it must be defined to IMS/DC before a connection can be established. From the IMS/DC point of view, there is no difference between a real SNA LUTYPE2 terminal and a KOA terminal. Therefore, each KOA terminal must be defined as part of the IMS/DC GEN. This fixes the characteristics of the terminal, and KOA is not able to specify the characteristics of the terminal according to script commands such as SCREENSIZE and COLOR.

Step 22.7 – Other VTAM applications (optional)

Most VTAM applications, such as OMEGAMON, TSO, and NETVIEW, can communicate with any terminal that initiates a session with them. This means that there is no need for additional specifications to communicate between KOA and these applications.
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Step 23 – Support for other products (optional)
Perform the following steps to support other products that are installed at your site.

Step 23.1 – Support for LIBRARIAN (optional)
Control-M can submit jobs from members in LIBRARIAN libraries.
To install LIBRARIAN support, you must install the ELIPS TSO-LIBRARIAN interface. This interface supplies the necessary TSO and ISPF services to Control-M.
LIBRARIAN libraries with any DSORG except PO are supported. To include LIBRARIAN support in Control-M, select this step and edit member LINKLIBR in the INSTWORK library.
Change the library referenced by the SYSLIB DD statement to the LIBRARIAN load modules library, submit the job, and save the member.
All steps must complete with a condition code of 0.
Sample Exit CTMX014L must be installed.
All appropriate LIBRARIAN files should be added to the ISPxLIB DD statements in the IOA TSO logon procedures.
Repeat this process each time you change your LIBRARIAN version. Otherwise, submission results may be unpredictable.
When Control-M is installed, LIBRARIAN option "-INC" is not resolved during job submission.
To support the LIBRARIAN-INC command, apply Wish WI0880, located in the IOADFLT member in the IOA IOAENV library.
Because an error in the above-mentioned linkage procedures can cause serious errors in the Control-M monitor, you must test LIBRARIAN support under the AutoEdit submission simulation before attempting to install it under the Control-M monitor.

Step 23.2 – Support for PANVALET (optional)
Control-M may submit jobs from members in PANVALET libraries. To include PANVALET support in Control-M, select this step and edit member LINKPANV member in the INSTWORK library.
Change the library defined by the SYSLIB DD statement to the PANVALET load modules library, submit the job, and save the member.
All steps must complete with a condition code of 0.
Repeat this process each time you change your PANVALET version. Otherwise, submission results may be unpredictable.
BMC Software recommends that PANVALET support be tested under the AutoEdit submission simulation before attempting it under the Control-M monitor. An error in the above-mentioned linkage procedures may cause serious errors in the Control-M monitor.
For PANVALET versions 14 and later, certain modules are fetched dynamically during execution. For this reason, the PANVALET Load library must be referenced in either the STEPLIB DD statement of the Control-M monitor procedure or the MVS Linklist library.
The PANVALET LOAD library must also be APF-authorized.
Step 24 – Installation conclusion

This step is used to indicate that IOA installation is complete.

After installation of the products is complete, JCL procedures, User Exits, and other components of the product can be customized to further meet your site requirements. BMC Software recommends that you log all such changes in a readily available customization log. This log can then be used in future installations of the product, or when copying the product into additional environments.

BMC Software recommends that you include the following details for each entry in the customization log:

- the serial number and identifier
- the date of the change
- the function and purpose of the change
- a description of the change

Step 24.1 – Indicate installation concluded

This step updates the Status field in the Environment Table to indicate that IOA is installed.

Step 24.2 – Back up the installed environment

BMC Software recommends that you create a current backup of the IOA libraries.

When backing up the installed environment, verify that the base libraries, installation libraries, operations libraries, and SMP-related data sets are backed up. This backup can help you to restore the original IOA environment when required, so that IOA or an INCONTROL product can be reinstalled if a significant number of changes are made to the parameters, or when an unrecoverable failure occurs during installation.
Installing Control-M

This section describes the steps required to install Control-M. The installation procedure contains step-by-step instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-M installation below.

Before you begin

For a full list of Control-M libraries, A INCONTROL product data sets (on page 450).

To prepare for the ICE installation, do the following:
1. Open the IOA Installation—Main menu.
2. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter.
3. Type CTM in the Product ID field.

The Major Steps Selection screen for Control-M is displayed.

You are now ready to install Control-M using ICE.

Control-M step checklist

The following list is a summary of the steps required to install Control-M. Detailed step-by-step instructions follow.

- Step 1 – Planning (on page 152)
- Step 2 – Specify Control-M parameters (on page 152)
- Step 3 – Specify CTM target configuration parameters (on page 164)
- Step 4 – Control-M installation jobs (on page 169)
- Step 5 – Control-M customization process (on page 170)
- Step 6 – Install Control-M ISPF support (optional) (on page 171)
- Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172)
- Step 8 – JES considerations (on page 176)
- Step 9 – Control-M amendments (on page 180)
- Step 10 – Control-M customization (on page 184)
- Step 11 – Control-M VM support (optional) (on page 186)
- Step 12 – Control-M installation conclusion (on page 187)
Installation steps

Follow the major and minor steps below to install Control-M using ICE. Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-M installation sheet (on page 544) will help you determine the items you should consider before installing Control-M.

Find out if you require input from system programmers, security administrators and other personnel at your site. Check whether any system changes that require special authorization and processing are necessary. Before proceeding with Control-M installation verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?

This step verifies that you have filled in the Control-M planning sheet. When you have done so, do the following:

1. Press PF03/PF15 to exit this screen.
2. Type C in the Sel field.
3. Press Enter.

The step will be marked as completed.

Step 2 – Specify Control-M parameters

Insert values for the installation parameters, which are described briefly in this section.

Step 2.1 – Control-M operational parameters

Table 51  Operational parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCPRFM</td>
<td>The first three characters of the Control-M JCL procedures after they are copied to the local MVS procedure library. The value specified for this parameter must not be the same as that specified for the PROCPRFx parameter in IOA and other INCONTROL products.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Default: CTM</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| INTERVLM  | Sleeping interval of Control-M monitor, in hundredths of a second. The monitor becomes active at the specified intervals and determines which tasks are required from it.  
- Minimum: 10 (0.10 seconds)  
- Maximum: 9999  
- Default: 600 (6 seconds)  
Additionally, the sleeping interval can be set by the following modify command:  
`F CONTROLM,INTERVAL=xxx`  
If you use this command to modify the sleeping interval, you must shut down and then restart the Control-M monitor for this customization to take effect. For more information on this modify command, see the Control-M chapter of the *INCONTROL for z/OS Administrator Guide*.  
Note: The sleeping interval is relevant only when there is little or no Control-M monitor activity. |
| NONSWAPM  | Whether to make the Control-M monitor non-swappable. Valid values are:  
- N - The Control-M monitor does not make itself non-swappable at initialization time.  
BMC Software recommends that you make Control-M non-swappable. Otherwise, Control-M is swapped out on each interval, which may slow down the monitor.  
This option does not change the storage consumption and paging activity of the Control-M monitor. Setting NONSWAP to Y only orders MVS to alter its regular swapping algorithm to reduce overhead. |
### Parameter | Description
--- | ---
**CTMPLEX** | Whether to activate the CTMPLEX facility, that is, run the Control-M monitor in Sysplex mode.
- Mandatory
Valid values are:
- **Y** - Activate the CTMPLEX facility. If CTMPLEX is set to Y, you must build the Control-M Sysplex member. For details, see Step 2.2 – Build Control-M Sysplex member (optional) (on page 160).
- **N** - Do not activate the CTMPLEX facility. Default.
For more information about CTMPLEX, see the Control-M chapter in the *INCONTROL for z/OS Administrator Guide*.

**HLDCLAS** | The automatic held output class to which Control-M sends the MSGCLASS output of the job.
- Mandatory
- Default: X
For more information about the HLDCLAS parameter, see *Installation considerations* (on page 193).
Warning: If you modify this parameter while jobs are executing using the existing settings, Control-M, when restarted, cannot read the sysouts of those jobs.

**PRTCLAS** | Output class to be dynamically changed on DD statements containing sysout parameters relating to jobs submitted by Control-M.
The class is changed to the HLDCLAS to prevent printing of the output of the job separately from the syslog output.
The change is applied only to the JCL records that are submitted by Control-M.
If this parameter is left blank, DD statements containing sysout parameters are not changed.
Default is blank.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST</td>
<td>Whether to activate the History Jobs file option.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Activate this option.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not activate this option. Default.</td>
</tr>
<tr>
<td></td>
<td>For more information, see the following section: Introduction to Control-M -&gt; Functional Approach -&gt; Expanded Control-M Functionality -&gt; History Jobs File in the Control-M for z/OS User Guide.</td>
</tr>
<tr>
<td>JRNL</td>
<td>Whether to activate the Control-M AJF Journaling option.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Activate this option.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Do not activate this option. Default.</td>
</tr>
<tr>
<td></td>
<td>For more information, see the following section: Introduction to Control-M -&gt; Functional Approach -&gt; Expanded Control-M Functionality -&gt; Journaling and Restoration Capability in the Control-M for z/OS User Guide and see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td>REUSAPPL</td>
<td>Specifies the prefix of the application parameter in the Job Schedule Definition, for jobs to be handled by AJF Space Reuse Facility.</td>
</tr>
<tr>
<td></td>
<td>Valid value is a string not longer than 8 characters. The default value is blank, which means that all jobs may be processed by the AJF Space Reuse Facility (if the value of the REUSTIME parameter is not zero).</td>
</tr>
<tr>
<td></td>
<td>For further information see the discussion of the Active Jobs File Space Reuse Facility in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td>REUSTIME</td>
<td>Specifies the retention period (in minutes) for a job in Active Jobs File before it is deleted by AJF Space Reuse facility.</td>
</tr>
<tr>
<td></td>
<td>Valid values are from 0 to 9999 minutes. Default is zero, which means that AJF Space Reuse Facility is inactive.</td>
</tr>
<tr>
<td></td>
<td>For further information see the discussion of the Active Jobs File Space Reuse Facility in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **DOCU**  | Whether the third party vendor product DOCU/TEXT is installed at the site.  
  ▪ Mandatory  
  Valid values are:  
  ▪ Y – DOCU/TEXT is installed at the site.  
  ▪ N – DOCU/TEXT is not installed at the site. Default. |
| **J SCAN** | Whether a third party vendor JOB/SCAN or PRO/J CL product is installed at the site.  
  ▪ Mandatory  
  Valid values are:  
  ▪ Y – A JOB/SCAN or PRO/J CL product is installed at the site.  
  ▪ N – A JOB/SCAN or PRO/J CL product is not installed at the site. Default. |
Parameter | Description
--- | ---
DAYTIMEM | The start time of the work day at your site.

- Mandatory

The format is:

`DAYTIMEM = +hhmm or -hhmm`

where:

- + is after midnight
- - is before midnight
- `hhmm` is the time, in hours and minutes format
- Default: +1200.

This start time defines the beginning of a new work day for Control-M.

Examples

- If DAYTIMEM is set to +1000, the hours between midnight and 10 AM are considered part of the previous work day, so that 6 AM on February 10 is part of the February 9 Control-M work day.
- If DAYTIMEM is set to -2200, the hours between 10 PM and midnight are considered part of the Control-M work day of the next date.

Every day at the specified time, the Control-M monitor performs a series of procedures that start a New Day under Control-M. The New Day procedure cleans the Active Jobs File of job orders that completed executing OK and job orders with a MAXWAIT that has expired.

For more information about the monitor daily workflow, see the INCONTROL for z/OS Administrator Guide.

Most installations use a DAYTIMEM between +0900 and +1400.

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Warning! BMC Software recommends that you do not change this parameter once Control-M has been in operation in a production environment, or you may introduce unwanted shifts in scheduling.

If, despite this, you want to modify the value of this parameter in your production environment, you must not do so between the time set by the current value of DAYTIMEM and the next occurrence of the time that you intend to set for the new value. If you modify DAYTIMEM during this period, you will cause the following:

- The New Day procedure for the day on which you make the change will rerun.
- This rerun will fail, because the New Day procedure has already run. The CTML03W and CTML06W messages will be issued.
- You will have to stop Control-M, or Control-M will continue to try to rerun the erroneous New Day procedure.

Examples

If your existing DAYTIMEM value is 12:00 and you want to change it to 18:00, you must change the value only after 18:00 and before the next occurrence of 12:00.

If your existing DAYTIMEM value is 18:00, and you want to change it to 12:00, you must change the value only after 12:00 and before the next occurrence of 18:00.

**ARMELMNT**

The element name that represents Control-M as an element of automatic restart management (ARM). This element name must exactly match the ELEMENT and ELEMENT_NAME ARM policy parameters, or the operating system will use the default policy.

For more information, see the section on ARM support in the Control-M chapter of the INCONTROL for z/OS Administrator Guide, and see "ARMELMNT" in the Control-M customization considerations section in the Customizing INCONTROL products chapter in the INCONTROL for z/OS Installation Guide: Customizing.

Sysout archive allocation attributes

The following ARCUNIT, ARCSPECT, ARCPRI # and ARCSEC# parameters control the sysout archive data set allocations. (The sysout archive is associated with the DO SYSOUT F command.) Whenever the Control-M monitor activates a sysout archiving request, an archive data set is allocated using the following allocation parameters:

UNIT=arcunit,SPACE=(arcspect,(arcpri#,arcsec#),RLSE)
### Table 52  Sysout archive allocation parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCUNIT</td>
<td>Unit name for the sysout archive data set. Maximum length: 8 characters. The physical address of a volume can be specified but this method is not recommended. BMC Software recommends specifying a unit that spans a few volumes, such as SYSDA, 3390, and so on. The volumes must be defined in member VATLSTnn in SYS1.PARMLIB with an attribute of STORAGE.</td>
</tr>
<tr>
<td>ARCSPECT</td>
<td>Allocation type for the sysout archive data set. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- BLK. Default.</td>
</tr>
<tr>
<td></td>
<td>- TRK</td>
</tr>
<tr>
<td></td>
<td>- CYL</td>
</tr>
<tr>
<td>ARCPRI#</td>
<td>Non-zero primary allocation size for the sysout archive data set.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits.</td>
</tr>
<tr>
<td></td>
<td>- Default: 200.</td>
</tr>
<tr>
<td>ARCSEC#</td>
<td>Secondary allocation size for the sysout archive data set.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits.</td>
</tr>
<tr>
<td></td>
<td>- Default: 500</td>
</tr>
<tr>
<td>ARCRET</td>
<td>Archive retention period in days.</td>
</tr>
<tr>
<td></td>
<td>- Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- 0 through 9999</td>
</tr>
<tr>
<td></td>
<td>- ‘’ (Blank) – there is no retention period</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 4 digits</td>
</tr>
<tr>
<td></td>
<td>- Default: 0</td>
</tr>
<tr>
<td>ARCHFBA</td>
<td>Whether to create the Archive file with the FBA or the FB record format.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Create the Archive file with the FBA record format.</td>
</tr>
<tr>
<td></td>
<td>- N - Create the Archive file with the FB record format. Default.</td>
</tr>
</tbody>
</table>

In previous versions, this was optional Wish WM1733.
The archive data set’s block size (BLKSIZE) is automatically calculated by Control-M. The logical record length (LRECL) is copied from the input SYSOUT file. The maximum LRECL allowed is 256 characters.

Step 2.2 – Build Control-M Sysplex member (optional)

If the CTMPLEX parameter is set to Y in Step 2.1, this step is mandatory.

The CTMPLEX parameter member specifies Control-M Sysplex Installation Parameters. This member contains global parameters for both the entire Control-M Sysplex environment and parameters for each Sysplex member in which the LSM monitor may run.

For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Select this step and press Enter. The Update Control-M Plex (CTMPLEX) screen is displayed.

Figure 39 Update Control-M Plex (CTMPLEX) screen

<table>
<thead>
<tr>
<th>Table Header</th>
<th>Update Control-M Plex (CTMPLEX)</th>
<th>Row 1 of 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ===&gt;</td>
<td>SCROLL ==&gt; CSR</td>
<td></td>
</tr>
<tr>
<td>Codes in the Sel field:</td>
<td>Command and Keys:</td>
<td></td>
</tr>
<tr>
<td>D Delete SYSID</td>
<td>ADD Add SYSID D</td>
<td></td>
</tr>
<tr>
<td>A Add SYSID D</td>
<td>CANCEL Exit without Save</td>
<td></td>
</tr>
<tr>
<td>PF3/End Exit and Save</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure name ==&gt; STRUCTNAME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work balancing indicator ==&gt; N (Y/N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. number of entries in structure ==&gt; 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sel</td>
<td>SYSTEMD Relative Maxi num PRI ORI TY</td>
<td></td>
</tr>
<tr>
<td>SYS6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Global CTMPEX parameters

In the following table, the name in parentheses in the Parameters column is the name of the parameter in the CTMPEX member that is built in this Step.

Table 53  Global CTMPEX parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure name (STRUCTNM)</td>
<td>The name of the Coupling Facility structure to be used during CTMPEX installation. The Coupling Facility name should be the same name that appears in the active Coupling Facility resource management (CFRM) policy governing the use of the Coupling facility at this installation.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>The Coupling facility structure used by CTMPEX should be available for all Sysplex members in which GSM and LSM monitors may run.</td>
</tr>
<tr>
<td></td>
<td>For more information regarding CFRM administration, see the IBM MVS documentation about the Format Utility for Couple Data Sets (IXCL1DSU). For example, you can find such documentation in &quot;Appendix B. Format Utility for Couple Data Sets&quot; in z/OS V1Rx MVS Setting up a Sysplex.</td>
</tr>
<tr>
<td>Work balancing indicator (BALANCEM)</td>
<td>Workload Balancing mode indicator.</td>
</tr>
<tr>
<td>Max. number of entries in structure (MAXENTRY)</td>
<td>The size of the CTMPEX Coupling Facility structure in units of 4KB blocks. If a smaller structure size is specified in the active CFRM policy, the size from the CFRM policy is used.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Each 4KB block may contain from 1 through 4 jobs, depending on the amount of data in the job scheduling definition. The size of the CTMPEX Coupling Facility should be large enough to include all active jobs, that is, jobs that passed the Select phase and are &quot;Eligible for Run&quot;, but not ended yet, at any moment.</td>
</tr>
<tr>
<td></td>
<td>For example, if 1,000 jobs are active and each job is 2 records, you must define at least 500 4KB blocks for the size of the CTMPEX Coupling Facility structure.</td>
</tr>
<tr>
<td>Recovery time interval (RECOVERT)</td>
<td>The time interval (in minutes) between attempts to automatically recover the CTMPEX Facility in case of Coupling Facility failures. A value of 0 (default) means that no automatic recovery procedure takes place.</td>
</tr>
<tr>
<td>Max. number of recovery attempts (RECOVERM)</td>
<td>The maximum number of attempts to automatically recover the CTMPEX Facility in case of Coupling Facility failures. A value of 0 (default) means that there is no limit to the number of attempts.</td>
</tr>
</tbody>
</table>
System(s) CTMPEX parameters

For each computer in a Sysplex in which an LSM monitor may run, there is a corresponding section labeled SYSTEM in the CTMPEX member. The following parameters should be specified.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTEMID</td>
<td>The system identifier. All the systems you specify should be the members of the same Sysplex. The corresponding JES subsystems should share the same SPOOL and CHECKPOINT data sets (that is, the system should be a JES2 multi-access spool (MAS) configuration or a JES3 complex).</td>
</tr>
<tr>
<td>Relative (RELCAP)</td>
<td>Relative capacity of the Sysplex member. This is the number of active jobs (that is, jobs that passed the selected phase but have not yet ended) that typically may be processed concurrently by the Control-M monitor on this system. This number is used by the workload balancing mechanism when the CTMPEX Global Monitor looks for a Monitor that should process a new active job. The GSM selects the “least busy” CTM Monitor, that is, the one having the smallest percentage of active jobs processed by the monitor in relation to the RELCAP number of active jobs for that member. If work balancing mode is disabled, this parameter is ignored.</td>
</tr>
<tr>
<td>Maximum (MAXCAP)</td>
<td>Maximum number of active jobs that may be concurrently processed by the local monitor on this system. This limit is in effect for both workload balancing and non-workload balancing modes. If workload balancing is enabled, the MAXCAP parameter indicates the maximum number of jobs that can be passed to each Local monitor by the Global monitor in the event that each Local monitor has reached 100% utilization based on the value specified in the RELCAP parameter for each monitor. If workload balancing is disabled, the MAXCAP parameter indicates the maximum number of concurrent jobs that can be activated by each Local monitor.</td>
</tr>
<tr>
<td>PRIORITY</td>
<td>Priority in the selection of the Local monitor to operate as the Global monitor if the Global monitor fails or stops. If the Global monitor fails or stops, the active Local monitor with the highest PRIORITY value becomes the Global monitor. Valid values are from 0 through 99. The default is 0.</td>
</tr>
</tbody>
</table>
Step 2.3 – Control-M/CM App. Server parameters (optional)

The following table lists the parameters that you need to specify in CTMPARM to configure the Control-M Configuration Manager application server. These parameters must be specified in the CTMAA section of CTMPARM.

These parameters identify the Control-M components that Control-M Configuration Manager controls, and determines whether the Control-M Configuration Manager application server should attempt to change the status of the Control-M monitor, and if so, using which method.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GATEPROC</td>
<td>JCL procedure name of the IOAGATE that starts the CTMAS that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory.</td>
</tr>
<tr>
<td>GATEJOB</td>
<td>Job name of the IOAGATE that starts the CTMAS that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td>CTMASJOB</td>
<td>Job name of the Control-M application server (CTMAS) that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td>CTMPROC</td>
<td>JCL procedure name of the Control-M monitor that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td>CMEMPROC</td>
<td>JCL procedure name of the CMEM or Control-O monitor that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ If Control-O will be installed, the default name will be &lt;CTO-proc prefix&gt;TROLO.</td>
</tr>
<tr>
<td></td>
<td>▪ If Control-O will not be installed, the default name will be &lt;CTM-proc prefix&gt;CMEM.</td>
</tr>
<tr>
<td>ECAPARM</td>
<td>Name of the parameter member that contains the definitions of the Control-M application server that is to be controlled by CCM. 1 through 8 characters.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory.</td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
CHANID | The value of the ID= parameter in the channel definition of the Control-M application server that is to be controlled by CCM. 2 characters. Optional. If CHANID is not specified, the CCM application server will use the first channel defined in the parameter member specified in ECAPARM.

STATACT | Controls whether the Control-M Configuration Manager application server should change the status of the Control-M monitor if the actual status of the monitor differs from its desired status. Valid values are:
- **NONE** - No attempt is made to change the status of the Control-M monitor, even if the desired status is different from the actual status. Default.
- **MSG** - The Control-M Configuration Manager application server issues a message when the desired state of the Control-M monitor is different from its actual state.
- **CMD** - The Control-M Configuration Manager application server should issue an MVS START command for the Control-M monitor if its desired state is up and its actual status is down. The Control-M Configuration Manager application server should issue an MVS STOP command if its desired state is down and its actual state is up.

STATGPER | Minimum interval in seconds between two successive attempts at changing the status of the Control-M monitor. Numeric value; 0 through 999. Optional. Default is 60.

---

**Step 3 - Specify CTM target configuration parameters**

Specify values for the parameters listed below.

**Step 3.1 - Control-M libraries and repository**

Enter values for the parameters shown in the following table:
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 56 Libraries and repository parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| ILPREFM   | High level data set name prefixes of Control-M installation libraries.  
  ▪ Mandatory  
  ▪ Maximum length: 35 characters.  
  The value specified for this parameter must be different from the values specified for ILPREFx parameters of other products. |
| ILUNITM   | Disk unit on which Control-M Installation libraries are placed.  
  Specify a generic unit (for example, 3390 – not SYSDA). |
| ILVOLM    | Serial number of the volume on which the Control-M installation libraries are placed. |
| OLPREFM   | High level data set name prefixes of Control-M Operations libraries.  
  ▪ Mandatory  
  ▪ Maximum length is 27 characters. |
| OLUNITM   | Disk unit on which Control-M Operations libraries are placed.  
  Specify a generic unit (for example, 3390 – not SYSDA). |
| OLVOLM    | Volume serial number on which Control-M Operations libraries are placed. |
| DBPREFM   | High level data set name prefixes of Control-M Repository files.  
  ▪ Mandatory  
  ▪ Maximum: 27 characters. |
| DBUNIITM  | Unit name for Control-M repository.  
  Specify a generic unit (such as 3390 – not SYSDA). |
<p>| DBVOLM    | Volume serial number for Control-M repository. |</p>
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATFILE</td>
<td>Name of the Control-M Job Execution Statistics VSAM file. BMC Software recommends that the ILPREFM prefix qualifier be used to name this file.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 38 characters</td>
</tr>
<tr>
<td></td>
<td>The installation default space allocation for this file is 5 cylinders. To re-size (expand) the STATFILE, adjust the STTPSZ and STTSSIZE parameters using Step 2.2 of the Control-M customization in the ICE Customization process. For more information, see the <em>INCONTROL for z/OS Installation Guide: Customizing</em>.</td>
</tr>
<tr>
<td>VSUNITM</td>
<td>Unit name for the Control-M Statistics VSAM file.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>VSVOLM</td>
<td>Volume name for the Control-M Statistics VSAM file.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
</tbody>
</table>
Step 3.2 – Control-M repository characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AJFSIZE</strong></td>
<td>Maximum number of records in the Active Jobs file (AJF). The AJF contains active job orders currently under the supervision of the Control-M monitor. BMC Software recommends that you set the AJFSIZE parameter to a figure not less than the maximum number of jobs that can reside in the AJF. The entire AJF is loaded by the Control-M monitor into its address space.</td>
</tr>
<tr>
<td></td>
<td>- Minimum: 1000</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits</td>
</tr>
<tr>
<td></td>
<td>- Default: 1000</td>
</tr>
<tr>
<td></td>
<td>For more information, see the HISTSIZE parameter in this table, and the Control-M chapter in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td><strong>RESBQNT#</strong></td>
<td>Maximum number of Quantitative resources to be defined in the Control-M Resources file and kept for Base slots.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Minimum: 100</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 1169 (resources)</td>
</tr>
<tr>
<td></td>
<td>- Default: 300</td>
</tr>
<tr>
<td></td>
<td>For more information, see the RESQNT# parameter in this table.</td>
</tr>
<tr>
<td><strong>RESQNT#</strong></td>
<td>Number of physical records in the Control-M Resources file dedicated for Quantitative resources. Each record can hold approximately 1100 slots.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Minimum: 1 record</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 20 records, including the first record that is used for Base slots.</td>
</tr>
<tr>
<td></td>
<td>- Default: 5</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td>Note: The Resources file contains two types of slots:</td>
</tr>
<tr>
<td></td>
<td>- Base slots – These define the resource, by resource name and maximum amount. While the Control-M monitor is running, it aggregates the quantities of resources in use by individual jobs in these Base slots. Because these Base slots can only reside in the first record of the Resources file, the number of Base slots is limited to 1169. Base slots stay in that record until deleted by the operator, IOACND, or a Control-O rule.</td>
</tr>
<tr>
<td></td>
<td>- Use slots – Whenever a job holds a resource, the Control-M monitor allocates a Use slot for that job. Use slots can reside in any record allocated for Quantitative resources in the Resources file. When the job finishes executing and releases the resource, the Use slot allocated for that job is freed.</td>
</tr>
<tr>
<td>RESCNTL#</td>
<td>Number of physical records in the Control-M Resources file dedicated for Control resources. Each record can hold approximately 1100 resources.</td>
</tr>
<tr>
<td></td>
<td>- Minimum: 1 record</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 20 (records)</td>
</tr>
<tr>
<td></td>
<td>- Default: 5</td>
</tr>
<tr>
<td>HSTSIZE</td>
<td>Maximum number of records in the History Jobs file. The value of this parameter must not be less than the value of the AJFSIZE parameter, which is described in this table, because jobs deleted from the Active Jobs file by the New Day procedure are first copied to the History Jobs file. The optimum value depends on the number of jobs for which retention is specified and the retention period specified for each job. The recommended value is twice the value of the AJFSIZE parameter.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits.</td>
</tr>
<tr>
<td></td>
<td>- Default: 2000 (records).</td>
</tr>
</tbody>
</table>

For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JNLPSIZ</td>
<td>Primary space allocation (cylinders) for the Journal file.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits</td>
</tr>
<tr>
<td></td>
<td>- Default: 10 (cylinders).</td>
</tr>
<tr>
<td></td>
<td>For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JNLSSIZ</th>
<th>Secondary space allocation (cylinders) for the Journal file.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 7 digits</td>
</tr>
<tr>
<td></td>
<td>- Default: 10 (cylinders)</td>
</tr>
<tr>
<td></td>
<td>For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
</tbody>
</table>

---

**Step 4 – Control-M installation jobs**

Before running the installation jobs, perform the following steps.

**Step 4.1 – Parameter verification**

In addition to the validation checks that are performed during the data entry phase, this step runs a program to verify that various installation parameters do not contain conflicting values. For example, the prefix of the Control-M installation libraries is checked to verify that it is not the same as other INCONTROL product prefixes.

When the step completes, it is marked complete.

If conflicts are found, a list of warning messages is displayed. The list displays the current values of the conflicting parameters and the required corrective action.

**Step 4.2 – Save parameters into product libraries**

This step saves all the parameters specified in ICE. Wait until processing completes. When the step ends, it is marked complete.

This step customizes the CTMPARM and DEFPARM members in the IOA.PARM library.
Step 4.3 – Before you proceed

You have completed the data entry of Control-M installation parameters in ICE. The following step submits a job that allocates data sets and tailors members in several libraries. Verify that all the values you have specified for the parameters are correct; otherwise, any changes in the parameters may require extensive manual modifications.

Step 4.4 – Install Control-M libraries

The INSTALLM job in the IOA INSTWORK library loads the Control-M libraries. The member contains JCL for

- allocating the Control-M libraries
- loading Control-M libraries
- performing JCL adaptations of certain Control-M members

Submit the job and verify that all steps complete with a condition code of 0.

Step 4.5 – Indicate Control-M libraries installed

This step indicates that Control-M libraries were installed. When the process completes, this step is marked complete.

Step 5 – Control-M customization process

Perform the steps below to format Control-M data sets. When completed, mark this step complete.

Step 5.1 – Format Control-M repository

The FORMCTM job creates and formats the following data sets in the Control-M Repository:

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKP</td>
<td>Control-M Active Jobs file (AJF)</td>
</tr>
<tr>
<td>BKP</td>
<td>Control-M Active Jobs file—backup</td>
</tr>
<tr>
<td>STATFILE</td>
<td>Control-M Job Execution Statistics file</td>
</tr>
<tr>
<td>GRF</td>
<td>Control-M Job Dependencies file</td>
</tr>
<tr>
<td>RES</td>
<td>Control-M Resources file</td>
</tr>
</tbody>
</table>

If the appropriate parameter is set to Yes in a previous step, the FORMCTM job also creates and formats the following data sets:
Table 59  **Data sets formatted by the FORMCTM job if parameter set to Y**

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HST</td>
<td>Control-M History Jobs file, if the HIST parameter is set to Y</td>
</tr>
<tr>
<td>JNL</td>
<td>Control-M Journaling file, if the JRNL parameter is set to Y</td>
</tr>
<tr>
<td>BKPJNL</td>
<td>Control-M Journaling file (backup), if the JRNL parameter is set to Y</td>
</tr>
<tr>
<td>CKPJNL</td>
<td>Control-M Journaling AJF Checkpoint file, if the JRNL parameter is set to Y</td>
</tr>
<tr>
<td>CNDJNL</td>
<td>Control-M Journaling CND Checkpoint file, if the JRNL parameter is set to Y</td>
</tr>
</tbody>
</table>

If the DUALDB IOA installation parameter is set to Y, the following data set is formatted:

**Table 60  Data set formatted if the DUALDB parameter is set to Y**

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTCKP</td>
<td>Control-M Mirror (Dual) Active Jobs file</td>
</tr>
</tbody>
</table>

Submit the job and verify that all job steps complete with a condition code of 0.

**Step 5.2 – Copy Control-M started tasks to site library**

The COPYCTMP job copies Control-M started tasks from IOA PROCJCL library into the site library according to values specified earlier.

Submit the job and verify that all steps complete with a condition code of 0.

**Step 6 – Install Control-M ISPF support (optional)**

Follow the steps below to install Control-M ISPF support.

1. **Enable the Quick Submit Function**

   Control-M supports a "quick submit" function that enables the user to optionally submit jobs through Control-M to the MVS spool. For a detailed description, see the Control-M for z/OS User Guide.

   Each user who replaces the TSO/ISPF SUBMIT command with the quick submit option should perform the following:

   Edit any one member and specify CTMSETSB in the command line. Subsequently, when you specify the SUB or SUBMIT command, the new function becomes active.

   **Considerations**

   - The scope of the CTMSETSB is for a SUBMIT command performed under any library with the same project name (meaning, highest qualifier). To work with a different project, you must specify the CTMSETSB command again, one for each project name.
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- To restore the original TSO/ISPF SUBMIT command, ISPF EDIT a member and specify CTMSETSB DELETE.
- Verify that the IOA LOAD library is available, using MVS LINLIST or STEPLIB, for any TSO user who requires the quick submit function.

2. Verify that CTMPSIMS is in an ISPF Skeleton library
   - Verify that the CTMPSIMS member was copied from the Control-M JCL library to an ISPF Skeleton library.

3. Copy IOA ISPF messages to an ISPF Message library
   - Verify that the IOA ISPF messages were copied or concatenated to an ISPF Message library.

4. Copy IOA ISPF panels to an ISPF panel library
   - Verify that the IOA ISPF panels were copied or concatenated to an ISPF panel library.

5. Copy IOA CLISTs to an ISPF CLIST library
   - Verify that the IOA ISPF CLISTs were copied or concatenated to an ISPF CLIST library.

Refer to A INCONTROL product data sets (on page 450) to determine the specific type of IOA ISPF libraries that must be copied or concatenated.

Step 7 – Install Event Manager (CMEM)/Control-O interface

Follow the steps below to install the Control-M Event Manager (CMEM) and the Control-O interface.

This step must be performed if the CTO IOA installation parameter is set to Y, meaning Control-O is to be installed.

Mark the step complete when you have completed all the steps.

Step 7.1 – Define a subsystem and IOA computer

The IOA subsystem may be installed before or during the installation of IOA.

Define IOA computers.

Before you proceed with installing CMEM, check and define IOA computers using Installation IOA => Customization Process => Specify IOA computers.

If the IOA subsystem is not installed, the CMEM monitor will define it the first time that CMEM is started.

Step 7.2 – CMEM communication options

The Control-M Event Manager (CMEM) communicates with Control-M through communication files. Communication can be implemented using the previously existing method (Step 7.4 - Allocate and/or format communication files (for non-Sysplex environments) (on page 173)) in any environment.

In a Sysplex environment, communication can also be implemented by the MVS System Logger Sysplex function (Step 7.5 - CMEM Sysplex configuration parameters (optional) (on page 174) and Step 7.6 - Build CMMPLEX parameter member (optional) (on page 175)).

However, all active CMEM and Control-M monitors must use the same communication method.
The monitor-to-subsystem communication file CTM2SBS is required in both Sysplex and non-Sysplex environments (Step 7.3 - Allocate subsystem communication file (on page 173)).

The MVS System Logger option (Step 7.5 - CMEM Sysplex configuration parameters (optional) (on page 174) and Step 7.6 - Build CMMPLEX parameter member (optional) (on page 175)) forces the Control-M and CMEM monitors to not start or to terminate if a CMEM or Control-M monitor is started in non-Sysplex environment or the MVS System Logger is not available.

For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide, and CMEM considerations (on page 196).

Step 7.3 – Allocate subsystem communication file

The FORMSUB1 job allocates and formats a file that is used by the Control-M monitor to communicate with all active Control-M Event Manager monitors or Control-O monitors that are active in the complex.

If you already performed this job for Control-M, do not perform it again for Control-O.

The disk on which this file is to be allocated must have the following characteristics:

- The Control-M monitor must have WRITE access to it.
- All the CMEM monitors or Control-O monitors in all computers must have READ access to it.
- The disk must not be busy, and should not be reserved for any computer in the complex; otherwise, there may be serious performance degradation in CMEM and in the Control-M monitor.
- Change the VOL and UNIT parameters to define a disk suitable for this file.

Submit the job and check for successful completion. All job steps must end with a condition code of 0.

Step 7.4 – Allocate and/or format communication files (for non-Sysplex environments)

Select this step to allocate and format communication files in a non-Sysplex environment where the MVS System Logger will not be used. For more information, see CMEM considerations (on page 196).

The FORMSUB2 job allocates and formats a file that enables the Control-M Event Manager or Control-O monitors to communicate with the Control-M monitor.

If you already performed this job for Control-M, do not perform it again for Control-O.

All actions specified below should be repeated for each computer in the computer list.

The disk on which such a file is to be allocated must have the following characteristics:

- CMEM (or Control-O) in the designated computer must have WRITE access to the file.
- The Control-M monitor must have READ access to the file.
- The disk must not be busy, and should not be reserved from any computer in the complex. Otherwise, there might be serious performance degradation in CMEM and in the Control-M monitor.

For each computer whose SYSID was specified in IOACPRM, take the following steps:

1. Change the SMFID parameter to match the related entry.
2. Change the VOL and UNIT parameters to define a disk suitable for the specified SMFID.
3. Submit the job.

The job must run in the computer whose file is being formatted during this run.
4. Check for successful completion. All job steps must end with a condition code of 0.

All communication files should be reformatted whenever a new computer is added to the computer list.

Verify that the CMEM, Control-O, and the Control-M monitors are down when formatting the subsystem communication file.

Step 7.5 – CMEM Sysplex configuration parameters (optional)

Select this step to define the Sysplex environment when the CMEM communication vehicle at your site is the MVS System Logger and not communication files. For more information, see CMEM considerations (on page 196), and the Control-M chapter in the INCONTROL for z/OS Administrator Guide. Otherwise, skip this step, skip Step 7.6 – Build CMMPLEX parameter member (optional) (on page 175), and continue with Step 7.7 – Set up CMEM table (optional) (on page 176).

If the CMEM communication vehicle at your site currently is the Communication file method, and you are now switching to the System Logger method, both the Control-M monitor, and either the Control-O or CMEM monitor, should be stopped and restarted. For details, see "Use System Logger (SYSTLOGR)" in Step 6.3 – Specify IOA computers (optional) (on page 63).

Table 61  Sysplex configuration parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTNC</td>
<td>Coupling facility structure name specified in either the Coupling Facility Resource Management (CFRM) policy or DASDONLY.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 16 bytes</td>
</tr>
<tr>
<td></td>
<td>- Default: STRUCTNAME</td>
</tr>
</tbody>
</table>

The value of this parameter determines the type of MVS System Logger log streams used by Control-M.

Valid values are:

- DASDONLY – Control-M uses the System Logger without coupling facility, meaning it uses the DASD-only log streams
- structure_name – Control-M uses structure_name for coupling facility log streams, where structure_name is the structure name that was specified in the CFRM policy

For more information, see CMEM considerations (on page 196) and the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Note: Only applications from the same system (LPAR) can connect simultaneously to the DASD-only log streams. If you are using DASD-only log streams, then Control-M, CMEM or Control-O, and IOADDC (the CONNECT DIRECT interface) must all be running in the same LPAR.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGSTRNM</td>
<td>Name of the log stream associated with the Coupling Facility structure name, or name of the DASD-only log stream. The name must conform to standard data set naming conventions.</td>
</tr>
<tr>
<td></td>
<td>- Optional</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 26 bytes</td>
</tr>
<tr>
<td></td>
<td>- Default: LOG.STREAM</td>
</tr>
<tr>
<td>HLQ</td>
<td>The high-level qualifier for both the log stream and staging data set names.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 8 alphanumeric or national characters can be specified.</td>
</tr>
<tr>
<td></td>
<td>- Default: CTMLOGR</td>
</tr>
<tr>
<td>HI OFFTHR</td>
<td>Percent value to use as the high off-load threshold for the Coupling Facility structure associated with this log stream.</td>
</tr>
<tr>
<td></td>
<td>When the Coupling Facility is filled to the specified percentage, the MVS System Logger begins off-loading data from the Coupling Facility structure to DASD log stream data sets.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Default: 80 (percent)</td>
</tr>
<tr>
<td>LO OFFTHR</td>
<td>Percent value to use as the low off-load threshold for the Coupling Facility structure associated with this log stream.</td>
</tr>
<tr>
<td></td>
<td>This value is the target percent at which you want off-loading to stop, leaving approximately the specified percentage of log data in the Coupling Facility structure.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Default: 0 (percent)</td>
</tr>
</tbody>
</table>

Step 7.6 – Build CMMPLEX parameter member (optional)

If you did not perform Step 7.5 – CMEM Sysplex configuration parameters (optional) (on page 174), skip this step and continue with Step 7.7 – Set up CMEM table (optional) (on page 176).

Select this step to build the CMMPLEX parameter member in the IOA.PARM library when the CMEM communication vehicle at your site is the MVS System Logger and not communication files. For more information, see CMEM considerations (on page 196).
If the CMEM communication vehicle at your site is currently the Communication file method, and you are now switching to the System Logger method, both the Control-M monitor, and either the Control-O or CMEM monitor, should be stopped and restarted. For details, see "Use System Logger (SYSTLOGR)" in Step 6.3 – Specify IOA computers (optional) (on page 63).

Step 7.7 – Set up CMEM table (optional)

Although this step is optional, you should read it, because default CMEM rules are supplied as part of the installation. These rules reside in the IOACMEMR member in the IOA IOAENV library and are activated when CMEM is started.

Set up Control-M Event Manager rules to order CMEM rules to monitor external events in the system.

For further information, see the CMEM chapter in the Control-M for z/OS User Guide and the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Step 7.8 – Update SCHEDnn member in SYS1.PARMLIB

This step must be performed if CMEM is to be installed at your site.

Add the SCHED00 sample member from the INSTCTO library to the SCHEDnn member in the SYS1.PARMLIB library. To protect CMEM control blocks, the PPT entries listed below must be added to the SCHEDnn member, where nn is the number specified in the IEASYSnn member in the SYS1 PARMLIB library, or defaults to 00 if not specified in IEASYS:

```
PPT PGMNAME (CTOMTO7)  
KEY(7)  
```

To activate the new PPT definitions without performing an IPL, issue the following command:

```
T SCH=(nn,L)  
```

where nn is the suffix of member SCHEDnn.

Step 8 – JES considerations

Review the steps below for the required Control-M definitions to JES2 or JES3. In addition, see the recommendations that are relevant to JES2 or JES3 in the Control-M chapter of the INCONTROL for z/OS Administrator Guide.

Either Step 8.1 – JES2 considerations (optional) (on page 176) or Step 8.2 – JES3 considerations (optional) (on page 178) must be performed, depending on which version of JES is installed at your site.

Step 8.1 – JES2 considerations (optional)

If you only have JES3 at your site, skip this step.
By default, Control-M does not support sites that use both JES2 and JES3. However, you can set the MULJ ESPP post-processing parameter in the CTMPARM member to Y. In such a case, jobs sent, using NJE, from a JES2 system to be executed on a JES3 system are post-processed by Control-M using JES2 when the job output returns to the originating node.

The sysout class on the JES3 system must be set to HOLD=TSO.

The automatic held output class that is defined in the HLDCLAS Control-M installation parameter in the CTMPARM member must be defined to JES so that the three JES-managed data sets, JOBLOG, JCL statement images, and system messages, will be fully produced and written to a held sysout for all jobs and started tasks monitored by Control-M.

To specify the held output class, the following JES definition must be made:

```
OUTCLASS(h) OUTDISP=(HOLD,HOLD) /* IS A HELD CLASS */
OUTPUT=PRINT /* PRINT CLASS */
```

where h is the sysout class specified in the HLDCLAS parameter in the CTMPARM member.

To produce these files, MSGLEVEL must be set to (1,1) in all jobs monitored by Control-M, and the following JES definition must be made for each execution class used by Control-M jobs:

```
JOBCLASS(x) OUTPUT=YES,MS
MSGLEVEL=(1,1),LOG=YES
```

where x is the job execution class that is used by jobs monitored by Control-M.

For started tasks, the following JES definition must be made:

```
JOBCLASS(STC) MSGLEVEL=(1,1),LOG=YES,MSGCLASS=h
```

where h is the sysout class specified in the HLDCLAS parameter in the CTMPARM member.

Do not specify CONDPURG=YES in the above JOBCLASS initialization statements. Users who want to purge a job's JES2 system data sets should use the D(elete) option in the SYSOUT or DO SYSOUT Control-M job scheduling parameters. For more information, see the chapter about job production parameters in the Control-M for z/OS User Guide.

If started tasks (STCs) are not scheduled by Control-M, the sysout class and the MSGLEVEL definition for started tasks have no relevance for Control-M.

Control-M allocates a permanent internal reader for submitting jobs. Therefore, it may be necessary to increase the number of internal readers defined within JES2 by increasing the value of the RDNUM parameter in the INTRDR statement in the JES2PARM JES2 member.

JES2PARM tuning considerations

For information on JES2PARM tuning considerations, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

CMEM considerations for JES2

CMEM uses the JESCHAR parameter from IOAPARM to identify JES messages and trigger events. Verify that the JES command character defined in the JESCHAR IOA parameter is correct.

If DATASET/NCT2 events are defined, the jobs, started tasks, or TSUs that are monitored should have the MSGLEVEL=(1,1) parameter.
For batch jobs, this can be set in the JCL JOB statement, or in the JES2 initialization parameter:
```
JOBCLASS(h) ... MSGLEVEL=(1,1)...
```
For started tasks, this can be set in the JES initialization parameter:
```
JOBCLASS(STC) MSGLEVEL=(1,1)...
```
For TSUs, this can be set in the JES initialization parameter:
```
JOBCLASS(TSU) MSGLEVEL=(1,1)...
```

Step 8.2 – JES3 considerations (optional)

If you only have JES2 at your site, skip this step.

By default, Control-M does not support sites that use both JES2 and JES3. However, you can set the MULJESPP post-processing parameter in the CTMPARM member to Y. In such a case, jobs sent, using NJE, from a JES3 system to be executed on a JES2 system are post-processed by Control-M using JES3 when the job output returns to the originating node.

If you want to use NJE to route jobs to other nodes, add DEFCLASS=NO to the NJERMT JES3 initialization statement.

If you are using the recommended method (see the next topic), jobs returning from JES2 must be set to HOLD=EXTWTR.

Set up the Control-M working method. Two methods of running the Control-M monitor and Tape Pull list utility under JES3 are provided:

- The following is the recommended method:
  - Define the HLDCLAS parameter in the CTMPARM member as a class that is defined to JES3 as HOLD=EXWTR (not HOLD=TSO).
  - Run the normal Control-M procedure.
  - Run the normal Tape Pull list procedure (CTMTAPUL).

The disadvantage of this method is that neither the TSO OUTPUT command nor option 3.8 under ISPF permits viewing of sysouts defined to JES3 as HOLD=EXWTR. Therefore, this method can only be used by users of products that are capable of reading the output using a technique other than TSO OUTPUT or ISPF 3.8. Use the following sample JES3 sysout definition in the JES3 initialization deck INISHDECK:
```
SYSOUT,CLASS=h,TYPE=(PRINT...),HOLD=EXTWTR,...
```
where h is the value of the HLDCLAS parameter in the CTMPARM member.

- Alternate Method
  - Define the HLDCLAS parameter in the CTMPARM member as a class that is defined to JES3 as HOLD=TSO.
  - Run Control-M under TSO. You must create and customize a procedure to run Control-M under TSO, using the TSO monitor program IKJEFT01. This procedure must then be placed in the procedure library under the name CONTROLM.
  - Run the Tape Pull list utility under TSO. You must create and customize a procedure to run the Tape Pull list utility under TSO, using the TSO monitor program IKJEFT01. You must then place this procedure in the procedure library under the name CTMTAPUL.
Using this method, Control-M and the Tape Pull list utility can handle sysouts defined to JES3 as HOLD=TSO, and the TSO OUTPUT command or ISPF option 3.8 functions as usual.

Setting MSGLEVEL and started tasks MSGCLASS

Jobs or started tasks monitored by Control-M should have the three system data files known as JESYSMSG, JESJCL, and JESMSGLG, fully produced. Started tasks should be in the sysout class defined in the HLQDCP parameter in member CTMPARM.

The JESYSMSG, JESJCL, and JESMSGLG files are known as SYSDATA in the IOA environment.

Use the following sample JES3 definition to define the default MSGLEVEL for batch jobs, and MSGCLASS and default MSGLEVEL for started tasks:

CIPARM PARM=...ef...,PARMID=n

where the e and f options in the options list should be set to 1, which is also the default setting in JES3.

- For batch jobs, set the MSGLEVEL parameter to (1,1) in the JCL JOB statement, or in the JES initialization parameter, as follows:

  STANDARDS INPTMID=n

  where n is the PARMID of the CIPARM statement.

- For started tasks, set the JES initialization parameter:

  STANDARDS STCPMID=n

  where n is the PARMID of the CIPARM statement.

The h option in the CIPARM statement (referred to by STCPMID=n) should be set to the same MSGCLASS as the HLQDCP parameter, as described in Step 2.1 – Control-M operational parameters (on page 152). All the sysdata output of the started tasks will be routed to the Control-M HLQDCP.

If started tasks (STCs) are not scheduled by Control-M, the definition for started tasks has no relevance for Control-M.

- For TSUs, set the JES initialization parameter:

  STANDARDS TSOPMID=n

  where n is the PARMID of the CIPARM statement.

  Control-M allocates a permanent internal reader for submitting jobs. Therefore, it may be necessary to increase the number of internal readers defined within JES3 by increasing the value of the INTRDR parameter in the OPTIONS statement in the JES3 member JES3INxx.

Performance considerations

For information on performance considerations, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

JES3 Exit IATUX30

The JES3 Exit IATUX30 must allow the Control-M monitor to issue subsystem requests. JES3 has a special security exit for controlling subsystem requests. The exit controls the following types of subsystem requests:
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- **Job status subsystem requests**
  
  The Control-M monitor issues status requests for jobs that were submitted by it, using the job status subsystem request. JES3 Exit IATUX30 can prevent the Control-M monitor from receiving the status of the job.

- **Sysout read/purge subsystem requests**
  
  The Control-M monitor reads and purges the sysout from the spool using the regular MVS subsystem interface. JES3 Exit IATUX30 can prevent the Control-M monitor from reading the output of jobs from the spool.

If JES3 Exit IATUX30 is used to check and prevent subsystem requests by unauthorized users, it must be modified to allow the Control-M monitor to issue subsystem requests for all the jobs. The recommended method is to place a check at the beginning of the exit for the started task name of the Control-M monitor, and to bypass all the special checks in the exit when the request originates from the monitor.

Verify that Exit IATUX30 is set up correctly in all computers in the complex where the Control-M monitor may run.

TSO Exit IKJEFF53 is mentioned several times in conjunction with Exit IATUX30. Exit IKJEFF53 does not have control over Control-M because Control-M does not make use of the TSO OUTPUT, TSO STATUS or TSO CANCEL commands.

**Step 9 – Control-M amendments**

Follow the steps below to perform final amendments to the Control-M installation.

**Step 9.1 – Control-M password data**

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-M. The product ordered is licensed to run on one or more computers for a specific period of time.

If BMC supplied you with a site licence, copy the printout to the PASCTM member.

The PASCTM member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-M is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=Control-M / yymmdd**
  
  The PROD parameter line contains the name Control-M and the expiration date of the password in yymmdd format.

- **START=yymmdd**
  
  - The START parameter line contains the start date of Control-M in yymmdd format.
  
  - Only one START parameter can be specified in a password member.

- **CPUID=iiii mmmm**
  
  - In the CPUID parameters line, iiiii is the CPU ID, and mmmm is the model, on which Control-M can run.
  
  - There must be a separate CPUID parameter for each CPU authorized to run Control-M.
The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-M is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

<table>
<thead>
<tr>
<th>PROCESSOR STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

+ ONLINE - OFFLINE.

DOES NOT EXIST

- PASS=pppppppp pppppppp pppppppp
  - In the PASS parameter line, pppppppp pppppppp pppppppp is the password provided by the BMC representative.
  - Only one PASS line can be present in a password member

- TYPE=LICENCE
  - The TYPE parameter line contains the type of licence given. Valid values are:
    - LICENCE - For permanent licences.
    - TRIAL - For customers who want to evaluate products for a limited period of time.
    - EMERGENCY - For a short-term password, until a permanent password is provided.
  - Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-M password member:

**PROD = CONTROL-M / 080417**

START = 070418

CPUID = 231234 9021

CPUID = 140564 9121

PASS = 86243457 D324389C 58349852

TYPE = LICENCE

Note: This site has a permanent licence for Control-M, starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).
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The following additional considerations may apply when you edit the Control-M password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=Control-M / yymmd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to "CPUID=001234."
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 9.2 – Modification of SYS1.PARMLIB

1. Add the following commands to the COMMNDxx member in the SYS1.PARMLIB library:
   - Start the Control-M monitor after IPL:
     S CONTROLM
   - Start the Control-M Event Manager (optional):
     S CTMCMEM
     
     This definition will take effect only after the next IPL, and must be done for each computer in which CMEM is to be active.

     If Control-O monitors will be active, do not start the CMEM monitor.

2. For accurate Control-M job statistic accumulation and Control-M Event Manager (CMEM) processing, modify the appropriate member (CONSOLxx or COMMNDxx) in the SYS1.PARMLIB library, as follows:
   Add the MONITOR(JOBNAMES-T) parameter (if it does not already exist) to the console definitions in member CONSOLxx, or add the MN JOBNAMES,T automatic command (if it does not already exist) to member COMMNDxx.

   For z/OS version 1.8 and later, use the SETCON command instead of the MN command, as follows:
   
   SETCON MN,JOBNAMES=(ON,LOG),T=ON
   
   You can then use the following command to check the monitoring facility status that SETCON sets:
   
   D OPDATA,MONITOR
The status of each monitoring facility is displayed, as shown in the following sample:

```
CNZ1100I  03.23.22  MONITOR DISPLAY
SPACE=OFF  DSNAME=ON  TIMESTAMP=ON
MSGTYPE=SETCON  MN=NUMBER  OF  RECEIVERS
JOBNAMES=ON  LOG  0  CONSOLES
SESS=OFF  0  CONSOLES
STATUS=OFF  0  CONSOLES
```

Step 9.3 – Refresh LLA

If the IOA LOAD library resides in the MVS Linklist, refresh the LLA by using the MVS command

```
F LLA, REFRESH
```

If a program fetch optimization product such as PDSMAN, QUICKFETCH, PMO, or a similar product is used, a notification to refresh their Linklist tables may be required.

Log off from TSO or ROSCOE and log on again.

Step 9.4 – Security considerations

Control-M can be installed without setting up special security requirements, except as noted in this section for RACF, ACF2 and TOP SECRET. After Control-M is installed, it is possible to set up basic security parameters to allow a basic testing environment during the first stages of product testing.

The Control-M monitor must have read access authority to all JCL libraries that will be accessed as part of the job scheduling process. Use your local security product to perform this task. The Control-M monitor cannot function without this security requirement. In addition, the following started tasks should be defined as valid started tasks depending on the security product installed at your site:

- CONTROLM
- CTMCMEM
- CTMTDAY
- IOAOMON1 and any other online monitor
- other started tasks

If the Control-M monitor will use the Sysplex System Logger, make sure that the monitor is authorized to do so. For more information, see the IBM document, z/OS V1Rx MVS Setting up a Sysplex.

Submission authorization

The Control-M monitor must be authorized to submit jobs on behalf of all users in the site whose user IDs are used in jobs submitted by the Control-M monitor.

Statistics file access

The Control-M monitor must have update access authorization to the Control-M Statistics file.
For CATOP SECRET users
The Control-M monitor should be assigned the TSS attributes BYPASS ID and NOSUBCHK.

For CAACF2 users
The Control-M monitor should be defined with the JOBFROM parameter, to allow Control-M to add a JOBFROM statement to submitted jobs.

For complete details for implementing security for Control-M, see the INCONTROL for z/OS Security Guide.

Step 9.5 – TSO/E customization
Programs CTMAES, CTMRUN, CTMAPI and CTMDFL must be authorized under TSO.
Add CTMRUN, CTMAPI, CTMDFL and CTMAES to the list of authorized programs (the AUTHPGM parameter) in the IKJTSO.xx member in the SYS1.PARMLIB library. If xx=00, the member is accessed automatically during TSO startup. The member can be activated using the TSO command

```plaintext
PARMLIB UPDATE(xx)
```

For more details, see the IBM TSO Customization Manual.
The IOA Load library must be added to the authorized libraries list (see Step 11.1 – IOA LOAD library (on page 90) for details).

Step 10 – Control-M customization
After Control-M is installed, some customization may be required. Skip any customization step that does not apply to your site.

Step 10.1 – Modifying Control-M defaults (optional)
Certain Control-M defaults can be modified. For example, instead of submitting all jobs, it is possible to submit only the first job in a JCL member.

For details on how to change product defaults, see the following:
- “Control-M customization considerations” in the INCONTROL for z/OS Installation Guide: Customizing. This topic describes how to install most optional wishes by setting parameters in the CTMPARM member, though some optional wishes are contained in the IOADFLT member instead of the CTMPARM member.
- the IOA administration chapter of the INCONTROL for z/OS Administrator Guide.

Step 10.2 – Exits (optional)
Various user exits are available to modify Control-M operations to meet user needs. For more information about Control-M exits, see the Exits chapter in the INCONTROL for z/OS Administrator Guide.
Step 10.3 – Extended NJE support (optional)

The Control-M monitor can be used to schedule jobs to NJE nodes and control their execution. For more information, see the DOCMNJE member in the IOA DOC library.

Step 10.4 – CICS support (optional)

The $DOCCTM member in the IOA CI CSSAMP library provides information about how to support CICS under Control-M. Review this member if Control-M is required to interface with CICS.

Step 10.5 – IMS/DC support (optional)

The DOCMIMS member in the IOA DOC library provides information about how to support IMS/DC under Control-M. Review this member if Control-M is required to interface with IMS/DC.

Step 10.6 – Parameter Prompting facility (optional)

If Parameter Prompting facility - Type 2 is used (for more information, see the chapters about online facilities and implementation issues in the Control-M for z/OS User Guide), do the following:

Modify the Control-M submission Exit CTMX002 according to the CTMX2PPF sample member in the IOA SAMPEXIT library.

For sample JCL jobs for the parameter prompting file, see the PPF2DAY and PPF2DEL members in the Control-M JCL library.

Step 10.7 – Config. JOB/SCAN and DOCU/TEXT and PRO/JCL with CTM (optional)

If JOB/SCAN, DOCU/TEXT, or PRO/JCL are not installed, ignore this step.

When Control-M AutoEdit Simulation is displayed, the JOBSCAN function can be specified to invoke JOB/SCAN to check the JCL of the job. To use the JOBSCAN parameter, JOB/SCAN must be configured to run under ISPF, as follows:

1. Do one of the following:
   a. Concatenate the JOB/SCAN CLIST library in the SYSPROC DD statement in the TSO Logon procedure.
   b. Copy the JOB/SCAN CLISTs to one of the libraries that are concatenated in the SYSPROC DD statement.

2. Do one of the following:
   a. Concatenate the JOB/SCAN panel library in the ISPPLIB DD statement in the TSO Logon procedure.
   b. Copy the JOB/SCAN panels to one of the libraries that are concatenated in the ISPPLIB DD statement.

3. Do one of the following:
   a. Concatenate the JOB/SCAN Messages library in the ISPMLIB DD statement in the TSO Logon procedure.
b. Copy the JOB/SCAN messages to one of the libraries that are concatenated in the ISPMLIB DD statement.

4. Do one of the following:
   a. Concatenate the JOB/SCAN LOAD library in the STEPLIB DD statement in the TSO Logon procedure.
   b. Copy the JOB/SCAN load modules to one of the libraries that are concatenated in the STEPLIB DD statement.
   c. Make the JOB/SCAN LOAD library part of the MVS Linklist.

Repeat the steps above to configure DOCU/TEXT to work with Control-M.
Repeat the steps above to configure PRO/JCL to work with Control-M.

Step 10.8 – GRF file considerations (optional)

Depending on the number of job dependencies at your site, a GRF file that is allocated one cylinder (the default) can hold up to a maximum of 40,000 jobs. BMC Software recommends that the size of the GRF file is set to be 1 block for each 1000 jobs, plus 1 block for the header.

Step 10.9 – CONNECT DIRECT support (optional)

CONNECT DIRECT support (formerly called NDM support) enables data set events to automatically trigger Control-M operations, such as triggering jobs, adding prerequisite conditions and deleting prerequisite conditions. For information about the implementation, customization, and data set event definition process required to establish CONNECT DIRECT support, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Step 11 – Control-M VM support (optional)

This step installs the IOA VM support into a VM machine, called IOAVAUTO, that should be dedicated for this purpose. It includes the IOAVEXEC utility, which receives command members sent from the Control-M monitor running on an NJE-connected MVS node.

To install the Control-M VM support feature, perform the following step:

Step 11.1 – Transfer VM Support to VM machine

The INSTVM job sends the Control-M and VM support files to the VM user. Submit the job, and verify that all job steps complete with a condition code of 0.

In the VM/CMS environment, follow these steps to receive the support files:

1. Define a VM machine that will be dedicated to receiving command files from Control-M.
2. Check the file number of the file sent from the MVS installation node by issuing the following command:

   QUERY RDR * ALL
3. Reorder the files so that the VM enhancement file appears first on the list. Enter the following command:
   ORDER RDR file-number

4. Receive the file into your A disk:
   READ IOAVM INSTALL A

5. Prepare to punch the file:
   SPOOL PUN TO *

6. Punch the file:
   PUNCH IOAVM INSTALL A (NOH

7. Resume Punch default setting:
   SPOOL PUN FOR *

8. Make the Punch file first on the list:
   ORDER RDR file-number

9. Load the disk with the VM support data:
   DISK LOAD * * A

10. Add the IOAEXEC utility to the PROFILE EXEC file of the dedicated VM machine.

Step 12 – Control-M installation conclusion

This step is used to indicate that Control-M installation is complete. When completed, mark each step complete.

Step 12.1 – Indicate Installation Concluded

This step updates the Status field in the Environment Table to indicate that Control-M is installed.

Step 12.2 – Start Control-M (Optional)

Start the Control-M monitor by issuing the following operator command:
   S CTMTROLM

If the IOA Online monitor is installed and is already active, stop it by issuing the following operator command:
   P IOAOMON1

The IOA Online monitor is used to access the IOA Online facility from CICS, IMS/DC, VTAM monitor (IOAVMON), IDMS/DC, COM-PLETE, ROSCOE and TSO. Therefore, issuing this operator command immediately terminates the sessions of all Online monitor users. TSO and ROSCOE users who are not using the Cross Memory facility are not affected by this operator command.

Start the IOA Online monitor by issuing the following operator command:
   S IOAOMON1
If the IOA VTAM monitor is installed, see the IOA installation procedure for information about how to start the VTAM monitor.

If the Control-M Event Manager subsystem is installed and is not active, you can optionally start it using the following operator command:

`S CTMCMEM`

This command must be issued on each computer in which CMEM is to be active.

When starting Control-M:

- if Control-O monitors will be active, do not start CMEM
- if an enqueue management product is in use at your site, see “QNAME” in Step 4.2 – IOA operational parameters (on page 46).

Step 12.3 – Back up the Installed Environment

BMC Software recommends that you create a backup of the IOA and INCONTROL product libraries.

When backing up the installed environment, verify that the Base libraries, Installation libraries, Operations libraries, SMP-related data sets, and INCONTROL product repositories are backed up together. This backup can help users restore the original IOA environment when required, so that Control-M can be reinstalled if a significant number of changes are made to the parameters, or when an unrecoverable failure occurs during installation.

Step 12.4 – Installation Verification Process (IVP) (Optional)

Perform this step if you want to verify that the Control-M installation process has been successful by exercising various components and functions of IOA and Control-M.

The Installation Verification Process (IVP) verifies that the following components are functioning correctly:

- the Control-M monitor
- Control-M MVS operator commands
- the IOA Online facility
- the Control-M Application Interface (the Control-M API)
- Control-M/Restart (if installed)
- Control-M and IOA batch utilities and reports
- the IOA Global Variable database
- AutoEdit processing
- job ordering, selection, submission, and post-processing
- the processing of various types of jobs, including
  - cyclic
  - dummy
  - started task (STC)
  - “maybe”
How the IVP works

The IVP is contained within the job that is in the IVP member in the Control-M JCL library.

This job does the following:

1. It uses the CTMBLT Control-M utility to create several SMART Tables in the Control-M Job Scheduling library. You can view these jobs by means of Screen 2, the Control-M job scheduling definition facility.

2. It then orders the jobs it has created.

To follow the logic and flow of this job, you must be familiar with the CTMBLT utility. IN and OUT conditions are used to chain together the SMART Tables and jobs in a triggering structure. These SMART Tables and jobs are then scheduled by means of CTMBLT Global schedule RBC parameters.

Most of the jobs that are created and ordered by this job consist of batch utilities invoked as started tasks.

Before initiating the IVP

Before you initiate the IVP, BMC Software recommends that you ensure that the STC jobs listed below are present in the IOA PROCJCL library and are available in the IEFJ OBS DD statement concatenation. For more information, see PROCJCL library (on page 30).

The following STC jobs are required:

- IOAOPR
- IOATEST
- IOACND
- IOANOTE
- IOALDNRS
- CTMRNSC
- CTMRLFW
- CTCMAPI

These STC jobs must all be in the following format:
Running the IVP

Initiate the IVP by submitting the job in the IVP member in the Control-M JCL library.

While the IVP is executing the various tasks contained within this job, open the Active Environment screen (Screen 3) and observe the following processes as they take place:

- groups and jobs are ordered
- groups and jobs become ACTIVE and eligible for execution
  in the case of started tasks, the task status becomes GOING TO START
- jobs are submitted
- jobs end OK or NOTOK

You will be able to see how the status of each job changes as it passes through these stages. Additional points to watch for as jobs progress are described below.

From time to time, inspect the IOA Conditions/Resources screen (Screen 4) and the IOA Manual Conditions screen (Screen 7) to see how conditions and resources are added and deleted as jobs progress.

In addition, many of the groups and jobs that are executed send SHOUT messages from time to time to the operator’s console. Watch the MVS SYSLOG from time to time while jobs are being executed, to ensure that these messages are properly produced.

The IVP tables

The tasks performed by the IVP are divided into several tables. These tables are described in the following sections.

IVP0

The first table, IVP0, performs initialization tasks.

The IOA Global Variable database is controlled by the Control-M CMEM monitor. Some IVP jobs require access to this database. IVP0 activates the CMEM startup procedure, in order to ensure that the Control-M CMEM subsystem is running when required later in the IVP.

IVP1

The second table, IVP1, performs various functions that relate to IOA conditions. The IOACND IOA batch utility adds and deletes different types of conditions, including the following:
regular conditions, with condition names that consist of 20 characters or less
long conditions, with condition names that exceed 20 characters in length
STAT conditions
inverted (NOT) conditions

IVP1 includes tasks that must fail, such as attempts to delete non-existent conditions. The Control-M order ID of one of these tasks is saved to the IOA Global Variable database, for use when the CTMAPI is used to FORCE the job OK.

The final status of the group depends on the setting of the TBLRECHK Control-M installation parameter.
- If TBLRECHK was set to Y, the final status of the group reverts to WAIT SCHEDULE.
- If TBLRECHK was set to N, the final status of the group is ENDED NOTOK.

IVP2
The status of the third table, IVP2, remains WAIT SCHEDULE until the completion of the next table, IVP3, because IVP2 depends on the presence of a condition, GLOBAL-IN, which is added by one of the tasks in IVP3.

IVP2 contains a cyclic dummy job, CYCJOB, which is defined to run three times at 1-minute intervals. Watch the status of this job change as it returns to WAIT SCHEDULE after each execution. You will see that the Run number and the Prior Run status are displayed. In addition, a SHOUT message is issued after each cyclic run. This message includes the actual run number, using the %RN AutoEdit variable.

IVP3
The fourth table, IVP3, adds various conditions and resources that are needed by other jobs, and checks if certain conditions are present in the IOA Conditions file.

IVP4
The fifth table, IVP4, does the following:
- issues an operator command to display the Control-M installation parameters
- executes a task named IOATEST, which returns a completion code of 8, but uses a post-processing parameter to make the job end OK despite that completion code
- executes a task that ends NOTOK because of its condition code, and reruns this task twice more, a total of three runs
- issues several SHOUT messages relating to the NOTOK ending of the task and the reruns of that task
- writes a message to the IOA log
  You can use Screen 5 to see this message.
- produces the following reports:
  - a Control-M Night Schedule report
  - a job flow report on IVP6, one of the scheduling tables created by the IVP process
  - a job flow report on the Active Jobs file
You can see these reports in the job logs relating to the CTMRNSC and CTMRFLW jobs.

**IVP5**

The sixth table, IVP5, illustrates and verifies "maybe" job handling and manual conditions.

The SMART Table Entity is created with the ADJUST CONDITIONS parameter set to Y.

The DUMMY1 job is not ordered, so its OUT condition, MANUAL-IN-COND, is not present in the Active Jobs file.

The MANUAL-IN-COND is a prerequisite IN condition required for the following job, DUMMY2. However, because of the setting of the ADJUST CONDITIONS parameter in the SMART Table definition, DUMMY2 does not wait for that condition to become available.

As a result, the CTMBLT job sysout contains the following message:

```
JOB554I INPUT CONDITION REMOVED: CONDITION=MANUAL-IN-COND ODAT , MEMBER=DUMMY2 , GROUP IVPMCND
```

The DUMMY3 job has an IN condition named REAL-MANUAL-IN-COND. This really is a manual condition, because it does not exist as an OUT condition of any job. As a result, this condition is not removed, and the job remains in WAIT SCHEDULE status.

The following job executes the IOALDNRS utility and creates the Manual Conditions file. Use Screen 7 to view this file, and verify that the REAL-MANUAL-IN-COND condition is present there.

Because the DUMMY3 job remains in WAIT SCHEDULE status, the IVP5 table cannot end OK. Instead, it remains ACTIVE. However, the following table, IVP6, is dependent on the IVP5 table ending OK.

To enable the IVP to continue, you must do the following:

1. Enter the Active Environment screen (Screen 3).
2. Locate the DUMMY3 job.
3. Use the ? command to enter the SCHEDULING ANALYSIS screen (Screen 3.?).
4. Manually add the missing condition (REAL-MANUAL-IN-COND).

**IVP6**

The seventh table, IVP6, executes a series of CTMAPI (Control-M Application Program Interface) batch utilities.

These jobs verify several online functions in the Control-M Active Environment (Screen 3) and in the IOA Global Variable database.

Each of these jobs is separated by a run of the IOATEST utility, which causes Control-M to wait for 5 seconds, to allow time for each job to end before continuing.

The first job uses the CTMAPI to issue a FORCE OK command in relation to the job in the IVP1 table that ended NOTOK. To identify the failing job, it uses the order ID that was placed in the IOA Global Variable database by that job when it failed.

The next job searches for the job that was FORCEd OK by the previous job. The job that was FORCEd OK has the status END_OK_FOK.

The following series of jobs operate on the same job, that is, the one that was FORCEd OK. In turn, the following happens:
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- its status is changed to HOLD
- it is DELETED
- it is UNDELETEd
- it is placed back into FREE status

You can use Screen 3 to watch these processes happening.

Several of these jobs verify the operation of the IF selection function of the CTMAPI.

The next job is @#$DUMY. This is a dummy job, and is ordered with WAIT CONFIRMATION status. This job is followed by a CTMAPI task that checks whether @#$DUMY is present in the Active Jobs file, and, if it finds that it is, CONFIRMs it.

The last task in the table invokes CTMAPI, which uses the SETCKP command to add a Global variable to the IOA Global Variable database. This variable is %\%\M\NO_APPL\NO_GROUP\API\GBL_SET, and the value assigned to it is API. To ensure that this has been successfully performed, use the IOA option IV, and examine the contents of the IOAVAR pool to see if this is present.

Installation considerations

Job output processing

Sending a job to a held output class

Control-M analyzes job execution results by reading the job sysout. Therefore, the SYSDATA portion of the job must be sent to a held output class to prevent it from being printed accidentally before the Control-M monitor manages to read it.

HLDCLAS is the automatically held output class to which Control-M sends the job SYSDATA output.

SYSDATA is an IOA term used to designate the data in the following three job sysout data sets:
- job log (console messages)
- expanded JCL
- system output messages

This class is also used for started tasks under JES3. The started task MSGCLASS must be defined under this class. For more information, see Setting MSGLEVEL and started tasks MSGCLASS (on page 179).

When Control-M submits a job, Control-M either adds a MSGCLASS parameter to the job statement or overrides the existing MSGCLASS parameter. When a started task is started, its MSGCLASS is taken
- under JES2, from the STCCLASS
- under JES3, from the appropriate CIPARM statement

For details, see Step 8 – JES considerations (on page 176).

The job sysout is directed to the class designated in the HLDCLAS installation parameter. A regular automatically-held output class must be specified during installation.
Special precautions should be taken so that the job sysout will not be accidentally purged, or released for printing. At some sites, all jobs in the automatically held output class are purged by an operator command once a day (or more). You can use the following procedure to prevent deletion before Control-M reads the job sysout:

- Dedicate a special automatically held output class to Control-M.
- Protect the sysouts in this class from any change, such as by SDSF exits.

This procedure ensures that Control-M can read the sysout.

If other users are to access the sysout, the following sample parameters should be defined in any job production parameter definition:

```plaintext
ON PGMSTEP ANYSTEP CODES *****
DO SYSOUT OPT C PRM A FRM X
```

When Control-M finishes reading the job sysout, it transfers the sysout to the designated output class, where any user can access it.

The sysout can be read by the Control-M monitor only when the DEST parameter is set to LOCAL.

Special care should be taken when a system programmer formats the JES queue. This procedure usually involves unloading the output queues to a tape, formatting the spool, and then reloading the queues. The monitor should be shut down before the queue is unloaded to a tape, and brought up again only after the queues have been loaded from the tape back to the spool. If this procedure is not followed, Control-M may assume that the job is lost, that is, purged by an operator, and act accordingly. When you change the HLDCLASS parameter after Control-M installation, you should also change the class in the INTRDR DD statement of the Control-M monitor, and in the JCL procedures CTMAESIM and CTMTAPUL.

When one job submits another job, for example, using TSO batch, and the submitted job does not contain a MSGCLASS, the MSGCLASS of the submitting job is used. Since Control-M changes the MSGCLASS of the job, each job that is submitted by such a job (with no specified MSGCLASS) will use the Control-M HLDCLASS.

### Sending output to remote nodes

Whenever the output of a job is sent to a remote node such as NJE or VM, Control-M must receive a copy of the SYSDATA files (the first 3 output files of the job).

The following output statement should be added to this type of job, following the JOB statement, in addition to any other OUTPUT statement that may be defined in the job:

```plaintext
//CTM OUTPUT JESDS=ALL,CLASS=h
```

where h represents the held output class dedicated to Control-M.

### Activating more than one Control-M monitor

Many users need to operate two or more Control-M monitors simultaneously, for example, for production and test installations. Control-M does not support two monitors that update the same production databases, such as the IOA Log file, Active Jobs file, and History Job file. Using the IOA QNAME specified in the IOAPARM member in the IOA.PARM library, an Enqueue Management mechanism prevents different Control-M monitors from updating the same production databases.

To activate more than one Control-M monitor in a single system, follow these steps:
1. Install a new IOA environment. If a new IOA environment was previously created to operate two or more Control-D or Control-O monitors, skip to the next step below.

   The following prefixes must be different for the two environments when installing a new IOA environment:
   - prefix of the base libraries (the BASEPREF parameter)
   - name of the IOA Authorized Load Module library (the STEPLIB parameter)
   - prefix of the IOA Core (the DBPREFA parameter)
   - first three characters of the IOA JCL procedures (the PROCPRFA parameter)
   - QNAME for ENQ requests to the IOA Core (the QNAME parameter)
   - name and version (suffix) of the SSNAME IOA subsystem parameter
   - prefix of the Installation and Operations libraries (the ILPREFA and OLPREFA parameters)

2. Follow Step 6.7 – Copy IOA started tasks into site library (on page 66) to copy IOA procedures, CLISTs and ISPF members.

3. If the new IOA environment runs on different computers than the original IOA environment, contact your BMC Software representative to obtain new passwords.

4. Install another Control-M, meaning, create a separate Control-M and IOA environment.

   All editing required by the instructions below must be performed on members of the specified new Control-M library. Do not modify members in the currently working Control-M libraries.

   The following names and prefixes must be different from the current Control-M when performing the new Control-M installation:
   - the prefix of the Control-M Installation and Operations libraries (the ILPREFM and OLPREFM parameters)
   - the prefix of the Control-M Repository (the DBPREFM parameter)
   - the name of the Control-M Statistics file (the STATFILE parameter)
   - the first three characters of the Control-M JCL procedures (the PROCPRFM parameter)
   - the name of the Control-M New Day procedure (the PROCNAM parameter)

   Parameters values for the Control-M Event Manager (CMEM) must be different than those of the currently working Control-M. Change the value of the CTM2SBS CMEM parameter and the data set names in the IOACPRM member in the IOA.PARM library.

   Perform Step 5.2 – Copy Control-M started tasks to site library (on page 171).

   The job production parameters for each Control-M system must be stored in different Scheduling libraries. Verify that the job production parameters (for example, when to run the job, required resources, and so on) are specified for the new Control-M using the new Control-M Scheduling library. This is important for a new Control-M version, because it is critical that the job production parameters of the production Control-M system are not affected by the installation of a new Control-M.

   For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.
Minus-one support

Minus-One support is provided as part of Control-M and enhances Parallel Sysplex support (CTMPLEX). With Minus-One support, Control-M users that implement several Control-M monitors in a Sysplex environment can run several installations of Control-M with different maintenance releases or different versions, in parallel. This enables Control-M users to implement installation and upgrade procedures without having to shut down their entire complex.

Minus-One support is a built-in feature of Control-M. You do not have to take any specific step to install it. It is available even at sites that are not operating in a Sysplex environment.

When upgrading a specific Control-M instance to a new release, you must not utilize features of the new release until all other components (members of the Sysplex, application servers, and so on) are similarly migrated. Doing so may lead to unpredictable results on Control-Ms which have not been migrated.

CMEM considerations

The Control-M Event Manager (CMEM) is an optional feature of Control-M. CMEM can be activated for one or more computers in the complex. It is based on a monitor and the IOA subsystem. CMEM communicates with Control-M:

- in a Sysplex environment, through the MVS System Logger
- in a non-Sysplex environment, by communication files

The monitor-to-subsystem file CTM2SBS is required in both Sysplex and non-Sysplex environments.

If Control-O is installed and active, Control-O executes all functions that are performed by CMEM. It loads the CMEM rules and communicates with the Control-M monitor through the MVS System Logger or by the communication files. For more information, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Using the MVS System Logger

In a Sysplex environment, using the MVS System Logger provides the following advantages:
Communication is faster and more efficient because the MVS System Logger communicates through the Coupling Facility.

The MVS System Logger is a single, Sysplex-shared data set managed (that is, defined, accessed, and recovered) automatically by native MVS System Logger services.

The MVS System Logger automatically writes to a duplex DASD staging data set to provide automatic saving of the data on failure-independent, persistent media.

The MVS System Logger provides automatic recovery support if the system, Sysplex, or Coupling Facility structure fails.

The MVS System Logger is not a wrap-around file and therefore cannot overwrite data.

The MVS System Logger is an MVS-managed file that is automatically offloaded at pre-determined thresholds to DASD log data sets.

The MVS System Logger never has to be reformatted and enlarged.

A Coupling Facility is a shareable storage medium. It is licensed internal code running in a special type of PR/SM logical partition. A Coupling Facility can be shared by the systems in one Sysplex only. It makes data sharing possible by allowing data to be accessed throughout a Sysplex with the assurance that the data will not be corrupted and will be consistent among all sharing users.

Implementing the MVS System Logger

To implement the MVS System Logger, do the following:

1. Use the IBM administrative data utility program IXCMIAPU to create or update the Coupling Facility Resource Management (CFRM) policy.

2. Define a Coupling Facility and a 1000K Coupling Facility structure. Use the 1- through 16-character Coupling Facility structure name for the STRUCTNC subparameter in Step 7.5 - CMEM Sysplex configuration parameters (optional) (on page 174).

3. Set the parameters for the structure and log stream as shown in the following table:
Table 62 Parameter values for the structure and log stream

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTODELETE</td>
<td>NO</td>
</tr>
<tr>
<td>RETPD</td>
<td>0</td>
</tr>
<tr>
<td>AVGBUFSIZE</td>
<td>144</td>
</tr>
</tbody>
</table>
| STG_DUPLEX      | - For a regular log stream - YES  
|                 | - For a DASD-only log stream - NO  |
| DASPDUPLEXMODE  | - For a regular log stream - COND  
|                 | - For a DASD-only log stream - not applicable  |
| LS_SIZE         | 128                        |

For detailed information about how to manage the CFRM policy, see Chapter 4, “Managing Coupling Facility Resources” and Appendix B, “Administrative Data Utility” in the IBM document z/OS V1Rx MVS Setting Up a Sysplex.

The MVS System Logger can also be used with DASD-only log streams. The main difference between Coupling Facility and DASD-only log streams is the storage medium used by the System Logger to hold interim log data.

- The Coupling Facility log stream uses Coupling Facility structures.
- The DASD-only log stream uses LOGR buffers.

To use DASD-only log streams you should set the value of the STRUCTNC CMEM installation parameter to DASDONLY. For more information, see Step 7.5 – CMEM Sysplex configuration parameters (optional) (on page 174).

Only applications from the same system (LPAR) can connect simultaneously to the DASD-only log streams. If you are using DASD-only log streams, Control-M, CMEM or Control-O, and IODDCC (the CONNECT DIRECT interface) must all be running in the same LPAR.

Security issues for the System Logger resource

Perform the following security tasks for the System Logger:

- Define security for the LOGGER address space, by defining the required authorization for file access by the System Logger address space.
- Authorize the application (Control-M, Control-O or CMEM) that will use the System Logger facilities.

Using the communication files

In a non-Sysplex environment, allocate and format the communication files by following the instructions in Step 7.4 – Allocate and/or format communication files (for non-Sysplex environments) (on page 173).
Other CMEM-related parameters

Set the CMEM-related parameters shown in the following table:

Table 63  CMEM-related parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSNAME in IOAPARM</td>
<td>Name of the IOA subsystem. For more information about this parameter, see Step 4.2 – IOA operational parameters (on page 46).</td>
</tr>
<tr>
<td>CTM2SBS in IOACPRM</td>
<td>Name of the monitor-to-subsystem communication file. The monitor-to-subsystem CTM2SBS file is required in both Sysplex and non-Sysplex environments.</td>
</tr>
<tr>
<td>SYSID in IOACPRM</td>
<td>List of all computers in the complex, with the names of the subsystem-to-monitor communication files. For more information about this parameter, see Step 6.3 – Specify IOA computers (optional) (on page 63). If the CMEM communication vehicle at your site is the MVS System Logger and not communication files, specify the DSN of each computer as SYSTEM.LOGGER.</td>
</tr>
</tbody>
</table>

See also Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172).

You may need to change these parameters or the definitions in the communications files if any of the actions listed below are performed:

- installing CMEM when Control-M is already installed
- adding, deleting, or changing an SMFID in the computer list
- changing the JES2 SID of one of the systems in the IOACPRM member
- increasing the size of a subsystem-to-monitor file
- renaming a communications file

Detailed descriptions follow.

When CMEM or Control-O are shut down, events are not captured. The activities below should be scheduled accordingly.

Installing CMEM when Control-M is already installed

If Control-M was installed without CMEM and subsequently CMEM is required, perform the following steps:

This is relevant when Control-O is not installed. If Control-O is installed, see Installing Control-O (on page 300).

1. Specify IOA as the Product ID in the ICE IOA Installation Main menu.

   Check and, if necessary, change the SSNAME CMEM-related parameter. For more information about this parameter, see Step 4 – Specify IOA parameters (on page 44).

2. Select Step 6.3 – Specify IOA computers (optional) (on page 63). Check or change the CTM2SBS CMEM-related parameter.
INCONTROL for z/OS Installation Guide: Installing

Check and, if necessary, change the computer parameters.

3. Select Step 6.2 – Save parameters into IOA libraries (on page 63) to save the parameters in the installation libraries.

4. If the IOA subsystem was not previously installed, perform Subsystem definition (on page 509).

5. Proceed with Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172).

6. For additional information, see Step 8 – JES considerations (on page 176) and Step 9 – Control-M amendments (on page 180).

7. Stop and restart the Control-M monitor.

8. Start CMEM using the command:
   
   S CTMCMEM
   
   This command should be issued in all computers where CMEM is to be active.

Adding, deleting and/or changing an SMFID in the computer list

IOA and Control-M parameters should be changed when:

- a computer (system) is added to the configuration
- a computer (system) is removed from the configuration
- the SMFID of one of the systems is changed

Updating the SMFIDS ensures that:

- CMEM and Control-O events function properly
- Started tasks (STC) are properly activated and tracked
- SHOUT messages to alternate nodes and CPUs are properly performed
- Job statistics are correctly accumulated and displayed

If neither CMEM nor Control-O is installed:

1. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SYSID parameter in the IOACPRM member to match the new configuration.

2. Stop and restart the Control-M monitor.

3. If Control-D is installed and active, stop and restart the Control-D monitor.

If CMEM or Control-O is installed:

4. Stop the Control-M monitor.

5. If Control-O is installed and active, stop the Control-O monitor using one of the following operator commands:

   F CONTROLO,STOP
   
   P CONTROLO
   
   One of these commands should be issued in all the computers where Control-O is active.

6. If CMEM is active, stop it using one of the following operator commands:
F CTMCMEM, STOP
P CTMCMEM

Issue one of these commands on all the computers where the CMEM monitor is active.

7. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SIZE, CTM2SBS, SBS2CTM, ID, SYSTEM, and SMFID parameters in the IOACPRM member to match the new configuration.

8. Select Step 6.2 – Save parameters into IOA libraries (on page 63). Delete the CTM2SBS file and all the subsystem-to-monitor files.

9. Reformat all the communication files, that is, the CTM2SBS file and all the subsystem-to-monitor files defined in the SYSID parameter in member IOACPRM.

10. For additional installation requirements, see Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172) and Step 9 – Control-M amendments (on page 180).

11. Start the Control-M monitor.

12. If Control-D is installed and active, stop and restart the Control-D monitor.

13. If Control-O is installed, start the Control-O monitor in all computers where it should be active.

14. If CMEM was active in one or more computers, start it using the following operator command:

   S CTMCMEM

   Issue this command on all computers where CMEM is active.

Adding an SMFID with CMEM or Control-O installed (when the System Logger is not used)

The method described here enables a new SMFID to be added faster and easier than the method described in "Adding, deleting and/or changing an SMFID in the computer list" on page 247. However, this faster method can only be used if CMEM or Control-O is installed and the following requirements are met:

- Only one SMFID is being added. No deletions, no updates and no other additions are being made.
- The new SMFID and its corresponding data sets are added at the end of current lists.
- The position and sequence of all existing SMFIDs and data sets remain completely unchanged.
- This method can be used only when real SBS2CTM files are used instead of the SYSTEM LOGGER. Ensure that SYSTLOGR=N in IOACPRM.

The advantages of this method are

- reduced Control-O, CMEM, and Control-M downtime
- fewer required actions

If the requirements listed above are not met, or the instructions outlined below are not followed exactly, results may be unpredictable and files may become corrupted. If this occurs, follow the procedure described in "Adding, deleting and/or changing an SMFID in the computer list" on page 247.

To add a new SMFID using this method, perform the following steps:
1. Perform "Step 6.3 – Specify IOA computers (optional)" on page 101 to update the SYSID parameter in the IOACPRM member to match the new configuration. The new SMFID must be added at the end of the current list. The position and values of all previously defined parameters must not be changed.


3. Using the FORMSUB2 job, format a Subsystem-to-Monitor file for the new SMFID. For details, see "Step 7.4 – Allocate and/or format communication files (for non-Sysplex environments)" on page 213.

4. Stop the Control-M monitor.

   The Control-O or CMEM monitors must be down only on the new system with the new SMFID. It is not necessary to stop the Control-O or CMEM monitors running on any other system.

5. Submit the FORMSUB3 job from Control-M JCL library on the new system with the new SMFID. Verify that FORMSUB3 issued the message "+CTM314I ADDING SMFID <smfid> WAS SUCCESSFUL." FORMSUB3 is required either when adding a new SMFID or when resetting an existing SMFID in the CTM2SBS file, as described in Reformatting communication files for only one SMFID.

6. Restart the Control-M monitor.

   From a communications file viewpoint, all required actions have been performed. You can start CMEM or Control-O as soon as you finish installing them in this computer.

Adding an SMFID with CMEM or Control-O installed (when the System Logger is used)

To add a new SMFID using this method, perform the following steps:

1. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SYSID parameter in the IOACPRM member to match the new configuration.

2. Perform Step 6.2 – Save parameters into IOA libraries (on page 63).

   There is no need to stop Control-M or any Control-O/CMEM and there is no need to run any FORMSUBx jobs.

Reformatting communication files for only one SMFID

The method described here enables the CTOFS3 utility to reset the record entry for one SMFID in a monitor-to-subsystem (M2S) communication file without shutting down the monitors for all the computers in a complex. The CTOFS3 utility in the LOAD library is invoked by the FORMSUB3 job from Control-M JCL library.

This method is faster and easier than the method described above under the topic Adding, deleting and/or changing an SMFID in the computer list (on page 200). However, this faster method can only be used if CMEM or Control-O is installed and the following requirements are met:

- Only one SMFID is being modified. No additions, no deletions, and no other modifications are being made.
- Control-M is not running.
- Neither CMEM nor Control-O is running in the computer with the SMFID that matches the monitor-to-subsystem record entry that needs to be reset.
This method can be used only when real SBS2CTM files are used instead of the SYSTEM LOGGER. Ensure that SYSTLOGR=N in IOACPRM.

The advantages of this method are

- reduced Control-O, CMEM and Control-M downtime
- fewer required actions

To modify the monitor-to-subsystem record of an SMFID using this method, perform the following steps:

1. Stop Control-M.
2. Stop CMEM or Control-O in the computer with the SMFID that matches the monitor-to-subsystem record entry that needs to be reset.
3. Submit the FORMSUB3 job for execution in the computer with the SMFID that matches the entry you need to reset.
4. Delete the subsystem-to-monitor file defined in the SYSID parameter in the IOACPRM member that matches the SMFID you want to reset.
5. Submit the FORMSUB2 job for execution in the same computer in which the FORMSUB3 job ran.

The FORMSUB2 job allocates and formats a subsystem-to-monitor (S2M) file for the SMFID that enables the Control-M Event Manager or Control-O monitors to communicate with the Control-M monitor. For details, see Step 7.4 – Allocate and/or format communication files (for non-Sysplex environments) (on page 173).

6. Restart Control-M.
7. Restart CMEM or Control-O.

Customization required due to modifying a system JES2 SID

1. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SYSID parameter in the IOACPRM member to match the new configuration.

   Do not change the order of the SYSIDs in the IOACPRM member. If you do change the order, perform all steps as described in Adding, deleting and/or changing an SMFID in the computer list (on page 200).

2. If neither CMEM nor Control-O is installed, skip to step 5 below. Otherwise, continue with the next step.

   If Control-O is installed and active, it should be restarted using the following operator command:

   S CONTROLO

   The active Control-O will be stopped, and a new monitor will be started. This command should be issued in all computers where Control-O is active.

3. Stop and restart the Control-M monitor.
4. If Control-D is installed and active, stop and restart the Control-D monitor.
Increasing the size of a subsystem-to-monitor file (for non-Sysplex environments)

Select this step to increase the size of a communication file in a non-Sysplex environment where the MVS System Logger will not be used.

Control-O and CMEM transfers FORCEJOB and RESOURCE requests to Control-M through the subsystem-to-monitor communication file.

When Control-M is active, it processes all written requests. When the Control-M monitor is shut, Control-O and CMEM continue processing events and write the required actions to the communication file. All the actions processed by Control-O and CMEM when the Control-M monitor is shut down will be performed by the monitor when it becomes active again.

The subsystem-to-monitor communication file is a "wraparound" file. Control-M is usually active most of the time, and processes Control-O and CMEM requests a few seconds after they are written. Therefore, the size of the subsystem-to-monitor communication file need not be too large.

However, if the Control-M monitor is down for a long time while Control-O and CMEM are active, and the subsystem-to-monitor communication file is not large enough, old and unprocessed records may be overwritten by new records. When unprocessed records are overwritten by new requests, message CTM448E indicates that data was overwritten. This message also indicates how many communication file records were lost and on which computer.

Follow the steps below to increase the size of the subsystem-to-monitor communication file:

1. Stop the Control-M monitor.
2. If Control-O is installed and active, stop the Control-O monitor using one of the following operator commands:
   F CONTROLO,STOP
   P CONTROLO
   This command should be issued in all the computers where Control-O is active.
3. If CMEM is active, stop it using one of the following operator commands:
   F CTMCMEM,STOP
   P CTMCMEM
   This command should be issued in all the computers where CMEM is active.
4. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SYSID parameter in the IOACPRM member to match the new configuration. Delete the CTM2SBS file and all the subsystem-to-monitor files.
5. Reformat all the communication files - the CTM2SBS file and all the subsystem-to-monitor files defined in the SYSID parameter in the IOACPRM member. For details, see Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172).
6. Start the Control-M monitor.
7. If Control-O is installed, start the Control-O monitor in all computers where Control-O should be active.
8. If the CMEM subsystem was active in one or more computers, start it using the following operator command:
Renaming the monitor-to-subsystem file

1. Stop the Control-M monitor.
2. If Control-O is installed and active, stop the Control-O monitor using one of the following operator commands:
   - P CTMCMEM
   - P CONTROLO
   This command should be issued in all computers where Control-O is active.
3. If the CMEM subsystem is active, stop it using the following operator command:
   - F CTMCMEM,STOP
   - P CTMCMEM
   Issue this command on all computers where the CMEM subsystem is active.
4. Perform “Step 6.3 – Specify IOA computers (optional)” on page 101. Update the CTM2SBS parameter in the IOACPRM member to match the new configuration.
5. Change the name of the monitor-to-subsystem communication file, using ISPF 3.2, ISPF 3.4, utility IEHPROGM, and so on.
6. Start the Control-M monitor.
7. If Control-O is installed, start the Control-O monitor in all computers where Control-O should be active.
8. If CMEM was active in one or more computers, start it using the following operator command:
   - S CTMCMEM
   Issue this command on all computers where CMEM is active.

Renaming a subsystem-to-monitor file (for non-Sysplex environments)

Select this step to rename a communication file in a non-Sysplex environment where the MVS System Logger will not be used.

1. Stop the Control-M monitor.
2. If Control-O is installed and active, stop the Control-O monitor using one of the following operator commands:
   - F CONTROLO,STOP
   - P CONTROLO
   Issue this command on all computers where Control-O is active.
3. If CMEM is active, stop it using one of the following operator commands:
   - F CTMCMEM,STOP
4. Perform Step 6.3 – Specify IOA computers (optional) (on page 63) to update the SYSID parameter in the IOACPRM member to match the new configuration.

5. Change the name of the subsystem-to-monitor communication file, using ISPF 3.2, ISPF 3.4, utility IEHPROGM, and so on.

6. Start the Control-M monitor.

7. If Control-O is installed, start the Control-O monitor in all computers where Control-O should be active.

8. If CMEM was active in one or more computers, start it using the following operator command:

   S CTMCMEM

   Issue this command on all computers where the CMEM subsystem is active.

Reformatting a communication file

When a communication file (subsystem-to-monitor, or monitor-to-subsystem) has to be reformatted as a result of a disk crash, or a similar failure, all the communication files should be reformatted. Follow the steps below to restore the communication file:

1. Stop the Control-M monitor.

2. If Control-O is installed and active, stop the Control-O monitor using one of the following operator commands:

   F CONTROLO, STOP

   P CONTROLO

   Issue this command on all computers where Control-O is active.

3. If CMEM is active, stop it using one of the following operator commands:

   F CTMCMEM, STOP

   P CTMCMEM

   Issue this command on all computers where CMEM is active.

4. Delete the CTM2SBS file and all the subsystem-to-monitor files.

5. Reformat all the communication files, meaning, the CTM2SBS file, and all the subsystem-to-monitor files defined in the SYSID parameter in the IOACPRM member in the PARM library. See Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172).

6. Start the Control-M monitor.

7. If Control-O is installed, start the Control-O monitor in all computers where it should be active.

8. If CMEM was active in one or more computers, start it using the following operator command:

   S CTMCMEM

   This command should be issued in all computers where CMEM should be active.
Installing Control-M/Restart

This chapter describes the steps required to install Control-M/Restart. The installation procedure contains step-by-step instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-M/Restart installation below.

Before you begin

➢ To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTR in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-M/Restart is displayed.
You are now ready to install Control-M/Restart using ICE.

Control-M/Restart step checklist

The following list is a summary of the steps required to install Control-M/Restart.

- Step 1 – Planning (on page 207)
- Step 2 – Specify Control-M/Restart parameters (on page 208)
- Step 3 – Specify CTR target configuration parameters (on page 213)
- Step 4 – Control-M/Restart installation jobs (on page 215)
- Step 5 – Control-M/Restart adjustments (on page 217)
- Step 6 – Control-M/Restart installation conclusion (on page 217)

Installation steps

Follow the major and minor steps below to install Control-M/Restart using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-M/Restart installation sheet (on page 548) will help you determine the items you should consider before installing Control-M/Restart.
Find out if you require input from system programmers, security administrators and other personnel at your site. Check whether system changes that require special authorization and processing are necessary. Before proceeding with Control-M/Restart installation, verify that all necessary configurations are known and planned in advance.

**Step 1.1 – Is the planning sheet complete?**

This step verifies that you have filled in the Control-M/Restart planning sheet.

When you have filled in the Control-M/Restart planning sheet, do the following:

1. Press PF03/PF15 to exit this screen.
2. Type C in the Sel field.
3. Press Enter.

The step will be marked as completed.

**Step 2 – Specify Control-M/Restart parameters**

Specify values for the parameters listed in the following table.

If you change the values of certain parameters, you must shut down and restart the Control-M monitor, or issue the `F Control-M,NEWPARM` monitor command. These steps are indicated by the number 1 in the Act column of the parameter tables.

**Step 2.1 – Control-M/Restart operational parameters**

<table>
<thead>
<tr>
<th>Table 64 Operational parameters</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCPRFR</td>
<td>The first three characters of the Control-M/Restart JCL procedures after it is copied to the local MVS procedure library. The value specified for this parameter should not be the same as the value specified for the PROCPRFx parameter in IOA and other INCONTROL products (where x is a 1-character abbreviation for the product name).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Default: CTR</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Act</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
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<tr>
<td></td>
<td>Note: If the SITEPROC IOA installation parameter is set to DONTCOPY, you must copy a modified version of the CTRTROLR procedure to a site procedure library. To do this, use the COPY PROCEDURE option in the INCONTROL Installation and Customization Engine (ICE), available by selecting Maintain your Environment =&gt; ICE refresh and insert the following values for the parameters:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- input procedure name ==&gt; CTRTROLR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- output procedure name ==&gt; leave blank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- site library ==&gt; your site procedure library</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- copy IOASET and IOAENV ==&gt; Y</td>
<td></td>
</tr>
<tr>
<td>ABNDTYP</td>
<td>A special restart step is inserted into the JCL of the job to be restarted as part of the restart processing of Control-M/Restart within the Control-M monitor. If this restart step encounters an unrecoverable error (for example, an OPEN error) the ABNDTYP parameter is used to determine how the restart step terminates.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- CC – Terminate the restart step with an appropriate non-zero condition code. Default.</td>
<td></td>
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<tr>
<td></td>
<td>- UABEND – Abend the restart step with a user abend code.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If an error occurs, the CONTROLR step terminates the execution of the whole job immediately. Therefore, it is not always necessary to abend the step.</td>
<td></td>
</tr>
<tr>
<td>MAXDAYS</td>
<td>The default number of days the archived sysout data sets must be kept.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The archived sysouts are deleted after the number of days specified by this parameter, or after the number of runs specified in the MAXRUNS parameter, whichever occurs first.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Maximum: 99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Default: 10 (days)</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Act</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>MAXRUNS</td>
<td>Default number of runs the archived sysout data sets are to be kept. The archived sysouts are deleted after the number of runs specified by this parameter, or after the number of days specified in the MAXDAYS parameter, whichever occurs first.</td>
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<tr>
<td>NCAT2</td>
<td>Whether to prevent NOT CATLGD 2 events in advance as a default.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>TAPEMS</td>
<td>Whether a Tape Management system is installed at the site.</td>
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<tr>
<td>MSG_LVL</td>
<td>Message level of the Control-M/Restart step.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
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</tr>
</tbody>
</table>

### MAXRUNS Parameter
- **Default**: 20 (runs)
- **Maximum**: 999

### NCAT2 Parameter
- **Valid values**:
  - **YES**: Prevent NOT CATLGD 2 events in advance during job execution by deleting the old data set and creating the required one in its place.
  - **NO**: Do not prevent NOT CATLGD 2 events from being generated. Default.
  - **FLUSH**: Detect NOT CATLGD 2 errors and halt job processing.
  - **LIST**: Simulate prevention of NOT CATLGD 2 errors but take no action.
- **Default**: NO

### TAPEMS Parameter
- **Valid values**:
  - **YES**: Tape Management System is installed.
  - **NO**: Tape Management System is not installed. Default.

### MSG_LVL Parameter
- **Valid values**:
  - **S**: Basic messages only. Default.
  - **F**: All messages. This value should not be used unless requested by BMC Software Customer Support.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRSTAT</td>
<td>The CTR066I message can be displayed when Control-M/Restart performs restart operations. It indicates how many steps will be skipped and how much CPU time will be saved. Valid values are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ NO – Do not display skipped steps statistics.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ ONLY – Display skipped steps statistics only during restart simulation.</td>
<td></td>
</tr>
<tr>
<td>IFADJ</td>
<td>Whether to simulate the IF condition in IF, THEN and ELSE DD statements so that a job can be restarted within an IF, THEN or ELSE DD statement. For a description of how the simulation affects the placement of the CONTROLR step, see the introduction chapter in the Control-M/Restart User Guide. Valid values are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ YES – Simulate IF, THEN and ELSE DD statements.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ NO – Do not simulate IF, THEN and ELSE DD statements. Default.</td>
<td></td>
</tr>
<tr>
<td>ALLRUNS</td>
<td>Specifies whether during post processing Control-M considers all previous runs of a job, both original runs and restarts, or only the last run or restart. For more information, see the introduction chapter in the Control-M/Restart User Guide. Valid values are:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>▪ YES – Use all previous runs of a job during Control-M post processing. Default.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ NO – Use only the last run of the job during Control-M post processing.</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Act</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>CHKSEC</td>
<td>Security checks for data sets used by a job. Valid values are:</td>
<td></td>
</tr>
<tr>
<td>(WR0273)</td>
<td>§ Y – In addition to all other Control-M/Restart functionality, the product checks if a Security Violation failure may occur for the job while it accesses its data sets (specified by DD statements). Control-M/Restart uses the IOASE32 security exit for this checking.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>§ N – This feature is not activated. Default.</td>
<td></td>
</tr>
<tr>
<td>IGNLIST</td>
<td>Whether Control-M/Restart can ignore a missing input data set during Control-M/Restart List mode processing. The IGNLIST parameter checks for and records missing input data set files during Control-M/ Restart List mode processing, that is, when the NCT2 parameter is set to L in the job scheduling definition. If this parameter is not activated and a missing input data set is discovered, an error message is displayed and Control-M/Restart fails. Valid values are:</td>
<td></td>
</tr>
<tr>
<td>(WR0275)</td>
<td>§ Y – Control-M/Restart ignores missing input data sets during List mode processing. In case of missing data sets, List mode processing may nevertheless finish OK, and no error message is issued.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>§ N – During List mode processing, Control-M/Restart checks for the existence of input data sets in the same way as does all other kinds of processing. If List mode processing recognizes that an input data sets is missing, it finishes NOTOK, and corresponding error messages are issued. Default.</td>
<td></td>
</tr>
<tr>
<td>IGNGDGMB</td>
<td>Control-M/Restart can detect a missing base generation data set (base GDG) when processing a Control-M/Restart facility such as NCT2 RESTART. Control-M/Restart can either stop or allow processing of the job, depending on the value of this parameter. Valid values are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>§ Y – Control-M/Restart issues the CTR099S and CTR073I messages concerning the missing GDG base, excludes the DSNAME from the Control-M/Restart decision, and allows the processing of the job.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>§ N – Control-M/Restart issues message CTR099S concerning the missing GDG base, and stops the processing of the job. Default.</td>
<td></td>
</tr>
</tbody>
</table>
Step 3 – Specify CTR target configuration parameters

Specify values for the parameters listed below.

Step 3.1 – Control-M/Restart target libraries and members

Enter values for the parameters shown in the following table:

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 65 Target library and member parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
</table>
| OLPREFR   | High level data set name qualifiers (prefix) of the Control-M/Restart Operations libraries.  
- Mandatory  
- Maximum length: 27 characters | |
<p>| OLUNITR   | Disk unit on which Control-M/Restart Operations libraries are placed. Specify a generic unit (for example, 3390, not SYSDA). | |
| OLVOLR    | Volume serial number on which Control-M/Restart Operations libraries are placed. | |</p>
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
</table>
| AMPREFR   | Prefix of the Control-M/Restart archived sysout data set names that are created by the Control-M monitor (the first qualifier in the data set name). The Control-M monitor writes each sysout that is read from the spool to a data set name that starts with this prefix. Only the SYSDATA components of a job are written to the compressed data set.  
  - Maximum length: 7 characters, optionally including 1 period.  
  - Default: CTRSYS  
  If Control-D is installed, the prefix must be different than that defined for the AMPREF, AMPREFD and JB1PREF parameters in the CTDPARM member.  
  Note: SYSDATA is an IOA term used to designate the data in the following three job sysout data sets:  
  - the job log (console messages)  
  - the expanded JCL  
  - the system output messages | 1 |
| EAVUSE#R  | Allows allocation of Control-R CDAM files on EAV (Extended Address Volumes). Optional. Valid values are:  
  - OPT- Allows allocation on EAV. Default.  
  - NO - Prevents allocation on EAV. | 1 |
| AMUNITR   | Default unit for archived sysout files. This unit is used for the SYSDATA archived by the Control-M monitor. If no value is set for the AMVOLR parameter (the following parameter in this table), the volumes to be used for compressed sysout files must be defined in the VATLSTnn member in the SYS1.PARMLIB library with an attribute of STORAGE. Maximum length: 8 characters | 1 |
## Step 3.2 – Control-M/Restart data sets

### Table 66 Data Set Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMVOLR</td>
<td>Default volume serial numbers for Control-M/Restart archived sysout data sets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- ' ' (Blank) – Use only the AMUNITR definition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- (xxxxxx,yyyyyy,...) – Use the AMUNITR parameter (the preceding parameter in this table), but only on the specified volumes. A maximum of six different volumes can be specified.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMBLK#R</td>
<td>The default number of blocks in the first logical extent of a Control-M/Restart compressed sysout data set.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 5 digits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Recommended value: 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Default: 100</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMBLKSZR</td>
<td>The block size that should be used for compressed sysout data sets.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>BMC Software recommends that the following block sizes be used:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- For 3350: 19068</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- For 3380: 23476</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- For 3390: 27998</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Different block sizes will result in unnecessary waste of space.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 5 digits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Default: 27998</td>
<td></td>
</tr>
</tbody>
</table>
Step 4.1 – Parameter verification

In addition to the validation checks that are performed during the data entry phase, this step runs a program to verify that various installation parameters do not contain conflicting values. For example, the prefix of the Control-M/Restart Installation libraries is checked to verify that it is not the same as other INCONTROL product prefixes.

- If the step completes successfully, it is automatically marked complete.
- If conflicts are found, a list of warning messages is displayed. The list displays the current values of the conflicting parameters and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. Wait until processing completes. This step is automatically marked complete.

This step customizes the DEFPARM and CTRPARM members in the IOA.PARM library of the current IOA environment.

Step 4.3 – Before you proceed

You have completed the data entry of Control-M/Restart installation parameters in ICE. The following step submits a job that allocates data sets and tailors members in several libraries. Verify that all the values you have specified for the parameters are correct, because any changes in the parameters may require extensive manual modifications.

Step 4.4 – Install Control-M/Restart libraries

The INSTALLR job loads the Control-M/Restart libraries. The member contains JCL for the following:

- allocating the Control-M/Restart libraries
- loading Control-M/Restart libraries
- performing JCL adaptations of certain Control-M/Restart members

Submit the job and verify that all steps complete with a condition code of 0.

Step 4.5 – Indicate Control-M/Restart libraries installed

This step indicates that Control-M/Restart libraries were installed. When the process completes, this step is marked complete.

Step 4.6 – Copy several procedures to site library

This process customizes and copies certain selected procedures to the site procedure library, which is specified by the IOA SITEPROC parameter. This prevents having to add the JCLLIB statement to the existing jobs at the site.

For more information about the configuration of the site procedure library, see Step 5.3 – MVS procedures (on page 59).
Step 5 - Control-M/Restart adjustments

Follow the steps below to perform adjustments to the Control-M/Restart installation.

Step 5.1 – Check default processing options

Check the $DEFAULT member in the Control-M/Restart PARM library. This member can be used to override the default processing options of Control-M/Restart. For example, you can specify that all files beginning with the prefix SYS1 are to be excluded from processing by Control-M/Restart. In addition, this member can be used to specify that unit CASS01 is to be treated the same as unit TAPE by Control-M/Restart.

For more information, see the online facilities chapter in the Control-M/Restart User Guide.

Step 5.2 – Modify Control-M/Restart defaults

It is possible to change some of the defaults within Control-M/Restart. For example, it is possible to change the default logic for deleting data sets that are catalogued to a different volume from the volume that appears in the JCL.

For details on how to change product defaults, see the following:

- "Control-M/Restart customization considerations" in the INCONTROL for z/OS Installation Guide: Customizing. This topic describes how to install most optional wishes by setting parameters in the CTRPARM member. However, some optional wishes are contained in the IOADFLT member instead of the CTRPARM member.
- the online IOA administration chapter in the INCONTROL for z/OS Administrator Guide

Step 5.3 – Authorize modules to TSO

Ensure that the CTRSPL and CTRCTR modules are authorized as TSO programs. Do the following:

1. Define the programs in the IKJTSOxx member of the SYS1.PARMLIB library.
2. Activate the definitions using the 'PARMLIB' TSO command.

Step 6 - Control-M/Restart installation conclusion

This step is used to indicate that Control-M/Restart installation is complete. When completed, mark each step complete.

Step 6.1 – Control-M/Restart password data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-M/Restart. The product ordered is licensed to run on one or more computers for a specific period of time.
If BMC supplied you with a site licence, copy the printout to the PASCTR member. The PASCTR member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-M/Restart is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=**CONTROl-M/RESTART / *yymmdd*
  
The PROD parameter line contains the name Control-M/RESTART and the expiration date of the password in *yymmdd* format.

- **START=**yymmdd
  
  - The START parameter line contains the start date of Control-M/Restart in *yymmdd* format.
  
  - Only one START parameter can be specified in a password member.

- **CPUID=**iiiii mmmm
  
  - In the CPUID parameters line, *iiiii* is the CPU ID, and *mmmm* is the model, on which Control-M/Restart can run.
  
  - There must be a separate CPUID parameter for each CPU authorized to run Control-M/Restart.

  The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-M/Restart is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

<table>
<thead>
<tr>
<th>PROCESSOR STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>+ ONLINE - OFFLINE.</td>
</tr>
<tr>
<td>DOES NOT EXIST</td>
</tr>
</tbody>
</table>

- **PASS=**pppppppp pppppppp pppppppp
  
  - In the PASS parameter line, *pppppppp pppppppp pppppppp* is the password provided by the BMC representative.
  
  - Only one PASS line can be present in a password member

- **TYPE=**LICENCE
  
  - The TYPE parameter line contains the type of licence given. Valid values are:
    
    o LICENCE - For permanent licences.
    
    o TRIAL - For customers who want to evaluate products for a limited period of time.
    
    o EMERGENCY - For a short-term password, until a permanent password is provided.

  - Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-M/Restart password member:
The following additional considerations may apply when you edit the Control-M/Restart password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-M/RESTART / yymmdd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to "CPUID=001234."
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 6.2 – Refresh LLA

If the IOA LOAD library resides in the MVS Linklist, a refresh to the LLA is required. Use the MVS command

F LLA, REFRESH

If you operate a program fetch optimization product such as PDSMAN, QUICKFETCH, PMO, and so on, you may need to inform it to refresh its Linklist tables.

Step 6.3 – Indicate installation concluded

This step automatically updates the Status field in the Environment Table to indicate that Control-M/Restart is installed.

Verify that the IOA installation parameter CTR is set to Y.
Step 6.4 – Stop and start the Control-M monitor

1. Stop the Control-M monitor by issuing the following operator command:
   
   P CONTROLM

2. Start the Control-M monitor by issuing the following operator command:

   S CONTROLM

3. Log off from TSO/ROSCOE and log on again.

Step 6.5 – Stop and start the IOA Online monitor

1. Stop the IOA Online monitor by issuing the following operator command:

   P IOAOMON1

   The IOA Online monitor is used to access the IOA Online facility from CLCS, IMS/DC, VTAM monitor, IDMS/DC, COM-PLETE, ROSCOE (Cross-Memory), and TSO (Cross-Memory). Therefore, issuing this operator command immediately terminates the sessions of all online monitor users and prevents new users from accessing the Online facility. TSO and ROSCOE users who are not using the Cross-Memory facility are not affected by this operator command.

2. Start the IOA Online monitor by issuing the following operator command:

   S IOAOMON1

Step 6.6 – Back up the installation environment

BMC Software recommends that you create a backup of the Control-M/Restart libraries.

When backing up the installed environment, verify that the IOA base libraries, installation libraries, operations libraries, and SMP-related data sets are backed up. This backup allows you to restore the original IOA environment when required, so that Control-M/Restart can be reinstalled if a significant number of changes are made to the parameters, or if an unrecoverable failure occurs during installation.
Installing Control-D

This chapter describes the steps required to install Control-D. The installation procedure contains step-by-step instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-D installation.

Before you begin

For a complete list of Control-D libraries, see A INCONTROL product data sets (on page 450).

Complete this step only when you have completed filling in the Control-D installation sheet (on page 550).

➢ To prepare for the ICE installation

1. Open the IOA Installation—Main menu

2. Type CTD in the Product ID field

3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

   The Major Steps Selection screen for Control-D is displayed.

   You are now ready to install Control-D using ICE.

Control-D step checklist

The following list is a summary of the steps required to install Control-D. Detailed step-by-step instructions follow.
Step 1 – Planning (on page 222)
Step 2 – Specify Control-D parameters (on page 223)
Step 3 – Specify target configuration parameters (on page 234)
Step 4 – Install Control-D libraries (on page 241)
Step 5 – Customization process (on page 242)
Step 6 – Install Compressed Dataset Access Method (on page 253)
Step 7 – JES3 considerations (optional) (on page 253)
Step 8 – FDR support adaptations (optional) (on page 257)
Step 9 – XEROX printer support (optional) (on page 258)
Step 10 – AFP (APA) printer support (optional) (on page 259)
Step 11 – Advanced ACIF interface support (optional) (on page 260)
Step 12 – Connection with Control-D/Delivery Server (optional) (on page 261)
Step 13 – Adjustments (on page 262)
Step 14 – Control-D customization (on page 268)
Step 15 – Installation conclusion (on page 269)
Step 16 – Start Control-D (optional) (on page 269)

Installation steps
Perform the major and minor steps below to install Control-D using ICE.
Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning
Plan the installation process carefully. The Control-D installation sheet (on page 550) will help you determine the items you should consider before installing Control-D.

Find out if you require input from system programmers, security administrators and other personnel at your site. Check whether any system changes that require special authorization and processing are necessary. Before proceeding with the Control-D installation, verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?
This step verifies that you have filled in the Control-D planning sheet.
When you have done so,
1. press PF03/PF15 to exit this screen
2. type C in the Sel field
3. press Enter
The step will be marked as completed.

Step 2 – Specify Control-D parameters
Perform the minor steps below to specify Control-D installation parameters. These parameters are later saved in the CTDPARM member in the IOA.PARM library.

Step 2.1 Control-D operational parameters

<table>
<thead>
<tr>
<th>Table 67 Operational parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>AMNAME</td>
</tr>
</tbody>
</table>

Note: The value of AMNAME must be unique among all the existing IOA installations that may run on one system.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAYTIMED</td>
<td>Start time of the Control-D work day.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>The format is:</td>
</tr>
<tr>
<td></td>
<td>DAYTIMED=+hhmm</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>DAYTIMED=-hhmm</td>
</tr>
<tr>
<td></td>
<td>where:</td>
</tr>
<tr>
<td></td>
<td>▪ + is after midnight</td>
</tr>
<tr>
<td></td>
<td>▪ - is before midnight</td>
</tr>
<tr>
<td></td>
<td>▪ hhmm is the time in hhmm format</td>
</tr>
<tr>
<td></td>
<td>The DAYTIMED parameter specifies to Control-D when a new work day begins. For example, if DAYTIMED is set to +1000, the hours between midnight and 10:00 a.m. are considered as part of the work day of the previous date, that is, 6:00 A.M. on February 10th, is in the work day of February 9th.</td>
</tr>
<tr>
<td></td>
<td>Most sites set DAYTIMED between +0900 and +1400.</td>
</tr>
<tr>
<td></td>
<td>Every day at the specified time, the monitor performs a series of procedures that starts a new day under Control-D. One of these important procedures cleans the Active Missions file of missions that finished executing OK, or with an execution date range that has expired. For more information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td>CTDMON#</td>
<td>The number of parallel Control-D monitors, including generic monitors, that can work concurrently on the same Active Missions file. The reason for activating more than one monitor is speed of decollation. One Control-D monitor can decollate one job at a time.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 1</td>
</tr>
<tr>
<td></td>
<td>If a large number of sysouts must be processed in a very short time, more than one Control-D monitor can be opened. Each monitor decollates in parallel to the others.</td>
</tr>
<tr>
<td></td>
<td>Every additional Control-D monitor is named by changing the last character of the Control-D procedure. For example: If CTDMON# is set to 3, the following monitors are activated: CONTROLD, CONTROL2, and CONTROL3. The main Control-D monitor activates and controls all the other monitors.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| ESCAPCL   | Escape class for printouts directed to Generic classes. It must be different than the Generic class. When the GENCLAS option is activated, Control-D reads every output that appears on the spool in one of the Generic Decollation classes (the GENCLAS parameter), even if it is printed by the Control-D monitor. Therefore, it is important to direct outputs printed by Control-D away from Generic Decollation classes, even if the user requested it by mistake. In such cases, the output is routed to the ESCAPCL.  
  - Mandatory.  
  - Default: A. |
| INTERVLD  | Sleeping interval of the Control-D monitor. The monitor is dormant most of the time. It "wakes up" after each specified interval and determines which tasks it must carry out.  
The format for INTERVLD is HHMMSSth, where:  
  - HH is two digits representing hours. Valid values are: 00 through 24.  
  - MM is two digits representing minutes. Valid values are: 00 through 59.  
  - SS is two digits representing seconds. Valid values are: 00 through 59.  
  - th is two digits representing hundredths of seconds. Valid values are: 00 through 99.  
Leading zeros may be omitted. For example, three seconds, 00000300, may be specified as 300).  
  - Mandatory  
  - Minimum value: 300 (3 seconds).  
  - Default value: 600 (6 seconds).  
The value for INTERVLD should be specified according to the computer model. Its value can also be modified using an operator command. For information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| NONSWAPD | Control-D should be non-swappable for performance reasons. Otherwise, Control-D may be swapped out on each interval, which can slow down the monitor.  
  ▪ Mandatory  
  Valid values are:  
  ▪ Y (Yes) – The Control-D monitor becomes non-swappable at initialization time. Default.  
  ▪ N (No) – The Control-D monitor does not become non-swappable at initialization time.  
  
  Note: Sites with logically partitioned 3090/ES9000 machines should implement non-swappability by using PPT entries and setting the NONSWAPM parameter to N in CTMPARM (if Control-M is installed) and CTDPARM. |
| OUTGRP | This parameter identifies each chunk that Control-D sends to the spool in a unique way. For additional information about this parameter, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.  
  ▪ Mandatory  
  Valid values are:  
  ▪ Y (Yes) – Set the GROUPID according to the GROUP field of the Print Mission Definition.  
  ▪ N (No) – Do not set the GROUPID parameter. The GROUP field in the Print Mission Definition is ignored. Default.  
  ▪ J – Set GROUPID to the original job name.  
  ▪ U – Set the user name as the GROUPID of each chunk. This specification performs chunking at a user level.  
  ▪ P – Set the print mission name as the GROUPID of each chunk. |
### Parameter | Description
--- | ---
**PRTMON#** | Number of Printers Control monitors that are activated under Control-D. One Printers Control monitor is usually sufficient, since it can handle approximately 20 printing missions concurrently. The number of concurrent printing missions can be specified in Wish WD2618. If your data center is printing on several printers concurrently, an additional Printers Control monitor may be required. When counting printers, count only main computer printers that print large volumes of paper. Do not count remote printers.
- Mandatory
- Maximum: 9
- Default: 1

Every additional monitor is named by changing the last character of the Control-D Print Monitor procedure. For example, if PRTMON# is set to 3, the following monitors are automatically activated: CTDPRINT, CTDPRIN2, and CTDPRIN3.

**PRNTCLS** | Global Printing Class override. When specified, Control-D prints all printing mission reports output to the specified class. At JES2 sites, leave PRNTCLS blank (null) during installation.

At JES3 sites, this class is mandatory and must be reserved for Control-D printing, meaning, no other source should print on this class. For more information, see Step 7 – JES3 considerations (optional) (on page 253).

**SMF** | SMF records to be generated for accounting purposes.
- Mandatory

Valid values are:
- **NO** – Do not generate SMF records. Default.
- **nnn** – Generate SMF records, where nnn is the SMF record number. The valid range is 128 through 255.

Control-D can generate SMF records containing the number of lines and pages printed for each user, report or job. This permits accounting based on usage by end users, as opposed to standard accounting by job name. SMF record data can be controlled by User Exit CTDX006.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| STATD     | Whether to generate statistical data about Control-D usage. Some Control-D reports depend on the availability of this statistical data.  
- Mandatory  
Valid values are:  
- Y (Yes) – Produce statistics and store them in the IOA Log file.  
- N (No) – Do not produce statistics. Default. |
| BKPUTIL   | The type of backup and restore product that is in use at the data center. Valid values are:  
- DFDSSCAT – Designates DF/DSS as the backup utility to be used by Control-D. Backed up tapes are cataloged. Default.  
- DFDSSNCT – Designates DF/DSS as the backup utility to be used by Control-D. Backed up tapes are not cataloged.  
- FDRCAT – Designates FDR as the backup utility to be used by Control-D. Backed up tapes are cataloged.  
- FDRNOCAT – Designates FDR as the backup utility to be used by Control-D. Backed up tapes are not cataloged.  
- HSM – Designates HSM as the backup utility to be used by Control-D.  
- DMSOS – Designates DMS/OS as the backup utility to be used by Control-D.  
- ASM2 – Designates CA-ASM2 as the backup utility to be used by Control-D. |
| DFLTRST   | Default name of a restore mission to be used when the user does not designate a specific restore mission name on a report restore request. If optional Wish WD0499 is applied, the Restore window is not displayed and the name of the restore mission is obtained from this installation parameter.  
- Mandatory |
Parameter | Description
--- | ---
GENOTFND | If the GENCLAS parameter was not specified, ignore this parameter. If output classes are specified in the GENCLAS parameter, they are constantly monitored by Control-D. When non-held output appears on one of the specified classes, Control-D attempts to match the job name of the output with the job names specified in all scheduled Generic decollation missions. If no mission is found with a job name that matches the job name of the spool output, the GENOTFND installation parameter determines how Control-D handles the output file.
  - Mandatory
Valid values are:
  - PRIORITY – The spool priority of the output is set to 1. This allows other output with higher priority to be processed. Default. This value is not valid for JES3 environments.
  - DELETE – The output is deleted from spool.
  - HOLD – The spool status of the output is altered to hold, preventing it from being processed again by Control-D Generic decollation class monitoring. This value is not valid for JES3 environments.
  - CLASS=? – The class of the output is changed to the class specified by ? This class should not be one of the classes specified in the GENCLAS parameter. For JES3 environments, class alteration is only possible for output found by Control-D in classes defined to JES3 by the expression HOLD=EXTWTR.

Note: This parameter replaces the JES3ESC and GENDEL parameters from previous versions, which are no longer in use. Check your previous specification for this parameter to determine the required value for GENOTFND.

Step 2.2 – Printer definitions

In this step, you define the logical printers on which Control-D can print using DEFPRTS statements. Normally, one printer is defined for each local printer (that is, a printer that is not connected by a remote destination printing product).

You must specify at least one DEFPRTS statement.

Printer specifications are saved in the CTDPARM member.

Specify the following information for each logical printer:
## Table 68 Printer definition parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Printer Name | **Under JES2:**  
Printer name of 1 through 20 characters. BMC Software recommends that the name be identical to the JES2 logical printer name recognized by the operators (the name used in operator commands for that printer).  
**Under JES3:**  
Printer name of 1 through 20 characters. Use the printer name JUNIT, which is used by the operators in console commands. See Step 7 – JES3 considerations (optional) (on page 253). |
| Destination  | **Under JES2:**  
Valid JES2 destination code that is not assigned to any printer in JES2 definitions. Under JES2, for regular printing to spool, BMC recommends using destination U1 through U4096. Use a high order number, such as U1001, U1002, to prevent user errors. This destination code should not be defined to JES2 for the printer. The JES2 definitions remain unchanged. The destination is assigned to the printer when it is opened exclusively for Control-D use by a specific operator command. For more information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide. Assign a different destination code to every printer defined to Control-D.  
**Under JES3:**  
Specify the name defined in the JNAME parameter of the printer (in JES3 INISHDECK). For more information about printing in a JES3 environment, see Step 7 – JES3 considerations (optional) (on page 253). |
| Speed        | Approximate number of lines that the printer can print in one minute. This number is used by the Control-D printers workload balancing algorithm to decide how to optimally balance the printing workload in a multiple printers environment. |
| Status       | Valid values are:  
- **OPEN** - When Control-D is started, the printer is open, meaning, it is not necessary to issue an operator command to open this logical printer in Control-D. This is the recommended option.  
- **CLOSE** - When Control-D is started, the printer is closed. A manual operator command is required to start printing, that is, to assign and open a local printer. |
Parameter | Description
--- | ---
Chunk | Default chunk size in number of lines.

Control-D supports two printing techniques:

- **One-Chunk Method** – The entire bundle is sent to the spool for printing at one time. This method is activated by setting CHUNKSIZE to 0 in the Printing Mission Definition. If not specified in the Printing Mission Definition, CHUNKSIZE defaults to the value specified during installation. This method can be used for printing reports that contain identical printing characteristics. If reports that contain different printing characteristics are processed by this method, the characteristics of the first report are used as a default for all reports in the bundle.

- **Multi-Chunk Method** – Control-D creates a new chunk each time the number of lines specified in the CHUNKSIZE parameter is exceeded, or when printing characteristics of the reports change, whichever comes first, unless CHUNKSIZE is set to 0. Chunk size can be specified in the Printing Mission definition. If not specified in the Printing Mission definition, CHUNKSIZE defaults to the value defined during installation. For the Multi-Chunk method, the value for the CHUNKSIZE parameter must be greater than 1; the recommended value is 10000.

Multi-Chunk processing has two major advantages:

- Reports with different printing characteristics can be printed in the same bundle.
- Because the size of the chunk can be controlled, overloading the spool with a large amount of output can be prevented.

When installing Control-D for the first time, set CHUNKSIZE to 0. This ensures that work flow for the DEMO procedures outlined in the Control-D Getting Started Guide is uninterrupted. Later, choose the best value for each printer and modify it accordingly.
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Defines the type of printer. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- REG - Regular impact printer</td>
</tr>
<tr>
<td></td>
<td>- LAS - Laser printer (excluding those working in APA mode)</td>
</tr>
<tr>
<td></td>
<td>- APA – All Points Addressable printer or AFP – Advance Function Printing (such as 3800-3, 3820, or 3835).</td>
</tr>
<tr>
<td></td>
<td>- XER – XEROX 97xx laser printer (or any laser DJ DE printer)</td>
</tr>
<tr>
<td></td>
<td>- FOB – Siemens 2200 model 2 and 2300 model 2 laser printing subsystems, using SIEPRT control files</td>
</tr>
<tr>
<td></td>
<td>- MAIL – MVS E-mail Gateway</td>
</tr>
<tr>
<td></td>
<td>- NLP - Fujitsu NLP/CLP printer</td>
</tr>
<tr>
<td></td>
<td>- TP1, TP2, TP3 - User-defined printer types</td>
</tr>
<tr>
<td></td>
<td>Note: Printer type is no longer defined in the CTDX003 member of the CTDPARM library</td>
</tr>
</tbody>
</table>

Remote printers can also be defined to Control-D by the DEFPRTS parameter. This is usually done when the remote printer is a fast printer capable of handling a large amount of printing data serving a specific user. If a remote printer is defined by the DEFPRTS parameter, Control-D treats it as a local printer, that is, Control-D uses Multi-Chunk printing and sends lines to the spool according to the progress of the printing.

### Step 2.3 – Define levels in Recipient Tree

Select this step to define the TREE parameter.

The Tree Definition is a part of CTDPARM.

Modify the definitions of the levels in the Control-D Recipient Tree. The levels must be defined in pairs, a level code of two characters, and a level description of 20 characters.

The Control-D Recipient Tree is the list of all report recipients organized according to a hierarchy. The TREE parameter is used to define the structure of the tree. For more information about defining the Control-D Recipient Tree, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

In this step, it is not necessary to define the Recipient Tree in its final implementation form. The structure can be used as it is currently defined in the member. Alternatively, a tree can be defined for testing purposes. The structure of the tree can be modified at any time.
**Example**

**Table 69 Example Recipient Tree levels**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>20</td>
<td>COMPANY</td>
</tr>
<tr>
<td>30</td>
<td>DIVISION</td>
</tr>
<tr>
<td>40</td>
<td>DEPARTMENT</td>
</tr>
<tr>
<td>50</td>
<td>SECTION</td>
</tr>
<tr>
<td>60</td>
<td>END-USER</td>
</tr>
</tbody>
</table>

If Control-D is being installed for the first time, BMC Software recommends that the TREE parameter remain unchanged, to facilitate the implementation of the Getting Started environment. For more information, see the Control-D Getting Started Guide.

**Step 2.4 - Generic decollating missions classes (optional)**

Generic decollating is not mandatory, but BMC Software recommends that you use it, especially for processing the output of the MSGCLASS job.

The generic decollating missions classes are part of CTDPARM.

If an output class is specified, it is constantly monitored by Control-D. When a (non-held) job output appears on one of the specified classes, Control-D attempts to match its job name with scheduled generic decollating missions. If a generic decollating mission is present, Control-D processes output from these classes.

For more information about generic decollating missions, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

Generic classes are used to define the output classes for generic decollating missions for each Control-D monitor. Use the existing library and member name, or specify a different member to be edited.

Specify up to nine sets of classes where each set defines 1–8 generic output classes for Control-D monitor: one set for the first monitor, a second set for the second monitor, and so on.

When assigning values for the classes, note the following:

1. The same class can be specified for the first Control-D monitor, the second monitor, and so on.
2. If no output classes exist for a specific monitor, a comma must be specified for this monitor under some conditions. The following example illustrates the position where output classes are present only for the second and fourth monitors:

   \[ \text{GENCLAS}=(, \text{DEF}, , \text{XY}), \]
Step 3 - Specify target configuration parameters
Specify values for the parameters listed below.

Step 3.1 - Control-D target libraries and members
Enter values for the parameters shown in the following table:

Table 70  Control-D target libraries and members

<table>
<thead>
<tr>
<th>Library or Member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILPREFD</td>
<td>High level data set name qualifiers (prefix) of the Control-D Installation libraries.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>This prefix must be from 1 through 35 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td>ILUNITD</td>
<td>Disk unit on which Control-D Installation libraries are placed. Specify a generic unit such as 3390, and not SYSDA. The unit name must be a valid unit name of from 1 through 8 characters.</td>
</tr>
<tr>
<td>ILVOLD</td>
<td>Volume serial number of the volume on which Control-D Installation libraries are placed. The volume serial number must range from 1 through 6 characters.</td>
</tr>
<tr>
<td>OLPREFD</td>
<td>High level data set name qualifiers (prefix) of the Control-D Operations libraries and files. This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td>OLUNITD</td>
<td>Disk unit on which Control-D Operations libraries and files are placed. Specify a generic unit such as 3390, and not SYSDA. The unit name must be a valid unit name ranging from 1 through 8 characters.</td>
</tr>
<tr>
<td>OLVOLD</td>
<td>Volume serial number of the volume on which Control-D Operations libraries and files are placed. The volume serial number must range from 1 through 6 characters.</td>
</tr>
<tr>
<td>DBPREFD</td>
<td>High level data set name qualifiers (prefix) of the Control-D Repository.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
</tbody>
</table>
### Library or Member | Description
--- | ---
DEAVUSE | Allows allocation of Control-D Repository files (IOA Access method) on EAV (Extended Address Volumes). Optional.
Valid values are:
- **OPT** - Allows allocation on EAV.
- **NO** - Prevents allocation on EAV.
If not defined, the EAVUSE#D value is used by default.

DBUNITD | Disk unit for Control-D Repository. Specify a generic unit such as 3390, and not SYSDA. The unit name must be a valid unit name of from 1 through 8 characters.

DBVOLD | Volume serial number of the volume on which the Control-D Repository is placed. The volume serial number must be from 1 through 6 characters.

USERCAT | Name of a user catalog where the Control-D CDAM files are to be cataloged. The user catalog is created during the installation process. It must not be an OS catalog (SYSCTLG).
Verify that the prefix of the user catalog is not defined in the Master Catalog. For example, assume that the name of the user catalog is CTDV.UCAT. The name CTDV should not already exist in the Master Catalog. This is necessary for CTDV.UCAT to be cataloged in the Master Catalog.

---

**Step 3.2 - Control-D data sets**

Enter values for the parameters shown in the following table:

### Table 71 Control-D data sets

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Description</th>
</tr>
</thead>
</table>
| AMFSIZE | Number of records in the Control-D Active Missions file. The recommended number is twice the number of jobs to be decollated in one day. This parameter determines the number of missions (decollating, printing, archiving for Control-V, backup, restore) that can be placed on the Active Missions file concurrently.
- **Mandatory.** |
### Data Set Description

<table>
<thead>
<tr>
<th>Data Set</th>
<th>Description</th>
</tr>
</thead>
</table>
| COMSIZE    | The number of entries in the Control-D internal communication file. The recommended number is 200. If more than 200 local printers are activated at the same time, a larger number should be used.  
  ▪ Mandatory.                                                                 |
| EAVUSE#D   | Allows allocation of Control-D and Control-V files on EAV (Extended Address Volumes). Optional.  
  Valid values are:  
  ▪ OPT- Allows allocation on EAV. Default.  
  ▪ NO - Prevents allocation on EAV.                                                              |
| WRKCYL#    | Number of cylinders to allocate for Control-D print plan files.  
  ▪ Mandatory.  
  ▪ Valid range: 1 through 99.  
  This file is used for print management. Recommended value: 5 cylinders.                        |
| WRKPREF    | Data set name prefix of Control-D print plan files (used for print management). This prefix must be from 1 through 12 characters in length and may include periods. The last character must not be a period.  
  ▪ Mandatory  
  Verify that the data set name prefix (WRKPREF) is defined in the site security facility and has an alias defined in the user catalog. |
| WRKUNIT    | Default UNIT for Control-D print plan files. The unit name must be a valid unit name of from 1 through 8 characters.  
  If WRKVOL is not specified, the volume to be used for print plan files must be defined in the VATLSTnn member in the SYS1.PARMLIB library with an attribute of STORAGE. |
| WRKVOL     | Default volume serial number for Control-D print plan files. Only one volume can be specified. The volume serial number must range from 1 through 6 characters.  
  If this parameter is left blank, print plan files are allocated on volumes with status STORAGE in the specified WRKUNIT.  
  Print plan files are allocated when a printing mission is executed and are deleted when the printing mission is deleted by the Control-D New Day procedure. |
Step 3.3 – CDAM parameters

Enter values for the parameters shown in the following table:

<table>
<thead>
<tr>
<th>Table 72</th>
<th>CDAM parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| AMPREF | High level data set name qualifier of user-created Control-D CDAM files. This default prefix can be from 1 through 7 characters in length and may include one period. This prefix is used when the user does not specify the PREFIX parameter while using CDAM to create compressed data sets directly from jobs. The prefix should be unique.  
All users should have ALTER authority for files with the AMPREF prefix.  
The prefix should be different from the prefix defined in the AMPREFD parameter. If Control-M/Restart is installed, the prefix should be different from the prefix defined in the AMPREFR parameter in the CTRPARM member.  
 Mandatory. |
| AMPREFD | High level data set name qualifier for Control-D CDAM files containing report output produced by decollation missions. This prefix must be from 1 through 7 characters in length, and may include one period. The Control-D monitor writes each sysout that is read by the Control-D monitor from the spool to a data set name that starts with this prefix. This prefix should be different from the prefix defined in the AMPREF parameter.  
All users should have READ authority for files with the AMPREFD prefix. The Control-D monitor procedure and the Control-D administrator should have ALTER authority for files with this prefix.  
If Control-M/Restart is installed, the prefix should be different from the prefix defined in AMPREFR parameter in the CTRPARM member.  
 Mandatory |
| AMBLK#D | Default number of blocks in the first logical extent of a CDAM data set. The recommended number, which is used at installation time, is 100. For a full explanation of this parameter, see the CDAM chapter in the Control-D User Guide.  
 Mandatory |
### AMBLKSZD

Block size to be used when allocating Control-D CDAM sysout data sets.

- **Mandatory**

Recommended values are:

- For 3350: 19068
- For 3380: 23476
- For 3390: 27998. Default.

Other block sizes can be specified but may waste space.

### JB1PREF

Default prefix used by the Control-D monitor for CDAM sysout data sets allocated under the ALLOCOPT=JOBDSN1 option (multiple jobs in one file). This prefix must be from 1 through 7 characters in length and may include one period. This prefix must be different than those specified in the AMPREF and AMPREFD parameters.

- **Mandatory**

All users should have READ authority for files with the JB1PREF prefix. The Control-D monitor procedure and the Control-D administrator should have ALTER authority for files with this prefix.

If Control-M/Restart is installed, the prefix should be different from the prefix defined in the AMPREFR parameter in the CTRPARM member.

### EAVUSE#C

Allows allocation of Control-D CDAM files on EAV (Extended Address Volumes).

Valid values are:

- **OPT** - Allows allocation on EAV.
- **NO** - Prevents allocation on EAV.

If not defined, the EAVUSE#D value is used by default.

EAVUSE#C can be overridden, as follows:

- for new CDAM by parameter EAVUSE defined either in PRINT/CDAM PARMS in decollation mission definition or parameter SUBSYS in J CL DD statement
- for CDAM files migrated on DASD by parameter EAVUSE#S in IOASPRM member
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMUNITD</td>
<td>Default unit for CDAM sysout data sets. This unit is used for sysouts removed from the spool by the Control-D monitor. This unit is also used if the UNIT parameter is not specified when invoking the CDAM directly from jobs. If AMVOLD is not specified, the volumes to be used for CDAM sysout data sets must be defined in the VATLSTnn member in the SYS1.PARMLIB library with an attribute of STORAGE. If AMUNITD is specified but AMVOLD is not specified, the limit of 6 different volumes (described in the description of the following parameter) is not applicable. The unit name must be a valid unit name from 1 through 8 characters.</td>
</tr>
</tbody>
</table>
| AMVOLD    | Default volume serial numbers for Control-D CDAM sysout data sets. The volume serial number must range from 1 through 6 characters. Valid values are:  
- AMVOLD= – Use only the AMUNITD definition.  
- AMVOLD=(xxxxxx,yyyyyy,...) – Use the AMUNITD definition, but only on the specified volumes. A maximum of six different volumes can be specified. Note: CDAM data sets are pointed to by the VTOC. Therefore, BMC Software recommends that a large VTOC be specified in the production environment. |
| AMENCRPT  | Default setting for regular (non-JOBSDSN) CDAM files. Valid values are:  
- Y = by default, data is encrypted before it is written to CDAM file.  
- N = by default, data is not encrypted before it is written to CDAM file. Default: N |
| AMENCJDS  | Default setting for JOBSDSN CDAM files. Valid values are:  
- Y = by default, data is encrypted before it is written to CDAM file.  
- N = by default, data is not encrypted before it is written to CDAM file. Default: N |

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Step 3.4 – Control-D/PC related parameters (optional)

Enter values for the parameters shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMENCFRE</strong></td>
<td>Number of bytes in block to leave for data expansion since encryption may increase the size of the data. Use the following format: AMENCFRE=nnn</td>
</tr>
<tr>
<td></td>
<td>Default: 16</td>
</tr>
<tr>
<td><strong>AMENCDLN</strong></td>
<td>The maximum length (in bytes) of administrative data kept for each CDAM file. Use the following format: AMENCDLN=nnn</td>
</tr>
<tr>
<td></td>
<td>Default: 32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PCPREF</strong></td>
<td>High level data set name qualifier for Control-D/PC mainframe files. A maximum of 7 characters (including an optional period) can be specified for this prefix. If not specified, the default is the value specified in the AMPREFD parameter. If %%OPREF is specified, the prefix of the first file of the original CDAM file is used. BMC Software recommends, however, that this prefix be different from the value specified in the AMPREFD parameter.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PCTRKS</strong></td>
<td>Number of tracks for Control-D/PC index files.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 255 tracks can be specified.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 10.</td>
</tr>
<tr>
<td><strong>ATFBLK</strong></td>
<td>Number of blocks in the Control-D/PC Active Transmission file. The recommended value is approximately the number of Control-D/PC users divided by 36.</td>
</tr>
<tr>
<td></td>
<td>▪ Minimum number of blocks: 3</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td><strong>PCUNIT</strong></td>
<td>Unit name of Control-D/PC mainframe files. If PCUNIT is not specified, the default for CDAM files is the value specified in AMUNITD, or the file is allocated to a direct access volume for the index file. The unit name must be a valid unit name ranging from 1 through 8 characters.</td>
</tr>
</tbody>
</table>

Table 73  Control-D/PC related parameters
The PCVOLS parameter is no longer available using ICE. To set the PCBLKSZ parameter, edit the parameter manually in the CTDPARM member in the IOA.PARM library. PCBLKSZ should be set to a value greater than 296, which is the CMP block size. For more information, see the CTDAM macro.

Step 3.5 – MVS procedures and configuration

Table 74 MVS Procedure and Configuration Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSPRNTC</td>
<td>TS-PRINT users: Default class (one character) to which all remote printing reports are sent. Other users: Leave TSPRNTC blank.</td>
</tr>
</tbody>
</table>
| TSPRNTF   | TS-PRINT users: Default FORM, which is assigned to every report sent to a remote printer.  
- Maximum length: 4 characters.  
Other users: Leave TSPRNTF blank. |
| PROCPRFD  | First three characters of the Control-D JCL procedures after they are copied to the local MVS procedure library.  
- Mandatory  
- Default: CTD  
The value specified for this parameter must be different from the value specified for IOA and Control parameters PROCPRFx. |
INCONTROL for z/OS Installation Guide: Installing

Step 4.1 – Parameter verification

In addition to validation checks that are performed during data entry, this step runs a program to verify that the installation parameters do not contain conflicting values. For example, the prefix of the Control-D libraries is checked to determine that it does not conflict with other INCONTROL product prefixes.

When the step ends successfully, it is marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing ends, the step is automatically marked complete.

This step customizes the CTDPARM and DEFPARM members in the IOA.PARM library.

Step 4.3 – Before you proceed

You have completed the data entry of Control-D installation parameters in ICE. The following step submits a job that allocates data sets and tailors members in several libraries.

Verify that all the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.

Step 4.4 – Install Control-D libraries

The INSTALLD job loads the Control-D libraries. The member contains JCL for

- allocating Control-D libraries
- loading Control-D libraries
- performing JCL adaptations of certain Control-D members

Submit the job and verify that all steps complete with condition code 0.

Step 4.5 – Indicate Control-D libraries installed

This step indicates that Control-D libraries were installed. When the process completes, this step is marked complete.

Step 5 – Customization process

Perform the steps below to format Control-D data sets. When completed, mark this step complete.

Step 5.1 – Define user catalog and aliases (optional)

The FORMCAT job creates a user catalog where Control-D CDAM files are defined.

Submit the job and verify that all steps end with a condition code of 0.
Step 5.2 – Space calculation for the ACTive user report

When you select this step, the following screen is displayed:

-------- CTD ACTive user report file definition and space calculation -------
COMMAND =>
Enter or change values and press Enter.
Examine the resulting space requirements.
Use this space allocation in subsequent installation steps ? ==> (Y/N)
-----------------------------------------------------------------------------
Number of User Report entries to be retained =>
Number of $SYSDATA entries to be retained =>
Extend (A=Auto, M=Manual) =>
Secondary allocation (Percent of primary) =>
Data Comp. DUAL ==> (Y/N) DUALM ==> (Y/N) DUALST ==> (Y/N)
Index Comp. DUAL ==> (Y/N) DUALM ==> (Y/N) DUALST ==> (Y/N)
File type Unit type ----------------- Volser ------------------
Main Data => > > > > > > >
Main Index => > > > > > > >
Dual Data => > > > > > > >
Dual Index => > > > > > > >
Allocation ----------------- DATA COMPONENT ----------------- INDEX COMPONENT -------
Number of blocks =
Actual block size =

Specify values for the following parameters to calculate the space allocation for the Active User Report List file. For more information, see Installation considerations (on page 270).

Table 75 Calculating space allocation for the ACTive User report list file

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of User Report entries to be</td>
<td>The number of Active User Report entries to be retained.</td>
</tr>
<tr>
<td>retained</td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of $SYSDATA entries to be</td>
<td>The number of $SYSDATA entries to be retained.</td>
</tr>
<tr>
<td>retained</td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Extend</td>
<td>Whether a secondary extent is allocated automatically when an out-of-space</td>
</tr>
<tr>
<td></td>
<td>condition is detected.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>A (Auto) – A secondary extent is automatically allocated when an</td>
</tr>
<tr>
<td></td>
<td>out-of-space condition is detected. Default.</td>
</tr>
<tr>
<td></td>
<td>M (Manual) – Requires a secondary extent to be manually allocated after</td>
</tr>
<tr>
<td></td>
<td>an out-of-space condition is detected.</td>
</tr>
<tr>
<td></td>
<td>Note: The EXTEND parameter is ignored if no secondary space amount is</td>
</tr>
<tr>
<td></td>
<td>specified in the SPACE parameter.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary allocation (percentage of</td>
<td>Secondary space allocation (percentage of primary allocation). BMC Software</td>
</tr>
<tr>
<td>primary)</td>
<td>recommends that you specify approximately 50%.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the Active User Report List file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td> DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary Active User Report List file. Use of the dual file provides data recovery capabilities if the primary Active User Report List file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) - Allocate a dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td>— N (No) - Do not allocate a dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td> DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td>— N (No) - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td> DUALST – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— N (No) - Do not perform timestamp checkpoint processing.</td>
</tr>
</tbody>
</table>
### Index Comp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Comp</td>
<td>Index component of the Active User Report List file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUAL</strong> – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary Active User Report List file. Use of the dual file provides data recovery capabilities if the primary Active User Report List file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y (Yes)</strong> – Allocate a dual (mirror) image Active User Report List file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N (No)</strong> – Do not allocate a dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALM</strong> – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y (Yes)</strong> – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N (No)</strong> – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active User Report List file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALST</strong> – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y (Yes)</strong> – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N (No)</strong> – Do not perform timestamp checkpoint processing.</td>
</tr>
</tbody>
</table>

### Main Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Data</td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

### Main Index

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Index</td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
Parameter | Description
--- | ---
Dual Data | The dual data component. This parameter has the following subparameters:
| ▪ Unit type – The unit type to which data should be allocated.
| ▪ Volser – Up to six volsers can be specified.

Dual Index | The dual index component. This parameter has the following subparameters:
| ▪ Unit type – The unit type to which data should be allocated.
| ▪ Volser – Up to six volsers can be specified.

Space requirements are automatically calculated based on the values you specify in the Control-D ACTive user report file definition and space calculation screen.

To apply the allocations that have just been calculated, type Y in the Use this space allocation in subsequent installation steps? field, and press Enter.

**Step 5.3 – Space calculation for the HIStory user report**

Enter values for the parameters shown in the following table to calculate the space allocation for the History user report list file.

**Table 76 Calculating space allocation for the HIStory user report list file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Number of User Report entries to be retained | The number of History User Report entries to be retained.  
| ▪ Maximum: 9 digits. |
| Number of $SYSDATA entries to be retained | The number of $SYSDATA entries to be retained.  
| ▪ Maximum: 9 digits. |
| Extend | Whether a secondary extent is allocated automatically when an out-of-space condition is detected. Valid values are:  
| ▪ A (Auto) – A secondary extent is automatically allocated when an out-of-space condition is detected. Default.  
| ▪ M (Manual) – Requires a secondary extent to be manually allocated after an out-of-space condition is detected. |

Note: The EXTEND parameter is ignored if no secondary space amount is specified in the SPACE parameter.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary allocation (percentage of primary)</td>
<td>Secondary space allocation (percentage of primary allocation). BMC Software recommends that you specify approximately 50%.</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the History User Report List file. This parameter has the following subparameters:</td>
</tr>
</tbody>
</table>
| | ▪ DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary History User Report List file. Use of the dual file provides data recovery capabilities if the primary History User Report List file becomes damaged or inaccessible. Valid values are:  
  — Y (Yes) – Allocate a dual (mirror) image History User Report List file.  
  — N (No) – Do not allocate a dual (mirror) image History User Report List file. |
| | ▪ DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:  
  — Y (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image History User Report List file.  
  — N (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image History User Report List file. |
| | ▪ DUALST – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.  
  — Y (Yes) – Perform timestamp checkpoint processing.  
  — N (No) – Do not perform timestamp checkpoint processing. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Comp</td>
<td>Index component of the History User Report List file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary History User Report List file. Use of the dual file provides data recovery capabilities if the primary History User Report List file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Allocate a dual (mirror) image History User Report List file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Do not allocate a dual (mirror) image History User Report List file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image History User Report List file.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image History User Report List file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
Spaces are automatically calculated based on the values you specify in the Control-D History user report list file definition and space calculation screen.

To apply the allocations that have just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

**Step 5.4 – Space calculation for the PeRManent user report**

Enter values for the parameters shown in the following table to calculate the space allocation for the Permanent User Report file.

**Table 77 Calculating space allocation for the PeRManent user report list file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of User Report entries to be retained</td>
<td>The number of Permanent User Report entries to be retained.</td>
</tr>
<tr>
<td></td>
<td>Maximum: 9 digits.</td>
</tr>
<tr>
<td>Number of $SYSDATA entries to be retained</td>
<td>The number of $SYSDATA entries to be retained.</td>
</tr>
<tr>
<td></td>
<td>Maximum: 9 digits.</td>
</tr>
<tr>
<td>Extend</td>
<td>Whether a secondary extent is allocated automatically when an out-of-space condition is detected.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>A (Auto) – A secondary extent is automatically allocated when an out-of-space condition is detected. Default.</td>
</tr>
<tr>
<td></td>
<td>M (Manual) – Requires a secondary extent to be manually allocated after an out-of-space condition is detected.</td>
</tr>
<tr>
<td></td>
<td>Note: The EXTEND parameter is ignored if no secondary space amount is specified in the SPACE parameter.</td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
Secondary allocation (percentage of primary) | Secondary space allocation (percentage of primary allocation). BMC Software recommends that you specify approximately 50%.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Comp</td>
<td>Data component of the Permanent User Report List file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary Permanent User Report List file. Use of the dual file provides data recovery capabilities if the primary Permanent User Report List file becomes damaged or inaccessible. Valid values are:</td>
<td></td>
</tr>
<tr>
<td>— Y (Yes) – Allocate a dual (mirror) image Permanent User Report List file.</td>
<td></td>
</tr>
<tr>
<td>— N (No) – Do not allocate a dual (mirror) image Permanent User Report List file.</td>
<td></td>
</tr>
<tr>
<td>DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
<td></td>
</tr>
<tr>
<td>— Y (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Permanent User Report List file.</td>
<td></td>
</tr>
<tr>
<td>— N (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Permanent User Report List file.</td>
<td></td>
</tr>
<tr>
<td>DUALST – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
<td></td>
</tr>
<tr>
<td>— Y (Yes) – Perform timestamp checkpoint processing.</td>
<td></td>
</tr>
<tr>
<td>— N (No) – Do not perform timestamp checkpoint processing.</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Index Comp</strong></td>
<td>Index component of the Permanent User Report List file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUAL</strong> – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-D with the contents of the primary Permanent User Report List file. Use of the dual file provides data recovery capabilities if the primary Permanent User Report List file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) – Allocate a dual (mirror) image Permanent User Report List file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>— N (No) – Do not allocate a dual (mirror) image Permanent User Report List file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALM</strong> – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Permanent User Report List file.</td>
</tr>
<tr>
<td></td>
<td>— N (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Permanent User Report List file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALST</strong> – Whether Control-D performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y (Yes) – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— N (No) – Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td><strong>Main Data</strong></td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
<tr>
<td><strong>Main Index</strong></td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
Parameter | Description
--- | ---
Dual Data | The dual data component. This parameter has the following subparameters:  
- Unit type – The unit type to which data should be allocated.  
- Volser – Up to six volsers can be specified.

Dual Index | The dual index component. This parameter has the following subparameters:  
- Unit type – The unit type to which data should be allocated.  
- Volser – Up to six volsers can be specified.

Space requirements are automatically calculated based on the values you specify in the Control-D Permanent user report list file definition and space calculation screen.

To apply the allocations that have just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

**Step 5.5 – Format Control-D data sets**

The FORMCTD job creates and formats the following data sets:

| Table 78 Data sets created and formatted by the FORMCTD job |
|---|---|
| Type | Description |
| AMF | Control-D Active Missions file |
| AMB | Control-D Active Missions file – backup |
| COM | Control-D Communication file |
| ATF | Control-D Active Transfer file (for Control-D/WebAccess Server) |
| ATB | Control-D Active Transfer file – backup |
| PGC | Control-D Page Counter file. |
| ACT | Data component of the Control-D Active User Report List file. This is an IOA Access Method file. |
| ACTI | Index component of the Control-D Active User Report List file. This is an IOA Access Method file. |
| PRM | Data component of the Control-D Permanent User Report List file. This is an IOA Access Method file. |
Type | Description
--- | ---
PRMI | Index component of the Control-D Permanent User Report List file. This is an IOA Access Method file.
HST | Data component of the Control-D History User Report List file. This is an IOA Access Method file.
HSTI | Index component of the Control-D History User Report List file. This is an IOA Access Method file.
CTDS | Control-D Delivery Interface that loads standard logical destinations into the Permanent User File.

Submit the job and verify that all steps complete with a condition code of 0.

Step 5.6 – Build rulers for getting started
The BLDRUL job builds standard rulers that are used by the Getting Started environment. Submit the job and verify that all steps complete with a condition code of 0.

Step 5.7 – Copy CTD started tasks to site library
The COPYCTDP job copies Control-D started tasks from IOA PROCJCL library into the site library according to values specified earlier. Submit the job and verify that all steps end with a condition code of 0.

Step 5.8 – Copy several procedures to site library
This step customizes and copies a small set of selected procedures to the site procedure library, which is the library that was specified in the IOA SITEPROC parameter. This prevents having to add the JCLLIB statement to existing site jobs.

Step 6 – Install Compressed Dataset Access Method
The Compressed Dataset Access Method can use the services of the IOA subsystem, which is defined as part of the IOA installation procedure.

If the AMNAME Control-D installation parameter is the same as the SSNAME IOA installation parameter, the subsystem is already defined as part of the IOA installation procedure.

Verify that a subsystem is defined for all computers where CDAM will be run.
For details about defining subsystems, see H Defining subsystems (on page 509).

Step 7 – JES3 considerations (optional)
When working under JES3, review the following steps. Mark each step complete when you have completed the step.
Step 7.1 – Performance considerations

BMC Software recommends that the Control-D monitor runs on the JES3 global machine (for performance considerations), but this is not mandatory. Under the global machine, the monitor has direct access to JES3 status areas and spool queues. Thus, global access is faster and less expensive than local access.

Step 7.2 – Define Access Method under global procedure

The CDAM subsystem must be defined and installed in the global machine. This is required to activate CDAM from the job JCL. Under JES3, the JCL conversion is performed by the global machine. Therefore, if the CDAM subsystem is not installed in the global machine, jobs referencing CDAM in DD statements fail with JCL error.

Step 7.3 – JES3 exit IATUX30

The JES3 Exit IATUX30 enables Control-D (the Control-D monitors and the Printers Control monitors CTDPRINT) to issue subsystem requests.

JES3 has a special security exit for controlling subsystem requests. This exit controls two types of subsystem requests:

- **Job status subsystem requests**
  
  Control-D searches the jobs to be decollated from the spool using the job status subsystem request. JES3 Exit IATUX30 can prevent Control-D from receiving the status of the job. This causes report decollating missions to remain in WAITING FOR JOB status even if the job output for which the missions are waiting is in the output queue.

- **Sysout read subsystem requests**
  
  Control-D reads the sysout from the spool using the regular MVS subsystem interface. JES3 Exit IATUX30 can prevent the Control-D monitor from reading the output of jobs from the spool. This causes the following problems:
  
  - Control-D does not find any output for the job on spool although output seems to exist.
  - The Control-D Printers Control monitor does not pause between "chunks" of output that are directed to spool. You can see several outputs for the same printer on the spool.

If JES3 Exit IATUX30 is used to check and prevent subsystem requests by unauthorized users, it must be modified to allow Control-D to issue subsystem requests for all the jobs. The recommended method is to place a check at the beginning of the exit for the started task names of the Control-D monitors and the Control-D Printers Control monitors, and to bypass all other checking when the request originates from them.
Step 7.4 – Decollation considerations

Under JES3, output classes are divided into the following types:

- non-held class
- held external writer class (HOLD=EXTWTR)
- held TSO class (HOLD=TSO)

The characteristics of the class are defined in the JES3 INISHDECK, and have no connection with, or no relation to, the HOLD=YES or HOLD=NO expression in the JCL.

Control-D can read outputs from all these types of output classes. Consider the following alternatives:

- If it is necessary to read only held TSO classes, Control-D should run under TSO batch using the supplied procedure CONTRLD3. Due to JES3 restrictions, Control-D running under TSO cannot read outputs from external writer sysoouts.

- If Control-D is running under native mode, meaning, not under TSO, it is possible to read the output from non-held classes and held external writer classes, but not from held TSO classes.

In general, BMC Software recommends that decollation of held outputs under JES3 be avoided, unless there is no alternative.

The two methods of running the Control-D monitor under JES3 are described below.

Recommended method

Run the normal Control-D procedure.

Control-D cannot read sysoouts that are defined with the expression HOLD=TSO. It can read sysoouts that are defined with the expression HOLD=EXTWTR or are non-held.

The disadvantage of this method is that neither the TSO OUTPUT command nor option 3.8 under ISPF enables viewing sysoouts that are defined to JES3 with the expression HOLD=EXTWTR. Therefore, this method can only be used by users of products that can read the output from spool using a different technique than TSO OUTPUT or ISPF 3.8.

Use the following sample JES3 sysoout definition in the JES3 initialization deck (INISHDECK):

```
SYSOUT,CLASS=h,TYPE=(PRINT...),HOLD=EXTWTR
```

Alternative method

Run Control-D under TSO. Copy the procedure CONTRLD3 to your procedures library using the name CONTROLD.

The program CTDMON must be authorized under TSO and must be defined to TSO as an authorized module.

- For TSO/E 2.1 and later, use the following method:
  
  Add CTDMON to the list of authorized programs (the AUTHPGM parameter) in the IKJTSOxx member. If xx=00, the member is taken automatically during TSO startup. Otherwise, the member can be activated using the TSO command PARMLIB UPDATE(xx).
For TSO/E 1.4 and above, use the following method:

Add CTDMON to the list of authorized programs (the AUTHPGM parameter) in the IKJTSO00 member. The member is taken automatically during TSO startup. Any change in the member requires an IPL.

For earlier versions of TSO, use the following method:

Add CTDMON to CSECT IKJEFT8. A sample is provided by IBM in IPO1.SAMPLIB and in the TSOAPF member in IPO1.JCLLIB. This method can also be used for TSO/E 1.4 and above, but it is not recommended.

For more information, see the IBM TSO Customization Manual.

If the Control-D monitor issues message CTMAMSE, no APF authorization is granted.

Using this method, Control-D handles sysouts defined to JES3 with the expression HOLD=TSO. The TSO OUTPUT command or ISPF option 3.8 works as usual.

Step 7.5 – Printing considerations

Control-D uses a printer workload balancing algorithm to direct specific bundles to specific printers. Printers are controlled by the DEST sysout output parameter.

Under JES3, there is no command that opens a printer to a specific destination. Therefore, the printer destination is defined in JES3 INISHDECK.

The following is an example of JES3 INISHDECK, using the JNAME parameter:

```
DEVICE,DTYPE=PRT3203,J NAME=U001,
JUNIT=(04E,SYS01,UR,OFF,04E,SYS03,UR,OFF),
XTYPE=(PRT,UR),
XUNIT=(04E,SYS01,UR,OFF,04E,SYS03,UR,OFF),
HEADER=YES,TRAIN=(YES,HN),CKPNT=1000, CARRIAGE=(YES,STANDARD),
FORMS=(YES,STANDARD)
```

This printer should be defined in the CTDPARM member as

```
PRNTCLS=Q,
DEFPRTS PRINTER=(04E,U001,1500,OPEN,10000,REG)
DEFPRTS PRINTER=(04C,U002,15000,OPEN,10000,APA)
```

When Control-D prints to a specific printer, the printer definition under JES3 must be set by the operator in a manner that ensures that the Control-D Printers Control monitor is the only source to print on this printer. This prevents non-Control-D output from becoming mixed in a bundle.

Control-D uses a special dedicated class on which all outputs are printed. This class is defined by the PRNTCLS Control-D installation parameter. Assume that PRNTCLS is defined as class Q. When Control-D should print on a printer, the operator should issue the following operator commands, which are similar to those used to set a printer for a different paper type. "*" is the JES3 command prefix:

```
*WTR OUT=04E,H=N,B=N,WC=Q,WS=CL
*S 04E
F CONTROLD,STARTPRT,04E
```

For more details, see Step 2.2 – Printer definitions (on page 229).
Step 8 - FDR support adaptations (optional)

Control-D can archive and restore reports to tapes or cartridges. The function itself is performed by an archiving product (Control-D prepares the parameters). If the archiving product is FDR (Version 5.0 and later are supported), JCL tailoring of the supplied FDR samples is required before Control-D can archive and restore.

There are two ways to archive reports with Control-D:

- The backup data sets are not cataloged (the sample members BKPFDR and RSTFDR).
- The backup data sets are cataloged (the sample members BKPFCAT and RSTFCAT).

The BKPUTIL Control-D installation parameter specifies which method is to be used by the site (cataloged or not cataloged). Depending on which method was chosen, adapt the appropriate sample members.

If the BKPUTIL installation parameter is set to FDRNOCAT, only Step 8.1 - Uncataloged backup step (on page 257) and Step 8.2 - Uncataloged restore step (on page 257) are displayed. If the BKPUTIL installation parameter is set to FDRCAT, only Step 8.3 - Cataloged backup step (on page 257) and Step 8.4 - Cataloged restore step (on page 258) are displayed.

Step 8.1 - Uncataloged backup step

For uncataloged archiving, edit the BKPFDR member in the Control-D SKL library. The first step is an example of a backup step using FDR.

The backup step must contain two DD statements for each disk on which Control-D CDAM sysout data sets can reside:

- One DD statement describes the disk; the second DD statement describes the tape data set. Each TAPEx DD statement is referred to in the previous one by the expression VOL=REF=*\_TAPEx. The last TAPEx DD statement must be defined as DISP=(,PASS).
- The second step of the job (the ANALYZE step) must contain a backward reference to the last TAPEx DD statement of the first step.

Step 8.2 - Uncataloged restore step

Edit the RSTFDR member and correct the first step of the job in a similar way. The first TAPE DD statement is automatically resolved by Control-D into the correct volumes required for the restore.

Parameters in the JCL that start with % are interpreted by the Control-D monitor when running backup or restore missions and should not be modified. For details, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

For FDR version 5.1 and later, add the expression SELTERR=NO to the RESTORE command to prevent FDR abend U0888.

```
SELECT TYPE=DSF,MAXCARDS=9999,SELTERR=NO
```

Step 8.3 - Cataloged backup step

For cataloged archiving, edit the BKPFCAT member in the Control-D SKL library. The first step is an example of a backup step using FDR.
The backup step must contain two DD statements for each disk on which Control-D compressed sysout data sets can reside.

- One DD statement describes the disk; the second describes the tape data set. Note that each TAPE\textsubscript{ex} DD statement is referred to in the previous one by the expression VOL=REF=*.TAPE\textsubscript{ex}. Also note that the last TAPE\textsubscript{ex} DD statement must be defined as DISP=(,PASS).
- The second step of the job (the ANALYZE step) must contain a backward reference to the last TAPE\textsubscript{ex} DD statement of the first step.

Step 8.4 – Cataloged restore step

Edit the RSTFCAT member to restore cataloged data sets, and correct the first step of the job in a similar way. Note that the first TAPE DD statement is automatically resolved by Control-D into the correct volumes required for the restore.

Parameters in the JCL that start with % are interpreted by the Control-D monitor when running backup or restore missions, and should not be modified. For details, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

For FDR users running version 5.1 and later, add the expression SELTERR=NO to the RESTORE command to prevent FDR abend U0888.

SELECT TYPE=DSF,MAXCARD5=9999,SELTERR=NO

Step 9 – XEROX printer support (optional)

Perform the steps below to install XEROX printer support.

Step 9.1 – Set DJ DE parameters

Edit the DEFDJDE member in the Control-D DJ DEPARM library and specify following values:

+++MODEL
DJDE

These two lines define the default DJ DE prefix and its offset that are used at your site.

Specify the following DJ DE lines to be added to the Control-D printout:

- PRTDJ DE line, to be added if no information is found in the DJ DEPARM library for the current report
- LINEDJ DE line, to be added before printing the Start and End Bundle Banner
- USERDJ DE line, to be added before printing the Start and End User Banner
- REPTDJ DE line, to be added before printing the Start Report Banner, End Report Banner, and Immediate Print Banner
- MOVEDJ DE line, to be added before printing the User Bundle

It is possible to define several lines of each type and to delete existing lines.
Example:

```
* SET THE DEFAULT DJ DE VALUES (PREFIX X AND OFFSET)
+++MODEL
  DJ DE
  +++PRTDJ DE
  1 DJ DE J DE='TESTRP, J DL=DEFJ DL, END;
  +++LINEDJ DE
  1 J DE='BANNER1, J DL=DEFJ DL, END;
  +++USERDJ DE
  1 DJ DE USER BANNER DJ DE;
  +++REPTDJ DE
  1 J DE='USER, J DL=DEFJ DL, END;
  +++MOVEDJ DE
  1 DJ DE REPORT BANNER DJ DE;
```

Step 10 – AFP (APA) printer support (optional)

Step 10.1 – General information

If the site does not have an AFP printer, skip this step. For additional information on AFP (APA) print support, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

The PAGEDEF and FORMDEF parameters can be defined directly using Control-D decollating parameters without using OUTPUT statements. However, the OUTPUT statements can also be used.

If only OUTPUT statements are used to specify PAGEDEF and FORMDEF parameters, skip this step.

If more than three Control-D Printers Control monitors are used, repeat the following steps.

Step 10.2 – Modify CTDPRINT

Edit the CTDPRINT member to add the following DD statements after the last DD statement of the procedure:

DAPDEF

daDEF

Assign these DD statements to the installation PAGEDEF and FORMDEF libraries.

Example (DAPDEF DD statement)

Assign the following DD statement to the installation PAGEDEF library or libraries.

```
//DAPDEF    DD   DISP=SHR, DSN=SYS1.PDEFLIB
```

Example (DAFDEF DD statement)

Assign the following DD statement to the installation FORMDEF library or libraries.

```
//DAFDEF    DD   DISP=SHR, DSN=SYS1.FDEFLIB
```
The same PAGEDEF and FORMDEF library or libraries that are specified in the site PSF (Print Services facility) JCL procedure must also be specified in the CTDPRINT procedure.

For example, assume that the site specifies the following PAGEDEF and FORMDEF libraries in the PSF JCL procedure:

- **PAGEDEF libraries:**
  
  ```
  SYS1.PDEFLIB SYS1.PDEFLIB2
  ```

- **FORMDEF libraries:**
  
  ```
  SYS1.FDEFLIB SYS1.FDEFLIB2
  ```

In the CTDPRINT procedure, the following JCL statements must be added:

```jcl
// * PAGEDEF LI BRARI ES
// * PAGEDEF LI BRARI ES
// * DAPDEF DD DI SP=SHR, DSN=SYS1. PDEFLIB
// * DAPDEF DD DI SP=SHR, DSN=SYS1. PDEFLIB B2
// * FORMDEF LI BRARI ES
// * FORMDEF LI BRARI ES
// * DAFDEF DD DI SP=SHR, DSN=SYS1. FDEFLIB
// * DAFDEF DD DI SP=SHR, DSN=SYS1. FDEFLIB B2
```

Add the required JCL statements.

**Step 10.3 – AFP support for immediate printing**

The same DD statements that are added to the CTDPRINT procedure should also be added to the TSO Logon procedures and the IOA Online monitor (IOAOMON1) procedures. If the site is using more than one IOA Online monitor, additional DD statements should be added to all the Online monitors.

**Step 10.4 – Set BANAFP in exit CTDX003**

If you want to use the PAGEDEF, FORMDEF and OUTPUT parameters when printing banners by deferred printing, set the BANAFP parameter to YES in Exit CTDX003.

**Step 10.5 – Set BANAFP in exit CTDX014**

If you want to use the PAGEDEF, FORMDEF and OUTPUT parameters when printing banners by Immediate Print, set the BANAFP parameter to YES in Exit CTDX014.

**Step 11 – Advanced ACIF interface support (optional)**

If the ACIF facility (AFP Conversion and Indexing Facility) is not used by your site, skip this step.

**Step 11.1 – MVS software prerequisites**

The following MVS software products are required to support the Control-D Advanced ACIF Interface facility:
INCONTROL for z/OS Installation Guide: Installing

- ACIF utility (APKACIF) and PSF, from IBM.
- CIS, from Océ Printing Systems.

BMC Software recommends that you contact your IBM or Océ technical support representative to verify that your system configuration is compatible with the appropriate version and maintenance levels.

Step 11.2 – Enable ACIF to Control-D

BMC Software recommends that the APKACIF ACIF program module be located in the LPA or in an MVS LINKLIST library. Otherwise, all Control-D Print monitor JCL procedures must be manually edited to concatenate the ACIF distribution LOAD library to the STEPLIB DD statement.

The default name of the ACIF distribution LOAD library, as documented in MVS installation instructions for PSF, is PSF.ACIF.AAPKMOD1.

For more information about the ACIF facility, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

Step 12 – Connection with Control-D/Delivery Server (optional)

Perform these steps if Control-D should interact with Control-D/Delivery Server (CTDS) at your site.

Step 12.1 – Specify communication parameters

Edit the CTDSPARM member in the Control-D PARM library.

Insert values for the following parameters:

**Table 79**  Communication parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| HOST      | Enter one of the following:  
  - Name of host, up to 38 characters in length  
  - IP address - Either an IPv4 address (for example 192.168.10.1) or an IPv6 address (full 39 characters or abbreviated, for example 2001:500:100:1447::7). For examples of IPv6 addresses, refer to message ECAP9UE.  
Note: You can improve performance when transferring reports to Control-D/Delivery Server by using the compression option. This compresses the data that is to be transmitted by the TCP/IP link. To use this option, type ',' C' at the end of the IP address.  
For example, if the IP address is 172.16.240.92, type 172.16.240.92,C. |
| PORT      | Port number of the Session Manager defined during the installation of Control-D/Delivery Server. |
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIL_HOST</td>
<td>SMTP host to be used when sending e-mails.</td>
</tr>
<tr>
<td>DSR_NAME</td>
<td>Name of the repository to which the reports are transferred.</td>
</tr>
<tr>
<td>MFR_NAME</td>
<td>Name of the repository producing the reports, as defined in Control-D/Desktop. This is used when retrieving resources through Control-D Page on Demand.</td>
</tr>
<tr>
<td>USER_NAME</td>
<td>User name to be used on login to the repository.</td>
</tr>
<tr>
<td>PASSWORD</td>
<td>Password to be used on login to the repository.</td>
</tr>
</tbody>
</table>

#### Step 12.2 – Set default attributes

Edit the $$CTDSAT member in the Control-D OUTPARMS library.

Specify attributes for each Decollation Server destination type to be used by Control-D.

#### Step 12.3 – Specify OMVS RACF segment

Users of z/OS version 1.1 and later, with TCP/IP 3.4 and later, must define a proper OMVS RACF segment for the user ID and Group ID associated with the Print Monitor started task for deferred printing or online environment (OMON or TSO/ISPF) for the Immediate Print.

For details on defining an OMVS RACF segment, see the appropriate IBM documentation for this topic. Users of TOP/SECRET or ACF/2 should refer to their specific product documentation for details about the equivalent definitions in their environment.

#### Step 13 – Adjustments

Follow the steps below to perform final adjustments to the Control-D installation.

#### Step 13.1 – Initialize the Getting Started environment

The INITGS job initializes the Control-D Getting Started environment.

Submit the job and verify that all steps complete with condition code 0.

For additional information, see the Control-D Getting Started Guide.

#### Step 13.2 – Control-D password data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-D. The product ordered is licensed to run on one or more computers for a specific period of time.
If BMC supplied you with a site licence, copy the printout to the PASCTD member. The PASCTD member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-D is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=Control-D / yymmdd**
  
  The PROD parameter line contains the name Control-D and the expiration date of the password in yymmdd format.

- **START=yymmdd**
  
  - The START parameter line contains the start date of Control-D in yymmdd format.
  
  - Only one START parameter can be specified in a password member.

- **CPUID=iiii mmmm**
  
  - In the CPUID parameters line, iiiii is the CPU ID, and mmmm is the model, on which Control-D can run.
  
  - There must be a separate CPUID parameter for each CPU authorized to run Control-D.

  The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-D is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

<table>
<thead>
<tr>
<th>PROCESSOR STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>+ ONLINE - OFFLINE.</td>
</tr>
<tr>
<td>DOES NOT EXIST</td>
</tr>
</tbody>
</table>

- **PASS=pppppppp ppppppp ppppppp**
  
  - In the PASS parameter line, pppppppp pppppppp pppppppp is the password provided by the BMC representative.
  
  - Only one PASS line can be present in a password member

- **TYPE=LICENCE**
  
  - The TYPE parameter line contains the type of licence given. Valid values are:
    
    - LICENCE - For permanent licences.
    
    - TRIAL - For customers who want to evaluate products for a limited period of time.
    
    - EMERGENCY - For a short-term password, until a permanent password is provided.
  
  - Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-D password member:
The following additional considerations may apply when you edit the Control-D password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-D / yymmdd

- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to “CPUID=001234.”
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 13.3 – Control-D/Page On Demand password data (optional)

This step is used to set the password for Control-D/Page On Demand. If Control-D/Page On Demand is not to be installed at your site, skip both this step and Step 13.6 – Security considerations (on page 267).

Verify that Step 20 – Install IOAGATE (optional) (on page 105) has been performed. Verify that step Step 13.4 – Start Page On Demand (optional) (on page 265) has been performed.

Follow the instructions in Step 13.2 – Control-D password data (on page 262) to specify passwords for Control-D.

The PASPOD member in the IOA.PARM library must be updated with the password data from the printouts provided by the BMC Software representative.

Verify that the PROD parameter contains the name Control-D-POD and that its expiration date is in yymmdd format.

Example

PROD = CONTROL-D-POD / 010524
START = 070418
Step 13.4 – Start Page On Demand (optional)

If Control-D/Page On Demand is not installed at your site, skip this step.

Before starting Control-D/Page On Demand processing, verify that IOAGATE was installed, as described in Step 20 – Install IOAGATE (optional) (on page 105).

Activate the IOA Gateway using the following operator command:

```
S IOAGATE
```

It is possible to override ECAPARM communication parameters such as APPLIDS and PORT with parameters specified in the EXEC PARM of IOAGATE.

```
S IOAGATE,PORT=2525'
```

The Control-D Application Server (called IOAAS) is automatically activated by the IOA Gateway.

To deactivate the IOA Gateway, enter the following operator command:

```
P IOAGATE
```

This command deactivates the Control-D Application Server (IOAAS) as well.

Control-D/WebAccess Server users can now proceed to use Control-D/Page On Demand. For information on how to activate Control-D/WebAccess Server, see the Control-D/WebAccess Server User Guide.

Step 13.5 – Control-D/Image Password Data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-D/Image. The product ordered is licensed to run on one or more computers for a specific period of time.

If BMC supplied you with a site licence, copy the printout to the PASDIMG member.

The PASDIMG member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-D/Image is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=Control-D/Image / yymmdd**
  
The PROD parameter line contains the name Control-D/Image and the expiration date of the password in **yymmdd** format.

- **START=yymmdd**
  
  The START parameter line contains the start date of Control-D/Image in **yymmdd** format.
  
  Only one START parameter can be specified in a password member.
In the CPUID parameters line, \textit{iii}ii\textit{m}mmm is the CPU ID, and \textit{mmm}mm is the model, on which Control-D/Image can run.

There must be a separate CPUID parameter for each CPU authorized to run Control-D/Image. The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-D/Image is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

\begin{verbatim}
PROCESSOR STATUS
    ID CPU SERIAL
    0 + 0D06209221
    1 + 1D06209221
    + ONLINE - OFFLINE.

DOES NOT EXIST
\end{verbatim}

In the PASS parameter line, \textit{pppppppp pppppppp pppppppp} is the password provided by the BMC representative.

Only one PASS line can be present in a password member

The following example illustrates a completed Control-D/Image password member:

\begin{verbatim}
PROD = Control-D/Image / 080417
    START = 070418
    CPUID = 231234 9021
    CPUID = 140564 9121
    PASS = 86243457 D324389C 58349852
    TYPE = LICENCE

Note: This site has a permanent licence for Control-D/Image, starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).
\end{verbatim}
The following additional considerations might apply when you edit the Control-D/Image password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as:
  
  PROD=CONTROL-D/Image / yymmdd

- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to “CPUID=001234.”
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 13.6 – Security considerations

Control-D can be installed without setting up special security requirements, except as noted in this section for RACF, ACF2, and TOP SECRET. After Control-D is installed, it is possible to set up basic security parameters to allow a basic testing environment during the first stages of product testing. For more details, see Step 14 – Control-D customization (on page 268).

In addition, define the following started tasks as valid started tasks to the security product installed at your site:

- CONTROLD
- CTDNDAY
- CTDPRINT (and any other Printers Control monitors)
- IOAOMON1 (and any other online monitor)
- Other similar started tasks.

For RACF users

Perform an IPL (CLPA or MLPA, depending on the way RACF is implemented at your site). Verify that Control-D started tasks belong to a RACF Group (or user ID) that is authorized to allocate and write CDAM data set prefixes.
For CAACF2 users
You must have a module named ACFRxxxx in an MVS Linklist library, where xxxx is the CDAM name (the AMNAME installation parameter). A sample module named ACFRCDAM is included in the IOA LOAD library. If the IOA LOAD library does not reside in the MVS Linklist, copy the ACFRCDAM module (with rename if needed) to a Linklist library. This is a dummy program that returns with 4 in Register 15 (a requirement of ACF2).

For CATOP SECRET users
Verify that the Control-D started tasks are associated with an ACID that is authorized to allocate and write on CDAM data sets’ prefixes.
For more information, see the INCONTROL for z/OS Security Guide.

Step 14 – Control-D customization
After Control-D is installed, some customization may be required. Skip any customization step that does not apply to your site.

Step 14.1 – Exits (optional)
There are various user exits that can be used to modify Control-D operations to user needs, for example, to include the Banner exits. For information, see the Exits chapter of the INCONTROL for z/OS Administrator Guide.

Step 14.2 – Modify product defaults (optional)
Some of the defaults in Control-D can be modified to suit site-specific requirements. For example, a printing mission can be set to end OK even though no reports exist with Wait Print status. For information about how to modify this and other product defaults, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

Step 14.3 – Modify default restore library name (optional)
When the RESTORE (R) option is specified in the History list screen (Screen U), the user is prompted to specify the name of the restore mission. The name of the library where this restore mission resides is specified by the RSTLIB parameter in the $$PARMS member in the Control-D PARM library. The RSTLIB parameter can be modified to the name of any library with the following characteristics:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical record length:</td>
<td>80</td>
</tr>
<tr>
<td>Block size:</td>
<td>Multiple of 80</td>
</tr>
<tr>
<td>Record format:</td>
<td>Fixed blocked</td>
</tr>
</tbody>
</table>
Step 15 - Installation conclusion
This step is used to indicate that Control-D installation is complete. When completed, mark each step complete.

Step 15.1 - Indicate installation concluded
This step updates the Status field in the Environment table to indicate that Control-D is installed.

Step 15.2 - Back up the installed environment
BMC Software recommends that you back up the Control-D libraries.
When backing up the installed environment, verify that the Base libraries, Installation libraries, Operations libraries, and SMP-related data sets are backed up. This backup allows the users to restore the original IOA environment when required, so that Control-D can be reinstalled if a significant number of changes are made to the parameters, or if an unrecoverable failure occurs during installation.

Step 16 - Start Control-D (optional)
Follow the steps below to activate Control-D and the CDAM subsystem.

Step 16.1 - Refresh LLA
If the IOA LOAD library resides in the MVS Linklist, refresh to the LLA using the MVS command FLA,REFRESH
If a program fetch optimization product, such as PDSMAN, QUICKFETCH, or PMO, is in use at your site, you may need to refresh the Linklist tables.
Log off from TSO or ROSCOE and log on again.

Step 16.2 - Start CDAM and Control-D (optional)
Verify that the CDAM subsystem is initialized. To initialize it, use the following operator command:
S IOASINIT,OPTIONS=D
OPTIONS=D is coded as the default in the supplied copy of the IOASINIT procedure.
Start Control-D by issuing the following operator command:
S CONTROLD
If the IOA Online monitor is installed and active, issue the following operator command:
P IOAOMON1
The IOA Online monitor is used to access the IOA Online facility from CICS, IMS/DC, VTAM, IDMS/DC, COM-PLETE, and TSO or ROSCOE (Cross-Memory facility). The operator command immediately terminates the sessions of all Online monitor users and prevents new users from accessing the Online facility. TSO and ROSCOE users who are not using the Cross-Memory facility are not affected by this operator command.
Step 16.3 – Start IOA Online monitors (optional)

Start the IOA Online monitor by issuing the following operator command:

```sh
S IOAOMON1
```

If the IOA VTAM monitor is installed, start the VTAM monitor by issuing the following operator command:

```sh
S IOAVMON
```

Alternatively, edit the COMMNDxx member in SYS1.PARMLIB to add the following commands:

```sh
S IOASINIT,OPTIONS=D Initialize CDAM sub-system after IPL.
S CONTROLD Start the Control-D Monitor after IPL.
S IOAVMON Start the IOA VTAM Monitor after IPL (Optional).
```

Control-D can now be accessed by the Online Tracking and Control facility. Control-D shuts itself down at the time specified in the TIME parameter and runs the daily procedure CTDNDAY. This procedure starts Control-D for a new day.

The libraries you have loaded contain examples that can help you check some Control-D functions. The Control-D Getting Started Guide illustrates how some of these examples can be used.

Installation considerations

Control-D IOA Access Method file capacity considerations

The Control-D IOA Access Method File data and index components contain many different types of records, such as User Report, $SYSDATA, Ruler and Note records.

The quantity of records created for each decollated report may vary. A single report decollated to 100 different users might produce one $SYSDATA and 100 User Report records. A large report spanning 200 CDAM files decollated for one user produces 200 $SYSDATA and one Report record.

Similarly, the length of each record created is variable. Record lengths may be affected, for example, by the number of CDAM page ranges for a report, Ruler definition complexity, or the number of Notes tagged to a report.

Therefore, calculating the capacity of a database for a given number of reports must take into account all of the above considerations and forecasts of Control-D operation and usage in the future.

The following record lengths are typical for Database data and index components for Control-D reports and $SYSDATA records:

<table>
<thead>
<tr>
<th>Record Type</th>
<th>Data</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Report Records</td>
<td>300 Bytes</td>
<td>110 Bytes</td>
</tr>
<tr>
<td>$SYSDATA Records</td>
<td>700 Bytes</td>
<td>110 Bytes</td>
</tr>
</tbody>
</table>

In addition to the capacity considerations mentioned above, IOA Access Method file components must contain free space for block split processing. BMC Software recommends that an additional 50 percent of free space be added to a database capacity calculation for this purpose.
IOA Access Method file allocation formulas

The following formulas illustrate how to calculate space requirements for the Control-D Repository. For simplicity, only User Report and $SYSDATA record types are taken into account.

To calculate the number of blocks needed to allocate IOA Access Method file data and index components of the Active User Report file, use the formula:

$$\text{NumberOfBlocks} = \left( \frac{\text{MaxRpts} \times \text{AvgRptLrecl}}{} + \left( \frac{\text{MaxRpts} \times \text{AvgSysdataLrecl} \times \text{RecRatio}}{1.5} \right) \right) / \text{Blksize}$$

To calculate the number of cylinders from the resulting number of blocks, use the formula:

$$\text{NumberOfCylinders} = \left( \frac{\text{NumberOfBlocks}}{\text{BlocksPerTrack}} \right) / \text{TracksPerCylinder} + 1$$

where

- $\text{MaxRpts}$ is the maximum number of User Report records to be retained.
- $\text{AvgRptLrecl}$ is the average User Report record size.
- $\text{AvgSysdataLrecl}$ is the average $SYSDATA$ record size.
- $\text{RecRatio}$ is the ratio of $SYSDATA$ records to User Report records.
- $\text{BlocksPerTrack}$ is the number of blocks per track according to block size and track size.
- $\text{TracksPerCylinder}$ is the number of tracks per cylinder according to the specific device type.

The following table provides other relevant information for your convenience:

<table>
<thead>
<tr>
<th>DASD device</th>
<th>Tracks per cylinder</th>
<th>Optimal block size</th>
<th>Blocks per track</th>
</tr>
</thead>
<tbody>
<tr>
<td>3390</td>
<td>15</td>
<td>27,998</td>
<td>2</td>
</tr>
<tr>
<td>3380</td>
<td>15</td>
<td>23,476</td>
<td>2</td>
</tr>
<tr>
<td>3350</td>
<td>30</td>
<td>19,068</td>
<td>1</td>
</tr>
<tr>
<td>9345</td>
<td>15</td>
<td>22,928</td>
<td>2</td>
</tr>
</tbody>
</table>

IOA Access Method file allocation example

Assume the following is true for the purposes of this example:

- An Active User Report file is to be allocated on a 3390 DASD device.
- The maximum number of reports to be retained is 200,000.
- On the average, the ratio of $SYSDATA$ records to User Report records is 1-to-20.

Since the Active User Report file is to be allocated on a 3390 DASD device, the BLKSIZE parameter in the IOA Access Method file definition statement members for both the index and data components should be set to 27998. This is the maximum half track capacity of a 3390.
An additional 50 percent of the total space calculated is added as free space for block split processing. The number of blocks to be allocated for each IOA Access Method file component is specified in the IOA Access Method file definition statement member of the component, using the SPACE parameter.

To calculate the space for the data component:

- \[ \text{Number Of Blocks} = \left(\frac{(200,000 \times 300) + (200,000 \times 700 \times \frac{1}{20})}{27,998 \times 1.5}\right) = 3590 \]
- \[ \text{Number Of Cylinders} = \frac{3590}{2/15} + 1 = 120 \]

To calculate the space for the index component:

- \[ \text{Number Of Blocks} = \left(\frac{(200,000 \times 110) + (200,000 \times 110 \times \frac{1}{20})}{27,998 \times 1.5}\right) = 1240 \]
- \[ \text{Number Of Cylinders} = \frac{1240}{2/15} + 1 = 42 \]

Using the above formulas, the space requirement of the data component is 3590 blocks (approximately 120 cylinders on a 3390 DASD device).

Using the above formulas, the space requirement of the index component is 1240 blocks (approximately 42 cylinders on a 3390 DASD device).

Activating more than one monitor (test/production)

Many users need to operate two or more Control-D monitors simultaneously, for example, production and test. Control-D does not support two monitors that update the same repository. Control-D verifies that two monitors do not update the same repository by issuing an ENQ SYSTEMS command with the IOA QNAME.

To activate more than one Control-D monitor in a single system, perform the following steps:

1. Install a new IOA environment. For details, see the IOA installation procedure in Installing IOA (on page 34) and how to customize INCONTROL products in the "Customizing INCONTROL products" chapter in the INCONTROL for z/OS Installation Guide: Customizing. If a new IOA environment was previously created to operate two or more Control-M or Control-O monitors, skip to step 2.

   The following prefixes must be different for the two environments when installing a new IOA environment
   - the prefix of the Base libraries (the BASEPREF parameter)
   - the prefix of the Installation and Operations libraries (the ILPREFA and OLPREFA parameters)
   - the name of the IOA Authorized Load Module library (the STEPLIB parameter)
   - the prefix of the IOA Core (the DBPREFA parameter)
   - the first three characters of the IOA JCL procedures (the PROCPREFA parameter)
   - the QNAME for ENQ requests to the IOA Core (the QNAME parameter)
   - the name and version (suffix) of the SSNAME IOA subsystem parameter

2. Perform Step 6.7 – Copy IOA started tasks into site library (on page 66).

3. If the new IOA environment runs on different computers than the original IOA environment, contact your BMC Software representative to obtain new passwords.

4. Install another Control-D.
All editing of a member within a specific library must be performed on the specified new Control-D library.

None of the members within the currently working Control-D should be modified.

The following parameters must be different from the current Control-D parameters when performing the new Control-D installation:

- the prefix of the Control-D Installation and Operations libraries (the ILPREFD and OLPREFD parameters)
- the prefix of the Control-D Repository (the DBPREFD parameter)
- the first three characters of the Control-D JCL procedures (the PROCREFD parameter)
- the same Generic class specified in the GENCLAS parameter
- the prefix of compressed sysout data sets (the AMPREF, AMPREFD, and JB1PREF parameters)
- the name of the Control-D New Day procedure (the PROCNAMD parameter)

5. Perform Step 5.7 – Copy CTD started tasks to site library (on page 253).
Installing Control-V

This chapter describes the steps required to install Control-V. The installation procedure contains step-by-step detailed instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-V installation.

Before you begin

➢ To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTV in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-V is displayed.

You are now ready to install Control-V using ICE.

Control-V step checklist

The following list is a summary of the steps required to install Control-V. Detailed step-by-step instructions follow.

- Step 1 – Planning (on page 275)
- Step 2 – OAM support (optional) (on page 275)
- Step 3 – Specify target configuration parameters (on page 277)
- Step 4 – Installation jobs (on page 281)
- Step 5 – Install Centera support (optional) (on page 282)
- Step 6 – Customization process (on page 283)
- Step 7 – Adjustments (on page 296)
- Step 8 – Start Control-V (on page 298)
- Step 9 – Installation conclusion (on page 299)
Installation steps

Follow the major and minor steps below to install Control-V using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-V installation sheet (on page 554) will help you determine the items you should consider before installing Control-V.

Find out if you require input from system programmers, security administrators and other personnel at your site. Check whether any system changes that require special authorization and processing are necessary. Plan ahead. Before proceeding with Control-V installation, verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?

This step verifies that you have filled in the Control-V planning sheet.

When you have done so,

1. Press PF03/PF15 to exit this screen
2. Type C in the Sel field
3. Press Enter

The step will be marked as completed.

Step 2 – OAM support (optional)

This step should be performed by users who want to support OAM as a migrated media.

Step 2.1 – Space considerations

OAM stores objects in DB2 in two separate tables:

- One table is used for small objects, up to 4KB in size.
- One table is used for large objects, up to 32KB object size or segmented to 32KB blocks.

Usually, Control-D and Control-V files are stored as large objects. To maximize space utilization with the OAM databases in DB2, object size should be as close as possible to multiples of 32KB. This can be achieved by setting the number of blocks per object by the OBJ SIZE parameter.

For example, with BLKSIZE set to 27998, setting OBJ SIZE to 7 provides good space utilization, as indicated by the following computation:

\[(27998 \times 7) = 195986 = (6 \times 32 \times 1024) - 622.\]

When OBJ SIZE is set to 7, only 622 bytes are wasted.

In OAM installation, you must be familiar with the following parameters to calculate database sizes:
Table 83  Parameters for calculating database sizes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average object size</td>
<td>This parameter is calculated by multiplying the OBJ SIZE parameter value by the CDAM file block size, and rounding it to the next higher multiple of 32KB.</td>
</tr>
<tr>
<td>Total number of objects within an object storage group</td>
<td>This number is calculated by multiplying the number of objects created per day by the number of days you want to keep the objects. BMC Software recommends that you add 20% to the result as a safety margin.</td>
</tr>
<tr>
<td>Number of small objects</td>
<td>This number is usually zero.</td>
</tr>
<tr>
<td>Number of large objects</td>
<td>This number is usually equal to the total number of objects in an object storage group.</td>
</tr>
</tbody>
</table>

An OAM collection is created for each Control-V migrated file. Each collection is defined both in DB2 and in an ICF catalog. BMC Software recommends that you define a separate catalog for Control-V migrated files. You should ensure that the catalog is large enough for the needs of your site. The DSNPREF and SECPREF parameters in the IOASPRM member of the IOA.PARM library are used to direct the migrated files to the designated catalog. Due to OAM and DB2 limitations, collections are not deleted when Control-V migrated files reach the end of their normal retention period. Only the objects in the collections containing the actual data are deleted.

Step 2.2 – DB2 and SMS considerations

You can define up to 100 object storage groups to OAM (in SMS and DB2). If 100 object storage groups are not necessary, you can save space by defining only the number of storage groups you need, and defining the rest of the groups as VIEWS of the defined storage groups. For example, if you need 60 groups, you can define those 60 storage groups and then define the remaining 40 as VIEWS of the 60.

Although the OAM PISA (Planning, Installation, and Storage Administration) Guide for object support states that you can skip the steps for defining groups you do not need, you must define them at least as VIEWS so that the OAM DB2 plans are bindable.

In the SMS ACS routines, you must define the STORCLAS, MGMTCLAS and STORGRP attributes for objects. You can then assign objects to appropriate storage groups based on their values for these attributes.

Control-V objects can best be identified using the following:

- `&envir parameter (= 'STORE')`
- `&hlq parameter (= MIGRATED prefix defined in Control-V)`
- `&dsn parameter (= collection name)`

For example, you can derive the job name from the collection name and direct the collections to storage groups according to their job name prefix.
Step 2.3 – Installation considerations

By default, CBRSQXL* jobs (where * represents a suffix for these IBM jobs) use the BP0, BP1, BP2 and BP32K pools. If your site uses other buffer pools, do either of the following:

- define the above buffer pools in DB2
- change the CBRSQXL* jobs to use the buffer pools used at your site

To allocate and define only the storage groups you require, as discussed in the preceding step, remove the appropriate steps from the CBRIALC* and CBRSQXL* jobs. Define the VIEWS of the removed groups on an existing group so that OAM plans can bind successfully.

Control-V does not use the OAM CICS interface. Therefore, there is no need to change CICS installation parameters when installing IBM OAM only for the migration application of Control-V.

When defining the management class used for Control-V OAM objects, do not define any expiration or retention period. Control-V deletes an object at the end of its normal retention period as specified in the Migration Mission definition.

To redefine a storage group that was defined only as a VIEW, delete its defined VIEW, allocate a new cluster for the storage group, and then define the storage group to DB2.

Step 3 – Specify target configuration parameters

Specify values for the Control-V installation parameters listed below.

Step 3.1 – Control-V target libraries and members

Enter values for the parameters shown in the following table:

**Table 84 Target library and member parameters**

<table>
<thead>
<tr>
<th>Library / member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLPREFV</td>
<td>High level data set name qualifiers (prefix) of the Control-V Operations libraries. This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td>OLUNITV</td>
<td>Disk unit on which Control-V Operations libraries are placed. Specify a generic unit (such as 3390 – not SYSDA). The unit name must be a valid unit name ranging from 1 through 8 characters.</td>
</tr>
<tr>
<td>OLVOLV</td>
<td>Volume serial number of the volume on which Control-V Operations libraries are placed. The volume serial number must range from 1 through 6 characters.</td>
</tr>
</tbody>
</table>
### Library / member  Description

<table>
<thead>
<tr>
<th>Library / member</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTVCAT</td>
<td>Name of the user catalog where the Control-V Index files and migrated CDAM data sets are cataloged. The catalog is created during the installation process. It must not be an OS catalog (SYSCTLG). Verify that the user catalog prefix is not defined in the master catalog. For example, if the user catalog name is CTVV.UCAT, the name CTVV should not already exist in the master catalog. This is necessary so that CTVV.UCAT can be cataloged in the master catalog. Optional.</td>
</tr>
<tr>
<td>CATUNITV</td>
<td>Unit of the user catalog where the Control-V Index files and migrated CDAM data sets are cataloged. Optional. The unit name must be a valid unit name ranging from 1 through 8 characters.</td>
</tr>
<tr>
<td>CATVOLV</td>
<td>Volume serial number of the user catalog. Optional. The volume serial number must range from 1 through 6 characters.</td>
</tr>
</tbody>
</table>

---

### Step 3.2 – MVS procedures

**Table 85  MVS procedure parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| PROCPRFV    | First three characters of the Control-V JCL procedures after they are copied to the local MVS procedure library.  
  - Mandatory  
  - Default: CTV  
  The value specified for this parameter should not be the same as the value specified for the PROCPREFx parameter for IOA or any other INCONTROL product. |
### Step 3.3 – Control-V index parameters

#### Table 86 Index parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| IXBLKSZ   | Block size to be used by Control-V for index files. Recommended values:  
  - For 3380: 23476  
  - For 3390: 27998  
  Other block sizes can be specified. However, this may waste space. |
| IXHPREF   | One-, two-, or three-character value.  
  - Mandatory  
  If three characters, IXHPREF is a high-level qualifier of the index file name.  
  If one or two characters long, the index file name prefix is built as the CDAM file prefix, with one of the characters replaced by the first IXHPREF character.  
  If IXHPREF is one or two characters long, the first character of the CDAM file prefix is replaced. If two characters, the second character should be a digit from 1 to 7. This digit means the offset of the character in the CDAM file prefix, which is replaced with the first IXHPREF character.  
  The one or two characters option should be used if, according to data set naming conventions in use at the site, the high-level qualifier must be more than three characters in length.  
  Assign a unique prefix.  
  - Default: IXV. |
| IXPREF    | Second level data set name qualifier for index files. This prefix can be from 1 through 7 characters in length and may include one period. Assign a unique prefix.  
  If IXHPREF is one or two characters long, the second-level qualifier is not used and this parameter can be omitted.  
  Note: Grant ALTER authority to the Control-D Monitor for files starting with IXHPREF.IXPREF if IXHPREF is three characters in length or to the built prefix value if IXHPREF is one or two characters in length. |
<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
</table>
| IXTOPC        | Flag to indicate whether index data should or should not be included in transfer packets. Control-D/WebAccess Server version 2.0.1 supports index file transfer. If your site does not have Control-D/WebAccess Server version 2.0.1 or later, set this parameter to N. Valid values are:  
  - Y (Yes) – Include index files in PC transfer packets. Default.  
  - N (No) – Do not include index files in PC transfer packets. |
| EAVUSE#V      | Allows allocation on EAV (Extended Address Volumes) of Control-V index files (Active and Migrated on DASD media) and CDAM files Migrated on DASD media. Valid values are:  
  - OPT- Allows allocation on EAV.  
  - NO - Prevents allocation on EAV. If not defined, the EAVUSE#D value is used by default. EAVUSE#V can be overridden, as follows:  
  - for new Control-V index files by parameter EAVUSE defined in PRINT/CDAM PARMS in decollation mission definition  
  - for Control-V index files migrated on DASD by parameter EAVUSE#S in IOASPRM member |
| IXUNIT        | Default unit for index files. The unit name must be a valid unit name ranging from 1 through 8 characters. If the IXVOL parameter is not specified, the volumes to be used for the index files must be defined in the VATLSTnn member in SYS1.PARMLIB with an attribute of STORAGE. |
Step 3.4 – Define volume serials for index files

Specify the following parameter:

**Table 87 Parameter for defining volume serials for index files**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| IXVOL     | Default volume serial numbers for Control-V index files. The volume serial number must range from 1 through 6 characters. Valid values are:  
  - `' ' (Blank) – Use only the IXUNIT definition.  
  - `(xxxxxx,yyyyyy,...)` – Use the IXUNIT parameter only on the specified volumes. A maximum of 6 volumes can be specified. |

Step 4 – Installation jobs

Perform the following steps before running the installation jobs.

Step 4.1 – Parameter verification

In addition to validation checks that are performed during data entry, this step runs a program to verify that the installation parameters do not contain conflicting values. For example, the prefix of the Control-V libraries is checked to determine that it does not conflict with other INCONTROL product prefixes.

If the step completes successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing ends, the step is automatically marked complete.

This step customizes the CTVPARM and DEFPARM members in the IOA.PARM library.

Step 4.3 – Before you proceed

You have completed the data entry of Control-V installation parameters in ICE. The following step submits a job that allocates data sets and tailors members in several libraries.

Verify that all the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.

Step 4.4 – Install Control-V libraries

The INSTALLV job loads the Control-V libraries. The member contains JCL for
Step 4.5 – Indicate Control-V libraries installed

This step indicates that Control-V libraries are installed. When the process completes, this step is automatically marked complete.

Step 5 – Install Centera support (optional)

Users who want to use the EMC Centera Storage system as media for Control-V migrated reports must perform this step.

Step 5.1 - Download the Centera SDK file

Increase the IOA LOADE library to 1000 tracks in order to be able to hold the CENTERA SDK modules. Download the following file to your desktop:

ftp.bmc.com/pub/control-d/ctd4mf/centera/centera.9.0.00.zip.

Unzip it and upload it to a file on your M/F with RECFM=FB LRECL=80 attributes, you can choose any file name.

Step 5.2 - Build Centera support library

This job restores the Centera support modules from the XMIT file created in Step 5.1 - Download the Centera SDK file (on page 282).

1. Enter the file name in the //CENTIN statement.
2. Submit the job and verify that it completes with condition code 0.

Step 5.3 - Specify OMVS security segment

OMVS security segments should be defined for the following:

- IOASMON started tasks
- Migration jobs
- CTVCLMIG jobs

For details on how to define OMVS segments, please refer to the appropriate documentation, RACF, TopSecret, or ACF2 manuals.

Step 5.4 - Set Centera IP addresses access nodes

Specify the IP addresses of Centera access nodes in the POOL1 through POOL4 parameters of the Centera media. This will be done in Step 6.2 – IOA media specific parameters (on page 285).
Step 6 - Customization process

Perform the steps below to format Control-V data sets and compile the Control-V installation parameters. When completed, mark this step complete.

Step 6.1 - IOA archive server parameters

Table 88 IOA archive server parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAXSESSV</td>
<td>Maximum number of concurrent users who can view or print reports from the Migrated User file.</td>
</tr>
<tr>
<td></td>
<td> Mandatory</td>
</tr>
<tr>
<td></td>
<td> Default: 100.</td>
</tr>
<tr>
<td>CACHESZ</td>
<td>Maximum number of blocks the IOA Archive Server reads from external storage media for viewing and printing requests. The cache size is:</td>
</tr>
<tr>
<td></td>
<td>CDAM file BLKSIZE * CACHESZ</td>
</tr>
<tr>
<td></td>
<td>Cached data resides above the 16 MB line.</td>
</tr>
<tr>
<td></td>
<td>Set this value according to the average amount of data accessed for viewing and printing requests and the number of concurrent users. The cache should be sufficient to ensure good performance for the estimated number of concurrent users.</td>
</tr>
<tr>
<td></td>
<td>For example, if the system usually has many concurrent users, but most file accesses are accomplished through an index and few pages are viewed each time, the CACHESZ value can be low.</td>
</tr>
<tr>
<td></td>
<td> Mandatory</td>
</tr>
<tr>
<td></td>
<td> Minimum number of blocks: 5</td>
</tr>
<tr>
<td></td>
<td> Recommended size for mixed types of access by many users: 20</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| INTERVLV  | I OA Archive Server Sleeping interval. The server is dormant most of the time. It "wakes up" after the specified interval and determines which tasks it must perform. INTERVLV can be set to smaller numbers, depending on the computer model. For faster models, specify a smaller value. The interval should be set to a minimum, in accordance with the following figures:  
  - 10 seconds - For machines with less than 20 MIPS  
  - 5-6 seconds - For machines with 20-50 MIPS  
  - 4 seconds - For machines with over 50 MIPS  
  A shorter interval may unnecessarily increase system overhead. The format for INTERVLV is HHMMSSth, where:  
  - HH is two digits, representing hours. Valid values are: 00 through 24.  
  - MM is two digits, representing minutes. Valid values are: 00 through 59.  
  - SS is two digits, representing seconds. Valid values are: 00 through 59.  
  - th is two digits, representing hundredths of seconds. Valid values are: 00 through 99.  
  Leading zeros may be omitted (for example, three seconds, 00000300, may be specified as 300).  
  - Mandatory  
  - Minimum value: 300 (3 seconds)  
  - Default value: 600 (6 seconds).  
  The value for INTERVLV can also be modified using an operator command. For more information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide. |
### Parameter | Description
--- | ---
MIGENDTM | Termination time of the migration process (if still active at the specified time), in the format hhmm (hour and minute).
- Mandatory

The MIGENDTM parameter specifies when to stop the current migrated job. After this time, the migration job does not migrate the next CDAM data set. Any remaining unmigrated CDAM data sets are handled by the next appropriate migration mission.

This parameter should be specified to accommodate the online work load at the site. Most sites schedule the migration process to run at night when the online work load is light. If for some reason the migration process does not finish on time, it may interfere with online work. Therefore, BMC Software recommends that you set the MIGENDTM parameter to a time that precedes the heavy daytime online work load.

STATV | Wether to generate statistical data about Control-V usage. Some Control-D reports depend on the availability of this statistical data.
Valid values are:
- Y (Yes) – Produce statistics and store them in the IOA Log file.
- N (No) – Do not produce statistics. Default.

SMFV | SMF records to be generated for accounting purposes.
- Mandatory

Valid values are:
- NO – Do not generate SMF records. Default.
- nnn – Generate SMF records, where nnn is the SMF record number. Valid range: 128-255.

Control-V can generate SMF records containing the number of lines and pages printed for each user, report or job. This permits accounting based on usage by end users, as opposed to standard accounting by job name. SMF record data can be controlled by User Exit CTVX002.

---

### Step 6.2 – IOA media specific parameters

Select this step to define the archive MEDIAs. These parameters are used by Control-V to migrate reports.

For detail description of the IOA media-specific parameters see the following table. For a summary of the relationships between media types and the parameters, see Table 89, below.
### Table 89  Media-specific parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME</td>
<td>Logical name of the migrated media. The name specified should clearly describe the target media, such as ATL1, and so on. Assign unique names to different media types or, when applicable, to different device groups within the same media type. For example, if multiple ATLs (automatic tape libraries) are used, a media name should be assigned to each ATL. This ensures that tapes created in one ATL are not requested in another ATL. Define these names carefully because they are used for migration and for viewing migrated reports. Changing or deleting a name after it was used for migration prevents access to files migrated under that name.</td>
</tr>
<tr>
<td>TYPE</td>
<td>Target media type. Control-V supports the following media types: - CART – 3490 tape cartridge subsystem - DASD – Disks, Fat-DASD, IBM 3995 Optical library Dataserver Model 153 (3390 simulation) - OAM – IBM Object Access Method for IBM 3995 optical library data server - Centera - EMC Centera Storage System</td>
</tr>
<tr>
<td>DSNPREF</td>
<td>One-, two-, or three-character value. DSNPREF must be the same length as the IXHPREF parameter. If three characters, DSNPREF is the high level data set name qualifier of CDAM and index data sets migrated to the media. If one or two characters, the migrated data set name prefix is built by inserting the first DSNPREF character into the non-migrated file prefix. If DSNPREF is one character, it is inserted into the first position of the non-migrated file prefix. If DSNPREF is two characters, the second character should be a digit from 1 to 7. It represents the number of the position into which the first DSNPREF character is inserted. The one or two characters option should be used if, according to data set naming convention at the site, the high level qualifier must be more than three characters in length. The value specified for the DSNPREF parameter must be different than the value specified for the IXHPREF and SECPREF parameters.</td>
</tr>
</tbody>
</table>

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### Parameter | Description
--- | ---
SECPREF | One-, two-, or three-character value. SECPREF must be the same length as the DSNPREF and IXHPREF parameters.
| If three characters, SECPREF is the high level data set name qualifier of CDAM and Index data sets migrated to the media.
| If one or two characters, the migrated data set name prefix is built by inserting the first SECPREF character into the non-migrated file prefix. If SECPREF is one character, it is inserted into the first position of the non-migrated file prefix. If SECPREF is two characters, the second character should be a digit from 1 to 7. It represents the number of the position into which the first SECPREF character is inserted. The one- or two-character option should be used if, according to data set naming convention at the site, the high level qualifier must be more than three characters in length.
| If SECONDARY is set to Y in the migrated mission definition, the second migrated job uses this prefix, and the first migrated job uses the prefix specified by the DSNPREF parameter.
| The value specified for the SECPREF parameter must be different than the value specified for the IXHPREF and DSNPREF parameters.

**Notes:**
- Migrated job names should be granted ALTER authority to delete files starting with DSNPREF and SECPREF in your security facility.
- Verify that the DSNPREF, IXHPREF and SECPREF parameters contain unique values.

UNITNAME | Generic or esoteric unit name defined for this media in the system. Specify the esoteric unit name only if no generic unit name was defined for this media. The unit name must be a valid unit name ranging from 1 through 8 characters.
| If no specific unit name was defined in the system for these devices, type 3490 for UNITNAME.

CARTLEN | For CART media only.
| For CART media, the CARTLEN parameter specifies the length, in feet or MB, of the cartridges used. If the value is in foot, only the digital value should be specified. If the value is in MB, the letter 'M' should be added after the value.
| For more information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| COMP      | For CART media only. Whether to use IDRC Compression. Valid values are:  
  ▪ Y (Yes) – Use IDRC compression during the migration process.  
  ▪ N (No) – Do not use IDRC compression during migration.  
  ▪ D (Defined) – Use the MVS compression defined for the tape drive. Default. |
| DEVUSE    | For CART media only. This parameter relates to the device handling method used. Valid values are:  
  ▪ DEDICATED – The devices used by the server are dedicated to its use. The devices are not freed until the connection between the server and the device is stopped.  
  ▪ DYNAMIC – The devices used by the server are shared. The server uses any free device and releases the device when not in use or after requests for a volume are processed.  
  For additional information about this parameter, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide. |
| DEVADDR   | The DEVADDR parameter is optional for CART media and can only be used if the value entered for the DEVUSE parameter is DEDICATED.  
  The DEVADDR and DEVQTY parameters are mutually exclusive.  
  The DEVADDR parameter specifies the device numbers that identify each device dedicated to the IOA Archive Server. The syntax is:  
  (devnum[,devnum...])  
  where devnum is the 4-digit number of the device |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DEVQTY    | For CART media only.  
The DEVQTY and DEVADDR parameters are mutually exclusive.  
The DEVQTY parameter is mandatory if the DEVUSE parameter is set to DYNAMIC.  
The DEVQTY parameter specifies the maximum and initial quantity of devices that can be used by the IOA Archive Server for this media. The devices are allocated according to the DEVUSE parameter. For additional information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.  
The syntax is:  
(maximum,start)  
where:  
- maximum is the maximum quantity of devices that can be used by the IOA Archive Server for this media at any time. Default.  
- start is the quantity of devices used by the IOA Archive Server for this media when the media is initialized. |
| DYNDEVRL  | Specify this parameter for CART media when DEVUSE is set to DYNAMIC. The SWITCH/NOSWITCH flag indicates how to handle dynamic devices. The idletime subparameter specifies when to release dynamic devices. The syntax is:  
(SWITCH|NOSWITCH,idletime)  
where:  
- SWITCH – Release a device when a volume is switched. The next request may cause allocation of another device, or, if all devices are allocated, may cause a delay. In this allocation method, dynamic allocation is performed in a standard manner, using the MVS catalog. It is the recommended method at sites that have a multiple number of Robotic Tape Libraries, or when the IOASMON non-switched allocation method impacts on the functionality of the Tape Management System.  
- NOSWITCH – Release a device only when there are no pending requests. Volume switching does not cause device deallocation. This ensures that if there are pending requests, an allocated device is not reallocated to another job or started task. Default.  
- idletime – Time in minutes during which a DYNAMIC device remains allocated to the IOA Archive Server when the device is not used. If this time interval passes and the device is not used, it is freed. This parameter ensures device availability for pending requests, and frees unneeded devices. Default: 1 (minute). |
### Parameter | Description
---|---
MAXCONN | You can insert a value for this parameter if you are using OAM media. Maximum number of data sets that can be viewed or printed simultaneously from the OAM or FileTek Storage Machine by Control-V.  
- Default: 20.

OBJSIZE | For OAM media only. Number of original report CDAM file blocks to combine in each OAM object.

DB2PLAN | Name of the DB2 plan defined during OAM installation. Recommended value: CBRI DBS.  
Note: If you change the DB2 plan name in OAM to any name other than CBRI DBS, you must change the DB2PLAN parameter in this facility accordingly.

DB2SID | DB2 Subsystem ID.

POOL1-POOL4 | Each POOLx parameter defines Centera access node addresses. If more than 1 address is defined, they should be separated by commas and enclosed in single quotes.

The values specified for the DB2PLAN and DB2SID parameters are used in the COMMIT and ABRT processes of DB2.

The following table summarizes the relationships between media types and media-specific parameters. A legend follows the table describing what each symbol in the table means.
### Table 90 Relationships between media types and media-specific parameters

<table>
<thead>
<tr>
<th>Media-specific Parameter</th>
<th>Type of Media</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CART</td>
</tr>
<tr>
<td>NAME</td>
<td>Y</td>
</tr>
<tr>
<td>TYPE</td>
<td>Y</td>
</tr>
<tr>
<td>DSNPREF</td>
<td>Y</td>
</tr>
<tr>
<td>SECPREF</td>
<td>Y</td>
</tr>
<tr>
<td>UNITNAME</td>
<td>Y</td>
</tr>
<tr>
<td>DEVUSE</td>
<td>Y</td>
</tr>
<tr>
<td>DEVADDR</td>
<td>1, 2</td>
</tr>
<tr>
<td>CARTLEN</td>
<td>Y</td>
</tr>
<tr>
<td>COMP</td>
<td>Y</td>
</tr>
<tr>
<td>DEVQTY</td>
<td>(1)</td>
</tr>
<tr>
<td>DYNDEVRL</td>
<td>O, 3</td>
</tr>
<tr>
<td>MAXCONN</td>
<td>N</td>
</tr>
<tr>
<td>OBJSIZE</td>
<td>N</td>
</tr>
<tr>
<td>DB2PLAN</td>
<td>N</td>
</tr>
<tr>
<td>DB2SID</td>
<td>N</td>
</tr>
<tr>
<td>POOL1-POOL4</td>
<td>N</td>
</tr>
</tbody>
</table>

### Table 91 Legend for the relationship table (above)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Parameter is allowed.</td>
</tr>
<tr>
<td>N</td>
<td>Parameter is not allowed.</td>
</tr>
<tr>
<td>O</td>
<td>Parameter is optional. If not specified, defaults are used.</td>
</tr>
</tbody>
</table>
Step 6.3 – Complete input for creating user catalog (optional)

Change the indicated DEF ALIAS statement to include the data set name prefix of the migrated media (the DSNPREF parameter) in Step 6.2 – IOA media specific parameters (on page 285).

Repeat the DEF ALIAS statement for each migrated media that you defined in Step 6.2 – IOA media specific parameters (on page 285). The definitions of these media are stored in the IOASPRM member in the IOA.PARM library.

Step 6.4 – Deactivate Control-D and IOAOMON

Deactivate the Control-D monitors using the following operator commands:

P CONTROLD
P IOAOMON1
P IOAGATE

If you use more than one IOA online monitor (IOAOMONn), issue a command for each one.

Wait until all monitors shut down.

Step 6.5 – Define user catalog (optional)

The DFUCAT job defines the FORMCAT user catalog job, which creates a user catalog where Control-V Repository files are defined.

Step 6.6 – Space calculation for Migrated user report

When you select this step, the following screen is displayed:
--- CTV M Grated user report file definition and space calculation ---

**COMMAND**

Enter or change values and press Enter. Examine the resulting space requirements. Use this space allocation in subsequent installation steps? (Y/N)

Number of User Report entries to be retained
Number of $SYSDATA entries to be retained
Extend (A=Ato, M=Manual)
Secondary allocation (Percent of primary)

Data Comp. | DUAL | N (Y/N) | DUALM | N (Y/N) | DUALST | N (Y/N)
Index Comp. | DUAL | N (Y/N) | DUALM | N (Y/N) | DUALST | N (Y/N)

**File type** | **Unit type** | **Volser**
--- | --- | ---
Main Data | > | > | > | > | > | >
Main Index | > | > | > | > | > | >
Dual Data | > | > | > | > | > | >
Dual Index | > | > | > | > | > | >

**Allocation**

- DATA COMPONENT
- INDEX COMPONENT

Number of blocks =
Actual block size =

Insert the values shown in the following table to calculate the required space allocation for the Migrated user report file.

**Table 92 Calculating space allocation for the Migrated user report file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of User Report entries to be retained</td>
<td>The number of Migrated User Report entries to be retained.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Number of $SYSDATA entries to be retained</td>
<td>The number of $SYSDATA entries to be retained.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Extend</td>
<td>Whether a secondary extent is allocated automatically when an out-of-space condition is detected.</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ A (Auto) – A secondary extent is automatically allocated when an out-of-space condition is detected. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ M (Manual) – Requires a secondary extent to be manually allocated after an out-of-space condition is detected.</td>
</tr>
<tr>
<td></td>
<td>Note: The EXTEND parameter is ignored if no secondary space amount is specified in the SPACE parameter</td>
</tr>
<tr>
<td>Secondary allocation (percentage of primary)</td>
<td>Secondary space allocation (percentage of primary allocation).</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the Migrated User Report file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-V with the contents of the primary Migrated User Report file. Use of the dual file provides maximum data recovery capabilities if the primary Migrated User Report file or its disk become damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Allocate a dual (mirror) image Migrated User Report file.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Do not allocate a dual (mirror) image Migrated User Report file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Migrated User Report file.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Migrated User Report file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST – Whether Control-V performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y (Yes) – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N (No) – Do not perform timestamp checkpoint processing.</td>
</tr>
</tbody>
</table>
## Index Comp

Index component of the Migrated User Report file. This parameter has the following subparameters:

- **DUAL** - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-V with the contents of the primary Migrated User Report file. Use of the dual file provides data recovery capabilities if the primary Migrated User Report file becomes damaged or inaccessible. Valid values are:
  - **Y** (Yes) – Allocate a dual (mirror) image Migrated User Report file. BMC Software recommends that you do not use a dual file for the index component.
  - **N** (No) – Do not allocate a dual (mirror) image Migrated User Report file.

- **DUALM** - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:
  - **Y** (Yes) – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Migrated User Report file.
  - **N** (No) – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Migrated User Report file.

- **DUALST** - Whether Control-V performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead. Valid values are:
  - **Y** (Yes) – Perform timestamp checkpoint processing.
  - **N** (No) – Do not perform timestamp checkpoint processing.

## Main Data

The primary data component. This parameter has the following subparameters:

- **Unit type** - The unit type to which data should be allocated.
- **Volser** - Up to six volsers can be specified.

## Main Index

The primary index component. This parameter has the following subparameters:

- **Unit type** - The unit type to which data should be allocated.
- **Volser** - Up to six volsers can be specified.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Data</td>
<td>The dual data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Dual Index</td>
<td>The dual index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

Space requirements are automatically calculated based on the values you specify in the Control-V Migrated report file definition and space calculation screen. To apply the allocations that have just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

**Step 6.7 – Format Control-V data sets**

The FORMCTV job creates and formats the following data sets:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIG</td>
<td>Data component of the Control-V Migrated User Report List file. This is an IOA Access Method file.</td>
</tr>
<tr>
<td>MI GI</td>
<td>Index component of the Control-V Migrated User Report List file. This is an IOA Access Method file.</td>
</tr>
<tr>
<td>GIR</td>
<td>Data component of the Control-V Global index file. This is an IOA Access Method file.</td>
</tr>
<tr>
<td>GI RI</td>
<td>Index component of the Control-V Global Index file. This is an IOA Access Method file.</td>
</tr>
</tbody>
</table>

Submit the job and verify that all steps complete with a condition code of 0.

**Step 7 – Adjustments**

Follow the steps below to perform adjustments to the Control-V installation.
Step 7.1 – Control-V password data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-V. The product ordered is licensed to run on one or more computers for a specific period of time. If BMC supplied you with a site licence, copy the printout to the PASCTV member.

The PASCTV member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-V is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=**Control-V / yymmdd
  - The PROD parameter line contains the name Control-V and the expiration date of the password in yymmdd format.

- **START=yymmdd**
  - The START parameter line contains the start date of Control-V in yymmdd format.
  - Only one START parameter can be specified in a password member.

- **CPUID=iii mmmm**
  - In the CPUID parameters line, iii is the CPU ID, and mmmm is the model, on which Control-V can run.
  - There must be a separate CPUID parameter for each CPU authorized to run Control-V.

  The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-V is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

  **PROCESSOR STATUS**
  
<table>
<thead>
<tr>
<th>ID</th>
<th>CPU SERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0D06209221</td>
</tr>
<tr>
<td>1</td>
<td>1D06209221</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  + ONLINE - OFFLINE.
  DOES NOT EXIST

- **PASS=pppppppp pppppppp pppppppp**
  - In the PASS parameter line, pppppppp pppppppp pppppppp is the password provided by the BMC representative.
  - Only one PASS line can be present in a password member.

- **TYPE=LICENCE**
  - The TYPE parameter line contains the type of licence given. Valid values are:
    - LICENCE – For permanent licences.
    - TRIAL – For customers who want to evaluate products for a limited period of time.
    - EMERGENCY – For a short-term password, until a permanent password is provided.
• Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-V password member:

```
PROD = CONTROL-V / 080417
    START = 070418
    CPUID = 231234 9021
    CPUID = 140564 9121
    PASS = 86243457 D324389C 58349852
    TYPE = LICENCE
```

This site has a permanent licence for CONTROL-V, starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).

The following additional considerations may apply when you edit the Control-V password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-V / yymmdd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to “CPUID=001234.”
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

**Step 7.2 – Modifying Control-V defaults**

Some Control-V defaults can be modified to suit site-specific requirements. For details on modifying Control-V defaults, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

**Step 8 – Start Control-V**

Follow the steps below to activate Control-V.

**Step 8.1 – Refresh LLA**

If the IOA LOAD library resides in the MVS Linklist, refresh the LLA using the MVS command:

```
F LLA, REFRESH
```
If a program fetch optimization product, such as PDSMAN, QUICKFETCH, PMO, and so on, is in use at your site, you may need to refresh the Linklist tables.

Log off from TSO/ROSCOE and log on again.

Step 8.2 – Start Control-V
1. Reactivate the Online monitors by issuing the following operator command:
   ```
   S IOAOMON1
   ```
2. Issue an analogous command for every Online monitor that should be active.
3. Reactivate the Control-D monitor by issuing the following operator command:
   ```
   S CONTROLD
   ```
4. If a media type other than DASD was defined in the IOASPRM member, initialize the IOA Archive Server by issuing the following operator command:
   ```
   S IOASMON
   ```
   This command is mandatory for viewing reports migrated to any media other than DASD. This command is not required if reports migrate to media type DASD only. For more information, see the Control-D and Control-V chapter in the INCONTROL for z/OS Administrator Guide.

Step 9 – Installation conclusion
This step is used to indicate that Control-V installation is complete. When completed, mark each step complete.

Step 9.1 – Indicate installation concluded
This step updates the Status field in the Environment table to indicate that Control-V is installed.

Step 9.2 – Back up the installed environment
BMC Software recommends that you create a backup of the Control-V libraries.

When backing up the installed environment, verify that the Base libraries, Installation libraries, Operations libraries and SMP-related data sets are backed up. This backup allows the users to restore the original IOA environment when required, so that Control-V can be reinstalled if a significant number of changes are made to the parameters or if an unrecoverable failure occurs during installation.
Installing Control-O

This chapter describes the steps required to install Control-O. The installation procedure contains step-by-step detailed instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-O installation.

Control-M/Links for z/OS is a separately licensed product that enables customers to use Control-O functions to assist with Control-M operations. To install Control-M/Links follow the instructions for installing Control-O.

Sample exits

As of version 6.0.00, Control-O uses standard dynamic subsystem exits to support JES2 commands and JES3 commands and messages. Under z/OS JES3 and later, JES3 consoles are no longer used. Therefore, BMC Software no longer supplies the following:

- the sample exit for JES2 commands (CTOJESX5)
- the sample exits for JES3 commands (IATUX18)
- the sample exits for JES3 messages (IATUX31)

Before you begin

For a complete list of Control-O libraries, see A INCONTROL product data sets (on page 450).

Perform this step only when you have finished filling in the Control-O installation sheet (on page 557).

To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTO in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-O is displayed.

You are now ready to install Control-O using ICE.

Control-O step checklist

The following list is a summary of the steps required to install Control-O Detailed step-by-step instructions follow.
INCONTROL for z/OS Installation Guide: Installing

- Step 1 – Planning (on page 301)
- Step 2 – Specify Control-O parameters (on page 302)
- Step 3 – Specify target configuration parameters (on page 316)
- Step 4 – Installation jobs (on page 318)
- Step 5 – Customization process (on page 319)
- Step 6 – Jobs to be run on every computer (on page 319)
- Step 7 – Adjustments (on page 321)
- Step 8 – Install Control-O CICS interface (optional) (on page 322)
- Step 9 – Install Control-O IMS/DC interface (optional) (on page 324)
- Step 10 – COSMOS customization (optional) (on page 325)
- Step 11 – Control-O communication (optional) (on page 326)
- Step 12 – OMEGAMON support (optional) (on page 335)
- Step 13 – Installation conclusion (on page 335)

Installation steps

Perform the major and minor steps below to install Control-O using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-O installation sheet (on page 557) will help you determine the items you should consider before installing Control-O.

Find out if you require input from system programmers, security administrators, and other personnel at your site. Check if any system changes require special authorization and processing. Plan ahead. Before proceeding with the Control-O installation, verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?

This step verifies that you have filled in the Control-O planning sheet.

When you have done so,
1. press PF03/PF15 to exit this screen
2. type C in the Sel field
3. press Enter

The step will be marked as completed.
Step 2 – Specify Control-O parameters

Perform the minor steps in Step 2.1 – Control-O operational parameters (on page 302) to specify values for Control-O installation parameters.

Step 2.1 – Control-O operational parameters

Table 94 Operational parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTOQNAM</td>
<td>QNAME for Control-O ENQ requests. The specified QNAME should be different from the IOA QNAME installation parameter and the CTOQNAM of any existing Control-O installation at this site. It is used internally by Control-O.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Default: CONTROLO</td>
</tr>
<tr>
<td>Notes: It is not necessary to add this QNAME to parameters of products such as SDSI, SUPER-MSI, MMI, or GRS (IBM). For details about how to protect IOA Repository files when updated by more than one Control-O monitor from different computers, see “QNAME” in Step 4.2 – IOA operational parameters (on page 46).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSMOS</td>
<td>Whether the Control-O Status Monitoring System (COSMOS) will be active at your site. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y (Yes) – Control-O/COSMOS is active. (COSMOS uses the Control-O password.) Contact BMC Software Customer Support for a password.</td>
</tr>
<tr>
<td></td>
<td>▪ N (No) – COSMOS is not active. Default. For details about customizing COSMOS, see Step 10 – COSMOS customization (optional) (on page 325).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTOGATE</td>
<td>Whether Control-O uses IOAGATE to communicate with other Control-O monitors. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y (Yes) – IOAGATE is enabled.</td>
</tr>
<tr>
<td></td>
<td>▪ N (No) – IOAGATE is not enabled. Default. For details about installing IOAGATE, see Step 11 – Control-O communication (optional) (on page 326), and Step 20 – Install IOAGATE (optional) (on page 105).</td>
</tr>
</tbody>
</table>
### Parameter | Description
--- | ---
DAYTIMEO | The start time of the work day at your site. Format: DAYTIMEO=+hhmm or DAYTIMEO=–hhmm where:  
- + indicates after midnight  
- - indicates before midnight.  
- hhmm is the time (hour and minute)  
Default value: +1200  
The Control-O DAYTIMEO value must be the same as the one assigned to Control-M if Control-M is installed.
### Parameter | Description
--- | ---
INTERVLO | Sleeping interval of the Control-O monitor.
- Mandatory

The monitor is dormant most of the time. It "wakes up" after the specified interval and determines which tasks it must perform.

Most Control-O message processing is performed in the subsystem interface. Therefore, the value of INTERVLO does not affect the speed at which Control-O processes messages. Message processing is performed continuously.

The value of INTERVLO only affects how often the Control-O monitor scans its queues for work. For example, after each interval, Control-O checks if other INCONTROL products added new conditions to the IOA Conditions file.

The format for INTERVLO is HHMMSSth, where:
- HH – Two digits, representing hours. Valid values: 00 through 24.
- MM – Two digits, representing minutes. Valid values: 00 through 59.
- SS – Two digits, representing seconds. Valid values: 00 through 59.
- th – Two digits, representing hundredths of seconds. Valid values: 00 through 99.

Leading zeros may be omitted (for example, three seconds, 00000300, may be specified as 300).

The minimum value is 100 (1 second). The default value is 400 (4 seconds).

The value for INTERVLO should be specified according to the computer model. This value can also be modified using an operator command. For details, see the Control-O chapter of the INCONTROL for z/OS Administrator Guide.

STATO | Controls accumulation of message statistics.
Valid values are:
- Y (Yes) – Accumulate message statistics. Default.
- N (No) – Do not accumulate message statistics.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| STATINT   | Interval in seconds between two consecutive updates of the Statistics file.  
  - Minimum: 30 (seconds).  
  - Default: 45 (seconds).  
  This parameter is ignored if the STATO parameter is set to N. |
| JCMDSSN   | Name of an optional additional subsystem to be used by Control-O to control JES2 and JES3 commands.  
Under JES2  
Valid values are:  
- ‘ ’ (Blank) – JES2 command suppression is not required. Therefore, no other actions are required.  
- EXIT – The ability to suppress JES2 commands is required using the dynamic subsystem Exit IEFJFRQ. Default.  
- subsystem_name – The ability to suppress JES2 commands is required and an additional subsystem should be defined. The specified value (if any) must be different than the value specified in the SSNAME parameter in the IOAPARM member.  
Note: The option used in previous Control-O versions is still supported. However, IBM requires that the primary subsystem be the first subsystem in the subsystem chain, in which case defining this field overrides that specification.  
If this value is specified, this subsystem name must be defined in the IEFSSNnn member and must be placed immediately after JES2 in the subsystem name table. Otherwise, other subsystems, such as DB2, can be affected. |
Parameter | Description
---|---

For example, if JCMDSSN is set to 062J, the subsystem table may contain the following values:

- **SMS**—SMS
- **JES2**—JES2
- **062J**—Control-O JES2 command suppression subsystem.
- **I700**—IOA subsystem.
- **DB2T**—Any other subsystem in the machine.

However, once Control-O has been started, the specified Control-O JES2 command suppression subsystem (for example, 062J) is moved to the top of the subsystem list. Using the previous example, the result would be:

- **062J**
- **SMS**
- **JES2**
- **I700**
- **DB2T**

Under **JES3**

Valid values are:

- `' ' (Blank) – JES3 command suppression is not required. Therefore, no other actions are required.
- **EXIT** – The ability to suppress JES3 commands is required using the dynamic subsystem Exit IEFJFRQ.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| NUMCONS   | Number of subsystem consoles for use by Control-O rules for Command-Response processing.  
            | ▪ Default: 0. |
|           | Subsystem allocatable consoles are logical consoles not associated with any physical device. The consoles are reserved for use by special subsystems such as JES3 and OCCF. Control-O uses these consoles for Command-Response rules. |
|           | Subsystem allocatable consoles can be defined in the CONSOLxx member of the SYS1.PARMLIB library as follows:  
            | CONSOLE DEVNUM(SUBSYSTEM) AUTH(…) |
|           | For details, see the MVS Initialization and Tuning Reference.  
<pre><code>        | Subsystem allocatable consoles can be displayed using the MVS operator command DISPLAY CONSOLES. For information about the format of the display, see the z/OS System Messages Manual. If no subsystem consoles are available at this time, or this is the first time that Control-O is being installed, use the default value. This parameter can be modified later. |
</code></pre>
<p>|           | Control-O supports EMCS consoles that do not require system definitions. BMC Software recommends that you use EMCS consoles, and set this parameter to 0. |</p>
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAITPR#</td>
<td>Number of rules in wait mode that can execute concurrently.</td>
</tr>
<tr>
<td></td>
<td>- Default: 20.</td>
</tr>
</tbody>
</table>

Note: The rules which are currently executing in wait mode appear at the top of the list in the OS screen and in the output of the F CONTROLO,DISPLAY operator command.

Each rule executing in wait mode occupies one wait element in the ECSA, in an internal control block called PND. For additional information about the ECSA utilization of Control-O, see the INCONTROL for z/OS Administrator Guide. After the product is installed and running, the initial value specified for this parameter should be reviewed and adjusted according to the requirements at your site, as follows:

- Use the following operator command to determine the PND usage statistics:
  
  F CONTROLO,USAGESTATS=PND

- If the PND utilization exceeds 50%, increase the value of the WAITPR# parameter.

For further details on the MODIFY USAGESTATS command, see the INCONTROL for z/OS Administrator Guide.

The following events cause a rule to enter wait mode:

- Rule using a DO COMMAND statement with the WAITMODE parameter set to YES.
- Rule setting the variable WAITRESP or RESPMSG (for compatibility with previous versions).
- Rule using a DO TSO or DO KSL statement.
- Rule setting the variable WAITTSO or WAITKSL (for compatibility with previous versions).
- Rule using a DO WAIT statement.
- Rule using a DO ASKOPER statement.
- Rule processing a multiline WTO.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTOMLOG</td>
<td>Automation Log options.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ N (No) – Automation Log facility is not used. Rule traces are written to the Control-O monitor sysout DACTLOG file.</td>
</tr>
<tr>
<td></td>
<td>▪ D – Automation Log facility is used. The Automation Log file resides in a direct access (BDAM) data set.</td>
</tr>
<tr>
<td></td>
<td>▪ V – Automation Log facility is used. The Automation Log file resides in a DIV (Data in Virtual) VSAM Linear data set. This is the recommended value.</td>
</tr>
<tr>
<td>DEALIAS</td>
<td>Whether the Control-O DEALIAS feature is used.</td>
</tr>
<tr>
<td></td>
<td>This feature automatically brings MVS, JES2, and JES3 commands to a standard format before searching for rules that are triggered by the command. This saves specifying all the possible command formats in the rule.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y (Yes) – Use Dealias feature. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N (No) – Do not use Dealias feature.</td>
</tr>
<tr>
<td>GLBCOMP</td>
<td>Whether Control-O should automatically compress the Global AutoEdit library whenever necessary. This parameter is useful at sites that do not operate a PDS management product.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y (Yes) – Use the Autocompress function.</td>
</tr>
<tr>
<td></td>
<td>▪ N (No) – Do not use the Autocompress function. Default.</td>
</tr>
<tr>
<td></td>
<td>If Y is selected and the site security uses the Program Pathing option:</td>
</tr>
<tr>
<td></td>
<td>▪ Refer to the security definition member for Control-O for Program Pathing I OA.V900.BASE.INSTCTO (CTOSRAC4, CTOSSAF4 or CTOSTSS4).</td>
</tr>
<tr>
<td></td>
<td>▪ Control-O monitor must be allowed to run IEBCOPY.</td>
</tr>
<tr>
<td></td>
<td>▪ Note that any user allowed to update the Global AutoEdit library and run IEBCOPY may be able to compress the Global AutoEdit library directly (outside of the Control-O monitor).</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| RUNTCACH    | Number of entries in the Control-O security cache. Valid values are:  
  - 0 (Zero) – No security cache is allocated.  
  - n – Number (n) of security cache entries allocated. Recommended initial value: 100.  
  
  The security cache improves runtime security check performance by saving security blocks used for the authority check and reusing them in subsequent authority checks.  
  
  The RUNTCACH parameter is ignored if the RUNTSEC rule parameter is set to N. |
| RUNTDF      | How runtime security checks should be performed for rules. Valid values are:  
  - NONE – No runtime security checks are performed on the rule, unless the RUNTSEC rule parameter specifies otherwise.  
  - OWNER – Runtime security checks are performed according to the authority of the owner of the rule, unless the RUNTSEC rule parameter specifies otherwise.  
  - TRIGGER – Runtime security checks are performed according to the authority of the user ID that issued the message or the authority of the command that triggered the rule, unless the RUNTSEC rule parameter specifies otherwise.  
  - DISABLE – No runtime security checks are performed on the rule, overriding the value specified in the RUNTSEC rule parameter. Default. |
| SRVGEN#     | Number of General KOA/TSO servers. Recommended initial value 2. This value can be adjusted later to meet site requirements.                                                                                   |
| SRVGENQ     | Number of seconds a KOA/TSO request waits for a General server before being executed by an Immediate server. If 0 (Zero) is specified, requests wait indefinitely for a General server.  
  - Default: 0.                                                                                                                                   |
| SRVIMD#     | Number of Immediate servers that can run in parallel. Recommended initial value: 5. This value can be adjusted later to meet site requirements.                                                                |
| WSC#        | Number of events that can be intercepted concurrently.  
  - Minimum: 15  
  - Default: 20                                                                                                                                   |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Note: Each intercepted event occupies one work buffer in the ECSA, in an internal control block called WSC. For additional information about the ECSA utilization of Control-O, see the INCONTROL for z/OS Administrator Guide. After the product is installed and running, the initial value specified for this parameter should be reviewed and adjusted according to the requirements at your site, as follows:</td>
</tr>
<tr>
<td></td>
<td>▪ Use the following operator command to determine the WSC usage statistics: F CONTROLO,USAGESTATS=WSC</td>
</tr>
<tr>
<td></td>
<td>▪ If the WSC utilization exceeds 50%, increase the value of the WSC# parameter.</td>
</tr>
<tr>
<td></td>
<td>For further details on the MODIFY USAGESTATS command, see the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td>RQC#</td>
<td>Number of internal request elements used for inter-process communication. After the product is installed and running, the initial value specified for this parameter should be reviewed and adjusted according to the requirements at your site:</td>
</tr>
<tr>
<td></td>
<td>▪ Use the following operator command to determine the RQC usage statistics: F CONTROLO,USAGESTATS=RQC</td>
</tr>
<tr>
<td></td>
<td>▪ If the RQC utilization exceeds 80%, increase the value of the RQC# parameter.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 20000.</td>
</tr>
<tr>
<td></td>
<td>For further details on the MODIFY USAGESTATS command, see the INCONTROL for z/OS Administrator Guide.</td>
</tr>
<tr>
<td></td>
<td>Warning: In order to increase or decrease the value of the RQC# parameter, Control-O must be stopped and then re-started with the new value. Starting a new Control-O with an increased value over the running Control-O might have unexpected results, such as ABENDs.</td>
</tr>
<tr>
<td>THRESHOLD</td>
<td>The rule-triggering threshold for a Control-O interval. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ ‘ ’ (Blank) – No limit.</td>
</tr>
<tr>
<td></td>
<td>▪ 0 (Zero) – No limit.</td>
</tr>
<tr>
<td></td>
<td>▪ 1 through 999999999 – Threshold value.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>ONSYSOUT</td>
<td>Enables the Control-O sysout interface. The CTOJ FRQ Control-O exit module is called by the dynamic subsystem exit IEFJ FRQ. Valid values are: ▪ Y (Yes) – Support the ON SYSOUT interface. ▪ N (No) – Do not support the ON SYSOUT interface. Default.</td>
</tr>
<tr>
<td>WQEUPD</td>
<td>Whether to update message block (WQE) &quot;in place&quot; with the required changes created in statement: DO DISPLAY with NEWTEXT text. This parameter replaces optional Wish IO0024 in Control-O version 5.1.4. Valid values are: ▪ Y (Yes) – Update the message block. ▪ N (No) – Do not update the message block. Default.</td>
</tr>
<tr>
<td>SECJES</td>
<td>Support of a secondary JES2. If there are more than one active JES2s, Control-O can trigger Control-O rules related to JES2 messages regardless of whether the message is issued by the primary JES2 or the secondary JES2. This parameter replaces optional Wish WI0920 in Control-O version 5.1.4. Valid values are: ▪ Y (Yes) – Control-O rules are triggered regardless of issuing JES2. Default. ▪ N (No) – The JES that issued the message is taken into account before rules are triggered.</td>
</tr>
</tbody>
</table>
Parameter | Description
---|---
AOSUBSYS | MAINVIEW or AutoOPERATOR subsystem in which Control-O can respond to requests.
The value of entered in this field must be different than the value of IOA subsystem name.
The setting of the AutoOPERATOR SSID is done in Step 40 of the installation process as defined in the MAINVIEW Common Customization Guide documentation.
When CMEM is used (and not Control-O), AOSUBSYS is defined in CMMPARM in IOAENV. The default value of AOSUBSYS in CMMPARM is MVAO.
CMMPARM in IOAENV in maintained by BMC and thus might be replaced by a future PTF. Therefore the CMMPARM that is provided by BMC in IOAENV should not be changed. If a change in CMMPARM is required to match the value of AOSUBSYS to MAINVIEW AutoOPERATOR SSID, CMMPARM should be copied from IOAENV to the PARM library and the change made in the PARM library.

MLTOUT | The maximum period (seconds) a rule waits for the next or last line when a multiple line message is processed. The rule is timed-out if the seconds elapsed between one line to the next exceeds the specified value.
- Valid values: 2-120 (seconds).
- Default: 20.

---

Step 2.2 – Define special servers
Select this step to define parameters for special servers.
This definition is part of the CTOPARM member. The following parameters can be specified for each server:

Table 95 Special server parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Server name (up to six characters).</td>
</tr>
<tr>
<td>Timeout</td>
<td>Queue timeout—the number of seconds a KOA/TSO request waits for a special server before the queue timeout occurs. After the timeout, the request is routed to an Immediate server. If 0 (Zero) is specified, requests wait indefinitely for an appropriate Special server.</td>
</tr>
</tbody>
</table>
Step 2.3 – Define EMCS consoles

Select this step to define parameters for the allocation of Extended MCS Consoles (EMCS Consoles) by Control-O.

EMCS Consoles are logical consoles not associated with any physical device. Like other applications such as SDSF or TSO CONSOLE, Control-O uses these consoles for issuing operator commands and for receiving the output resulting from those commands.

When the Control-O monitor is started, it allocates a number of EMCS Consoles. Some of these consoles are allocated with a migration ID, and some of them are allocated without a migration ID. When the monitor terminates, it releases these allocated EMCS Consoles for reuse.

When a rule requests the issue of an operator command in Command/Response mode, Control-O selects a console through which to issue the command. That console remains occupied until the command has been executed and the response to it has been received.

When selecting a console for this purpose, Control-O first tries to use a subsystem console. However, when no subsystem consoles are defined, or when all defined subsystem consoles are in use, one of the available EMCS Consoles is used. An available EMCS console that has a migration ID is selected in preference to one that does not have a migration ID.

This step generates statements that become part of the CTOPARM member.

Insert values for the parameters shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>The SMF ID or System Name of the system to which this EMCS Console definition statement applies. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>*SMF or *SYSTEM – This statement applies to all systems that do not have a specific EMCS Console definition. Default.</td>
</tr>
<tr>
<td></td>
<td>xxxxxxxxx – This statement applies only to the system with this SMF ID or System Name. Maximum: 8 characters.</td>
</tr>
<tr>
<td><strong>Prefix</strong></td>
<td>The four characters that will be used as a prefix when assigning names to the EMCS Consoles. If the specified prefix is shorter than 4 characters, it will be padded with ‘@’ signs.</td>
</tr>
<tr>
<td></td>
<td>Note: The prefix must start with an alphabetic character.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>*SMF – A generic prefix that will translate to the SMF ID of the system where Control-O is active. Default.</td>
</tr>
<tr>
<td></td>
<td>*SSI – A generic prefix that will translate to the name of the IOA subsystem.</td>
</tr>
<tr>
<td></td>
<td>xxxx – Any other prefix of up to 4 alphanumeric characters.</td>
</tr>
<tr>
<td>As of version 6.1.00, it is no longer advantageous to assign a unique EMCS Console name prefix to each Control-O monitor. The same prefix, specific or generic, can be assigned to some or all of the Control-O monitors in the Sysplex.</td>
<td></td>
</tr>
<tr>
<td>EMCS#</td>
<td>The number of EMCS Consoles without a migration ID that are allocated by the Control-O monitor.</td>
</tr>
<tr>
<td></td>
<td>Valid Values: 0 through 999 can be specified.</td>
</tr>
<tr>
<td></td>
<td>Default: 10</td>
</tr>
<tr>
<td>MIG#</td>
<td>Number of EMCS Consoles with migration IDs that are allocated by the Control-O monitor. Depending on constraints imposed by MVS, a number from 0 through 152 can be specified.</td>
</tr>
<tr>
<td></td>
<td>Default: 1</td>
</tr>
<tr>
<td>ORDER#</td>
<td>Used to sort the EMCS Console definitions so that they appear in a particular order under ICE. If you insert values in this field, the line with the lowest value appears as the top line.</td>
</tr>
<tr>
<td>Valid values are:</td>
<td></td>
</tr>
<tr>
<td>* ' ' (Blank). Default.</td>
<td></td>
</tr>
<tr>
<td>0 through 998. The value 999 is reserved for certain purposes.</td>
<td></td>
</tr>
</tbody>
</table>
Step 3 – Specify target configuration parameters

Specify values for the parameters listed in Step 3.1 – Control-O target libraries and members (on page 316).

Step 3.1 – Control-O target libraries and members

Enter values for the parameters shown in the following table.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

<table>
<thead>
<tr>
<th>Table 97 Target library and member parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td>ILPREFO</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>ILUNITO</td>
</tr>
<tr>
<td>ILVLOLO</td>
</tr>
<tr>
<td>OLPREFO</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>OLUNITO</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>OLVLOLO</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Step 3.2 – Control-O data sets

Table 98  Control-O data set parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STREC#</td>
<td>Maximum number of message IDs that can be accumulated. This parameter determines the size of the Control-O Statistics file. BMC Software recommends a specification of 10,000 or a higher figure.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 10,000.</td>
</tr>
<tr>
<td></td>
<td>This parameter is ignored if the STATO parameter is set to N.</td>
</tr>
<tr>
<td>ALREC#</td>
<td>Maximum number of messages that can be stored in the Automation log. The Automation log is a wraparound file. When it becomes full, Control-O overwrites the oldest messages. Calculate this parameter according to the number of messages per day, and the number of days you want the messages to be kept in the Automation log. Each message record is 364 bytes long. For example, if a site has 100,000 messages a day, the Automation log requires 61 cylinders of 3390 disk space to hold the contents of one day of processing.</td>
</tr>
</tbody>
</table>

Step 3.3 – MVS procedures and configuration

Table 99  MVS Procedures and Configuration Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCPRFO</td>
<td>First three characters of the Control-O JCL procedures after they are copied to the local MVS procedure library. The value specified for this parameter must be different than the value specified for the PROCPRFx installation parameter for IOA and other INCONTROL products.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Default: CTO</td>
</tr>
<tr>
<td>Notes: Certain Control-O procedures must be activated before JES is up. These procedures should be copied to the SYS1.PROCLIB library.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The STEPLIB DD statement is mandatory.</td>
</tr>
</tbody>
</table>
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS3CHRS</td>
<td>For JES3 sites. JES3 command characters in use at the site.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory for JES3 sites, if DEALIAS was set to Y.</td>
</tr>
<tr>
<td></td>
<td>The command characters should be specified as a string beginning with an asterisk (*) followed by the characters specified for the SYN parameter of the CONSTD statement in the JES3 initialization deck. No separators, such as commas, slashes, or similar entities, should appear between the command characters.</td>
</tr>
</tbody>
</table>

---

**Step 4 – Installation jobs**

Perform the following steps before running the installation jobs.

**Step 4.1 – Parameter verification**

In addition to validation checks that are performed during data entry, this step runs a program to verify that the installation parameters do not contain conflicting values. For example, the prefix of the Control-O installation libraries is checked to determine that it does not conflict with other INCONTROL product prefixes.

If the step completes successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters and the required corrective action.

**Step 4.2 – Save parameters into product libraries**

This step saves all the parameters specified in ICE. When processing ends, the step is automatically marked complete.

This step customizes the CTOPARM and DEFPARM members in the IOA.PARM library.

**Step 4.3 – Before you proceed**

You have completed the data entry of Control-O installation parameters. The next step submits a job that allocates data sets and tailors members in several libraries. Verify that all the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.

**Step 4.4 – Install Control-O libraries**

The INSTALLO job loads the Control-O libraries. The member contains JCL for
allocating Control-O libraries
loading Control-O libraries, including the Rules, SOLVJCL, SOLVRULE, SOLVKOA and SOLVSCHD libraries
modifying certain Control-O library members
Submit the job and verify that all steps complete with a condition code of 0.

Step 4.5 – Indicate Control-O libraries installed
This step indicates that Control-O libraries were installed. When the process completes, this step is marked complete.

Step 5 – Customization process

Step 5.1 – Copy CTO started tasks to site library
The COPYCTOP job copies Control-O started tasks from the IOA PROCJCL library into the site library according to values specified earlier.
Submit the job and verify that the step completes with a condition code of 0.

Step 5.2 – Copy several procedures to site library
This process customizes and copies certain selected procedures to the site procedure library, which is specified by the SITEPROC IOA parameter. This prevents having to add the JCLLIB statement to the existing jobs at the site.

Step 6 – Jobs to be run on every computer

Step 6.1 – Allocate Global AutoEdit libraries
The DEFGLOB job defines the Global AutoEdit library for the Control-O monitor on the computer on which the job is run.
Global variables can be stored either in variable databases or in Global AutoEdit libraries. The Control-O monitor can write some Global variables, in AutoEdit symbol member format, to members in the Global AutoEdit library. Allocate a separate library for each computer in which Control-O is active.
Each library must be allocated on a disk that can be updated by the appropriate Control-O monitor; different Control-O monitors cannot use the same library. To enable Control-M to use the Global variables of Control-O, BMC Software recommends that the library be allocated on a disk with READ authority from the Control-M monitor.
If the Autocompress function is enabled, meaning that the GLBCOMP parameter is set to Y in the CTOPARM member in the IOA.PARM library, a backup file is also allocated to reserve an area for the backup.
For each computer where Control-O executes, modify the parameters in the following table.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 100  Global AutoEdit library parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFID</td>
<td>SMF ID of the computer where the job is being run.</td>
</tr>
<tr>
<td>UNIT</td>
<td>Unit where the Global library is allocated.</td>
</tr>
<tr>
<td>BLOCKS</td>
<td>Number of blocks. Do not define less than 300 blocks.</td>
</tr>
<tr>
<td>VOL</td>
<td>Volser where the Global library is allocated.</td>
</tr>
</tbody>
</table>

The VOL parameter must specify a non-SMS managed volume. In an SMS environment, use the SMS ACS member to specify the unit and volume for the Global library.

Submit the job and verify that the step completes with a condition code of 0.

Run this job (with different parameters) on every computer where Control-O executes.

**Step 6.2 – Allocate and format CTO Statistics files**

The DEFSTATO job defines the Control-O Message Statistics file. This job can be used to format an existing Statistics file or to allocate and format a new Statistics file.

If the STATO parameter is set to N, skip this step.

If parameters are passed to this job, it attempts to allocate a new file (DISP=NEW). When no parameters are passed to this job, it attempts to use an existing file (DISP=OLD).

When the STATO parameter is set to Y (default), Control-O accumulates message statistics. Control-O uses a separate statistics file for each computer on which it runs.

For each computer where Control-O executes, modify the parameters shown in the following table.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 101 Control-O Statistic file parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMFID</td>
<td>SMF ID of the computer where the job is being run.</td>
</tr>
<tr>
<td>UNIT</td>
<td>Unit where the Statistics file will be allocated.</td>
</tr>
<tr>
<td>VOL</td>
<td>Volume where the Statistics file will be allocated.</td>
</tr>
</tbody>
</table>

The VOL parameter must specify a non-SMS managed volume. In an SMS environment, use the SMS ACS member to specify the unit and volume for the Global library.

Submit the job and verify that all steps complete with a condition code of 0.

You must repeat this step on every computer where Control-O executes.

**Step 6.3 – Allocate the Automation Log file**

The DEFALO job defines the Control-O Automation Log file.

Control-O uses a separate Automation Log file for each computer on which it runs. A different library is allocated for each computer in which Control-O is active.

For each computer where Control-O executes, modify the parameters shown in the following table as appropriate.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 102 Automation Log file parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT</td>
<td>Unit where the Automation Log file will be allocated.</td>
</tr>
<tr>
<td>VOL</td>
<td>Volume where the Automation Log file will be allocated.</td>
</tr>
</tbody>
</table>

The VOL parameter must specify a non-SMS managed volume. In an SMS environment, use the SMS ACS member to specify the unit and volume for the Automation log file.

Submit the job and verify that all steps complete with a condition code of 0.

You must run this job (with different parameters) on every computer where Control-O executes.

**Step 7 – Adjustments**

Perform the steps in this section to perform adjustments to the Control-O installation.
Step 7.1 – Install Control-O subsystem (optional)

The Control-O subsystem can be installed before or during the installation of IOA.

If the Control-O subsystem is not installed, the Control-O monitor will define it the first time that Control-O is started.

Step 7.2 – When Control-M is installed

This step applies to Control-M users only. If Control-M is already installed, verify that the Control-M Event Manager (CMEM) is installed, using Step 7 – Install Event Manager (CMEM)/Control-O interface (on page 172). Do not continue with the Control-O installation until the CMEM is installed.

Once Control-O is installed and active, it assumes the functionality of the CMEM monitor. It loads the CMEM rules and communicates with the Control-M monitor through the Communication files. Therefore, after Control-O becomes active, the CMEM monitor is no longer required. It is necessary to bring down the CMEM monitor before trying to activate the Control-O monitor. For details about the management of the Control-O facilities, see the Control-O chapter of the INCONTROL for z/OS Administrator Guide.

Step 7.3 – Update SCHEDnn member in SYS1.PARMLIB

Add the SCHED00 sample member in the INSTCSTO library to the SCHEDnn member in the SYS1.PARMLIB library.

To protect Control-O control blocks, the following PPT entries listed below must be added to the SCHEDnn member, where nn is the number specified in the IEASYSnn member:

```
PPT PGMNAME(CTOMTO7)
   KEY(7)
```

To activate the new PPT definitions without performing an IPL, issue the following operator command:

```
T SCH=(nn,L)
```

where nn is the suffix of the SCHEDnn member and the number specified in the IEASYSnn member of the SYS1.PARMLIB library.

Step 7.4 – ON SMS support of Control-O (optional)

To install the Control-O interface for SMS, use one of the sample usermods to linkedit the Control-O ACS routines to the SITE LPALIB Library. After linkediting the routines, IPL with CLPA.

- USMSMV5 - used when the ACS exits are used only by Control-O.
- USMSMV51 - used when the ACS exits are used by Control-O and already existing ACS exits.

Step 8 – Install Control-O CICS interface (optional)

This step is intended for anyone who needs to install Control-O CICS support.

For more information about the CICS Interface, see the Control-O chapter of the INCONTROL for z/OS Administrator Guide.

To install Control-O CICS support, complete the following steps.
Step 8.1 – Define CICS Transient Data Queues

Define the CICS Transient Data Queues to be intercepted.

Edit the macro and specify values for DEST in a list form.

**Table 103 Defining CICS Transient Data Queues**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DEST      | List of transient data destinations that are handled by Control-O. If all destinations should be intercepted, leave the parameter blank. Generic names are supported.  

Note: The parameters are in Assembler Macro format, and are subject to Assembler Macro syntax rules (continuation marker in column 72, continuation line starts at column 16, and so on).  

The default value of CTOCPARM is DEST=C*. This default supports all the CICS system Transient Data queues. |

Step 8.2 – Compile and link the parameters

The CTOCPARJ job compiles the Control-O CICS installation parameter module, CTOCPARM.

Submit the job and verify that all steps end with a condition code of 0.

Step 8.3 – Copy interface modules for CICS 4.1 or later (optional)

The CP2CICS job copies the modules requested by the Control-O CICS interface to the DFHRPL library.

Submit the job and verify that all steps end with a condition code of 0.

Step 8.4 – Define Programs and Transactions to CICS

1. Add the following DAPARM DD statement to the CICS procedure:

   ```
   //DAPARM DD DISP=SHR,DSN=ilprefa.PARM  
   // DD DISP=SHR,DSN=ilprefa.IOAENV
   ```

   where ilprefa is the IOA installation libraries prefix.

2. If the IOA Load library is not included in the link list, add it to the list of STEPLIB libraries.

3. Sample CICS RDO definitions are available in the CICSDEF member in the INSTCTO library.

   For CICS 4.1 and later, the definitions in PPT are:

   ```
   DEF PROG(IOACICNV) G(CTO) L(A) EXECKEY(CICS)  
   DEF PROG(CTOCTDT)  G(CTO) L(A) EXECKEY(CICS)  
   DEF PROG(CTOCTDX)  G(CTO) L(A) EXECKEY(CICS)  
   DEF PROG(CTOCTDP)  G(CTO) L(A) EXECKEY(CICS)
   ```
You can use any group instead of CTO. If you define a new group, add it to the list defined in the
GRPLIST parameter in the SIT.
The TRANSID can be changed.
For CICS 4.1 and later, the RDO definitions are:
DEF TR(IOAC) G(CTO) PROG(CTOCTDT) TASKDATAKEY(CICS)
For CICS 4.1 and later, the following TSMODEL definitions are required:
DDEFINE TSMODEL(IOA@MCT) GROUP(IOA)
DESCRIPTION(TST MODEL for IOA@MCT)
LOCATION(MAIN) SECURITY(NO) PREFIX(IOA@MCT)

Step 8.5 – Start/stop the CICS interface
The Control-O CICS interface is controlled by the IOAC transaction, or a user-defined name.

- To activate the interface, type:
  IOAC INIT
- To terminate the interface, type:
  IOAC SHUT

Step 8.6 – Automatic startup of the interface
To start the interface automatically during CICS startup, insert the following entry after the entry for the
program DFHDELIM, assuming this entry does not already exist.
DFHPLT TYPE=ENTRY, PROGRAM=CTOCTDT
The interface is active all the time. However, the CICS interface becomes operational only when the
Control-O monitor is started.

Step 9 – Install Control-O IMS/DC interface (optional)
This step is intended for anyone who needs to install Control-O IMS support.
For more information about the IMS/DC Interface, see the Control-O chapter of the INCONTROL for z/OS
Administrator Guide.
In IMS, Automatic Operations Interfaces (AOI) can be activated using either of the following modules:

<table>
<thead>
<tr>
<th>Table 104</th>
<th>Modules for activating the automatic operations interfaces (AOI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>Description</td>
</tr>
<tr>
<td>DFSAOUE0</td>
<td>Supports IMS DB/DC and DCCTL environments.</td>
</tr>
<tr>
<td>DFSAOE00</td>
<td>Supports IMS DB/DC, DCCTL and DBCTL environments.</td>
</tr>
</tbody>
</table>

For more information about these modules, see the IMS Customization Guide for the IMS release in use at
your site.
Step 9.1 – Install Control-O IMS/DC interface
The Control-O IMS/DC interface is supported by IMS/DC AOI Exits DFSAOUE0 or DFSAOE00.

Required IOA libraries
The following steps will ensure that IOA has the libraries it needs in order to operate:
1. Add the following DAPARM DD statement to the IMS/DC procedure:
   
   ```
   //DAPARM DD DISP=SHR,DSN=ilprefa.PARM
   //         DD DISP=SHR,DSN=ilprefa.IOAENV
   ```
2. If the IOA LOAD library is not included in the linklist, add it to the list of STEPLIB libraries.

Step 9.2 – Install interface for IMS (DFSAOUE0)
The LNKIMS51 job installs the interface for IMS (DFSAOUE0).
Submit the job and verify that the step ends with a condition code of 0.

Step 9.3 – Install interface for IMS (DFSAOE00)
The IMSAOE50 job installs the interface for IMS (DFSAOE00).
Submit the job and verify that the step ends with a condition code of 0.

Step 9.4 – Start/stop the IMS interface
This step should be implemented only if the DFSAOE00 module has been used for the Control-O interface to IMS, as determined in the preceding step.

IMS starts the Control-O IMS AOI interface automatically during IMS environment initialization, if the DFSAOE00 module is present in the IMS RESLIB library.

The Control-O IMS AOI interface is controlled by internal commands that are not recognized by the IMS system and are not suppressed by the Control-O IMS AOI interface.

- To stop the interface, type `/DIS CTO STOP`
- To activate the interface, type `/DIS CTO START`
- To terminate the interface, type `/DIS CTO CANCEL`

Step 10 – COSMOS customization (optional)
This step installs support for the Control-O Status Monitoring System (COSMOS). To install COSMOS support, complete the following minor steps.

Step 10.1 – Edit global variables list
Edit the DAGLBLST member in the Control-O PARM library. Remove the asterisk at the beginning of the appropriate lines to cause COSMOS Databases to be loaded.
Step 10.2 – Edit rule list

Edit the RULELIST member in the Control-O PARM library. Remove the slash at the beginning of the following lines to cause COSMOS rules to be loaded:

```plaintext
/* IOAP.V900.IOAENV $COSMOSO NOFORCE
/* CTOP.V900.RULES $COSMOSU NOFORCE
```

In a SYSPLEX environment, edit the RULELIST member by removing the slash at the beginning of the following line to cause communication rules to be loaded:

```plaintext
/* CTOP.V900.RULES CTOGATEI NOFORCE
```

To use COSMOS Sysplex support, load the CTOGATEI table, which supports communications, in addition to the COSMOS tables.

Step 10.3 – Set COSMOS to Y in CTOPARM

This step sets the COSMOS parameter to Y in the CTOPARM member, indicating that COSMOS is installed. This step is automatically marked complete.

Step 11 – Control-O communication (optional)

If the IOA Gateway (IOAGATE) is to be used for communication between Control-O monitors, (for example, if VTAM connects systems at your site) perform all the minor steps in this step.

IOAGATE is installed as described in Step 20 – Install IOAGATE (optional) (on page 105).

If only XCF Services will be used for communication between Control-O monitors, review the instructions in Step 11.1 – Installation considerations (on page 326), and perform Step 11.4 – Edit rule list (on page 334).

Step 11.1 – Installation considerations

Control-O interface overview

The Control-O Console Automation System is designed to automatically detect messages, commands, and events, and respond by performing console actions according to predefined user specifications.

Communication with other systems

Control-O can issue messages and commands on other systems, and it can respond to messages and commands from other systems.

Particular responses to messages can depend on the system or console that issued the message.

For systems linked by IOAGATE, such as using VTAM, and so on:

Control-O directs actions to be performed on other systems using the SYSTEM subparameter or by the \%\%$COMMSYS system variable in the following IOAGATE-supported statements:
DO COMMAND
DO COND
DO DISPLAY
DO FORCEJOB
DO RESOURCE
DO RULE
DO SHOUT

Example

If the systems are connected through VTAM, Control-O uses the IOA Gateway to transfer action requests to the specified system, and waits for the response if necessary (assuming the WAITRESP subparameter is set to Y in the DO COMMAND statement).

For systems linked by XCF Services:

If the systems are members of a Sysplex environment, Control-O directs actions to be performed on other systems using the SYSTEM subparameter or by the %%%$COMMSYS system variable in the following statements:

- DO COMMAND and DO DISPLAY
  The actions are routed using the existing XCF connection created by MVS for MCS support.

- DO RULE
  The actions are routed using a Control-O-created XCF group.

Step 11.2 – Define the IOAGATE network map

Separate IOAGATE gateways can connect one application to another. Control-O currently uses this method of communication to enable one Control-O application to pass information to another Control-O application, each using a separate IOAGATE gateway. This connection uses either the SNA or TCP/IP protocol.
IOAGATE must be able to discern whether it is connecting to another IOAGATE gateway or directly to another application server. This is done by network mapping.

Defining the IOAGATE network map

Creating a network map to connect IOAGATEs on different machines at various sites requires defining the network map member in the IOA PARM library. The member name is specified by the NETWMAP parameter in ECAPARM. The IOA SAMPLE library contains a sample member, ECANWMAP, with sample definitions that can be customized for your site.

Planning the network map

All ECAPARM members of all IOAGATEs in your network must be defined. Each one should have a unique NODE (GTWID in previous versions).

Decide which application servers should communicate with each other. A sketch of all network entities and their connections should be drawn.
Example
This example illustrates SNA and TCP connections. For more information, refer to the ECANWAP member in the IOA SAMPLE library.

There are three mainframes at the site:
- MF01
- MF02
- MF03

Control-O and IOAGATE are installed on each one.

**MF01 Definitions** — The ECAPARM member includes:

<table>
<thead>
<tr>
<th>For SNA:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL</td>
<td>ID=C1,</td>
</tr>
<tr>
<td></td>
<td>Channel Identifier</td>
</tr>
<tr>
<td>MODEL</td>
<td>MC,</td>
</tr>
<tr>
<td></td>
<td>Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL</td>
<td>SNA,</td>
</tr>
<tr>
<td>NODE</td>
<td>GATE01,</td>
</tr>
<tr>
<td></td>
<td>Node name</td>
</tr>
<tr>
<td>NETWMAP</td>
<td>ECAABMAP,</td>
</tr>
<tr>
<td></td>
<td>Network map to use in node</td>
</tr>
<tr>
<td>APPLID</td>
<td>LU01,</td>
</tr>
<tr>
<td></td>
<td>VTAM LU6.2 Application ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For TCP:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL</td>
<td>ID=C1,</td>
</tr>
<tr>
<td></td>
<td>Channel Identifier</td>
</tr>
<tr>
<td>MODEL</td>
<td>MC,</td>
</tr>
<tr>
<td></td>
<td>Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL</td>
<td>TCP,</td>
</tr>
<tr>
<td>NODE</td>
<td>GATE01,</td>
</tr>
<tr>
<td></td>
<td>Node name</td>
</tr>
<tr>
<td>NETWMAP</td>
<td>ECAABMAP,</td>
</tr>
<tr>
<td></td>
<td>Network map to use in node</td>
</tr>
<tr>
<td>PORT=2760</td>
<td>Port for listening to incoming connections.</td>
</tr>
</tbody>
</table>
**MF02 Definitions** - The ECAPARM member includes:

<table>
<thead>
<tr>
<th>For SNA:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL ID=C1,</td>
<td>Channel Identifier</td>
</tr>
<tr>
<td>MODEL=MC,</td>
<td>Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL=SNA,</td>
<td>SNA</td>
</tr>
<tr>
<td>NODE=GATE02,</td>
<td>Node name</td>
</tr>
<tr>
<td>NETWMAP=ECAABMAP,</td>
<td>Network map to use in node</td>
</tr>
<tr>
<td>APPLID=LU02,</td>
<td>VTAM LU6.2 Application ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For TCP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL ID=C1,</td>
<td>Channel Identifier</td>
</tr>
<tr>
<td>MODEL=MC,</td>
<td>Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL=TCP,</td>
<td>TCP</td>
</tr>
<tr>
<td>NODE=GATE02,</td>
<td>Node name</td>
</tr>
<tr>
<td>NETWMAP=ECAABMAP,</td>
<td>Network map to use in node</td>
</tr>
<tr>
<td>PORT=2760,</td>
<td>Port for listening to incoming connections</td>
</tr>
</tbody>
</table>

**MF03 Definitions** - The ECAPARM member includes:

<table>
<thead>
<tr>
<th>For SNA:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANNEL ID=C1,</td>
<td>Channel Identifier</td>
</tr>
<tr>
<td>MODEL=MC,</td>
<td>Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL=SNA,</td>
<td>SNA</td>
</tr>
<tr>
<td>NODE=GATE03,</td>
<td>Node name</td>
</tr>
<tr>
<td>NETWMAP=ECAABMAP,</td>
<td>Network map to use in node</td>
</tr>
<tr>
<td>APPLID=LU03,</td>
<td>VTAM LU6.2 Application ID</td>
</tr>
</tbody>
</table>
For TCP:

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>ID=C1, Channel Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL</td>
<td>MC, Multi-Connections Channel</td>
</tr>
<tr>
<td>PROTOCOL</td>
<td>TCP</td>
</tr>
<tr>
<td>NODE</td>
<td>GATE03, Node name</td>
</tr>
<tr>
<td>NETWMAP</td>
<td>ECAABMAP, Network map to use in node</td>
</tr>
<tr>
<td>PORT</td>
<td>2760, Port for listening to incoming connections</td>
</tr>
</tbody>
</table>

Application server CONTROLO in MF01 should communicate with CONTROLO in MF02, and application server CONTROLO in MF01 should communicate with CONTROLO in MF03.

The following figure illustrates the network map for the sample configuration.
Figure 42  Sample network map configuration

Coding the network map

When coding the network map in the IOA.PARM library member with the name specified in the ECAPARM NETWMAP parameter, BMC Software recommends that you code the network map for the whole network and distribute this member to all sites that run IOAGATE. Each IOAGATE is able to extract the relevant information for itself from the same global map definitions.

All the parameters in the network map are mandatory.

The following are sample coded network maps that correspond to the sample configuration illustrated in Example (on page 329).
Figure 43  Sample coded network map for SNA

<table>
<thead>
<tr>
<th>LOCAL</th>
<th>APPL=CONTROLO, NODE=GATE01</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTNER</td>
<td>APPL=CONTROLO, NODE=GATE02, LUNAME=LU02</td>
</tr>
<tr>
<td>PARTNER</td>
<td>APPL=CONTROLO, NODE=GATE03, LUNAME=LU03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCAL</th>
<th>APPL=CONTROLO, NODE=GATE02</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTNER</td>
<td>APPL=CONTROLO, NODE=GATE01, LUNAME=LU01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCAL</th>
<th>APPL=CONTROLO, NODE=GATE03</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTNER</td>
<td>APPL=CONTROLO, NODE=GATE01, LUNAME=LU01</td>
</tr>
</tbody>
</table>

Each LOCAL statement defines a specific IOAGATE in the network. Each PARTNER statement under the LOCAL statement defines another remote IOAGATE with which this specific IOAGATE will communicate.

When an IOAGATE starts, it reads the network map member specified in the ECAPARM member and locates the LOCAL statement that corresponds to that IOAGATE. This LOCAL statement is the one that has the same value in the NODE parameter as the value coded in the NODE parameter of the ECAPARM member.

In the sample network map in Figure 43, because the IOAGATE on MF01 in Figure 42 has NODE set to GATE01 in the ECAPARM member, that IOAGATE locates the first LOCAL statement in the network map. That IOAGATE establishes a connection with each partner IOAGATE specified in the PARTNER statements under that LOCAL statement.

Considerations For SNA — The connection to the partner IOAGATE is the LUNAME specified on the PARTNER statement. This LUNAME must match the APPLID in the ECAPARM member of the partner IOAGATE. Each IOGATE initiates a connection to its partner IOAGATEs, so that between each pair of IOAGATEs there are two connections.

For example, in the configuration illustrated in Figure 42, the IOAGATE on MF01 connects to both LU02, which is the IOAGATE on MF02 (because it has APPLID=LU02), and LU03, which is the IOAGATE on MF03.

Note: Each connection must be defined in both directions. If a connection is defined between CONTROLO on GATE01 and CONTROLO on GATE02, define both CONTROLOs as LOCALs connecting to each other as PARTNERS. A connection defined only in one direction cannot be established by IOAGATE.

Considerations For TCP — The connection to the partner IOAGATE is to the host and port specified by the HOST and PORT parameters, but only if CONNECTOR is set to LOCAL. If CONNECTOR is set to PARTNER, IOAGATE waits for the partner IOAGATE to initiate the connection. Therefore, you must define one IOAGATE with CONNECTOR set to LOCAL and the other with CONNECTOR set to PARTNER.

The PORT parameter defined in the MAP must match the port on which the partner IOAGATE listens for incoming connections. That port is defined in the ECAPARM CHANNEL statement of the partner IOAGATE.

In TCP, only one side initiates the connection.

For example, in the configuration illustrated in Figure 42.
INCONTROL for z/OS Installation Guide: Installing

- IOAGATE on MF01 connects to both
  - port 2760 on HOST2, which is IOAGATE on MF02, because it listens to on port 2760 to HOST2
  - port 2760 on HOST3, which is IOAGATE on MF03
- HOST2 must resolve to an IP address of TCP/IP on MF02
- HOST3 must resolve to an IP address of TCP/IP on MF03
- IOAGATE on MF02 and IOAGATE on MF03 wait for MF01 to initiate the connection

The CHANNEL definition on the connection initiator side requires a port to be defined for listening to incoming connections, even though this IOAGATE may never receive any connection from any client or peer. This port can be shared with a Control-D/Page on Demand Application Server, in which case the port will be used to receive incoming connections from Control-D/WebAccess Server.

The value of APPL can be any of the following:
- O
- CONTROLO
- ControlO

Step 11.3 – Set CTOGATE to Y in CTOPARM

This step sets the CTOGATE parameter to Y in the CTOPARM member, indicating that Control-O communication is installed. This step is automatically marked complete.

Step 11.4 – Edit rule list

In a SYSPLEX environment, edit the RULELIST member by removing the slash at the beginning of the following line to cause communication rules to be loaded:

```bash
/*  CTOP.V900.RULES           CTOGATEI  NOFORCE
```

Step 11.5 – Define the parameter ECAPARM=<suffix of ECAPARM> in the CTOTROLO JCL procedure.

The suffix of the ECAPARM used by CTOGATE should be defined in the parameter ECAPARM=. If the ECAPARM member used by CTOGATE has no suffix, then leave the default as is (ECAPARM=,).

Step 11.6 – Verifications

Now that you have read the overview and configured the network map, verify that the following requirements are satisfied:
- The CTOGATE parameter was set to Y in Step 11.3 – Set CTOGATE to Y in CTOPARM (on page 334).
- Step 20 – Install IOAGATE (optional) (on page 105) of the IOA installation procedure was performed in a manner that supports the IOA Communication Gateway (IOAGATE).
Step 12 – OMEGAMON support (optional)

To enable Control-O handling of OMEGAMON exceptions, customize the OMEGAMON Exception Log Facility (XLF) to use a SYSOUT file with a DD statement name that begins with the CTOOMG? character string.

The ? in the CTOOMG? DD statement must be one of the characters shown in the following table:

<table>
<thead>
<tr>
<th>Character</th>
<th>Represented OMEGAMON Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>OMEGAMON MVS</td>
</tr>
<tr>
<td>C</td>
<td>OMEGAMON CICS</td>
</tr>
<tr>
<td>I</td>
<td>OMEGAMON IMS</td>
</tr>
<tr>
<td>D</td>
<td>OMEGAMON DB2</td>
</tr>
</tbody>
</table>

Step 13 – Installation conclusion

This step completes the installation of Control-O. After each step is performed, mark it complete.

Step 13.1 – Refresh LLA

Under z/OS, if the IOA LOAD library resides in the z/OS Linklist, refresh the LLA using the z/OS command `F ILLA, REFRESH`

If you operate a program fetch optimization product such as PDSMAN, QUICKFETCH, PMO, and so on, you may need to refresh the Linklist table.

Log off from TSO/ROSCOE and log on again.

Step 13.2 – Control-O password data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-O. The product ordered is licensed to run on one or more computers for a specific period of time.

If BMC supplied you with a site licence, copy the printout to the PASCTO member.

The PASCTO member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-O is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- PROD=CONTROL-O / yymmdd

  The PROD parameter line contains the name Control-O and the expiration date of the password in yymmdd format.
START=yyymmdd
- The START parameter line contains the start date of Control-O in yyymmdd format.
- Only one START parameter can be specified in a password member.

CPUID=iiii mmmm
- In the CPUID parameters line, iiiii is the CPU ID, and mmmm is the model, on which Control-O can run.
- There must be a separate CPUID parameter for each CPU authorized to run Control-O. The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-O is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

```
PROCESSOR STATUS
   ID CPU SERIAL
    0 + 0D06209221
    1 + 1D06209221
    + ONLINE - OFFLINE.
    DOES NOT EXIST
```

PASS=pppppppp pppppppp pppppppp pppppppp
- In the PASS parameter line, pppppppp pppppppp pppppppp is the password provided by the BMC representative.
- Only one PASS line can be present in a password member

TYPE=LICENCE
- The TYPE parameter line contains the type of licence given. Valid values are:
  - LICENCE - For permanent licences.
  - TRIAL - For customers who want to evaluate products for a limited period of time.
  - EMERGENCY - For a short-term password, until a permanent password is provided.
- Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-O password member:

```
PROD = CONTROL-O / 080417
    START = 070418
    CPUID = 231234 9021
    CPUID = 140564 9121
    PASS = 86243457 D324389C 58349852
    TYPE = LICENCE
```
This site has a permanent licence for Control-O, starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).

The following additional considerations may apply when you edit the Control-O password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-O / yymmdd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to "CPUID=001234."
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 13.3 – Edit rule list

Edit the RULELIST member in the Control-O PARM library. Ensure you removed the slash at the beginning of the appropriate lines to cause Control-O rules to be loaded as required. If you plan to use COSMOS or Control-O communications, verify that the COSMOS and the CTOGATEI tables have already been added to the rule list, as described in Step 10.2 – Edit rule list (on page 326) and Step 11.4 – Edit rule list (on page 334) respectively.

Step 13.4 – Indicate installation concluded

This step updates the Status field in the Environment table to indicate that Control-O is installed.

Step 13.5 – Start Control-O monitor (optional)

Start the Control-O monitor by issuing the command S CONTROLO in all computers in which Control-O should run or in which the Control-M Event Manager subsystem should be active. As previously stated, the Control-O monitor also functions immediately as the Control-M Event Manager subsystem.

If the CMEM monitor (CTMCMEM) is active, bring it down before starting Control-O.

Edit the COMMNDxx member in the SYS1.PARMLIB library.

If the command S CTMCMEM exists in the COMMND00 member, it must be deleted to start Control-O. Only the command S CONTROLO should remain in this member.

For more information, see the Control-O chapter of the INCONTROL for z/OS Administrator Guide.
Step 13.6 – Back up the installed environment

BMC Software recommends that you create a backup of the Control-O libraries. When backing up the installed environment, verify that the IOA base libraries, installation libraries, operations libraries, and SMP-related data sets are backed up. This backup allows you to restore the original IOA environment when required, so that Control-O can be reinstalled if a significant number of changes are made to the parameters, or if an unrecoverable failure occurs during installation.
Installing Control-M/Tape

This chapter describes the steps required to install Control-M/Tape. The installation procedure contains step-by-step detailed instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-M/Tape installation.

Before you begin

For a complete list of Control-M/Tape libraries, see A INCONTROL product data sets (on page 450).

To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTT in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-M/Tape is displayed.

You are now ready to install Control-M/Tape using ICE.

Control-M/Tape step checklist

The following list is a summary of the steps required to install Control-M/Tape. Detailed step-by-step instructions follow.
Installation steps

Perform the major and minor steps below to install Control-M/Tape using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Before you install Control-M/Tape, ensure that SMF records Types 14 and 15 are saved at your site.

When Control-M/Tape is active, it constantly tracks tape activity and updates the Control-M/Tape Media database. If Control-M/Tape is inactive for any period, you can use the CTTRSM utility to recover any tape activity data that was generated during that period. However, this utility will not work unless these SMF records (that is, Types 14 and 15) are saved at your site. The CTTRSM utility is described in the INCONTROL for z/OS Utilities Guide.

Step 1 – Planning

Plan the installation process carefully. The Control-M/Tape installation sheet (on page 564) , helps you determine the items you should consider and the decisions you should make before installing Control-M/Tape.

Find out if you require input from system programmers, security administrators and other personnel at your site. Check if any system changes require special authorizations and processing. Plan ahead. Before proceeding with the Control-M/Tape installation, verify that all necessary configurations are known and planned for in advance.
Step 1.1 – Planning

Verify that you have filled in the Control-M/Tape planning sheet, specify the values required to calculate the size of Control-M/Tape databases and files, and specify the Control-M/Tape password. When you finish filling in the planning sheet, mark this step complete.

Step 1.2 – Control-M/Tape password data

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-M/Tape. The product ordered is licensed to run on one or more computers for a specific period of time.

If BMC supplied you with a site license, copy the printout to the PASCTT member.

The PASCTT member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-M/Tape is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=CONTROL-M/TAPE / yymmdd**
  
  The PROD parameter line contains the name Control-M/TAPE and the expiration date of the password in *yymmdd* format.

- **START=yymmdd**
  
  • The START parameter line contains the start date of Control-M/Tape in *yymmdd* format.
  • Only one START parameter can be specified in a password member.

- **CPUID=iili iiiii mmmm**
  
  • In the CPUID parameters line, *iili* is the CPU ID, and *mmmm* is the model, on which Control-M/Tape can run.
  • There must be a separate CPUID parameter for each CPU authorized to run Control-M/Tape.

  The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-M/Tape is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

  **PROCESSOR STATUS**
  
<table>
<thead>
<tr>
<th>ID</th>
<th>CPU SERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0D06209221</td>
</tr>
<tr>
<td>1</td>
<td>1D06209221</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
  **+ ONLINE - OFFLINE.**
  
  **DOES NOT EXIST**

- **PASS=pppppppp pppppppp ppppppp**
  
  • In the PASS parameter line, *pppppppp pppppppp ppppppp* is the password provided by the BMC representative.
Only one PASS line can be present in a password member

**TYPE=LICENCE**

- The TYPE parameter line contains the type of licence given. Valid values are:
  - LICENCE - For permanent licences.
  - TRIAL - For customers who want to evaluate products for a limited period of time.
  - EMERGENCY - For a short-term password, until a permanent password is provided.

Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-M/Tape password member:

```
PROD = CONTROL-M/TAPE / 080417
START = 070418
CPUID = 231234 9021
CPUID = 140564 9121
PASS = 86243457 D324389C 58349852
TYPE = LICENCE
```

This site has a permanent licence for Control-M/Tape starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).

The following additional considerations may apply when you edit the Control-M/Tape password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-M/TAPE / yymmdd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to "CPUID=001234."
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the leftmost digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

**Step 2 – Control-M/Tape installation parameters**

Specify values for the following parameters. After data entry is complete, all values are saved in the CTTPARM member in the IOA.PARM library.
## Step 2.1 – Specify initialization parameters

### Table 106  Initialization parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODET</td>
<td>Control-M/Tape global operation mode.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ TEST – Control-M/Tape is working in test mode. Information is recorded in the Media Database, but Control-M/Tape does not intervene in any way, that is, prompts are not issued, data sets that have not expired are not protected, mount messages are not modified, and so on. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ PHASED – Control-M/Tape is working in production mode parallel to other tape management systems.</td>
</tr>
<tr>
<td></td>
<td>▪ PROD – Control-M/Tape is working in production mode, that is, data sets that have not expired are protected, mount messages are modified, and so on.</td>
</tr>
<tr>
<td>DYNINTR</td>
<td>Whether Control-M/Tape dynamically creates operating system interfaces during Control-M/Tape initialization.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Operating system interfaces are dynamically created during initialization and removed upon termination. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Control-M/Tape does not dynamically create operating system interfaces during initialization. It is necessary to perform the static installation as described in Step 7.2 – TLPE Static installation (optional) (on page 383)).</td>
</tr>
<tr>
<td>DYNSVC</td>
<td>Whether Control-M/Tape dynamically defines its SVC during initialization.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Control-M/Tape dynamically defines its SVC during initialization and removes it upon termination. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Control-M/Tape does not dynamically define its SVC during initialization. How to define the SVC is described in Step 6 – Control-M/Tape SVC installation (on page 381).</td>
</tr>
</tbody>
</table>
### Parameter | Description
---|---
**SVCNUM** | Control-M/Tape SVC number.  
- Mandatory  
- Valid values are: 200 through 255  
- Default: 242  

Note: Find an available SVC number for Control-M/Tape. Various products, such as OMEGAMON, LOOK, and RESOLVE, enable identification of available SVC numbers.

**TSSALLOC** | The action to be performed by Control-M/Tape if the Control-M/Tape subsystem is not yet defined in the operating system.  
- Mandatory  

Valid values are:  
- Y – If the CTTH subsystem does not exist, Control-M/Tape automatically creates one. Default.  
- N – If the CTTH subsystem does not exist, Control-M/Tape fails during initialization.

**SMSINTR** | Whether to activate the Control-M/Tape to DFSMS interface. For details, see the organization and administration chapter of the Control-M/Tape User Guide.  

Valid values are:  
- Y – Activate the Control-M/Tape to DFSMS interface.  
- N – Do not activate the Control-M/Tape to DFSMS interface. Default.  

If YES is specified for the SMSINTR installation parameter and the current data set is managed by DFSMS, the STKUNIT parameter is ignored for this data set and the data set is dynamically stacked only if it belongs to a storage group whose type is TAPE. For information about stacking DFSMS data sets, see the organization and administration chapter of the Control-M/Tape User Guide.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| PARALLEL    | Whether Control-M/Tape version 7.0.xx is to work in parallel with another version of Control-M/Tape. Version 7.0.xx can either be run as the primary Control-M/Tape (the default), meaning in production mode, or as a secondary Control-M/Tape, meaning in test mode.  
  ▪   Mandatory  
  Valid values are:  
  ▪   N – No other version of Control-M/Tape should be run in parallel with this Control-M/Tape. Default.  
  ▪   S – Run the current Control-M/Tape as the secondary Control-M/Tape while another Control-M/Tape installation is running in PROD mode.  
  For information about how to run two Control-M/Tapes in parallel, see the *INCONTROL for z/OS Installation Guide: Upgrading*.                                                                                                                                                                                                                       |
| ABENDACT    | Enables user to abend jobs that were started while Control-M/Tape was down. When an active job uses a tape, Control-M/Tape checks whether Control-M/Tape was active from the beginning of the job.  
  Mandatory  
  Valid values are:  
  ▪   Y – jobs that were started while Control-M/Tape was down are abended. Default.  
  ▪   N – jobs that were started while Control-M/Tape was down are not abended  
  Note: You cannot currently use ICE to set a value for the ABENDACT parameter. You can only set this parameter value after installation, by manually editing the CTTPARM member in the IOA.PARM library.                                                                                                                                                                                                                   |
Step 2.2 – Specify message editing parameters

Table 107   Message editing parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYNWTO</td>
<td>Whether to modify MOUNT and/or KEEP messages.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ M – Change only MOUNT messages. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ K – Change only KEEP messages.</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Change both KEEP and MOUNT messages.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Change no messages.</td>
</tr>
</tbody>
</table>

Note: If the DYNWTO parameter is used to indicate that mount and/or keep messages should not be modified, the unmodified messages cannot be used to trigger IOA functions, such as DO FORCEJOB or DO SHOUT, that are specified in a Control-M/Tape rule.

The following messages are modified according to the CNGMSGID and MSGFMT parameters, according to the value specified in the DYNWTO parameter:


The CNGMSGID parameter is described in this table, and the MSGFMT parameter is described in Step 2.3 – Specify MOUNT and KEEP message format (on page 347).

If M or Y is specified for the DYNWTO parameter, the keywords PRIVAT and SCRTCH are replaced by the pool name in MOUNT messages for Scratch tapes from Scratch pools.

Other products at your site may depend on the format of these messages. Use caution when altering messages.
### CNGMSGID

Whether to change message IDs for KEEP and/or MOUNT messages.

Valid values are:
- **M** - Change only MOUNT message IDs. Default.
- **K** - Change only KEEP message IDs.
- **Y** - Change both KEEP and MOUNT message IDs.
- **N** - Do not change any message IDs.
- **P** - Change only MOUNT messages for SCRATCH POOL requests.

For a list of messages that can be modified by specification of this parameter, see the "DYNWTO" parameter.

New message IDs are assigned as follows:
- **CTT100A** – Assigned to regular MOUNT messages.
- **CTT101A** – Assigned to MOUNT messages for SCRATCH tapes from Scratch pools.
- **CTT102A** – Assigned to KEEP messages.
- **CTT103A** – Assigned to regular JES3 MOUNT messages.
- **CTT104A** – Assigned to MOUNT messages for JES3 SCRATCH tapes from Scratch pools.
- **CTT105A** – Assigned to JES3 KEEP messages.

The CNGMSGID parameter only affects those messages that are also indicated as modifiable by the DYNWTO parameter.

### Step 2.3 – Specify MOUNT and KEEP message format

Select this step to define the MSGFMT parameter.

#### Table 108  MOUNT and KEEP message format parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSGFMT</td>
<td>Specifies the information (paired parameters consisting of a field name and its length) to be added to MOUNT and KEEP messages. The information for each included field is taken from the corresponding field in the Media Database record for that volume.</td>
</tr>
</tbody>
</table>
Parameter | Description
---|---
MSGFMT (cont.) | The format of this parameter is:
MSGFMT=(SLNAME,len,SLOTNUM,len,LOCATION,len,USERDATA,len,BOXID,len)
where
- SLNAME is the standard label name. It is the logical name of the volume. The accompanying parameter len defines the length of the SLNAME field.
  - Maximum length: 6 characters.
  - Default length: 6 characters.
- SLOTNUM is the slot number of the volume. The accompanying parameter len defines the length of the SLOTNUM field.
  - Maximum length: 6 digits.
  - Default length: 6 digits.
- LOCATION is the current location of the volume. The accompanying parameter len defines the length of the LOCATION field.
  - Maximum length: 8 characters.
  - Default length: 8 characters.
- USERDATA is free text added by the user to describe the volume. The accompanying parameter len defines the length of the USERDATA field.
  - Maximum length: 20 characters.
  - Default length: 20 characters.
- BOXID contains the box ID if the volume is boxed together with other volumes. The accompanying parameter len defines the length of the BOXID field.
  - Maximum length: 6 characters.
  - Default length: 6 characters.

Fields can be specified in any order. The information from the fields is added to the modified messages after the Volser field. Field information is displayed in the same order the fields are specified in the MSGFMT parameter. Fields not included in the specification of the MSGFMT parameter are not displayed as part of the information added to the message. If MSGFMT parameter is specified with no fields, no fields are added to the messages.

For a list of messages that can be modified by specification of this parameter, see “DYNWTO” in Step 2.2 – Specify message editing parameters (on page 346). Note: The MSGFMT parameter only affects messages that are also indicated as modifiable by the DYNWTO parameter. If the message does not indicate a specific volume (for example, indicates a Scratch volume) or the indicated volume is not defined in the Media Database, no information is added to the message.
### Step 2.4 – Specify database parameters

#### Table 109  Database parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDBWARN</td>
<td>Detects when the Control-M/Tape Media Database or the Stacking Database is utilized beyond the specified percent and issues warning messages. For example, if MDBWARN is set to 90, warning messages are issued after the Control-M/Tape Media Database has used more than 90 percent of its allocated space. If the Media Database becomes completely full, Control-M/Tape stops all processing.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values: must be numeric, 0 through 99</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 90 (percent)</td>
</tr>
<tr>
<td>TRCWARN</td>
<td>Detects when the Control-M/Tape Trace file is utilized beyond the specified percent and issues warning messages. For example, if TRCWARN is set to 80, warning messages are issued after the Control-M/Tape Trace file has used more than 80 percent of its allocated space. If the Trace file becomes completely full, Control-M/Tape stops all processing.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values: must be numeric, 0 through 99</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 80 (percent)</td>
</tr>
<tr>
<td></td>
<td>If a warning message is issued, the CTTTRB job in the Control-M/Tape JCL library must be run in order to back up the Media Database.</td>
</tr>
</tbody>
</table>
Step 2.5 – Specify operational parameters

Table 110 Operational parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| SCRPROT   | Protects specific access to scratch volumes.  
|           |  ▪ Mandatory  
|           |  ▪ Valid values are:  
|           |  ▪ Y - Scratch volumes can be used only by a SCRATCH and/or PRIVATE request.  
|           |  ▪ N - Scratch volumes can be accessed by a specific request. Default.  
|           |  ▪ T - This option is like Y for permanent data sets but requests can reopen temporary data sets on scratch volumes. |
| NLASKOP   | Determines the handling of NL/BLP (No Label and Bypass Label Processing) tapes for specific requests only.  
|           |  ▪ Mandatory  
|           |  ▪ Valid values are:  
|           |  ▪ Y - The operator is asked to confirm the volume serial number of NL and BLP tapes. Default.  
|           |  ▪ A - The operator is asked to confirm the volume serial number for NL and BLP tapes, and to supply volser numbers for nonspecific tapes while operating in TEST mode.  
|           |  ▪ N - The JCL volume serial number is accepted by Control-M/Tape without asking the operator to confirm. In TEST mode, setting NLASKOP to Y produces the same result as if NLASKOP was set to N. |
### Parameter | Description
---|---
**X98ASKOP** | The handling of JCL expression EXPDT=98000 when specified on an output request for a controlled volume. This expression instructs Control-M/Tape to bypass the tape request.  
Valid values are:  
- **P** – The operator is prompted to specify whether the bypass request should be honored. Default.  
- **U** – The bypass request is ignored and the job continues normal processing.  
- **F** – The bypass request is honored (forced) without an operator prompt.  
- **A** – The job is abended.  
In TEST mode, setting X98ASKOP to P, produces the same result as if X98ASKOP was set to F.  
**BLPDEF** | Determines the handling of BLP (Bypass Label Processing) requests.  
Valid values are:  
- **ALL** – All BLP data sets are recorded in the Media Database. Default.  
- **FIRST** – Only the first BLP data set on the volume is recorded in the Media Database. Any BLP access to the volume is recorded as an access to the first data set without recording the sequence number of the data set actually accessed.  
The expression BLPDEF=FIRST is compatible with CA-1.  
**LBLROUTC** | The WTO route code for the tape label printer. Any number from 1 through 128 can be specified.  
- Mandatory  
- Default: 13
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| RECREATE  | Whether Control-M/Tape allows re-creation of data sets. For more information, see the description of the DO RECREATE statement in the rule parameters chapter of the Control-M/Tape User Guide. Valid values are:  
  - Y – Data sets can be recreated, unless they have been assigned permanent retention. Default.  
  - P – Data sets can be recreated even if they were assigned permanent retention.  
  - N – Data sets cannot be recreated.  
  - D - Data sets can be recreated even if the disposition was new (DISP=NEW). This option is the same as Y without the condition related to DISP=OLD.  
  - A - Data sets can be recreated unconditionally. This option is the same as Y without any conditions. Use this option with great caution. |
| DYNDS     | If a job attempts to read a specific data set and the data set is not defined in the Media Database, this parameter determines whether the data set definition is added to the Media Database. Valid values are:  
  - Mandatory  
  Valid values are:  
  - Y – Data set definition is added to the Media Database and the job is able to access the data set. Default.  
  - N – Data set definition is not added to the Media Database and the job abends. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYNVOL</td>
<td>If a job attempts to access a volume, and this volume is not defined in the Media Database, this parameter determines whether a volume definition is added to the Media Database.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Two 1-character values must be specified for this parameter, enclosed in parentheses and separated by a comma. The first value indicates the action to take when a specific tape is requested. The second value indicates the action for a nonspecific (SCRATCH) request. The syntax is:</td>
</tr>
<tr>
<td></td>
<td>DYNVOL=(specific-request-action, non-specific-request-action)</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ P – A message is displayed, prompting the operator to specify whether the volume definition should be created. Default.</td>
</tr>
<tr>
<td></td>
<td>In TEST mode, setting DYNVOL to P produces the same result as if DYNVOL was set to Y.</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Volume definition is added to the Media Database without operator prompting. The job is allowed to access the volume.</td>
</tr>
<tr>
<td></td>
<td>▪ E – Volume definition is added to the Media Database without operator prompting. The volume is marked External.</td>
</tr>
<tr>
<td></td>
<td>▪ I – Volume is ignored and processing of the job continues without the intervention of Control-M/Tape. No information is recorded in the Media Database regarding the volume or the data sets contained in that volume.</td>
</tr>
<tr>
<td></td>
<td>If a subsequent tape that is mounted during the run of a job already exists in the Media Database, either the job is abended (for specific tape requests), or the tape is rejected and a different tape is requested (for nonspecific tape requests).</td>
</tr>
<tr>
<td></td>
<td>▪ N – Volume definition is not added to the Media Database and the job is forced to abend for specific requests, or the volume is rejected for scratch requests.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| **CNGDENS** | Determines how the operating system treats an 18-track tape that is mounted as a scratch tape on a 36-track drive. Valid values are:  
  - Y - If an 18-track tape is mounted as a scratch tape on a 36-track drive, Control-M/Tape directs the operating system to reject the tape, issue message CTT158E, and reissue the mount request. This protects against accidentally reformatting a tape.  
  - N - If an 18-track tape is mounted as a scratch tape on a 36-track drive, the operating system reformats the tape as a 36-track tape and allows the tape to be overwritten. Default.  
The CNGDENS parameter is irrelevant to the following cases:  
  - A 36-track tape is mounted as a scratch tape on an 18-track drive. In this case, the operating system asks the operator whether to reformat and overwrite the tape.  
  - An 18-track tape that already contains data sets is mounted on a 36-track drive. In this case, the operating system rejects the tape.  
  - An 18-track tape is mounted in response to a request for a specific VOLSER on a 36-track drive. In this case, the operating system reformats the tape as a 36-track tape and allows the tape to be overwritten. |
| **ACLREJC** | Controls the number of rejections before ACL is suspended.  
  - Mandatory  
The format of the parameter is ACLREJC=(p,n).  
In this format  
  - p is the number of POOL requests  
  - n is the number of non-POOL private requests  
Default: (2, 2)  
You cannot currently use ICE to set a value for the ACLREJC parameter. You can only set this parameter value after installation, by manually editing the CTTPARM member in the IOA.PARM library. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATLGLBL</td>
<td>Controls how Control-M/Tape refers to MVS catalog entries. Valid values are: ▪ N – Control-M/Tape ignores the label number in the catalog entry. Default. ▪ Y – Control-M/Tape uses the label number when searching for the catalog entry. When CATLGLBL is set to Y, Control-M/Tape does the following: ▪ When the retention of the data set is fixed by reference to its entry in the MVS catalog, Control-M/Tape keeps the data set active only if there is an entry in the MVS catalog with a label number that matches that of the data set. Otherwise, Control-M/Tape expires it to become SCRATCH. For example, a data set with the label number 2 will be scratched unless there is a catalog entry for this data set that refers to the same volser and has a label number of 2. ▪ When Control-M/Tape scratches a data set, it removes it from the catalog only if its entry in the MVS catalog has the same number as the data set in the Media Database. For example, when a data set with the label number 3 is scratched, the catalog entry for this data set is deleted only if the catalog entry refers to the same volser and has a label number of 3. You cannot currently use ICE to set a value for the CATLGLBL parameter. You can only set this parameter value after installation, by manually editing the CTTPARM member in the IOA.PARM library.</td>
</tr>
<tr>
<td>TPAUTHF1</td>
<td>Supports Tape Dataset DFSMS enhanced security, which is activated by setting the TAPEAUTHF1 and TAPEAUTHDSN keywords in DEVSUPxx SYS1.PARMLIB member to YES. Valid values are: ▪ N - Control-M/Tape ignores the Mount Exit Security call. Even with TAPEAUTHDSN and TAPEAUTHF1 set to YES, no additional tape authorization checks will be carried out. Default. ▪ Y - Control-M/Tape supports additional tape authorization checks for volumes signed as ACTIVE or SCRATCH in the Control-M/Tape Media Database. ▪ A - Control-M/Tape supports additional tape authorization checks only for volumes signed as ACTIVE in the Control-M/Tape Media Database.</td>
</tr>
</tbody>
</table>
### Step 2.6 – Specify retention and vault parameters

Table 111 Retention and vault parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERJCL</td>
<td>Whether Control-M/Tape rule definitions override expiration dates set by the operating system Retention Attributes.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Rule definitions override the operating system Retention Attributes. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Rule definitions do not override the operating system Retention Attributes.</td>
</tr>
</tbody>
</table>

If the Control-M/Tape to DFSMS Interface is active, the operating system Retention Attributes are derived from a combination of Retention Limit and Expiration attributes and JCL EXPD T and RETPD values (as described in "Defining Management Class Attributes" in the IBM DFSMSdfp Storage Administration Reference Manual).

If the Control-M/Tape to DFSMS Interface is not active, the operating system Retention Attributes are set to the values of the JCL EXPD T and RETPD parameters.

If you convert from CA-TLMS, BMC Software recommends that you specify Y for this parameter, for compatibility.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DEFEXPDT   | Specifies the default normal retention period.  
  - Mandatory  
  - Minimum: 0  
  - Maximum: 9999  
  - Default: 7 (days)  
This value is used if the normal retention period is not specified in any matching rule, EXPDT and RETPD are not specified in the JCL, and the default retention period is not specified in special rule $DEFAULT.  
The retention specified in $DEFAULT is valid when EXPDT and RETPD are not specified in the JCL, even if OVERJCL is set to Y. |
| DEFABEND   | Default retention period if the job abends, the job is canceled, or the system crashes.  
  - Maximum length: 4 digits  
  - Default: 3 (days)  
This parameter takes effect if the job abends and the abend retention period is not specified in any matching rule. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPDTYPE</td>
<td>Expiration date type. Provides compatibility with the EXPDT JCL parameter as used by CA-1 or CA-TLMS. For these products, the EXPDT parameter has either of two meanings. Depending on the value specified, it represents either a normal (expiration) date or a special date (for example, 98000, 99000). This expiration date affects the logic of vault expirations performed by the CTTVTM utility.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>When DATE or DAYS retention or vault management criteria are assigned to a data set, valid values are:</td>
</tr>
<tr>
<td></td>
<td>- CA1 – CA-1 logic applies. DATE or DAYS specifies the day on which the data set is expired or moved to a different vault. The move occurs on the same day as mentioned in the rule. Default.</td>
</tr>
<tr>
<td></td>
<td>- TLMS – CA-TLMS logic applies. DATE or DAYS specifies the last day of retention or vault management. The data set is expired or moved to a different vault the following day (a day after the date specified in the rule).</td>
</tr>
<tr>
<td></td>
<td>- NONE – Expiration or Vault management date in standard operating system format (a day after the date specified in the rule).</td>
</tr>
<tr>
<td></td>
<td>When cyclic retention criteria are specified, valid values are:</td>
</tr>
<tr>
<td></td>
<td>- CA1 – CA-1 logic applies. Only primary data sets, which are data sets with the LABEL parameter set to 1, are considered in the calculation. Default.</td>
</tr>
<tr>
<td></td>
<td>- Other – All cyclic data sets are considered regardless of label number.</td>
</tr>
<tr>
<td></td>
<td>If special expiration or vault management dates are required, specify CA1 even when CA-1 conversion is not performed.</td>
</tr>
<tr>
<td>EXPDTDDN</td>
<td>Used only for sites converting from CA-1 or CA-TLMS. Specifies the name of the DD statement that determines if the EXPDT JCL parameter should be interpreted as only a normal date, or as either a normal or a special date. If a DD statement with the specified name is present in a job, all EXPDT values are interpreted as normal dates.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| CYCLECNT   | Defines a cycle.  
  ▪ Mandatory  
  Valid values are:  
  ▪ DATE – Handles data sets with the same data set name and creation date as a single cycle. Default.  
  ▪ NONE – Handles data sets with the same data set name as a separate cycle. The creation date is ignored.  
  ▪ JOB – Handles data sets with the same data set name and job name as a cycle. The creation date is ignored.  
  ▪ JOBDATE – Handles data sets with the same data set name, job name, and creation date as a single cycle. |
| RTNTYPE    | Determines whether retention is performed on a data set level or on a volume level, or on a multi-volume group. The parameter statement includes two options separated by a comma. The first option is the retention type for a single volume. The second option is the retention type for a multi-volume group.  
  Valid values for a single volume are:  
  ▪ DSN – Each data set expires according to its own specified expiration date. That is, the data set becomes scratched regardless of the volume.  
  ▪ VOL – All files of a multifile volume expire at the same time (meaning, when the last one expires). This is compatible with other tape management retention methods. Default.  
  Valid values for a multi-volume group are:  
  ▪ DSN – Each data set expires according to its own specified expiration date. That is, the data set becomes scratched regardless of the multi-volume group.  
  ▪ GROUP – All files of a multi-volume group expire at the same time (meaning, when the last one expires). This is compatible with other tape management retention methods. Default.  
  A volume becomes SCRATCH by the CTTRTM utility only after all its data sets have expired. The CTTRTM utility ignores the retention of the volume except for external volumes, or volumes without any data sets. |
### Parameter | Description
--- | ---
**RTNUPD** | Determines in what situations retention should be updated.
Retention is always updated when the data set is first introduced to the Media Database using Create, Recreate or Dynamic Definition. Retention can also be updated in other situations, depending on the value specified for the RTNUPD parameter. Valid values are:
- **CRE** - Update retention only when the data set is created using Create, Recreate or Dynamic Definition. Default.
- **EXT** - Update retention when the data set is extended, for example, by the JCL expression DISP=MOD, in addition to the situations described for the CRE value.
- **UPD** - Update retention whenever the data set is accessed for update, in addition to the situations described for the CRE value, for example, when the data set is opened with INOUT or UPDAT mode.
- **ALL** - Update retention in all of the above situations.

**VLTBYDS1** | Indicates how the vaulting pattern of a volume is determined. Valid values are:
- **Y** - The first data set of the volume determines the vaulting pattern for the volume. This improves performance of the CTTVTM vault management utility, and is compatible with other tape management system vaulting methods. Default.
- **N** - The first data set that contains vaulting data determines the vaulting pattern for the volume. Only one data set can determine the vaulting pattern for the whole volume.

**CTLGWAIT** | Defines the number of wait days before the CTTRTM and CTTVTM Control-M/Tape utilities check for catalog-controlled retention data sets (DO RETENTION=MVS CATALOG). In some cases, a data set is created during a job step and cataloged at the end of that job step or a later job step. If the CTTRTM utility is executed after the data set is created but before it is cataloged, the utility expires the data set. The CTLGWAIT parameter causes the CTTRTM utility to wait the number of days specified (after data set creation) before checking if the data set is cataloged.
- **Mandatory**
- **Default**: 1 (day).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| GRACECAT | Defines the number of extended retention days that are added to data sets with CATALOG retention after the data set becomes SCRATCH. This option enables the user to add a grace period for data sets with CATALOG retention (DO RETENTION=MVS CATALOG) after they become SCRATCH.  
  - Mandatory  
  - Default: 0 (days). |
| GRACECYC | Defines the number of extended retention days that are added to data sets with CYCLE retention after the data set becomes SCRATCH. This option enables the user to add a grace period for data sets with CYCLE retention (DO RETENTION=CYCLES) after they become scratch.  
  - Mandatory  
  - Default: 0 (days). |
| SLOTRNG1 | Specifies how Control-M/Tape performs the slot assignment in the vault. Valid values are:  
  - N (No) – Each media type is assigned to a separate slot range. Default.  
  - Y (Yes) – All different media types are assigned to a single slot range in each vault. When using this option in the TV screen, all vault (slot and box) definitions must be defined only with the media ALLMEDIA. When you create box definitions under MAINLIB, specify the actual media type and do not specify ALLMEDIA. After modifying the SLOTRNG1 parameter, you must invoke CTTVTM in SLOTBLD mode to build the in-use slot bitmap inside the Media database. |
| EXPCAT | Controls whether to expire cataloged data sets or not.  
  - Mandatory  
  Valid values are:  
  - Y (Yes) – Expire cataloged data sets according to the Control-M/Tape retention logic. Default.  
  - N (No) – Do not expire cataloged data sets. Only after the data set expires according to Control-M/Tape retention logic, and it is removed from the catalog, does Control-M/Tape expire the data set.  
  - G – Do not expire GDG cataloged data sets. |
### Step 2.7 – Specify stacking parameters

#### Table 112  Stacking parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DYNSTK</strong></td>
<td>Whether the Control-M/Tape Dynamic Dataset Stacking facility is activated.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y – Dynamic Dataset Stacking is activated. Default.</td>
</tr>
<tr>
<td></td>
<td>- N – Dynamic Dataset Stacking is not activated.</td>
</tr>
<tr>
<td></td>
<td>A matching rule must set DO STACK to YES to activate dynamic stacking for a specific request.</td>
</tr>
<tr>
<td><strong>STKMODE</strong></td>
<td>The search algorithm used by the Dynamic Dataset Stacking Facility. The search is performed for each data set eligible for stacking to find the best matching volume. The selected search method influences volume utilization and the resources required to search the Media Database for a matching volume.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- S – Simple search. Searches for volumes from the same pool only. Data sets and volumes intended for vaulting are not eligible for stacking. Default.</td>
</tr>
<tr>
<td></td>
<td>- V – Searches for volumes from the same pool that have a vaulting pattern similar to the stacked data set. If the data set is to be vaulted, only volumes that have the same vault pattern are considered. If the data set is not to be vaulted, only volumes that are not to be vaulted are considered.</td>
</tr>
<tr>
<td></td>
<td>- R – Searches for volumes from the same pool that have a similar or later retention date. A permanent retention data set is stacked on a volume only if its last data set has permanent retention.</td>
</tr>
<tr>
<td></td>
<td>- A – Satisfies the requirements of both V and R.</td>
</tr>
<tr>
<td></td>
<td>This parameter was called DYNSTYP prior to version 5.1.4.</td>
</tr>
<tr>
<td></td>
<td>This installation parameter determines the default stacking algorithm. This parameter can be overridden for data sets or groups of data sets using a DO STKMODE statement in a Control-M/Tape rule.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>STKTEST</td>
<td>Whether Dynamic Dataset stacking takes place while Control-M/Tape is operating in Global TEST mode. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• Y – The Stacking facility is activated in all modes of operation (TEST, PHASED or PROD). Default.</td>
</tr>
<tr>
<td></td>
<td>• N – The Stacking facility is not activated when TEST is specified for the MODE parameter.</td>
</tr>
<tr>
<td></td>
<td>The STKTEST parameter is ignored when the DYNSTK parameter is set to N. If STKTEST is set to Y, stacking decisions affect production environment decisions concerning the volumes to which data sets should be written when Control-M/Tape is in Global Test mode.</td>
</tr>
<tr>
<td>STKSRCHL</td>
<td>The maximum number of volumes to be searched for a stackable volume. This parameter must contain a numeric value from 0 through 9999.</td>
</tr>
<tr>
<td></td>
<td>• Default: 0 (no limit).</td>
</tr>
<tr>
<td>STKDEFSZ</td>
<td>Size in megabytes for the data set to be stacked. When a data set that is about to be stacked cannot be located in the Stacking Database, Control-M/Tape references this parameter for the default data set size.</td>
</tr>
<tr>
<td></td>
<td>This parameter must be numeric and can have a value from 0 through 9999.</td>
</tr>
<tr>
<td></td>
<td>• Default: 10.</td>
</tr>
<tr>
<td></td>
<td>When STKDEFSZ is set to 0, no default is used. If the data set entry is not found in the Stacking Database, stacking is not performed for that data set.</td>
</tr>
<tr>
<td>STKKEEP</td>
<td>Whether data sets with a disposition of (NEW,KEEP) should be handled by the real-time data set stacking facility.</td>
</tr>
<tr>
<td></td>
<td>• Mandatory</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• Y – Stack data sets with a disposition of (NEW,KEEP) or (NEW,CATLG).</td>
</tr>
<tr>
<td></td>
<td>• N – Stack only data sets with a disposition of (NEW,CATLG). Default.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| STKVNSPC  | Determines whether Control-M/Tape selects volumes with non-specific retention for dynamic stacking.  
  - Mandatory  
  Valid values are:  
  - N – Control-M/Tape does not select volumes with non-specific retention. Default.  
  - R – Control-M/Tape selects volumes with non-specific retention.  
  - V – Control-M/Tape selects volumes with vault retention set to UNTIL EXPIRED.  
  - A – Control-M/Tape selects volumes with either or both of the following:  
    - non-specific retention  
    - vault retention set to UNTIL EXPIRED  
  If you stack data sets on volumes with non-specific retention, Control-M/Tape stacks the data sets on the volumes according to the retention of the last data set on the volume, as follows:  
    - If the last data set is set to specific retention, the incoming data set is stacked on the volume if its retention period is shorter than that of the last data set on the volume.  
    - if the last data set on the volume has non-specific retention periods that have a statistical record, the incoming data set is stacked on the volume if its retention period is shorter than that of the last data set on the volume.  
    - if the last data set on the volume has non-specific retention periods that do not have a statistical record, the volume is not used for stacking. |
| STKALCD   | Whether the Control-M/Tape Dynamic Stacking facility is activated under Dynamic allocations (SVC 99).  
  - Mandatory  
  Valid values are:  
  - N – Do not perform Dynamic Stacking for data sets which are allocated by dynamic allocation (SVC 99). Only data sets allocated by DD cards in the JCL will be considered for Dynamic Stacking. Default.  
  - Y – Perform Dynamic Stacking for data sets which are allocated by dynamic allocation (SVC 99). |
Step 2.8 – Units eligible for dynamic stacking

Select this step to define the STKUNIT parameter.

**Table 113** STKUNIT parameter (units eligible for dynamic stacking)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STKUNIT</td>
<td>Defines all unit names (as they appear in JCL) that are eligible for dynamic stacking. The syntax is: STKUNIT=(unit1,unit2,.....)</td>
</tr>
</tbody>
</table>

Step 2.9 – Specify general parameters

**Table 114** General parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAYTIMET</td>
<td>Start time of the work day at your site (used for rule scheduling only).</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>The format is:</td>
</tr>
<tr>
<td></td>
<td>DAYTIMET=+hhmm</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>DAYTIMET=-hhmm</td>
</tr>
<tr>
<td></td>
<td>where:</td>
</tr>
<tr>
<td></td>
<td>▪ + means after midnight</td>
</tr>
<tr>
<td></td>
<td>▪ - means before midnight</td>
</tr>
<tr>
<td></td>
<td>▪ hhmm is the time, in hours and minutes</td>
</tr>
<tr>
<td></td>
<td>▪ Default: +1200.</td>
</tr>
</tbody>
</table>

DAYTIMET sets the time at which a new work day begins for the purposes of Control-M/Tape. For example, if DAYTIMET is set to +1000, the hours between midnight and 10:00 A.M. are considered part of the work day of the previous date, so that 6:00 A.M. on 10 February is part of the work day of 9 February.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTRNVOL</td>
<td>Specifies a prefix for external volumes to be recorded in the Media Database. When manually adding external volumes to the Media Database through the External Volume Check-In screen, Control-M/Tape can automatically assign a local volume serial number (volser) while the original (physical) volser is kept as the SL-NAME. If no value is specified, automatic volser assignment is not activated. Default. Volsers for external volumes consist of six characters. To create the volser, Control-M/Tape supplies a sequence number that it adds to the prefix you have chosen. If you want Control-M/Tape to append a sequence number to the prefix during the Check-In process, insert up to three characters as a prefix for the EXTRNVOL parameter. Control-M/Tape always assigns the first available sequence number (volser). The maximum number of volsers with the same prefix is determined by the length of the specified prefix. If you choose a 3-character prefix, Control-M/Tape can define a maximum of 999 volsers with that prefix (from 001 through 999). If the prefix is only two characters, 9999 volsers can be defined using that prefix (from 0001 through 9999). If you have a prefix of only one character, Control-M/Tape can define up to 99999 volsers with that prefix (from 00001 through 99999). For example, the statement <code>EXTRNVOL=ABC</code> enables assignment of volsers ABC001 through ABC999 to external volumes, while the statement <code>EXTRNVOL=A</code> enables assignment of volsers A00001 through A99999. BMC Software recommends that the prefix specified for the EXTRNVOL parameter not be a prefix that is used by any of the internal volumes listed in the Media Database.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| TESTRULE   | Whether rules are checked to see if they are to be executed in TEST mode when PHASED or PROD is specified for the Global Operation mode. This parameter is irrelevant when Global Operation Mode is TEST.  
Control-M/Tape Global Operation Mode is determined by the MODE parameter in the CTTPARM member. In addition, operation mode can be set for a specific rule by the MODE parameter in each rule. When the Global Operation Mode is TEST, Control-M/Tape operates in TEST mode regardless of the rule mode. However, when Global Operation Mode is either PHASED or PROD, TEST mode can be selectively assigned to certain applications by specifying TEST in the MODE parameter for those rules. Valid values are:  
- **Y** – Test rules are implemented (in TEST mode). Utilities and online applications load rules to verify the operation mode.  
- **N** – All rules, including test rules, are implemented according to the Global Operation mode, that is, the MODE parameter in the CTTPARM member. Default.  
If all the jobs are to be run in the same operation mode, TEST, PHASED or PROD, use the default setting, N, for this parameter. |
| DEFVVIEW   | Default name for volumes view.  
- Default: V. |
| DEFDVIEW   | Default name for data sets view.  
- Default: D. |
| DEFGVIEW   | Default name for volume groups view.  
- Default: G. |
Step 2.10 – Automated tape Libraries

Select this step to define the RBTTYPE parameter.

Table 115  Automated tape library parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBTTYPE</td>
<td>Specifies the automated tape libraries to be used. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ NONE – No automated tape library is used. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ BTLS – IBM Basic Tape Library Support.</td>
</tr>
<tr>
<td></td>
<td>▪ OAM – Manages IBM Automated Tape library (ATL) and IBM Virtual Tape Server (VTS). In earlier versions the OAM equivalent value was IBMT or SMST.</td>
</tr>
<tr>
<td></td>
<td>▪ HSC</td>
</tr>
<tr>
<td></td>
<td>▪ CSC – StorageTek silo managed by Client System Component (CSC) when interacting with a StorageTek silo.</td>
</tr>
<tr>
<td></td>
<td>▪ MEMOREX – Memorex Telex Automatic Tape library (same as the following value, SUTMYN).</td>
</tr>
<tr>
<td></td>
<td>▪ SUTMYN—SUTMYN Automatic Tape library (same as the preceding value, MEMOREX).</td>
</tr>
<tr>
<td></td>
<td>▪ HACC – ADIC (formerly EMASS/GRAU) Automated Libraries, managed by the Host ABBA Communication Control (HACC).</td>
</tr>
<tr>
<td></td>
<td>▪ FUJITSU – FUJITSU LIBSP magnetic tape library.</td>
</tr>
</tbody>
</table>

The syntax is:

RBTTYPE=NONE|(atltype,atltype,...)

where atltype is any valid RBTTYPE value except NONE.

You can specify up to four automated tape libraries.

For more information about Control-M/Tape and automated tape libraries, see the Control-M/Tape Implementation Guide.
Step 2.11 – Control-M/Tape media parameters
Select this step to define media parameters.
The media definitions are contained in the CTTPARM member.

Table 116  Media parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Logical media name.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 8 characters.</td>
</tr>
<tr>
<td>Desc</td>
<td>Media description.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 10 characters.</td>
</tr>
<tr>
<td>Capacity</td>
<td>Amount of compressed data (in megabytes) that can fit on the tape device.</td>
</tr>
<tr>
<td></td>
<td>Valid range: 0 through 2047000000.</td>
</tr>
<tr>
<td></td>
<td>For example, for a media capacity of 40 GB (120 GB at 3-to-1 compression), use 40960 (40 x 1024).</td>
</tr>
<tr>
<td>STKPCNT</td>
<td>Percentage of this media that can be filled up by dynamic stacking.</td>
</tr>
<tr>
<td></td>
<td>Valid range: 0 through 99.</td>
</tr>
</tbody>
</table>

Step 3 – Target configuration parameters
Specify values for the parameters listed below.

Step 3.1 – Specify CTT target libraries and members
These parameters are saved in the DEFPARM member in the IOA.PARM library.
Enter values for the parameters shown in the following table.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

Table 117  Target library and member parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILPREFT</td>
<td>High level data set name qualifiers (prefix) of the Control-M/Tape installation libraries.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 35 characters</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>ILUNITT</td>
<td>Disk unit for Control-M/Tape installation libraries.</td>
</tr>
<tr>
<td>ILVOLT</td>
<td>Volume serial number for Control-M/Tape installation libraries.</td>
</tr>
</tbody>
</table>
| OLPREFT   | High level data set name qualifiers (prefix) of the Control-M/Tape operations libraries.  
  - Mandatory  
  - Maximum length: 27 characters |
| OLUNITT   | Disk unit for Control-M/Tape operations libraries. |
| OLVOLT    | Volume serial number for Control-M/Tape operations libraries. |
| DBPREFT   | High level data set name qualifiers (prefix) of the Control-M/Tape database files. This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.  
  - Mandatory  
  - Maximum length: 27 characters |
| TEAVUSE   | Allows allocation of Control-T Media database and Stacking Database files (IOA Access method) on EAV (Extended Address Volumes). Optional.  
  Valid values are:  
  - OPT - Allows allocation on EAV. Default.  
  - NO - Prevents allocation on EAV. |
| DBUNITT   | Unit name for the Control-M/Tape database data component. Specify a generic unit (for example, 3390 – not SYSDA). |
| DBVOLT    | Volume serial number for the Control-M/Tape database data component. |
| TRCUNITT  | Unit name for the Control-M/Tape Trace file. Specify a generic unit (for example, 3390, not SYSDA). |
| TRCVOL    | Volume serial number for the Control-M/Tape Trace file. For recovery reasons, the Trace file must be placed on a different disk than the rest of the Control-M/Tape database. |
Step 3.2 – Specify MVS procedures and configuration

Specify values for the parameters listed below.

Table 118 MVS procedures and configuration parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROCPRFT</td>
<td>First 3 characters of the Control-M/Tape JCL procedures after they have been copied to the local operating system procedure library.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Default: CTT</td>
</tr>
<tr>
<td></td>
<td>The value of this parameter must be different from the value of PROCPRF{x} for all other INCONTROL products.</td>
</tr>
</tbody>
</table>

Step 4 – Installation jobs

Perform the following steps before running the installation jobs.

Step 4.1 – Parameter verification

In addition to performing validation checks during the data entry phase, this step runs a program to verify that conflicts do not occur due to the values specified for installation parameters. For example, the prefix of the Control-M/Tape installation libraries is checked to verify that it does not conflict with other INCONTROL product prefixes.

If the step completes successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing completes, the step is automatically marked complete.

This step customizes the CTTPARM and DEFPARM members in the IOA.PARM library.

Step 4.3 – Before you proceed

You have just finished the data entry of Control-M/Tape installation parameters using ICE. The next step submits a job that allocates data sets and tailors members in several libraries. Verify that the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.

Step 4.4 – Install Control-M/Tape libraries

Select this step, and press Enter. The INSTALLT job is displayed.
This job loads the Control-M/Tape libraries. The member contains JCL for:

- allocating Control-M/Tape libraries
- loading Control-M/Tape libraries
- modifying certain Control-M/Tape members

Submit the job and verify that all steps complete with a condition code of 0.

Step 4.5 – Indicate Control-M/Tape libraries installed

This step indicates that Control-M/Tape libraries were installed. When the process completes, this step is marked complete.

Step 5 – Customization process

Perform the steps below to format Control-M/Tape data sets.

Control-M/Tape databases and the Trace file should be placed on disks that will not get defragmented while Control-M/Tape is running. If your site uses a disk defragmenter, place the Control-M/Tape TRC, MDBD, MDBI, STKD and STKI data sets in an "exclude list" to prevent the defragmenter from processing them. If you fail to do this, you will corrupt your Control-M/Tape data sets.

Step 5.1 – Media database space calculation

The Media Database has a data component and an index component.

Enter values for the parameters shown in the following table to calculate the space allocation for the Media Database.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.
### Table 119 Calculating the space allocation for the media database

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of removable volumes at the site</td>
<td>The number of removable volumes at your site.</td>
</tr>
<tr>
<td></td>
<td>- Minimum length: 1 digit.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 7 digits.</td>
</tr>
<tr>
<td>Average number of data sets per volume</td>
<td>The average number of data sets per volume.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 2 digits.</td>
</tr>
<tr>
<td>Data component block size</td>
<td>5-digit number that sets the size of data component blocks. Use a multiple of 660.</td>
</tr>
<tr>
<td></td>
<td>- Minimum 1320.</td>
</tr>
<tr>
<td></td>
<td>- Maximum 32340.</td>
</tr>
<tr>
<td></td>
<td>- Default: 10560.</td>
</tr>
<tr>
<td></td>
<td>Note: By increasing the block size you can decrease the number of blocks required, and this will also decrease the number of extents needed.</td>
</tr>
<tr>
<td>Index component block size</td>
<td>5 digit number that sets the size of index component blocks.</td>
</tr>
<tr>
<td></td>
<td>- Minimum 255.</td>
</tr>
<tr>
<td></td>
<td>- Maximum 27998.</td>
</tr>
<tr>
<td></td>
<td>- Default: 3174.</td>
</tr>
<tr>
<td></td>
<td>Note: By increasing the block size you can decrease the number of blocks required.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The file data component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The file index component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.
For a description of the space calculation, see Media database calculations (on page 394).

Media database: Data component

The size of the data component of the Media Database is determined by the calculated values, that is, the number of blocks and the actual block size. These are stored in the CTTMDBD member of the IOA INSTWORK library. The structure of this database member definition is described in the IOADBF utility section of the INCONTROL for z/OS Utilities Guide.

The following space requirements are automatically calculated based on the values you specify in the Control-M/Tape Media Database Space Calculation screen.

### Table 120 Automatically calculated parameters—Data component

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required blocks</td>
<td>Number of blocks needed. (The sum of the primary and all secondary extents.)</td>
</tr>
<tr>
<td>Primary</td>
<td>Number of blocks in the primary extent.</td>
</tr>
<tr>
<td></td>
<td>Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Secondary</td>
<td>Number of blocks in each secondary extent.</td>
</tr>
<tr>
<td></td>
<td>Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Extents needed</td>
<td>Number of secondary extents needed in addition to the primary extent.</td>
</tr>
<tr>
<td>Actual block size</td>
<td>Block size of the database file to be used.</td>
</tr>
<tr>
<td>3380 Tracks</td>
<td>Calculated number of 3380 tracks on the disk, for the data components file.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Calculated number of 3390 tracks on the disk, for the data components file.</td>
</tr>
</tbody>
</table>

Media database: Index component

The size of the index component of the Media Database is determined by the calculated values, that is, the number of blocks and the actual block size. These are stored in the CTTMDBI member of the IOA INSTWORK library.

The space requirements are automatically calculated based on the values you specify in the Control-M/Tape Media Database Space Calculation screen. (Since Control-M/Tape does not support extents to the index file, some calculated information (identified in the following table by ***) may be blank.)
Table 121  Automatically calculated parameters—Index component

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required blocks</td>
<td>***</td>
</tr>
<tr>
<td>Primary</td>
<td>Number of blocks in the primary extent.</td>
</tr>
<tr>
<td></td>
<td>• Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Secondary</td>
<td>***</td>
</tr>
<tr>
<td>Extents needed</td>
<td>***</td>
</tr>
<tr>
<td>Actual block size</td>
<td>Block size of the database file to be used.</td>
</tr>
<tr>
<td>3380 Tracks</td>
<td>Calculated number of 3380 tracks on the disk, for index component files.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Calculated number of 3390 tracks on the disk, for index component files.</td>
</tr>
</tbody>
</table>

Step 5.2 – Stacking database

Because other installation jobs use these definitions, it is important to perform this step even if you do not intend to activate the Control-M/Tape Dynamic Data set Stacking facility.

The Stacking Database was called the Stacking Statistics file prior to INCONTROL version 5.1.4.

The Stacking Database has a data component and an index component.

Enter values for the parameters shown in the following table to calculate the space allocation for the Stacking Database.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.
### Table 122  Calculating the space allocation for the stacking database

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of data sets processed by Control-M/Tape</td>
<td>Insert the total number of data sets that are recorded in the Control-M/Tape Media Database.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum length: 7 digits.</td>
</tr>
<tr>
<td>Data component block size</td>
<td>5-digit number that sets the size of data component blocks. Use a multiple of 160.</td>
</tr>
<tr>
<td></td>
<td>▪ Minimum: 960.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 32640.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 8960.</td>
</tr>
<tr>
<td></td>
<td>Note: By increasing the block size you can decrease the number of blocks required, and this will also decrease the number of extents needed.</td>
</tr>
<tr>
<td>Index component block size</td>
<td>5 digit number that sets the size of index component blocks.</td>
</tr>
<tr>
<td></td>
<td>▪ Minimum: 255.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 27998.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 6518.</td>
</tr>
<tr>
<td></td>
<td>Note: By increasing the block size you can decrease the number of blocks required, and this will also decrease the number of extents needed.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The file data component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The file index component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

For a description of the space calculation, see [Stacking database calculations](on page 396).
Stacking database: Data component

The size of the data component of the Media Database is determined by the calculated values, that is, the number of blocks and the actual block size. These are stored in the CTTSTKD member of the IOA INSTWORK library. The structure of this database member definition is described in the IODBF utility section of the INCONTROL for z/OS Utilities Guide.

The following space requirements are automatically calculated based on the values you specify in the Control-M/Tape Stacking Database Space Calculation screen.

**Table 123  Automatically calculated parameters—Data component**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required blocks</td>
<td>Number of blocks needed. (The sum of the primary and all secondary extents.)</td>
</tr>
<tr>
<td>Primary</td>
<td>Number of blocks in the primary extent.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Secondary</td>
<td>Number of blocks in each secondary extent.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Extents needed</td>
<td>Number of secondary extents needed in addition to the primary extent.</td>
</tr>
<tr>
<td>Actual block size</td>
<td>Block size of the database file to be used.</td>
</tr>
<tr>
<td>3380 Tracks</td>
<td>Calculated number of 3380 tracks on the disk, for the data components file.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Calculated number of 3390 tracks on the disk, for the data components file.</td>
</tr>
</tbody>
</table>

Stacking database: Index component

The size of the index component of the Stacking Database is determined by the calculated values, that is, the number of blocks and the actual block size. These are stored in the CTTSTKI member of the IOA INSTWORK library.

The space requirements are automatically calculated based on the values you specify in the Control-M/Tape Stacking Database Space Calculation screen. (Since Control-M/Tape does not support extents to the index file, some calculated information (identified in the following table by *** ) may be blank.)
### Table 124  Automatically calculated parameters—Index component

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required blocks</td>
<td>***</td>
</tr>
<tr>
<td>Primary</td>
<td>Number of blocks in the primary extent.</td>
</tr>
<tr>
<td></td>
<td>- Maximum number of blocks is 65535.</td>
</tr>
<tr>
<td>Secondary</td>
<td>***</td>
</tr>
<tr>
<td>Extents needed</td>
<td>***</td>
</tr>
<tr>
<td>Actual block size</td>
<td>Block size of the database file to be used.</td>
</tr>
<tr>
<td>3380 Tracks</td>
<td>Calculated number of 3380 tracks on the disk, for the data components file.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Calculated number of 3390 tracks on the disk, for the data components file.</td>
</tr>
</tbody>
</table>
Step 5.3 – Trace file

Insert values for the following parameters to calculate the required space allocation for the Trace file:

**Table 125 Calculating the space allocation for the Trace file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of data sets per volume</td>
<td>The average number of data sets per volume.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 2 digits.</td>
</tr>
<tr>
<td>Number of volumes mounted per day</td>
<td>The number of volumes mounted daily at your site.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 5 digits</td>
</tr>
<tr>
<td>Number of volumes scratched per day</td>
<td>The number of volumes scratched daily at your site.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 7 digits</td>
</tr>
<tr>
<td>Number of volumes changing location per day</td>
<td>The number of volumes that change their location each day at your site.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 5 digits</td>
</tr>
<tr>
<td>Number of days to retain the information</td>
<td>The number of days for which Control-M/Tape is to retain information.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 3 digits</td>
</tr>
<tr>
<td>Required block size</td>
<td>The block size that you require.</td>
</tr>
<tr>
<td></td>
<td>- Minimum value: 728.</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 5 digits</td>
</tr>
<tr>
<td></td>
<td>- Maximum value: 32400.</td>
</tr>
<tr>
<td></td>
<td>- Default: 3600.</td>
</tr>
</tbody>
</table>

The space requirements are calculated based on the values you specify.

The following parameters determine the size of the Trace file:
Table 126 Parameters for size of Trace file

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRCBLKS</td>
<td>Number of trace blocks. This number depends on the number of records that are in the Trace File.</td>
</tr>
<tr>
<td></td>
<td>• Mandatory</td>
</tr>
<tr>
<td>TRCBLK</td>
<td>Block size. This can be any multiple of 718 plus 10 bytes.</td>
</tr>
<tr>
<td></td>
<td>• Mandatory</td>
</tr>
<tr>
<td></td>
<td>• Minimum value: 728.</td>
</tr>
<tr>
<td></td>
<td>• Maximum length: 5 digits.</td>
</tr>
<tr>
<td></td>
<td>• Maximum value: 32400.</td>
</tr>
<tr>
<td></td>
<td>• Default: 3600.</td>
</tr>
</tbody>
</table>

Trace file space requirements are automatically calculated based on the values you specify in the Control-M/Tape Trace File Space Calculation screen.

Table 127 Automatically calculated fields

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3380 Tracks</td>
<td>Calculated number of 3380 tracks.</td>
</tr>
<tr>
<td>3390 Tracks</td>
<td>Calculated number of 3390 tracks.</td>
</tr>
</tbody>
</table>

To apply the allocations that have just been calculated, type Y in the Use this space allocation in subsequent installation steps? field, and press Enter.

Step 5.4 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing completes, the step is automatically marked complete.

This step customizes the CTTPARM and DEFPARM members in the IOA.PARM library.

Step 5.5 – Create and initialize media database

Select this step, and press Enter. The CTTCMDB job is displayed.

This job creates and initializes the Control-M/Tape Media Database. Verify that you specified the required space allocation values for the Media Database in Step 5.1 – Media database space calculation (on page 372).

The default Media Database space allocation provided in this job is based on the calculations made in Step 5.1 – Media database space calculation (on page 372). For a description of space calculations and requirements for the Media Database, see Media database calculations (on page 394).
Do not move any Media Database, Trace Database, or Stacking Database files while Control-M/Tape is active.

Submit the job. All steps must end with a condition code of 0.

Step 5.6 – Create and initialize stacking database (optional)

If you do not intend to activate the Control-M/Tape Dynamic Data set Stacking facility (parameter DYNSTK=N), skip the current step and mark it complete.

Verify that you specified the required space allocations for the Stacking Database in Step 5.2 – Stacking database (on page 375).

For a description of space calculations and requirements for the Stacking Database, see Stacking database calculations (on page 396).

Select this step, and press Enter. The CTTCSTK job in the IOA INSTWORK library is displayed. This job creates and initializes the Control-M/Tape Stacking Database.

Submit the job. All job steps must end with a condition code of 0.

Step 5.7 – Create and initialize Trace file

Verify that you specified the required space allocations for the Trace file in Step 5.3 – Trace file (on page 379).

For a detailed explanation of space calculations and requirements for the Trace file, see Trace file calculations (on page 398).

Select this step, and press Enter. The CTTCTRRC job in the IOA INSTWORK library is displayed. This job creates and initializes the Control-M/Tape Trace file.

Submit the job. All steps must end with condition code of 0.

Step 5.8 – Copy CTT started tasks to site library

Select this step, and press Enter. The COPYCTTP job in the IOA INSTWORK library is displayed.

This job copies Control-M/Tape started tasks into the site library. The procedures are copied with or without renaming, depending on how the PROCPRFT parameter is set.

Submit the job and verify that all steps end with a condition code of 0.

Step 6 – Control-M/Tape SVC installation

Perform the following steps to prepare for the Control-M/Tape SVC installation.

Step 6.1 – Control-M/Tape SVC installation

Control-M/Tape uses one type 4 SVC to perform all its real-time processing.

The next step will rename the module responsible for handling the SVC calls, so that it will conform to MVS naming standards (IGC00xxx for type 4 SVCs).
INCONTROL for z/OS Installation Guide: Installing

Depending on the value specified for the DYNSVC parameter in the CTTPARM member, perform either of the following actions after completing the next step:

- If the value of the DYNSVC parameter is set to Y (Dynamic SVC), BMC Software recommends that a comment be inserted (for example, /*SVC number nnn is used by Control-M/Tape*/) in the IEASVCxx member in the SYS1.PARMLIB library. No further action is required.

- If the value of the DYNSVC parameter is set to N (Static SVC), define the SVC. The SVC must be defined in the IEASVCxx member in the SYS1.PARMLIB library. Add the following line:
  
  SVCPARM svcnum,REPLACE,TYPE(4),APF(NO)

  where svcnum is the SVC number specified in the SVCNUM parameter in the CTTPARM member.

  Copy module IGC00xxx from the IOA LOAD library to the LPA library.

  IPL the system to activate the Control-M/Tape SVC.

  The IPL can be postponed if you intend to use the MVS interfaces in static mode.

Step 6.2 – Apply SYSMOD for rename CTTSVC module

Select this step, and press Enter. The COPYTSVC job in the IOA INSTWORK library is displayed.

The job renames the Control-M/Tape SVC from the CTTSVC member to IGC00xxx, where xxx follows operating system standards for SVC modules, using the SVC number selected in Step 2.1 – Specify initialization parameters (on page 343).

Submit the job and verify that it ends with a condition code of 0 or 4.

Step 7 – MVS Tape Label Processing Exits installation

Control-M/Tape uses MVS Tape Label Processing Exits to gain control during open, close, and end of volume points during tape data management processing. You can dynamically install these exists at initialization or statically install them into the MVS module in the SYS1.LPALIB library.

Step 7.1 – Tape Label Processing Exits considerations

This section describes both dynamic and static ways to install MVS Tape Label Processing Exits:

Dynamic installation

The MVS Tape Label Processing Exits are dynamically installed during CONTROL-M/Tape initialization (using the CTTINIT procedure), and removed when Control-M/Tape terminates.

An advantage in performing a dynamic installation is that you do not have to perform an IPL (which you would need to do if you performed a static installation) to have the exits take effect. If you choose to perform a dynamic installation, set the DYNINTR parameter to Y in the CTTPARM member definition.

To verify that the MVS Tape Label Processing Exits can be dynamically installed, start Control-M/Tape real time environment procedure in VERIFY mode. Use the following syntax:

  S CTTINIT,PARM=VERIFY
Static installation

The Control-M/Tape supplied exits for MVS Tape Label Processing Exits will be linked into the relevant MVS modules in SYS1.LPALIB library. This will be done by running an SMP/E user mode on the SMP/E CSI of MVS.

An advantage in performing a static installation is that if the Control-M/Tape real time environment (CTTINIT procedure) was inadvertently not started, all that would happen is that jobs would get the CTT134A WTOR message when they tried to access a tape. If the same circumstances existed after a dynamic installation, although jobs could write to tape, Control-M/Tape would not recognize that this had happened.

If you choose to perform a static installation

- set the DYNINTR parameter to N in the CTTPARM member definition
- verify that the SVC installation is specified as static. For more information, see Step 6 - Control-M/Tape SVC installation (on page 381).
- run ICE step 7.2.

Static installation should not be used in TEST mode. For example, if the Control-M/Tape real time environment is not active, the CTT134A message is issued even if TEST is indicated in the CTTPARM member definition.

Step 7.2 – TLPE Static installation (optional)

This step should be performed only if you choose to statically install the MVS Tape Label Processing Exits. Otherwise, mark this step complete.

Select this step, and press Enter. The CTTTLPE job is displayed.

Edit the job following the instructions at the top of the job. You may need to type the following information in the job:

- MVS SMP/E CSI file name
- MVS SMP/E target zone name
- MVS SMP/E FMID

Run the job. On successful completion, the MVS Tape Label Processing Exits are linked into SYS1.LPALIB library.

Step 8 – Initial loading of the Media database (optional)

If your site does not use any tape management software, load the Media Database with a list of the existing volumes at the site.

Step 8.1 – Load the media database

Select this step, and press Enter. The ADDVOLS job is displayed.

This job adds specific ranges of volumes to the Control-M/Tape Media Database. It is possible to load test data before performing a conversion, and then load actual data after performing the conversion.
This step is optional if you set DYNVOL to (Y,Y) in member CTTPARM. That setting indicates that you want Control-M/Tape to dynamically check in volumes when they are used.

Edit the ADDVOLS job. For every volume range, the following must be specified:

**Table 128 Parameters for specifying volume ranges**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST</td>
<td>First volume serial number.</td>
</tr>
<tr>
<td>LAST</td>
<td>Last volume serial number.</td>
</tr>
<tr>
<td>MEDIA</td>
<td>Volume media type.</td>
</tr>
<tr>
<td>SCRATCH</td>
<td>Whether the volumes should be added as scratch volumes.</td>
</tr>
<tr>
<td>VENDOR</td>
<td>Vendor name. Optional.</td>
</tr>
</tbody>
</table>

Submit the job. All steps must complete with a condition code of 0.

**Step 9 – Upgrade from Control-M/Tape repository (optional)**

This step applies only to users upgrading from an earlier version of the product.

This step can be run any number of times to test the conversion of an earlier version of the Media Database.

**Step 9.1 – Stop tape activity (optional)**

If you are running this conversion for test purposes, proceed to **Step 9.2 – Allocate work file (SEQD) (optional)** on page 384. If this conversion is for production purposes, bring down the earlier version of Control-M/Tape using the following operator command:

```
S CTTINIT,PARM='MODE=TERM'
```

Stop all tape processing.

**Step 9.2 – Allocate work file (SEQD) (optional)**

Select this step, and press Enter. The C610SEQD job is displayed.

This job allocates a sequential file as a fixed block with a record length of 660 bytes.

The data set name is:

```
prefix.SEQD
```

where prefix is the value specified for the DBPREFT parameter in the DEFPARM member.

Edit this job by replacing the block size defined by the expression BLK=10560 and the number of blocks defined by the expression NBLKS=1001 with the values that were calculated in **Step 5.1 – Media database space calculation** on page 372.

This file is used later in the conversion process.
Step 9.3 – Convert the Media database

This step converts the previous Media database to one appropriate for the current version.

1. Select this step, and press Enter. The CXXXT610 job in the IOA INSTWORK library is now displayed.

2. Edit the job, as follows:
   a. Replace the data set name in the line marked by the comment <=== CHANGE (OLD MDBD) with the data set name of the old Media database data component.
   b. Replace the IOA load library name in the line marked by the comment <=== CHANGE (OLD LOAD LIBRARY NAME) with the name of the previous version of the IOA load library.

3. Submit the job.

If this conversion is for production purposes, all steps must end with a return code of 0.

For information about return codes for the CTTCDB program that is activated during this job, see the following table.

Table 129  Return codes for the CTTCDB program

<table>
<thead>
<tr>
<th>Return Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The operation was performed successfully.</td>
</tr>
<tr>
<td>4</td>
<td>Control-M/Tape is active (processing continues). If this return code is issued during conversion for test purposes, it does not indicate an error.</td>
</tr>
<tr>
<td>16</td>
<td>An open error occurred. Message CTT390S, issued with this error, contains the DD name that references the file in error.</td>
</tr>
<tr>
<td>20</td>
<td>Invalid record length (LRECL) for DD name DAOUT or DAIN. The valid record length for the file referenced by DD name DAIN is 460 or 600. The valid record length for the file referenced by DD name DAOUT is 660.</td>
</tr>
<tr>
<td>24</td>
<td>An error occurred during initialization of the IOA environment.</td>
</tr>
</tbody>
</table>

Step 9.4 – Convert the Stacking database

If the Control-M/Tape Dynamic Stacking Facility is not used at your site, skip this step and proceed to Step 9.5 – Resume tape activity (on page 386).

This step converts the previous version of the stacking database (STK) to a STK database that supports the current version of Control-M/Tape.

1. Select this step, and press Enter. The CXXXS610 job in the IOA INSTWORK library is now displayed.

2. Edit the job, as follows. In the line marked by the comment <=== CHANGE (OLD STKD), replace the data set name with the name of the old STK data component.
3. Submit the JCL to run the program. All steps should end with a return code of 0.

### Table 130 Return codes for the CTTSTM program

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Operation performed successfully.</td>
</tr>
<tr>
<td>8</td>
<td>Open error.</td>
</tr>
<tr>
<td>12</td>
<td>STK version 5.0.x is not supported.</td>
</tr>
<tr>
<td>16</td>
<td>Loading Control-M/Tape environment failed.</td>
</tr>
</tbody>
</table>

**Step 9.5 – Resume tape activity**

If you brought down the earlier version of Control-M/Tape, you can now restart the earlier version of Control-M/Tape using the following operator command:

```plaintext
S CTTINIT,PARM='MODE=INIT'
```

Tape activities are now permitted.

**Step 10 – Adjustments**

Follow the steps below to perform adjustments to the Control-M/Tape installation.

**Step 10.1 - Indicate installation concluded**

This step updates the Status field in the Environment table to indicate that Control-M/TAPE is installed.

**Step 10.2 – Adjust SYS1.PARMLIB members**

This step describes modifications that must be performed in the SYS1.PARMLIB library for each computer in which Control-M/Tape is installed.

The modifications described below take effect only after the next IPL.

1. When a MOUNT message is detected in the operating system console, Control-M/Tape uses the data set name in the message to determine the appropriate scratch pool. Check if the data set name is included in the MOUNT messages. If it is not included, do one of the following:
   - Specify `MONITOR(DSNNAME)`, if this statement does not already exist, in console definition member CONSOLxx of the SYS1.PARMLIB library.
   - Add Automatic Command MN DSNNAME, if it does not already exist, to the COMMNDxx member of the SYS1.PARMLIB library.

2. If the Dynamic Dataset Stacking facility is installed, do one of the following:
Specify MONITOR(JOBNAMEST), if this statement does not already exist, in console definition member CONSOLxx of the SYS1.PARMLIB library.

or

Add Automatic Command MN JOBNAMEST, if it does not already exist, to the COMMNDxx member of the SYS1.PARMLIB library.

For z/OS version 1.8 and later, use the SETCON command instead of the MN command, as follows:

```
SETCON MN,JOBNAMEST=(ON,LOG),T=ON
```

You can then use the following command to check the monitoring facility status that SETCON sets:

```
D OPDATA,MONITOR
```

The status of each monitoring facility is displayed, as shown in the following sample:

```
CNZ1100I 03.23.22 MONITOR DISPLAY
SPACE=OFF DSNAME=ON TIMESTAMP=ON
MSGTYPE SETCON MN NUMBER OF RECEIVERS
JOBNAMEST ON,LOG 0 CONSOLES
SESS OFF 0 CONSOLES
STATUS OFF 0 CONSOLES
```

Step 10.3 – Replace IEHINITT by CTTTP III (optional)

To prevent accidental activation of IBM utility IEHINITT, BMC Software recommends the following actions:

- Rename the existing IEHINITT program in the SYS1.LINKLIB library.
- Copy the CTTTP III program to a system LINKLIST library.
- Rename the CTTTP III program in the LINKLIST library to IEHINITT.

Step 10.4 – Review and update Control-M/Tape definitions

Review and update the Control-M/Tape definitions in the PARM library:
### Control-M/ Tape definition parameters to review

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RULLIST</td>
<td>Contains a list of rules to be loaded by CTTINIT.</td>
</tr>
<tr>
<td>$$POOL</td>
<td>Contains the pool definition (option TP on the IOA Primary Option menu). If you will be using scratch pools, verify that all definitions in $$POOL meet your requirements. If you will not be using scratch pools, verify that the supplied samples do not overlap your defined volume range.</td>
</tr>
<tr>
<td>$$VAULT</td>
<td>Contains the vault definition (option TV on the IOA Primary Option menu).</td>
</tr>
</tbody>
</table>

### Step 10.5 – Multiple system considerations

Control-M/Tape can operate in a multi-system environment. Consider the following when sharing Control-M/Tape among several systems:

#### Installation

When sharing Control-M/Tape, it should be installed only once. However, certain installation steps, such as installing Control-M/Tape SVC (in static mode only), must be repeated for all systems. This applies not only when a single IOA environment is shared between all the systems, but also when several IOA environments are shared between the systems. This means that in a multi-IOA installation, Control-M/Tape should be installed only on one of the IOA environments.

If you have installed more than one IOA environment, you must select one of them as the basic environment for Control-M/Tape, and install Control-M/Tape in this environment only.

#### Sharing the repository

When the Control-M/Tape Media database, Stacking database, or Trace file are shared between several systems, the operating system enqueue mechanism or RESERVE is used by Control-M/Tape to maintain the locking on these files.

#### GRS setting

If you are using Global Resource Serialization (GRS) and all systems are connected in a GRSplex, set N as the value of CTTRSRV in the IOA PARM library. No statements are required in SYS1.PARMLIB(GRSRNLxx).

If you are using Global Resource Serialization (GRS) and not all systems are connected in a GRSplex, set Y as the value of CTTRSRV in the IOA PARM library. The following statements are required in SYS1.PARMLIB(GRSRNLxx):

```
RNLDEF RNL(EXCL) TYPE(GENERIC) QNAME(control-m/tape qname)
```
INCONTROL for z/OS Installation Guide: Installing

MIM setting

If you are using MIM and each enqueue from any system can be propagated to all other systems, set N as the value of CTTRSRV in the IOA PARM library. Use the following in the MIMQNAME member of the CNTL data set:

```
control-m/tape qname GDIF=YES, /* GDIF SHOULD PROCESS THIS QNAME
                     SCOPE=SYSTEMS, /* GDIF TO PROCESS SYSTEMS ENQS
                     EXEMPT=YES,  /* APPLY EXEMPT LIST
                     ECMF=NO,     /* NO REPORTS CONFLICTS
                     TRACE=NONE   /* NO TRACING
```

If you are using MIM but not all enqueues from any system can be propagated to all other systems, or if you want to use the RESERVE option, set Y as the value of CTTRSRV in the IOA PARM library. Use the following in the MIMQNAME member of the CNTL data set:

```
control-m/tape qname GDIF=YES, /* GDIF SHOULD PROCESS THIS QNAME
                     SCOPE=SYSTEMS, /* GDIF TO PROCESS SYSTEMS ENQS
                     RESERVES=KEEP, /* USE RESERVE IF REQUESTED
                     EXEMPT=YES,  /* APPLY EXEMPT LIST
                     ECMF=NO,     /* NO REPORTS CONFLICTS
                     TRACE=NONE   /* NO TRACING
```

You should also use the following statement in the GDIEXMPT member:

```
LOCAL QNAME=control-m/tape qname
```

No resource locking software

If no resource locking software is used at your site, set Y as the value of CTTRSRV in the IOA PARM library.

When using the Reserve option, you must define the HCD SHARED option as YES, in the disk unit on which Control-M/Tape databases reside.

Checking the locking of the Media database

The CTTCENQ routine verifies the locking of the Control-M/Tape Media database from a multi-systems environment. The CTTCENQ member in the Control-M/Tape JCL library contains a job to initiate this routine. Use the following steps to perform the test:

1. Submit the CTTCENQ job in all systems that shared the same Media database.
2. Wait for a WTOR to be issued on all systems, prompting whether to start the test.
3. Only after the WTOR has been issued on all systems, reply Y for the WTOR in all systems.
4. Wait for a WTOR to be issued on all systems, providing end-of-test information.
5. Only after the WTOR has been issued on all systems, reply C for the WTOR in all systems.
6. Look for the CTTCENQ message, which indicates whether the locking of the Media database has been defined correctly.

Real-Time Environment

Because Control-M/Tape is installed in only one IOA environment, only one CTTPARM member is used by Control-M/Tape. It is therefore required that the number inserted in the SVCNUM Control-M/Tape installation parameter be an SVC number that is not used by any of the systems that share Control-M/Tape.

If you choose to use the static method to install Control-M/Tape, repeat the MVS Tape Label Processing exits step and the SVC installation step for all the systems sharing Control-M/Tape. For more information, see Step 6 – Control-M/Tape SVC installation (on page 381), and Step 7 – MVS Tape Label Processing Exits installation (on page 382).

To activate the Control-M/Tape Real-time environment, start the CTTINIT procedure in every system.

Do not remove the IOA LOAD library from the STEPLIB statement of the CTTINIT procedure even if the library is added to the Linklist.

Daily job, utilities and online environment

BMC Software recommends that the Control-M/Tape utilities, the Daily procedure, and the Control-M/Tape Online facility, be run in the MVS system in which Control-M/Tape was installed, and not in each system.

The New Day procedure (CTTDAY) must run only on one MVS system and not on each MVS system that shares the same Media database. Only the following two steps of the New Day procedure should be run on each MVS system:

1. Reloading the scheduled Control-M/Tape rules into memory.
2. Checking that Control-M/Tape real time environment is active.

The Control-M/Tape UNTIL MVS CATALOG retention criterion can be used in either of the following circumstances:

- to retain a data set as long as it is cataloged in the operating system catalog
- to retain a volume in a certain vault as long as its vaulting data set is cataloged in the operating system catalog

If all the systems that share Control-M/Tape do not share all the operating system catalogs, the CTTRTM utility might search the wrong catalog and therefore prematurely expire a data set. The same situation can occur when running the CTTVTM utility, which may prematurely move a volume out of a vault.

Therefore, if all systems that share Control-M/Tape do not share all the operating system catalogs, the CTTDAY Control-M/Tape daily job must be tailored. Appropriate INCLUDE statements should be added to the steps of the daily job that runs the retention management utility (CTTRTM) and the vaulting management utility (CTTVTM). The INCLUDE statements should limit the processing of these utilities only to data sets that are cataloged in the operating system catalogs of the system in which the daily job is executed.

The CTTRTM and CTTVTM utilities must be run on a daily basis in the remaining systems. Every job that runs these utilities must be tailored to contain the appropriate INCLUDE statements in it, to ensure that the Control-M/Tape utilities process only the data sets of the system that is running the job.
Examples

The following are examples of the CTTRTM and CTTVTM utilities.

**Figure 45 Example of the CTTRTM utility**

```plaintext
// CTTRTM EXEC CTTRTM
// SYSIN DD *
TYPE RUN  MODE=NORMAL
TYPE RET  MODE=REGULAR
INCLUDE CRECPU=SYSA
REPORT NAME=SCRATCH, SUMMARY=YES
FIELDS ROWID, VOLSER, SLNAME, MEDIA, EXPDT, LACCDT,
LOCATION, POOL, DSNAME, EXPDS
SORTBY POOL/B, VOLSER
/*
*/
```

**Figure 46 Example of the CTTVTM utility**

```plaintext
// CTTVTM EXEC CTTVTM
// SYSIN DD *
TYPE RUN  MODE=NORMAL
TYPE VLT  MODE=REGULAR
INCLUDE CRECPU=SYSA
REPORT NAME=DI STRI B, SUMMARY=YES
FIELDS ROWD, TOLOC, VOLSER, FROMSLOT, TOSLOT, NEXTLOC
SORTBY FROMLOC/B, TOLOC, VOLSER
/*
*/
```

IOA functional monitor

Review *Multi-computer and Multi-IOA considerations* (on page 93).

Step 10.6 – Building Vault Information in the Media database

Select this step, and press Enter. The CTTSLOT job is displayed.

This job rebuilds vault and box records in the Media Database.

Submit this job and verify that all steps end with a condition code of 0.

Step 11 – Control-M/Tape installation conclusion

This step is used to indicate that Control-M/Tape installation is complete. When each minor step is completed, mark the step complete.

Step 11.1 – Start Control-M/Tape

Before initializing Control-M/Tape, review *Changing over to Control-M/Tape* (on page 394).

Initialize Control-M/Tape in verify mode by issuing the following operator command:

```plaintext
S CTTINIT[, PARM='MODE=VERIFY']
```

This command must be issued on each computer where Control-M/Tape is to operate.
Setting the MODE parameter to VERIFY in the command

- verifies that Control-M/Tape operating system interfaces can be applied
- verifies that the SVC can be installed
- produces additional information if a problem occurs

Then initialize Control-M/Tape:

```
S CTTINIT
```

For an explanation of the CTTINIT procedure and its parameters, see the INCONTROL for z/OS Administrator Guide.

If you run Control-M/Tape in parallel with another tape management product, you must

- start the Control-M/Tape initialization procedure after the other product finishes its initialization
- terminate Control-M/Tape before terminating the other product

To activate Control-M/Tape automatically after any IPL, add a command to the COMMNDxx member in the SYS1.PARMLIB library to start the CTTINIT procedure.

Step 11.2 – Run CTT installation verification

Select this step, and press Enter. The TESTINST job is displayed.

This job verifies the validity of the new Control-M/Tape installation. This job creates a multivolume data set that spans two Standard Label volumes.

By default, the UNIT JCL parameter is set to 3490 (meaning, cartridge). This value can be set to any unit name used for removable media at your site.

Submit the job.

For the two mount requests, mount two Standard Label scratch volumes.

The step must end with a condition code of 0.

Step 11.3 – Check installation verification results

1. Open the Inquire/Update screen by selecting option TI on the IOA Primary Option menu.
2. After the Inquire/Update entry panel is displayed, insert in the VOLSER FROM field the volume serial number of the last volume mounted in the job, and press Enter. The volume record is displayed.
3. Check that the volume is marked with an asterisk, which designates it as part of a multivolume group.
4. Type S in the option column of the volume and press Enter.
5. Verify the data set name that was created. The default name for this data set is CTT.MULTI.VOLUMES.
6. Type A in the option column of the volume and press Enter. The Prev Volume field in the Multi-Volume section should contain the volume serial number of the first volume mounted in the job.

Step 11.4 – Back up the installation environment

BMC Software recommends that you create a backup of the Control-M/Tape libraries.
When backing up the installed environment, verify that the base libraries, installation libraries, operations libraries, and SMP-related data sets are backed up. This backup allows the users to restore the original IOA environment when required, so that Control-M/Tape can be reinstalled if a significant number of changes are made to the parameters, or if an unrecoverable failure occurs during installation.

Step 12 – Conversion considerations
Once the Media Database is created and initialized, it must be loaded, or converted, or both, using Control-M/Tape utilities. The following options are available:

- conversion from CA-1 database
- conversion from CA-TLMS database
- conversion from EPIC/MVS database
- conversion from DFSMSrmm database
- conversion from MVS catalog
- initial loading of the database, where no previous tape management software is being used

BMC Software recommends that you read Installation considerations (on page 393) before proceeding with the conversion.

Step 13 – Automated conversion from CA-1 (optional)
Follow the steps outlined under this topic in the Control-M/Tape Conversion Guide.

Step 14 – Conversion from CA-TLMS (optional)
Follow the steps outlined under this topic in the Control-M/Tape Conversion Guide.

Step 15 – Conversion from EPIC/MVS (optional)
Follow the steps outlined under this topic in the Control-M/Tape Conversion Guide.

Step 16 – Conversion from DFSMSrmm (optional)
Follow the steps outlined under this topic in the Control-M/Tape Conversion Guide.

Step 17 – Conversion from MVS Catalog (optional)
Follow the steps outlined under this topic in the Control-M/Tape Conversion Guide.

Installation considerations
This section contains additional information about converting to, and phasing in, Control-M/Tape from a CA-1, CA-TLMS, MVS/EPIC or RMM database, and from the MVS catalog.
Changing over to Control-M/Tape

The process of changing over to Control-M/Tape from another tape management system (TMS) requires a number of steps over a period of time. Installing Control-M/Tape is only the first step in this process. For more information, see the Control-M/Tape Implementation Guide and the Control-M/Tape Conversion Guide.

Media database calculations

The initial calculation of the Media database data and index components is performed automatically using ICE, and is described in Step 5.1 – Media database space calculation (on page 372). The following explanations are for information only.

If at a later stage you wish to change the space allocations calculated automatically during the installation process, you can use the Customize procedure provided in the IOA Installation – Main Menu.

1. Open IOA Installation – Main Menu.
2. Type CTT in the Product ID field.
3. Type 6 in the OPTION field, to select option 6, Customize. The Major Steps Selection screen is displayed.
4. Select option 2, Customize Control-M/Tape Data sets, and press Enter. The Minor Steps Selection screen is displayed.
5. Select option 1, Media Database Space Calculation, and press Enter. The CTT Media Database Space Calculation screen is displayed.

Media database: Data component

The default block size (blk_size) of the data components of the Media database is 10,560. It can be changed to any multiple of 660.

The required number of blocks (num_blks) for the data components of the Media Database depends on the number of records (num_rcds) that are in the data components of the Media Database.

The required number of blocks is calculated according to the following formula:

\[
\text{num\_blks} = (\text{num\_rcds} / \text{x1}) + 1
\]

where

- \( x1 \) is \( \text{blk\_size} / 660 \)
- \( x2 \) is the number of volumes at the site
- \( x3 \) is the average number of files on each volume
- \( \text{num\_rcds} = [(x2 \times x3) + x2] \times 1.1 \)

The value of \( \text{num\_rcds} \) includes a multiplication by 1.1 on the assumption that 10% of the records in the data component of the Media Database are other records.
Example

Assuming a block size of 13,200, 6,000 volumes at the site, and an average of 2 files per volume, the following is the calculation:

1. \( x_1 \) is the \( \frac{13,200}{660} = 20 \) entries per block
2. \( x_2 \) is the 6,000 volumes at the site
3. \( x_3 \) is the 2 files per volume
4. \( \text{num}_\text{rcds} = [(6,000 \times 2) + 6,000] \times 1.1 = 19,800 \)

\( \text{num}_\text{blks} = \frac{19,800}{20} + 1 = 990 \)

Media database: Index component

Index blocks contain 10 bytes of control information followed by a maximum of 255 items, or keys, each of which has a variable length.

The key length (key_len) of the Media Index file is 49. This value must not be changed.

The default block size (blk_size) of the Media Database index component is 3,174. If you want to change the block size, you can employ any value. BMC Software recommends that you use a value that will minimize wasted space on the device to which the Index file is allocated.

The required number of blocks (num_blks) is calculated as follows:

\( \text{num}_\text{blks} = 1.05 \times y \)

where \( y \) is calculated by the following steps:

1. \( y_1 \) is the number of records in the data component of the Media Database (num_rcds)
   For information on calculating num_rcds, see Media database: Data component (on page 394).
2. \( y_2 \) is the number of volumes at the site (\( x_2 \) in the data component calculations)
3. \( y_3 \) is the number of data sets at the site multiplied by 2
   This number (\( y_3 \)) can be calculated according to the formula
   \[ y_3 = x_2 \times x_3 \times 2 \]
   where:
   - \( x_2 \) is the number of volumes at the site
   - \( x_3 \) is the average number of files on each volume
   Use the same values for \( x_2 \) and \( x_3 \) that you used in calculating the data component (as described in Media database: Data component (on page 394))
4. \( y_4 \) is 10% of \( y_1 \), that is, \( y_1 / 10 \)
   It is assumed that 10% of the records in the data component of the Media Database are other records.
5. \( y_5 \) is \( y_2 + y_3 + y_4 \)
6. \( y_6 \) is \( y_5 \times (\text{key}_\text{len} + 6) \)
7. \( y \) is \( \frac{y_6}{\text{blk}_\text{size}} \times 2 \)
Example

Assuming a block size of 9,200, 6,000 volumes at the site, and an average of 2 files per volume, the following is the calculation:

1. \( y_1 \) is 19,800
2. \( y_2 \) is 6,000 (the number of volumes at the site)
3. \( y_3 \) is \( 6,000 \times 2 \times 2 = 24,000 \)
4. \( y_4 \) is \( 10\% \times 19,800 = 1980 \)
5. \( y_5 \) is \( 1980 + 24,000 + 6,000 = 31,980 \)
6. \( y_6 \) is \( 31,980 \times (49 + 6) = 1,758,900 \)
7. \( y \) is \( (1,758,900 / 9,200) \times 2 = 382 \)

\( \text{num\_blks} \) is \( 1.05 \times 382 = 401 \)

Stacking database calculations

The calculation of the Stacking Database data and index components is performed automatically, using ICE, and is described in *Step 5.2 – Stacking database* (on page 375). The following explanations are for information only.

If at a later stage you wish to change the space allocations calculated automatically during the installation process, you can use the Customize procedure provide in the IOA Installation – Main Menu.

1. Open IOA Installation – Main Menu.
2. Type CTT in the Product ID field.
3. Type 6 in the OPTION field, to select option 6, Customize.
   The Major Steps Selection screen is displayed.
4. Select option 2, Customize Control-M/Tape Datasets, and press Enter.
   The Minor Steps Selection screen is displayed.
5. Select option 2, Stacking Database Space Calculation, and press Enter.
   The CTT Stacking Database Space Calculation screen is displayed.

Stacking database: Data component

The default block size (blk_size) of the data components of the Stacking Database is 8,960. It can be changed to any multiple of 160.

The required number of records for the data components of the Stacking Database (sd_num_blks) depends on the number of records in the data components of the Stacking Database (sd_num_rcds).

The required number of blocks is calculated as follows:

\[ \text{sd\_num\_blks} = (\text{sd\_num\_rcds} / x) + 1 \]
where

- \( sd\_num\_rcds \) is the number of data sets that was processed, or will be processed, by Control-M/Tape. The number of generations per data set name is not relevant.

- \( x \) is \( \text{blk\_size} / 160 \)

**Example**

Assuming that the block size is 8,960, and the number of data sets that are processed by Control-M/Tape is 1,500, the following is the calculation:

1. \( sd\_num\_rcds = 15000 \)
2. \( x = 8960 / 160 = 56 \)
3. \( sd\_num\_blks = (15000 / 56) + 1 = 269 \)

**Stacking database: Index component**

Index blocks consist of 10 bytes of control information followed by no more than 255 items, or keys. Each item in an index component has a variable length. The key length (\( sdi\_key\_len \)) of the Stacking Database Index file is 57 and must not be changed.

The default block size of the components (\( \text{blk\_size} \)) of the Stacking Database is 6,518.

You can change the block size (\( \text{blk\_size} \)) to any value. BMC Software recommends that you use a value that will minimize wasted space on the device to which the Index file is allocated.

The required number of blocks is calculated as follows:

1. \( x1 \) is the number of records in the data components of the Stacking Database (\( sd\_num\_rcds \)). For information on calculating \( sd\_num\_rcds \), see **Stacking database: Data component** (on page 396).
2. \( x2 \) is \( x1 \times (sdi\_key\_len + 6) \)
3. \( x3 \) is \( (x2 / \text{blk\_size}) \times 2 \)
4. \( sdi\_num\_blks \) is \( x3 \times 1.05 \)

**Example**

Assuming that the block size is 6,378 and the number of data sets that are processed by Control-M/Tape is 1,500, the following is the calculation:

1. \( x1 \) (\( sd\_num\_rcds \)) is 15,000
2. \( x2 \) is 15,000 \( \times (57 + 6) = 945,000 \)
3. \( x3 \) is \( (945,000 / 6378) \times 2 = 296 \)
4. \( sdi\_num\_blks = 296 \times 1.05 = 311 \)
Trace file calculations

The calculation of the Control-M/Tape Trace file is performed automatically, using ICE, and is described in Step 5.3 – Trace file (on page 379). The following explanations are for information only.

If at a later stage you wish to change the space allocations calculated automatically during the installation process, you can use the Customize procedure provide in the IOA Installation – Main Menu.

1. Open IOA Installation – Main Menu.
2. Type CTT in the Product ID field.
3. Type 6 in the OPTION field, to select option 6, Customize. The Major Steps Selection screen is displayed.
4. Select option 2, Customize Control-M/Tape Datasets, and press Enter. The Minor Steps Selection screen is displayed.
5. Select option 3, Trace File Space Calculation, and press Enter. The CTT Trace File Space Calculation screen is displayed.

Block size
The default block size (blk_size) of the Trace File is 3,600.

If you want to change the block size, you can employ any value. BMC Software recommends that you use a value calculated according to the following formula:

\[ \text{blk\_size} = n \times (660 + 58) + 10 \]

where \( n \) is any number you may choose.

Number of blocks
The required number of blocks is calculated according to the following formula:

\[ \text{tf\_num\_blks} = (\text{tf\_num\_rcds} / x1) + 10 \]

where

- \( x1 \) is \( (\text{blk\_size} - 10) / (660 + 58) \)
- \( x2 \) is the average number of data sets per volume
- \( x3 \) is the number of volumes mounted per day
- \( x4 \) is the number of volumes scratched per day
- \( x5 \) is the number of volumes changing location (that is, vault) per day
- \( x6 \) is the number of days to retain the information in the Trace file

\[ \text{tf\_num\_rcds} = ((6 \times x2 + 6) \times x3 + 2 \times x4 \times (x2 + 1) + 2 \times x5) \times x6 \]
Example
Assume the following values:

- blk_size is 3,600
- x2 is 3 (three data sets per volume)
- x3 is 500 (500 volumes are mounted each day)
- x4 is 500 (500 volumes become scratch each day)
- x5 is 250 (250 volumes change location every day)
- x6 is 2 (the Trace file should retain data for two days)

The following is the calculation:

1. \[ x1 = \frac{(3,600 - 10)}{(660+58)} = 5 \]
2. \[ \text{tf_num_rcds is} \]
   \[ ((6\times3 + 6) \times 500 + 2 \times 500 \times (3 + 1) + 2 \times 250) \times 2 = 33,000 \]
   \[ \text{tf_num_blks} = \frac{33,000}{5} + 10 = 6610 \]
Installing Control-M/Analyzer

This chapter describes the steps required to install Control-M/Analyzer. The installation procedure contains step-by-step detailed instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-M/Analyzer installation.

Before you begin

For a complete list of Control-M/Analyzer libraries, see A INCONTROL product data sets (on page 450). Perform this step only when you have finished filling in the Control-M/Analyzer installation sheet (on page 563).

To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTB in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-M/Analyzer is displayed.

You are now ready to install Control-M/Analyzer using ICE.

Control-M/Analyzer step checklist

The following list is a summary of the steps required to install Control-M/Analyzer. Detailed step-by-step instructions follow.

- Step 1 – Planning (on page 401)
- Step 2 – Specify Control-M/Analyzer parameters (on page 401)
- Step 3 – Specify target configuration parameters (on page 404)
- Step 4 – Installation jobs (on page 406)
- Step 5 – Customization process (on page 407)
- Step 6 – JES2 considerations (optional) (on page 425)
- Step 7 – JES3 considerations (optional) (on page 425)
- Step 8 – Adjustments (on page 426)
- Step 9 – Control-M/Analyzer customization (optional) (on page 430)
- Step 10 – Installation conclusion (on page 430)
Installation steps

Follow the major and minor steps below to install Control-M/Analyzer using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-M/Analyzer installation sheet (on page 563) will help you determine the items you should consider before installing Control-M/Analyzer.

Find out if you require input from system programmers, security administrators and other personnel at your site. Check if any system changes require special authorization and processing. Before proceeding with the Control-M/Analyzer installation, verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?

This step verifies that you have filled in the Control-M/Analyzer planning sheet.

When you have done so,

1. press PF03/PF15 to exit this screen
2. type C in the Sel field
3. press Enter

The step will be marked as completed.

Step 2 – Specify Control-M/Analyzer parameters

Perform the minor steps below to specify values for the Control-M/Analyzer installation parameters.
Step 2.1 – Control-M/Analyzer Operational Parameters

Table 132 Operational parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAYTIMEB</td>
<td>The start time of the work day at your site. Format: DAYTIMEB=+hhmm, or DAYTIMEB=−hhmm. Mandatory Default: +1200. For more information, see the description of date definitions and date fields in the introduction chapter of the Control-M/Analyzer User Guide.</td>
</tr>
<tr>
<td>RTEBUF</td>
<td>Number of buffer pages to create for the purpose of forward and backward reference when scanning a sequential data set, CDAM file, sysout, and so on, while processing WHEN and DO EXTRACT statements. Specify an odd number. Mandatory Default: 007, meaning 3 pages back and 3 pages forward from the current page.</td>
</tr>
<tr>
<td>VARCRET</td>
<td>Whether a rule must automatically create a data item (database variable) in the Control-M/Analyzer database while executing a Control-M/Analyzer rule. Mandatory Valid values are: Y – If a data item (variable) did not exist before a rule execution, it is automatically created during rule execution and committed in the Control-M/Analyzer database. The data item is created even if a DO COMMIT statement is not specified within the rule. Default. N – If rule attempts to set a nonexistent data item (database variable) in the Control-M/Analyzer database using a DO COMMIT statement, a runtime error results.</td>
</tr>
<tr>
<td>VARGENS</td>
<td>If the VARCRET parameter is set to Y, specify the default number of generations with which the variable is automatically created. Mandatory Default: 0005.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>DEFSTAT</strong></td>
<td>The default result with which a Control-M/Analyzer rule ends if no DO TERMINATE statement was specified.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ OK – Indicates that the result is valid. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ NOTOK – Indicates that the result is not valid.</td>
</tr>
<tr>
<td></td>
<td>▪ TOLER – Indicates that the result is not valid, but within tolerance limits.</td>
</tr>
<tr>
<td><strong>DEFCODE</strong></td>
<td>Default code with which a Control-M/Analyzer rule ends if no DO TERMINATE statement was specified.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values: 0000 through 4000.</td>
</tr>
<tr>
<td></td>
<td>▪ Default: 0000.</td>
</tr>
<tr>
<td><strong>CTBINM</strong></td>
<td>If Control-M/Analyzer is installed at a site where Control-M is also installed, Control-M/Analyzer rules can be invoked by Control-M through a DO CTBRULE statement.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Control-M can invoke Control-M/Analyzer rules. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Control-M cannot invoke Control-M/Analyzer rules.</td>
</tr>
<tr>
<td><strong>CTBIND</strong></td>
<td>If Control-M/Analyzer is installed at a site where Control-D is also installed, Control-M/Analyzer rules can be invoked by Control-D through a DO CTBRULE statement.</td>
</tr>
<tr>
<td></td>
<td>▪ Mandatory</td>
</tr>
<tr>
<td></td>
<td>▪ Valid values are:</td>
</tr>
<tr>
<td></td>
<td>▪ Y – Control-D can invoke Control-M/Analyzer rules. Default.</td>
</tr>
<tr>
<td></td>
<td>▪ N – Control-D cannot invoke Control-M/Analyzer rules.</td>
</tr>
</tbody>
</table>
### Step 3 – Specify target configuration parameters
Specify values for the parameters listed below.

### Step 3.1 – Control-M/Analyzer target libraries and members
Enter values for the parameters shown in the following table.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECCHAR</td>
<td>Specifies the default decimal point character and thousands separator for system variable SYSDECCHAR and the Control-M/Analyzer Dynamic Print facility.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Valid values:</td>
</tr>
<tr>
<td></td>
<td>- DOT – Use a period to indicate the decimal point and a comma as the thousands separator. Default.</td>
</tr>
<tr>
<td></td>
<td>- COMMA – Use a comma to indicate the decimal point and a dot as the thousands separator.</td>
</tr>
<tr>
<td></td>
<td>For more information, see the Control-M/Analyzer User Guide.</td>
</tr>
<tr>
<td>CTMSTSTA</td>
<td>Name of the first step added by Control-M to the submitted job stream.</td>
</tr>
<tr>
<td></td>
<td>- Default: CTBFIRST.</td>
</tr>
<tr>
<td>CTMSTEND</td>
<td>Name of the last step added by Control-M to the submitted job stream.</td>
</tr>
<tr>
<td></td>
<td>- Default: CTBLAST.</td>
</tr>
</tbody>
</table>
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 133   Target library and member parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILPREFB</td>
<td>High level name qualifiers (prefix) of the Control-M/Analyzer Installation libraries.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 35 characters.</td>
</tr>
<tr>
<td></td>
<td>The value specified for this parameter must be different from the values specified for ILPREFx parameters of other products.</td>
</tr>
<tr>
<td>ILUNITB</td>
<td>Disk unit on which Control-M/Analyzer Installation libraries are placed. Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>ILVOLB</td>
<td>Volume serial number of the volume on which Control-M/Analyzer Installation libraries are placed.</td>
</tr>
<tr>
<td>OLPREFB</td>
<td>High level name qualifiers (prefix) of the Control-M/Analyzer Operations libraries (and files). This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>OLUNITB</td>
<td>Disk unit on which Control-M/Analyzer Operations libraries (and files) are placed. Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>OLVOLB</td>
<td>Volume serial number of the volume on which Control-M/Analyzer Operations libraries (and files) are placed.</td>
</tr>
<tr>
<td>DBPREFB</td>
<td>High level data set name qualifiers (prefix) of the Control-M/Analyzer Repository (IOA Access Method files). This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>DBUNITB</td>
<td>Disk unit for the Control-M/Analyzer Repository. Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>DBVOLB</td>
<td>Volume serial number for the volume of the Control-M/Analyzer Repository (IOA Access Method files).</td>
</tr>
</tbody>
</table>
Step 3.2 – MVS procedures

Table 134  MVS Procedure Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| PROCPRFB  | First three characters of the Control-M/Analyzer JCL procedures after they are copied to the local MVS procedure library.  
  ▪ Mandatory  
  ▪ Default: CTB  
  The value specified for this parameter must be different than the value specified for the PROCPRFx installation parameter for other INCONTROL products. |

Step 4 – Installation jobs

Perform the following steps before running the installation jobs.

Step 4.1 – Parameter verification

In addition to validation checks that are performed during data entry, this step runs a program verifying that the installation parameters do not contain conflicting values. For example, the prefix of the Control-M/Analyzer libraries is checked to determine that it does not conflict with other INCONTROL product prefixes.

If the step ends successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters, and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing ends, the step is automatically marked complete.

This step customizes the CTBPARM and DEFPARM members in the IOA.PARM library.

Step 4.3 – Before you proceed

You have just completed the data entry of Control-M/Analyzer installation parameters. The next step submits a job that allocates data sets and tailors members in several libraries. Verify that the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.
**Step 4.4 – Install Control-M/Analyzer libraries**

The INSTALLB job loads the Control-M/Analyzer libraries. The member contains JCL for
- allocating Control-M/Analyzer libraries
- loading Control-M/Analyzer libraries
- modifying certain Control-M/Analyzer members

Submit the job and verify that all steps complete with a condition code of 0.

**Step 4.5 – Indicate Control-M/Analyzer libraries installed**

This step indicates that Control-M/Analyzer libraries were installed. When the process completes, this step is marked complete.

**Step 5 – Customization process**

Perform the steps below to format Control-M/Analyzer data sets. When completed, mark this step complete.

**Step 5.1 – Active Balancing File-Space Calculation**

Specify values for the parameters in the following table to calculate the required space allocation for the Active Balancing file.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 135 Calculating the space allocation for the Active Balancing file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rules invocations per day.</td>
<td>The number of rule invocations per day.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Number of days invocations data is to be retained</td>
<td>The number of days that the invocations data is to be retained.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Data Comp    | Data component of the Active Balancing file. This parameter has the following subparameters:  
|              | - DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Active Balancing file. Use of the dual file provides data recovery capabilities if the primary Active Balancing file becomes damaged or inaccessible. Valid values are:  
|              |    - Y – Allocate a dual (mirror) image Active Balancing file.  
|              |    - N – Do not allocate a dual (mirror) image Balancing file.  
|              | - DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:  
|              |    - Y – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active Balancing file.  
|              |    - N – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Active Balancing file.  
|              | - DUALST – Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.  
|              |    - Y – Perform timestamp checkpoint processing.  
|              |    - N – Do not perform timestamp checkpoint processing. |
| Main Data    | The primary data component. This parameter has the following subparameters:  
|              | - Unit type – The unit type to which data should be allocated.  
|              | - Volser – Up to six volsers can be specified. |
| Dual Data    | The dual data component. This parameter has the following subparameters:  
|              | - Unit type – The unit type to which data should be allocated.  
|              | - Volser – Up to six volsers can be specified. |

The space requirements are calculated based on the values you specify.
To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

Step 5.2 – Group File-Space Calculation

Specify the values for the parameters shown in the following table to calculate the required space allocation for the Group file.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 136 Calculating the space allocation for the Group file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Maximum number of groups to be defined | The maximum number of groups to be defined.  
- Maximum: 9 digits. |
| Data Comp | Data component of the Group file. This parameter has the following subparameters: |
| | - DUAL - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Group file. Use of the dual file provides data recovery capabilities if the primary Group file becomes damaged or inaccessible. Valid values are:  
  - Y - Allocate a dual (mirror) image Group List file.  
  - N - Do not allocate a dual (mirror) image Group file.  
| | - DUALM - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:  
  - Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Group file.  
  - N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Group file.  
| | - DUALST - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.  
  - Y - Perform timestamp checkpoint processing.  
  - N - Do not perform timestamp checkpoint processing. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Comp</td>
<td>Index component of the Group file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Group file. Use of the dual file provides data recovery capabilities if the primary Group file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y - Allocate a dual (mirror) image Group file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>— N - Do not allocate a dual (mirror) image Group file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Group file.</td>
</tr>
<tr>
<td></td>
<td>— N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Group file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST – Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>— Y - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— N - Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Data</td>
<td>The dual data component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Dual Index</td>
<td>The dual index component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

Step 5.3 – Vars Definition File-Space Calculation

Specify values for the parameters shown in the following table to calculate the required space allocation for the Variables Definitions file.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

**Table 137 Calculating the space allocation for the Variables Definitions file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of groups to be defined</td>
<td>The maximum number of groups to be defined.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Average number of models variables per group</td>
<td>The average number of models variables per group.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Data Comp</td>
<td>Data component of the Variables Definitions file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>• DUAL - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Variables Definitions List file. Use of the dual file provides data recovery capabilities if the primary Variables Definitions file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— N - Do not allocate a dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>• DUALM - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>— N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>• DUALST - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>— Y - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— N - Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Index Comp</td>
<td>Index component of the Variables Definitions file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Variables Definitions file. Use of the dual file provides data recovery capabilities if the primary Variables Definitions file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Allocate a dual (mirror) image Variables Definitions file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not allocate a dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>- N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Definitions file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>- Y - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not perform timestamp checkpoint processing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Data</th>
<th>The primary data component. This parameter has the following subparameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Unit type - The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser - Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Index</th>
<th>The primary index component. This parameter has the following subparameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Unit type - The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser - Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Data</td>
<td>The dual data component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Dual Index</td>
<td>The dual index component.</td>
</tr>
<tr>
<td></td>
<td>This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>

The space requirements are calculated based on the values you specify.
To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps? field, and press Enter.

Step 5.4 – Vars Generations File-Space Calculation
Specify values for the parameters shown in the following table to calculate the required space allocation for the Variables Generations file.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

Table 138 Calculating the space allocation for the Variables Generations file

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of groups to be defined</td>
<td>The maximum number of groups to be defined.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Average number of models variables per group</td>
<td>The average number of models variables per group.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
<tr>
<td>Average number of generations per model variable</td>
<td>The average number of generations per model variable.</td>
</tr>
<tr>
<td></td>
<td>- Maximum: 9 digits.</td>
</tr>
</tbody>
</table>
Parameter | Description
--- | ---
Data Comp | Data component of the Variables Generations file. This parameter has the following subparameters:

- **DUAL** - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Variables Generations file. Use of the dual file provides data recovery capabilities if the primary Variables Generations file becomes damaged or inaccessible. Valid values are:
  - **Y** - Allocate a dual (mirror) image Variables Generations file.
  - **N** - Do not allocate a dual (mirror) image Variables Generations file.

- **DUALM** - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:
  - **Y** - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Generations file.
  - **N** - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Generations file.

- **DUALST** - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.
  - **Y** - Perform timestamp checkpoint processing.
  - **N** - Do not perform timestamp checkpoint processing.
### Index Comp

Index component of the Variables Generations file. This parameter has the following subparameters:

- **DUAL** - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Variables Generations file. Use of the dual file provides data recovery capabilities if the primary Variables Generations file becomes damaged or inaccessible. Valid values are:
  - **Y** - Allocate a dual (mirror) image Variables Generations file. BMC Software recommends that you do not use a dual file for the Index Component.
  - **N** - Do not allocate a dual (mirror) image Variables Generations file.

- **DUALM** - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:
  - **Y** - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Generations file.
  - **N** - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Variables Generations file.

- **DUALST** - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.
  - **Y** - Perform timestamp checkpoint processing.
  - **N** - Do not perform timestamp checkpoint processing.

### Main Data

The primary data component. This parameter has the following subparameters:

- **Unit type** - The unit type to which data should be allocated.
- **Volser** - Up to six volsers can be specified.

### Main Index

The primary index component. This parameter has the following subparameters:

- **Unit type** - The unit type to which data should be allocated.
- **Volser** - Up to six volsers can be specified.
The space requirements are calculated based on the values you specify.
To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps? field, and press Enter.

**Step 5.5 – Activity File-Space Calculation**

The Rule Activity File screen is displayed when this step is selected. Specify values for the parameters shown in the following table to calculate the required space allocation for the Rule Activity file.

When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them

**Table 139 Calculating the space allocation for the Rule Activity file**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rules invocations per day.</td>
<td>The number of rule invocations per day.</td>
</tr>
<tr>
<td></td>
<td>• Maximum: 9 digits.</td>
</tr>
<tr>
<td>Number of days invocation data to be retained</td>
<td>The number of days that invocation data is to be retained.</td>
</tr>
<tr>
<td></td>
<td>• Maximum: 9 digits.</td>
</tr>
</tbody>
</table>
Data Comp

Data component of the Rule Activity file. This parameter has the following subparameters:

- **DUAL** - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Rule Activity file. Use of the dual file provides data recovery capabilities if the primary Rule Activity file becomes damaged or inaccessible. Valid values are:
  - **Y** - Allocate a dual (mirror) image Rule Activity file.
  - **N** - Do not allocate a dual (mirror) image Rule Activity User Report List file.

- **DUALM** - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:
  - **Y** - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Rule Activity file.
  - **N** - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Rule Activity file.

- **DUALST** - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.
  - **Y** - Perform timestamp checkpoint processing.
  - **N** - Do not perform timestamp checkpoint processing.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Comp</td>
<td>Index component of the Rule Activity file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUAL</strong> – Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Rule Activity file. Use of the dual file provides data recovery capabilities if the primary Rule Activity file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y</strong> – Allocate a dual (mirror) image Rule Activity file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N</strong> – Do not allocate a dual (mirror) image Rule Activity file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALM</strong> – Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y</strong> – Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Rule Activity file.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N</strong> – Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Rule Activity file.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>DUALST</strong> – Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>— <strong>Y</strong> – Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>— <strong>N</strong> – Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Unit type</strong> – The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Volser</strong> – Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
Parameter | Description
--- | ---
Dual Data | The dual data component.
 | This parameter has the following subparameters:
 | ▪ Unit type – The unit type to which data should be allocated.
 | ▪ Volser – Up to six volsers can be specified.
Dual Index | The dual index component.
 | This parameter has the following subparameters:
 | ▪ Unit type – The unit type to which data should be allocated.
 | ▪ Volser – Up to six volsers can be specified.

The space requirements are calculated based on the values you specify.
To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

Step 5.6 – Report File-Space Calculation
Specify values for the parameters shown in Step 5.5 – Activity File-Space Calculation (on page 417) to calculate the required space allocation for the Report file.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

Table 140 Calculating the space allocation for the Report file

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rules invocations per day.</td>
<td>The number of rule invocations per day.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Number of days invocations data is to be retained</td>
<td>The number of days for which invocations data is to be retained.</td>
</tr>
<tr>
<td></td>
<td>▪ Maximum: 9 digits.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Data Comp | Data component of the Report file. This parameter has the following subparameters:  
  - **DUAL** - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Report file. Use of the dual file provides data recovery capabilities if the primary Report file becomes damaged or inaccessible. Valid values are:  
    - **Y** - Allocate a dual (mirror) image Report file.  
    - **N** - Do not allocate a dual (mirror) image Report file.  
  - **DUALM** - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:  
    - **Y** - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Report file.  
    - **N** - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Report file.  
  - **DUALST** - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.  
    - **Y** - Perform timestamp checkpoint processing.  
    - **N** - Do not perform timestamp checkpoint processing. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Comp</td>
<td>Index component of the Report file. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- DUAL - Whether dual (mirror) image processing is implemented. The contents of the dual file are kept synchronized by Control-M/Analyzer with the contents of the primary Report file. Use of the dual file provides data recovery capabilities if the primary Report file becomes damaged or inaccessible. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Allocate a dual (mirror) image Report file. BMC Software recommends that you do not use a dual file for the Index Component.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not allocate a dual (mirror) image Report file.</td>
</tr>
<tr>
<td></td>
<td>- DUALM - Whether execution terminates if a non-recoverable I/O error occurs while processing the dual image file. This parameter is only relevant if dual image file processing is implemented. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- Y - Terminate execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Report file.</td>
</tr>
<tr>
<td></td>
<td>- N - Continue execution if a nonrecoverable I/O error occurs while processing the dual (mirror) image Report file.</td>
</tr>
<tr>
<td></td>
<td>- DUALST - Whether Control-M/Analyzer performs timestamp checkpoint processing to ensure that the primary file and dual image file are fully synchronized. Enabling this option ensures greater data integrity at the expense of increasing I/O processing overhead.</td>
</tr>
<tr>
<td></td>
<td>- Y - Perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td></td>
<td>- N - Do not perform timestamp checkpoint processing.</td>
</tr>
<tr>
<td>Main Data</td>
<td>The primary data component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type - The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser - Up to six volsers can be specified.</td>
</tr>
<tr>
<td>Main Index</td>
<td>The primary index component. This parameter has the following subparameters:</td>
</tr>
<tr>
<td></td>
<td>- Unit type - The unit type to which data should be allocated.</td>
</tr>
<tr>
<td></td>
<td>- Volser - Up to six volsers can be specified.</td>
</tr>
</tbody>
</table>
### Dual Data

The dual data component.

This parameter has the following subparameters:

- **Unit type** – The unit type to which data should be allocated.
- **Volser** – Up to six volsers can be specified.

### Dual Index

The dual index component.

This parameter has the following subparameters:

- **Unit type** – The unit type to which data should be allocated.
- **Volser** – Up to six volsers can be specified.

The space requirements are calculated based on the values you specify.

To apply the allocation that has just been calculated, type Y in the Use this space allocation in subsequent installation steps ? field, and press Enter.

---

### Step 5.7 – Format Control-M/Analyzer repository

The FORMCTB job allocates and formats the following data sets:

- Active Balancing File
- Backup File
- Group File
- Variables Definition File
- Variables Generations File
- Rule Activity File
- Report File

JES3 users should split the FORMCTB job in two parts, since JES3 attempts to allocate all resources prior to the job run.

- The first part of the job should include only the EXEC IOADBF,FUNC=INIT steps, which allocates the files.
- The second part of the job should include only the EXEC CTBABI steps. This part should be run immediately after the first part has finished successfully.

If the FORMCTB job is run on JES3 without this split, the job execution gives the following JCL error:

```
LOCATE FOR STEP=ABI DD=DAABF ... DATASET NOT FOUND ON MAIN PROCESSOR
```

Submit the job and verify that all steps complete with a condition code of 0.
Step 5.8 – Install Control-M/Analyzer DB2 interface (optional)

DB users only should perform the steps below to install the Control-M/Analyzer DB2 interface.

Bind the DB2 interface

Edit the IOABIND job. This job should be run for each DB2 subsystem that requires an interface to Control-M/Analyzer. The DB2 subsystem ID should be changed in the bind statement. This subsystem ID should be specified in the rules that access DB2.

Set DB2 authorizations

This step should be run for each DB2 subsystem that requires an interface to Control-M/Analyzer. For each user that needs to use the interface, add the following authorization:

```
GRANT EXECUTE ON PLAN CTBDB2 TO user-name ;
```

For each of these users, grant SELECT capabilities for each table they need to access. This authorization is required because the interface uses Dynamic SQL. Generally, the following authorization should be added for each user who was not previously authorized:

```
GRANT SELECT ON TABLE table-name TO user-name ;
```

For additional details, see the IBM Database 2 SQL Reference Manual and Administration Guide.

Modify Control-M/Analyzer procedures

Modify Control-M/Analyzer procedures CONTROLB and CONTRLB3. To modify these procedures, add the DD statement that references the DB2 LOAD library to the specified STEPLIB DD statement.

Example

```
//procname  PROC  RULE=,

        MISSION=,
        GROUP=,
        ARG=

//STEPLIB   DD    DISP=SHR,DSN=&STEPLIB
//          DD    DISP=SHR,DSN=SYS1.DB2.LOAD
```

where procname is the Control-M/Analyzer procedure name, either CONTROLB or CONTRLB3.

The same modification should be performed for the user logon procedure if Control-M/Analyzer rules are invoked with CLIST CONTROLB.

Step 5.9 – Copy several procedures to site library

This process customizes and copies certain selected procedures to the procedure library at your site, which is specified by the IOA SITEPROC parameter. This prevents having to add the JCLLIB statement to the existing jobs at your site.
Step 6 – JES2 considerations (optional)

When working under JES2, consider the following:

When a request to read a sysout is issued, Control-M/Analyzer can read only held output classes. In addition, the expression FREE=CLOSE must be specified in the DD statement that created the output. For more details, see the description of the ON CLASS and ON SYSOUT parameters in the Control-M/Analyzer User Guide.

Step 7 – JES3 considerations (optional)

When working under JES3, the following points should be addressed.

Step 7.1 – JES3 exit IATUX30

Exit IATUX30 must allow the Control-M/Analyzer Runtime Environment to issue subsystem requests.

JES3 has a special security exit for controlling subsystem requests. The exit controls two types of subsystem requests:

- Job status subsystem requests
  
  Before the Control-M/Analyzer format module (CTBFRM) formats the Active Balancing file, it checks that no active (executing) job is updating the Active Balancing file. This check is performed using the job status subsystem request. JES3 Exit IATUX30 can prevent Control-M/Analyzer from receiving the status of the job.

- Sysout read subsystem requests
  
  Control-M/Analyzer reads the sysout from the spool using the standard MVS subsystem interface. JES3 Exit IATUX30 can prevent the Control-M/Analyzer Runtime environment from reading the output of jobs from the spool. A common symptom is that Control-M/Analyzer does not find any output for the current job on the spool although output exists.

  If JES3 Exit IATUX30 is used to check and prevent subsystem requests by unauthorized users, then it must be modified to allow the Control-M/Analyzer Runtime environment to issue subsystem read requests for the current job in which it executes.

Step 7.2 – Sysout access considerations

Under JES3, three types of output classes are available:

- Non-held class
- Held external writer class (HOLD=EXWTR)
- Held TSO class (HOLD=TSO)

The characteristics of each class are defined in JES3 INISHDECK. They have no connection with, and no relation to, the expression HOLD=YES|NO in the JCL.

When instructed to read a sysout, Control-M/Analyzer can read only held output classes. In addition, the expression FREE=CLOSE must be specified in the DD statement that created the output. For details, see the description of the ON CLASS and ON SYSOUT parameters in the Control-M/Analyzer User Guide.

Consider the following for the different held class combinations:
If Control-M/Analyzer is running in default mode (meaning, JCL procedure CONTROLB), it can read output from held external writer classes but not from held TSO classes.

- If it is only necessary to read output from held TSO classes, run Control-M/Analyzer under TSO batch using the supplied JCL procedure CONTRLB3. Due to JES3 restrictions, Control-M/Analyzer running under TSO cannot read external writer sysouts.

The two methods of running the Control-M/Analyzer Runtime Environment under JES3 are described below.

**Recommended method**

Run Control-M/Analyzer using procedure CONTROLB.

Using this method, Control-M/Analyzer does not read sysouts defined using the expression HOLD=TSO. It can read sysouts defined using the expression HOLD=EXWTR.

The disadvantage of this method is that neither the TSO OUTPUT command nor option 3.8 under ISPF is able to view sysouts defined to JES3 using the expression HOLD=EXWTR. Therefore, this method can only be used by users of products that are capable of reading the output from spool using a different technique than TSO OUTPUT or ISPF 3.8.

**Alternative method**

Run Control-M/Analyzer under TSO using the procedure CONTRLB3.

The program CTBCXJB must be given authorization under TSO. The program must be defined to TSO as an authorized module:

Add CTBCXJB to the list of authorized programs (using the AUTHPGM parameter) in the IKJTSOxx member. If xx=00, the member is taken automatically during TSO startup. Otherwise, the member can be activated using the TSO command PARMLIB UPDATE(xx).

**Step 8 – Adjustments**

Follow the steps below to perform adjustments to the Control-M/Analyzer installation.

**Step 8.1 – Control-M/Analyzer password data**

Your BMC Software distributor provides your site with one or more printouts containing password data for Control-M/Analyzer. The product ordered is licensed to run on one or more computers for a specific period of time.

If BMC supplied you with a site license, copy the printout to the PASCTB member.

The PASCTB member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-M/Analyzer is authorized to run on the specific CPU ID and model. The password members contain the following parameters:

- **PROD=Control-M/ANALYZER / yymmdd**

  The PROD parameter line contains the name Control-M/ANALYZER and the expiration date of the password in yymmdd format.
START=yyymmdd
- The START parameter line contains the start date of Control-M/Analyzer in yymmdd format.
- Only one START parameter can be specified in a password member.

CPUID=iiii mmmm
- In the CPUID parameters line, iiiii is the CPU ID, and mmmm is the model, on which Control-M/Analyzer can run.
- There must be a separate CPUID parameter for each CPU authorized to run Control-M/Analyzer.

The CPU IDs and models present at the site can be obtained by specifying the D M=CPU MVS command on each mainframe CPU where Control-M/Analyzer is to run. As a result of this command, the CPU ID and model (such as 9021 or 9221) is displayed. In the following example, the CPU ID is 0D0620, and the CPU model number is 9221:

<table>
<thead>
<tr>
<th>PROCESSOR STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

DOES NOT EXIST

PASS=papppppp pppppppp ppppppppp
- In the PASS parameter line, pppppppp pppppppp ppppppppp is the password provided by the BMC representative.
- Only one PASS line can be present in a password member

TYPE=LICENCE
- The TYPE parameter line contains the type of licence given. Valid values are:
  - LICENCE - For permanent licences.
  - TRIAL - For customers who want to evaluate products for a limited period of time.
  - EMERGENCY - For a short-term password, until a permanent password is provided.
- Only one TYPE line can be present in a password member.

The following example illustrates a completed Control-M/Analyzer password member:

PROD = CONTROL-M/ANALYZER / 080417
START = 070418
CPUID = 231234 9021
CPUID = 140564 9121
PASS = 86243457 D324389C 58349852
TYPE = LICENCE
This site has a permanent licence for Control-M/Analyzer starting April 18, 2007 and ending April 17, 2008. The authorized CPU IDs are 231234 (model 9021) and 140564 (model 9121).

The following additional considerations may apply when you edit the Control-M/Analyzer password member:

- The lines in the password member can be in any order.
- Comment lines (those with an asterisk in position 1 of the line) are ignored.
- There can be any number of blanks (or no blanks) between parameters on each line. For example, the PROD line can be written as: PROD=CONTROL-M/ANALYZER / yymmdd
- The following principles apply to multiprocessor models:
  - A particular model is considered a multiprocessor if it has two or more processors. Each processor has a different CPU ID, for example, 001234 and 101234.
  - Only the last four digits of the CPU ID are checked. For example, CPU IDs 001234, 101234 and nn1234 are all considered to be equivalent to "CPUID=001234."
  - The CPU ID must be six digits. The model (such as 9021 or 9121) must be four digits. For a 7-digit CPU ID, ignore the left-most digit and handle the remaining six digits as discussed above.

If new INCONTROL products are added, or a CPU is added, replaced or removed, your BMC Software representative will tell you how to modify the appropriate password members.

Step 8.2 – Security considerations

Control-M/Analyzer can be installed without setting up special security requirements, except as noted below for RACF, ACF2 and TOP SECRET. After Control-M/Analyzer is installed, it is possible to set up basic security parameters to allow a basic testing environment during the first stages of product testing.

- For RACF users:
  
  If you are using RACF and intend to run the Control-M/Analyzer New Day procedure (CTBNDAY) as a started task (not a job), you must define the CTBNDAY started task as a valid started task under RACF.

  Perform an IPL, (CLPA or MLPA, depending on the way RACF is implemented at your site. Verify that any job containing the Control-M/Analyzer Runtime environment belongs to a RACF Group, or user ID, that is authorized to read CDAM data set prefixes.

- For CA-ACF2 users:

  Verify that any job that contains the Control-M/Analyzer Runtime environment is associated with a UID that is authorized to read CDAM data set prefixes.

- For CA-TOP SECRET users:

  If you are using TOP SECRET and intend to run the Control-M/Analyzer New Day procedure (CTBNDAY) as a started task (not a job), then you must define the CTBNDAY started task as a valid started task under TOP SECRET.

  Verify that any job containing the Control-M/Analyzer Runtime environment is associated with an ACID that is authorized to read CDAM data set prefixes.
Step 8.3 – Refresh LLA
If the IOA LOAD library resides in the MVS Linklist, refresh the LLA using the MVS command

F LLA, REFRESH

If you operate a program fetch optimization product such as PDSMAN, QUICKFETCH, PMO, and so on, you may need to refresh the Linklist tables.

Log off from TSO/ROSCOE and log on again.

Step 8.4 – Indicate installation concluded
This step updates the Status field in the Environment Table to indicate that Control-M/Analyzer is installed.

Step 8.5 – Stop and start IOA Online monitor (optional)
If the IOA Online monitor has been installed and is already active, issue the following operator commands:

P IOAOMONx
S IOAOMONx

where x is the unique monitor ID.

The IOA Online monitor uses cross-memory services to communicate with other address spaces requesting services. Like other address spaces using cross-memory services, whenever the IOA Online monitor is shut down, the address space entry in the MVS Address Space Vector Table (ASVT) remains nonreusable until the next IPL, and message IEF352I is issued (in some MVS releases). If the IOA Online monitor is brought up and down many times, the ASVT may become full. New address spaces do not start and an immediate IPL may be required.

To prevent this problem, set a large enough value in the MAXUSER, RSVSTRT and RSVNONR MVS initialization parameters in the IEASYSXX member in SYS1.PARMLIB.

For information about these parameters, see the MVS Initialization and Tuning Reference.

- If the Control-M monitor has been installed and is active, issue the following operator commands
  
P CONTROLM
  S CONTROLM

- If the Control-D monitor has been installed and is active, issue the following operator commands
  
P CONTROLD
  S CONTROLD

Step 8.6 – Getting started verification step (optional)
When you select this step, ICE displays member PREPGSM. Update or verify that the jobcard is correct and submit the job.

Check the results of the job. Each step in the job should end with the condition codes listed below:
### Step 9 – Control-M/Analyzer customization (optional)

After Control-M/Analyzer is installed, some customization may be required.

Various user exits can be used to modify Control-M/Analyzer operations to meet your needs. For information about how to modify user exits, see the exits chapter of the INCONTROL for z/OS Administrator Guide. For additional information, see the IOA administration chapter of the INCONTROL for z/OS Administrator Guide.

### Step 10 – Installation conclusion

When completed, mark the minor step complete.

#### Step 10.1 – Back up the installed environment

BMC Software recommends that you create a backup of the Control-M/Analyzer libraries.

When backing up the installed environment, verify that the IOA Base libraries, Installation libraries, Operations libraries, and SMP-related data sets are backed up. This backup allows you to restore the original IOA environment when required, so that Control-M/Analyzer can be reinstalled if a significant number of changes are made to the parameters, or if an unrecoverable failure occurs during installation.
Installing Control-M/Analyzer in multiple INCONTROL environments

At a site with multiple INCONTROL environments, it is sometimes more convenient to first install Control-M/Analyzer in a single site, and then copy the definitions to the other sites.

Since Control-M/Analyzer files are allocated during ICE, and are then supposed to be preallocated when attempting to convert an old database, the following is recommended when installing Control-M/Analyzer at a site with multiple INCONTROL environments.

Step 1 - Define Control-M/Analyzer parameters in ICE

Define the Control-M/Analyzer parameters during ICE at the site where you installed the SMP/E installation of IOA.

Step 2 - Install Control-M/Analyzer at each site

Perform one of the following options:

- Copy the allocated Control-M/Analyzer data sets to the other sites. Copy the IOAPARM member, and adjust the Control-M/Analyzer password member CPUID at each site.
- Repeat the installation process at each site using ICE.

It is also possible to combine these two options. For example, you can install Control-M/Analyzer using ICE at each site but then use the files and definitions already prepared at the primary site, allocate new "dummy" files during the Control-M/Analyzer installation, and later on use the copied files or definitions (or both) from the primary site.
Installing Control-M/JCL Verify

This chapter describes the steps required to install Control-M/JCL Verify. The installation procedure contains step-by-step detailed instructions that correspond to the major and minor steps in the INCONTROL Installation and Customization Engine (ICE).

If you are not familiar with ICE, review Performing tasks common to all product installations (on page 19) before proceeding with the Control-M/JCL Verify installation.

Before you begin

For a complete list of Control-M/JCL Verify libraries, see A INCONTROL product data sets (on page 450).

Perform this step only when you have finished filling in the Control-M/JCL Verify installation sheet (on page 546).

To prepare for the ICE installation

1. Open the IOA Installation—Main menu
2. Type CTJ in the Product ID field
3. Type 3 in the OPTION field to select option 3, "INSTALL CTx", and press Enter

The Major Steps Selection screen for Control-M/JCL Verify is displayed.

You are now ready to install Control-M/JCL Verify using ICE.

Control-M/JCL Verify step checklist

The following list is a summary of the steps required to install Control-M/JCL Verify. Detailed step-by-step instructions follow.

Installation steps

Follow the major and minor steps below to install Control-M/JCL Verify using ICE.

Because all jobs submitted during the installation process are tailored as needed, all members referenced in the installation process are located in the ilprefa.INSTWORK library unless specified otherwise.

Step 1 – Planning

Plan the installation process carefully. The Control-M/JCL Verify installation sheet (on page 546) will help you determine the items you should consider before installing Control-M/JCL Verify.
Find out if you require input from system programmers, security administrators and other personnel at your site. Check if any system changes require special authorization and processing. Before proceeding with the Control-M/J CL Verify installation, verify that all necessary configurations are known and planned in advance.

Step 1.1 – Is the planning sheet complete?
This step verifies that you have filled in the Control-M/J CL Verify planning sheet.
When you have done so,
1. press PF03/PF15 to exit this screen
2. type C in the Sel field
3. press Enter
The step will be marked as completed.

Step 2 – Specify Control-M/J CL Verify parameters
Perform the minor steps below to specify values for the Control-M/J CL Verify installation parameters.

Step 2.1 – Control-M/J CL Verify Management
Control-M/J CL Verify is capable of validating a given JCL job before it is submitted.
Control-M/J CL Verify tests the JCL syntax to verify that the JCL statements in the job are valid. After the job passes this basic test, additional tests can be performed.
This step allows the user to specify the default settings that determine which additional tests are performed on the JCL jobs. The parameters, described in the following table, are located in the CTJ PARM member.
### Table 142  CTJ PARM parameters specified in Minor Step 1 - Control-M/ JCL Verify Management

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DSNACCSS   | Verifies that the owner of the job has access privileges to the datasets used in the job. Valid values are:  
  - Y – Yes. Default.  
  - N – No.  
  The required access privilege (for example, read and update) is verified according to the DISP parameter coded in the DD statement.  
  If the user is not specified one of the following users are verified:  
  - when a JCL job is verified - the user that invoked Control-M/ JCL Verify  
  - when a Control-M job definition is verified - the Control-M job owner  
  The verification is performed by the security products supported by IOA (for example, RACF, CA-Top Secret, and CA-ACF2).  
  Note: If the JCL verification is performed while editing a job member (during the edit JCL function), the access privileges of the Control-M job owner is verified. |
| DSNEXIST   | Verifies the existence of the datasets referred to in the job. Valid values are:  
  - Y – Yes. Default.  
  - N – No.                                                                                                                                                                                                                                                                 |
| JESTTMNT   | Verifies that JES2 and JES3 statements can be used in the job. Valid values are:  
  - Y – Yes. Default.  
  - N – No.                                                                                                                                                                                                                                                                 |
| PGMCHECK   | Verifies that the PGM load modules used by the job exist and can be found in the conventional search order (as follows: steplib, joblib, linklist...). Valid values are:  
  - Y – Yes. Default.  
  - N – No.                                                                                                                                                                                                                                                                 |
Step 3 – Specify target configuration parameters
Specify values for the parameters listed below.

Step 3.1 – Control-M/JCL Verify libraries
Enter values for the parameters shown in the following table.
When specifying values for parameters or subparameters that include both unit and volser fields, you must either define both the Unit and Volser fields, or leave both of them blank. Do not enter a value for only one of them.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITESTDR</td>
<td>Specifies that the site standard rules will be used in the JCL verification. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• Y – Yes. Default.</td>
</tr>
<tr>
<td></td>
<td>• N – No.</td>
</tr>
<tr>
<td>SUPUTIL</td>
<td>Verifies utilities, such as IEBGENER, IEBCOPY, and SORT. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• Y – Yes. Default.</td>
</tr>
<tr>
<td></td>
<td>• N – No.</td>
</tr>
<tr>
<td>CTMVARS</td>
<td>Resolves Control-M AutoEdit variables in the job. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• Y – Yes. Default.</td>
</tr>
<tr>
<td></td>
<td>• N – No.</td>
</tr>
<tr>
<td>MSGLEVEL</td>
<td>Specifies the minimum severity of messages to be issued. Messages with lower severity than specified are not printed and do not affect the final return code (RC). Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• I – Information messages (lowest severity) and above (all messages). Default.</td>
</tr>
<tr>
<td></td>
<td>• W – Warning messages and above.</td>
</tr>
<tr>
<td></td>
<td>• E – Error messages (highest severity) only.</td>
</tr>
</tbody>
</table>
### Table 143   Library parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILPREFJ</td>
<td>High level name qualifiers (prefix) of the Control-M/J CL Verify Installation libraries.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td></td>
<td>- Maximum length: 35 characters.</td>
</tr>
<tr>
<td></td>
<td>The value specified for this parameter must be different from the values specified for ILPREFx parameters of other products.</td>
</tr>
<tr>
<td>ILUNITJ</td>
<td>Disk unit on which Control-M/J CL Verify Installation libraries are placed. Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>ILVOLJ</td>
<td>Volume serial number of the volume on which Control-M/J CL Verify Installation libraries are placed.</td>
</tr>
<tr>
<td>OLPREFJ</td>
<td>High level name qualifiers (prefix) of the Control-M/J CL Verify Operations libraries (and files). This prefix must be from 1 through 27 characters in length and may include periods. The last character must not be a period.</td>
</tr>
<tr>
<td></td>
<td>- Mandatory</td>
</tr>
<tr>
<td>OLUNITJ</td>
<td>Disk unit on which Control-M/J CL Verify Operations libraries (and files) are placed. Specify a generic unit (for example, 3390 – not SYSDA).</td>
</tr>
<tr>
<td>OLVOLJ</td>
<td>Volume serial number of the volume on which Control-M/J CL Verify Operations libraries (and files) are placed.</td>
</tr>
</tbody>
</table>
Step 3.2 – MVS procedures and CTJ CLIST name

**Table 144 MVS Procedure and CTJ CLIST name parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| PROCPRFJ | First three characters of the Control-M/J CL Verify JCL procedures after they are copied to the local MVS procedure library.  
  - Mandatory  
  - Default: CTJ  
  The value specified for this parameter must be different than the value specified for the PROCPRFx installation parameter for other INCONTROL products. |
| CLISTNMJ | New name for REXX “CTJXVER” copied from IOA CLIST library to SYSPROC Site library. Mandatory. Default: CTJXVER.  
  You can use for the CLIST any valid name, like JV or JVER, to simplify the usage of Control-M/J CL Verify.  
  If you are specifying a name for the CLISTNMJ parameter, which is not the default, the SYSPROCA parameter must not be set to DONTCOPY in Install IOA Step 5.3 (MVS procedures), but instead a data set name for the SYSPROC site library must be defined in Step 5.3, then verified in Step 6.1 (Parameter verification), and finally saved in Step 6.2 (Save parameters into IOA libraries). |

Step 4 – Installation jobs

Perform the following steps before running the installation jobs.

Step 4.1 – Parameter verification

In addition to validation checks that are performed during data entry, this step runs a program verifying that the installation parameters do not contain conflicting values. For example, the prefix of the Control-M/J CL Verify libraries is checked to determine that it does not conflict with other INCONTROL product prefixes.

If the step ends successfully, it is automatically marked complete.

If conflicts are identified, a list of warning messages is displayed. The list contains the current values of the conflicting parameters, and the required corrective action.

Step 4.2 – Save parameters into product libraries

This step saves all the parameters specified in ICE. When processing ends, the step is automatically marked complete.

This step customizes the CTJ PARM and DEFPARM members in the IOA.PARM library.
Step 4.3 – Before you proceed
You have just completed the data entry of Control-M/JCL Verify installation parameters. The next step submits a job that allocates data sets and tailors members in several libraries. Verify that the parameter values you have specified are correct. Subsequent changes to these parameters may require extensive manual modifications.

Step 4.4 – Install Control-M/JCL Verify libraries
The INSTALLJ job loads the Control-M/JCL Verify libraries. The member contains JCL for
- allocating Control-M/JCL Verify libraries
- loading Control-M/JCL Verify libraries
- modifying certain Control-M/JCL Verify members
Submit the job and verify that all steps complete with a condition code of 0.

Step 4.5 – Control-M/J CL Verify libraries installed
This step indicates that Control-M/J CL Verify libraries were installed. When the process completes, this step is marked complete.

Step 5 – Customization process
Perform the steps below to format Control-M/J CL Verify data sets. When completed, mark this step complete.

Step 5.1 – Copy Control-M/J CL Verify started tasks to site library
The COPYCTJP job copies Control-M/J CL Verify started tasks from IOA PROCJCL library into the site library according to values specified earlier.
Submit the job and verify that all steps complete with a condition code of 0.

Step 5.2 – Copy Control-M/J CL Verify CLIST to SYSPROC site library
This step copies REXX "CTJ XVER" from the IOA CLIST library to your SYSPROC site library, which is the library that was allocated to the TSO users. REXX "CTJ XVER" will be renamed to value given for CLISTNMJ parameter.

Step 6 – Control-M/J CL Verify adjustments
Follow the steps below to perform adjustments to the Control-M/J CL Verify installation.

Step 6.1 – Control-M/J CL Verify Password Data
This step is used to edit the PASCTJ password member for Control-M/J CL Verify, which is added to the IOA.PARM library.
Your BMC Software distributor provides your site with one or more printouts containing password data for Control-M/JCL Verify. The product ordered is licensed to run on one or more computers for a specific period of time license.

If BMC supplied you with a site license, copy the printout to the PASCTJ member.

The PASCTJ member in the IOA.PARM library must be updated with the password data from the printouts provided by the distributor. The data contained in this member is used by the IOA password mechanism to verify that Control-M/JCL is authorized to run on the specific CPU ID and model. The PASCTJ password member has the same format as password members for other products.

**Step 6.2 – TSO Requirements**

Control-M/JCL Verify must be authorized under TSO.

To authorize Control-M/JCL Verify under TSO, add CTJTSO and CTJTONL to the authorized programs listed in both the AUTHPGM and AUTHTSF sections in the IKJTSOxx member located in the SYS1.PARMLIB library.

If xx=00, the member is accessed automatically during the TSO startup.

The member can be activated using the Operator command

```
SET IKJTSO=xx
```

For more details, see the IBM MVS System Commands Reference Manual.

**Step 6.3 – Edit Macro Customization**

To create Control-M/JCL Verify as an ISPF Edit Macro or TSO command

1. Complete the Control-M/JCL Verify installation.
2. If you set value DONTCOPY for SYSPROCA do the following:
   - Copy REXX "CTJXVER" from the IOA CLIST library to your SYSPROC site library. You can rename the CLIST to any valid name, like JV or JVER, to simplify the usage of the Control-M/JCL Verify.
3. Allocate the SYSPROC library to the TSO users.

Do not change the CTJXVER, since its purpose is to call the IOA CLISTs and REXXs from IOA CLIST library. This way, if any maintenance is required for the CLISTs and REXXs in IOA CLIST, the CTJXVER user can access them without any special handling.

You can call CTJXVER any valid name that the TSO users might already use for JCL verification.

**Step 7 – Installation conclusion**

When completed, mark the minor step complete.

**Step 7.1 – Indicate installation concluded**

This step updates the Status field in the Environment table to indicate that Control-M/JCL Verify is installed.
Part 4 Cloning
Cloning an IOA environment

Often customers require more than one IOA environment. The additional IOA environments may be used for testing and debugging purposes, as well as for additional production systems.

Instead of repeating the installation process, you can simply create copies of your base (source) IOA environment, using a cloning process.

IOA provides a toolkit, which consists of a set of utilities, that can be used for efficiently cloning the existing IOA environment on the same MVS system (local cloning) or to another MVS system (remote cloning). Both SMP/E managed and non-SMP/E managed cloned environments can be created with the toolkit.

The toolkit that is provided with IOA includes the following utilities:

- Data Set Listing tool
- Renaming tool

The general overview of the cloning process consists of the following stages:

1. Run the Data Set Listing tool that generates the following: a list of the data sets in the base (source) IOA environment, a sample packaging job, and a renaming definition list.

2. Edit and run the sample packaging job to generate a cloning package.

3. For remote cloning only, transfer the cloning package, the renaming definitions and a sample extraction job to the target system. If the cloning is local, allocate a new renaming definitions data set (clone_basepref.RNM) and then copy the contents of the renaming definitions member (ilprefa.INSTWORK(IOACDRNM)) into it.

4. Edit the renaming definition list so that the file names on the cloned (target) system will be different from those on the base (source) system. This step is mandatory for local cloning, but optional for remote cloning.

5. Create the cloned IOA environment, by unpacking the cloning package on the target system.

6. Adjust the cloned IOA environment according to the renaming definition list using the Renaming tool.

7. Perform the manual post-cloning operations on the cloned system.

Limitations

Before performing a cloning procedure, you should consider the following limitations of a cloned IOA environment:
The new cloning tools are designed to work with SMS. The allocation of cloned data sets is performed according to the SMS rules on the target system and depends on the new prefixes specified for the data sets.

- The ECAPARMx, IOADSNL, and TCMPAR members are not handled by the cloning process.
- Due to a DFDSS limitation, the number of qualifiers used for each target system data set must be the same as used for the corresponding source data set.

The following are additional limitations of a non-SMP/E managed cloned environment:

- The MAINTENANCE activity cannot be performed on a cloned environment.
- The SECURITY activity is limited to the customization of the SECPARM member.
- Cloning of a cloned environment is not supported.

Cloning an IOA environment

To clone an IOA environment:

Steps are performed on the source system.

1. Run ICE.
2. Select the "Clone, Deploy IOA Environment" option.
3. Select the "Create Cloned IOA" option.
4. Enter Y in the Clone user data field, to copy user data from the source IOA environment to the clone environment, or N, not to copy any user data to the clone environment.
5. Enter Y in the Clone SMP/E data field, to create an SMP/E managed clone environment, or N, to create a non-SMP/E managed clone environment.
6. Press Enter.

The Data Set Listing tool is invoked and a progress window opens.

The Data Set Listing tool creates the following members in the ilprefa.INSTWORK library:

- IOACJPKG - the sample packaging job
- IOACDRNM - renaming definitions
- IOACDDSL - list of data sets in base IOA environment

The default package data set name is displayed in a message box with the following format: ilprefa.Pmmddsss (where: mm = month (from 01 to 12), dd = day of month (from 01 to 31); sss = are the first three digits of the 5-digit number of seconds since 12:00 midnight (from 000 to 863). Note that the prefix "P" indicates "cloning package". When the utility is used for making a backup the prefix is "B".) You can edit the package data set name displayed in the message box. In addition, the following options are available from the message box:

- Y - Yes - Submit the packaging job.
- N - No - Do not submit the packaging job, but return to the IOA Cloning and Changes Deployment screen.
- E - Edit - Open the packaging job for editing.
The messages of the utility are sent to the ilprefa.ICELOG data set and, when the utility is invoked from a job, to a data set allocated to the DD SYSTSPRT.

If you choose the Y option, the IOACJPKG job is automatically submitted. This job invokes the standard IBM DFDSS utility to pack all files in the IOA source environment into the package file. The maximum return code for successfully running IOACJPKG is 4.

7. Allocate a basepref.RNM sequential file. Specify the following allocation attributes:
   - OrganizationPS
   - Record format:FB
   - Record length:80
   - Block size:6160

8. Copy the contents of the ilp pref a.INSTWORK(IOACDRNM) member to the basepref.RNM sequential file. This file will be used later on the target system.

   If you want to clone the environment with the prefix IOA.V900.SOURCE and create the cloned (local or remote) system with the base prefix IOA.V900.CLONE, the renaming definitions data set must be named IOA.V900.CLONE.RNM, and the new value of basepref must be IOA.V900.CLONE.

9. Copy the following files to the target system:
   - basepref.RNM - renaming definitions data set. In the data set name, basepref must match the base prefix of the cloned IOA environment (see the example in step 8).
   - The package created by the packaging job. As described in step 6, the default package data set name has the following format: ilp pref a.Pmmddss.
   - ilp pref a.JCL(IOADSRST) - the sample extraction job

The remaining steps (10 to 14) are performed on the target system.

10. Adjust all the parameters in the file basepref.RNM to the new target environment.

    Make sure
    - to avoid using the characters "/" in the parameter values
    - the number of qualifiers used for each target system data set is the same used for the corresponding source data set
    - the value of the USER parameter at the end of the Renaming Definitions data set is not changed
    - the mandatory continuation character "-" is at the 71th position of each line except the last line

When the editing of the Renaming Definitions is performed with the ISPF Editor, the following procedure can be used for a mass replacement of the data set prefixes:

a. Select all relevant lines for massive find/replace operation by excluding them using the following command:

   \text{EXCLUDE C'CHANGE' 62 ALL}

b. Replace all old values with the new ones in all relevant (excluded) lines only using the following command:

   \text{CHANGE 'OldPref' 'NewPref' ALL X}

   All changed lines will be flagged with the "==CHG>" string in the ISPF editor prefix area.
Due to DFDSS limitation the number of qualifiers in the NewPref and OldPref prefixes must be equal.

c. Redisplay all excluded lines using the following command:
   
   \text{RESET}

d. Review and adjust the rest of the parameters which were not changed with the find/replace operation.

e. Compare the number of matching lines of the following commands to ensure that all occurrences of the OldPref have a corresponding NewPref definition:
   
   \text{FIND 'OldPref' ALL}
   
   \text{FIND 'NewPref' ALL}

f. Ensure that the DFDSS continuation character ".-" is missing at the 71th column of the last line only, using the following command:
   
   \text{FIND ' ' 71 ALL}

   There should be one matching line only - the last line of the data set.

11. Adjust the sample extraction job by entering the package file name and the name of the basepref.RNM data set (in the SYSIN card at the end of the job).

12. Submit the sample extraction job to extract the files from the package. At this stage all the files, which are being extracted, are allocated on the target system with new names. The maximum return code for successfully running IOADSRST is 4.

13. Compress the ilprefa.PARM and ilprefa.INSTWORK libraries.

14. Activate the Renaming tool to adjust the cloned environment, by first specifying the values for the ENVID, MODE, BASEPREF, and ILPREFA parameters in the ilprefa.JCL(IOARNM) job and then submitting the job. The value for the ENVID parameter must be the same as it was specified for the ENVID parameter for the Data Set Listing tool, but the BASEPREF and ILPREFA are the new BASEPREF and ILPREFA of the cloned system. (For more information, see "IOACCRNM - the Renaming tool" in the INCONTROL for z/OS Utilities Guide.)

   The maximum return code for successfully running IOARNM is 4.

   The input for this utility is:
   
   - \text{ilprefa.INSTWORK(IOACDDSL)} - List of data sets to be processed.
   - \text{basepref.RNM} - List of the parameters to be adjusted in the cloned IOA environment.

   The messages of the utility are sent to the ilprefa.ICELOG data set and to a data set allocated to the DD SYSTSPRT.

   At this stage most of the internals of the cloned IOA environment are adjusted to the new names and most user files which are not moved from the base environment are allocated from scratch.

   The cloning process is completed.

   Do not use ICE on the cloned environment until the renaming process has completed successfully.

Post-cloning procedures

This section describes procedures that can only be performed after the cloning procedure is completed. Only perform the post-cloning steps that are relevant to the installed products.
Do not manually submit the jobs in the ilprefa.INSTWORK library. Any adjustments required for the cloned environment must only be performed using the ICE Customization facilities.

➢ To make a working target system, perform the following post cloning processes:

1. Grant APF authorization to the following libraries:
   - STEPLIB
   - STEPLIBE
   - ilprefa.CTRANS

   To permanently define them as authorized, edit member IEAAPFx or member PROGxx in SYS1.PARMLIB (where xx is the number specified in the IEASYSxx member in SYS1.PARMLIB). The libraries will become authorized after the next IPL.

   Dynamically define them with the following MVS command:

   ```
   SETPROG APF,ADD,DSN=DsName,VOLUME=VolSer
   SETPROG APF,ADD,DSN=IOA.V900.CLONE.CTRANS,VOLUME=CLONEV
   SETPROG APF,ADD,DSN=IOA.V900.CLONE.LOAD,VOLUME=CLONEV
   SETPROG APF,ADD,DSN=IOA.V900.CLONE.LOADE,VOLUME=CLONEV
   ```

2. Refresh LLA

   If the IOA LOAD library resides in the MVS Linklist, refresh the LLA using the MVS command:

   ```
   F LLA,REFRESH
   ```

   If a program fetch optimization product, such as PDSMAN, QUICKFETCH, PMO, and so on, is in use at your site, you may need to refresh the Linklist tables.

   Log off from TSO/ROSCOE and log on again.

   *Perform the following steps from ICE, as indicated in the parenthesis. In each of the steps, when a window is displayed, asking whether you want to replace the existing copy, specify Y.*

3. Update defining subsystems to z/OS if IOAPARM member parameter SSALLOC (Allow Dynamic SubSystem Definition) is set to N.

4. Set IOA Online Monitor Parameters (IOA Customization step 15.1).

5. Specify IOA CPUs (Control-O Customization step 1.4 or Control-M Customization step 1.16).

6. Allocate Global AutoEdit Libraries (Control-O Customization step 2.4) - for each SMFID.

7. Allocate and Format Control-O Statistics Files (Control-O Customization step 2.5) - for each SMFID.

8. Allocate the Automation Log Files (Control-O Customization step 2.6) - for each SMFID.

9. Allocate Subsystem Communication File (Control-M Customization step 5.3).

10. Allocate and Format Communication Files (Control-M Customization step 5.4) - for each SMFID.

11. If SYSTLOGR=Y, Perform CMEM SYSPLEX Configuration (Control-M Customization step 5.5).

12. If SYSTLOGR=Y, Build CMMPLEX Parameter Member (Control-M Customization step 5.6).

13. For remote cloning, edit the password members for each of the installed products.

14. Review and adjust the ECAPARMx parameter members (IOA Customization step 14.2).
15. Review and adjust the CTMPLAX parameter member (Control-M Customization step 3.1)
16. Review the operational libraries to ensure that there are no references to the base (source) installation.

Troubleshooting

Several common situations that may occur when running the cloning utilities are described in this section.

Case 1

Symptoms
The IOACJ PKG packaging job terminates with MAXCC=4. The following warning message is issued to the SYSPRINT in the RUNDFDSS step:

ADR804W (xxx)-DTDSC(yy), EOF FOR DATA SET DsName IN CATALOG CatName WAS NOT FOUND WHERE EXPECTED. ALL ALLOCATED SPACE WILL BE PROCESSED.

Diagnosis
The results of a job that terminates with MAXCC=4 are valid.

Solution
Continue the cloning procedure.

Case 2

Symptoms
The IOADSRST sample extraction job terminates with MAXCC=8. The following message is issued to the SYSPRINT in the RUNDFDSS step:

ICH408I USER(xxxxxxxx) GROUP(yyyyyyyy) NAME(zzzzzzzz) nnn
STGADMIN.ADR.RESTORE.IMPORT CL(FACILITY)
INSUFFICIENT ACCESS AUTHORITY
FROM STGADMIN.ADR.* (G)
ACCESS INTENT(READ) ACCESS ALLOWED (NONE)

Diagnosis
The user performing the cloning does not have the proper RACF facility class authorization.

Solution
The user must obtain the proper RACF facility class authorization from the RACF administrator.

Case 3

Symptoms
The IOADSRST sample extraction job terminates with MAXCC=4. The following warning message is issued to the SYSPRINT in the RUNDFDSS step:
ADR115W (R/I)-RI01 (06), AN IMPROPERLY PLACED COMMENT DELIMITER HAS BEEN ENCOUNTERED

**Diagnosis**

The message is caused by the default value ('//*') of the JCL1 and JCL2 parameters in the Renaming Definitions data set. The results of the job are valid, provided that the job has terminated with MAXCC=4 and none of the parameters in the Renaming Definitions data set contain a '*/' string.

**Solution**

Continue the cloning procedure.

---

**Case 4**

**Symptoms**

The IOADSRST sample extraction job terminates with MAXCC=4. The following warning message is issued to the SYSPRINT in the RUNDFDSS step:

ADR744W (xxx)-MRPAM(yy), NO VALID MEMBERS WERE FOUND FOR PDS DATA SET DsName. ONLY THE DIRECTORY WILL BE UPDATED

**Diagnosis**

The results of a job that terminates with MAXCC=4 are valid.

**Solution**

Continue the cloning procedure.

---

**Case 5**

**Symptoms**

The IOADSRST extraction job allocates the restored data sets to the same volumes as the base installation, even though different prefixes were defined for the cloned installation.

**Diagnosis**

In the cloning procedure, the volumes used for the restored data sets are determined by the new prefixes specified by the user in the basepref.RNM Renaming Definitions data set.

When the IOADSRST extraction job restores the data sets from the cloning package, it uses the IMPORT parameter in the DFDSS control statements, provided in the Renaming Definitions data set, to invoke SMS for allocating the data sets on the appropriate volumes.

The allocation is performed according to the SMS rules on the target system and depends on the new prefixes specified for the data sets.

The IOADSRST job can fail when attempting to allocate the restored data sets to the same volumes found on the base system for the following reasons:

- During a local cloning procedure, the job can fail if there is insufficient space on the target volumes.
- During a remote cloning procedure, the job can fail if the requested volumes do not exist on the remote (target) system.
Solution

➢ To perform a workaround:

Edit the basepref.RNM Renaming Definitions data set, by adding one of the following parameters, after the IMPORT parameter:

- To allocate data sets of a cloned environment on specific volumes:
  
  OUTDYNAM((VolSer1,Unit1)[,(VolSer2,Unit2)])

  OUTDYNAM((VOL1,3390))

  OUTDYNAM((VOL1,3390),(VOL2,3390),(VOL3,3390),(VOL4,3390))

  If the data sets of the base environment were allocated using SMS classes, the following parameters must be added:

  BYPASSACS(**) NULLMGMTCLAS NULLSTORCLAS

- To allocate data sets of a cloned environment according to SMS classes:

  STORCLAS(StorageClass) | MGMTCLAS(ManagementClass)

  STORCLAS(MYSCLASS)

  MGMTCLAS(MYMCLASS)

  STORCLAS(MYSCLASS) MGMTCLAS(MYMCLASS)

To resolve this problem without having to perform the workaround, contact your SMS administrator.

Case 6

Symptoms

The IOADSRST job terminates with RC=8. The following error message is issued to the SYSPRINT in the RUNDFDSS step:

ADR472E (xxx) -NEWDS(yy), UNABLE TO SELECT A TARGET VOLUME FOR DATA SET DsName, nn

Diagnosis

DFDSS failed to restore the DsName data set for the nn reason.

Solution

➢ To correct the problem:

1. Refer to the z/OS V1R9.0 MVS System Messages, Vol 1 (ABA-AOM) SA22-7631-15 for more information regarding the reason code nn failed.

2. Eliminate the cause of the job failure.

3. Delete all data sets created by the job.

4. Submit the job again.
Case 7

Symptoms
The Renaming tool fails due to a shortage of available free disk space on the target system. The following error message is issued:

IOAI22E Failed to process data set DsName

If the failure was caused by a job, then the following information messages are issued after the IOAI22E message:

IOAI23I RC=JobRc Routine
IOAI23I The job JobName(JobId) failed

Diagnosis
The Renaming tool allocates and formats a number of repository data sets of the INCONTROL products on the target system.

Some jobs that allocate new data sets on a target system can fail because a shortage of available free disk space.

Solution
➢ To correct the problem:

1. Analyze the output of the Renaming tool to ensure that the failure was caused by a shortage of available free disk space.

2. Estimate the amount of the free disk space required by analyzing the size of the data sets of the base environment. (The Renaming tool allocates data sets using the size definitions of the base environment.)

3. Free the required amount of disk space on the target system.

4. Delete all the cloned data sets from the target environment.

5. Invoke the Cloning process again from step 12 (see Cloning an IOA environment (on page 442)).
A INCONTROL product data sets

This section lists the data sets for INCONTROL products.

IOA data sets

Table 145  IOA Base data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>J CL prefix parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONVLIB</td>
<td>&amp;BASEPREF</td>
<td>Conversion library</td>
</tr>
<tr>
<td>GENERAL</td>
<td>&amp;BASEPREF</td>
<td>IOA General (Miscellaneous) library – fixed length record (80)</td>
</tr>
<tr>
<td>GENERALV</td>
<td>&amp;BASEPREF</td>
<td>IOA General (Miscellaneous) library – variable length record</td>
</tr>
<tr>
<td>GENRL132</td>
<td>&amp;BASEPREF</td>
<td>IOA General (Miscellaneous) library – fixed length record (132)</td>
</tr>
<tr>
<td>INSTALL</td>
<td>&amp;BASEPREF</td>
<td>ICE library for IOA</td>
</tr>
<tr>
<td>INSTCTB</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-M/Analyzer</td>
</tr>
<tr>
<td>INSTCTD</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-D</td>
</tr>
<tr>
<td>INSTCTM</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-M</td>
</tr>
<tr>
<td>INSTCTO</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-O</td>
</tr>
<tr>
<td>INSTCTR</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-M/Restart</td>
</tr>
<tr>
<td>INSTCTT</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-M/Tape</td>
</tr>
<tr>
<td>INSTCTV</td>
<td>&amp;BASEPREF</td>
<td>ICE library for Control-V</td>
</tr>
<tr>
<td>MAINTLIB</td>
<td>&amp;BASEPREF</td>
<td>IOA Maintenance library</td>
</tr>
<tr>
<td>NLSSUPP</td>
<td>&amp;BASEPREF</td>
<td>National Languages Support library</td>
</tr>
<tr>
<td>PROJCL</td>
<td>&amp;BASEPREF</td>
<td>IOA Started Task library</td>
</tr>
<tr>
<td>XMITLIB</td>
<td>&amp;BASEPREF</td>
<td>Uncompressed IOA installation image file</td>
</tr>
</tbody>
</table>
**Table 146 IOA Installation data sets**

<table>
<thead>
<tr>
<th>Type</th>
<th>J CL prefix parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI CSSAMP</td>
<td>&amp;ILPREFA</td>
<td>IOA CICS Sample library</td>
</tr>
<tr>
<td>CLIST</td>
<td>&amp;ILPREFA</td>
<td>IOA CLIST library</td>
</tr>
<tr>
<td>CTRANS</td>
<td>&amp;ILPREFA</td>
<td>&quot;C&quot; Transient library</td>
</tr>
<tr>
<td>CUSTEXIT</td>
<td>&amp;ILPREFA</td>
<td>Modified user exits library</td>
</tr>
<tr>
<td>DOC</td>
<td>&amp;ILPREFA</td>
<td>Documentation members (for exits and so on)</td>
</tr>
<tr>
<td>ICELOG</td>
<td>&amp;ILPREFA</td>
<td>Log data set of ICE</td>
</tr>
<tr>
<td>INSTWORK</td>
<td>&amp;ILPREFA</td>
<td>Installation work library</td>
</tr>
<tr>
<td>IOAENV</td>
<td>&amp;ILPREFA</td>
<td>IOA Environment Parameter library</td>
</tr>
<tr>
<td>ISMSGENG</td>
<td>&amp;ILPREFA</td>
<td>IOA ISPF Message library (English)</td>
</tr>
<tr>
<td>ISMSGFRA</td>
<td>&amp;ILPREFA</td>
<td>IOA ISPF Message library (French) – optional</td>
</tr>
<tr>
<td>ISMSGGER</td>
<td>&amp;ILPREFA</td>
<td>IOA ISPF Message library (German) – optional</td>
</tr>
<tr>
<td>ISMSGJAP</td>
<td>&amp;ILPREFA</td>
<td>IOA ISPF Message library (Japanese) – optional</td>
</tr>
<tr>
<td>J CL</td>
<td>&amp;ILPREFA</td>
<td>IOA J CL Sample library</td>
</tr>
<tr>
<td>KSL</td>
<td>&amp;ILPREFA</td>
<td>IOA KSL scripts library</td>
</tr>
<tr>
<td>LOAD</td>
<td>&amp;STEPLIB</td>
<td>IOA Load library</td>
</tr>
<tr>
<td>LOADE</td>
<td>&amp;STEPLIB</td>
<td>IOA Program library (PDSE load library)</td>
</tr>
<tr>
<td>MAC</td>
<td>&amp;ILPREFA</td>
<td>IOA Macro library</td>
</tr>
<tr>
<td>MSGENG</td>
<td>&amp;ILPREFA</td>
<td>IOA Message, Screen, and Help Screen library (English)</td>
</tr>
<tr>
<td>MSGFRA</td>
<td>&amp;ILPREFA</td>
<td>IOA Message, Screen, and Help Screen library (French) – optional</td>
</tr>
<tr>
<td>MSGGER</td>
<td>&amp;ILPREFA</td>
<td>IOA Message, Screen, and Help Screen library (German) – optional</td>
</tr>
<tr>
<td>MSGJAP</td>
<td>&amp;ILPREFA</td>
<td>IOA Message, Screen, and Help Screen library (Japanese) – optional</td>
</tr>
</tbody>
</table>
## Type | JCL prefix parameters | Description
--- | --- | ---
 failed | &ILPREFA | IOA ISPF Panel library (English)
 PANELFRA | &ILPREFA | IOA ISPF Panel library (French) – optional
 PANELGER | &ILPREFA | IOA ISPF Panel library (German) – optional
 PANELJAP | &ILPREFA | IOA ISPF Panel library (Japanese) – optional
 PARM | &ILPREFA | IOA Parameter library
 PROCJCL | &ILPREFA | IOA Started Tasks library
 PROCLIB | &ILPREFA | IOA JCL Procedure library
 ROSLIB | &ILPREFA | IOA ROSCOE RPFs and Panel library
 SAMPEXIT | &ILPREFA | User exits and samples
 SAMPLE | &ILPREFA | IOA Sample library
 SAMPREPS | &ILPREFA | IOA Sample Reports library
 SECSRC | &ILPREFA | Security exits and samples
 SIML | &ILPREFA | IOA Simulation Load library
 SSAROMOD | &ILPREFA | SAS/C Resident library

Table 147 IOA Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANNERS</td>
<td>&amp;OLPREFA</td>
<td>IOA Banner library</td>
</tr>
<tr>
<td>CAL</td>
<td>&amp;OLPREFA</td>
<td>IOA Calendar library</td>
</tr>
<tr>
<td>CSTMP</td>
<td>&amp;OLPREFA</td>
<td>Condition synchronization file between Control-M and Control-M/Enterprise Manager</td>
</tr>
<tr>
<td>M2F</td>
<td>&amp;OLPREFA</td>
<td>Communication file for remote force job requests from Control-M to Control-M/Enterprise Manager</td>
</tr>
<tr>
<td>M2G</td>
<td>&amp;OLPREFA</td>
<td>Shout message communication file for Shout messages from Control-M (and other IOA products) to Control-M/Enterprise Manager</td>
</tr>
</tbody>
</table>
### Table 148  IOA Repository data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROF</td>
<td>&amp;OLPREFA</td>
<td>IOA Profile library</td>
</tr>
<tr>
<td>RBC</td>
<td>&amp;OLPREFA</td>
<td>IOA Rule-Based Calendar library</td>
</tr>
<tr>
<td>REQFRC</td>
<td>&amp;OLPREFA</td>
<td>LOG file for remote force job requests from Control-M/Enterprise Manager to Control-M</td>
</tr>
<tr>
<td>SIMLOG</td>
<td>&amp;OLPREFA</td>
<td>Simulation Log</td>
</tr>
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</table>

### Table 149  IOA Maintenance data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>MAINTLIB</td>
<td>&amp;ILPREFA</td>
<td>IOA Maintenance library</td>
</tr>
</tbody>
</table>
## SMP/E data sets

**Table 150** SMP/E data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACICSSAM</td>
<td>&amp;SPDPREF</td>
<td>IOA CICS Sample Distribution library</td>
</tr>
<tr>
<td>ACLIST</td>
<td>&amp;SPDPREF</td>
<td>IOA CLIST Distribution library</td>
</tr>
<tr>
<td>ACONV</td>
<td>&amp;SPDPREF</td>
<td>IOA Conversion Distribution library</td>
</tr>
<tr>
<td>ADOC</td>
<td>&amp;SPDPREF</td>
<td>IOA Documentation Member Distribution library</td>
</tr>
<tr>
<td>AGENERAL</td>
<td>&amp;SPDPREF</td>
<td>IOA General (Miscellaneous) Distribution library (fixed length record 80)</td>
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<tr>
<td>AGENERELV</td>
<td>&amp;SPDPREF</td>
<td>IOA General (Miscellaneous) Distribution library (variable length record)</td>
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<td>AGNRL132</td>
<td>&amp;SPDPREF</td>
<td>IOA General (Miscellaneous) Distribution library (fixed length record 132)</td>
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<td>AINSTALL</td>
<td>&amp;SPDPREF</td>
<td>IOA Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTB</td>
<td>&amp;SPDPREF</td>
<td>Control-M/Analyzer Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTD</td>
<td>&amp;SPDPREF</td>
<td>Control-D Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTM</td>
<td>&amp;SPDPREF</td>
<td>Control-M Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCITO</td>
<td>&amp;SPDPREF</td>
<td>Control-O Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTR</td>
<td>&amp;SPDPREF</td>
<td>Control-M/Rerstart Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTT</td>
<td>&amp;SPDPREF</td>
<td>Control-M/Tape Installation Distribution library</td>
</tr>
<tr>
<td>AINSTCTV</td>
<td>&amp;SPDPREF</td>
<td>Control-V Installation Distribution library</td>
</tr>
<tr>
<td>AI OAENV</td>
<td>&amp;SPDPREF</td>
<td>IOA Environment Parameters Distribution library</td>
</tr>
<tr>
<td>AI OALOAD</td>
<td>&amp;SPDPREF</td>
<td>IOA Load Distribution library</td>
</tr>
<tr>
<td>AI MSGGEN</td>
<td>&amp;SPDPREF</td>
<td>IOA ISPF Message Distribution library (English)</td>
</tr>
<tr>
<td>AI MSGGFR</td>
<td>&amp;SPDPREF</td>
<td>IOA ISPF Message Distribution library (French)</td>
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<td>AI MSGGGE</td>
<td>&amp;SPDPREF</td>
<td>IOA ISPF Message Distribution library (German)</td>
</tr>
<tr>
<td>Type</td>
<td>JCL prefix parameter</td>
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<tr>
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<td>----------------------</td>
<td>-----------------------------------------------------</td>
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<td>AISMSGJP</td>
<td>&amp;SPDPREF</td>
<td>IOA ISPF Message Distribution library (Japanese)</td>
</tr>
<tr>
<td>AKSL</td>
<td>&amp;SPDPREF</td>
<td>IOA KSL Distribution library</td>
</tr>
<tr>
<td>ALOADE</td>
<td>&amp;SPDPREF</td>
<td>IOA Program Distribution library (PDSE Load Distribution library)</td>
</tr>
<tr>
<td>AMAC</td>
<td>&amp;SPDPREF</td>
<td>IOA Macro Distribution library</td>
</tr>
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<td>AMSGENGER</td>
<td>&amp;SPDPREF</td>
<td>IOA Message, Screen, and Help Screen Distribution library (English)</td>
</tr>
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<td>AMSGFRA</td>
<td>&amp;SPDPREF</td>
<td>IOA Message, Screen, and Help Screen Distribution library (French)</td>
</tr>
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<td>AMSGGER</td>
<td>&amp;SPDPREF</td>
<td>IOA Message, Screen, and Help Screen Distribution library (German)</td>
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<td>&amp;SPDPREF</td>
<td>IOA Message, Screen, and Help Screen Distribution library (Japanese)</td>
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<td>&amp;SPDPREF</td>
<td>IOA ISPF Panels Distribution library (English)</td>
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<td>&amp;SPDPREF</td>
<td>IOA ISPF Panels Distribution library (French)</td>
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<td>&amp;SPDPREF</td>
<td>IOA ISPF Panels Distribution library (German)</td>
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<td>APANELJP</td>
<td>&amp;SPDPREF</td>
<td>IOA ISPF Panels Distribution library (Japanese)</td>
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<td>&amp;SPDPREF</td>
<td>IOA Started Tasks Distribution library</td>
</tr>
<tr>
<td>APROCJLIB</td>
<td>&amp;SPDPREF</td>
<td>IOA JCL Procedures Distribution library</td>
</tr>
<tr>
<td>AROSXB</td>
<td>&amp;SPDPREF</td>
<td>IOA ROSCOE RPFs Distribution library</td>
</tr>
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<td>ASAMPEXT</td>
<td>&amp;SPDPREF</td>
<td>IOA User Exits Distribution library</td>
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<td>&amp;SPDPREF</td>
<td>IOA Samples Distribution library</td>
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<td>&amp;SPDPREF</td>
<td>IOA Sample Reports Distribution library</td>
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<td>&amp;SPDPREF</td>
<td>IOA Security Exits Distribution library</td>
</tr>
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<td>CSI</td>
<td>&amp;SPCPREF</td>
<td>SMP/E Global Zone cluster</td>
</tr>
<tr>
<td>CSI</td>
<td>&amp;SPCPREFD</td>
<td>SMP/E Distribution Zone cluster</td>
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<td>JCL prefix parameter</td>
<td>Description</td>
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<td>CSI</td>
<td>&amp;SPCPREFT</td>
<td>SMP/E Target Zone cluster</td>
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<td>CSI.D</td>
<td>&amp;SPCPREF</td>
<td>SMP/E Global Zone cluster (data component)</td>
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<td>&amp;SPCPREFD</td>
<td>SMP/E Distribution Zone cluster (data component)</td>
</tr>
<tr>
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<td>&amp;SPCPREFT</td>
<td>SMP/E Target Zone cluster (data component)</td>
</tr>
<tr>
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<td>&amp;SPCPREF</td>
<td>SMP/E Global Zone cluster (index component)</td>
</tr>
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<td>CSI.I</td>
<td>&amp;SPCPREFD</td>
<td>SMP/E Distribution Zone cluster (index component)</td>
</tr>
<tr>
<td>CSI.I</td>
<td>&amp;SPCPREFT</td>
<td>SMP/E Target Zone cluster (index component)</td>
</tr>
<tr>
<td>SMPLOG</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Log file</td>
</tr>
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<td>SMPLOGA</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Alternate Log file</td>
</tr>
<tr>
<td>SMPLTS</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Linkage Temporary Store</td>
</tr>
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<td>SMPMTS</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Macro Temporary Store</td>
</tr>
<tr>
<td>SMPPTS</td>
<td>&amp;SPAPREF</td>
<td>SMP/E PTF Temporary Store</td>
</tr>
<tr>
<td>SMPSCDS</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Save Control Data Set</td>
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<tr>
<td>SMPSTS</td>
<td>&amp;SPAPREF</td>
<td>SMP/E Source Temporary Store</td>
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</table>
## Control-M data sets

### Table 151  Control-M Installation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCL</td>
<td>&amp;ILPREFM</td>
<td>Control-M Sample JCL library</td>
</tr>
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</table>

### Table 152  Control-M Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCLPROMP</td>
<td>&amp;OLPREFM</td>
<td>Control-M Master JCL library (of the Parameter Prompting facility – Type 2)</td>
</tr>
<tr>
<td>JOBLIST</td>
<td>&amp;OLPREFM</td>
<td>Communication file</td>
</tr>
<tr>
<td>PARM</td>
<td>&amp;OLPREFM</td>
<td>Control-M Parameters library</td>
</tr>
<tr>
<td>PLANMSTR</td>
<td>&amp;OLPREFM</td>
<td>Control-M Master Prompting Plans library (of the Parameter Prompting facility – Type 2)</td>
</tr>
<tr>
<td>PROMPT</td>
<td>&amp;OLPREFM</td>
<td>Control-M Prompting Tables library (of the Parameter Prompting facility – Type 1)</td>
</tr>
<tr>
<td>SCHEDULE</td>
<td>&amp;OLPREFM</td>
<td>Control-M Scheduling Tables library</td>
</tr>
</tbody>
</table>

### Table 153  Control-M Repository data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTCKP</td>
<td>&amp;DBPREFM</td>
<td>Control-M Mirror (Dual) Active Jobs file</td>
</tr>
<tr>
<td>BKP</td>
<td>&amp;DBPREFM</td>
<td>Control-M Active Jobs file – backup</td>
</tr>
<tr>
<td>CKP</td>
<td>&amp;DBPREFM</td>
<td>Control-M Active Jobs file</td>
</tr>
<tr>
<td>CKPJ NL</td>
<td>&amp;DBPREFM</td>
<td>Control-M AJF for Journaling Synchronization</td>
</tr>
<tr>
<td>CNDJ NL</td>
<td>&amp;DBPREFA</td>
<td>Condition File for Journaling Synchronization</td>
</tr>
<tr>
<td>CTM2SBS</td>
<td>&amp;CTM2SBS</td>
<td>Control-M to CMEM Communication file</td>
</tr>
<tr>
<td>GRF</td>
<td>&amp;DBPREFM</td>
<td>Control-M Job Dependencies file</td>
</tr>
<tr>
<td>HST</td>
<td>&amp;DBPREFM</td>
<td>Control-M History file</td>
</tr>
</tbody>
</table>
### Control-M/JCL Verify data sets

**Table 154** Control-M/JCL Verify Installation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JNL</td>
<td>&amp;DBPREFM</td>
<td>Control-M Journaling file</td>
</tr>
<tr>
<td>RES</td>
<td>&amp;DBPREFM</td>
<td>Control-M Resources file</td>
</tr>
<tr>
<td>SBS2CTM</td>
<td>&amp;SBS2CTM</td>
<td>CMEM to Control-M Communication file</td>
</tr>
<tr>
<td>STATFILE</td>
<td>&amp;STATFILE</td>
<td>Control-M Job Execution Statistics file</td>
</tr>
</tbody>
</table>

**Table 155** Control-M/JCL Verify Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARM</td>
<td>&amp;OLPREFJ</td>
<td>Control-M/JCL Verify Parameters library</td>
</tr>
<tr>
<td>RULES</td>
<td>&amp;OLPREFJ</td>
<td>Control-M/JCL Verify Rule library (contains sample rules)</td>
</tr>
</tbody>
</table>

### Control-M/Restart data sets

**Table 156** Control-M/Restart Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARM</td>
<td>&amp;OLPREFR</td>
<td>The Restart Parameters library of Control-M/Restart</td>
</tr>
</tbody>
</table>
## Control-D data sets

### Table 157 Control-D Installation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCL</td>
<td>&amp;LPREFD</td>
<td>Control-D sample JCL library</td>
</tr>
<tr>
<td>SKL</td>
<td>&amp;LPREFD</td>
<td>Control-D Backup/Restore Job skeletons</td>
</tr>
</tbody>
</table>

### Table 158 Control-D Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACIFPARM</td>
<td>&amp;OLPREFD</td>
<td>ACIF Parameters library</td>
</tr>
<tr>
<td>APAPARM</td>
<td>&amp;OLPREFD</td>
<td>Control-D APA Parameters library</td>
</tr>
<tr>
<td>BKPMIS</td>
<td>&amp;OLPREFD</td>
<td>Control-D Backup Missions definitions</td>
</tr>
<tr>
<td>DJDEPARM</td>
<td>&amp;OLPREFD</td>
<td>Control-D XEROX (DJ DE) Parameters library</td>
</tr>
<tr>
<td>DSNLIST</td>
<td>&amp;OLPREFD</td>
<td>Control-D Print Plan Communications List file</td>
</tr>
<tr>
<td>FTOPARM</td>
<td>&amp;OLPREFD</td>
<td>Control-D File Transfer Option Parameters library</td>
</tr>
<tr>
<td>JOB</td>
<td>&amp;OLPREFD</td>
<td>Control-D Backup/Restore Jobs library</td>
</tr>
<tr>
<td>OUTPARMS</td>
<td>&amp;OLPREFD</td>
<td>Control-D Sysout Parameters library</td>
</tr>
<tr>
<td>PARM</td>
<td>&amp;OLPREFD</td>
<td>Control-D Parameters library</td>
</tr>
<tr>
<td>PRTMIS</td>
<td>&amp;OLPREFD</td>
<td>Control-D Print Missions definitions</td>
</tr>
<tr>
<td>REPORTS</td>
<td>&amp;OLPREFD</td>
<td>Control-D Report Decollating definitions library</td>
</tr>
<tr>
<td>RSTMIS</td>
<td>&amp;OLPREFD</td>
<td>Control-D Restore Missions definitions library</td>
</tr>
<tr>
<td>SCRLIST</td>
<td>&amp;OLPREFD</td>
<td>Control-D CTDDELRP Communication List file</td>
</tr>
<tr>
<td>TRANSTO</td>
<td>&amp;OLPREFD</td>
<td>Control-D Transforming to PDF Parameters library</td>
</tr>
</tbody>
</table>
## Table 159 Control-D Repository data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>&amp;DBPREFD</td>
<td>Data Component of Control-D Active User file</td>
</tr>
<tr>
<td>ACTI</td>
<td>&amp;DBPREFD</td>
<td>Index Component of Control-D Active User file</td>
</tr>
<tr>
<td>AMB</td>
<td>&amp;DBPREFD</td>
<td>Control-D Active Missions file – backup</td>
</tr>
<tr>
<td>AMF</td>
<td>&amp;DBPREFD</td>
<td>Control-D Active Missions file</td>
</tr>
<tr>
<td>ATB</td>
<td>&amp;DBPREFD</td>
<td>Control-D Active Transfer file – backup</td>
</tr>
<tr>
<td>ATF</td>
<td>&amp;DBPREFD</td>
<td>Control-D Active Transfer file</td>
</tr>
<tr>
<td>BTR</td>
<td>&amp;DBPREFD</td>
<td>Bundle Tracking file (data component)</td>
</tr>
<tr>
<td>BTRI</td>
<td>&amp;DBPREFD</td>
<td>Bundle Tracking file (index component)</td>
</tr>
<tr>
<td>COM</td>
<td>&amp;DBPREFD</td>
<td>Control-D Communication file</td>
</tr>
<tr>
<td>GIR</td>
<td>&amp;DBPREFD</td>
<td>Data Component of Control-V Global Index file.</td>
</tr>
<tr>
<td>GIRI</td>
<td>&amp;DBPREFD</td>
<td>Index Component of Control-V Global Index file.</td>
</tr>
<tr>
<td>HST</td>
<td>&amp;DBPREFD</td>
<td>Data Component of Control-D History User file</td>
</tr>
<tr>
<td>HSTI</td>
<td>&amp;DBPREFD</td>
<td>Index Component of Control-D History User file</td>
</tr>
<tr>
<td>MIG</td>
<td>&amp;DBPREFD</td>
<td>Data Component of Control-V Migrate User Report file</td>
</tr>
<tr>
<td>MIGI</td>
<td>&amp;DBPREFD</td>
<td>Index Component of Control-V Migrate User Report file</td>
</tr>
<tr>
<td>PGC</td>
<td>&amp;DBPREFD</td>
<td>Control-D Page Counter file</td>
</tr>
<tr>
<td>PRM</td>
<td>&amp;DBPREFD</td>
<td>Data Component of Control-D Permanent User file</td>
</tr>
<tr>
<td>PRMI</td>
<td>&amp;DBPREFD</td>
<td>Index Component of Control-D Permanent User file</td>
</tr>
<tr>
<td>RESLIB</td>
<td>&amp;DBPREFD</td>
<td>Control-D Resources library for The Library Set</td>
</tr>
</tbody>
</table>
**Control-O data sets**

**Table 160 Control-O Installation data sets**

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCL</td>
<td>&amp;ILPREFO</td>
<td>Control-O Sample JCL library</td>
</tr>
</tbody>
</table>

**Table 161 Control-O Operation data sets**

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ALO</td>
<td>&amp;OLPREFO</td>
<td>Automation Log file</td>
</tr>
<tr>
<td>GLB</td>
<td>&amp;OLPREFO</td>
<td>Global Variables library</td>
</tr>
<tr>
<td>PARM</td>
<td>&amp;OLPREFO</td>
<td>Control-O Parameters library</td>
</tr>
<tr>
<td>RULES</td>
<td>&amp;OLPREFO</td>
<td>Control-O Rules library (contains sample rules)</td>
</tr>
<tr>
<td>SOLVKOA</td>
<td>&amp;OLPREFO</td>
<td>SolveWare KOA Script library</td>
</tr>
<tr>
<td>SOLVJCL</td>
<td>&amp;OLPREFO</td>
<td>SolveWare J CL library</td>
</tr>
<tr>
<td>SOLVRULE</td>
<td>&amp;OLPREFO</td>
<td>SolveWare Rules library</td>
</tr>
<tr>
<td>SOLVSCHD</td>
<td>&amp;OLPREFO</td>
<td>SolveWare Schedule library</td>
</tr>
</tbody>
</table>

**Control-V data sets**

**Table 162 Control-V Operation data sets**

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI GMS</td>
<td>&amp;OLPREFV</td>
<td>Control-V Migration Missions Definition library</td>
</tr>
</tbody>
</table>
## Control-M/Analyzer data sets

### Table 163 Control-M/Analyzer Installation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCL</td>
<td>&amp;LIPREFB</td>
<td>Control-M/Analyzer sample JCL library</td>
</tr>
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</table>

### Table 164 Control-M/Analyzer Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARM</td>
<td>&amp;OLPREFB</td>
<td>Control-M/Analyzer parameters library</td>
</tr>
<tr>
<td>RULES</td>
<td>&amp;OLPREFB</td>
<td>Control-M/Analyzer rules library (contains sample rules)</td>
</tr>
<tr>
<td>BALMIS</td>
<td>&amp;OLPREFB</td>
<td>Control-M/Analyzer balancing missions library</td>
</tr>
<tr>
<td>SOLVJ CL</td>
<td>&amp;OLPREFB</td>
<td>SolveWare J CL library</td>
</tr>
<tr>
<td>SOLVRULE</td>
<td>&amp;OLPREFB</td>
<td>SolveWare Rule library</td>
</tr>
<tr>
<td>SOLVREP</td>
<td>&amp;OLPREFB</td>
<td>SolveWare Reports library</td>
</tr>
</tbody>
</table>

### Table 165 Control-M/Analyzer Repository data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABF</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Active Balancing file</td>
</tr>
<tr>
<td>ABFBKP</td>
<td>&amp;DBPREFB</td>
<td>Backup of Control-M/Analyzer Active Balancing file</td>
</tr>
<tr>
<td>GRPD</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Group file (data component)</td>
</tr>
<tr>
<td>GRPI</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Group file (index component)</td>
</tr>
<tr>
<td>JAFD</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Rule Activity file (data component)</td>
</tr>
<tr>
<td>JAFI</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Rule Activity file (index component)</td>
</tr>
<tr>
<td>MODD</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Model Variables Definition file (data component)</td>
</tr>
<tr>
<td>MODI</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Model Variables Definition file (index component)</td>
</tr>
</tbody>
</table>
### Control-M/Analyzer Report file data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPD</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Report file (data component)</td>
</tr>
<tr>
<td>REPI</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Report file (index component)</td>
</tr>
<tr>
<td>VARD</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Variables Generations file (data component)</td>
</tr>
<tr>
<td>VARI</td>
<td>&amp;DBPREFB</td>
<td>Control-M/Analyzer Variables Generations file (index component)</td>
</tr>
</tbody>
</table>

### Control-M/Tape data sets

#### Table 166  Control-M/ Tape Installation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCL</td>
<td>&amp;ILPREFT</td>
<td>Control-M/Tape Sample JCL library</td>
</tr>
</tbody>
</table>

#### Table 167  Control-M/ Tape Operation data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOC</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape Rule Documentation library</td>
</tr>
<tr>
<td>CKPT</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape Checkpoint file</td>
</tr>
<tr>
<td>PARM</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape Parameter library</td>
</tr>
<tr>
<td>RULES</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape Rule library (contains sample rules)</td>
</tr>
<tr>
<td>RTMDELL</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape CTTRTM Deletion list</td>
</tr>
<tr>
<td>VTMREPD</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape CTTVTM Report data</td>
</tr>
<tr>
<td>RTMRPD</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape CTTRTM Report data</td>
</tr>
<tr>
<td>FMLOG</td>
<td>&amp;OLPREFT</td>
<td>IOA monitor checkpoint file</td>
</tr>
<tr>
<td>Type</td>
<td>JCL prefix parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>REPDATA</td>
<td>&amp;OLPREFT</td>
<td>Control-M/Tape CTTSPL Extract file</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: BMC Software recommends that you enlarge the REPDATA file if you plan to use utilities CTTSPL and CTTMER to transfer a large number of Media Database records</td>
</tr>
</tbody>
</table>

**Table 168** Control-M/ Tape Repository data sets

<table>
<thead>
<tr>
<th>Type</th>
<th>JCL prefix parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDBD</td>
<td>&amp;DBPREFT</td>
<td>Control-M/Tape Media Database Data file</td>
</tr>
<tr>
<td>MDBI</td>
<td>&amp;DBPREFT</td>
<td>Control-M/Tape Media Database Index file</td>
</tr>
<tr>
<td>STKD</td>
<td>&amp;DBPREFT</td>
<td>Control-M/Tape Stacking Statistics Data file</td>
</tr>
<tr>
<td>STKI</td>
<td>&amp;DBPREFT</td>
<td>Control-M/Tape Stacking Statistics Index file</td>
</tr>
<tr>
<td>TRC</td>
<td>&amp;DBPREFT</td>
<td>Control-M/Tape Trace file</td>
</tr>
</tbody>
</table>
B IOAGATE installation and configuration considerations

This section discusses IOAGATE installation and configuration issues.

For information on the application servers for the following products:

- Control-M, see Step 21 - Install Control-M Application Server (on page 135)
- Control-D/Page On Demand, see Step 13.4 - Start Page On Demand (optional) (on page 265).
- Control-O, see Step 11 - Control-O communication (optional) (on page 326).

For a more complete discussion of these products, refer to the appropriate user guide for that INCONTROL product, as well as the appropriate chapter in the INCONTROL Administrator Guide.

IOAGATE planning

Ensure that you have completed the IOAGATE installation sheet (on page 567).

IOAGATE configuration

IOAGATE is a mainframe software communications gateway (middleware) that enables INCONTROL mainframe applications to communicate with other mainframe and non-mainframe applications over the network.

Client applications access INCONTROL products by means of an application server through IOAGATE.

**Figure 47 Access of INCONTROL products through IOAGATE**

IOAGATE supports multiple concurrent application servers of different applications and their clients. A single IOAGATE can support...
IOAGATE allows one application to communicate with multiples of the same application. For example:

- Control-O can communicate with multiple other Control-Os by means of one IOAGATE connecting to multiple IOAGATEs sitting on other mainframes.
- Control-M/Enterprise Manager can communicate with Control-M.
- Control-D/WebAccess Server can communicate through Control-D/Page On Demand to access the Control-D repositories through IOAGATE.
- Control-D Session Agent can transfer files to Control-D on an MVS using IOAGATE and the Control-D/File Transfer Option application server.

IOAGATE can support multiple, dedicated or shared communication channels. A shared channel indicates that multiple applications use that same port or LU for their communication. A dedicated channel refers to a port or LU that is used exclusively by one application.

IOAGATE can periodically check the connection to the client when it is in a TCP/IP dual communications model. For an explanation of dual communications model, see Channel sharing (on page 467). When IOAGATE discovers broken connections, it closes them and listens for new ones.

In addition, IOAGATE can recover broken connections with clients. IOAGATE can recover failed application servers and subtasks as well.

IOAGATE distributes client requests to the next available application server through a sequential search of available application server address spaces.

**Supporting multiple application servers**

IOAGATE supports communication between multiple application servers and their clients.

The following example illustrates multiple INCONTROL applications communicating with multiple clients.
Channel sharing

A channel consists of the following components:

- Communications protocol (TCP/IP or SNA)
- Communications model
- A set of communication subtasks inside IOAGATE that interface with TCP/IP or VTAM according to the protocol and model

Specific applications use a specific communications model. A communications model refers to the type of connection that handles the multiple users’ requests. These connections may be either Dual Connection Channels or Multiple Connection Channels.

Dual Connection Channels (DC) are two connections that are multiplexed by the client application in order to handle a multitude of users. This model is used by Control-M and Control-M/Enterprise Manager. The first connection is dedicated for traffic from IOAGATE to the client application and the other connection is for traffic in the opposite direction.

Multiple Connection Channels (MC) use a single port or LU to establish all new connections, each of which then receives its own socket and/or conversation and communication traffic. Control-D/Page On Demand, Control-D/File Transfer Option, and Control-O use this type of connection. Channel sharing is only possible when using Multiple Communication Channels, and only for connections between the following application servers:

- Control-O application server
- Control-D/Page on Demand (POD) application server

One Multiple Connection Channel can be shared between different applications using Multiple Connection Channels with the same protocol.

The following example illustrates how IOAGATE can be configured to take advantage of Channel Sharing in a multiple connection setup:
The Control-D/File Transfer Option should not use Channel Sharing.

Dedicated channels

The simplest way to configure an IOAGATE channel is shared channel use. When a shared channel is overloaded, the IOAGATE channel can be configured for dedicated use by product. Congestion on a Multiple Connection TCP channel can also be relieved by assigning more communication subtasks to a channel. For more information, see "UPERTASK" in Specifying advanced channel parameters (on page 119).

The following example illustrates IOAGATE configured with dedicated channels:

When using a dedicated channel configuration with IOAGATE
Control-D/Page On Demand may use either a TCP/IP or SNA protocol with a Multiple Connection Channel.

Control-M and Control-M/Enterprise Manager must use a TCP/IP protocol with a Dual Connection Channel.

Control-O may use either a TCP/IP or SNA protocol with a Multiple Connection Channel.

Control-D/File Transfer Option must use a TCP/IP protocol with a dedicated Multiple Connection Channel.

**Application server cloning**

For Control-D/Page On Demand and Control-D/File Transfer Option applications, if an application server address space is overloaded, additional address spaces can be defined in additional APSERVER statements, to distribute the load. For more information, see Option 1, Application, for the Add function under Step 20.2 – Configure IOAGATE parameters (on page 107). Additional application server subtasks within an application server can also be defined, to relieve overload. For more information, see Option 1, Application, for the A (Advanced) function under Step 20.2 – Configure IOAGATE parameters (on page 107).

**TCP/IP requirements**

The following describes customization requirements for configuring the communication between IOAGATE and client applications using the TCP/IP protocol.

**TCP/IP on z/OS**

- z/OS IBM Communication server (CS)
  - or
- SNS/TCPaccess v 5.3 or above from CA

**Functional TCP/IP connection**

A functional TCP/IP connection is required between IOAGATE and the client application, that is,

- Control-M/EM
- Control-D/Page On Demand
- Control-D Session Agent
- IOAGATE (for Control-O to Control-O connection)

Any network topology configuration that supports TCP/IP (hardware and software) can be used, as long as TCP/IP connections can be established between IOAGATE and the client application workstation. Connectivity should be verified before you start the client application, for example, by using the ping command, Telnet commands, or other TCP/IP applications to test.
Multiple connection channels using SNA session support

This section describes how to establish parallel sessions between the following specific client applications:

- Control-D/WebAccess Server and IOAGATE over Microsoft SNA Server
- Control-O to Control-O and IOAGATE using IBM Communication Server for z/OS

Note: SNA Server can also be configured to support single-session logical unit (LU) dependent connections to IOAGATE.

Enabling parallel sessions between the client applications and IOAGATE allows sessions to connect to their respective repositories through a single logical unit.

Note: The steps for mainframe-related configuration activities are provided in the following topic. For non-mainframe related steps, see the documentation of the relevant client application.

To support parallel sessions, the following components must be configured:

- Mainframe (in VTAM and IOAGATE)
- Microsoft SNA Server or Microsoft Host Integration Server 2000 or 2004

Note: References to Microsoft SNA Server in the following section include Microsoft Host Integration Server 2000 and 2004.

Changes must be made in VTAM and IOAGATE to support parallel sessions.

To enable parallel session support:

1. Verify independent logical unit support by verifying that the SNA connection supports XID format 3, and that the node VTAM PU definition includes the XID=YES configuration.

   Note: The SNA server physical unit (PU) connection must support PU 2.1.

   To verify the XID type used by the SNA connection:

   Open Microsoft SNA Server Manager.

   a. Double-click the Connections tree node.

   b. Right-click the connection used for the independent LU session and select Properties from the popup menu.

   Note: SWPU30 is used as an example connection name.

   The Connection Properties dialog box is displayed.

   **Figure 51  Connection properties - General tab**

   ![Connection properties - General tab](image_url)
c. Click the System Identification tab.

**Figure 52  Connection properties - System Identification tab**

![System Identification tab](image)

In the XID Type field, select Format 3 and click OK.

For more information on defining a PU that supports an independent logical unit, see the Microsoft SNA Server Administration Guide.

2. Add a new LU called LUPRL to the SNA server node VTAM member and set LOCADDR to 0 to configure the logical unit as independent.

Example

```
SWPU30   PU    ADDR=01,
CPNAME=CPSWPU30,
PUTYPE=2,
XID=YES,
...
LUPRL    LU    LOCADDR=0
```

3. Use INACT and ACT commands to initiate the new LU definition.

4. In SYS1.VTAMLST, create a new application Major Node for IOAGATE with parallel session support, or add the following definitions, which appear in the ECAMAPPL member in the SAMPLE library, to an existing member:

```
VBUILD TYPE=APPL
PODLUP APPL AUTH=(VPACE),
DSESLIM=256, /* Max concurrent logged on users */
OPERCNOS=ALLOW,
APPC=YES,
VPACING=7
```

Do not specify DLOGMODE or MODETAB.

The logical unit (LU) name PODLUP can be changed if you alter all references to it.

5. Activate the application major node. For an existing application major node, recycle the node using INACT and ACT commands.

When a new logical unit is defined, the DSESLIM takes effect immediately. When adding DSESLIM to an existing LU (and performing INACT and ACT), DSESLIM does not take effect immediately.

The following CNOS command can be used to set the parallel session limits to take effect immediately:

```
F VTAM, CNOS, ID=PODLUP, LUNAME=LUPRL, LOGMODE=#INTER, LIMITS=(256,0,256)
```

where PODLUP is the name of the remote LU and LUPRL is the name of the local LU.
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6. Specify the LU name to IOAGATE. Set the APPLID parameter to PODLUP in the ECAPARM member under the SNA multi-connection used for this connection.

Configuration of Microsoft SNA Server

Microsoft SNA Server can be configured to allow parallel sessions to connect to IOAGATE using SNA protocol. This is accomplished by defining a single logical unit that is shared by all users.

To configure Microsoft SNA, see the documentation of the relevant client application.

SNA parameters configuration table

The following table shows how each element is configured to establish parallel sessions between the various client applications and IOAGATE over Microsoft SNA Server.

Table 169 SNA Parameters

<table>
<thead>
<tr>
<th>Element</th>
<th>Sample</th>
<th>IOAGATE</th>
<th>VTAM</th>
<th>MS SNA Server</th>
<th>Client application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local LU Name</td>
<td>LUPRL</td>
<td>Independent LU name</td>
<td>Local APPC LU name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote LU name</td>
<td>PODLUP</td>
<td>Defined in ECAPARM member</td>
<td>Application name</td>
<td>Remote APPC LU name &amp; Partner LU name</td>
<td></td>
</tr>
<tr>
<td>CPI C Symbolic Name</td>
<td>MSSNAP</td>
<td>CPI C name</td>
<td>CPI C Symbolic Destination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session Limit</td>
<td>256</td>
<td>DSESLIM parameter &amp; CNOS command</td>
<td>Parallel session limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode name</td>
<td>#INTER</td>
<td>Defined in the IBM default Mode table</td>
<td>APPC mode</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IOAGATE recovery considerations

IOAGATE supports the following recovery features:
VIPA and DVIPA support

This subsection describes IOAGATE support for the VIPA (Virtual IP Address) and DVIPA (Dynamic Virtual IP Address) features of the IBM OS/390 or z/OS Communications Server.

Unlike a regular IP address, which is associated with a specific communication adapter, a Virtual IP Address is not associated with a specific adapter and may be transferred from one z/OS image to another.

VIPA and DVIPA have the following flavors:

- VIPA takeover
- Dynamic VIPA for a single application instance
- Dynamic VIPA for multiple application instances with a Sysplex Distributor

VIPA takeover

The VIPA takeover feature associates an individual VIPA with a TCP/IP stack, allowing the VIPA to be moved from a failing z/OS image to a backup image. This is functionally similar to replacing a computer but keeping the same IP address. Using this feature, all applications that are moved to the backup image can be reached by the same IP address that they were associated with on the failed image.

If this method is used for IOAGATE recovery, IOAGATE should be restarted on the backup image which has taken over the VIPA address.

IOAGATE transparently supports VIPA takeover, and therefore no special definitions are required in IOAGATE to implement it.

Pure Dynamic VIPA for a single application instance

The pure Dynamic VIPA (DVIPA) feature allows a VIPA to be associated with a particular application instance. Using this feature, when an application is moved to another z/OS host image in a Sysplex environment, the VIPA remains associated with that application.

If the application fails, the application can be restarted in another TCP/IP stack in the Sysplex environment. The VIPA associated with that application is automatically activated at the new stack when the application BINDs to it.

General Sysplex environment requirements

When using the pure DVIPA feature for IOAGATE recovery, you must configure your Sysplex environment as follows:

- RUN a routing server OMPROUTE on each image in the Sysplex.

The new location of the moved IP Address must be advertised to routers in the network, so that reconnection requests are routed to the backup z/OS image. This requires running a Dynamic Routing Server (OMPROUTE) on both the original z/OS image, and the backup image.
DEFINE DVIPA support in the TCP/IP profile

To enable DVIPA support for an application, use the VIPARANGE statement in the TCP/IP profile to define the VIPA for each TCP/IP stack where the application may run.

For OS/390 version 2.8, the following example illustrates the syntax for VIPARANGE:

VIPADYNAMIC
VIPARANGE DEFINE 255.255.255.0 172.16.240.193
ENDVIPADYNAMIC

For OS/390 version 2.10 and later, the following example illustrates the syntax for VIPARANGE:

VIPADYNAMIC
VIPARANGE DEFINE MOVEABLE NONDISRUPT 255.255.255.0 172.16.240.193
ENDVIPADYNAMIC

IOAGATE implementation

IOAGATE implements DVIPA support using the following channel parameter in the CHANNEL declaration in the ECAPARM member:

BIND={INADDR_ANY|IP_Address|Hostname}

where

- INADDR_ANY indicates that IOAGATE BINDS to any IP address, meaning that it listens to all adapters. Default.
- IP_Address or Hostname indicates that IOAGATE BINDs to either the given IP_address or the IP address after Hostname resolution, respectively.

If the IP address as set in the BIND parameter is defined in the TCP/IP profile as an application-associated DVIPA, the specified IP address is associated with IOAGATE and "follows" IOAGATE when it "fails" on one image and restarts on the other image.

You can use the BIND parameter of the TCP/IP Profile PORT statement to define IOAGATE support for this feature transparently, meaning, without setting the BIND parameter in IOAGATE.

Considerations for implementing DVIPA support for IOAGATE with the Control-M application server (CTMAS)

When a z/OS image fails, Control-M/Enterprise Manager running on either Unix or Windows NT detects the connection failure to IOAGATE through its keep-alive mechanism, and attempts to reconnect to IOAGATE. When IOAGATE and CTMAS are restarted on a backup image using the DVIPA associated with IOAGATE, Control-M/Enterprise Manager will successfully reconnect to IOAGATE on the new image.

IOAGATE running in conjunction with the CTMAS can be moved to any z/OS image in a Sysplex without being tied to the z/OS image in which the main Control-M Monitor is running. This is because CTMAS communicates with Control-M through files such as the Active Jobs file (AJF), IOA Conditions file, and Control-M Resources file, as well as through Shouts and GRS (the ENQ/DEQ mechanism).
Although multiple IOAGATE instances can be started in parallel anywhere in a Sysplex to support other applications, only one instance of IOAGATE used in conjunction with CTMAS can exist in the Sysplex, using the CTMPLEX facility. For more information on CTMPLEX, see the Control-M chapter in the INCONTROL for z/OS Administrator Guide.

Dynamic VIPA for multiple application instances with the Sysplex distributor

The IBM Communications Server enables you to run multiple instances of an application on multiple z/OS images, allowing the multiple application instances to share the same Dynamic Virtual IP Address. The Sysplex Distributor distributes connection requests from clients between the application instances based on predefined policies.

Sysplex environment requirements

Implement the Sysplex Distributor according to the appropriate IBM documentation.

The following example illustrates how to define the DVIPA address 172.16.240.193 as a distributed DVIPA under the control of the Sysplex Distributor.

This example does not constitute a complete example for implementing the Sysplex Distributor.

```
VIPADYNAMIC
VIPARANGE DEFINE MOVEABLE NONDISRUPT 255.255.255.0 172.16.240.193
VIPADISTRIBUTE DEFINE 172.16.240.193 PORT 4000 DESTIP ALL
ENDVIPADYNAMIC
```

Considerations when using Control-D/Page On Demand for Control-D/WebAccess support

The Sysplex Distributor is useful when using IOAGATE in conjunction with Control-D/Page On Demand for support of Control-D/WebAccess. Control-D/WebAccess can potentially have thousands of users in one Sysplex. The Sysplex Distributor enables you to distribute the load between multiple z/OS images, providing scalability, load balancing, and availability.

When you use the Sysplex Distributor with Control-D/WebAccess, define the following channel parameter in the CHANNEL declaration in the ECAPARM member:

```
BIND=DVIPA_address
```

Using the example as described in Sysplex environment requirements (on page 475), the corresponding definitions for that example would be:

```
PORT=4000,
BIND=172.16.240.193
```

You can use the BIND parameter of the TCP/IP Profile PORT statement to define IOAGATE support for this feature transparently, meaning, without setting the BIND parameter in IOAGATE.
Automatic restart management support

Automatic restart management can reduce the impact of an unexpected error to a system program by restarting it automatically, without operator intervention. In a Sysplex environment, a system program can enhance its own recovery potential by registering as an element of the automatic restart management function of the cross system coupling facility (XCF).

To provide program recovery through automatic restart management, your installation must activate a policy through the SETXCF START command. This can be an installation-written policy or part of the IBM-supplied policy defaults. Because an installation-written policy may affect your program, you must understand how your installation uses automatic restart management for recovery in a Sysplex. Details of the automatic restart management function are described in the section of IBM publication OS/390 MVS Sysplex Services Guide that discusses using the automatic restart management function of XCF.

In general, the operating system restarts an element under the following conditions:

- when the element itself fails—in this case, the operating system restarts the element on the same system
- when the system on which the element was running unexpectedly fails or leaves the Sysplex—in this case, the operating system restarts the element on another system in the Sysplex. This is called a cross-system restart.

The operating system will not attempt to restart an element if

- the element has not yet registered as an element of automatic restart management
- the element is cancelled through a CANCEL, STOP, or FORCE command (without the ARMRESTART parameter specified)
- JES is down or has indicated that the element should not be restarted
- the element has reached the restart attempts threshold specified in the policy
- the policy indicates that this element should not to be restarted
- access to the ARM couple data set was lost

Installing and implementing automatic restart management for IOAGATE

1. Follow the instructions to set up an automatic restart management policy as specified in the section of IBM publication z/OS V1Rx MVS Setting Up a Sysplex that discusses automatic restart management parameters for administrative data utility. Some of the restart parameters are discussed in Restart parameters (on page 477).

   Your system does not need to specify an automatic restart management policy if the default values are acceptable. The default values, if any, are described under each parameter in IBM publication z/OS V1Rx MVS Setting Up a Sysplex, in the section discussing automatic restart management parameters for administrative data utility.

2. Specify the IOAGATE ARMELEM parameter in the ECAPARM member as described in Step 20 – Install IOAGATE (optional) (on page 105).

3. Stop and then restart the IOAGATE monitor. At restart, IOAGATE checks the ARMELEM parameter in ECAPARM and, if specified, registers as an element of automatic restart management. The IOAGATE monitor then issues the following message:

   ECAG0HI ENABLED FOR THE AUTOMATIC RESTART MANAGEMENT FUNCTION
If \texttt{IOAGATE} fails to activate ARM when starting up, it issues the following message:

\texttt{ECAG0JW AUTOMATIC RESTART MANAGEMENT REQUEST FAILED R15=XX REASON=XXXX}

**Automatic restart management and \texttt{IOAGATE} failure**

If ARM support is enabled and \texttt{IOAGATE} fails unexpectedly, the following message is issued when the operating system automatically restarts \texttt{IOAGATE}:

\texttt{ECAG0II AUTOMATIC RESTART IN PROGRESS AFTER UNEXPECTED FAILURE}

**Restart parameters**

There are several ARM policy parameters you can choose to determine where, under what circumstances, and how many times, \texttt{IOAGATE} is to be restarted. Some of these restart parameters are described in the following table.

**Table 170 Restart parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TARGET_SYSTEM</td>
<td>Systems on which \texttt{IOAGATE} can be restarted in a cross-system restart.</td>
</tr>
<tr>
<td>ELEMENT</td>
<td>Element name that represents \texttt{IOAGATE}. This must exactly match the ARMELEM ECAPARM parameter.</td>
</tr>
<tr>
<td>RESTART_ATTEMPTS</td>
<td>Maximum number of times that the operating system should attempt to restart \texttt{IOAGATE}. This limit prevents the operating system from continually restarting an element that is recursively terminating.</td>
</tr>
<tr>
<td>TERMTYPE</td>
<td>Specifies under which condition the operating system should restart \texttt{IOAGATE}. Valid values are:</td>
</tr>
<tr>
<td></td>
<td>- \texttt{ALLTERM}—Indicates that \texttt{IOAGATE} should be restarted if the address space terminates, or if the system terminates.</td>
</tr>
<tr>
<td></td>
<td>- \texttt{ELEMTERM}—Indicates that \texttt{IOAGATE} should be restarted only if the address space terminates.</td>
</tr>
<tr>
<td>RESTART_METHOD</td>
<td>Specifies the command text that the operating system is to use to restart the element. \texttt{RESTART_METHOD}. (\texttt{BOTH,PERSIST}) indicates that the operating system is to use the command text that previously started \texttt{IOAGATE}.</td>
</tr>
</tbody>
</table>

To obtain information about elements of the automatic restart manager while the system is active, you can issue the \texttt{D XCF,ARMSTATUS,DETAIL} MVS operator command. For more information about this command, see the discussion about displaying cross system coupling facility (XCF) information, in the IBM publication MVS System Commands.
Example

The following is an example of an addition to the existing automatic restart management policy of an installation. The example specifies a target system and directs that IOAGATE should be restarted only if the system program terminates, but not when the system terminates.

```
RESTART_GROUP(IOAGATE)
TARGET_SYSTEM(OS35)
ELEMENT(IOAGATE)
TERMTYPE(ELEMTERM)
```

SSL support

SSL is available for providing secure communication for IOAGATE. Procedures for implementing SSL are described in this section (refer to the following table). The steps required for implementing SSL can be performed on the mainframe, externally, or partially on the mainframe and partially externally. You can use Control-M Configuration Manager for implementing SSL, as described in detailed in the Control-M SSL Guide.

**Table 171 Various SSL operations for INCONTROL components**

<table>
<thead>
<tr>
<th>Operation</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Creating keys and certificates for IOAGATE</td>
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</tr>
<tr>
<td>Using demo certificates for IOAGATE with Control-M</td>
<td>484</td>
</tr>
<tr>
<td>Using non-demo certificates for IOAGATE with the Control-D/File Transfer Option</td>
<td>485</td>
</tr>
<tr>
<td>Using demo certificates for IOAGATE with Control-D/File Transfer Option</td>
<td>490</td>
</tr>
</tbody>
</table>

IOAGATE supports Security Access Facility (SAF) (for example, RACF) as the key database. Various settings for IOAGATE and the corresponding SSL security levels are indicated in the following table.
Table 172  SSL security levels supported by IOAGATE

<table>
<thead>
<tr>
<th>SSL support level</th>
<th>Setting in the ECAPARM</th>
<th>Keys</th>
<th>CA Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>SSL=No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Server (IOAGATE)</td>
<td>SSL=Yes CLIAUTH=No</td>
<td>IOAGATE requires a private/public key pair and a certificate signed by a CA. This certificate must be defined in SAF and added to the keyring defined for IOAGATE by the KEYRING parameter in the ECAPARM member.</td>
<td>The certificate of the CA that has signed IOAGATE's certificate must be added to the key database on the peer side using sslcmd or the Java keytool utility.</td>
</tr>
<tr>
<td></td>
<td>(Default when SSL=Yes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both Server (IOAGATE) and Client authentication</td>
<td>SSL=Yes CLIAUTH=Yes</td>
<td>In addition to the IOAGATE's keys, the client must have a private/public key pair and a certificate signed by a CA. These items must be added to the client's local key database.</td>
<td>In addition to the signed IOAGATE certificate, the certificate of the CA, which signed the client's certificate, must be added to the keyring defined for IOAGATE by the KEYRING parameter in the ECAPARM member.</td>
</tr>
</tbody>
</table>

The following commands allow access to the RACF RACDCERT command by user ID admin:

```
RDEFINE FACILITY IRR.DIGTCERT.* UACC(NONE)
PERMIT IRR.DIGTCERT.* CLASS(FACILITY) ID(admin) ACCESS(Control)
SETROPTS RACLIST(FACILITY) REFRESH
```

Control-D/Agent client 3.7.00 (or later) can transfer files to Control-D on an MVS using IOAGATE and the Control-D/File Transfer Option application server.

For a background on SSL refer to the internet. For documentation of SSL support by Control-M/EM and Control-M Configuration Manager, refer to the Control-M SSL Guide. For documentation of SSL support by Control-D/Agent client refer to Control-D/Agent User Guide version 3.7.00 (or later).

Creating keys and certificates for IOAGATE

Key pairs and certificates can be created for IOAGATE by using a SAF on the mainframe or an external CA, or with a combination of these two approaches. See the following table for the method appropriate to your site.
Table 173  Alternate methods of generating and signing IOAGATE keys and certificates

<table>
<thead>
<tr>
<th>Keys generated by:</th>
<th>CA</th>
<th>See page</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF</td>
<td>RACF</td>
<td>Using the basic methods - RACF or Control-M Configuration Manager (on page 480)</td>
</tr>
<tr>
<td>Control-M</td>
<td>Control-M Configuration Manager</td>
<td>Using the basic methods - RACF or Control-M Configuration Manager (on page 480)</td>
</tr>
<tr>
<td>RACF</td>
<td>external CA</td>
<td>Using variations of the basic methods (on page 482)</td>
</tr>
<tr>
<td>outside mainframe</td>
<td>outside mainframe</td>
<td>Using variations of the basic methods (on page 482)</td>
</tr>
</tbody>
</table>

Table 174  Additional operations

<table>
<thead>
<tr>
<th>To:</th>
<th>See page</th>
</tr>
</thead>
<tbody>
<tr>
<td>add keyring</td>
<td>Using variations of the basic methods (on page 482)</td>
</tr>
<tr>
<td>add client authentication</td>
<td>Using variations of the basic methods (on page 482)</td>
</tr>
</tbody>
</table>

Using the basic methods - RACF or Control-M Configuration Manager

In this section, the procedures using RACF (an example of SAF) and Control-M Configuration Manager are described.

To create keys and certificates using RACF:

1. Create a local CA certificate called MYCA using the following command. Modify the command parameters to reflect the naming conventions used at the installation:

   ```
   RACDCERT CERTAUTH GENCERT SUBJECTSDN(CN('MYCA') O('BMC') C('US'))
   KEYUSAGE(CERTSIGN) WITHLABEL('MYCA')
   ```

2. Create a private/public key pair and a digital certificate using the following command. The local CA certificate, MYCA, is used for the digital certificate. Replace GATEUSER with the IOAGATE RACF user ID.

   ```
   RACDCERT ID(GATEUSER) GENCERT SUBJECTSDN(CN('IOAGATE') O('BMC') C('US'))
   WITHLABEL('IOAGATE') SIGNWITH(CERTAUTH LABEL('MYCA'))
   KEYUSAGE(HANDSHAKE)
   ```

3. Assign the digital certificate a trusted status using the following command:

   ```
   RACDCERT ID(GATEUSER) ALTER (LABEL('IOAGATE')) TRUST
   ```
4. Export the digital certificate using the following command:
   
   ```bash
   RACDCERT CERTAUTH EXPORT(LABEL('MYCA')) DSN('hlq.EXPORT.P12')
   ```

5. Add the digital certificate to the client’s key database using sslcmd or the Java keytool utility.

   To generate certificates with Control-M/EM:

1. In the Control-M Configuration Manager, choose Tools => System Configuration=> Control-M/EM
   System Parameters=> Advanced=> CmsCommMode

2. Set the CmsCommMode parameter to auto.

3. In the Control-M Configuration Manager, choose Tools => Security=> Manage SSL=> Generate
   Component Certificates...

   There are two generated certificates (files) in the Certificate_for Control-M_for_zOS folder:
   - **IOAGATE.PCK12**
     This is the certificate which includes the private/public key pair of IOAGATE. This file is encrypted
     with a password that can be found in the README file created by Control-M/EM.
   - **CACERT.PEM**
     This is the certificate of the CA (Control-M/EM) itself that is needed for decrypting
     IOAGATE.PCK12. If client authentication is required, this certificate is also the certificate of the CA
     that signed the certificate of the client.

4. FTP IOAGATE.PCK12 to z/OS in binary mode. Assume that the file name on z/OS is IOAGATE.PCK12.

   By default, FTP allocates the new file with the following attributes:
   - Organization: PS
   - Record format: VB
   - Record length: 256
   - Block size: 6233

5. FTP CACERT.PEM to z/OS in ASCII (text) mode. Assume that the file name on z/OS is CACERT.PEM.

   By default, FTP allocates the new file with the following attributes:
   - Organization: PS
   - Record format: VB
   - Record length: 256
   - Block size: 6233

6. Import CACERT.PEM to RACF using the following command:

   ```bash
   RACDCERT CERTAUTH ADD ('CACERT.PEM') WITHLABEL('CACERTXX')
   ```

   Choose XX so that the name is unique and does not conflict with an existing name.

7. Create IOAGATERING (if it does not already exist) with the following command:

   ```bash
   RACDCERT ID(GATEUSER) ADDRING(IOAGATERING)
   ```

8. Connect CACERTXX to IOAGATERING with the command:
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```
RACDCERT ID(GATEUSER) CONNECT(CERTAUTH LABEL('CACERTXX')
RING(IOAGATERING))
```

9. Import IOAGATE's certificate with the command:

```
RACDCERT ID(GATEUSER) ADD('IOAGATE.PCK12') TRUST WITHLABEL('IOAGATEXX')
PASSWORD('ctm_zos_hhmm')
```

The hhmm part of the password can be found in the README file generated by Control-M/EM.

10. Connect IOAGATEXX to IOAGATERING with the command

```
RACDCERT ID(GATEUSER) CONNECT(ID(GATEUSER) LABEL('IOAGATEXX')
RING(IOAGATERING) DEFAULT USAGE(PERSONAL))
```

11. For connecting to Control-M Configuration Manager and to Control-M/EM, define the following in ECAPARMG and in ECAPARMMM CHANNELs:

   • SSL=YES
   • KEYRING=IOAGATERING
   • KEYRLAB=IOAGATEXX

   If client authentication is needed, also specify:

   • CLIAUTH=YES

   Both IOAGATEC and IOAGATEM must have the same SSL definitions.

12. Stop and restart IOAGATEM and IOAGATEC.

For more information about the CmsCommMode parameter, see the "Control-M/EM" sub-section in the "SSL communication parameters" section in the "Preparing to use SSL" chapter in the Control-M SSL Guide.

For more information about generating the certificates in Control-M/EM, see the "Generating component certificates using the wizard" section in the "Managing certificates" chapter in the Control-M SSL Guide.

Using variations of the basic methods

Key pairs and certificates can either be created for IOAGATE by using RACF on the mainframe and then certified with an external CA or they can be generated outside the mainframe and then imported to the mainframe. These procedures are described in this section.

➢ To certify keys created with RACF using an external CA:

1. Define a local CA certificate and a digital certificate for IOAGATE as described in the first steps of the following procedure: "To create keys and certificates using RACF" in Using the basic methods - RACF or Control-M Configuration Manager (on page 480).

2. Generate a certificate request for IOAGATE, using following command:

```
RACDCERT ID(GATEUSER) GENREQ (LABEL('IOAGATE')) DSN('hlq.GENREQ')
```

The GENREQ command generates a certificate request in PKCS#10 format, based on an existing certificate with a private key and writes it to hlq.GENREQ.

3. Send the resulting file to a CA for signing. The reply from the CA contains the signed certificate.

4. FTP (in ASCII mode) the reply from the CA to the mainframe, replacing the IOAGATE certificate.
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The following command assumes that the certificate has been uploaded into the hlq.NEWCERT.PEM data set:

```
RACDCERT ID(GATEUSER) ADD('hlq.NEWCERT.PEM') TRUST WITHLABEL('IOAGATE')
```

To create keys and certificates externally and afterwards importing them to the mainframe:

1. Generate and export the certificate to be used by IOAGATE including the private key in PKCS#12 format.

   The exact generation and export process depends on the platform and tool being used, and is not described here. The export process will request a password for encrypting the generated file. This password is needed in the next step.

2. FTP (in ASCII mode) the certificate of the CA, which signed the IOAGATE's keys and certificates, to the mainframe and import it:

```
RACDCERT CERTAUTH ADD('hlq.CACERT1.PEM') WITHLABEL('CACERT1')
```

3. FTP the PKCS#12 file to the mainframe to a sequential file and import it:

   The PKCS#12 file must be transferred either in binary or in ASCII format, depending on the exact encoding of the PKCS#12 file. If the file is encoded using Base64 then it must be transferred in ASCII mode. Determine the required transfer mode by examining the first line. If the first line is "-----BEGIN CERTIFICATE-----", use ASCII format. Otherwise use binary format.

   The following assumes that the file has been uploaded to the 'hlq.GATECERT.P12' data set and that it has been encrypted with the password abcd1234:

```
RACDCERT ID(GATEUSER) ADD('hlq.GATECERT.P12') TRUST WITHLABEL('IOAGATE') PASSWORD('abcd1234')
```

Regardless of which of the above methods is used, the following steps are required:

To create a keyring:

1. Create the RACF keyring for IOAGATE.

   The following command creates a keyring named IOAGATERING for user ID GATEUSER:

   ```
   RACDCERT ID(GATEUSER) ADDRING(IOAGATERING)
   ```

2. Connect IOAGATE's certificate to the keyring.

   The certificate containing the private key used for decryption must be connected to the user's keyring as the default certificate:

   ```
   RACDCERT ID(GATEUSER) CONNECT(ID(GATEUSER) LABEL('IOAGATE') RING(IOAGATERING) DEFAULT USAGE(PERSONAL))
   ```

3. Connect CA's certificate to the keyring.

   ```
   RACDCERT ID(GATEUSER) CONNECT(CERTAUTH LABEL('CACERT1') RING(IOAGATERING))
   ```

To add client authentication:

1. FTP (in ASCII mode) the CA's certificate to the mainframe and import it:

   ```
   RACDCERT CERTAUTH ADD('hlq.CACERT.PEM') WITHLABEL('CACERT')
   ```
2. Connect the CA's certificate to IOAGATE's keyring:

```
RACDCERT ID(GATEUSER) CONNECT(CERTAUTH LABEL('CACERT') RING(IOAGATERING))
```

Using demo certificates for IOAGATE with Control-M

For testing SSL functionality between IOAGATE and Control-M/EM and Control-M Configuration Manager, install the demo certificates provided by Control-M/EM and by IOA.

The sample certificates are for demonstration purposes only and must not be used in a production environment.

The following sample members are provided with the IOA installation in the SAMPLE library:

- **CERTGATE** - Demo certificate for IOAGATE, including a private/public key pair signed by the demo certificate authority that is included in the demo key database of Control-M/EM and Control-M Configuration Manager.
- **CERTCA** - Demo certificate of the above demo certificate authority.
- **CERTCOPY** - Sample job for copying the demo certificates to a sequential variable blocked (VB) file.

➢ To enable SSL on the Control-M/EM side:

1. In the Control-M Configuration Manager, choose Tools => System Configuration=> Control-M/EM System Parameters=> Advanced=> CmsCommMode
2. Set the CmsCommMode parameter to auto.

For more information about the CmsCommMode parameter, see the "Control-M/EM" sub-section in the "SSL communication parameters" section in the "Preparing to use SSL" chapter in the Control-M SSL Guide.

➢ To enable SSL on the INCONTROL side:

1. Copy the CERTCA and CERTGATE sample members to sequential files using the CERTCOPY sample job.
   
   This step is needed because RACDCERT must be provided with the demo certificates in a sequential VB file.

   The SAMPLE job CERTCOPY is listed below:
   ```
   //COPYCERT JOB (ACCOUNT), 'PGMR', NOTIFY=&SYSUID
   //IEBGENER EXEC PGM=IEBGENER
   //SYSPRINT DD SYSOUT=* 
   //SYSUT1 DD DISP=SHR,DSN=IOAP.V900.SAMPLE(CERTCA)
   //SYSUT2 DD DISP=(,CATLG),DSN=IOA.CERTCA.DEMO
   //       RECFM=VB,LRECL=84,BLKSIZE=27998,
   //       UNIT=3390,SPACE=(TRK,(1,1))
   //SYSIN DD DUMMY
   //*
   //IEBGENER EXEC PGM=EBGENER
   //SYSPRI NT DD SYSOUT=*  
   ```
// SYSUT1 DD DSN=IOAP.V900.SAMPLE(CERTGATE)
// SYSUT2 DD DSN=IOA.CERTGATE.DEMO
// RECFM=VB, LRECL=84, BLKSIZE=27998,
// UNI T=3390, SPACE=( TRK, (1,1))
// SYSIN DD DUMMY

2. Import the CA certificate:
   RACDCERT CERTAUTH ADD('IOA.CERTCA.DEMO') TRUST WITHLABEL('CACERT')

3. Import IOAGATE's certificate:
   GATEUSER is assumed to be the RACF USERID of IOAGATE. Replace all occurrences of GATEUSER in the sample commands below with the actual IOAGATE user ID.
   RACDCERT ID(GATEUSER) ADD('IOA.CERTGATE.DEMO') TRUST WITHLABEL('IOAGATE')
   PASSWORD('abcd1234')

4. Define a key ring for IOAGATE:
   RACDCERT ID(GATEUSER) ADDRING(IOAGATERING)

5. Connect the certificates to IOAGATE's keyring:
   RACDCERT ID(GATEUSER) CONNECT(CERTAUTH LABEL('CACERT')
   RING(IOAGATERING)USAGE(CERTAUTH))
   RACDCERT ID(GATEUSER) CONNECT(ID(GATEUSER) LABEL('IOAGATE')
   RING(IOAGATERING))

Using non-demo certificates for IOAGATE with the Control-D/File Transfer Option

The following steps are for illustrations purposes. To use non-demo certificates for Control-D/File Transfer Option (FTO), do the following in the distributed systems side:

1. Create a key pair for your server and a digital certificate contained in the ctdagent.keystore file.
   keytool -genkey -alias ctdagent -keyalg RSA -keystore keystore_file_path -storepass
   keystore_password -keypass keystore_password -dname distinguished_name

   The password for storepass and keypass must be identical.

   Where distinguished_name (X.509 attributes of the certificate) are:
   • Common name (CN): Control-D.Agent
   • Country name (C): IL
   • State (ST): NotApplicable
   • Locality (L): NotApplicable
   • Organization (O): bmc
   • Organization Unit (OU): BSM

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keytool -genkey -alias ctdagent -keyalg RSA -keystore ctdagent.keystore1 -storepass sarina -keypass sarina -dname "C=IL, CN=Control-D_Agent, ST=NotApplicable, L=NotApplicable, O=BMC, OU=BSM"

2. Generate a certificate signing request (CSR).
   a. Run the following keytool utility to export a CSR from the keystore in order to sign it:
      keytool -certreq -alias ctdagent -keystore keystore_file_path -storepass keystore_password
      file certilename.crs
      keytool -certreq -alias ctdagent -keyalg RSA -keystore ctdagent.keystore1 -storepass sarina -file
      ctdagentCerttest.crs

      Use a private or commercial trusted CA to sign the certificate. In the following sample we will
      connect to VeriSign http://www.verisign.com/ to get a trial certificate.

      The CSR you have previously generated is a string of text generated by your server. Provide this
      string to VeriSign during the enrollment process.

      When enrolling for your certificate, you will be prompted to select a server platform. In our case
      select: Server not listed and type Java keystore.
b. You will receive the trial SSL certificate by mail. Perform the instructions described in the mail that you receive.

3. Install the CA certificates:

   Install the Trail Root CA and the Trail Intermediate CA certificate on the server’s keystore.

   Download the root CA certificate from the link that you receive by mail and save it with the following name: rootCA.cer

   Download the intermediate CA certificate from the link and save it with the following name: intermediateCA.cer

4. Import the root CA certificate and the intermediate CA certificate:

   a. Import the root CA to your keystore file with the following command:

      \[ \text{keytool -import -alias RootCA -keystore <your_keystore_filename> -trustcacerts -file rootCA.cer} \]

      Example:
INSTALLING

5. Install the trail SSL certificate:

   Copy the certificate from your mail and paste it into a text file using notepad or vi.

   Enter the following command to import your trail SSL certificate:

   `keytool -import -alias <your_aliasname> -keystore <your_keystore_filename> -trustcacerts -file <your_certificate_filename.DER>`

   The alias name in this command must be the same as the alias name used during the generation of the private key and CSR. The signed certificate must be in X.509 DER (Definite Encoding Rule) format.

   `keytool -import -alias ctdagent -keystore ctdagent.keystore1 -file signedcert.der -trustcacerts`

6. Configure the ctdagent.ssl.properties file and change your keystore password

   a. Update parameter: `KeystoreFile=ctdagent.keystore1`

   b. Change the encrypted `KeystorePassword`:

      o Run `bmc-ctd-ssl-changepass (UNIX)` or `ctd-ssl-changepass.bat (Windows)` from the `<INSTALLATION PATH>/bin` directory.

      o Enter a new password at the prompt to update the ctdagent.ssl.properties configuration file.

7. Recycle the Control-D/Agent file transfer server service.

   ➢ To use non-demo certificates for Control-D, perform the following on the mainframe systems side:

   The following sample illustrates server (IOAGATE) authentication only.

   This level is specified by setting `SSL=Yes` and `CLIAUTH=No` (the default when `SSL=Yes`) in the ECAPARM member.

   The following certificates must be in place for this support:
IOAGATE must have a certificate representing a private/public key and signed by a CA. This certificate must be defined in SAF (for example, RACF) and added to the keyring defined for IOAGATE by the KEYRING parameter in the ECAPARM member.

The certificate of the CA that has signed IOAGATE's certificate must be added to the key database on the peer side.

The following sample flow illustrates IOAGATE's keys generated by RACF and signed by certificate authority outside the mainframe. In our example, we use the VeriSign site:

1. Define a local certificate authority and a digital certificate for IOAGATE
   a. Generate a local Certificate Authority
      
      RACDCERT CERTAUTH GENCERT SUBJECTSDN(CN('Control-D_Agent') O('BMC') C('IL') L('NotApplicable') SP('NotApplicable')) KEYUSAGE(CERTSIGN) WITHLABEL('GATECA')
   
   b. Generate a Digital Certificate with a Private Key for IOAGATE
      
      A digital certificate with a private key must be generated for the IOAGATE user.
      
      RACDCERT ID(STCUSER) GENCERT SUBJECTSDN(CN(' Control-D_Agent') O('BMC') C('IL') L('NotApplicable') SP('NotApplicable')) WITHLABEL('IOAGATE') SIGNWITH(CERTAUTH LABEL('GATECA')) KEYUSAGE(HANDSHAKE)
   
   c. The RACDCERT ALTER command is required to add the TRUST attribute to the certificate:
      
      RACDCERT ID(STCUSER) ALTER (LABEL('IOAGATE')) TRUST

2. Generate a certificate request (CSR) for IOAGATE
   
   The following command will generate a certificate request and write it to hlq.GENREQ:
   
   RACDCERT ID(STCUSER) GENREQ (LABEL('IOAGATES')) DSN('ilprefa.GENREQ')

3. Send the CSR file to a certificate authority for signing.

4. FTP (in ASCII mode) the reply containing the signed certificate to the mainframe, and import it as IOAGATE's certificate.
   
   The following command assumes that the certificate has been uploaded into data set hlq.NEWCERT.PEM:
   
   RACDCERT ID(STCUSER) ADD('IOAQ.Q71MN.NEWCERT.PEM') TRUST WITHLABEL('IOAGATES')

5. FTP (in ASCII mode) the certificate authority's certificate to the mainframe and import it:
   
   You will receive a mail from Verisign. Install the intermediate certificate according to the mail. The following commands import the intermediate certificate:
   
   RACDCERT CERTAUTH ADD('ilprefa.CACERT.PEM') WITHLABEL('CACERTV')

6. Connect the certificates to IOAGATE's keyring
Using demo certificates for IOAGATE with Control-D/File Transfer Option

Control-D/Agent provides a DEMO certificate signed by the DEMO CA of Control-D. The Control-D for z/OS is also signed by the same DEMO CA.

The sample certificates are for demonstration purposes only and must not be used in a production environment.

➢ To enable SSL on Control-D/Agent file transfer server:

1. In the configuration file, sesmgr.config, <INSTALLATION PATH>/config, set Ssl true to enable the server to listen in SSL mode on the port.

2. Restart Control-D/Agent file transfer server.

➢ To enable SSL on Control-D/Agent file transfer client:

The -ssl command line parameter should be added to the command line to communicate with the host using SSL.

bmc-ctd-sftclient  - h=host -p=port -u -f=input_file -d=output  - ssl

The Control-D file transfer client can send files to Control-D on z/OS via IOAGATE when IOAGATE is configured for Control-D/File Transfer Option support.

➢ To set up Control-D/File Transfer Option in IOAGATE for SSL:

1. Specify the following parameters in ECAPARM:

    SSL=YES,
    KEYRING=<IOAGATE's keyring>,
    KEYRLAB=<IOAGATE's certificate label>,
    CLIAUTH=NO | YES,

    SSL=YES,
    KEYRING=IOAGATERING,
    KEYRLAB=IOAGATEF,
    CLIAUTH=NO,

2. Use the following members in the SAMPLE library:

   ▪ CERTGATF - DEMO Certificate for IOAGATE with private-public key pair signed by the DEMO certificate authority
   ▪ CERTCAF - DEMO Certificate of the CA with its public key
   ▪ CERTFTOF - Sample job to convert certificates to files that can be used as input to RACDCERT

3. Copy SAMPLE members CERTCAF and CERTGATF to sequential files using sample job CERTFTOF.
This step is needed because RACSCERT must be provided with the demo certificates in a sequential VB file, with trailing blanks removed.

Assume that these files will be called IOAQ.Q71MN.CERTCAF.DEMO and IOAQ.Q71MN.CERTGATF.DEMO.

```
//Q53CER JOB OR, CLASS=A, MSGCLASS=X, REGION=0M, NOTIFY=SYSUID

COPY1 EXEC PGM=SORT
   SYSPUT DD SYSOUT=* 
   SORTIN DD DSN=IOAQ.Q71MN.SAMPLE(CERTCAF), DISP=SHR 
   VBOUT DD DSN=IOAQ.Q71MN.CERTCAF.DEMO, 
      DI SP=(NEW CATLG, DELETE), 
      SPACE=(TRK,(1,1), RLSE), 
      VOL=SER=IOAQ31, UNIT=3390, 
      DCB=(RECFM=VB, LRECL=68, BLKSIZE=6800)

COPY2 EXEC PGM=SORT
   SYSPUT DD SYSOUT=* 
   SORTIN DD DSN=IOAQ.Q71MN.SAMPLE(CERTGATF), DISP=SHR 
   VBOUT DD DSN=IOAQ.Q71MN.CERTGATF.DEMO, 
      DI SP=(NEW CATLG, DELETE), 
      SPACE=(TRK,(1,1), RLSE), 
      VOL=SER=IOAQ31, UNIT=3390, 
      DCB=(RECFM=VB, LRECL=68, BLKSIZE=6800)
```

4. Go to RACF and issue the following RACF commands:

   a. Import the CA certificate:

      ```bash
      RACDCERT CERTAUTH ADD('IOAQ.Q71MN.CERTCAF.DEMO') TRUST WITHLABEL('CACERTF')
      ```

   b. Import IOAGATE's certificate:

      ```bash
      RACDCERT ID(STCUSER) ADD('IOAQ.Q71MN.CERTGATF.DEMO') TRUST WITHLABEL('IOAGATEF') PASSWORD('abcd1234')
      ```
c. Define a key ring for IOAGATE:
   RACDCERT ID(STCUSER) ADDRING(IOAGATERING)

d. Connect the certificates to IOAGE's keyring:
   RACDCERT ID(STCUSER) CONNECT(CERTAUTH LABEL('CACERTF') RING(IOAGATERING) USAGE(CERTAUTH))
   RACDCERT ID(STCUSER) CONNECT(ID(STCUSER) LABEL('IOAGATEF') RING(IOAGATERING))
   ○ RING according to KEYRING defined in ECAPARM.

e. Recycle IOAGATE and the application server of Control-D/File Transfer Option.

Useful RACF commands

The command:
   RACDCERT ID(STCUSER) LISTRING(IOAGATERING)
shows the following (sample):

Digital ring information for user STCUSER:

Ring:
   >IOAGATERING<
Certificate             Cert Owner     USAGE      DEFAULT
Label Name  Name        ------------   --------   -------
CACERT15    CERTAUTH     CERTAUTH     NO
IOAGATED0112 ID(STCUSER) PERSONAL     YES

The command:
   RACDCERT ID(STCUSER) LIST
shows the following (sample):

Label: IOAGATED0112
Certificate ID: 2Qfi48Pk4sXZydBx8Hj xcTw8fHy
Status: TRUST
Start Date: 2009/12/01 15:12:26
End Date: 2029/11/26 15:12:26
Serial Number:
   >00F844CE5CB9ADB20<
Issuer's Name:
   >A@B.CN=A. OU=Tzahi. O=Efrat. L=Nir. SP=kuku. C=IL<
Subject's Name:
   >controlm_security@bmc.com.CN=CONTROL-M for z/OS. OU=CONTROL-M Ltd. O=BMC <
   >Software Ltd. L=Tel-Aviv. SP=NA. C=IL<
Private Key Type: Non-ICSF
Private Key Size: 1024
Ring Associations:
   Ring Owner: STCUSER
Validation of an incoming IP address

This feature enables you to validate incoming IP addresses against a table in the ECAIPLSx member in IOA.PARM library. This list of IP addresses is a source table that contains IP addresses that are allowed or forbidden to communicate with IOAGATE. All incoming addresses are checked against the table.

Define these IP addresses using one of the following methods:

When IPv6 is enabled on the z/OS system, IOAGATE messages display incoming IPv4 connections in the form of IPv4-mapped IPv6 addresses. However, do not use IPv4-mapped IPv6 addresses in the ECAIPLSx member. Use the IPv4 addresses instead. IPv6 addresses can be specified in full (39 characters) or abbreviated format (for example, ‘fd66:bc12:ac12:101::3’).

- Defining specific IP addresses. For IPv4 addresses, these entries define the implicit subnet mask, 255.255.255.255
- For IPv4 addresses, defining the full range of IP addresses for a given IP segment, by placing asterisks in that segment and in all subordinate segments. With this notation, the IP address range a.b.*.* means that the last two segments of the incoming IP address can be anything and you only want to check the first two segments. Such entries define an implicit subnet mask with zeros in the segments where the asterisks appear and 255 in the other segments. For example, the range 165.4.*.* defines the subnet mask 255.255.0.0. This subnet means that only the first two segments are checked.
- For IPv4 addresses, defining a range using a standard subnet mask. You should use this method when you want to define a range of IP address which does not fall in exact segment boundary. For example, 165.4.240.0,MASK=255.255.240.0 means that you want to check the first two segments and also the four leftmost bits of the third segment (240=\x'F0\').
- For IPv6 addresses, defining a range of addresses by specifying the lowest and highest addresses in the range. For example:
  The low and high addresses must be separated by one hyphen, no spaces.

ALLOW * and FORBID * apply also to IPv6 addresses.

If the text extends beyond column 70 (for example, if the 2 IP addresses are 39 character long each), use the following 2-line format:

- Line 1: ALLOWFR or FORBIDFR in column 1, followed by a space and the low IP address.
- Line 2: ALLOWTO or FORBIDTO in column 1, followed by a space and the high IP address.

Example:

ALLOW *
The subnet mask applies both to the incoming address and the specified address in the entry. The mask selects the exact bits in both addresses that are matched. The rest of the bits are ignored.

For details on how to define IP addresses, see Guidelines for defining IP addresses (on page 494).

For examples on how to code IP addresses, see Examples (on page 494).

Guidelines for defining IP addresses

Up to 999 records can be specified in a list of IP addresses. The order of ALLOW and FORBID statements is not important.

Define IP addresses using the following guidelines:

- Any IP address or range of addresses that you want to permit, must begin with ALLOW. Any IP address or range of addresses that you want to restrict must begin with FORBID. ALLOW * and FORBID * are the only valid shorthand entries. All other IP addresses must have 4 segments separated by a period.

- The first statement of the list must always be either ALLOW * or FORBID *. An asterisk in such statement means all addresses or no address. Both ALLOW * and FORBID * statements create the following mask: 0.0.0.0

- If an address matches more than one rule, the rule that is more specific is the one that is applied. The absolute value of a mask as a hexadecimal number determines how specific the rule is. The greater the absolute value of the mask associated with a rule, the more specific it is.

  For example, the IP address 165.4.241.7 matches both of the following rules:

  ALLOW 165.4.*.*
  FORBID 165.4.240.0, MASK=255.255.240.0

  The rule ALLOW 165.4.*.* has the implicit mask 255.255.0.0 associated with it. The second rule uses the mask 255.255.240.0, which has a higher value, meaning the second rule is more specific. The result is that the connection from IP address 165.4.241.7 will be rejected.

- When an IP address matches multiple rules where no one rule is more specific than the rest, FORBID is applied.

The source format of an IP List is processed at the initialization of IOAGATE (when IOAGATE is started) and when a F IOAGATE,REFRESH=ECAIPLSx modify command is issued to detect syntax errors.

For more information on defining a list of IP addresses, refer to the ECAIPLS Member Name suffix parameter in Adding Channels (on page 117).

Examples

The following examples show different ways that the List of IP addresses can be defined.

- The following example allows all IP addresses, with the exception of one specific address (81.50.1.241) and a range of addresses (80.56.241.0-80.56.241.255).

  ALLOW * First statement allows any IP

  FORBID 81.50.1.241
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FORBID 80.56.241.*

Alternatively, you can write the last line as
FORBID 80.56.241.0,MASK=255.255.255.0

- The following example forbids all IP addresses, with the exception of two specific addresses (172.16.241.128 and 81.50.1.241) and a range of addresses (80.56.241.0-80.56.241.255).
  
  FORBID *                  First statement forbids any IP
  ALLOW 172.16.241.128
  ALLOW 81.50.1.241
  ALLOW 80.56.241.*

- The following example allows 2 short ranges (172.16.241.0-172.16.241.127) and (172.16.241.129-172.16.241.255) to communicate with IOAGATE.

  FORBID *
  ALLOW 172.16.241.*
  FORBID 172.16.241.128

- The following example uses a subnet mask to permit a range of addresses. The permitted range is 172.16.240.0 to 172.16.255.255.

  FORBID *
  ALLOW 172.16.240.0,MASK=255.255.240.000
C Structure of the IOA Conditions file

The IOA Conditions file is comprised of the following parts:

- 1 physical record for synchronization purposes.
- 32 logical records for prerequisite conditions, as follows:
  - 31 logical records; one for each day of the month.
  - 1 logical record for STAT conditions.

The record size, in bytes, of a physical record in the IOA Conditions file is fixed at 32 KB.

The CNDREC# parameter specifies the number of physical records in each logical record.

Each prerequisite condition requires 24 bytes. Therefore, the number of conditions allowed for each date is equal to 1/24 of the 32 KB times the value specified for the CNDREC# parameter. You can also use long condition names. Each long condition name occupies two entries, or 48 bytes each.

Due to MVS access method limitations, a maximum of 32KB bytes can be specified for the record size of a physical record in the IOA Conditions file. This default value is the maximum block size for 3380 disks and 3390 DASD devices. This default allows a maximum of 1365 conditions in each prerequisite condition record of the IOA Conditions file.

If your site uses a large number of conditions such as OUT conditions created by Control-M, and you require more than the maximum 32KB for each record in the IOA Conditions file, additional slots can be allowed for each record. For more information about this option, see “CNDREC#” in Parameters (on page 55).

Use the following formula to calculate the region size needed for the IOA Conditions file:

\[32760 \times (2 + (32 \times \text{CNDREC#}))\]

The following examples illustrate the use of the formula:

- If CNDREC# is set to 1, about 1.11 MB of virtual storage is needed to load the IOA Conditions file.
- If CNDREC# is set to 2, about 2.16 MB of virtual storage is needed to load the IOA Conditions file.

For more information about the CNDREC# parameter, see Step 5 – Specify target configuration parameters (on page 53).
D Housekeeping

This section discusses the various housekeeping options available using the Maintain your Environment option from the INCONTROL Installation and Customization (ICE) Main Menu.

Accessing housekeeping activities

To access housekeeping activities, do the following:
1. Open the IOA Installation—Main menu.
2. Select the Maintain your Environment option.
3. Select the ICE refresh option.

The IOA Installation – ICE refresh screen is displayed.

Figure 54  IOA Installation – ICE refresh screen

Reference

This option allows you to specify members of an existing installation from which values should be inserted into the reference column in the Parameters Table. Use this option to specify members other than the default members supplied during environment definition.

To access this option, do the following:
1. Type 1 in the OPTION field to select Option 1, REFERENCE, and press Enter.

The Reference Member Specification Panel is displayed.
2. The reference values can be retrieved from a version 8.x.xx installation or a version 7.x.xx installation. To do this, type 800 or 700, as appropriate, in the Reference release field, and press Enter.

You can retrieve values from both the DEFPARM member and from the xxxPARM member or, if you want, from only one of these. If you leave the Member field blank in either line, no values will be retrieved from the data set referenced in that line.

3. When the process of retrieving the values has been completed, press Enter again. The IOA Installation – Main Menu is redisplayed.

Refresh tables

Refreshes the current set of ICE tables, so that changes and modifications to the IOA and INCONTROL environments are implemented.

If a change results in the replacement of ICE tables, the new copy of the table must be merged with all values previously entered during installation, customization, and so on.

To refresh the ICE elements that were replaced by the change, type 2 in the OPTION field and press Enter.

The tables are refreshed.

After the tables are refreshed, the following message is displayed:

IOA7B8I ICE TABLES REPLACED

Tailor job

Modifies jobs in the installation libraries. This can be used as an alternative method for modifying jobs that reformat (recreate) INCONTROL product data sets. During the installation process, only the jobs you select are tailored before submission and saved in the INSTWORK library. This option provides you with a method for building, or rebuilding, any job from the installation libraries.

As a default, the job is built in a temporary file but you can save the file in the INSTWORK library if you choose.

To use this method, do the following:

1. Type 3 in the OPTION field and press Enter. The Build a Job Specification Panel for this option is displayed.
2. Insert values for the parameters in this screen, as shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Code</td>
<td>This parameter defaults to the INCONTROL product that corresponds to the Product ID that you specified.</td>
</tr>
<tr>
<td>Job to be Tailored</td>
<td>The member name.</td>
</tr>
<tr>
<td>Output Library</td>
<td>The output library to serve as the location for the tailored member.</td>
</tr>
<tr>
<td></td>
<td>Valid values are:</td>
</tr>
<tr>
<td></td>
<td>• TEMP - The file is stored in a temporary location. Default.</td>
</tr>
<tr>
<td></td>
<td>• INSTWORK - The file is stored in the INSTWORK library.</td>
</tr>
</tbody>
</table>

3. When you have inserted values for the parameters in this screen, press Enter. The job is then built.

For information about members that are ISPF skeletons for creating, allocating, or formatting INCONTROL product data sets, see the section concerning data set formatting jobs for INCONTROL products in the *INCONTROL for z/OS Administrator Guide*.

**Copy procedure**

Copies procedures to a site procedure library.

Certain situations require that you manually copy a procedure to a site procedure library. For example, if the SITEPROC IOA installation parameter is set to DONTCOPY, you must copy a modified version of the CTRTROLR procedure to a site procedure library.

To do this, do the following:

1. Type 4 in the OPTION field and press Enter. The Build a Job Specification Panel for this option is displayed.
2. Define the parameters in this screen as shown in the following table:

**Table 176 Parameters in the Build a Job Specification Panel (2)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input procedure name</td>
<td>Name of the procedure to copy.</td>
</tr>
<tr>
<td>Output procedure name</td>
<td>To rename the procedure, specify a procedure name. Otherwise, leave blank.</td>
</tr>
<tr>
<td>Site library</td>
<td>The name of your site procedure library.</td>
</tr>
</tbody>
</table>
| Copy IOASET and IOAENV   | Indication that you want the IOASET and IOAENV members copied also to the new site procedure library. Valid values are:  
  - Y – Copy the IOASET and IOAENV members. Default.  
  - N – Do not copy the IOASET and IOAENV members. |

3. Press Enter.
E Uninstalling

This section discusses the uninstalling process activated from the INCONTROL Installation and Customization (ICE) Main Menu.

Before the uninstallion is performed, ICE displays a list of the datasets that were allocated by ICE for the current environment. These datasets will be deleted if you proceed with the uninstall. Review the list of datasets to ensure that these files are not used by another IOA environment, and then confirm that all the datasets are relevant to the current environment and can be deleted without affecting any other IOA environments.

➢ To uninstall an IOA environment:

1. On the main ICE panel, select Uninstallation.
2. When prompted, select the relevant environment.
3. When prompted, confirm that all the datasets are relevant to the current environment and can be deleted without affecting any other IOA environments.
F Message considerations

The JES, MVS, INCONTROL product and security (ACF2) messages listed in the following table should not be modified or suppressed by an automatic operator, since IOA and the INCONTROL products assume and are based on the original structure of these messages.

If you are implementing the Control-M NJE job tracking facility, also make sure that messages beginning with the remote NJE node name are not suppressed. For more information about extended NJE tracking support, see Step 10.3 – Extended NJE support (optional) (on page 185).

Table 177 Messages that should not be modified or suppressed

<table>
<thead>
<tr>
<th>Message</th>
<th>Required by Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>$HASP100</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP373</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP395</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP398</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP608</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP693</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP826</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>$HASP890</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>ACF1007</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>ACF1012</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTMC41E</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTMC42E</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTO285E</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTR066I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTR082I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTR103I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTT100A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>Message</td>
<td>Required by Products</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>CTT101A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTT102A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTT103A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTT104A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>CTT105A</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IAT2000</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IAT2006</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IAT4801</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IAT5210</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>IAT5410</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>IAT6100</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IAT6101</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEC101A</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>IEC111E</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>IEC151I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEC501A</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEC501E</td>
<td>Control-M/Tape</td>
</tr>
<tr>
<td>IEC502E</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEC705I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF125I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF126I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF142I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF202I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF233A</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>Message</td>
<td>Required by Products</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>IEF233D</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF234E</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF236I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF237I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF251I</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF253I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF272I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF283I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF285I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF287I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF373I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF374I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF375I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF376I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF378I</td>
<td>Control-M, Control-M/R</td>
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<tr>
<td>IEF379I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF403I</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF404I</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF450I</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF451I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF452I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF453I</td>
<td>Control-M, Control-M/R, Control-M/Tape</td>
</tr>
<tr>
<td>IEF472I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>IEF607I</td>
<td>Control-M, Control-M/R</td>
</tr>
<tr>
<td>Message</td>
<td>Required by Products</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>IEF635I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IEF653I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IEFC452I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IEF607I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD100I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD101I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD103I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD104I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
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<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD107I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD108I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD1700I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
<tr>
<td>IGD1710I</td>
<td>Control-M, Control-M/Restart</td>
</tr>
</tbody>
</table>
G Control-M virtual storage requirements

This section deals with the virtual storage requirements of the Control-M monitor, files and utilities.

Control-M Monitor

The Control-M monitor procedure CONTROLM is supplied with a default region size of 0 MB. The specified region size is honored by z/OS unless a local exit is employed to limit the region size of jobs and started tasks (STCs). The region size may be limited by MVS Exit IEALIMIT, by IEFUSI, or by other MVS and JES exits.

If Control-M monitor startup fails due to insufficient region size, message IEF374I of the Control-M monitor sysout can be examined to determine how much virtual storage was actually used.

At startup, the monitor obtains working storage. The monitor tries to allocate this storage above the 16 MB line. When the Journaling facility is enabled (parameter JRNL in member CTMPARM of the IOA PARM library is set to Y) storage above the bar (4GB) is also allocated.

Under certain circumstances, RMF and SDSF display incorrect real storage consumption of the monitor. They actually show virtual storage consumption. This can occur due to one or more of the following:

- There is no paging activity in the z/OS system.
- The Control-M monitor is running non-swappable.

In such cases, z/OS does not perform any page-outs and does not update its counters.

Calculations

Calculate the amount of virtual storage required by the Control-M monitor by

- considering the number of records in the Active Jobs File (AJF), as defined by parameter AJFSIZE in member CTMPARM in the IOA PARM library

  The monitor loads the entire Active Jobs file into virtual storage. Each entry of the Active Jobs file requires 1024 bytes. For example, assuming there are 20,000 records in the Active Jobs file, the Control-M monitor requires 20 MB of storage above the 16 MB line to process the Active Jobs file.

- considering the number of records per day defined for the IOA Conditions file (CND), and the blocksize of each such record, which is 32 K (32760 bytes)

  The monitor loads the entire CND file into virtual storage. When one record per day is defined by parameter CNDREC# in member IOAPARM, 1.05 MB of virtual storage is needed by Control-M for the CND file.

  If one condition record per day is not sufficient to contain the required number of conditions, multiple records per day can be defined by means of parameter CNDREC# in member IOAPARM. The default value of CNDREC# is 1. A maximum of 32 records per day can be specified. The total number of records in the CND file can be calculated as follows:

  \[ \text{TOTAL CND RECORDS} = (\text{CNDREC#} \times 32) + 1 \]
To determine the total amount of virtual storage required by the CND file, multiply the total number of records by the record length. For example: If parameter CNDREC# equals 2 and the CND file contains 65 records, 2.06 MB virtual storage is needed by the Control-M monitor for the CND file.

- determining how many records you need for quantitative and control resources. (This is usually done during product customization.) The system needs one additional record for its use.
  If, for example, you define 5 records for quantitative and 5 for control resources, Control-M needs (5+5+1) * 32K bytes of virtual memory to accommodate all resources.

- adding space for the basic software used by the Control-M monitor, which requires between 750 to 1000K of virtual storage, depending on the environment and the functions used.

- In-memory Trace facility:
  The amount of virtual storage required by the Control-M monitor for the In-memory Trace facility (described in the IOA Admin guide) is determined by the buffer size specified in the member CTMTRCMx (x=L, M or H) in the CTM PARM library. The LINES parameter specifies the maximum number of lines to be held in memory. The calculation is as follows: Virtual Storage buffer required = Number of LINES * 192 The LINES parameter in the member may be modified by the user if desired. The virtual storage requirements for the Control-M Application server is determined by the buffer size specified in the member CTMTRCAx (x=L, M or H) in the CTM PARM library according to the formula above.

- setting aside space for user dependent work areas and programs
  For example
  - the size of user exits and the destination tables
  - the maximum size of AutoEdit members referenced at job submission time
  - the blocksize of the JCL library and of the library that contains AutoEdit members
  These items usually requires a small amount of virtual storage, and therefore it is not essential to calculate it exactly. However, remember to reserve some storage for these items.

- when the JRNL parameter is set to Y, considering the number of records in the Control-M AJF for Journaling Synchronization image (CKPJNL), as defined by the AJFSIZE parameter in the CTMPARM member in the IOA PARM library. This storage is obtained above the bar.

- periodically checking the content of message IEF374I in the sysout of the Control-M monitor to compare the actual storage requirements with the existing region size definition.

**Example**

When specifying 30,000 Active Jobs file entries, 8 records per day for the IOA Conditions file, and five records for both the control records and the quantitative records in the Control-M Resources (RES) file, a region size of 39.8 MB above the line (16MG) must be allocated according to the following calculation:
Table 178  Sample Calculation for Control-M Monitor

<table>
<thead>
<tr>
<th>Item</th>
<th>Size</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Jobs file</td>
<td>30.0 MB</td>
<td>(30,000 x 1,024)</td>
</tr>
<tr>
<td>Conditions file</td>
<td>8.1 MB</td>
<td>(32,760 x (32 x 8)+1))</td>
</tr>
<tr>
<td>Resources file</td>
<td>0.4 MB</td>
<td>(32,760 x (5+5+1))</td>
</tr>
<tr>
<td>Basic software</td>
<td>1.0 MB</td>
<td></td>
</tr>
<tr>
<td>User-dependent</td>
<td>0.3 MB</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>39.8 MB</td>
<td></td>
</tr>
</tbody>
</table>

Control-M New Day Procedure

The amount of virtual storage required by the first step of the New Day procedure (procedure CTMTDAY) is determined by the size of the Active Jobs file plus the size of the IOA Conditions file (CND) plus the sizes of the Control-M Resource files plus approximately 10% for additional areas required for processing.

If parameter HIST is set to YES in member CTMPARM (that is, History Active Jobs file processing is enabled), the amount of virtual storage required by the CLRHIST step of the CTMTDAY procedure is determined by the size of the History file plus approximately 10% for additional areas required for processing.

Utility CTMCAJF

The COMPRESS function of utility CTMCAJF requires the same amount of virtual storage as the Control-M New Day procedure for the Active Jobs file.

The COPY utility requires virtual storage equivalent to the sum of the source and target files.
H Defining subsystems

In MVS, a subsystem can be defined dynamically or by adding it to an IEFSSNnn PARMLIB member. The definition in the IEFSSNnn member applies only after the next IPL. The dynamic definition applies immediately and lasts until the next IPL.

This section is relevant for the subsystems used by IOA, Control-D Compressed Access Method (CDAM), Control-O, Control-M Event Manager (CMEM), IOA Archive Server subsystem, and the IOA Online Monitor. This section does not deal with the Control-M/Tape subsystem which is explained in Installing Control-M/Tape (on page 339).

Subsystem definition

Edit the IEFSSNnn member in the SYS1.PARMLIB library, where nn is the suffix specified in the IEASYS member in the SYS1.PARMLIB library. If the suffix is not specified in the IEASYS, the default is 00. The subsystem can be defined using positional or keyword parameter structure.

- When using the keyword parameter structure, add a record to the IEFSSNnn member in the following format:

  SUBSYS SUBNAME(xxxx)

  where xxxx is the name of the subsystem

- When using the positional parameter structure, add a record to the IEFSSNnn member in the following format:

  xxxx

  where xxxx is the name of the subsystem

INCONTROL subsystems are initialized when their corresponding monitors are started. There is no need to define them in the IEFSSNnn member.

They can be defined in IEFSSNnn member without specifying a subsystem initialization routine.

If INCONTROL subsystems are defined, their position in the IEFSSNnn member is not important (see Special considerations for Control-O (on page 510)).

INCONTROL subsystems are not affected by the BEGINPARALLEL statement, which might appear in IEFSSNnn, because INCONTROL subsystems have no subsystem initialization routines and the BEGINPARALLEL statement indicates that the subsystem initialization routines specified in SUBSYS statements that follow the BEGINPARALLEL statement are invoked in parallel.

For more information, see the relevant IBM MVS Initialization and Tuning Reference.
Dynamic subsystem definition

There are number of ways a subsystem can be dynamically defined without having to perform an IPL.

- When an INCONTROL product or component is started and its subsystem is not defined, it can define the subsystem dynamically. The subsystem is added at the end of the subsystem chain and remains until the next IPL. Using this method, the subsystem does not have to be defined in IEFSSNnn.

  The decision whether dynamic definition is allowed is controlled by the IOA Installation SSALLOC parameter or, for the IOA Online Monitor, by the IOA Online Monitor global Dynamic definition parameter.

  For more information see the explanations for these parameters in the relevant product sections of this manual.

- The subsystem can be defined using the following operating system command:

  ```
  SETSSI ADD, SUB=xxxx
  ```

  where `xxxx` is the name of the subsystem

  For more information, see the description of the SETSSI command in the IBM MVS System Commands manual.

- Certain products can define a subsystem dynamically. To use this method, see the appropriate product manual.

Special considerations for Control-O

To enable Control-O to change or suppress subsystem commands (for example, commands for DB2 that start with the '-' character), the Control-O subsystem must be defined in the IEFSSNnn member BEFORE the definition of the target subsystems of these commands.

An exception to this rule is the interception of JES2 commands using the IEFJFRQ dynamic subsystem exit, instead of a Control-O subsystem. For more information, see the JCMDSSN parameter in Step 2.1 - Control-O operational parameters (on page 302).
I National Language Support facility

This Chapter discusses the National Language Support installation.

BMC Software enables you to configure your system to support one or more of the following national languages, in addition to English:

- French
- German
- Japanese

Ensure that you have installed IOA before beginning the National Language Support installation.

System installation preparation

Install the National Language Support (NLS) from one of the following sources:

- The BMC Software Electronic Product Distribution (EPD) site
- CD

➢ To install NLS:

1. Prepare your system.

   For information about the space requirements, see the INCONTROL for z/OS release notes that accompany this release. The DCB information for the image file is as follows:

   `RECFM=FB, LRECL=1024, BLKSIZE=6144`

2. Transfer the image file to the mainframe as a binary file, by doing one of the following actions:

   - Download the National Language Support installation from the EPD site at https://webapps.bmc.com/signon/content/logon.jsp.
   - Copy the file from the product CD.

3. Uncompress the image file.

   If you do not have TRSMAIN on your mainframe, instructions for downloading and installing it can be found at the following URL:


   The IBM TRSMAIN program is required because the image files are delivered in a compressed format that was created using TRSMAIN.

   a. Once the image file has been uploaded to your mainframe, make the necessary changes in the following UNTERSE job to uncompress the image file.
**In the preceding UNTERSE job**

- basepref represents your choice of prefix for the base libraries, which are described in Loading ICE (on page 10).

- ppp,ss,dd represents the space requirements for the basepref.NLSSUPP file, as specified in the INCONTROL for z/OS release notes that accompany this release.

b. Submit the UNTERSE job.

c. Verify that the job completes with a return code of 0.

### Install national language support

To install national language support, do the following:

1. Select Customization from the ICE main menu.
2. Select an environment.
3. Specify product IOA.
4. Select Product Customization.
6. Select minor step 1 (Select additional languages).
7. Select minor step 2 (Apply the National Language Support).

These steps build the NLSINST job in the IOA INSTWORK library.

The NLSINST job is tailored according to the languages selected in minor step 1. In the following steps, lng represents the language selected for the installation, where

- FRA or FR represents the French national language
- GER or GE represents the German national language
- JPN or JP represents the Japanese national language

The following table describes the jobs used to install national language support.
### Table 179  National language support installation steps

<table>
<thead>
<tr>
<th>Step name</th>
<th>Description</th>
</tr>
</thead>
</table>
| **ALLOCT** | This job allocates the target and distribution language libraries, as follows:  
  - The target language libraries names are:  
    - ilprefa.I.SMSGlng  
    - ilprefa.MSGlng  
    - ilprefa.PANELlng  
  - The distribution language libraries names are:  
    - spdpref.AI.SMSGlng  
    - spdpref.AMSGlng  
    - spdpref.APANELlng |
| **ADDDDEF** | Adds SMP/E DDDEFs for language target and distribution libraries. |
| **RCV* | Performs the RECEIVE operation for the language FMIDs and PTFs, which are located in the lang8000 member in the BASEPREF.NLSSUPP library.  
  **Note:** The asterisk in the final character of the step name represents  
  - F - if the French national language has been selected  
  - G - if the German national language has been selected  
  - J - if the Japanese national language has been selected |
| **APPLCHK** | Performs the APPLY CHECK operation for the language FMIDs and PTFs. |
| **APPLY** | Performs the APPLY operations for the language FMIDs and PTFs. |
| **ACPTCHK** | Performs the ACCEPT CHECK operation for the language FMIDs and PTFs. |
| **ACCEPT** | Performs the ACCEPT operation for the language FMIDs and PTFs. |
Japanese and French screen display considerations

In order to complete the installation of Japanese or French language support, the Japanese and French version of IOAX037 (IOA user Exit 37) should be installed. This version is used to translate specific hexadecimal values. To install, follow the steps below:

1. Enter ICE.
2. Select Customization.
3. Select an environment.
4. In the Customization screen, set the Product ID to IOA.
5. Select Product Customization.
7. Select Minor Step 2 (EXITS Customization).
8. In the select Exit field, specify either:
   • IOAX037J for Japanese
   • IOAX037F for French

   The source of sample exit IOAX037J or IOAX037F is tailored to support the Japanese or French language support that you have installed.
9. Press PF3 to continue.
10. Submit JOB UMAX037J or IOAX037F to install this version of Exit 37 in your system.

The first time that you run this job, it will complete with a condition code of 12. Examine the SMPOUT for this step, and verify that the only SMP/E command which completed with a condition code of 12 is the REJECT command. All other SMP/E commands should complete with a completion code of 0 (zero).

For further information on modifying this exit, refer to the description of Exit IOAX037 in the Exits chapter of the INCONTROL for z/OS Administrator Guide.

Language selection

Language selection is specified by the LANG parameter during the installation of INCONTROL. For further information on language selection, refer to Step 4.2 – IOA operational parameters (on page 46), and "Step 2.4.2, IOA Operational Parameters", of the INCONTROL Installation and Customization Engine (ICE).
### J General parameter descriptions

ICE does not perform validity checks on these parameters.

**Table 180 General data set allocation parameters**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS Classes</td>
<td>Data, Management, Storage&lt;br&gt;In system-managed storage environments, use these parameters to specify information to the ACS routines and installation exits, to help them determine the SMS Classes for the corresponding data set and decide whether it is to be SMS-managed or non-SMS-managed.&lt;br&gt;▪ Optional, unless otherwise noted.&lt;br&gt;▪ Maximum length for each parameter: 8 characters.</td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>In system-managed storage environments, use this parameter to specify information to the ACS routines and installation exits, to help them determine the SMS Classes for the corresponding data set and decide whether it is to be SMS-managed or non-SMS-managed. In non-SMS environments, or for data sets that are non-SMS-managed, specify either a Generic Unit (such as 3390) or an Esoteric Unit (such as SYSDA), unless otherwise instructed.&lt;br&gt;▪ Optional, unless otherwise noted.&lt;br&gt;▪ Maximum length: 8 characters.</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>In system-managed storage environments, use this parameter to specify information to the ACS routines and installation exits, to help them determine the SMS Classes for the corresponding data set and decide whether it is to be SMS-managed or non-SMS-managed. In non-SMS environments, or for data sets that are non-SMS-managed, specify a real disk volume serial that matches the Unit parameter.&lt;br&gt;▪ Optional, unless otherwise noted.&lt;br&gt;▪ Maximum length: 6 characters.</td>
<td></td>
</tr>
</tbody>
</table>
K Installation guide planning sheets

Installation planning sheets are included for the following types of installations:

- **Express installation** (on page 516)
- **Customized installation** (on page 533)

Express installation

Installation planning sheets for the Express installation are located in the following section.

For additional details about parameters, see the installation process described for each specific product.

Express installation sheet

<table>
<thead>
<tr>
<th>A. Identity installation environments</th>
<th>A. Identity installation environments</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ Test  ____ Production</td>
<td>The general overall ICE installation workflow is as follows:</td>
</tr>
<tr>
<td>Environment Name_______________________</td>
<td>- 1 Defining and creating the IOA environment</td>
</tr>
<tr>
<td></td>
<td>- 2 Expanding the files from the installation media</td>
</tr>
<tr>
<td></td>
<td>- 3 Installing the IOA infrastructure</td>
</tr>
<tr>
<td></td>
<td>- 4 Installing each Control-X product</td>
</tr>
</tbody>
</table>

The first step in the installation procedure defines the IOA environment to be installed and identifies it as a test or production installation.

For details, see *Performing tasks common to all product installations* (on page 19), especially Figure 5 “IOA Installation – Environment definition screen”, with values and Table 1 “Environment values in the Environment definition screen”.

An environment name may contain a maximum of 8 characters.

<table>
<thead>
<tr>
<th>B. IOA LOAD library</th>
<th>B. IOA LOAD library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data set name (DSNAME, such as IOA.PROD.LOAD):</td>
<td>Specify the data set name for the IOA LOAD library (for example, IOA.PROD.LOAD). Use the LOAD library as a STEPLIB in the JCL procedures, or incorporate it into the MVS LINKLIST.</td>
</tr>
<tr>
<td>______________________</td>
<td>______________________</td>
</tr>
</tbody>
</table>

(continued)
### B. IOA LOAD library (continued)

Before deciding whether to use the library as a STEPLIB or in the LINKLIST, review the general considerations and the site standards for program product LOAD libraries. Then consider the following:

#### Using STEPLIB

- All IOA JCL procedures include member IOAENV to provide a STEPLIB DD statement that points to the IOA LOAD library.
- STEPLIB may be used to distinguish between executions in different IOA environments (such as test and production environments) within the same MVS system.
- You can catalog the library in the master catalog or in a user catalog. This selection affects the name you choose for the IOA LOAD library.
- If any jobs execute IOA product programs without supplied JCL procedures, you must add the STEPLIB DD statement to the jobs and maintain it as required.

**Note:** STEPLIB is the recommended way to access the IOA LOAD library.

#### Using LINKLIST

- Remove the STEPLIB DD statement from the IOAENV member in the IOA PROCLIB library.  
  **Note:** Before removing the STEPLIB DD statement, test with the library as a STEPLIB.
- If each active MVS system runs jobs only for a single environment (either for a test or for a production environment), jobs use the program library associated with the environment within which they run.
- The library must be cataloged in the master catalog.
- Adding a library to the LINKLIST, or extending such a library, might require an IPL.

**Note:** The IOASINIT, CTOTROLO, CTMCMEM, and CTTINIT JCL procedures must each contain a STEPLIB DD statement that points to the IOA LOAD library, even if LINKLIST is used.
### C. Reference Libraries Prefix

Prefix for high level data set name qualifiers (prefix) of the installation libraries to be used as reference libraries.

### D. Allocation attributes:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Vol Ser</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>SMS Classes:</td>
<td></td>
</tr>
<tr>
<td>Data:</td>
<td>Management:</td>
</tr>
<tr>
<td>Storage:</td>
<td></td>
</tr>
</tbody>
</table>

Specify the allocation attributes at the environment definition screen.

These specifications will be used for all the selected products and for all libraries' categories.

You can modify these parameters at the allocation screen.

Note: Product Control-O obligates unit and volser for operational libraries.

### E. Products to be installed and capacities.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Y/N</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-M</td>
<td></td>
<td>(S/M/L/X/R)</td>
</tr>
<tr>
<td>Control-M/Restart</td>
<td>(Y/N)</td>
<td></td>
</tr>
<tr>
<td>Control-M/Analyzer</td>
<td>(Y/N)</td>
<td>(S/M/L/X/R)</td>
</tr>
<tr>
<td>Control-M/Tape</td>
<td>(Y/N)</td>
<td>(S/M/L/X/R)</td>
</tr>
<tr>
<td>Control-D</td>
<td>(Y/N)</td>
<td>(S/M/L/X/R)</td>
</tr>
<tr>
<td>Control-V</td>
<td>(Y/N)</td>
<td></td>
</tr>
<tr>
<td>Control-O</td>
<td>(Y/N)</td>
<td>(S/M/L/X/R)</td>
</tr>
</tbody>
</table>

Select the INCONTROL products to be installed and each product’s capacity.

Use the following capacity indicators:

- **S** = Small IOA installation
- **M** = Medium IOA installation
- **L** = Large IOA installation
- **X** = Extra large IOA installation
- **R** = Insert from reference (only available if the "Propagate the Space calculation from reference" option was specified when creating an IOA environment).

Note: Default capacity is M. However, if a product is not to be installed, the capacity setting is ignored.

Select the INCONTROL products from Table 1 to be installed at your site with a Y in the Y/N column in the Products and Sizes screen (default is N).

For each selected product (indicated with a Y), specify the installation capacity size. Default is M.

(continued)
**E. Products to be installed and capacities (continued).**

<table>
<thead>
<tr>
<th>Control-M:</th>
<th>Control-M/ Analyzer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Small = 10,000 jobs</td>
<td>1.</td>
</tr>
<tr>
<td>▪ Medium = 50,000 jobs</td>
<td>▪ Small = 20 rules invocations/day</td>
</tr>
<tr>
<td>▪ Large = 100,000 jobs</td>
<td>▪ Medium = 50 rules invocations/day</td>
</tr>
<tr>
<td>▪ eXtra large = 250,000 jobs</td>
<td>▪ Large = 100 rules invocations/day</td>
</tr>
<tr>
<td></td>
<td>▪ eXtra large = 1000 rules invocations/day</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>▪ Small = retained for 1 day</td>
</tr>
<tr>
<td></td>
<td>▪ Medium = retained for 3 days</td>
</tr>
<tr>
<td></td>
<td>▪ Large = retained for 5 days</td>
</tr>
<tr>
<td></td>
<td>▪ eXtra large = retained for 7 days</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>▪ Small = 5 groups</td>
</tr>
<tr>
<td></td>
<td>▪ Medium = 10 groups</td>
</tr>
<tr>
<td></td>
<td>▪ Large = 20 groups</td>
</tr>
<tr>
<td></td>
<td>▪ eXtra large = 50 groups</td>
</tr>
<tr>
<td></td>
<td>4.</td>
</tr>
<tr>
<td></td>
<td>▪ Small = 1 model for each group</td>
</tr>
<tr>
<td></td>
<td>▪ Medium = 5 models for each group</td>
</tr>
<tr>
<td></td>
<td>▪ Large = 50 models for each group</td>
</tr>
<tr>
<td></td>
<td>▪ eXtra large = 100 models for each group</td>
</tr>
<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>▪ Small = 3 generations for each model variable</td>
</tr>
<tr>
<td></td>
<td>▪ Medium = 10 generations for each model variable</td>
</tr>
<tr>
<td></td>
<td>▪ Large = 100 generations for each model variable</td>
</tr>
<tr>
<td></td>
<td>▪ eXtra large = 200 gen. for each model variable</td>
</tr>
</tbody>
</table>
### E. Products to be installed and capacities. (continued)

<table>
<thead>
<tr>
<th>Control-M/ Tape:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Small = 50,000 volumes</td>
</tr>
<tr>
<td>- Medium = 250,000 volumes</td>
</tr>
<tr>
<td>- Large = 1,000,000 volumes</td>
</tr>
<tr>
<td>- eXtra large = 5,000,000 volumes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control-D:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>- Small = 1,000 missions</td>
</tr>
<tr>
<td>- Medium = 5,000 missions</td>
</tr>
<tr>
<td>- Large = 10,000 missions</td>
</tr>
<tr>
<td>- eXtra large = 50,000 missions</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>- Small = 10,000 reports</td>
</tr>
<tr>
<td>- Medium = 100,000 reports</td>
</tr>
<tr>
<td>- Large = 500,000 reports</td>
</tr>
<tr>
<td>- eXtra large = 2,000,000 reports</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>- Small = 100,000 active archives</td>
</tr>
<tr>
<td>- Medium = 1,000,000 active archives</td>
</tr>
<tr>
<td>- Large = 30,000,000 active archives</td>
</tr>
<tr>
<td>- eXtra large = 100,000,000 active archives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control-O:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Small = 1,000 rules</td>
</tr>
<tr>
<td>- Medium = 10,000 rules</td>
</tr>
<tr>
<td>- Large = 20,000 rules</td>
</tr>
<tr>
<td>- eXtra large = 25,000 rules</td>
</tr>
</tbody>
</table>
**F. Data set configuration**

High-level qualifier prefix: __________________________________________

Select the file naming format: _____ (HPC/HCP)

Specify EAV ability: ______ NO (OPT/NO/Empty)

---

**F. Data set configuration**

Specify a naming convention that will apply to all the allocated data sets, by doing the following:

Specify the high-level qualifier (header) prefix. The default is the installation prefix from the environment creation panel.

Select the file-naming format from the two options: HPC or HCP

where

- H=Header, P=Product, C=Category
- Product = CTM, CTD, CTO, CTT, CTV, CTR, or CTB.
- Category = OPR, SMP, MNT, or DB.

Default value which will be set to the following EAVUSE parameters allowing allocation of some data sets on EAV (Extended Address Volumes):

- EAVUSE#A - Allows allocation of Control-D Report Decollating Definitions library and Control-M Scheduling Tables library on EAV
- EAVUSE#D - Allows allocation of Control-D / Control V files on EAV
- EAVUSE#R - Allows allocation of Control-R CDAM files on EAV
- TEAVUSE - Allows allocation of Control-T Media database and Stacking Database files (IOA Access method) on EAV

**G. ISPF libraries prefix of the O.S.:**

__________________________________________

Specify ISPF product library prefix.

Default: ISP.

**H. ISPF language suffix of the O.S.:**

__________________________________________

Specify ISPF language suffix of the O.S. from following the list:

- ENU for US English (default)
- DES for Swiss German
- DEU for German
- JPN for Japanese
- ENP for Uppercase English
### I. Products (according to previous selection)

#### IOA
- Number of conditions records per day __________
- Num. of recs/day in manual cond. file __________
- First 3 characters of IOA JCL procedures_________
- QNAME for ENQ requests ______________________
- IOA Subsystem name_________________________

#### Control-M
- Install Control-M Configuration Manager_____ (Y/N)
  Port number __________
- Install Control-M/Enterprise Manager_____ (Y/N)
  Port number __________
- First 3 characters of CTM JCL procedures_______

#### Control-M/ Restart
- Prefix archived sysout __________
- First 3 characters of Control-M\Restart JCL procedures __________

#### Control-M/ Analyzer
- First 3 characters of Control-M\Analyzer JCL procedures __________

#### Control-M/ Tape
- QNAME for Control-M/Tape ENQ requests _________
- Control-M/Tape global operation mode __________
- First 3 characters of Control-M/Tape JCL procedures __
- CTT SVC number (200-255) __________
### 1. Products (according to previous selection) (continued)

**Control-D**
- Install Control-D/FTO/AS ____ (Y/N)
- Port number ______
- Install Control-D/AS ___ (Y/N)
- Port number ______
- Prefix for user created CDAM files __________
- Prefix for Control-D monitor CDAM files_____
- Prefix of JOBDSN1 files___________________
- First 3 characters of Control-D JCL procedures__

**Control-V**
- High level qualifier for index files __________
- First 3 characters of Control-V JCL procedures__

**Control-O**
- QNAME for Control-O ENQ requests____________
- First 3 characters of Control-O JCL procedures__
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>J. Job cards data:</strong></td>
<td><strong>J. Job cards data:</strong></td>
</tr>
<tr>
<td>JOBNAME: __________</td>
<td>JOBNAME: Job name prefix, from 1 through 8 characters, to be used for jobs submitted during the IOA installation process.</td>
</tr>
<tr>
<td>JOBCARD: ____________________________</td>
<td>JOBCARD: Job statement data to be used for all jobs submitted during the IOA installation.</td>
</tr>
<tr>
<td>JCL1:_________________________________</td>
<td>Maximum length: 43 characters</td>
</tr>
<tr>
<td>JCL2:_________________________________</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>JOBNAME=IOAINS</td>
</tr>
<tr>
<td></td>
<td>JOBCARD=IOAINST,CLASS=A,MSGCLASS=X</td>
</tr>
<tr>
<td></td>
<td>Resulting job statement:</td>
</tr>
<tr>
<td></td>
<td>//IOAINS01 JOB,IOAINST,CLASS=A,MSGCLASS=X</td>
</tr>
<tr>
<td></td>
<td>JCL1: First additional JCL. Can be used as a continuation of the job statement.</td>
</tr>
<tr>
<td></td>
<td>If this parameter is used as a continuation, the job statement parameter must end with a comma.</td>
</tr>
<tr>
<td></td>
<td>Maximum length: 60 characters</td>
</tr>
<tr>
<td></td>
<td>Default: //*.</td>
</tr>
<tr>
<td></td>
<td>Note: The JCL1 and JCL2 parameters affect the installation jobs.</td>
</tr>
<tr>
<td></td>
<td>These parameters can be used, for example, for a multiline job statement. Do not use JCL1 or JCL2 for a JCLLIB statement, because all installation jobs already contain JCLLIB.</td>
</tr>
<tr>
<td></td>
<td>JCL2: Second additional JCL, used for any general purpose. Compare with JCL1, in this table.</td>
</tr>
<tr>
<td></td>
<td>Maximum length: 60 characters</td>
</tr>
<tr>
<td></td>
<td>Default: //*.</td>
</tr>
</tbody>
</table>
K. Started task and procedure libraries

Started tasks library (PROCLIB)
___ Use the supplied PROCJCL directly
___ Copy started tasks to site PROCLIB
   PROCLIB DSNAME: ___________________
Procedure library (SITEPROC)
___ Copy some JCL procedures to SITEPROC
SITEPROC DSNAME: ________________

K. Started task and procedure libraries

Started Tasks Library (PROCLIB)

The PROCJCL library contains all the started tasks. All the members in this library are jobs. Therefore, DDNAME IEFJ OBS, which is in the MSTJ CLxx member of SYS1.PARMLIB, must point to the library in which these members reside.

You can define the PROCJCL library in your system as a started task library, or copy started tasks from the IOA PROCJCL library into an existing started tasks library. To specify the DSNAME of an existing started tasks library, use the PROCLIB installation parameter.

Started tasks are customized during the installation process for each environment.

Procedure Library (SITEPROC)

The PROCLIB library contains all the procedures to be used in jobs. Each job supplied already contains a JCLLIB statement to enable the job to use this library.

You can also copy a small number of selected procedures into an existing procedure library. The SITEPROC installation parameter specifies the DSNAME of an existing procedure library. If you do this, make sure that the names of new JCL procedures are different from existing ones.
### L. Datasets prefixes:

Note: If your configurations are not compatible with Express installation conventions for data sets naming according to the HPC/HCP format, use the following information:

#### IOA

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>BASEPREF</td>
<td>___________</td>
</tr>
<tr>
<td>Installation</td>
<td>ILPREFA</td>
<td>___________</td>
</tr>
<tr>
<td>Operational</td>
<td>OLPREFA</td>
<td>___________</td>
</tr>
<tr>
<td>Core</td>
<td>DBPREFA</td>
<td>___________</td>
</tr>
<tr>
<td>Log</td>
<td>DBPREFA</td>
<td>___________</td>
</tr>
<tr>
<td>Maintenance</td>
<td>MLPREFA</td>
<td>___________</td>
</tr>
<tr>
<td>SMP PTS MTS</td>
<td>SPAPREF</td>
<td>___________</td>
</tr>
<tr>
<td>SMP CSI</td>
<td>SPCPREF</td>
<td>___________</td>
</tr>
<tr>
<td>Distribution</td>
<td>SPDPREF</td>
<td>___________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3,4</td>
</tr>
<tr>
<td>Installation</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Operational</td>
<td>Update</td>
<td>1,2,4</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>IOA Core</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Update</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend:

- 1 Users who install and customize INCONTROL products, and determine implementation and policy issues.
  - The installer needs full access including authority to allocate, read, write, and delete data sets.
- 2 Users who create and update definitions of IOA entities, such as conditions and resources.
- 3 Users of INCONTROL products.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.
- (continued)
L. Datasets prefixes (continued):

IOA (continued)

The IOA Online monitor requires:

- UPDATE access to all IOA and INCONTROL product data sets
- READ access to all user data sets (for example, JCL, schedule)

L. Datasets prefixes (continued):

IOA (continued)

Maintenance

MLPREFA - High level data set name qualifiers (prefix) of the IOA Maintenance libraries.

MLVOLA - Serial number of volume on which IOA Maintenance libraries are placed.

MLUNITA - Unit of disk on which IOA Maintenance libraries are placed.

SMP CSI

IOA supplies the CSI, SMPPTS, MTS, STS, LTS, and SCDS SMP/E data sets. Choose other SMP data set names and organization according to your local practices.

Configure SMP CSI libraries in any of the following ways:

- Create a new CSI exclusively for IOA use.
- Add IOA version 9.0.xx distribution and target zones to an existing CSI data set.
- Use a separate CSI data set for each IOA 9.0.xx zone, but define these zones in an existing global zone.
### L. Datasets prefixes (continued):

**Control-M**

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFM</td>
<td>___________</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFM</td>
<td>___________</td>
</tr>
<tr>
<td>Repository</td>
<td>DBPREFM</td>
<td>___________</td>
</tr>
<tr>
<td>Statfile</td>
<td>ILPREFM</td>
<td>___________</td>
</tr>
</tbody>
</table>

**Library Type** | **Access Type** | **User Category**
**Installation** | Read       | 2,3,4        |
**Installation** | Full       | 1            |
**Operations**   | Update     | 1,2,4        |
**Operations**   | Read       | 3            |
**Repository**   | Update     | 1,2,3,4      |

**Legend:**
- 1 Control-M installers and system administrators.
- 2 Users who create and update definitions of Control-M entities.
- 3 Other Control-M users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

See additional requirements in the explanation for this item in the text at the right.
### Control-M/ Restart

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>OLPREFR</td>
<td></td>
<td>________</td>
</tr>
<tr>
<td>Archived</td>
<td>AMPREFR</td>
<td></td>
<td>________</td>
</tr>
</tbody>
</table>

**sysout data sets**

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category (see Legend)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1, 2</td>
</tr>
<tr>
<td>Archived sysout</td>
<td>Read</td>
<td>1, 2</td>
</tr>
</tbody>
</table>

**Legend:**
- 1 Control-M/Restart installers and system administrators.
- 2 Control-M/Restart users.

### Control-M/ Analyzer

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFB</td>
<td></td>
<td>________</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFB</td>
<td></td>
<td>________</td>
</tr>
<tr>
<td>Repository</td>
<td>DBPREFB</td>
<td></td>
<td>________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3</td>
</tr>
<tr>
<td>Installation</td>
<td>Full</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>

**Legend:**
- 1 Control-M/Analyzer installers and system administrators.
- 2 Users who create and update Control-M/Analyzer entities.
- 3 Control-M/Analyzer end users.

### Control-M/ Restart

This item specifies Control-M/Restart data set access requirements.

Examples of data set prefixes:

### Control-M/ Analyzer

Examples of data set prefixes:
- CTB.V9000I for Control-M/Analyzer Installation libraries.
- CTB.V9000O for Control-M/Analyzer Operations libraries.
- CTB.V9000D for Control-M/Analyzer Repository.
### L. Datasets prefixes (continued):

#### Control-D

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFD</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFD</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Repository</td>
<td>DBPREFD</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Work files</td>
<td>WRKPREF</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>CDAM files</td>
<td>AMPREF</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td></td>
<td>AMPREFD</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td></td>
<td>JB1PREF</td>
<td></td>
<td>___________</td>
</tr>
</tbody>
</table>

#### Library Type | Access Type   | User Category
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
</tr>
<tr>
<td>CDAM files</td>
<td>Update</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control-D installers and system administrators.
- 2 Security administrators.
- 3 Control-D end users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

For additional requirements, see the explanation for this item in the text at the right.

### L. Datasets prefixes (continued):

#### Control-D

Examples of data set prefixes:
- CTD.V9000I for Control-D Installation libraries.
- CTD.V9000O for Control-D Operations libraries.
- CTD.V9000D for Control-D Repository.

To access Control-D data sets and to use the basic facilities of Control-D, the following access authorizations are recommended:
- Control-D monitors:
  - UPDATE access to the Control-D JOB library.
  - READ and PURGE access to JES spool SYSOUT data sets.
  - Authority to issue operator commands.
  - Authority to submit jobs.
  - UPDATE access to IOA and Control-D repositories and product data sets.
  - UPDATE access to Control-D CDAM files. See the AMPREF, AMPREFD and JB1PREF parameters in minor step 3.3 "CDAM Parameters."

#### The Control-D New Day procedure (CTDNDAY):

- UPDATE access to the DSNLIST file.
- UPDATE access to the Control-D PARM library.

Jobs that change the order of missions require UPDATE access to the Control-D PARM library.

The job that executes the CTDDELRP utility requires UPDATE access to the SCRLIST file:

Backup and restore jobs require UPDATE access to the Control-D Active Missions file.
### L. Datasets prefixes (continued):

#### Control-V

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>OLPREFV</td>
<td>____________</td>
<td></td>
</tr>
<tr>
<td>Index files</td>
<td>IXHPREF</td>
<td>____________</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IXPREF</td>
<td>____________</td>
<td></td>
</tr>
<tr>
<td>User catalog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(optional)</td>
<td>CTVCAT</td>
<td>____________</td>
<td></td>
</tr>
</tbody>
</table>

#### Library Type                      | Access Type | User |
#### Operations                        | Read        | 3    |
#### Operations                        | Update      | 1,2,4|
#### CDAM files                         | Update      | 1,2,3,4|

#### Legend:
- 1 Control-V installers and system administrators.
- 2 Security administrators.
- 3 Control-V end users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

For additional requirements, see the explanation for this item in the text at the right.

#### Control-O

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFO</td>
<td>____________</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFO</td>
<td>____________</td>
<td></td>
</tr>
</tbody>
</table>

### L. Datasets prefixes (continued):

#### Control-V

Examples of data set prefixes:
- CTV.V9000O for Control-V Operations libraries.
- IXV for Control-V Index files.
- CTV.V9000.USERCAT for the Control-V user catalog.

To access Control-V data sets and to use the basic facilities of Control-D, the access authorizations shown for this item in the table at the left are recommended.

In addition, migration jobs require UPDATE access to the Active User file and to the Migration User file.

#### Control-O

Examples of data set prefixes:
- CTO.V9000I for Control-O Installation libraries
- CTO.V9000O for Control-O Operations libraries
### L. Datasets prefixes: (continued)

**Control-M/ Tape**

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Database</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Media data</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Media index</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Stacking data</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Stacking index</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
<tr>
<td>Database data</td>
<td>DBPREFT</td>
<td>___________</td>
</tr>
</tbody>
</table>

Legend:
- 1 Users who install and customize Control-M/Tape, and determine implementation and policy issues.
- 2 Users who create and update definitions of Control-M/Tape entities, such as rules and pools.
- 3 Users who inquire information from the Control-M/Tape media database.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs, such as External Data Manager started tasks.
- 5 Users who submit tape jobs.

### L. Datasets prefixes: (continued)

**Control-M/ Tape**

This item specifies the Control-M/Tape data set access requirements.

Examples of data set prefixes:
- CTT.V9000I for Control-M/Tape Installation libraries.
- CTT.V9000O for Control-M/Tape Operations libraries.
- CTT.V9000D for Control-M/Tape Database libraries.

Category 5 users do not require authorization if are no Control-M/Tape exits used to deny access.

---

532
Customized installation

Detailed installation planning sheets are included for the following INCONTROL products:

- **IOA installation sheet** (on page 534)
- **Control-M installation sheet** (on page 544)
- **Control-M/JCL Verify installation sheet** (on page 546)
- **Control-M/Restart installation sheet** (on page 548)
- **Control-D installation sheet** (on page 550)
- **Control-V installation sheet** (on page 554)
- **Control-O installation sheet** (on page 557)
- **Control-M/Analyzer installation sheet** (on page 563)
- **Control-M/Tape installation sheet** (on page 564)
- **IOAGATE installation sheet** (on page 567)
### A. Identity installation environments

<table>
<thead>
<tr>
<th>Environment</th>
<th>Test</th>
<th>Production</th>
</tr>
</thead>
</table>

Name__________________________________

The general overall ICE installation workflow is as follows:

- 1 Defining and creating the IOA environment
- 2 Expanding the files from the installation media
- 3 Installing the IOA infrastructure
- 4 Installing each Control-X product

The first step in the installation procedure defines the IOA environment to be installed and identifies it as a test or production installation.

For details, see [Performing tasks common to all product installations](on page 19), especially Figure 5 “IOA Installation – Environment definition screen”, with values and Table 1 “Environment values in the Environment definition screen”.

An environment name may contain a maximum of 8 characters.

### B. IOA LOAD library

Data set name (DSNAME, such as IOA.PROD.LOAD): ________________________________

Specify the data set name for the IOA LOAD library (for example, IOA.PROD.LOAD). You may use the LOAD library as a STEPLIB in the JCL procedures, or you may incorporate it into the MVS LINKLIST.

Before deciding whether to use the library as a STEPLIB or in the LINKLIST, review the general considerations and the site standards for program product LOAD libraries. Then consider the following:
### B. IOA LOAD library (continued)

#### Using STEPLIB
- All IOA JCL procedures include member IOAENV to provide a STEPLIB DD statement that points to the IOA LOAD library.
- STEPLIB may be used to distinguish between executions in different IOA environments (such as test and production environments) within the same MVS system.
- You can catalog the library in the master catalog or in a user catalog. This selection affects the name you choose for the IOA LOAD library.
- If any jobs execute IOA product programs without supplied JCL procedures, you will have to add the STEPLIB DD statement to those jobs and maintain it as required.

Note: STEPLIB is the recommended way to access IOA LOAD library.

#### Using LINKLIST
- Remove the STEPLIB DD statement from the IOAENV member in the IOA PROCLIB library.
  
  Note: Before removing the STEPLIB DD statement, test with the library as a STEPLIB.
- If each active MVS system runs jobs only for a single environment (that is, only for a test or only for a production environment), jobs use the program library associated with the environment within which they run.
- The library must be cataloged in the master catalog.
- Adding a library to the LINKLIST, or extending such a library, may require an IPL.

Note: The IOASINIT, CTOTROLO, CTMCMEM, and CTTINIT JCL procedures must each contain a STEPLIB DD statement that points to the IOA LOAD library, even if LINKLIST is used.
### C. Reference Libraries Prefix

Prefix for high level data set name qualifiers (prefix) of the installation libraries to be used as reference libraries.

### D. IOA variable databases:

- Databases duplex  ____ Yes   ____ No
- Columns duplex     ____ Yes   ____ No
- Variables duplex   ____ Yes   ____ No
- IOAPLEX (XAE)      ____ Yes   ____ No

If you install Control-M or Control-O, see major step 7 “Set Global Variables Database” in the chapter about installing IOA, in the INCONTROL for z/OS Administrator Guide.

### E. Primary language

Determine the primary language to be used.

English   ____ French   ____
German   ____ Japanese

### F. Started task and procedure libraries

Started tasks library (PROCLIB)

- Use the supplied PROCJCL directly
- Copy started tasks to site PROCLIB

PROCJCL DSNAME: ___________________

Procedure library (SITEPROC)

- Copy some JCL procedures to SITEPROC

SITEPROC DSNAME:________________

Three character prefix for IOA procedures: _______

Started Tasks Library (PROCLIB)

The PROCJCL library contains all the started tasks. All the members in this library are jobs. Therefore, DDNAME IEFJJOBS, which is in the MSTJCLxx member of SYS1.PARMLIB, must point to the library in which these members reside.

You can define the PROCJCL library in your system as a started task library, or copy started tasks from the IOA PROCJCL library into an existing started tasks library. To specify the DSNAME of an existing started tasks library, use the PROCLIB installation parameter.

Started tasks are customized during the installation process for each environment.

Procedure Library (SITEPROC)

The PROCLIB library contains all the procedures to be used in jobs. Each job supplied already contains a JCLLIB statement to enable the job to use this library.

You can also copy a small number of selected procedures into an existing procedure library. The SITEPROC installation parameter specifies the DSNAME of an existing procedure library. If you do this, make sure that the names of new JCL procedures are different from existing ones.
### G. Data set configuration

<table>
<thead>
<tr>
<th>Environment: ____________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Type</td>
</tr>
<tr>
<td>Base</td>
</tr>
<tr>
<td>Installation</td>
</tr>
<tr>
<td>Operational</td>
</tr>
<tr>
<td>Core</td>
</tr>
<tr>
<td>Log</td>
</tr>
<tr>
<td>Maintenance</td>
</tr>
</tbody>
</table>

### G. Data set configuration

When you choose data set parameters for IOA libraries and data sets, you should do the following:

- Review site practices for allocating program product libraries and data sets.
- Determine which systems access each data set in the current installation and in future activities, such as changing from TEST to PRODUCTION and replicating production systems. Determine implied naming conventions and data set placement constraints.
- Catalog libraries residing in LINKLIST in the Master Catalog.
- Make data set names different from names in existing installations of IOA products.

Minor step 3.2 "Allocate IOA Libraries" allocates prefixes for all libraries. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and libraries are restored. Shown below are examples of data set name prefixes:

- Library/ TEST Env./ PROD Env.
- IOA Base/
- IOA.V9000.TESTBASE/ IOA.V9000.PRODBASE
- IOA Installation/
- IOA.V9000.TESTI/ IOA.V9000.PRODI
- IOA Operations/
- IOA.V9000.TESTO/ IOA.V9000.PRODO
- IOA Core/
- IOA.V9000.TESTD/ IOA.V9000.PRODD
- CTM Installation/
- CTM.V9000.TESTI/ CTM.V9000.PRODI
- CTD Databases/
- CTD.V9000.TESTD/ CTD.V9000.PRODD

(continued)
G. Data set configuration: (continued)

Base

Base libraries are used as a base (skeleton) for creating certain environment-specific libraries. The Installation and Customization Engine (ICE) also resides in a base library.

Installation

Installation libraries are static product libraries that contain various program elements. These elements generally change only during product installation, maintenance and customization—but not as a result of ongoing operation.

Operational

Operational libraries contain operational information such as scheduling tables in Control-M, or print mission definitions in Control-D. Most operational libraries are updated regularly by users and are referenced during automatic operation of the product.

Core

The IOA core contains files that are used by all INCONTROL products. To improve performance, assign the log to a different volume and unit.

Note: To allocate IOA installation or operations libraries on DF/SMS managed volumes, do one of the following:

- Specify a volume serial number and/or unit that will be handled by your site's ACS routines.

Leave the UNIT and VOLUME installation parameters empty.

Maintenance

MLPREF A - High level data set name qualifiers (prefix) of the IOA Maintenance libraries.

MLVOLA - Serial number of volume on which IOA Maintenance libraries are placed.

MLUNITA - Unit of disk on which IOA Maintenance libraries are placed.
## H. Type of access to IOA data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3,4</td>
</tr>
<tr>
<td>Installation</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,4</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>IOA Core</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Update</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend:
- 1 Users who install and customize INCONTROL products, and determine implementation and policy issues
  - The installer needs full access including authority to allocate, read, write, and delete data sets.
- 2 Users who create and update definitions of IOA entities, such as conditions and resources
- 3 Users of INCONTROL products
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs

The IOA Online monitor requires:
- UPDATE access to all IOA and INCONTROL product data sets
- READ access to all user data sets (for example, JCL, schedule)

---

This section specifies the access requirements for different dataset types by user category.

Maintenance files store the PTFs (program fixes) for IOA programs and JCL, as well as the jobs that implement them.
## SMP data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMP PTS MTS</td>
<td>SPAPREF____SPAVOL____SPAUNIT____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMP CSI</td>
<td>SPCPREF____SPCVOL____None____</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td>SPDPREF____SPDVAL____SPDUNIT____</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone Names</th>
<th>Target:______(For example, IOA9TZN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distribution:__ (For example, IOA9DZN)</td>
</tr>
</tbody>
</table>

### SMP data sets

IOA supplies the CSI, SMPPTS, MTS, STS, LTS, and SCDS SMP/E data sets. Choose other SMP data set names and organization according to your local practices.

#### SMP CSI

Configure SMP CSI libraries in any of the following ways:

- Create a new CSI exclusively for IOA use.
- Add IOA version 7.0.xx distribution and target zones to an existing CSI data set.
- Use a separate CSI data set for each IOA 7.0.xx zone, but define these zones in an existing global zone.

See minor step 2.4 "SMP CSI Configuration" for details about each configuration.
J. System changes

Determine which system changes are relevant to your site.

- 1. Define high level qualifiers and associated aliases in catalogs.
- 2. Define IOA subsystem.
- 3. Add the IOA LOAD library to the Authorized libraries list (APF).
- 4. Add the IOA CTRANS library to the Authorized libraries list (APF).
- 5. Add the IOA LOAD library to the LINKLIST.
- 6. Changes to TSO logon procedures.
- 7. VTAM definitions.
- 8. CICS, IMS/DC, COM-PLETE, IDMS/DC, and ROSCOE definitions.
- 9. Define QNAME to multi-CPU access control products such as GRS or MIM.
- 10. JES2 and/or JES3 definitions required by the product.

J. System changes

To determine which of the listed system changes are relevant to your site, see the step that describes that subject, as follows:

- 1. Minor step 2.3 "Operation Libraries" and minor step 5.3 "IOA Core"
- 2. Major step 9 "Install IOA Subsystem"
- 3. Minor step 11.1 "IOA LOAD library"
- 4. Minor step 11.2 "Site's Multiple Access Control (Optional)"
- 5. Minor step 11.3 "Linklist Considerations (Optional)"
- 6. Minor step 11.4 "TSO Logon Procedure (Optional)"
- 7. Major step 16 "Install IOA VTAM Support (Optional)"
- 8. Major step 14 "Install IOA CICS Support (Optional)"
- 9. Minor step 4.2 "IOA Operational Parameters"
- 10. Minor step 4.1 "Site Software Environment"
### K. CPU configuration of this IOA environment

<table>
<thead>
<tr>
<th>SMF ID</th>
<th>JES2 SID</th>
</tr>
</thead>
<tbody>
<tr>
<td>______</td>
<td>__________</td>
</tr>
</tbody>
</table>

For each CPU in the target IOA environment, get the SMF ID. For JES2 systems, get the SID number.

Major step 6 "Customization Process"
Minor step 3 "Specify IOA CPUs"

### L. Password information available

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Verify that you have all password information required for the INCONTROL products you are installing.

### M. Libraries related to ISPF

<table>
<thead>
<tr>
<th>Use IOA supplied libraries</th>
<th>Copy IOA members to the site libraries</th>
</tr>
</thead>
</table>

Some IOA libraries contain ISPF panels, tables, messages, and skeletons, as well as the TSO CLIST library. To use these members, access them in the original libraries or copy them to other libraries. To use members in the original library, concatenate them to the appropriate DD statements of the logon procedures. For details see major step 8, "Install ISPF Support (Optional)."
### N. Install the IOA online monitor

**Yes _____  No _____**

You can use IOA online facilities in the following ways:

- Directly, under TSO by each individual IOA user
- Directly, under ROSCOE by each individual ROSCOE user
- Through the IOA online monitor (IOAOMON), which can manage multiple users in a single address space

You can access the IOA online monitor through interfaces to VTAM, CICS, IMS/DC, IDMS/DC, COM-PLETE, ROSCOE, IOAVMON, and from TSO (using cross-memory services).

Whether to install the IOA online monitor depends on the online facilities used at your site and the different types of users. For example, users who already use TSO for their operations can access INCONTROL products through TSO, as usual. However, those who are not familiar with TSO should probably use the IOA online monitor.

### O. Install National Language Support

**Yes _____  No _____**

If you plan to implement French, German, or Japanese national language support, install it through Step 6 (Install National Language Support) in the ICE CUSTOMIZE section.
Control-M installation sheet

<table>
<thead>
<tr>
<th>A. Number of jobs to run each day</th>
<th>A. Number of jobs to run each day</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________</td>
<td>The number of jobs Control-M will handle each day. This number is used to calculate the size of various IOA and Control-M files. Maximum 9 digits. Minimum value 1000.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Mirror Active Jobs file required</th>
<th>B. Mirror Active Jobs file required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No ___</td>
<td>Sometimes referred to as dual DB. See the DUALDB parameter in Chapter 2 &quot;Installing IOA&quot;, in minor step 5.2 &quot;IOA Data set Characteristics&quot;, under &quot;Mirror File for IOA Conditions.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Selected sysout HLDCLASS</th>
<th>C. Selected Sysout HLDCLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________</td>
<td>This 1-character string specifies the held sysout class used by jobs that Control-M submits. See the INCONTROL for z/OS Administrator Guide for details.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Install CONTROL-M Event Manager (CMEM)</th>
<th>D. Install Control-M Event Manager (CMEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No ___</td>
<td>If the Control-M Event Manager (CMEM) will be installed, define the subsystem so that MVS will recognize it. See major step 7 &quot;Install Event Manager (CMEM).&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. CTMPLEX support</th>
<th>E. CTMPLEX support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No ___</td>
<td>Control-M Sysplex support. For more information, see the section on CTMPLEX in Control-M chapter of the INCONTROL for z/OS Administrator Guide.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F. Data set name (DSN) prefixes, volumes, and units</th>
<th>F. Data set name (DSN) prefixes, volumes, and units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Type Unit</td>
<td>DSN Prefix</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Installation ILUNITM</td>
<td>ILPREFM</td>
</tr>
<tr>
<td>Operations OLVOLM</td>
<td>OLPREFM</td>
</tr>
<tr>
<td>Repository DBUNITM</td>
<td>DBPREFM</td>
</tr>
<tr>
<td>Statfile ILPREFM</td>
<td>VSVOLM</td>
</tr>
</tbody>
</table>

Minor step 4.4 "Install Control-M Libraries" allocates prefixes for all libraries. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and libraries are restored.

Examples of DSN prefixes:
- CTM. V9000I for Control-M Installation libraries.
- CTM. V9000O for Control-M Operations libraries.
- CTM. V9000D for Control-M Repository.
G. Type of access to Control-M data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category (see Legend)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3,4</td>
</tr>
<tr>
<td>Installation</td>
<td>Full</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,4</td>
</tr>
<tr>
<td>Operations</td>
<td>Read</td>
<td>3</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control-M installers and system administrators.
- 2 Users who create and update definitions of Control-M entities.
- 3 Other Control-M users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

See additional requirements in the explanation for this item in the text at the right.

G. Type of access to Control-M data sets

To access Control-M data sets and to use the basic facilities of Control-M, the Control-M monitor requires:

- READ and UPDATE access to JES spool SYSOUT data sets.
- Authority to issue operator commands.
- Authority to submit jobs.
- READ access to all schedule and JCL libraries.
- UPDATE access to IOA and Control-M Repositories and product data sets.

If User Dailies are not owned by the IOA administrator, user categories 2,3,4 require UPDATE access to the Control-M PARM library.

The Control-M New Day procedure and jobs that issue operator commands require authority to issue these operator commands.
**Control-M/J CL Verify installation sheet**

<table>
<thead>
<tr>
<th>A. APF authorization</th>
<th>A. APF authorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>__Yes    __No</td>
<td>10A load library is defined as APF in the system where Control-M/J CL Verify will be executed under ISPF.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. TSO authorized programs</th>
<th>B. TSO authorized programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>__Yes    __No</td>
<td>CTJ.TSO and CTJ.TONL are defined in the TSO parameter member IKJ.TSOxx under the AUTHPGM and AUTHTSF sections and IKJ.TSOxx has been activated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. IOA Security</th>
<th>C. IOA Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>__Yes    __No</td>
<td>IOA security has been enabled (otherwise, the File Access validation will not be performed).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Edit Macro</th>
<th>D. Edit Macro</th>
</tr>
</thead>
<tbody>
<tr>
<td>__Yes    __No</td>
<td>Control-M/J CL Verify Edit Macro CTJ.XVER has been copied to site CLIST library and renamed to ________.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. Data set name (DSN) prefix, volume, and unit</th>
<th>E. Data set name (DSN) prefix, volume, and unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Type  DSN Prefix   Volume   Unit</td>
<td>Minor step 4.4 &quot;Install Control-M/J CL Verify Libraries&quot; allocates prefixes for all libraries. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and libraries are restored.</td>
</tr>
<tr>
<td>Operations   OLPREFJ   OLVOLJ   OLUNITJ</td>
<td>Examples of data set prefixes:</td>
</tr>
</tbody>
</table>
### F. Type of access to Control-M/J CL Verify data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2, 3</td>
</tr>
<tr>
<td>Installation</td>
<td>Full</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Read</td>
<td>3</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1, 2</td>
</tr>
</tbody>
</table>

**Legend:**
- 1 Control-M/J CL Verify installers and system administrators.
- 2 Users who create and update definitions of Control-M/J CL Verify entities, such as rules.
- 3 Control-M/J CL Verify end users.

---

### F. Type of Access to Control-M/J CL Verify Data sets

This item specifies Control-M/J CL Verify data set access requirements.
Control-M/Restart installation sheet

<table>
<thead>
<tr>
<th>A. Archived sysout prefix</th>
<th>A. Archived sysout prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________________________</td>
<td>The 1–7 character prefix of the Control-M/Restart archived sysout data set name created by the Control-M monitor.</td>
</tr>
<tr>
<td></td>
<td>See the AMPREFR parameter in minor step 3.1 &quot;Control-M/Restart Target Libraries and Members.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Maximum number of days and runs to keep sysout of archived job</th>
<th>B. Maximum number of days and runs to keep sysout of archived job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days __________ Runs _______________</td>
<td>Enter the maximum number of days and runs to retain the archived sysout data sets.</td>
</tr>
<tr>
<td></td>
<td>For details, see the MAXDAYS and MAXRUNS parameters in minor step 2.1 &quot;Control-M/Restart Operational Parameters.&quot;</td>
</tr>
</tbody>
</table>

| C. Tape management system installed | C. Tape management system installed |
|____________________________________|____________________________________|
| __Yes    __No                        | Control-M/Restart scratches data sets and media volumes, when necessary to ensure a correct version of the output data. |
| Type: _____________________________ | Control-M/Restart uses the CTRX001 exit to notify the site tape management software of scratched media volumes. Therefore, this exit must be installed. |
|                                       | See the SAMPEXIT library for a sample CTRX001 exit and exits for interfacing with Control-M/Tape media management, as well as CA–1. |

<table>
<thead>
<tr>
<th>D. Data set name (DSN) prefix, volume, and unit</th>
<th>D. Data set name (DSN) prefix, volume, and unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Type DSN Prefix Volume Unit</td>
<td>Minor step 4.4 “Install Control-M/Restart Libraries” allocates prefixes for all libraries. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and libraries are restored.</td>
</tr>
<tr>
<td>Operations OLPREFR OLVOLR OLUNITR</td>
<td>Examples of data set prefixes:</td>
</tr>
<tr>
<td>Archived AMPREFR AMVOLR AMUNITR</td>
<td>CTR.V90000 for Control-M/Restart Operations libraries.</td>
</tr>
<tr>
<td>sysout data sets</td>
<td></td>
</tr>
</tbody>
</table>
### E. Type of access to Control-M/Restart data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1, 2</td>
</tr>
<tr>
<td>Archived sysout</td>
<td>Read</td>
<td>1, 2</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control-M/Restart installers and system administrators.
- 2 Control-M/Restart users.

---

### E. Type of access to Control-M/Restart data sets

This item specifies Control-M/Restart data set access requirements.
### Control-D Installation Sheet

<table>
<thead>
<tr>
<th>A. Number of User Report entries to be retained in the Active User file</th>
<th>A. Number of User Report entries to be retained in the Active User file</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
<td>Calculate this number as follows:</td>
</tr>
<tr>
<td></td>
<td>- 1 For each retention period (expressed in number of days), multiply the estimated number of different User Report entries per day (after decollation) by the number of days to keep the entries active.</td>
</tr>
<tr>
<td></td>
<td>- 2 Add the results to get the total for all retention periods.</td>
</tr>
<tr>
<td></td>
<td>See minor step 5.2 &quot;Space Calculation for ACTive User Rep.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Number of User Report entries to be retained in the History User file</th>
<th>B. Number of User Report entries to be retained in the History User file</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
<td>Calculate this number as follows:</td>
</tr>
<tr>
<td></td>
<td>- 1 For each retention period (expressed in number of days), multiply the estimated number of different User Report entries per day (after decollation) by the number of days to keep the entries in the History User file.</td>
</tr>
<tr>
<td></td>
<td>- 2 Add the results to get the total for all retention periods.</td>
</tr>
<tr>
<td></td>
<td>See minor step 5.3 &quot;Space Calculation for HiSTory User Rep.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Number of User Report entries to be retained in the Permanent User file</th>
<th>C. Number of User Report entries to be retained in the Permanent User file</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________________</td>
<td>This number is the total number of reports that all users (recipients) may receive. See minor step 5.4 &quot;Space Calculation for PeRManent User Rep.&quot;</td>
</tr>
</tbody>
</table>
### D. Number of $SYSDATA entries to be retained in the Active User file

$SYSDATA entries point to original reports, before decollation. Calculate the number of these $SYSDATA entries to be retained in the Active User file as follows:

- 1 For each retention period (expressed in number of days), multiply the estimated number of original reports created per day (before decollation) by the number of days to keep the entries active.
- 2 Add the results to get the total for all retention periods.

See minor step 5.2 "Space Calculation for ACTive User Rep."

### E. Number of $SYSDATA entries to be retained in the History User file

$SYSDATA entries point to backed up original reports, before decollation. Calculate the number of these $SYSDATA entries to be retained in the History User file as follows:

- 1 For each retention period (expressed in number of days), multiply the estimated number of backups of original reports created per day (before decollation) by the number of days to keep the entries in the History User file.
- 2 Add the results to get the total for all retention periods.

See minor step 5.3 "Space Calculation for HiSTory User Rep."

### F. Dual User Report files

- Active User Report file:  __ Yes  __ No
- History User Report file:  __ Yes  __ No
- Permanent User Report file:  __ Yes  __ No

Determine whether to use a dual (mirror image copy) of each User Report file. See the DUAL parameter in minor step 5.2 "Space Calculation for ACTive User Rep."

### G. Selected generic output classes

Specify the names of generic output classes to use for decollating non-held output from dedicated output classes. See the GENCLAS parameter in minor step 2.4 "Generic Decollating Missions Classes (Optional)."
### H. Printers to be used by Control-D

<table>
<thead>
<tr>
<th>Printer Name</th>
<th>Destinations</th>
<th>Types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See the Name, Dest, and Type parameters in minor step 2.3 "Printers Definition". Usually, only channel-attached printers are defined to Control-D.

### I. Data set name (DSN) prefixes, volumes, and units

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFD __</td>
<td>ILVOLD _</td>
<td>ILUNITD _</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFD __</td>
<td>OLVOLD_</td>
<td>OLUNITD _</td>
</tr>
<tr>
<td>Repository</td>
<td>DBPREFD __</td>
<td>DBVOLD_</td>
<td>DBUNITD</td>
</tr>
<tr>
<td>Work files</td>
<td>WRKPREF__WRKVOL _</td>
<td>WRKUNIT _</td>
<td></td>
</tr>
<tr>
<td>CDAM files</td>
<td>AMPREF__</td>
<td>AMVOLD_</td>
<td>AMUNITD _</td>
</tr>
<tr>
<td></td>
<td>AMPREFD ____</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JB1PREF ____</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minor step 4.4 "Install Control-D Libraries" allocates all library prefixes. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and the libraries are restored.

Examples of data set prefixes:
- CTD.V9000I for Control-D Installation libraries.
- CTD.V9000O for Control-D Operations libraries.
- CTD.V9000D for Control-D Repository.

See the AMPREF, AMPREFD and JB1PREF parameters in minor step 3.3 "CDAM Parameters."
### J. Type of access to Control–D data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3</td>
</tr>
<tr>
<td>Installation</td>
<td>Update</td>
<td>1,4</td>
</tr>
<tr>
<td>Operations</td>
<td>Read</td>
<td>3</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,4</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>CDAM files</td>
<td>Update</td>
<td>1,2,3,4</td>
</tr>
</tbody>
</table>

**Legend:**
- 1 Control–D installers and system administrators.
- 2 Security administrators.
- 3 Control–D end users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

For additional requirements, see the explanation for this item in the text at the right.

---

### J. Type of Access to Control–D data sets

To access Control–D data sets and to use the basic facilities of Control–D, the following access authorizations are recommended.

- Control-D monitors:
- UPDATE access to the Control-D JOB library.
- READ and PURGE access to JES spool SYSOUT data sets.
- Authority to issue operator commands.
- Authority to submit jobs.
- UPDATE access to IOA and Control-D repositories and product data sets.
- UPDATE access to Control-D CDAM files. See the AMPREF, AMPREFD and JB1PREF parameters in minor step 3.3 "CDAM Parameters."

The Control-D New Day procedure (CTDNDAY):
- UPDATE access to the DSNLIST file.
- UPDATE access to the Control-D PARM library.

Jobs that change the order of missions require UPDATE access to the Control-D PARM library.

The job that executes the CTDDELRP utility requires UPDATE access to the SCRLIST file:

Backup and restore jobs require UPDATE access to the Control–D Active Missions file.
Control-V installation sheet

<table>
<thead>
<tr>
<th><strong>A. Number of User Report entries to be retained in the Migrated User file</strong></th>
<th><strong>A. Number of User Report entries to be retained in the Migrated User file</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate the number of User Report entries to be retained in the Migrated User file as follows:</td>
<td></td>
</tr>
<tr>
<td>- 1 For each retention period (expressed in number of days), multiply the estimated number of different User Report entries per day (after decollation) by the number of days to keep the entries in the Migrated User file.</td>
<td></td>
</tr>
<tr>
<td>- 2 Add the results to get the total for all retention periods.</td>
<td></td>
</tr>
<tr>
<td>See minor step 5.6 “Space Calculation for Migrated User Report.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B. Number of $SYSDATA entries to be retained in the Migrated User file</strong></th>
<th><strong>B. Number of $SYSDATA entries to be retained in the Migrated User file</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$SYSDATA entries point to original reports, before decollation. Calculate the number of $SYSDATA entries to be retained in the Migrated User file as follows:</td>
<td></td>
</tr>
<tr>
<td>1. For each retention period (expressed in number of days), multiply the estimated number of original reports created per day (before decollation) by the number of days to keep the entries in the Migrated User file.</td>
<td></td>
</tr>
<tr>
<td>2. Add the results to get the total for all retention periods.</td>
<td></td>
</tr>
<tr>
<td>See minor step 5.6 “Space Calculation for Migrated User Report.”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>C. Allocate Control-V user catalog:</strong></th>
<th><strong>C. Allocate Control-V user catalog</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>_ Yes _ _ No</td>
<td>See the CTVCAT parameter in minor step 3.1 &quot;Control-V Target Libraries and Members&quot; for details on how to allocate the Control-V user catalog.</td>
</tr>
</tbody>
</table>
### D. IOA archive support

- **DASD** - Archive to DASD
  - UNITNAME – Generic or specific unit name
  - DEVADDR – Device address
  - OAM – IBM object access method for IBM 3995 optical library data server
  - MAXCONN – Maximum number of connections
  - OBJ SIZE – Number of blocks in object
  - DB2PLAN – DB2PLAN name
  - DB2SID – DB2 subsystem name

- **CART** - Archive to cartridge
  - UNITNAME – Generic or specific unit name
  - DEVADDR – Device address


### E. Data set name (DSN) prefixes, volumes, and units

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>OLPREFDV ___ OLVOLV ___ OLUNITV__</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index files</td>
<td>IXHPREF ___ IXVOL ___ IXUNIT ___</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IXPREF _______</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User catalog</td>
<td>CTVCAT _____ CATVOL __ CATUNIT __</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Minor step 4.4 “Install Control–V Libraries” allocates all library prefixes. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and the libraries are restored.

**Examples of data set prefixes:**
- CTV.V9000O for Control–V Operations libraries.
- IXV for Control–V Index files.
- CTV.V9000.USERCAT for the Control–V user catalog.
### F. Type of access to Control–V data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>Read</td>
<td>3</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1, 2, 4</td>
</tr>
<tr>
<td>CDAM files</td>
<td>Update</td>
<td>1, 2, 3, 4</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control–V installers and system administrators.
- 2 Security administrators.
- 3 Control–V end users.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs.

For additional requirements, see the explanation for this item in the text at the right.

### F. Type of Access to Control–V data sets

To access Control–V data sets and to use the basic facilities of Control–D, the access authorizations shown for this item in the table at the left are recommended.

In addition, migration jobs require UPDATE access to the Active User file and to the Migration User file.
Control-O installation sheet

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFO</td>
<td>ILVOLO</td>
<td>ILUNITO</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFO</td>
<td>OLVOLO</td>
<td>OLUNITO</td>
</tr>
</tbody>
</table>

**A. Catalog Control-O operations files and procedures**

- Catalog Control-O procedures and IOASET to site PROCLIB
  - Yes__ No__

**B. Data set name (DSN) prefixes, volumes, and units**

- **Library Type**
- **DSN Prefix**
- **Volume**
- **Unit**

**A. Catalog Control-O operations files and procedures**

If Control-O starts before CATALOG is active (e.g., to start JES), catalog the following Control-O data sets in the master catalog, prefixed with OLPREFO:

- Automation log file (each CPU has its own file).
- Global variables library (each CPU has its own file).
- Statistics file (each CPU has its own file).
- IOA Global Variable database definition file, columns file, and variables file (can be shared among CPUs).
- RULES library (can be shared among CPUs).
- If used during IPL, SolveWare SOLVRULE and SOLVKOA libraries (can be shared among CPUs).

Copy Control-O procedures in site PROCLIB

Copy the Control-O procedure (CONTROLO) and the Control-O SERVER procedure (CTOSRV) into a proclib that is available during IPL and before JES is active. You must copy the IOASET to the same library, because JCL resolution (before JES is active) requires it.

Major step 5, "Customization Process"

Minor step 2, "Copy Several Procedures to Site Library"
### B. Data set name (DSN) prefixes, volumes, and units

Minor step 4.4 "Install Control-O Libraries" allocates all library prefixes. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and the libraries are restored.

Examples of data set prefixes:
- CTO.V9000I for Control-O Installation libraries
- CTO.V9000O for Control-O Operations libraries

### C. Disk space requirements

Number of Automation log records: ________
(Disk space: ________)
### D. Control-O security requirements

Operator command Yes ___ No ___

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3</td>
</tr>
<tr>
<td>Installation</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control-O installers and system administrators
- 2 Control-O users
- 3 Special user IDs, such as long running started tasks or specific system jobs

The Control-O monitor requires:
- Authority to issue operator commands
- UPDATE access to IOA and Control-O repositories and product data sets

### E. Update SYS1.PARMLIB

Protection for Control-O areas: Define the Control-O program in the SCHEDnn member with the required protection key. See minor step 7.3 "Update Member SCHEDnn in SYS1.PARMLIB" for details.

Control-O subsystem: The Control-O subsystem name is taken from the SSNAME IOA installation parameter. See H Defining subsystems (on page 509) for details about defining subsystems.
F. Console definitions

Number of subsystem consoles (recommended value is 0):
______

Names and number of extended MCS console definitions:
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______
- system ___ prefix ____ EMCS ___ EMCS+MI GI D ______

F. Console definitions

Control-O uses logical consoles to process command responses. A logical console is a console that is reserved for use by special subsystems or a virtual console created and managed by Control-O.

Number of subsystem consoles is described under the NUMCONS parameter in minor step 2.1 “Control-O Operational Parameters.”

Names and number of extended MCS consoles for each system is described in minor step 2.3 “Define EMCS Consoles.”

G. Control-O servers

Immediate servers number (SRVIMD#): ______________

General servers number (SRVGEN#): _______________

Dedicated servers:
- Name ______________ Timeout: _________________
- Name ______________ Timeout: _________________
- Name ______________ Timeout: _________________
- Name ______________ Timeout: _________________
- Name ______________ Timeout: _________________
- Name ______________ Timeout: _________________

G. Control-O servers

Required for DO TSO and DO KSL

Major step 2 "Specify Control-O Parameters"

Minor step 1 "Control-O Operational Parameters"

Minor step 2 "Define Special Servers"

H. Install KOA

Yes ___ No ___

H. Install KOA

Review the installation requirements for this optional interface to determine whether special handling is required by you or by other teams in the organization.

IOA Major step 22 "Install KOA and IOA Routes (optional)"

I. Control-M support

Yes ___ No ___

I. Control-M support

If Control-M is installed, you must first execute Control-M installation step 7, "Install Event Manager (CMEM) / Control-O Interface."
### J. Install CICS and/or IMS support

**CICS ____ IMS ____**

#### These are optional steps.

- If you do not install CICS support, you will not be able to handle internal CICS messages sent to Transient Data Queues.
- If you do not install IMS support, you will not be able to handle internal IMS messages sent to the Master Terminal (MTO).

### K. Communication support

**Yes _____ No _____**

- _____ VTAM
- _____ TCP/IP
- **NODE name ____________ LU / HOST ____________**

#### Major step 11 "Control-O Communication"

- The IOAGATE definition requires the name of LU 6.2, which will be the system name of each member of the Control-O communication group.
- Requires modification in Control-O rules list.
- Requires definition of IOAGATE MAP refer to IOA Major step 20 "Install IOAGATE"
- The IOAGATE map can be TCP/IP or VTAM lu6.2

### L. COSMOS support

**Yes _____ No _____**

- Database definitions in IOAVAR
- Global variables database list
- Rules list
- COSMOS database list

#### Major step 10 "COSMOS Customization"

- Requires modification in IOAVAR database
- Control-O global pools' list
- Control-O rules list

### M. JES2 support

**___ None**

- **___ Exit** using the IEFJFRQ subsystem exit
- **___ Subsystem** using Control-O (not recommended)
  - **JES2 command suppression subsystem name:**

#### Major step 10 "COSMOS Customization"

- If you skip the JES2 support step, you will not be able to modify or suppress JES2 commands.
- See the JCMDSSN parameter in minor step 2.1 "Control-O Operational Parameters."
### N. OMEGAMON support

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Note:** Major step 12 "OMEGAMON Support"
May requires changes in the OMEGAMON monitor STCs
Requires the definition of the Control-O subsystem in the CTOPARM ALTSSN

### O. SMS support

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Note:** IPL with CLPA is required to activated the SMS support

### P. SYSOUT data capture

<table>
<thead>
<tr>
<th>None</th>
<th>Using the IEFJFRQ subsystem exit</th>
</tr>
</thead>
</table>

**Note:** Copy the IGDACSD, IGDACSM, IGDACSS modules to site LPALIB
Major step 7 "Adjustments"
Minor step 4 "ON SMS support of Control-O"
Control-M/Analyzer installation sheet

<table>
<thead>
<tr>
<th>A. Data set name (DSN) prefix, volume, and unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Type</td>
</tr>
<tr>
<td>Installation</td>
</tr>
<tr>
<td>Operations</td>
</tr>
<tr>
<td>Repository</td>
</tr>
</tbody>
</table>

A. Data set name (DSN) prefix, volume, and unit

Minor step 4.4 "Install Control-M/Analyzer Libraries" allocates all library prefixes. After prefixes are allocated, they can be modified as soon as the previous data sets are deleted and the libraries are restored.

Examples of data set prefixes:
- CTB.V9000I for Control-M/Analyzer Installation libraries.
- CTB.V9000O for Control-M/Analyzer Operations libraries.
- CTB.V9000D for Control-M/Analyzer Repository.

B. Type of access to Control-M/Analyzer data sets

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2, 3</td>
</tr>
<tr>
<td>1</td>
<td>Full</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Repository</td>
<td>Update</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>

Legend:
- 1 Control-M/Analyzer installers and system administrators.
- 2 Users who create and update Control-M/Analyzer entities.
- 3 Control-M/Analyzer end users.

B. Type of access to Control-M/Analyzer data sets

Full access includes authority to read, update, allocate, and delete these data sets.
### Control-M/Tape installation sheet

<table>
<thead>
<tr>
<th>A. Number of removable volumes at the site</th>
<th>A. Number of removable volumes at the site</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The number of removable volumes to be defined in the Control-M/Tape Media Database.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Average number of data sets per volume</th>
<th>B. Average number of data sets per volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The average number of data sets to be recorded in the Media Database for each volume.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Average number of volume mounts per day</th>
<th>C. Average number of volume mounts per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The average number of volume mounts to be issued each day in all the systems that share the Control-M/Tape Media Database.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. Number of datasets processed by Control-M/ Tape per day</th>
<th>D. Number of datasets processed by Control-M/ Tape per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The total number of datasets processed daily by Control-M/Tape.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. Number of volumes scratched per day</th>
<th>E. Number of volumes scratched per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The number of volumes to be scratched daily.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F. Number of volumes changing location per day</th>
<th>F. Number of volumes changing location per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The number of volumes to be sent to the vault daily.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>G. Number of days to retain trace information</th>
<th>G. Number of days to retain trace information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The number of days to retain trace information before rewriting the wrap-around trace file.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H. Control-M/ Tape SVC</th>
<th>H. Control-M/ Tape SVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ Static ____ Dynamic</td>
<td>Control-M/Tape uses one type 4 SVC to perform all its real-time processing. You can install Control-M/Tape SVC dynamically or statically.</td>
</tr>
<tr>
<td>SVC number ___________</td>
<td>To determine the Control-M/Tape SVC number, see the SVCNUM parameter in minor step 2.1 &quot;Specify Installation Parameters.&quot;</td>
</tr>
<tr>
<td></td>
<td>For details about installing Control-M/Tape SVC, see major step 6, &quot;Control-M/Tape SVC Installation.&quot; You may need to IPL to activate the Control-M/Tape SVC.</td>
</tr>
</tbody>
</table>
I. Control-M/Tape Operating system interfaces

____ Static   ____ Dynamic

Control-M/Tape uses operating system interfaces to gain control at certain points during data management processing. You can define these interfaces dynamically or statically.

For details about installing the Control-M/Tape operating system interfaces, see major step 7 "Control-M/Tape Operating System Interfaces." You may need to IPL to activate the Control-M/Tape operating system interfaces.

J. Share Control-M/Tape database

____ Yes   ____ No

If two or more systems will share the Control-M/Tape Media Database, see minor step 11.4 "Multiple CPUs Considerations."

K. Data set name (DSN) prefix, volume, and unit

<table>
<thead>
<tr>
<th>Library Type</th>
<th>DSN Prefix</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>ILPREFT ___</td>
<td>ILVOLT ___</td>
<td>ILUNITT</td>
</tr>
<tr>
<td>Operations</td>
<td>OLPREFT ___</td>
<td>OLVOLT ___</td>
<td>OLUNITT</td>
</tr>
<tr>
<td>Database</td>
<td>DBPREFT ___</td>
<td>DBVOLT ___</td>
<td>DBUNITT</td>
</tr>
</tbody>
</table>

Examples of data set prefixes:
- CTT.V9000I for Control-M/Tape Installation libraries.
- CTT.V9000O for Control-M/Tape Operations libraries.
- CTT.V9000D for Control-M/Tape Database.

Major step 5 "Customization Process" allocates the database files and the trace file.
**L. Type of access to Control-M/ Tape data sets**

Category 5 users do not require authorization if no Control-M/Tape exits are used to deny access.

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Access Type</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Read</td>
<td>2,3,4</td>
</tr>
<tr>
<td>Installation</td>
<td>Update</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>Read</td>
<td>4</td>
</tr>
<tr>
<td>Operations</td>
<td>Update</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Database</td>
<td>Read</td>
<td>3</td>
</tr>
<tr>
<td>Database</td>
<td>Update</td>
<td>1,2,4</td>
</tr>
</tbody>
</table>

Legend:
- 1 Users who install and customize Control-M/Tape, and determine implementation and policy issues.
- 2 Users who create and update definitions of Control-M/Tape entities, such as rules and pools.
- 3 Users who inquire information from the Control-M/Tape media database.
- 4 Users with special user IDs, such as long running started tasks, or specific system jobs, such as External Data Manager started tasks.
- 5 Users who submit tape jobs.

**L. Type of access to Control-M/ Tape data sets**

This item specifies the Control-M/Tape data set access requirements.
**A. IOAGATE Started Tasks:**

Determine the number of IOAGATEs and which client applications will be supported by each one:

<table>
<thead>
<tr>
<th>Procedure Name</th>
<th>Suffix (PSFX)</th>
<th>Client Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>__D__F__O__M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>__D__F__O__M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>__D__F__O__M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>__D__F__O__M</td>
</tr>
</tbody>
</table>

A. IOAGATE Started Tasks

Decide whether a single IOAGATE will support all your IOAGATE application servers (client applications) or whether dedicated, separate IOAGATEs will support each application server. It is also possible to distribute the application servers between two or more IOAGATE started tasks without fully dedicating one IOAGATE per application server. Dedicating an IOAGATE per application is the fastest method and we recommend that this method be implemented unless it is essential to minimize address spaces.

Each IOAGATE that you start must have a unique JCL procedure that loads a unique ECAPARMx member. ECAPARMx members are distinguished by one-character member suffixes (the x in ECAPARMx), which must be specified to IOAGATE via the EXEC PARM JCL parameter PSFX.

When specifying the application servers, and when using this planning sheet, use the following key:

- D Control-D/Page on Demand (CTD/POD)
- F Control-D/File Transfer Option (CTD/FTO)
- O Control-O (CTO)
- M Control-M Application Server (CTM)

For further details, see step 20.2 in the section titled Configure IOAGATE Parameters, and the Chapter on IOAGATE installation and configuration considerations in the *INCONTROL for z/OS Installation Guide: Installing.*
### B. IOAGATE Application Servers and their Channels

Specify for each supported application its Channel ID:

- For D: Channel ID:___________
- For F: Channel ID:___________
- For O: Channel ID:___________
- For M: Channel ID:___________

### B. IOAGATE Application Servers and their Channels

If IOAGATE will be used to support CTD/POD, it is possible to start multiple application server address spaces for supporting it (cloning).

ALL CTD/POD application server address spaces can use the same channel. Address space cloning as described above is possible also for CTD/FTO.

If CTO is supported, it can share the same channel with CTD/POD.

CTD/FTO must have a dedicated channel.

CTM must have a dedicated channel.

For further details, see step 20.2 in the section titled Configure IOAGATE Parameters, and the chapter on IOAGATE installation and configuration considerations in the *INCONTROL for z/OS Installation Guide: Installing.*
C. Channels: Specify for each channel

Channel: Channel model: __MC ___DC
   Channel protocol: ___TCP/IP ___SNA
      If TCP/IP: Channel port: ____________
      TCP/IP vendor: ___IBM ___CA
      If CA:
         Subsystem Name: ___Default ___Other:
      If O is using the channel (either dedicated or shared with D):
         Network Map: ___________ Node ID: ___________
         If SNA: Channel APPLID: ________________ (MC only)
      If O is using the channel (either dedicated or shared with D):
         Network Map: ___________ Node ID: ___________
         Channel: Channel model: __MC ___DC
         Channel protocol: ___TCP/IP ___SNA
         If TCP/IP: Channel port: ____________
         TCP/IP vendor: ___IBM ___CA
         If CA:
            Subsystem Name: ___Default ___Other:
      If O is using the channel (either dedicated or shared with D):
         Network Map: ___________ Node ID: ___________
         If SNA: Channel APPLID: ________________ (MC only)

C. Channels: Specify for each channel

Channels must be defined per application, as follows:

CTD/POD (D) - - - - - - - - - - - - - - - MC
CTD/FTO (F) - - - - - - - - - - - - - - - MC
CTO (O) - - - - - - - - - - - - - - - - - - MC
CTM (M) - - - - - - - - - - - - - - - - - - DC

Channel protocol can be either TCP/IP (for all applications) or SNA for Control-O and CTD/POD, which also support SNA.

Repeat the planning definitions for each channel as necessary. Space for three channels has been provided on this planning sheet. Use additional paper if necessary.

For further details, see step 20.2 in the section titled Configure IOAGATE Parameters, and the Chapter on IOAGATE installation and configuration considerations in the INCONTROL for z/OS Installation Guide.
<table>
<thead>
<tr>
<th>Channel: Channel model:</th>
<th>___MC ___DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel protocol:</td>
<td>___TCP/IP ___SNA</td>
</tr>
<tr>
<td>If TCP/IP: Channel port:</td>
<td>___________</td>
</tr>
<tr>
<td>TCP/IP vendor:</td>
<td>___IBM ___CA</td>
</tr>
<tr>
<td>If CA:</td>
<td></td>
</tr>
<tr>
<td>Subsystem Name:</td>
<td>___Default</td>
</tr>
<tr>
<td>____Other:</td>
<td></td>
</tr>
<tr>
<td>If O is using the channel (either dedicated or shared with D):</td>
<td></td>
</tr>
<tr>
<td>Network Map:</td>
<td>___________ Node ID: ___________</td>
</tr>
<tr>
<td>If SNA: Channel APPLID:</td>
<td>___________ (MC only)</td>
</tr>
<tr>
<td>If O is using the channel (either dedicated or shared with D):</td>
<td></td>
</tr>
<tr>
<td>Network Map:</td>
<td>___________ Node ID: ___________</td>
</tr>
<tr>
<td>D. Software Requirements and Compatibility</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td><strong>D. Software Requirements and Compatibility</strong></td>
<td></td>
</tr>
<tr>
<td>To use Control-M Application Server (CTMAS), Control-M/Enterprise Manager must be from the same version and release, or later, as Control-M for z/OS. The version and release are indicated by the v.vv.rr.mm (version.release.maintenance) format of the product description.</td>
<td></td>
</tr>
<tr>
<td>In case there is a need to work with an earlier release of Control-M/Enterprise Manager, such as during a testing period, the parameters MODECTM and MODEASM in IOAPARM member must be set to the version of the Control-M/Enterprise Manager. For example, if the Control-M/Enterprise Manager is in V8 and the IOA is in V9, the setting of MODECTM=800 and MODEASM=800 must be used. Setting the value would restrict the functionality of the Control-M for z/OS to the features and parameter values that were in effect in the specified version. See the section on the parameters MODECTM/MODEASM for more detailed explanation on the values and the accompanied restrictions.</td>
<td></td>
</tr>
<tr>
<td>Note that BMC does not recommend that this mode be used for a long period of time, but should be limited to only upgrading and testing periods.</td>
<td></td>
</tr>
<tr>
<td>If you have any questions, please contact BMC Customer Support.</td>
<td></td>
</tr>
</tbody>
</table>