



# Control-M for z/OS for APM/HS5000 9.0.00 Conversion Guide



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  - 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
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# Contents

<b>About This Guide</b>	<b>9</b>
Conventions Used in This Guide . . . . .	10
<b>Chapter 1    Conceptual Overview</b>	<b>15</b>
Overview . . . . .	16
Application Definition . . . . .	16
Job Definition . . . . .	16
Job Dependency . . . . .	17
CONTROL-M HS5000 conversion tool . . . . .	17
<b>Chapter 2    Conversion Process Flow</b>	<b>19</b>
Overview . . . . .	20
JOB1: Build CONTROL-M Scheduling Table Library, Calendars, Parameter Libraries, and a Cross-Reference File . . . . .	20
Description . . . . .	20
Input . . . . .	21
Output . . . . .	21
JOB2: Convert JCL Libraries . . . . .	22
Description . . . . .	22
Input . . . . .	22
Output . . . . .	22
<b>Chapter 3    Conversion Steps</b>	<b>23</b>
Overview . . . . .	24
Step 1 - Create the Conversion Source and Load Libraries . . . . .	25
Step 2 - Produce the YSEQ Report . . . . .	25
Step 3 - Check and Modify Parameters in Member DEFAULTS . . . . .	25
Step 4 - Modify and Run the ASMLINK Member . . . . .	26
Step 5 - Modify and Run Member JOB1 . . . . .	26
Step 6 - Modify and Run Member JOB2 . . . . .	27
Step 7 - Final Adjustments . . . . .	28
Step 8 - Check Conversion Results . . . . .	28
<b>Chapter 4    Conversion Details</b>	<b>29</b>
Overview . . . . .	30
Component Conversion Summaries . . . . .	30
Component Conversion Detail . . . . .	31

1. MASTER .....	31
2. JOBNAME.....	31
3. NETWORK .....	31
4. DESC .....	32
6. EARLY.....	32
7. UNTIL .....	32
8. PRIORITY .....	32
9. STATUS1.....	32
10. STATUS2.....	33
11. LIBKEY .....	33
12. COND-CODE .....	33
13. DEADLINE CODE and DATE Scheduling Criteria .....	34
14. Dependencies .....	35
15. TAPE (1 and 2), USER (1 - 5) .....	36
16. APM000D8 .....	36
Unique CONTROL-M and CONTROL-M/Restart Parameters .....	36
DO SYSOUT .....	37
MAXWAIT .....	37
PREVENT-NCT2 .....	37
RETRO .....	38
SHOUT .....	38
<b>Appendix A Downloading and installing the CONTROL-M conversion tools</b>	<b>39</b>
<b>Appendix B Conversion Parameters</b>	<b>43</b>
<b>Appendix C Messages</b>	<b>47</b>
<b>Appendix D Planning The Conversion</b>	<b>53</b>
1: Organize the Conversion Team .....	53
2: Analyze Your Hardware .....	54
3: Consider Current Practices .....	55
4: Read the Conversion Manual .....	57
<b>Appendix E Problem Reporting</b>	<b>59</b>
<b>Index</b>	<b>61</b>



# Tables

Primary Conversion Jobs .....	20
HS5000 TAB Library Members Used in Conversion .....	21
Parameters to Be Adjusted .....	25
Conversion of HS5000 Fields to CONTROL-M Parameters .....	30
Conversion of HS5000 STATUS1 Parameter .....	32
Conversion of HS5000 STATUS2 Parameter .....	33
Conversion of HS5000 DEADLINE CODE and DATE Scheduling Criteria .....	34
Conversion of Condition Names .....	36
SHOUT Situations .....	38
HS5000 Conversion Parameters .....	43





# About This Guide

This conversion guide reviews basic concepts relevant to converting APM/HS5000 to CONTROL-M and CONTROL-M/Restart, and provides step-by-step instructions on how to use the conversion tool. The terms APM and HS5000 are used interchangeably in this document.

The guide is divided into the following chapters:

## **Chapter 1 – Conceptual Overview**

Overview of basic concepts describing the conversion from HS5000 to CONTROL-M

## **Chapter 2 – Conversion Process Flow**

Description of the conversion process including details of each of the batch jobs

## **Chapter 3 – Conversion Steps**

Step-by-step procedure for installing and operating the conversion tool

## **Chapter 4 – Conversion Details**

Definitions of relevant HS5000 components in relation to corresponding CONTROL-M parameters, and a description of unique CONTROL-M and CONTROL-M/Restart parameters that can be automatically set in CONTROL-M scheduling tables

## **Appendix A – Downloading and installing the CONTROL-M Conversion tool**

Description of the CONTROL-M Conversion tools, and the procedure for downloading and installing them.

## **Appendix B – Conversion Parameters**

Various parameters for the conversion process

## Appendix C – Messages

Messages and codes of the conversion process

## Appendix D – Planning the Conversion

Advance planning before carrying out the conversion

## Appendix E – Problem Reporting

Instructions on reporting problems to BMC Software Customer Support

# 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).

---

### — **WARNING** —

---

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**.

## 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 'CBLTDLI'
```

---

- code examples, such as

---

```
FOR TABLE owner.name USE option, . . . ;
```

---

- control statements, such as

---

```
//PRDSYSIN DD * USERLOAD PRD(2) PRINT
```

---

- 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*:

— **NOTE** —

---

Notes provide additional information about the current subject.

---

— **WARNING** —

---

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

---



# Conceptual Overview

This chapter includes the following topics:

Overview .....	16
Application Definition .....	16
Job Definition .....	16
Job Dependency .....	17
CONTROL-M HS5000 conversion tool .....	17

# Overview

This overview is intended for production control personnel who are familiar with HS5000 terminology. Experience with CONTROL-M is recommended but not required.

The HS5000 to CONTROL-M conversion tool is provided by BMC Software to assist in the creation of the primary product elements for CONTROL-M. It is designed to expedite the conversion process by automatically translating the most commonly built HS5000 scheduling elements into functionally equivalent processes in CONTROL-M. For more information on the HS5000 conversion tool, see [“CONTROL-M HS5000 conversion tool” on page 17](#).

## Application Definition

The following paragraphs discuss components of the HS5000 application definition in relation to the management of corresponding components under CONTROL-M.

## Job Definition

CONTROL-M jobs are defined in job scheduling definitions. CONTROL-M job scheduling definitions include scheduling criteria and other production parameters and are defined using the Job Scheduling Definition screen. One or more related job scheduling definitions are organized within scheduling tables. These scheduling tables are members stored in partitioned datasets (PDS) called scheduling table libraries.

In CONTROL-M, job control is independent of the job name in the job statement. CONTROL-M controls the job using the JCL member name, which is specified in the parameter MEMNAME of the CONTROL-M job scheduling definition.

The conversion tool uses the HS5000 MASTER name as a value for the CONTROL-M parameter MEMNAME. If the MASTER parameter is not defined in the HS5000 job, the value of the JOBNAME parameter is used instead.

In a typical production environment, jobs are grouped into applications. HS5000 uses NETWORKS to relate jobs to applications. The HS5000 network structure is defined in the NET library, which contains one member for each network. Each member contains the names of all the jobs in that network.



In CONTROL-M, application job grouping is performed by defining all related jobs in a single scheduling table. The conversion tool converts each HS5000 NETWORK to a CONTROL-M scheduling table, and the scheduling information specified for the NETWORK is used as default parameters for the jobs in the table. HS5000 jobs, described in the YSEQ report, are converted to CONTROL-M jobs, and the scheduling information specified for each job is used to create a CONTROL-M job scheduling definition. HS5000 jobs that are not contained in any network, that is, not referenced in any NET library member, are placed in a special CONTROL-M scheduling table named \$NONET.

## Job Dependency

CONTROL-M job dependencies are controlled using prerequisite conditions. A prerequisite condition is a descriptive name given to a specific situation, event, or condition. A prerequisite condition can be defined as an IN condition or an OUT condition for the job. A condition date reference is associated with each condition.

- An IN condition for a job is a prerequisite condition that must exist in a file called the IOA Conditions file before the job can be executed. The job is submitted for execution only if all IN conditions with the required date exist in the IOA Conditions file.
- An OUT condition for a job is a prerequisite condition that is, generally, added to the IOA Conditions file upon completion of the job. A job is considered to have ended OK if it terminates with a condition code of 4 or less in all its steps.

The conversion tool translates HS5000 job dependencies to the appropriate CONTROL-M IN or OUT prerequisite conditions.

## CONTROL-M HS5000 conversion tool

The conversion consists of a sequence of batch jobs. Although these jobs run independently of HS5000 and CONTROL-M, CONTROL-M must be installed in order to perform the conversion.

The conversion tool

- creates CONTROL-M scheduling tables and calendars based on HS5000 scheduling definitions and calendars
- converts HS5000 symbols in JCL libraries to CONTROL-M format

- enables customers to automatically set unique CONTROL-M and CONTROL-M/Restart options in the scheduling tables
- issues messages about problems and errors found in the HS5000 definitions

The conversion tool is delivered in source code format and may be locally tailored to fit specific requirements.

## Conversion Process Flow

This chapter includes the following topics:

Overview .....	20
JOB1: Build CONTROL-M Scheduling Table Library, Calendars, Parameter Libraries, and a Cross-Reference File .....	20
Description .....	20
Input .....	21
Output .....	21
JOB2: Convert JCL Libraries .....	22
Description .....	22
Input .....	22
Output .....	22

# Overview

This chapter describes in detail the components of the conversion process from the perspective of jobs, programs and datasets.

A familiarity with the conversion process helps in understanding the conversion logic and the installation and operation steps discussed in [Chapter 3, “Conversion Steps.”](#)

The process is comprised of the following jobs:

**Table 1 Primary Conversion Jobs**

Job	Description
JOB1	Build CONTROL-M Scheduling Table Library, Calendars, Parameter Libraries, and a Cross-Reference File
JOB2	Convert JCL Members

## JOB1: Build CONTROL-M Scheduling Table Library, Calendars, Parameter Libraries, and a Cross-Reference File

### Description

This job

- builds the CONTROL-M scheduling table library based on the output of HS5000 command YSEQ and the contents of HS5000 NET and TAB libraries
- builds the WORKDAYS calendar using the HS5000 HSHDxxxx members in the HS5000 TAB library

This calendar is referenced by CONTROL-M scheduling parameters DCAL, WCAL, and CONFCAL in the CONTROL-M job scheduling definitions created by the conversion tool.

- creates a PARM library containing all HS5000 symbol (SYM) members, converted to AutoEdit format

The members in this library are used to resolve variables in %%INCLIB and %%INCMEM statements that are added to converted members of the JCL library.

## Input

1. The HS5000 YSEQ report
2. The HS5000 NET library
3. The HS5000 SYM library
4. The following members in the HS5000 TAB library

**Table 2 HS5000 TAB Library Members Used in Conversion**

Member	Description
APM000CD	condition-code processing table.
APM000TO	LIBKEY and JCL library name table.
APM000AZ	special date-codes.
APM000D8	exclusive and share-type resources.
HSHDxxxx	calendar information.

## Output

1. File containing input control statements for utility CTMBLT (used later in this job)  
 Default file name: CTM.HS5000.INPRM  
 File characteristics: sequential; record length 80; block size 23440
2. Job Name and Table Name Cross-Reference file  
 Default file name: CTM.HS5000.XREF  
 File characteristics: sequential; record length 132; block size 1320
3. CONTROL-M scheduling table library created using utility CTMBLT  
 For more information on this utility, see the *INCONTROL for z/OS Utilities Guide*.  
 Default file name: CTM.HS5000.SCHEDULE  
 File characteristics: PDS; record length 80; block size 3120
4. CONTROL-M calendar library  
 Default file name: CTM.HS5000.NEWCAL  
 File characteristics: PDS; record length 80; block size 3120

---

**— NOTE —**

If no HSHDxxxx members are found in the HS5000 TAB library, an error message is issued. In this case, the WORKDAYS calendar must be created manually using the IOA Online Calendar facility (Screen 8).

---

5. CONTROL-M PARM library containing CONTROL-M AutoEdit variable definitions  
Default file name: CTM.HS5000.PARM  
File characteristics: PDS; record length 80; block size 3120

## JOB2: Convert JCL Libraries

### Description

This job converts the HS5000 JCL library to CONTROL-M AutoEdit format.

JOB2 invokes the program CTMHS5JC, which converts the HS5000 JCL library to CONTROL-M format. When the program first encounters an HS5000 JCL variable symbol (usually prefixed by %) in a member, it inserts the following AutoEdit control statement before the line containing that variable:

---

```
/* %%INCLIB &inclib %%INCMEM INCMEM
```

---

All symbols and variables in the member are converted to CONTROL-M AutoEdit variables. For more information, see [“Step 7 - Final Adjustments” on page 28](#).

Conversion parameter &AUTOEDT can be used to indicate whether symbols in JCL comment statements are to be converted. For more information, see [“&AUTOEDT” on page 43](#).

### Input

The HS5000 JCL library.

### Output

CONTROL-M JCL Library  
Default file name: CTM.HS5000.JCL  
File characteristics: PDS; record length 80; block size 3120

## Conversion Steps

This chapter includes the following topics:

Overview .....	24
Step 1 - Create the Conversion Source and Load Libraries .....	25
Step 2 - Produce the YSEQ Report .....	25
Step 3 - Check and Modify Parameters in Member DEFAULTS .....	25
Step 4 - Modify and Run the ASMLINK Member .....	26
Step 5 - Modify and Run Member JOB1 .....	26
Step 6 - Modify and Run Member JOB2 .....	27
Step 7 - Final Adjustments .....	28
Step 8 - Check Conversion Results .....	28

# Overview

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**NOTE**

If you have not yet downloaded and installed the CONTROL-M conversion tools, do so now according to the instructions in [Appendix A, “Downloading and installing the CONTROL-M conversion tools”](#).

---

Installation and operation of the conversion tool consists of a series of steps.

BMC Software recommends that you first review the contents of [Appendix D, “Planning The Conversion,”](#) then read through the remainder of this chapter before performing the steps. It is important to follow the outlined sequence of the steps to ensure a successful conversion.

The following is a summary checklist of the steps:

- 1 Create the conversion source and load libraries.
- 2 Produce the YSEQ Report.
- 3 Check and modify parameters in member DEFAULTS.
- 4 Modify and run member ASMLINK.
- 5 Modify and run member JOB1.
- 6 Modify and run member JOB2.
- 7 Final adjustments.
- 8 Check the conversion results.

---

**NOTE**

The source code for all programs resides in the conversion source library and may be locally tailored.

---



# Step 1 - Create the Conversion Source and Load Libraries

1. Run job \$\$INIT in the IOA CONV library to create the HS5000 conversion source library and allocate the conversion load library
2. Tailor the following parameters in the member in accordance with your local conventions:

**Table 3 Parameters to Be Adjusted**

Parameter	Description
Job statement	
INLIB	IOA CONV library name
OUTLIB	HS5000 conversion source library name
LOADLIB	HS5000 conversion load library name
UNIT	Unit name of DASD device
VOLSER	Volser of DASD device
PRODUCT	HS5000

3. Submit the job for execution. The job must finish with a condition code of 0.

## Step 2 - Produce the YSEQ Report

Issue HS5000 command YSEQ and save the output report on a disk file. This file is used in later steps of this conversion.

## Step 3 - Check and Modify Parameters in Member DEFAULTS

Edit the DEFAULTS member in the conversion source library. Adjust the conversion parameters according to your site requirements. For a detailed description of the conversion parameters, see [Appendix B, "Conversion Parameters,"](#)

## Step 4 - Modify and Run the ASMLINK Member

The ASMLINK member is used to assemble and link-edit all the conversion programs. This assembly uses the DEFAULT parameters member, which was described in Step 3.

Modify the JCL of the ASMLINK member in the conversion source library. Adjust the following specifications according to your local naming conventions:

- job statement
- conversion source library (parameter SRCLIB)
- conversion load library (parameter LOADLIB)
- IOA LOAD library (parameter IOALOAD)
- IOA macro library (parameter IOAMAC)

---

**NOTE**

This step must be re-executed whenever changes are made to a parameter in the DEFAULTS member, or when a source fix is applied to any module. It may also be necessary to perform an LLA REFRESH after changes are made.

---

Submit the job for execution and check the sysout for non-zero condition codes and error messages. The job must finish with a condition code not higher than 4. Error message IEW0461 can be ignored.

## Step 5 - Modify and Run Member JOB1

JOB1 builds the CONTROL-M scheduling library, the calendars library, and the PARM library, which contains AutoEdit variable definitions.

Modify the JCL in the JOB1 member of the conversion source library. Adjust the following specifications according to your local conventions:

- job statement
- conversion load library name (in STEP0, DD statement CTMLOAD)
- IOA LOAD library (in STEP0, DD statement IOALOAD)
- IOA PARM library (in STEP0, DD statement IOAPARM)
- IOA LOG file (in STEP0, DD statement IOALOG)
- name of the HS5000 YSEQ report (in STEP0, DD statement YSEQ) created in Step 2

- name of the HS5000 NET library (in STEP0, DD statement APMNET)
- name of the HS5000 TAB library (in STEP0, DD statement APMTAB)
- name of the HS5000 SYM library (in STEP0, DD statement APMSYM)
- name and location of the Job-Name and Table-Name Cross-Reference file (STEP0, DD statement DAXREF)
- name and location of the CONTROL-M Scheduling Table library (STEP0, DD statement DASCHD)
- name and location of the CONTROL-M PARM library (STEP0, DD statement PARM)
- name and location of the CONTROL-M Calendar library (STEP0, DD statement CALENDAR)
- name and location of the Scheduling Table Definition file (STEP0, DD statement DAINPRM).  
DAINPRM contains information extracted from HS5000 definitions. This information is used as input for the CONTROL-M utility CTMBLT.

Submit the job for execution and check the output for completion code and error messages. The job must finish with condition code 0. Condition code 12 and higher causes the job to stop processing.

## Step 6 - Modify and Run Member JOB2

JOB2 converts symbolic variables in the HS5000 JCL libraries to CONTROL-M AutoEdit format.

Modify the JCL in the JOB2 member of the conversion source library. Adjust the following specifications according to your local conventions:

- job statement
- conversion load library name (STEP0, DD statement CTMLOAD)
- the IOA LOAD library name (STEP0, DD statement IOALOAD)
- name of the HS5000 JCL library (STEP0, DD statement APMJCL)
- name and location of the converted CONTROL-M JCL library (STEP0, DD statement CTMJCL)

Submit the job for execution and check the output for condition code and error messages.

If errors are encountered while converting the HS5000 JCL library, appropriate messages are issued. Condition code 12 and higher causes the job to stop processing. Condition code 8 may indicate that some members require manual conversion. For more information, see [“CTMHS5JC-10E UNABLE TO MODIFY MEMBER memname” on page 51.](#)

## Step 7 - Final Adjustments

Copy the INCMEM member from the conversion source library to the PARM library created in JOB1.

This member contains the following lines:

---

```
%%INCLIB CTM.HS5000.PARM %%INCMEM AZDDMM%%YEAR
%%INCLIB CTM.HS5000.PARM %%INCMEM AZDD%%MONTH%%YEAR
%%INCLIB CTM.HS5000.PARM %%INCMEM AZDAILY
```

---

If the PARM library name was changed in JOB1, the library name, which by default is CTM.HS5000.PARM, must be changed accordingly in the INCMEM member.

The PARM library contains 14 AutoEdit variable members, 1 yearly member “AZDDMMyy”, 12 monthly members “AZDDmmyy”, and the daily member “AZDAILY”, which have been converted from the HS5000 symbol members. These AutoEdit variable members must be manually updated to reflect the current operating environment.

## Step 8 - Check Conversion Results

Enter the CONTROL-M environment, order one of the scheduling tables that was just created, and run the job. You can also use the graphic job flow, Option 2G, to access the job flow of any HS5000 network as it appears in CONTROL-M. Batch utilities such as CTMRPLN, CTMRFLW, CTMRNSC, CTMXRF are also very useful in checking the conversion results. These utilities are described in the *INCONTROL for z/OS Utilities Guide*.

---

### — NOTE —

---

If when you are trying to view a job scheduling table online error message IOAE33E (Insufficient storage) is displayed, simply split the job scheduling table into multiple tables.

---

## Conversion Details

This chapter includes the following topics:

Overview .....	30
Component Conversion Summaries .....	30
Component Conversion Detail .....	31
1. MASTER .....	31
2. JOBNAME .....	31
3. NETWORK .....	31
4. DESC .....	32
6. EARLY .....	32
7. UNTIL .....	32
8. PRIORITY .....	32
9. STATUS1 .....	32
10. STATUS2 .....	33
11. LIBKEY .....	33
12. COND-CODE .....	33
13. DEADLINE CODE and DATE Scheduling Criteria .....	34
14. Dependencies .....	35
15. TAPE (1 and 2), USER (1 - 5) .....	36
16. APM000D8 .....	36
Unique CONTROL-M and CONTROL-M/Restart Parameters .....	36
MAXWAIT .....	37
PREVENT-NCT2 .....	37
RETRO .....	38
SHOUT .....	38

# Overview

This chapter details the conversion of relevant HS5000 fields into corresponding CONTROL-M job definition parameters, and also describes unique CONTROL-M and CONTROL-M/Restart parameters that may be specified for the conversion.

## Component Conversion Summaries

The table below lists HS5000 fields and the corresponding CONTROL-M statements to which they are converted. Following the tables is a detailed explanation of how each field is converted.

---

— **NOTE** —

---

Item number (Item No.) in the following table refers to the number of the relevant topic in this chapter.

---

**Table 4 Conversion of HS5000 Fields to CONTROL-M Parameters**

HS5000 Field	CONTROL-M Job Scheduling Definition Parameter	Item No.
MASTER	MEMNAME	1
JOBNAME	MEMNAME	2
NETWORK	Table name, GROUP, APPL	3
DESCRIPTION	DESC	4
EARLY	TIME FROM	6
UNTIL	TIME UNTIL	7
PRIORITY	PRIORITY	8
STATUS1	Manual IN condition, OVERLIB	9
STATUS2	Manual IN condition, ON PGMST SHOUT WHEN LATESUB	10
LIBKEY	MEMLIB	11
COND-CODE	ON PGMST <i>xxxx</i> CODES <i>yyyy</i>	12
DEADLINE CODEs	Basic Scheduling parameters	13
DATEs	Basic Scheduling parameters	13
Dependencies	IN and/or OUT conditions	14
TAPE (1 and 2), USER (1 - 5)	Quantitative RESOURCEs	15
APM000D8	CONTROL resources	16

# Component Conversion Detail

## 1. MASTER

This field contains the JCL member name. It is converted to the CONTROL-M parameter MEMNAME. If field MASTER is omitted from an HS5000 job, the HS5000 parameter JOBNAME is used to supply a value for CONTROL-M parameter MEMNAME.

## 2. JOBNAME

JOBNAME indicates an alias for the HS5000 member name. Usually JOBNAME is the actual name of the HS5000 member. JOBNAME must contain a value that is unique in the schedule of the day. In some cases, such as when a job must run several times in one day, this field contains an alias name.

The conversion tool uses this field to supply a value for CONTROL-M parameter MEMNAME if the HS5000 MASTER parameter was omitted from the job.

The JOBNAME field is also used to build IN/OUT condition names. These conditions are used to indicate dependencies between jobs, and to specify manual actions, or manual IN Conditions, required prior to the job run.

Parameter JOBNAME is also added to CONTROL-M parameter DESC to help users more easily locate their jobs in the new environment.

## 3. NETWORK

In HS5000, there are two types of entities: NETWORK (N) and JOB (J/T). Each NETWORK is converted to a CONTROL-M scheduling table, and the NETWORK scheduling information is used to define default parameters for the jobs in the table. In addition, each JOB is converted to a CONTROL-M job, and the scheduling information specified for the job is used to create the job scheduling definition.

The NETWORK name is also used as the value for the CONTROL-M GROUP and APPL parameters.

## 4. DESC

This field specifies the job description. The parameter is converted to the CONTROL-M parameter DESC.

## 6. EARLY

This field specifies the earliest time for job submission. The parameter is converted to the CONTROL-M parameter TIME FROM.

## 7. UNTIL

This field specifies the latest time for job submission. The parameter is converted to the CONTROL-M parameter TIME UNTIL.

## 8. PRIORITY

This field specifies the job priority. The one-byte HS5000 priority is copied to the CONTROL-M parameter PRIORITY.

## 9. STATUS1

Specifies action to be performed prior to job submission. The parameter is converted as follows:

**Table 5 Conversion of HS5000 STATUS1 Parameter**

<b>STATUS1 Value</b>	<b>CONTROL-M Job Scheduling Definition Parameter</b>
H (Place the job in hold status)	HLD1- <i>jobname</i> manual IN-condition
T (Wait for temporary update)	TMP1- <i>jobname</i> manual IN-condition
D (Wait for data)	DAT1- <i>jobname</i> manual IN-condition
U (Wait for update)	UPD1- <i>jobname</i> manual IN-condition
A (Dummy job)	OVERLIB=DUMMY



## 10. STATUS2

Specifies various actions involved with the run of the job. The parameter is converted as follows:

**Table 6 Conversion of HS5000 STATUS2 Parameter**

STATUS2 Value	CONTROL-M Job Scheduling Definition Parameter
H (Hold the job)	HLD2- <i>jobname</i> manual IN condition
T (Wait for temporary update)	TMP2- <i>jobname</i> manual IN condition
D (Wait for data)	DAT2- <i>jobname</i> manual IN condition
U (Wait for update)	UPD2- <i>jobname</i> manual IN condition
F (Set a Ready message after job cancellation)	ON PGMST ANYSTEP CODES=***** DO=OK
X (Set job in hold when it has reached latest end)	SHOUT WHEN LATESTSUB <i>time-until</i>

## 11. LIBKEY

The LIBKEY field in an HS5000 APM000TO member points to a JCL library name. The value in this field is converted to the full JCL library name and stored in the CONTROL-M parameter MEMLIB as specified by the APM000TO table. If the value of LIBKEY is not found in member APM000TO, GENERAL is specified for parameter MEMLIB.

## 12. COND-CODE

Actions to be taken that depend on job or step condition codes are specified in the APM000CD member of the TAB library. These actions are converted to CONTROL-M ON PGMST *xxxxxxx* CODES *yyyyy* statements.

If no step name is specified in the appropriate record in member APM000CD, a value of ANYSTEP is substituted for *xxxxxxx* in the above mentioned ON PGMST statement. Generic job names (*jobname* prefix followed by an '\*') are supported.

HS5000 operators (columns 28 and 29) are converted to appropriate CONTROL-M operators (that is, blank, N, >, and <) in the *yyyyy* code. System (Sxxx in column 45) and User (Uxxxx in column 50) abend codes are similarly supported.

The field in column 36 may contain different types of information. It is converted as follows:

- O.K.–The ON PGMST action specifies DO OK
- Blank–The ON PGMST action specifies DO NOTOK
- Start *Stand-by jobname*–The ON PGMST action specifies DO RERUN and the job name is specified in the RERUNMEM parameter. In addition, a default MAXRERUN of 1 is specified, unless a maximum (MA *nnnn*) is explicitly coded in column 64.

## 13. DEADLINE CODE and DATE Scheduling Criteria

DEADLINE CODE and DATE scheduling criteria are converted to CONTROL-M basic scheduling criteria as described in the table shown below. Codes not specified in this table are converted according to the date definition criteria in the member APM000AZ.

Column “Note” in the chart below refers to the letter of the corresponding note listed after the following table.

**Table 7 Conversion of HS5000 DEADLINE CODE and DATE Scheduling Criteria (part 1 of 2)**

DEADLINE CODE or DATE Scheduling Criteria	CONTROL-M Basic Scheduling Parameter	Note
00	DAYS=-L1	A
01 - 31	DAYS=D01-D31	A
33	DAYS=L1	A
40	DAYS=ALL	
41 - 47	WDAYS=<1,...,<0	B
51 - 57	WDAYS=1,...,0	B
61 - 67	WDAYS=>1,...,>0	B
97	DATES=0101, TASKTYPE=CYC, MAXWAIT=99, INTERVAL=2 D FROM TRGT	
98	DATES=0201, TASKTYPE=CYC, MAXWAIT=99, INTERVAL=2 D FROM TRGT	
99	DAYS=-L1,-D1	A
Dd.BE	DAYS=<dd or WDAYS=<x (for dd=51-57)	A

**Table 7 Conversion of HS5000 DEADLINE CODE and DATE Scheduling Criteria (part 2 of 2)**

<b>DEADLINE CODE or DATE Scheduling Criteria</b>	<b>CONTROL-M Basic Scheduling Parameter</b>	<b>Note</b>
<i>Dd.AF</i>	DAYS=> <i>dd</i> or WDAY=> <i>x</i> (for <i>dd</i> =51-57)	A
<i>LA.BE</i>	DAYS=L1,SHIFT=<	C
<i>LA.AF</i>	DAYS=L1,SHIFT=>	C
<i>DdD00</i>	DAYS=- <i>Ddd</i> or WDAY=- <i>x</i> (for <i>dd</i> =51-57)	A
<i>DdDmm</i>	DAYS=- <i>Ddd</i> ,MONTHS= <i>mm</i>	A
<i>DdBmm</i>	DATES= <i>ddmm</i> ,SHIFT=<	C
<i>DdAmm</i>	DATES= <i>ddmm</i> ,SHIFT=>	C
<i>Dd</i>	DAYS= <i>Ddd</i> or <i>dd</i>	A
<i>Dd.mm</i>	DATES= <i>ddmm</i> or DAYS= <i>Dxx</i> ,MONTHS= <i>mm</i>	A
<i>33.mm</i>	DAYS=L1,MONTHS= <i>mm</i>	A
<i>CcTmm</i>	MONTHS= <i>mm</i>	D

**Notes**

- A** CONTROL-M job scheduling definitions also specify the DCAL calendar WORKDAYS when the DAYS parameter must be limited according to a calendar.
- B** CONTROL-M job scheduling definitions also specify the WCAL calendar WORKDAYS. The conversion described in the above table assumes that MON was specified for IOA installation parameter SWEET.
- C** CONTROL-M job scheduling definitions also specify the CONFCAL calendar WORKDAYS.
- D** Date-code *cc* is converted according to the method specified in HS5000 APMTAB member APM000AZ.

## 14. Dependencies

HS5000 job dependencies are converted to CONTROL-M using IN/OUT prerequisite conditions. The format of the conditions is:

---

```
tablename-jobname ODAT [+]
```

---

where *jobname* is JOBNAME as described in “2. JOBNAME” on page 31.

Condition names are modified according to HS5000 dependency codes as follows:

**Table 8 Conversion of Condition Names**

HS5000 Dependency Code	Modification
+ (Boolean OR)	The condition name is prefixed by ' ' (hex 4F).
/ (job of the previous day)	The condition date is specified as PREV.

## 15. TAPE (1 and 2), USER (1 – 5)

HS5000 resources TAPE (1 and 2) and USER (1 – 5) are converted to CONTROL-M quantitative RESOURCES TAPE<sub>n</sub> and USER<sub>n</sub> with their respective quantity.

## 16. APM000D8

Member APM000D8 in the HS5000 TAB library specifies a table of events that must be prevented from running simultaneously with certain other jobs. This table is converted to CONTROL-M exclusive or shared CONTROL resources. Shared resources are indicated in the APM000D8 table with a '+' prefix.

# Unique CONTROL-M and CONTROL-M/Restart Parameters

Several unique CONTROL-M and CONTROL-M/Restart job scheduling definition parameters that do not have corresponding HS5000 features can be set by the conversion tool during creation of the CONTROL-M scheduling tables.

The parameters member DEFAULTS in the conversion source library contains the default settings for these parameters, and must be reviewed and modified to specify your local CONTROL-M and CONTROL-M/Restart preferences. For additional information regarding these parameters, see [Appendix B, “Conversion Parameters,”](#) the *CONTROL-M for z/OS User Guide*, and the *CONTROL-M/Restart User Guide*.

## DO SYSOUT

This CONTROL-M parameter specifies how the job output is handled.

At job completion, CONTROL-M analyzes the job output. To enable CONTROL-M to locate the job output on the system spool, CONTROL-M modifies the JCL MSGCLASS parameter of the job at the time of submission to the automatically held output class. After analyzing the sysout, CONTROL-M may be ordered to requeue the sysout. For more information regarding DO SYSOUT options, see the *CONTROL-M for z/OS User Guide*.

The conversion tool can be instructed to specify various actions, using the CONTROL-M DO SYSOUT facility.

Conversion parameter &TOCLASS specifies the output class to which CONTROL-M requeues the job output. For more information, see “&TOCLASS” on page 46.

Conversion parameter &RELEASE instructs CONTROL-M whether to release the output of the job for printing on the system spool. The default is Y (Yes). For more information, see “&RELEASE” on page 44.

## MAXWAIT

This CONTROL-M parameter specifies the number of extra days a job must wait in the Active Jobs file to be executed. If the job is not executed within that time, it is discarded. This two-digit parameter accepts values from 00 through 99 and is specified by means of conversion parameter &MAXWAIT, described in “&MAXWAIT” on page 44. Default: 03.

---

— **NOTE** —

HS5000 DEADLINE CODEs 97 and 98 are dealt with differently. For more information, see [Table 7](#) on page 34.

---

## PREVENT-NCT2

This CONTROL-M/Restart parameter prevents NOT CATLG 2 errors, by setting the PREVENT-NCT2 job scheduling parameter. For more information, see “&CTR” on page 43.

## RETRO

This CONTROL-M parameter specifies if a job must be scheduled for execution after its original scheduling date has passed. The RETRO parameter can be set to either Y (Yes) or N (No) using conversion parameter &RETRO, which is described in “&RETRO” on page 45. Default: Y.

## SHOUT

This CONTROL-M parameter specifies messages to be sent (“shouted”) to different destinations on different occasions.

The conversion tool supports the following situations:

**Table 9 SHOUT Situations**

Situation	Description
WHEN NOTOK	Instructs CONTROL-M to send a SHOUT message when a job fails.
WHEN LATESUB	Instructs CONTROL-M to send a SHOUT message when a job is submitted late

The &SHOUTT conversion parameter specifies the SHOUT message text for failed jobs. The default message text is:

```
%%JOBNAME J%%JOBID ENDED NOTOK!
```

The &SHOUTL conversion parameter specifies the SHOUT message text for late submitted jobs. The default message text is:

```
MEMBER %%$MEMNAME IS LATE!
```

%%JOBNAME is the AutoEdit variable in which the name of the submitted job is placed. %%\$MEMNAME is the AutoEdit variable that specifies the name of the member containing the job to be submitted.

A variety of addresses can be specified as CONTROL-M SHOUT message destinations. For more information, see the *CONTROL-M for z/OS User Guide*.

The &SHOUTD and &SHOUTLD conversion parameters specify the destination of the SHOUT message texts for failed and late-submitted jobs. For more information on these conversion parameters, see “&SHOUTD” on page 45 and “&SHOUTLD” on page 45.

# Downloading and installing the CONTROL-M conversion tools

---

**NOTE**

---

Ensure that CONTROL-M for z/OS is installed before proceeding with this installation.

---

## 1 Prepare your system.

Do one of the following actions:

- Download the CONTROL-M Conversion tools from the EPD site at <https://webapps.bmc.com/signon/content/logon.jsp>.
- Copy the file from the product CD.

Transfer the image file to the mainframe as a binary file. For more information about the space requirements, see the Release Notes that accompany the CONTROL-M Conversion tools. The DCB information for the image file is as follows:

```
RECFM = FB, LRECL=1024,BLKSIZE=6144
```

## 2 Uncompress the image file.

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

<http://techsupport.services.ibm.com/390/trsmain.html>

Once the image file has been uploaded to your mainframe, make the necessary changes in the following UNTERSE job to uncompress the image file.

---

*ppp,ss,dd* represents the space requirements for the UNTERSE file. For more information, refer to the Release Notes that accompany the CONTROL-M Conversion tools.

```
***** Top of Data *****
//UNTERSE JOB          <=== tailor job card to local standards
//*
//UNTERSES EXEC PGM=TRSMAN,PARM=UNPACK
//SYSPRINT DD  SYSOUT=*
//INFILE  DD  DISP=SHR,DSN=uploaded.image.file.from.step1  <===UPDATE
//OUTFILE DD  DISP=(NEW,CATLG,DELETE),
//          UNIT=disk_unit,VOL=SER=disk_volser,              <===UPDATE
//          DSN=basepref.CONVLIB,                            <===UPDATE
//          SPACE=(CYL,(ppp,ss,dd))                          <===UPDATE
***** Bottom of Data *****
```

In the preceding UNTERSE job, *basepref* represents your choice of prefix for the base libraries, which are described in the Installation and Customization Engine (ICE) chapter in the *INCONTROL for z/OS Installation Guide*. This parameter must be specified again later in the installation process.

Submit the above job and review the output of the job. Ensure that the return code is 0.

### 3 Install the Conversion tools.

To install the Conversion tools, do the following:

- Select Customization from the ICE main menu.
- Specify product CTM.
- Select step 8 (Conversion installation).
- Select minor step 1 (Conversion installation).
- Submit the job.

This job consists of 5 steps:

#### A ADDDEF

This step adds SMP/E DDDEFs for the conversion target and distribution libraries.

#### B ALLOCT

This step allocates the conversion libraries.

- The target conversion library name is *ilprefa.CONV*.
- The distribution conversion library name is *spdpref.ACONV*.



---

### C RCVAPLC

This step performs the RECEIVE and APPLY CHECK operations for the conversion FMID and PTFs. The FMID and PTFs are located in the CONVINST member in the *basepref.CONVLIB* library.

### D APLACC

This step performs the APPLY and ACCEPT CHECK operations for the conversion FMID and PTFs.

### E ACCEPT

This step performs the ACCEPT operation for the conversion FMID and PTFs.

## 4 Find any relevant updates.

Look for Solution SLN000000197255 (List of APARs required for conversion to CONTROL-M) in the Knowledge Base on the BMC Customer Support Site for the latest fixes and instructions.



# Conversion Parameters

The DEFAULTS member in the conversion source library contains various parameters for the conversion process. These parameters must be modified according to your site requirements:

**Table 10 HS5000 Conversion Parameters (part 1 of 4)**

Parameter	Description
&AUTOEDT	<p>Determines whether symbols in JCL comment statements (/*) are converted. Valid values are:</p> <ul style="list-style-type: none"> <li>■ XCOMMENT - Excludes comment statements. Default.</li> <li>■ ALL - Processes all JCL statements.</li> </ul>
&CTR	<p>CONTROL-M/Restart parameter. Valid values are:</p> <ul style="list-style-type: none"> <li>■ Y (Yes) - CONTROL-M/Restart is implemented with CONTROL-M. Default. When specified, parameter PREVENT-NCT2 is set to Y and a DO IFRERUN statement (beginning with the step that ended in error) is inserted into the job scheduling definition.</li> <li>■ N (No) - CONTROL-M/Restart is not implemented with CONTROL-M. Instructs the conversion tool not to set any CONTROL-M/Restart statements.</li> </ul>
&DELCOND	<p>Specifies whether all IN conditions are deleted from the IOA Conditions file at successful end-of-job. Valid values are:</p> <ul style="list-style-type: none"> <li>■ Y (Yes) - Delete all IN conditions for the job.</li> <li>■ N (N0) - Do not delete the IN conditions for the job. Default.</li> </ul> <p>When many jobs run more than once a day, this parameter is useful for cleaning “used” conditions from the IOA Conditions file so that a condition that triggered a successful job run does not trigger subsequent job runs.</p>
&DIRMAX	<p>Maximum number of members in a HS5000 JCL library. Default: 5000</p>

**Table 10 HS5000 Conversion Parameters (part 2 of 4)**

Parameter	Description
&DOCLIB	Name of the CONTROL-M documentation library.
&FROMC	Held sysout classes to be requeued. Specify ' ' (Blank) if all held sysouts must be requeued. Default: ' ' (Blank)  When TOCLASS is ' ' (Blank), this parameter is ignored.
&INCLIB	The name of the CONTROL-M PARM library containing CONTROL-M AutoEdit variable definitions that were converted from HS5000 symbol members (SYM library). For more information, see <a href="#">"Step 7 - Final Adjustments" on page 28</a> .  Default: CTM.HS5000.PARM
&LINMAX	The maximum of the number of lines in the largest of the following: <ul style="list-style-type: none"> <li>■ the largest member of the APM NET library</li> <li>■ the APM000AZ member</li> <li>■ the APM000TO member</li> <li>■ the APM000CD member</li> <li>■ the APM000D8 member</li> </ul> Default: 5000
&MAXWAIT	The number of extra days a job must wait in the Active Jobs file to be executed, after which the job is deleted. A value from 00 through 99 may be specified. If 99 is specified, jobs wait indefinitely. Default: 05
&MEMLIB	CONTROL-M JCL library name. Specify ' ' (Blank) to instruct the conversion tool to use HS5000 member APM000TO to determine the JCL library name. For more information, see <a href="#">"11. LIBKEY" on page 33</a> .
&RECMAX	Maximum number of records in the YSEQ report. Default: 10000
&RELEASE	Sysout release. Specifies whether job sysouts are released for printing after they are analyzed by CONTROL-M. Valid values are: <ul style="list-style-type: none"> <li>■ Y (Yes) - Release sysouts for printing. Default.</li> <li>■ N (No) - Do not release sysouts.</li> </ul>
&RESORC	Name and quantity of a Quantitative resource to be added to all jobs (for example, add one initiator resource to each job). Default: INIT,0001

**Table 10 HS5000 Conversion Parameters (part 3 of 4)**

Parameter	Description
&RETRO	Retroactive scheduling. Specifies whether to schedule a job when its original scheduling date has passed. Valid values are: <ul style="list-style-type: none"> <li>■ Y (Yes) – Schedule the job even though its original scheduling date has passed. Default.</li> <li>■ N (No) – Do not schedule the job when its original scheduling date has passed.</li> </ul>
&SCDLIB	CONTROL-M scheduling table library name. The scheduling table library name must be the same as the name specified in JOB1, DD statement DASCHD.  Default: CTM.HS5000.SCHEDULE
&SHOUTD	Destination for SHOUT messages when a job failed. The following may be specified: <ul style="list-style-type: none"> <li>■ OPER – Issue the SHOUT message to the console. Default.</li> <li>■ OPER2 – Issue the SHOUT message to the console as highlighted and unrollable.</li> <li>■ TSO-uid – Issue the SHOUT message to a specific TSO user ID, where uid is a specific user ID (up to seven characters).</li> </ul> For information about additional options, see the description of the SHOUT parameter in the <i>CONTROL-M for z/OS User Guide</i> .
&SHOUTLD	Destination for SHOUT messages when a job is submitted late. For the various choices of destination, see &SHOUTD above.
&SHOUTL	Job late SHOUT message. Specify the text (a maximum of 50 characters) for the SHOUT WHEN LATESUB message that is sent when a job is submitted late. Specify ' ' (Blank) to suppress the message.  Default: MEMBER %\$MEMNAME IS LATE!
&SHOUTT	Job failed SHOUT message. Specify the text, a maximum of 50 characters, for the SHOUT WHEN NOTOK message that is sent when a job fails. Specify ' ' (Blank) to suppress the message. Default: %%JOBNAME J%%JOBID ENDED NOTOK!
&SYMCHAR	Prefix of the JCL symbols in HS5000 SYM library. Default: %

**Table 10 HS5000 Conversion Parameters (part 4 of 4)**

Parameter	Description
&TOCLASS	<p>New output class to which CONTROL-M is to requeue the JCL MSGCLASS sysouts of the job. Specify ' ' (Blank) if requeue is not required.</p> <p>Specify * if the MSGCLASS sysouts of the job must be requeued to the original MSGCLASS of the job after they are analyzed by CONTROL-M.</p> <p>Default: *</p>
&USERID	<p>The source for the CONTROL-M OWNER job scheduling parameter. The OWNER parameter is useful for implementing security checking by various CONTROL-M components. The following may be specified:</p> <ul style="list-style-type: none"> <li>■ GROUP - HS5000 job-group code. Default.</li> <li>■ =xxxxxxx - A fixed value of xxxxxxxx (1 through 8 characters) for every CONTROL-M job scheduling definition.</li> </ul>

# Messages

This list contains messages produced by the components of the conversion tool, except those issued by the CTMBLT utility. Messages issued by the CTMBLT utility are described in the *INCONTROL for z/OS Messages Manual*.

A message code usually consists of the following parts:

---

CTMyyyaa-nnx

---

where CTM indicates that the message pertains to CONTROL-M, and where:

Item	Explanation
yyy	3-character identifier of the conversion tool component that produced the message. Examples: CA7, DRP
aa	2-character identifier for the component that produced the message
nn	2-character numeric identifier for the message
x	1-character alphabetic identifier for the severity of the message. Valid values are: <ul style="list-style-type: none"> <li>■ A - Action</li> <li>■ E - Error</li> <li>■ I - Information</li> <li>■ S - Severe</li> <li>■ W - Warning.</li> </ul>

Message descriptions contain any or all of the following:

*Explanation:* Description of the cause of the message, and other related information.

*System action:* System action when this message is issued.

*User response:* Recommended actions to correct the problem.

---

**CTMHS5MN-02S****MORE THAN *nnnn* RECORDS IN THE YSEQ REPORT**

*Explanation:* The YSEQ report contains more than the indicated maximum number of records.

The maximum number of records in the YSEQ report was specified in the conversion parameter &RECMAX. This number has been exceeded.

*System action:* The conversion program terminates with condition code 12.

*User response:* Increase the number specified for &RECMAX in the DEFAULTS member in the conversion source library, rerun job ASMLINK, and rerun JOB1.

**CTMHS5xx-03S****INSUFFICIENT STORAGE. INCREASE THE REGION SIZE**

*Explanation:* An attempt to allocate space for internal use failed due to insufficient memory.

*System action:* The job ends with a condition code of 12.

*User response:* Specify REGION=0K on the failed step and rerun the job in error.

**CTMHS5xx-04W*****jobname* “*field*” IS NOT SUPPORTED**

*Explanation:* The indicated HS5000 field (date, status, and so on) in job *jobname* could not be automatically converted.

*System action:* The conversion program continues without converting this field.

*User response:* Manually convert the unsupported field, if possible. Check the resulting job scheduling definition to verify that it was correctly converted.

**CTMHS5xx-05S****UNABLE TO READ MEMBER “*mem-name*” OR CTMMEM FUNCTION *func* FAILED WITH RC *rcnum***

*Explanation:* An attempt to read or write the specified member failed.

*System action:* The program is terminated.

*User response:* Look for the CTMMEM reason code for further information. Correct the error and rerun the job in error.

**CTMHS503-06E****MEMBER APM000TO IS EMPTY/DOES NOT EXIST**

*Explanation:* Member APM000TO is empty or does not exist in the APMTAB library.

*System action:* The job scheduling parameter MEMLIB is set to GENERAL for all job definitions. Program CTMHS5MN terminates with condition code 8.

*User response:* If the above system action is satisfactory, no user action is necessary. Otherwise, correct the error or set the &MEMLIB conversion parameter to a valid library name, and rerun ASMLINK and JOB1.



---

**CTMHS5MN-06W    JOB/NET *job/net* HAS NO RECORD IN THE YSEQ REPORT**

*Explanation:* A record was not found for the indicated job or network name.

The required record does not exist in the YSEQ report.

*System action:* If a job is specified, and that job is a predecessor for another job, the corresponding CONTROL-M IN prerequisite condition is not created in the appropriate job scheduling definition.

- If the job is specified in a NET member, the job is omitted from the corresponding job scheduling table.
- If a NET member is specified in the message, the corresponding CONTROL-M scheduling table is created, but no Global parameters are defined for this table. For more information on utility CTMBLT, see the *INCONTROL for z/OS Utilities Guide*.

This message causes a condition code of 8 at program termination.

*User response:* Check which record is missing and why. Add the record to the APM database. Regenerate the YSEQ report and rerun JOB1.

**CTMHS5MN-07S    ERROR IN READING THE “*directory*” DIRECTORY**

*Explanation:* An attempt to read the indicated library directory failed.

*System action:* The program is terminated with a condition code of 12.

*User response:* Check the library specified in DD statement APMxxx, and correct accordingly.

**CTMHS5MN-08W    *netname* NETWORK HAS NO “NET” MEMBER**

*Explanation:* There is a network record in the YSEQ report for which there is no corresponding member in the NET library.

*System action:* The specified network is ignored and the conversion program continues. A CONTROL-M scheduling table is not created for this network.

*User response:* Correct the error and rerun JOB1.

**CTMHS5xx-02S    MORE THAN LINMAX LINES IN THE “*member*” MEMBER**

*Explanation:* The indicated member contains more than the maximum number of lines specified in the conversion parameter &LINMAX.

*System action:* The conversion program terminates with condition code 12.

*User response:* Increase the number specified for &LINMAX in the DEFAULTS member in the conversion source library, rerun ASMLINK, and rerun the job in error.

---

CTMHS501-10I

***dd.mm* - WAS CONVERTED TO DAYS=*Ddd*, MONTHS=*mm***

*Explanation:* This information message indicates that a *dd.mm* date from APM000AZ was converted to DAY=*Ddd* and MONTHS=*mm*.

This may not be an exact conversion. If there are more scheduling criteria for the job, the job may be executed on the wrong dates.

*System action:* The conversion program continues as normal.

*User response:* Verify that the converted scheduling criteria suits your needs, and if not, modify the scheduling criteria for this job manually.

CTMHS5xx-11W

**KEY *xx* - NOT FOUND IN “*table*”.**

*Explanation:* Key *xx* was not found in the specified table.

- If table APM000AZ is specified in this message, date code *xx* is specified in a YSEQ record, but is not defined.
- If table APM000CD is specified in this message, LIBKEY *xx* is specified in a YSEQ record, but is not defined.

This message is output only the first time that a given key is not found.

*System action:* The conversion program continues, and ends with condition code 4.

*User response:* Check the specified table and, if necessary, add the missing key to the table and rerun JOB1.

CTMHS501-12W

***datecode* - DATE NOT FOUND FOR THIS CODE IN “APM000AZ”**

*Explanation:* The specified datecode was not found in member APM000AZ.

*System action:* The conversion program continues normally, and ends with condition code 4.

*User response:* Check member APM000AZ and, if needed, add the specified date-code and rerun JOB1.

CTMHS5CL-13W

***ddxmm* - INVALID DATE**

*Explanation:* An HSHDxxxx member contains invalid date information (such as *dd* < 01 or *dd* > 31 or *mm* < 01 or *mm* > 12).

*System action:* The date is ignored and the conversion program ends with condition code 4.

*User response:* Correct the HSHDxxxx member and rerun JOB1.

- 
- CTMHS5xx-14S**      **MORE THAN *dirmax* ENTRIES IN DIRECTORY OF “*library*” LIBRARY.**
- Explanation:* The specified library contains more than the maximum number of members per library, which is indicated in the conversion parameter &DIRMAX.
- System action:* The conversion program terminates with condition code 12.
- User response:* Increase the number specified for &DIRMAX in the DEFAULTS member in the conversion source library, rerun ASMLINK, and rerun the job in error.
- CTMHS5xx-09S**      **LIBRARY “*library*” IS EMPTY**
- Explanation:* The specified library, that is, SYM, TAB, or JCL, is empty.
- System action:* The conversion program terminates with condition code 12.
- User response:* Correct the error and rerun the job in error.
- CTMHS5xx-10S**      **UNABLE TO WRITE MEMBER “*member name*”**
- Explanation:* An attempt to write the specified member failed.
- System action:* The conversion program terminates with condition code 12.
- User response:* Correct the error and rerun the job in error.
- CTMHS5JC-10E**      **UNABLE TO MODIFY MEMBER *memname***
- Explanation:* The member *memname* in the HS5000 JCL library could not be converted.
- Either there was no JCL in the member, or a converted JCL statement would have extended into column 72.
- System action:* The conversion program continues processing and ends with condition code 8.
- User response:* The indicated member must be manually converted after conversion.
- CTMHS5JC-07I**      **MODIFICATIONS WERE DONE TO MEMBER *memname***
- Explanation:* This information message indicates that the member *memname* in the HS5000 JCL library was converted to CONTROL-M format.

---

**CTM89BE**

**PLEASE SPECIFY MEMNAME**

*Explanation:* Utility CTMBLT detected a table containing no jobs.

Either the HS5000 network member (in the NET library) was empty, or no jobs specified in the NET member were found in the YSEQ report.

*System action:* Utility CTMBLT continues processing and ends with condition code 8.

*User response:* Correct (or delete) the NET member, or define the missing jobs.

# Planning The Conversion

To assist the smooth running of the conversion process, BMC Software recommends that you carry out a number of steps before starting the conversion itself. These steps are set out in this appendix.

This appendix outlines the key Business Integrated Scheduling (BIS) functions and environmental metrics required to determine the initial level of effort associated with the migration of business processing to CONTROL-M.

## 1: Organize the Conversion Team

- 1 Identify those who will be involved in the conversion process. They should participate in planning the conversion and implementing the steps in this appendix before beginning the conversion.

Include in this list those who support the current environment and who require training or retraining and/or mentoring, such as operators, production control administrators, product administrators, production analysts, application support and programming personnel, security administrators, and so on.

- 2 Ensure that the conversion team has sufficient knowledge of
  - the features and operation of
    - HS5000
    - CONTROL-M
    - the conversion utilities
  - your existing scheduling information and its operation procedures
  - your site rules on dataset organization, naming conventions, and so on
  - your expectations from the conversion project

- 3 Identify the exact release or version number of HS5000 that you are currently using.
- 4 Identify the operating system and platforms to be supported by CONTROL-M in the target environment. In relation to each platform, identify the release level, number of systems, and physical location.

## 2: Analyze Your Hardware

Consider the configuration of the system currently in use at your site, and whether you are making the best use of your hardware resources.

Obtain sufficient information to respond to the issues raised in this section. Record the answers carefully, because they will be of importance during and after the conversion to CONTROL-M.

- What resources, such as tape drives, initiators, and so on, do you use at your site?
- What MVS images, that is, CPUs, LPARs, and/or Sysplexes, will be available to CONTROL-M when running production jobs?
- How are your MVS images connected? Is the connection by
  - coupling facility
  - shared spool
  - NJE
  - some other method

Are the systems managed separately or collectively? Is there job flow between systems?
- Do you currently have multi-system dependencies, either on the same platform type, or using different platforms? If so,
  - how many?
  - how are they managed?

## 3: Consider Current Practices

Consider the current practices at your site. The relevant issues include at least the questions set out in this section. Do not hesitate to ask others for information they may be able to provide. Take all software and hardware platforms into account when answering. Record the answers carefully, because they will be of importance during and after the conversion to CONTROL-M.

- 1 How is production scheduling currently handled on your computers?
- 2 Who currently uses your system?
  - Is there a single production department or are there several?
  - Who are the end users of the system?
- 3 Consider the typical application flows at your site. The following are useful questions to ask:
  - Which are the three key applications, in terms of size, complexity, or value to your business?
  - How are those applications scheduled?
  - How are their internal dependencies managed?
  - Are there currently any performance bottlenecks or constraints in scheduling implementation?
- 4 List any products you use to support production scheduling, such as console automation, job restart products, and so on.
  - What function does each such product perform?
  - Will CONTROL-M replace that function?

If you think that CONTROL-M will not make some product redundant, obtain as much information as possible about that product, to enable you to decide how the product will interface with CONTROL-M.

- 5 List all your applications, interfaces, user or system exits, reports, and similar material, that
  - operators, system programmers, and other third parties have customized, and
  - form part of the implementation of your current production scheduling

Include interfaces used to submit jobs from an internal front-end process, as well as any interface used to issue commands and/or perform tasks using batch utility programs.

Consider whether you can use CONTROL-M to implement these functions and/or features.

- 6 Do you manually schedule any jobs or their logical successors on demand, instead of allowing the system to schedule jobs? If you do,
  - list each job and record the way you deal with it
  - consider whether CONTROL-M can be used to schedule these jobs automatically
- 7 Do your jobs run automatically, on rigid scheduling, or do you frequently modify job schedules and/or dependencies to meet needs as they arise?
- 8 Consider your job concurrency requirements, and the way you meet those requirements. Examples of questions to ask are the following:
  - Do you use job triggering, so that the completion of one job causes another job to be submitted or ordered?
  - Do you use job dependencies, meaning that one job (the “waiting job”) does not start until another has finished, even though the waiting job is submitted or ordered in some other way?
  - Do you use negative job dependencies, meaning that if a job fails, another job starts?
- 9 How do you manage such resources as tape drives, initiators, and so on?
- 10 Consider the following questions about the jobs your systems currently perform:
  - How many jobs do you currently have defined?
  - How many jobs are run on a daily, weekly, or monthly basis?
  - How many jobs run on peak days, for example, end of year processing?
  - How many jobs run “on request”, that is, demand jobs (see Question 6)?
  - Are your existing job definitions satisfactory in every respect?
  - Do you use all your existing job definitions, or are many now obsolete?
  - How many jobs use JCL automation features? Identify the type of automation used.
  - How many jobs are scheduled using dataset triggering?



- How many jobs require manual intervention prior to submission?
- 11 How many jobs use JCL automation features? Identify the type of automation used.
  - 12 How many jobs are scheduled using dataset triggering?
  - 13 How many jobs require manual intervention prior to submission?

## 4: Read the Conversion Manual

Read through this conversion manual. While doing so, consider the following points.

- 1 Identify any “special” situations. These can arise where
  - the conversion will not be performed automatically
  - your existing system is otherwise incompatible with CONTROL-M, for example, where calendar generation may serve as a substitute for some scheduling parameters

Are the proposed solutions acceptable in all cases? If not, identify alternative solutions, such as the use of the supplied user exits.
- 2 Is there any aspect of the way you use HS5000 that may not be reflected in the reports and parameter files used by the conversion program?
- 3 Prepare the names to be used for libraries, table names, job names, conditions, resources, and so on, in the output of the conversion, in order to reflect the way you want the CONTROL-M environment to appear to users.
- 4 Consider whether at this stage you are converting the entire production environment, or just one application? If you are only converting one application, determine
  - how typical it is of the work done at your site
  - what are the principal differences between this application and other applications

Consider whether you can yet identify any other pitfalls ahead, and if so, how to avoid the problems they appear to present.



# Problem Reporting

Please supply all the information requested below when reporting a problem related to the conversion tool:

- the version number of CONTROL-M (such as 6.1.00) and the MVS operating system, such as z/OS 1.1
- the release number of HS5000 from which you are converting
- the latest PTF applied to the conversion tool
- a copy of the DEFAULTS member
- the full text of all Job Log messages, in addition to all error messages in the error files, DAPRINT, SYSPRINT, and so on
- any source fixes or zaps applied to the conversion tool  
Also, check if REFRESH LLA was done after changes were applied.

If an abend has occurred, send the symptom dump to BMC Software Customer Support and have a full dump (SYSUDUMP) available for use by Customer Support staff.

Whenever a change is made to the DEFAULTS member, or a source fix is applied, you should re-perform [Chapter 3, “Step 1 - Create the Conversion Source and Load Libraries,”](#) [“Step 3 - Check and Modify Parameters in Member DEFAULTS,”](#) and [“Step 4 - Modify and Run the ASMLINK Member”](#).



# Index

## Symbols

- %%JOBID AutoEdit Variable [45](#)
- %%JOBNAME AutoEdit Variable [45](#)
- &AUTOEDT Conversion Parameter [22, 43](#)
- &CTR Conversion Parameter [37, 43](#)
- &DELCOND Conversion Parameter [43](#)
- &DIRMAX Conversion Parameter [43](#)
- &DOCLIB Conversion Parameter [44](#)
- &FROMC Conversion Parameter [44](#)
- &INCLIB Conversion Parameter [44](#)
- &LINMAX Conversion Parameter [44, 49](#)
- &MAXWAIT Conversion Parameter [37, 44](#)
- &MEMLIB Conversion Parameter [44, 48](#)
- &RECMAX Conversion Parameter [44, 48](#)
- &RELEASE Conversion Parameter [37, 44](#)
- &RESORC Conversion Parameter [44](#)
- &RETRO Conversion Parameter [38, 45](#)
- &SCDLIB Conversion Parameter [45](#)
- &SHOUTD Conversion Parameter [38, 45](#)
- &SHOUTL Conversion Option [38](#)
- &SHOUTL Conversion Parameter [45](#)
- &SHOUTLD Conversion Parameter [38, 45](#)
- &SHOUTT Conversion Option [38](#)
- &SHOUTT Conversion Parameter [45](#)
- &SYMCHAR Conversion Parameter [45](#)
- &TOCLASS Conversion Parameter [37, 46](#)
- &USERID Conversion Parameter [46](#)

## A

- APM000D8 Member [36](#)
- ASMLINK Member
  - Assembling/Link-Editing Conversion Programs [26](#)

## B

- BMC Software, contacting [2](#)

## C

- Calendars Library
  - Building [26](#)
- Checklist
  - Conversion Steps [24](#)

- Codes (Messages)
  - Descriptions [47](#)
- CONTROL-M
  - Parameters
    - HS5000 Fields and [30](#)
- CONTROL-M Parameters
  - APPL [30, 31](#)
  - CONFCAL [20](#)
  - CONTROL [30](#)
  - DAYS [35](#)
  - DCAL [20, 35](#)
  - DESC [30, 31, 32](#)
  - DO DYSOUT [37](#)
  - Generally [36](#)
  - GROUP [30, 31](#)
  - JOBNAME [16](#)
  - MAXRERUN [34](#)
  - MAXWAIT [37](#)
  - MEMLIB [30, 33, 48](#)
  - MEMNAME [16, 30, 31](#)
  - ON PGMST [30](#)
  - ON PGMST SHOUT WHEN LATESUB [30](#)
  - OVERLIB [30](#)
  - OWNER [46](#)
  - PRIORITY [30, 32](#)
  - RERUNMEM [34](#)
  - RESOURCE [30](#)
  - RETRO [38](#)
  - SHOUT [38, 45](#)
  - TIME FROM [30, 32](#)
  - TIME UNTIL [30, 32](#)
  - WCAL [20](#)
- CONTROL-M PARM Library
  - AutoEdit Variable Members [28](#)
  - Building [26](#)
- CONTROL-M Utilities
  - CTMBLT [21, 47, 52](#)
  - CTMRFLW [28](#)
  - CTMRNSC [28](#)
  - CTMRPLN [28](#)
  - CTMXRF [28](#)
- CONTROL-M/Restart
  - Conversion Option [43](#)
- CONTROL-M/Restart Parameters
  - Generally [36](#)
  - PREVENT-NCT2 [37](#)

PREVENT-NCT2 and &CTR Conversion Parameter  
43

Conventions Used in This Guide 10

Conversion

Checking Results 28

Details 30

Overview 16

Steps Checklist 24

Conversion Load Library

Creation 25

Conversion Parameters

&AUTOEDIT 43

&CTR 43

&DELCOND 43

&DIRMAX 43

&DOCLIB 44

&FROMC 44

&INCLIB 44

&LINMAX 44

&MAXWAIT 44

&MEMLIB 44

&RECMAX 44

&RELEASE 44

&RESORC 44

&RETRO 45

&SCDLIB 45

&SHOUTD 45

&SHOUTL 45

&SHOUTLD 45

&SHOUT 45

&SYMCHAR 45

&TOCLASS 46

Descriptions 43

Table 43

Conversion Programs

Assembling/Link-Editing 26

Conversion Source Library

Creation 25

CTM.HS5000.INPRM file 21

CTM.HS5000.JCL file 22

CTM.HS5000.NEWCAL file 21

CTM.HS5000.PARM file 22

CTM.HS5000.SCHEDULE file 21

CTM.HS5000.XREF file 21

Customer Support 59

customer support 3

## D

DASD Device 25

DEFAULTS Member 43

Adjustment 25

DEFAULTS member 36

DO IFRERUN Statement

&CTR Conversion Option 43

DO SYSOUT Statement

JCL MSGCLASS Parameter 37

Documentation Library

Conversion Parameter 44

## E

Error Message IEW0461 26

Error Message IOAE33E 28

Error Messages

Descriptions 47

## F

Failed Job SHOUT Destination 45

## G

Graphic Job Flow 28

## H

Held Sysout Classes 44

HS5000

Conversion of Fields 30

Dependencies 35

Fields

APM000D8 30

COND-CODE 30, 33

DATES 30

DEADLINE CODES 30

DESC 32

DESCRIPTION 30

EARLY 30, 32

JOBNAME 30, 31

LIBKEY 30, 33

MASTER 30, 31

NETWORK 30, 31

Parallel Parameters 30

PRIORITY 30, 32

STATUS1 30, 32

Conversion Table 32

STATUS2 30, 33

Conversion Table 33

TAPE1 30

TAPE2 30

UNTIL 30, 32

USER 30

JCL Libraries

Variable Conversion 27

JCL Library

Conversion 22

Failure to Convert 51

MASTER Parameter 16

- NET Library [16, 21](#)
- NETWORKS [16](#)
- Parameter JOBNAME [31](#)
- Resources
  - TAPE1 [36](#)
  - TAPE2 [36](#)
  - USER [36](#)
- Scheduling Criteria
  - DATES [34](#)
- SYM Library [21, 45](#)
- Symbol Members [28](#)
- TAB Library [20, 21](#)
  - Members Used in Conversion [21](#)
- YSEQ Report [17, 21, 44, 48, 49](#)
  - Production [25](#)

## I

- IN Condition
  - Definition [17](#)
- INCMEM Member [28](#)
- INLIB [25](#)
- IOA Conditions File [17](#)
- IOA CONV Library
  - Job \$\$INIT [25](#)
- IOA Parameters
  - SWEEK [35](#)

## J

- JCL Library Conversion [22](#)
- JCL Parameters
  - MSGCLASS [46](#)
  - DO SYSOUT Option [37](#)
- Job
  - Connection Conditions [43](#)
- Job Definition [16](#)
- Job Dependency [17](#)
- Job Output
  - DO SYSOUT Statement [37](#)
- JOB1
  - Modifications [26](#)

## L

- LOADLIB [25](#)

## M

- Messages & Codes [47](#)
- Messages and Codes
  - Descriptions [47](#)
- MSGCLASS
  - Sysouts [46](#)

- MSGCLASS Parameter
  - DO SYSOUT Statement [37](#)

## N

- New Output Class [46](#)

## O

- OPER Value
  - SHOUT Destination [45](#)
- OPER2 Value
  - SHOUT Destination [45](#)
- Operation Dependency
  - Prerequisite Conditions [17](#)
- OUT Condition
  - Definition [17](#)
- OUTLIB [25](#)
- Output
  - DO SYSOUT Statement [37](#)
- Output Class [46](#)

## P

- Prerequisite Conditions
  - Operation Dependency [17](#)
- PREVENT-NCT2 Parameter
  - &CTR Conversion Option [43](#)
- Primary Conversion Jobs [20](#)
- Problem Reporting [53, 59](#)
- Process Flow [20](#)
- product support [3](#)

## R

- Release Sysouts [44](#)
- Requeue
  - Held Sysout Classes [44](#)
  - MSGCLASS Sysouts [46](#)
- Reroute MSGCLASS Sysouts [46](#)
- Retroactive Scheduling [45](#)

## S

- Scheduling Library
  - Building [26](#)
- Scheduling Table
  - Library Name [45](#)
- Scheduling Table Library
  - Building [20](#)
- SHOUT
  - Destination For Failed Jobs [45](#)
  - WHEN NOTOK [45](#)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

SHOUT Destinations  
    &SHOUTD Conversion Parameter [38](#)  
SHOUT Messages [38](#)  
SHOUT Situations [38](#)  
support, customer [3](#)  
Sysout  
    Release [44](#)

## T

technical support [3](#)  
TSO-uid Value  
    SHOUT Destination [45](#)

## U

UNIT [25](#)

## V

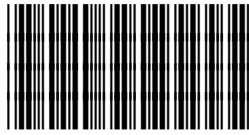
Verification  
    Conversion Results [28](#)  
VOLSER [25](#)

## W

Work Flow [20](#)  
WORKDAYS Calendar  
    Building [20](#)



## Notes



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