BMC Capacity Optimization

Ensure optimal IT and business alignment by delivering automated capacity management for modern IT infrastructures from a service and business perspective. Leverage powerful analytics to predict future utilization of all IT resources—including distributed, mainframe, physical, virtual, cloud, database, storage, and network—as well as their business and cost impact.

Business Challenge

Organizations in every market segment require IT to anticipate and cost-effectively align IT capacity with the changing capacity needs of their business. In particular, enterprises with siloed, heterogeneous environments struggle to manage and plan for service performance and capacity needs effectively. Moreover, the shared and dynamic nature of virtual and cloud technologies increases the complexity of managing these environments.

To reduce the cost of IT, avoid unplanned expenditures, and minimize the risk of missed service level agreements (SLAs) caused by demand for IT resources exceeding available capacity, companies are adopting a completely new and simple approach to capacity management. This effective approach to capacity management enables IT to balance cost against capacity—and supply against demand—to ensure that sufficient IT resources are available to meet current and future business requirements, without requiring manual activities or highly skilled capacity planners.

THE BMC SOLUTION

BMC Capacity Optimization makes this new approach to capacity management possible. BMC Capacity Optimization integrates with virtually any existing data source, including performance, capacity, and configuration data, and all data center resources, including compute (both distributed and mainframe—physical, virtual, and cloud), database, storage, and network resources, as well as with business key performance indicators (KPIs).

The solution also provides powerful analytics that provide automated predictions of potential risks and full visibility into IT capacity at the component, service, and business level through out-of-the-box best-practice views and by-exemption reports.

KEY BENEFITS

- Achieve full visibility into IT capacity and avoid risks for business-critical services
- Safely plan consolidation and virtualization activities and data center migrations
- Confidently simulate IT changes based on expected business demand
- Automatically optimize cloud capacity and deliver cost visibility at the service and tenant level
- Support IT innovation and transformation initiatives and enable timely decision-making

SUPPORTED CONNECTORS

BMC solutions:
- BMC ProactiveNet Performance Management, BMC PATROL, BMC Atrium CMDB, BMC Application Discovery and Dependency Mapping, and BMC Cloud Lifecycle Management

Third-party solutions:
- VMware vCenter, Oracle Enterprise Manager, IBM Tivoli® Monitoring, HP Reporter, HP uCMDB, MS SCOM DW, EMC Control Center Storage Scope, NetApp OnCommand Operations Manager, Hitachi Device Manager, EMC SMI-S, Entuity, and more.
With BMC Capacity Optimization, you will:

- Get full visibility into your current level of resource utilization
- Predict potential risks, such as over-utilized servers or storage saturation
- Identify potential areas of optimization, such as under-utilized servers or idle virtual machines (VMs)
- Safely plan for consolidation, virtualization, and cloud computing initiatives and evaluate available options, such as performance of different hardware models based on standard benchmarks, or recommendations, such as how many additional hosts need to be added to the virtual clusters to accommodate additional VMs
- Correlate business KPIs with resource utilization metrics to extrapolate the required capacity for supporting potential or expected business demand
- Optimize cloud infrastructures with intelligent placement that supports self-provisioning of new resources
- Automatically provide cost visibility based on fixed, allocation-based, and utilization-based chargeback models

With BMC Capacity Optimization, you can effectively support successful IT innovation and transformation initiatives and enable timely decision-making, thus ensuring that IT is more aligned to your business.

**DATA**

BMC Capacity Optimization is based on a robust and scalable architecture that couples lightweight/agentless data collection and flexible data integration mechanisms with powerful analytics and reporting capabilities to provide automated notification of predicted risks and full visibility of IT capacity—from a service and business perspective—via web-based, out-of-the-box, and easily customizable views.

**FIG 1:** Out-of-the-box “Data Center Overview” view quickly identifies over-and under-utilized resources by business service, physical location, domain or organization.

**FIG 2:** High-level architecture of BMC Capacity Optimization, including main logical components: data integration engines, capacity management database, analytics and reporting engines, and presentation layer
BMC delivers software solutions that help IT transform digital enterprises for the ultimate competitive business advantage. We have worked with thousands of leading companies to create and deliver powerful IT management services. From mainframe to cloud to mobile, we pair high-speed digital innovation with robust IT industrialization—allowing our customers to provide amazing user experiences with optimized IT performance, cost, compliance, and productivity. We believe that technology is the heart of every business, and that IT drives business to the digital age. BMC – Bring IT to Life.

BMC Capacity Optimization provides a flexible approach to data collection and integration. It provides automated and robust data collection mechanisms to leverage already deployed management tools via ready-to-use connectors based on Extract, Transform, and Load (ETL) technology. These connectors can integrate performance and configuration data from BMC solutions, including BMC ProactiveNet Performance Management, BMC Atrium CMDB, BMC Atrium Discovery and Dependency Mapping and BMC Cloud Lifecycle Management, as well as from third-party vendors, such as VMware, Oracle®, NetApp, EMC, Microsoft, HP, IBM®, Entuity, and others.

BMC Capacity Optimization also provides general purpose connectors that can be easily customized to integrate CSV files or relational databases—without coding. Moreover, if required, you can create custom connectors using a Software Development Kit (SDK) and an Integrated Development Environment (IDE) based on Eclipse. Finally, BMC Capacity Optimization can also collect workload and process-level data using either agent-based or agentless data collectors, depending on the specific target platform.

At the core of the BMC Capacity Optimization architecture lies a capacity management database (CDB) that provides an open and flexible data model and supports automated data normalization (with respect to heterogeneous sources), data summarization (at different time granularities), aggregation (at customizable levels) and purging (based on aging and retention policies). All data stored in the capacity management database can be easily accessed via published interfaces from third-party reporting tools and external applications.

**ANALYTICS**

BMC Capacity Optimization includes analytics capabilities that effectively support a proactive approach, thus preventing service disruptions, enabling consistent service delivery, and keeping IT capacity continuously aligned with business demand.

The solution provides a broad range of predictive analytics, including automated time forecasting models, extrapolation models, “what-if” scenarios, and optimal allocation models:

- Analyze resource utilization (with respect to business cycles) to establish baselines from normal utilization daily/weekly profiles and to identify peak periods and periodical behaviors; easily configure analyses to display different types of graphs (including trend lines, stacked bars, pie charts, etc.)

- Predict saturation dates and residual capacity as provided by comprehensive forecasting algorithms (including linear robust, exponential, logarithmic, last-ramp detection, time-shifts, Holt-Winters, and Box and Jenkins); automatically select the right algorithm without any manual analysis

- Automatically identify resource saturations or deviations from baselines and notify users ahead of time through emails or alerts, so that appropriate actions can be executed before services are impacted

- Correlate resource utilization with respect to business KPIs to translate residual capacity into business terms

- Simulate how potential or expected business demand can impact the capacity needs and evaluate different options (e.g. increasing memory or refreshing hardware of the web server layer) based on standard SPEC, TPC-C, or custom benchmarks

- Plan consolidation and virtualization (P2P, P2V and V2V) scenarios by automatically identifying best candidates and simulating optimal placement configurations; consider hypothetical workloads (i.e. corresponding to projects being delivered in the future) and custom technical/business policies and provide recommendations (e.g. how many hosts need to be added to virtual clusters)

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**FIG 3:** Utilize tree-maps to visualize the result of optimal placement scenarios and easily visualize resource utilization and residual capacity.
The optimal allocation models within BMC Capacity Optimization are leveraged by BMC Cloud Lifecycle Management for capacity-aware placement advice to intelligently allocate new workloads into a cloud infrastructure.

In addition, all BMC Capacity Optimization analysis and model results can be easily embedded into reports that can be generated (and automatically forwarded by e-mail) in different formats, including PDF, HTML, RTF, and PPT, as scheduled, on-demand, or by-exception reports. Moreover, BMC Capacity Optimization provides a variety of report templates, including custom report templates that can be easily designed via a graphical editor based on Eclipse.

In particular, BMC Capacity Optimization provides show/charge-back reports based on complex cost models, including fixed, allocation-based, or utilization-based cost models defined on any managed system and collected metric. These capabilities are also leveraged by BMC Cloud Lifecycle Management to automatically generate chargeback reports by service or tenant based on defined service offering instances (SOI) and contract lines.

**MORE BUSINESS BENEFITS**

**Cost reduction:**
- Infrastructure right-sizing and timely provisioning enable savings on both hardware and operating costs.

**Risk avoidance:**
- Automated notification of forecasted capacity issues improves service availability and guarantees higher levels of service.

**Safe consolidation:**
- Placement simulation and optimization enables safe data center consolidation, virtualization, and cloud initiatives.

**IT and business alignment:**
- Correlation between resource utilization and business KPIs ensures that IT infrastructures match service demands.

**VISIBILITY**

The BMC Capacity Optimization web-based interface provides out-of-the-box specialized views for several managed platforms, including “virtual farms” for VMWare, Hyper-V, AIX, Solaris, HP, KVM, and Xen; “storage farms” for EMC and NetApp; and cross-domain views, such as “Data Center Overview” (as displayed in Figure 1).

The solution’s best-practice views are structured into several pages that can be accessed through multiple navigation paths (e.g. drilling down from vSphere clusters to hosts or from frames to LPARs). Each page displays dynamic information that is designed and organized to help users who are not experts in that specific technology to quickly investigate key capacity metrics and identify potential risks and optimizations (e.g. datastore saturation or VMs with high CPU ready time).

BMC Capacity Optimization enables custom analyses, model, and report views to be created by dragging and dropping portlets from a menu. Views are accessible to both technical and business users according to role.

**UNIFIED BSM ARCHITECTURE**

Business Service Management (BSM) takes the IT you have or will need and adds the visibility and control of an integrated service management platform. BSM manages services, supporting applications, and infrastructure across a broad set of platforms and operating environments—from mainframe and distributed physical infrastructures to virtual infrastructures, and in the cloud.

As part of BSM, BMC Capacity Optimization delivers real business value through integration with BMC tools.

**BMC PROACTIVE NET PERFORMANCE MANAGEMENT**

BMC Capacity Optimization integrates with BMC ProactiveNet Performance Management to provide a unified performance and capacity management solution that enables IT Operations to easily access historical data, real-time analytics, capacity alerts, and predictions.
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BMC – Bring IT to Life.

WHY BMC

Enterprise-wide:
• Provides visibility across distributed, mainframe, physical, virtual, and cloud environments, as well as across compute, database, storage, and network resources

Agentless:
• Offers a wide set of supported connectors to leverage already deployed management tools and the ability to integrate custom data sources

Service-oriented:
• Integrates configuration items and relationships to technical and business services to provide a service and business-level perspective

Business-aware:
• Correlates resource utilization metrics and business KPIs to align IT capacity and business demand

Automated:
• Automatically predicts potential resource saturations and delivers notifications and exception-based reports

Cloud-enabled:
• Optimizes workload placement on cloud infrastructures and automatically generates chargeback reports for cloud services and tenants

BMC ATRIUM

BMC Capacity Optimization leverages both BMC Atrium Discovery and Dependency Mapping and the BMC Atrium CMDB by integrating configuration items (CIs) and relationships to deliver accurate capacity results based on defined technical and business services.

BMC CLOUD LIFECYCLE MANAGEMENT

BMC Capacity Optimization integrates with BMC Cloud Lifecycle Management to provide visibility into the actual capacity of cloud containers (e.g., PODs, network containers, compute and storage pools, clusters and hosts). This integration also helps to identify potential resource saturations in the cloud, supports intelligent placement of new workloads, and provides automated chargeback reports.

FOR MORE INFORMATION

To learn more on BMC Capacity Optimization, please visit www.bmc.com/capacityoptimization