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- Find the most current information about BMC products
- Search a database for problems similar to yours and possible solutions
- Order or download product documentation
- Download products and maintenance
- Report a problem or ask a question
- Subscribe to receive proactive e-mail alerts
- Find worldwide BMC support center locations and contact information, including e-mail addresses, fax numbers, and telephone numbers

Support by telephone or e-mail
In the United States and Canada, if you need technical support and do not have access to the web, call 1 800 537 1813 or send an e-mail message to customer_support@bmc.com. (In the subject line, enter SupID:yourSupportContractID, such as SupID:12345). Outside the United States and Canada, contact your local support center for assistance.

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 problem
- 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
License key and password information

If you have questions about your license key or password, contact Customer Support through one of the following methods:

- Send an e-mail message to customer_support@bmc.com. (In the Subject line, enter SupID:yourSupportContractID, such as SupID:12345.)
- In the United States and Canada, call 1 800 537 1813. Outside the United States and Canada, contact your local support center for assistance.
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Overview of Cost Analyzer

This section introduces the BMC Cost Analyzer for zEnterprise (Cost Analyzer) product, describing its architecture, user roles, and tools.

Cost Analyzer provides interactive tools for comprehensive analysis of your IBM sub-capacity licensing costs across your mainframe system. As part of your cost-savings program, Cost Analyzer:

- Utilizes the Universal Information Exchange (UIE) component running on the mainframe to populate data in Capacity Management Databases (CDBs).
- Retrieves data from CDB to create a cost model.
- Provides you with the knowledge of the costs of your environment so you can enact effective plans to make reductions.
- Unifies the various components of your overall cost-saving solution by providing reporting, planning, and cost management capabilities.
- Utilizes cost analysis tools that can determine where and how to implement changes for maximum cost savings.

For more information, view the Quick Course Cost Analyzer for zEnterprise: What's New in Version 1.1.

You must have a BMC Support ID to view the Quick Course.

How Cost Analyzer works

Cost Analyzer is a tool for analysis, optimization, and planning of software license cost for IBM Base Monthly License Charge (MLC) products with Sub-Capacity Variable Workload License Charges (VWLC) licenses.

IBM bases sub-capacity pricing on the four-hour rolling average utilization of z/OS LPARs recorded during the period of a month. A monthly period runs from 00:00 on the second day of the month through midnight (24:00) on the first day of the next month.
The unit of measurement for utilization of z/OS LPARs is MSUs or Millions of Service Units used per hour. MSUs are also sometimes called Software MSUs (as opposed to Hardware MSUs) and are calculated as CPU seconds used by general purpose CPs in a z/OS LPAR during an hour multiplied by the Software Service Units coefficient reported by RMF in field SMF70CPA of the type 70 record.

The Software Service Units coefficient determines the MSU rating of an IBM mainframe processor. However, MSU ratings cannot be utilized as a capacity metric since IBM uses MSUs only to gauge software pricing. For this reason, the information provided by Cost Analyzer cannot be used for Capacity Planning or Performance Reporting and should be used only for cost analysis and planning.

For more information about IBM sub-capacity pricing, see http://www-03.ibm.com/systems/z/resources/swprice/subcap/zos.html.

For the table containing MSU ratings for IBM mainframe processors see http://www-304.ibm.com/servers/resourcelink/lib03060.nsf/pages/lsprITRzOSv1r13?OpenDocument&pathID=%20%27

As a component of the BMC Cost & Performance Optimization for System z suite, Cost Analyzer:

- Provides reports and interactive displays that clearly indicate where cost savings can be realized by managing and optimizing your LPAR capacities and workloads
- Retrieves specific data from the CDB server and then dynamically builds it into a cost model that can be processed and analyzed by a variety of tools
- Utilizes a Reporting Tool and a Planning Tool for your cost analysis:
  - The Reporting Tool provides information about MLC products existing in your data center environment, and components that impact the overall cost.
  - The Planning Tool gives you the ability to investigate the effect of future data center environment changes on the overall cost. It also enables you to analyze potential cost optimization actions.

Cost Analyzer architecture

BMC Cost Analyzer is built on a four-tiered architecture that consists of the following components:

- (IBM z/OS) Universal Information Exchange (UIE) data processing/analysis batch program
- (Microsoft Windows) Capacity Management Database (CDB) application server
- (MS Windows) Cost Analyzer application server
- (Web Browser Client) Microsoft Silverlight Rich Internet Application (RIA)

Figure 1 on page 11 illustrates the architecture of the BMC Cost Analyzer environment.

Figure 1: Cost Analyzer architecture

Terminology

This topic lists and defines terminology used throughout Cost Analyzer.
### Table 1: Cost Analyzer terminology

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
</table>
| 4 hour rolling average (4HRA)            | CPU consumption, measured in MSUs  
4HRA is calculated by the RMF using the last 48 5-minute buckets and written into the type 70 record of the z/OS image in which the RMF is running.  
While the RMF in each z/OS image records the CPU consumption of all LPARs on the same CPC, the 4HRA metric is available only for the host LPAR (the LPAR in which this record is created).  
**Note:** The 4 Hour Rolling Average or 4HRA is sometimes called *R4HA*. |
| AWLC                                      | Advanced Workload License Charges                                                                                                                                  |
| AEWLC                                     | Advanced Entry Workload License Charges                                                                                                                          |
| Central processor complex (CPC)          | Physical collection of hardware that includes main storage, one or more central processors, timers, and channels  
| EWLC                                      | Entry Workload License Charges                                                                                                                                   |
| FWLC                                      | Flat Workload License Charges                                                                                                                                     |
| Logical partition (LPAR)                 | Subset of a single system that contains resources (processors, memory, and input/output devices)  
An LPAR operates as an independent system and can contain different operating systems such as:  
- z/OS  
- Integrated Coupling Facility  
- Linux (from Linus Torvalds)  
- IBM z/VM  
An LPAR can also be inactive. |
| Millions of Service Units (MSUs)         | A measure of CPU time consumption, calculated as number of CPU seconds used per hour, multiplied by the service units per seconds (SU/sec) coefficient.  
The SU/sec coefficient depends on the CPC type and model and normally is the same for all LPARs on a CPC. |
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly License Charges (MLCs)</td>
<td>One of the methods that IBM is using to charge for software products This method is used for the operating system itself and for the most important (and expensive) transaction processing subsystems (for example, CICS, DB2, IMS, and Web Sphere MQ). For more information see, <a href="http://www-03.ibm.com/systems/z/resources/swprice/mlc/index.html">http://www-03.ibm.com/systems/z/resources/swprice/mlc/index.html</a></td>
</tr>
<tr>
<td>MLC Product</td>
<td>IBM System z software product using MLC pricing</td>
</tr>
<tr>
<td>Sub-Capacity</td>
<td>A group of licensing rules, terms, and conditions for software licenses based on actual CPU resource usage For more information see, <a href="http://www-03.ibm.com/systems/z/resources/swprice/subcap/index.html">http://www-03.ibm.com/systems/z/resources/swprice/subcap/index.html</a></td>
</tr>
<tr>
<td>Sub-Capacity Reporting Tool (SCRT)</td>
<td>IBM tool that processes the RMF and SMF records (in particular type 70 and type 89) and produces the Sub-Capacity report This report is used by IBM to calculate the monthly license charge. IBM customers using Sub-Capacity licenses must use SCRT to process data from all LPARs on a CPC for the complete usage month (from 00:00 of day 2 of the calendar month to 24:00 of day 1 of the next calendar month) and send it to IBM. For more information see, <a href="http://www-03.ibm.com/systems/z/resources/swprice/subcap/scrt/index.html">http://www-03.ibm.com/systems/z/resources/swprice/subcap/scrt/index.html</a></td>
</tr>
<tr>
<td>Universal Information Exchange (UIE)</td>
<td>A BMC component that runs on your mainframe system to read and process SMF/RMF and subsystem data collected from target z/OS images UIE can produce two types of output:  - XML data files  - Visualizer files For more information, see the <em>Universal Information Exchange User Guide</em> .</td>
</tr>
<tr>
<td>VWLC</td>
<td>Variable Workload License Charges</td>
</tr>
<tr>
<td>Workload</td>
<td>A group of work to be tracked, managed, and reported as a unit A workload consumes system resources such as CPU time and I/O operations. Cost Analyzer analyzes only CPU resource consumption. Work performed in the system can be measured and reported by different tools (SMF, RMF). It also can be grouped using different rules. The selected reporting tool or grouping rule determines the workload type. For more information, see “Cost Analyzer workloads” on page 14.</td>
</tr>
</tbody>
</table>

Chapter 1  Overview of Cost Analyzer     13
Cost Analyzer workloads

Cost Analyzer provides you the opportunity to analyze the work that affects software cost not only on the level of individual LPARs, but also on the level of individual jobs, started tasks, and address spaces aggregated into objects called workloads.

Cost Analyzer provides the following different methods of aggregation:

- Importance
- Service Class name
- WLM Workload name in WLM Policy
- Suite
- Subsystem Address Space (IBM CICS, IBM IMS, IBM DB2, and so on)

Each workload type always corresponds to the total activity in the LPAR. So, different types of workloads always represent, from different perspectives, the same total work performed in an LPAR. This information is derived from RMF and SMF measurement data using proprietary BMC algorithms.

Table 2 on page 14 describes each workload type:

<table>
<thead>
<tr>
<th>Workload type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>Activity is aggregated using Service Class Period Importance from the WLM Policy.</td>
</tr>
</tbody>
</table>
### Workload type vs Description

<table>
<thead>
<tr>
<th>Workload type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Class name</td>
<td>Activity is aggregated by Service Class. <strong>Note:</strong> Using data from each Service Class in the model would not be practical, so you must specify a filter: a list of Service Class names (possibly with wildcards) that you want to include in the model. All Service Classes not included explicitly by the filter are aggregated into workload OTHER_WORK.</td>
</tr>
<tr>
<td>Suites</td>
<td>Suites are user-defined groups of jobs and STC. The number of the Suites can be very high, so a filter is required. Suites are defined in UIE directives.</td>
</tr>
<tr>
<td>WLM Workload name in WLM Policy</td>
<td>Activity is aggregated according to the workload name in the Workload Manager (WLM) policy.</td>
</tr>
<tr>
<td>Subsystem address space</td>
<td>Subsystem address space type activity is aggregated by Subsystem Address Types (CICS, CICSUTL, DB2, DB2UTL, IMS, IMSUTL, IRLM, OMVS, MQSeries, WAS). All other activity is aggregated into workload OTHER_WORK.</td>
</tr>
</tbody>
</table>

---

## BMC Cost Analyzer User Groups

The functionality of Cost Analyzer tools and access to cost data can vary for each user and is determined by assigning users to BMC Cost Analyzer user groups.

It is the responsibility of the Windows system administrator to assign each user to a User Group. For more information, see “Assigning users to BMC Cost Analyzer User Groups” on page 37.

The user's assignment to a BMC Cost Analyzer group determines:

- Which tools the user can access and the degree of functionality of those tools
- Whether the group members have access to cost information

Users should be assigned to one of the following BMC Cost Analyzer groups:

- **BMC Product Administrators**
  
  Group members can access all product components and can use Administration Tools to perform application administration functions such as editing the cost tables and defining Cost Analyzer Model Builder Tasks.

- **BMC Cost Analyzer Capacity Planners**
  
  Group members can access all product components and can view MLC cost information but cannot access Administration Tools or edit the cost table.
■ BMC Cost Analyzer System Programmers
  Group members can access limited application functionality but cannot view MLC cost information.

■ BMC Cost Analyzer Application Support
  Group members can access limited application functionality but cannot view MLC cost information.

■ BMC Cost Analyzer Executives
  Group members can access limited application functionality and can view MLC cost information.

■ BMC Cost Analyzer Managers
  Group members can access limited application functionality and can view MLC cost information.

The following table lists the BMC Cost Analyzer groups and details their attributes:

Table 3: BMC Cost Analyzer groups and component access control

<table>
<thead>
<tr>
<th>User Group</th>
<th>MSU Cost Editor</th>
<th>Reporting Tool</th>
<th>Planning Tool</th>
<th>Administration Tools</th>
<th>Tool functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC Product Administrators</td>
<td>Yes</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>Yes</td>
<td>Full functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Capacity Planners</td>
<td>No</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>Full functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer System Programmers</td>
<td>No</td>
<td>Yes (no cost information)</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Application Support</td>
<td>No</td>
<td>Yes (no cost information)</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Executives</td>
<td>No</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Managers</td>
<td>No</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
</tbody>
</table>
Cost Analyzer tools

Cost Analyzer provides group-based Administration, Reporting, and Planning Tools.

Administration Tools

Note
You need to be a BMC Product Administrator to access the Administration Tools. For more information, see “BMC Cost Analyzer User Groups” on page 15.

Administrators can access tools that can:

- Manage profiles where Cost Analyzer gathers the data for analysis
- Build models that determine the composition of the data
- Specify cost coefficient values for MLC products
- Configure CPC pricing metrics and PricingPlex
- View Application, Services, and Model Build log files

Table 4 on page 17 provides details about the Administration Tools:

Table 4: Cost Analyzer Administration Tools

<table>
<thead>
<tr>
<th>Administration Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage CDB Server Profiles</td>
<td>Add, remove, or modify CDB server profiles</td>
</tr>
<tr>
<td></td>
<td>This tool also provides a list of the available CDB Server profiles once they have been added by the administrator.</td>
</tr>
<tr>
<td></td>
<td>See “Defining connections to CDB servers” on page 49.</td>
</tr>
<tr>
<td>Administration Tool</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Model Builder Tasks              | Add, modify or remove Model Builder Tasks to determine the parameters for the cost models  
You can perform the following actions to your cost models:  
  ■ Specify different workload types and filters  
  ■ Gather data from different CDB servers and databases  
  ■ Setup time zone offsets  
  ■ Exclude particular LPARs from the model  
  ■ Designate zNALC LPARs to include in the model  
This tool provides a list of the available Model Builder Tasks that have been created and added by the administrator. Additionally, instead of waiting for the nightly build process to execute, you have the option to run the task immediately.  
See “Defining Model Builder Tasks” on page 52.                                                                                                                                                                                                                     |
| MSU Cost Editor                  | Setup and manage the cost structure of MLC products for your enterprise based on your agreement with IBM  
You can perform the following tasks:  
  ■ Edit cost tables and assign cost coefficients to predefined MSU ranges for individual MLC products  
  ■ Specify pricing metric override values  
  ■ Specify if MLC products are covered by a Single Version Charge (SVC) agreement  
  ■ Specify reporting locale  
See “Using the MSU Cost Editor” on page 44.                                                                                                                                                                                                                      |
| CPC Configuration Editor         | Configure default Pricing Metrics and PricingPlex information  
See “Using the CPC Configuration Editor” on page 66.                                                                                                                                                                                                                                                                                                                                                      |
| Application Server Log Viewer    | View Application, Services, and Model Build log files  
See “Displaying Cost Analyzer log files” on page 107.                                                                                                                                                                                                                                                                                                                                                      |

**Group-based component tools**

Based on the user’s group assignment, Cost Analyzer can perform a variety of reporting and analysis functions. Table 1 on page 12 describes the available assigned component tools:
Table 5: Cost Analyzer group-based component tools

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting Tool</td>
<td>Generate monthly MSU Summary Reports and perform comparative analysis of 4HRA MSU Utilizations by MLC Product, CPC, LPAR, or Workload</td>
</tr>
<tr>
<td>Planning Tool</td>
<td>Create sub-capacity licensed product cost optimization plans for future activity and data center environment changes</td>
</tr>
</tbody>
</table>

Logging on to Cost Analyzer

Use the following procedure to access Cost Analyzer.

Before you begin

Before you can login and use Cost Analyzer, you need to add at least one user to a BMC Cost Analyzer Group. For more information, see “Assigning users to BMC Cost Analyzer User Groups” on page 37.

To log on to Cost Analyzer

1. Perform one of the following actions:
   - From a web browser, type the required URL to access BMC Cost Analyzer at your site.
     For example: http://machineName | IPAddress/BMCSCA/default.aspx
   - From the Start menu, select All Programs => BMC Capacity Management for Mainframes => Cost Analyzer for zEnterprise => Navigate to Cost Analyzer for zEnterprise.

2. Type your user name (in the format domain\userName) and password, and click OK.

The BMC Cost Analyzer splash screen is displayed.

Note

If you need to call Customer Support for a BMC Cost Analyzer issue, make note of the product version and build number that appear on the About box.
Cost Analyzer console

The Cost Analyzer console provides a selection of tools for analyzing the cost of MLC products in your data center.

The following figure illustrates the Cost Analyzer console:

Figure 2: Cost Analyzer console

The Cost Analyzer console consists of the following items:

- The toolbar button provides access to the Administration Tools as described in the following table:

Table 6: Cost Analyzer toolbar buttons

<table>
<thead>
<tr>
<th>Administration Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage CDB Servers Profiles</td>
<td>Add, remove, or modify CDB server profiles</td>
</tr>
<tr>
<td>Model Builder Tasks</td>
<td>Add, remove, or modify Model Builder Tasks</td>
</tr>
<tr>
<td>MSU Cost Editor</td>
<td>Specify cost coefficient values for MLC Products</td>
</tr>
<tr>
<td>CPC Configuration Editor</td>
<td>Configure CPC pricing metrics and PricingPlex</td>
</tr>
<tr>
<td>Application Server Log Viewer</td>
<td>View all available Application Server log files</td>
</tr>
</tbody>
</table>

**Note**

The availability of the Toolbar button on your console depends upon your User Group assignment. For more information, see “BMC Cost Analyzer User Groups” on page 15.

- The tool tabs provide access to the Reporting Tool and Planning Tool as described in the following table:
Table 7: Cost Analyzer Tool Tabs

<table>
<thead>
<tr>
<th>Tool Tab</th>
<th>Description</th>
</tr>
</thead>
</table>
| Reporting Tool| Generate Monthly Summary Reports for analysis  
You can run reports and use interactive features to explore and analyze the results. |
| Planning Tool | Create cost optimization plans for future activity or environment changes and estimate the effects on total cost  
Using interactive features, you can move LPARS from CPCs, scale workloads, and redistribute MSUs to strategize potential cost savings |

- The links provide access to logging out, online Help (a PDF of the BMC Cost Analyzer User Guide), and product information.

**Note**
The user name link displays an information window that indicates the user group assignment for the user.

---

**Where to go from here**

This topic directs you to the following sections:

- To install BMC Cost Analyzer, see “Installation” on page 23.

- To perform the administrative setup tasks that will prepare BMC Cost Analyzer for use, see “Setting up Cost Analyzer” on page 35.

- When you are ready to start using BMC Cost Analyzer, see “Generating cost-analysis reports” on page 69 and “Developing cost-reduction plans” on page 87.
Installation

Installing the Cost Analyzer product requires installing the Universal Information Exchange (UIE) mainframe component and CDB server components, followed by the Cost Analyzer application files.

Installing UIE on the mainframe

You must install the Universal Information Exchange product to use Cost Analyzer. The Universal Information Exchange (UIE) is a tool that processes performance metrics, enabling you to do capacity planning for subsystems running on z/OS.

For more information, see the BMC Capacity Management for Mainframes Installation Guide and the Universal Information Exchange User Guide.

Installing the CDB server

This section describes the requirements and procedures for installing the CDB server in a Windows environment.

You must install the following CDB components:

- BMC CDB Services
- BMC CDB Workflow Service

**Note**

- CDB version 1.2 Patch 3 or later is required to run Cost Analyzer.
- You can install BMC CDB Services and BMC CDB Workflow Service on the same machine or on different machines. At least one instance of each component is required.
CDB system requirements

This topic lists the requirements for installing CDB components.

*Note*
The user running the installation must be an administrator.

Table 8: CDB system requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>■ Microsoft Windows Server 2012 R2</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2012</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2008 R2</td>
</tr>
<tr>
<td></td>
<td>■ Windows 8.1</td>
</tr>
<tr>
<td></td>
<td>■ Windows 8</td>
</tr>
<tr>
<td></td>
<td>■ Windows 7</td>
</tr>
<tr>
<td>Additional OS features and roles</td>
<td>■ Microsoft .NET Framework 4.5</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft Message Queuing Server (MSMQ)</td>
</tr>
<tr>
<td></td>
<td>■ Internet Information Server (IIS) for your version of Windows, with the following items enabled:</td>
</tr>
<tr>
<td></td>
<td>— IIS ASP.NET</td>
</tr>
<tr>
<td></td>
<td>— IIS HTTP WCF Activation</td>
</tr>
<tr>
<td></td>
<td>— IIS Windows Authentication</td>
</tr>
<tr>
<td></td>
<td>— IIS Metabase</td>
</tr>
<tr>
<td>Memory</td>
<td>8 GB</td>
</tr>
</tbody>
</table>

Before you begin

Before you set up the CDB server, review the following information:
Ensure that you have the following shared components installed:

— BMC Universal Information Exchange (UIE): 1.9.10 Patch 6
— Capacity Management Database CDB 1.2.00 Patch 3

Close all open files and applications. If the installation program cannot override certain system files, you might have to restart your computer when the installation is complete.

## Installing BMC CDB Services

Use the following procedure to install BMC CDB Services.

### To install BMC CDB Services

1. Perform one of the following actions:
   - If you downloaded the product from the Electronic Product Distribution (EPD) facility, navigate to the folder where the installation files were saved.
   - If you received a physical product shipment, insert the BMC CDB installation CD into a CD drive.

2. In the **BMC CDB Services** folder, double-click the `setup.exe` file.

3. On the Welcome page, click **Next**.

4. Read the license agreement and click **Yes**.

5. Review the Readme file and click **Next**.

6. On the Choose Destination Location page, perform one of the following options:
   - Click **Next** to accept the default location.
   - Click **Browse** to choose a different location.

   The Destination Location identifies the folder where you want to install BMC CDB Services product files. The default the 64-bit OS destination folder is `C:/Program Files (x86)/BMC Software/CDB`.

   **Note**

   The selected Destination Location becomes the IIS virtual directory, which provides access to BMC CDB Services.
7 On the Start Copying Files page, review the destination folder and click Next to begin the installation.

The Setup Status page displays a progress bar. After the files are installed, the Setup program updates your registry.

8 Click Finish and, if prompted to restart your computer, restart it now.

Note
You must restart your computer before you attempt to access BMC CDB Services.

Installing BMC CDB Workflow Service

Use the following procedure to install BMC CDB Workflow Service.

Note
You can install BMC CDB Workflow Service on the same machine as BMC CDB Services or on a different machine.

Before you begin

If you plan to use a specific user account to run BMC CDB Workflow Service, the account must have "Log On as a Service" rights.

To install BMC CDB Workflow Service

1 In the BMC CDB Workflow Service folder, double-click the setup.exe file.
2 On the Welcome page, click Next.
3 Read the license agreement and click Yes.
4 Review the Readme file and click Next.
5 On the Choose Destination Location page, perform one of the following actions:
   - Click Next to accept the default location.
   - Click Browse to choose a different location.

The Destination Location identifies the folder where you want to install BMC CDB Workflow Service product files. The default the 64-bit OS destination folder is C:/Program Files (x86)/BMC Software/CDB.
6  On the Binding Information page as shown in Figure 3 on page 27, specify the following information to bind this instance of BMC CDB Workflow Service to an instance of BMC CDB Services:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB Server</td>
<td>Host name or IP address of the BMC CDB Services server&lt;br&gt;If BMC CDB Services is installed on the same machine, you can specify <em>localhost</em>.</td>
</tr>
<tr>
<td>Port</td>
<td>Port number of the BMC CDB Services server&lt;br&gt;The default port number is 80.</td>
</tr>
<tr>
<td>Virtual Directory</td>
<td>Virtual directory where BMC CDB Services is installed&lt;br&gt;The default directory is BMCCDB.</td>
</tr>
<tr>
<td>Username</td>
<td><em>(optional)</em> User name to be used when accessing a secure IIS server where BMC CDB Services is installed</td>
</tr>
<tr>
<td>Password</td>
<td><em>(optional)</em> Password to be used when accessing a secure IIS server where BMC CDB Services is installed</td>
</tr>
</tbody>
</table>

---

**Note**

If you have a secure site, you must specify user account information.

---

Figure 3: CDB Services Binding Information page
7 Click **Test CDB Connection** to verify the connection, and then click **Next**.

*Note*
If a message indicates that the connection failed, correct your binding information to specify a valid connection.

8 On the Service Account Information page as shown in Figure 4 on page 28, select an account under which the BMC CDB Workflow Service should run:

- If BMC CDB Workflow Service is on the same machine as BMC CDB Services, select **Local System Account** and click **Next**.

- If the BMC CDB Workflow Service is binding to BMC CDB Services on a remote machine, select **Specific User Account**. The specific user account must have "Log On As A Service" rights. After entering a user name and password, click **Test User Account** to verify the account, and then click **Next** to continue.

**Figure 4: CDB Workflow Service Account Information page**

9 When the Start Copying Files page is displayed, review your entries and click **Next** to begin the installation.

The Setup Status page displays a progress bar. After the files are installed, BMC CDB Workflow Service detects the Microsoft Windows Firewall.
When asked if you want to configure the firewall, enter **YES** or **NO** based on the following conditions:

- Enter **YES** if you want the installation program to add all necessary entries to the firewall.
- Enter **NO** if you want to enter the firewall settings shown in Table 9 on page 29 manually.

### Table 9: Firewall settings for BMC CDB Workflow Service

<table>
<thead>
<tr>
<th>Firewall setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule type</td>
<td>Port</td>
</tr>
<tr>
<td>Direction</td>
<td>Inbound/Outbound</td>
</tr>
<tr>
<td>Program</td>
<td>CDBWorkflowService.EXE</td>
</tr>
<tr>
<td>Protocol and ports</td>
<td>TCP All local ports</td>
</tr>
<tr>
<td>Action</td>
<td>Allow Connection</td>
</tr>
<tr>
<td>Profile</td>
<td>DomainPrivate</td>
</tr>
<tr>
<td>Name</td>
<td>CDBWorkflowService</td>
</tr>
</tbody>
</table>

Click **Finish** and, if prompted to restart your computer, restart it now.

## Installing Cost Analyzer

This section describes the requirements and procedures for installing Cost Analyzer.

*Note*

You can install Cost Analyzer on the same machine as the CDB server components (BMC CDB Services and BMC CDB Workflow Service) or on a different machine.

## Cost Analyzer system requirements

The following topics describe the Cost Analyzer application server and web client requirements.

### Cost Analyzer application server requirements

This topic lists the requirements for installing the Cost Analyzer application server.
Table 10: Application server requirements for Cost Analyzer

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>■ Microsoft Windows Server 2012 R2</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2012</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2008 R2</td>
</tr>
<tr>
<td></td>
<td>■ Windows 8.1</td>
</tr>
<tr>
<td></td>
<td>■ Windows 8</td>
</tr>
<tr>
<td></td>
<td>■ Windows 7</td>
</tr>
<tr>
<td>Additional OS features and roles</td>
<td>■ Microsoft .NET Framework 4.5</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft Message Queuing Server (MSMQ)</td>
</tr>
<tr>
<td></td>
<td>■ Internet Information Server (IIS) for your version of Windows, with the following items enabled:</td>
</tr>
<tr>
<td></td>
<td>— IIS ASP.NET</td>
</tr>
<tr>
<td></td>
<td>— IIS HTTP WCF Activation</td>
</tr>
<tr>
<td></td>
<td>— IIS Windows Authentication</td>
</tr>
<tr>
<td></td>
<td>— IIS Metabase</td>
</tr>
<tr>
<td>Memory</td>
<td>8 GB</td>
</tr>
</tbody>
</table>

Cost Analyzer web-browser requirements

This topic lists the system requirements for launching the Cost Analyzer application in a web browser.
Table 11: Browser-related requirements for Cost Analyzer

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>◼ Microsoft Windows Server 2012 R2</td>
</tr>
<tr>
<td></td>
<td>◼ Windows Server 2012</td>
</tr>
<tr>
<td></td>
<td>◼ Windows Server 2008 R2</td>
</tr>
<tr>
<td></td>
<td>◼ Windows 8.1</td>
</tr>
<tr>
<td></td>
<td>◼ Windows 8</td>
</tr>
<tr>
<td></td>
<td>◼ Windows 7</td>
</tr>
<tr>
<td>Web-browser</td>
<td>◼ Windows Internet Explorer 8 or later</td>
</tr>
<tr>
<td></td>
<td>◼ Mozilla Firefox</td>
</tr>
<tr>
<td></td>
<td>◼ Google Chrome</td>
</tr>
<tr>
<td>Additional components</td>
<td>Latest version of Microsoft Silverlight</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB</td>
</tr>
<tr>
<td>Screen resolution</td>
<td>◼ 1280 x 1024</td>
</tr>
</tbody>
</table>

Note: For screen resolutions lower than 1280 x 1024, BMC recommends that you put your web browser into full-screen mode (F11) to fully utilize the available screen space.

Installing Cost Analyzer on a web server

Use the following procedure to install the Cost Analyzer server component on a web server.

Before you begin

- The installation program checks for the requirements described in “Cost Analyzer application server requirements” on page 29. If any requirement is not satisfied, the installation program notifies you and stops. Before restarting the installation program, you must satisfy the missing requirements.
If you plan to use a specific user account to run Cost Analyzer, the account must have "Log On as a Service" rights.

Note
After the installation completes, the administrator does need to associate each Windows domain user account with a BMC Cost Analyzer group definition.

To install Cost Analyzer

1. Perform one of the following actions:
   - If you downloaded the product from the Electronic Product Distribution (EPD) facility, navigate to the folder where the installation files were saved.
   - If you received a physical product shipment, insert the Cost Analyzer installation CD into a CD drive.

2. In the Cost Analyzer folder, double-click the `setup.exe` file.

3. On the Welcome page, click Next.

4. Read the license agreement and then click Yes.

5. Review the Readme file and then click Next.

6. On the Choose Destination Location page, perform one of the following actions:
   - Click Next to accept the default location.
   - Click Browse to choose a different location.

The Destination Location identifies the folder where you want to install Cost Analyzer files. The default the 64-bit OS destination folder is `C:/Program Files (x86)/BMC Software/SCA`.

7. Perform the following actions:
   a. On the Service Account Information page, select an account under which the Cost Analyzer Service should run.
      
      You can select either Local System Account or Specific User Account. The specific user account must have "Log On As A Service" rights.
   b. Enter the user name and password for the account.
   c. Click Test User Account to verify the account.
When finished, click **Next**.

The Start Copying Files page is displayed.

8 Review your entries on the Start Copying Files page and click **Next** to begin the installation.

The Setup Status page displays a progress bar that indicates the progression of the installation process.

After the installation completes, Cost Analyzer detects the Microsoft Windows firewall.

9 When prompted, configure the firewall based on the following options:

- If you want the installation program to add all necessary entries to the firewall, click **YES**.
- If you want to enter the firewall settings manually, click **NO** and use the following table to complete the configuration.

### Table 12: Manual firewall settings for Cost Analyzer

<table>
<thead>
<tr>
<th>Firewall setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule Type</td>
<td>Port</td>
</tr>
<tr>
<td>Direction</td>
<td>Inbound/Outbound</td>
</tr>
<tr>
<td>Program</td>
<td>BMCSCAService.EXE</td>
</tr>
<tr>
<td>Protocol and ports</td>
<td>TCP All local ports</td>
</tr>
<tr>
<td>Action</td>
<td>Allow connection</td>
</tr>
<tr>
<td>Profile</td>
<td>DomainPrivate</td>
</tr>
<tr>
<td>Name</td>
<td>BMCSCAService</td>
</tr>
</tbody>
</table>

10 Click **Finish** and, if prompted, restart your computer.

### Where to go from here

Assign at least one user to a BMC Cost Analyzer user group in order to login and use Cost Analyzer. For more information, see “Assigning users to BMC Cost Analyzer User Groups” on page 37.
Installing Microsoft Silverlight

If Silverlight is not already installed when you launch Cost Analyzer for the first time, you are prompted to install it.

**Note**
Depending on your site standards, installing Silverlight might require Administrator rights. If you are not able to install Silverlight yourself, contact your local administrator.

**To install Microsoft Silverlight**


2. Follow the instructions on the Silverlight installation page.

3. When the installation wizard completes the installation, click **Finish**.
Setting up Cost Analyzer

This section describes the administrative operations you need to perform before using the Reporting and Planning tools.

Overview of setup tasks

This topic explains the administrative setup tasks required to make the tools functional for all users.
Before the Reporting Tool and Planning Tool can be used, you need to complete the administration setup tasks described in Figure 5 on page 36:

**Figure 5: Setup tasks flowchart**

The following table provides hyperlinks to the topics that explain how to complete the administration setup tasks:

<table>
<thead>
<tr>
<th>Task</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign users to the appropriate user group on the application server</td>
<td>“Assigning users to BMC Cost Analyzer User Groups” on page 37</td>
</tr>
<tr>
<td>Create and schedule the Automator script</td>
<td>“Creating and scheduling the Automator script” on page 39</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If you are currently using BMC Capacity Management for Mainframes (CMM), you can skip this task.</td>
</tr>
</tbody>
</table>
Assigning users to BMC Cost Analyzer User Groups

Use the following procedure to assign a user to a BMC Cost Analyzer User Group.

Before a user can begin to use Cost Analyzer, he or she must be assigned to a BMC Cost Analyzer User Group. The group assignment determines the user's access to Cost Analyzer components.

To assign a user to a BMC Cost Analyzer User Group

1. In Microsoft Windows, navigate to Computer Management.
2. In the left pane, expand Local Users and Groups and select the Groups folder.
3. From the list in the Groups folder, select the BMC Cost Analyzer User Group that you want to assign the user to.

Tip
You need to add at least one user to a BMC Cost Analyzer Group before you can login and use Cost Analyzer for zEnterprise Cost Analyzer.

For a checklist and complete details about how to install Cost Analyzer on a MS Windows Server, see “Checklist to install Cost Analyzer for zEnterprise on a MS Windows Server” on page 109.

### Assigning users to BMC Cost Analyzer User Groups

<table>
<thead>
<tr>
<th>Task</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit cost tables</td>
<td>“Editing the cost coefficients” on page 41</td>
</tr>
<tr>
<td>Define connections to CDB servers</td>
<td>“Defining connections to CDB servers” on page 49</td>
</tr>
<tr>
<td>Define Model Builder Tasks</td>
<td>“Defining Model Builder Tasks” on page 52</td>
</tr>
<tr>
<td>Install the Model Builder Proxy</td>
<td>“Installing the Cost Analyzer Model Builder Proxy” on page 58</td>
</tr>
<tr>
<td>Update the Automator script</td>
<td>“Updating the Cost Analyzer Model Builder Proxy event” on page 60</td>
</tr>
<tr>
<td>Verify/edit CPC Configuration</td>
<td>“Verifying and editing the CPC Configuration” on page 63</td>
</tr>
</tbody>
</table>
Note
Each BMC Cost Analyzer group provides different functionality to the user by allowing access to particular Cost Analyzer components. Determine which Cost Analyzer components the user should have access to and then assign the user to the appropriate group. For more information, see “BMC Cost Analyzer User Groups” on page 15.

4 In the Properties dialog, click the Add button.

5 In the Select users, Computers, Service Accounts or Groups dialog, enter the object names to select and then click Check Names.

Windows verifies your credentials and adds the new name to the BMC Cost Analyzer group.

6 Click OK.

The Select users, Computers, Service accounts or Groups dialog closes.

7 From the properties dialog of the BMC Cost Analyzer Group, verify that the new name displays in the list of members.

8 Click OK to close the dialog.

Populating your mainframe data into the CDB server

The CDB Server manages the databases that contain the populated output data from the mainframe UIE batch job. Cost Analyzer uses the data that has been populated into this database as input to the model build process.

The population of your mainframe data into the CDB server depends upon the following conditions:

- Your enterprise is currently using BMC Capacity Management for Mainframes (CMM)

In this case, you are already generating and populating Visualizer data files on a daily basis. Cost Analyzer accesses the exact same database for the output of the UIE runs and then uses the database as the input for the model build process.
Your enterprise is not currently using BMC Capacity Management for Mainframes (CMM)

In this case, you must create a new Automator script, run the mainframe UIE batch job, and populate the output data into this CDB-managed database. Cost Analyzer then accesses this populated data and uses it as the input to the model build process. For more information, see “Creating and scheduling the Automator script” on page 39.

Note
If you currently use CMM and want to populate the mainframe data into a separate database for Cost Analyzer to access, you must create a new Automator script.

Creating and scheduling the Automator script

Complete the following tasks to create and schedule the Automator script.

Note
If you are currently using BMC Capacity Management for Mainframes (CMM), you should skip this task and use the Automator script that already exists for that product.

Creating an Automator populate event

Use the following procedure to create an Automator populate event.

Before you begin

Note
This procedure assumes that you have already configured or know how to configure a 32-bit ODBC system data source, and that you have added it to the Automator catalog. For more information about how to create an OBDC data source, see the Knowledge Base on the BMC Support Central site (http://www.bmc.com/support).

To create an Automator populate event

1 Run the Automator application.

Depending on your installation this may be found in the Start Menu under BMC Performance Assurance - Visualizer or BMC Performance Assurance - CDB.

2 Select File => New.
A new script window is displayed.

3 Select Edit => Add Target Database/Group.

4 From the list, select the ODBC Database from which you want to populate the data to and click OK.

5 Select Edit => Add Event => Populate.

6 Browse or enter a location on the local machine to which you want to transfer the VIS files.

7 Click OK.

Your script should now look something like this:

If you were to run this now and you have VIS files in the specified folder, they should populate to the designated database.

**Scheduling the Automator script**

Use the following procedure to schedule the Automator script to run every night.

**To schedule the Automator script**

1 Select Run => Schedule.

2 Browse for the script file that you want to schedule.
If necessary, refer to the name that you used in “Creating an Automator populate event” on page 39.

3 Select a start time.

**Tip**
Select a time that occurs after the VIS files are available.

4 Select dates on which to run the script, or **All** to run the script daily.

5 Enter a name for the task, and the user name and password under which the task should run.

6 Click **OK** to schedule the script.

The Automator scheduler uses the Windows Task Scheduler to schedule and run tasks.

**Note**
After creating a task, you need to use the Windows Task Scheduler to modify, pause, or delete it.

---

**Editing the cost coefficients**

This section describes how to use the MSU Cost Editor to edit your cost coefficients.

By using the MSU Cost Editor, you can enter the actual cost information from your contract with IBM and adjust each component of the cost so that it accurately reflects the real cost structure that has been established for your enterprise.

To set up your cost tables, you use the MSU Cost Editor and complete the following tasks:

- Specify the cost coefficients that Cost Analyzer uses to calculate your MLC product costs
  For more information, see “Using the MSU Cost Editor” on page 44

- Override the default pricing metric type used for a particular MLC product (if applicable)
  For more information, see “Overriding the pricing metric type” on page 46
- Designate which MLC products accrue charges based on Single Version Charge (SVC)
  For more information, see “Specifying Single Version Charging for specific MLC products” on page 47
- Change the reporting locale
  For more information, see “Changing the reporting locale” on page 48

**Overview of the MSU Cost Editor**

The MSU Cost Editor lets you edit your IBM Workload License Charges (WLCs) so that Cost Analyzer can use actual costs when building your cost models.

For example, you use this editor to insert MSU cost coefficients from your IBM License Agreement into the cost tables. As indicated in the sample in Figure 6 on page 42, the MSU Cost Editor lists all of the MLC products on a system.

**Figure 6: Sample MSU Cost Editor**

**MSU Cost Editor legend**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Configure Reporting Locale</td>
<td>Accesses a dialog where you can change the reporting locale. For more information, see “Changing the reporting locale” on page 48.</td>
</tr>
<tr>
<td>2</td>
<td>Pencil icon</td>
<td>Indicates that the cost coefficient tables for the product have been edited</td>
</tr>
<tr>
<td>#</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Triangle icon</td>
<td>Lets you display or hide product features by clicking the icon</td>
</tr>
<tr>
<td>4</td>
<td>Type</td>
<td>The license type used by the products on your system. <strong>Note:</strong> Cost Analyzer supports only Monthly License Charge (MLC) products at this time.</td>
</tr>
<tr>
<td>5</td>
<td>Group</td>
<td>The IBM software family of the product (CICS, DB2, IMS, MQ, ZOS, or OTH)</td>
</tr>
<tr>
<td>6</td>
<td>Product ID</td>
<td>The product's identification designation</td>
</tr>
<tr>
<td>7</td>
<td>Product Name</td>
<td>The name of the product</td>
</tr>
<tr>
<td>8</td>
<td>Feature ID</td>
<td>The feature's identification designation</td>
</tr>
<tr>
<td>9</td>
<td>Feature Name</td>
<td>The name of the feature</td>
</tr>
<tr>
<td>10</td>
<td>Cost Coefficients</td>
<td>Contains a link for editing the cost coefficient tables and provides a list of pricing metric types that have had their cost tables edited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access the cost tables to assign cost coefficients to the MSU ranges defined by IBM. You can edit a separate cost table for every Pricing Metric Type that applies to the MLC product. For more information, see “Using the MSU Cost Editor” on page 44.</td>
</tr>
<tr>
<td>11</td>
<td>Pricing Metric Override</td>
<td>Enables you to designate a different pricing metric type for any MLC product to override the default pricing metric type defined for the CPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Overriding the pricing metric type” on page 46</td>
</tr>
<tr>
<td>12</td>
<td>Single Version Charge</td>
<td>Enables you to designate that two versions of the same MLC product accrue charges based on Single Version Charging (SVC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> When certain conditions are met during the migration to newer versions of IBM Middleware or an IBM Operating System, IBM provides Single Version Pricing (SVC) for a limited period. For more information see, “Specifying Single Version Charging for specific MLC products” on page 47.</td>
</tr>
</tbody>
</table>

**Adjusting the data display**

To change how the data is displayed in the MSU Cost Editor, you can perform the following actions:

- Sort the data in a column alphabetically, in either ascending or descending order, by clicking the column header
- Adjust the column widths by hovering over the header's column lines, and then clicking and dragging them to the desired size
Using the MSU Cost Editor

In order to calculate the costs of running MLC products, Cost Analyzer requires you to insert cost coefficients from your IBM license agreement into cost tables. Use the MSU Cost Editor to edit the cost coefficients for each MLC product on your system.

Cost Analyzer sets the default value of the cost coefficients in these tables to zero. You must edit the cost coefficients in the cost tables by entering your actual cost coefficient values provided by IBM.

**Note**
You must specify the cost coefficients for your MLC products before you can use the Reporting Tool or Planning Tool. Similarly, you should edit the cost coefficients to reflect any changes to your pricing arrangements with IBM.

**To edit the cost coefficients**

1. From the console, click Administration Tools.

2. From the Administration Tools dialog, click MSU Cost Editor.

   The MSU Cost Editor displays showing a listing of MLC products as shown in Figure 6 on page 42.

3. In the MSU Cost Editor, perform one of the following actions:
   - To specify coefficients for a specific product, find the row for that product and click the Edit link in the Cost Coefficients column.
   - To specify or modify cost coefficients for individual Features of an MLC product, click the triangle icon (↑) in that product's row to display the product's available features; then, click Edit in the Cost Coefficients column for the feature that you want.
A dialog displays a cost table showing the MSU ranges and their associated cost coefficients (Figure 7 on page 45).

**Figure 7: Sample MSU Cost Table**

<table>
<thead>
<tr>
<th>MSU Range</th>
<th>Cost Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0 4 - 45 MSUs</td>
<td>211</td>
</tr>
<tr>
<td>Level 1 46 - 175 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 2 176 - 315 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 3 316 - 575 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 4 576 - 875 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 5 876 - 1315 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 6 1316 - 1975 MSUs</td>
<td>82</td>
</tr>
<tr>
<td>Level 7 1975+ MSUs</td>
<td>82</td>
</tr>
</tbody>
</table>

**Note**

A separate cost table is available for each Pricing Metric Type.

4 From the *Pricing Metric Type* drop-down list, click the desired type to select its cost table for editing.

You should edit a separate cost table for each Pricing Metric Type associated with the MLC product. The pencil icon next to the Pricing Metric Type designation indicates that the cost table has been previously edited.

**Tip**

You can edit multiple cost tables at one time. If you want to switch to another cost table, click *Pricing Metric Type* to select it. You can perform this action whenever you want to alternate between cost tables.

5 Set the Base charge.

**Note**

For Flat Workload License Charges (FWLC), you can only enter the flat price as MSU ranges do not apply to this type.
6 Edit the cost coefficients values in the cost table, entering the coefficients provided in your IBM License Agreement.

For each level in the MSU range, you can specify the cost coefficient associated with this MSU usage.

7 If you want to edit the cost table for another Pricing Metric Type, repeat Step 4 on page 45 through Step 6 on page 46.

8 When finished editing cost coefficients, click Accept.

Cost Analyzer applies your changes and closes the dialog.

9 Repeat Step 3 on page 19 through Step 8 on page 46 for each MLC product you want to edit.

10 When finished editing MLC products in the MSU Cost Editor, click Save Changes.

**Overriding the pricing metric type**

In most instances, the MLC products running on a CPC use the same pricing metric. However, there may be particular MLC products on the CPC that are using a different pricing metric type.

Use the follow procedure to override the CPC pricing metric type and designate a different pricing metric type for a specific MLC product.

**Note**

For each MLC product, Cost Analyzer uses the default pricing metric type defined for the CPC in the CPC Configuration Editor. For more information, see “Using the CPC Configuration Editor” on page 66.

1 From the console, click Administration Tools.

2 From the Administration Tools dialog, click MSU Cost Editor.

3 From the MSU Cost Editor, perform one of the following actions:

- In the Pricing Metric Override column for the MLC product that you want to edit, click the drop-down box.

- To specify a pricing metric override for an individual Feature of an MLC product, click the triangle icon (△) in that product's row to display the product's available features; then, click the drop-down box in the Pricing Metric Override column.
4 From the drop-down list, click the Workload License Charge that you want to apply to the MLC product.

You can select from the options described in Table 13 on page 47:

<table>
<thead>
<tr>
<th>Workload License Charge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEWLC</td>
<td>Advanced Entry Workload License Charges</td>
</tr>
<tr>
<td>AWLC</td>
<td>Advanced Workload License Charges</td>
</tr>
<tr>
<td>EWLC</td>
<td>Entry Workload License Charges</td>
</tr>
<tr>
<td>FWLC</td>
<td>Flat Workload License Charges</td>
</tr>
<tr>
<td>VWLC</td>
<td>Variable Workload License Charges</td>
</tr>
<tr>
<td>ZNALC</td>
<td>System z New Application License Charges</td>
</tr>
</tbody>
</table>

Once selected, the Pricing Metric Type that applies to the MLC product is displayed in Pricing Metric Override column.

5 Repeat Step 3 on page 46 through Step 4 on page 47 for each MLC product that you want to edit.

6 When finished, click Save Changes.

**Specifying Single Version Charging for specific MLC products**

Use the following procedure to specify single version charging for specific MLC products.

According to IBM, enterprises migrating to a new version of an IBM software product may require continued use of the old version during a transition period. In this situation, such use may be permitted without license charges accruing for the old version until the transition is complete. This is known as Single Version Charging (SVC).

If you have SVC arrangements with IBM, you need to indicate which MLC products are priced based on SVC, so that the correct pricing is included in the cost models.

**Note**

If you want to apply SVC information to pre-existing models, you must rebuild these models. SVC information can only be applied to new models.
1 From the console, click *Administration Tools*.

2 From the Administration Tools dialog, click *MSU Cost Editor*.

3 In the MSU Cost Editor, specify which products have SVC agreements:

   *Note*

   When specifying Single Version Charging for two versions of the same MLC Product, you *must* specify the SVC information in the row that corresponds to the newer version.

   a From the list of MLC Products, find the newer version of the product to which SVC applies.
   
   b In the **Single Version Charge** column of the newer version, click the drop-down box.
   
   c From the list of MLC product versions in the drop-down list, select the *old version* of the product covered by the SVC agreement.

   The MSU editor populates the associated versions of the MLC products into the Single Version Charge column.
   
   d Repeat Step 3.a on page 48 through Step 3.c on page 48 for each product that has an SVC agreement.

4 Repeat Step 3 on page 48 through Step 3.c on page 48 for each MLC product you want to edit.

5 When finished editing, click *Save Changes*.

    During the model build process, Cost Analyzer retrieves SVC data from the cost table and applies that data to the model to reflect accurate pricing.

**Changing the reporting locale**

The reporting locale controls how your reports format monetary units, decimal numbers, dates, and times. Use the following procedure to change your system’s reporting locale to correspond to the standard location for your enterprise.

1 From the console, click *Administration Tools*.

2 From the Administration Tools dialog, click *MSU Cost Editor*.
3 To change the locale, click **Configure Reporting Locale**.

4 In the Configure dialog, select the locale that you want from the Reporting Locale list.

   For example, to select France in order to show costs in euros and dates in *dd/mm/yyyy* format, click the drop-down box and select **French (France):fr-FR**.

---

**Note**

Changing the reporting locale does not convert the cost coefficients into the currency of the locale. Cost coefficients must match the currency of the selected locale.

---

5 Click **Accept**.

6 When finished, click **Save Changes**.

---

### Defining connections to CDB servers

You define connections to CDB servers by adding or modifying CDB Server Profiles. Use the following procedure to define the CDBs that Cost Analyzer will access to gather data.

**To define a connection by adding or modifying a CDB Server profile**

1 From the Cost Analyzer console, click **Administration Tools**.

   The Administration Tools dialog is displayed.

2 Click **Manage CDB Server Profiles**.

   The Manage CDB Server Profiles dialog is displayed:
3 Perform one of the following actions:

- To add a new profile, click the **Add** button.

- To modify an existing CDB Server profile, select the icon of the profile you want to modify from the list, and then click the **Modify** button.

The Add/Modify CDB Server Profile dialog is displayed:
4 Complete each field based on the following Table 14 on page 51:

### Table 14: Add CDB Server Profile fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Name</td>
<td>Name for the profile</td>
</tr>
<tr>
<td>Profile Description</td>
<td><em>(optional)</em> Brief description for the profile</td>
</tr>
</tbody>
</table>
| Server Hostname or IP-Address | Host name or IP address of the BMC CDB Services server  
If BMC CDB Services is installed on the same machine, you can specify localhost. |
| Port                       | Port number of the BMC CDB Services server  
The default port number is 80. |
| Virtual Directory          | Virtual directory where BMC CDB Services is installed  
The default directory is BMCCDB. |
| Username                   | *(optional)* User name to be used when accessing a secure IIS server  
where BMC CDB Services is installed |
| Password                   | *(optional)* Password to be used when accessing a secure IIS server  
where BMC CDB Services is installed |

5 Click Test Connection.

Cost Analyzer tests the connection and displays the status in the **Connection Status** field.

6 When the test is finished, perform one of the following actions:

- Click **Add Profile** to add the profile.
- Click **Modify Profile** to modify the profile.

**To remove a CDB Server profile**

1 From the list of available CDB Server profiles, select the CDB Server profile you want to remove.

2 Click the **Remove** button.

Cost Analyzer removes the CDB Server profile.

3 Click **Save Changes** to commit the changes to the application server.
Defining Model Builder Tasks

Use the following procedure to create, add, and manage Model Builder Tasks.

The Model Builder Tasks tool provides you with the ability to build cost models based on current data from the CDB server. Once defined and scheduled, Model Builder Tasks generate the models required for the Reporting Tool and the Planning Tool.

You can build a variety of models to affect the scope of your analysis. In general, if you have multiple CDB servers, you have to define multiple Model Builder Tasks to run. If you have more than one workload type you want to process, you can define one Model Builder Task for all of the workloads. It is not necessary to create a separate task for each workload type.

**Note**

If you are using multiple CDB Servers, they CANNOT contain LPARs from the same CPCs. This type of LPAR arrangement invalidates all cost models.

Model Builder tasks provide advanced options where you can:

- Exclude particular LPARs from the cost calculations
- Designate the LPARs that use zNALC licensing for z/OS products

**Before you begin**

You need to define at least one CDB Server profile before you can create a Model Builder Task. Defining the CDB Server profile enables Cost Analyzer to connect to the CDB database and retrieve the necessary data for the model. For more information, see “Defining connections to CDB servers” on page 49.

**To define Model Builder Tasks**

1. From the Cost Analyzer console, click **Administration Tools**.

2. In the Administration Tools window, click **Model Builder Tasks**.

   The Model Builder Tasks dialog opens, listing all of the tasks that have been defined by the user:
From the dialog you can add, modify, or remove Model Builder Tasks.

3 Perform one of the following actions:

- To add a new Model Builder Task, click the Add button.
- To modify an existing Model Builder Task, select the icon of the task you want to modify from the list, and then click the Modify button.

The Add/Modify dialog is displayed as shown in the following figure:
Complete each field based on Table 15 on page 54:

**Note**

It is possible to create models from data in separate Source CDB Servers and/or databases by creating multiple Model Builder Tasks. In this situation, you must select the same workload types for each Model Builder Task.

**Table 15: Add Model Build Task fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task name</td>
<td>Name to be assigned to the task</td>
</tr>
<tr>
<td></td>
<td><strong>Tip:</strong> Make a record of the task name because you need it to schedule the Cost Analyzer Model Builder Proxy application.</td>
</tr>
<tr>
<td>Task description</td>
<td><em>(optional)</em> Description of the task</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Workload type</td>
<td>Click one or more of the following types:</td>
</tr>
<tr>
<td></td>
<td>■ Suites</td>
</tr>
<tr>
<td></td>
<td>■ Service Class</td>
</tr>
<tr>
<td></td>
<td>■ Subsystem Address Space</td>
</tr>
<tr>
<td></td>
<td>■ Importance</td>
</tr>
<tr>
<td></td>
<td>■ Workload Manager</td>
</tr>
<tr>
<td>Note: Suites and Service Class workloads require a filter to be specified. For more information, see “Cost Analyzer workloads” on page 14.</td>
<td></td>
</tr>
<tr>
<td>Workload Filter</td>
<td>Filter for the workload</td>
</tr>
<tr>
<td></td>
<td>If the selected workload type is either Suites or Service Class, you must enter a list of comma delimited workload names or wildcard character patterns that will be used as a filter to reduce the size of the cost model.</td>
</tr>
<tr>
<td>Note: Specifying a very large number of workloads may significantly degrade performance of Cost Analyzer. The workload filter provides the ability to specify which workloads to process.</td>
<td></td>
</tr>
<tr>
<td>Source CDB Server</td>
<td>Desired CDB Server Profile</td>
</tr>
<tr>
<td>Source CBD Database</td>
<td>Desired CDB Database accessible from the specified CDB Server</td>
</tr>
<tr>
<td></td>
<td>The database needs to be compatible with Cost Analyzer.</td>
</tr>
<tr>
<td>Time Zone Offset</td>
<td>Desired time zone offset</td>
</tr>
<tr>
<td></td>
<td>You can specify an offset from the time zone of the data in the CDB database.</td>
</tr>
<tr>
<td>Note: When using the Planning Tool, all CPCs included in the plan must be built with the same time zone offset.</td>
<td></td>
</tr>
</tbody>
</table>

5 *(optional)* If you want to exclude particular LPARs from the cost calculation or designate zNALC LPARs, click **Advanced Options**.

The Advanced Options dialog displays as shown in figure:
To exclude LPARs from the cost calculation, enter the name of the LPAR you want to exclude and then click **Add**.

To designate zNALC LPARs click the **zNALC** tab, enter the name of the zNALC LPAR you want to include, and then click **Add**.

**Note**

You can enter LPARs either individually or you can list multiple LPARs separated by commas.

Entries are case-sensitive, so be sure to enter the LPAR name exactly as it appears in z/OS, which primarily uses capital letters for all LPAR names.

When finished, click **Accept**.

When finished, click **Add Task**.

The task appears as a listing in the Model Builder Tasks dialog.

Click **Save Changes** to save the Model Builder Task to the server.

**Where to go from here**
Note
After defining your Model Builder Tasks, schedule them to run on a nightly basis for use with the Reporting Tool and the Planning Tool. For more information, see “Scheduling Model Builder Tasks” on page 57.

If necessary, Model Builder Tasks also provides you with the option to run the task immediately by utilizing Run Task Now. You can use this option if your scheduled tasks will not process the data you need for a specific cost model as described in the following examples:

- If you are running the UIE to process older data, you can run the task to generate a cost model.
- If you updated or corrected a SVC definition in the cost table, you can run the task to rebuild the cost models to reflect the new values.
- If for some reason the regularly scheduled task did not run, you can run the task to generate the missing data.
- If you excluded LPARs or specified zNALC LPARs, you can run the task to rebuild the cost models to reflect the new values.

Scheduling Model Builder Tasks

This section explains how to schedule Model Builder Tasks by using the Model Builder Proxy.

To generate a cost model for Cost Analyzer, you need to run a Model Builder Task that builds the cost model from the populated mainframe data.

The preferred way to schedule and run Cost Analyzer Model Builder Tasks is to add the Cost Analyzer Model Builder Task to a new or existing Automator script.

Overview of Cost Analyzer scheduled operations

You must schedule daily cost model builds to provide Cost Analyzer with pertinent data for your analysis.

You should establish the following environment for Cost Analyzer:

- Depending on the number of LPARs, volume of the data, schedule of SMF dumps on the mainframe side, and the need to see Cost Analyzer reports ASAP, you can set up a 24-hour, 12-hour, 8-hour, or other hourly cycle.
In each cycle, UIE is scheduled to run and process data for all LPARs.

**Note**

If you are using other CMM products, such as Visualizer, at least some of the Cost Analyzer charts and reports require processing in a single UIE run of all LPARs from a particular CPC.

Cost Analyzer itself does not have such a requirement. Several groups of LPARs can be processed in separate UIE runs. However, to produce valid 4HRA and cost estimates, it is necessary to process all LPARs all the time. If some LPAR data will be missing, Cost Analyzer still can produce the reports, but the values will not necessarily match the SCRT report and IBM bill.

Certain UIE commands affect the information in Cost Analyzer models. These commands are:

— Commands defining Physical System name and parameters (PSYS)

— Commands defining VM Guests and VM Hosts

— Commands defining aggregation of work into larger units (SUITE). These commands should be specified in such way that ensures consistency of these units during the usage month.

— Commands defining the time zone for the data in the CDB

After successful UIE runs, the generated Visualizer files populate into the CDB server by a scheduled Automator event. In the Automator script, the Build Model event creates all Cost Analyzer models for the current usage month, gathering into this model all data from the beginning of the usage month. The current models replace all of the models from a previous cycle, which by that time might already be invalid because the latest populated data can contain different Peak values and costs. For any usage month, there is always only one set of valid models (CPCs and Workloads). The current set of models contains one model per CPC and up to 5 types of Workload models per CPC.

After Model Builder Tasks execute, Cost Analyzer makes the cost models available for use with the Reporting Tool and Planning Tool and can be selected for use together with all previous usage month models.

**Installing the Cost Analyzer Model Builder Proxy**

Use the following procedure to install the Cost Analyzer Model Builder Proxy. The program and its dependencies are packaged in a zip file in the Cost Analyzer product installation directory.
To install Cost Analyzer Model Builder Proxy

1 Find the proxy zip file by navigating to the Cost Analyzer installation folder. By default, the 64-bit OS folder location is: C:/Program Files (x86)/BMC Software/SCA/Services/MBProxyBin/SCAModelBuildProxy.zip.

The following figure shows a sample location for the proxy zip file.

**Figure 8: Sample location for proxy zip file**

2 Extract the contents of the SCAModelBuildProxy.zip file.

The contents of this file must be extracted to a folder on the machine where you wish to schedule the model build task.

3 Run the SCAModelBuildProxy.exe program.

   **Note**

You must run SCAModelBuildProxy.exe program at least once to configure the target Cost Analyzer machine information. (The same user that runs this program, must be the same user that schedules the Automator script.)

The Cost Analyzer Model Builder Proxy dialog is displayed:
By default, the dialog fills the field data for you.

4 Check the field data for accuracy and click Close.

**Tip**
The Model Build Proxy must run under the same user identity that will be used to execute this task using the Windows Scheduler.

---

**Updating the Cost Analyzer Model Builder Proxy event**

After creating an Automator populate event, you need to add a new run event to the script so Automator can run the Cost Analyzer Model Builder Proxy. Use the following procedure to add the Cost Analyzer Model Builder proxy event.

**To update the Cost Analyzer Model Builder Proxy run event**

1 Open the script.

2 Select **Edit => Add Event => Run Visualizer Input File Transfer**.

**Note**
This event runs another application, such as an FTP application or (in this case) the Cost Analyzer Model Builder Proxy application.

3 Click the **Browse** button, navigate to the folder where you extracted the contents of the **SCAModelBuildProxy.zip** file, and select the **SCAModelBuildProxy.exe** file.
4 In the **Arguments** field, type the name of the Model Build Task created in the Cost Analyzer product.

**Tip**
If the task name has spaces in it, enclose it in quotes (for example, "My Task").

5 Click **OK**.

Be sure the run event appears after the populate event. If not, select the run event and then use **Ctrl+Up** or **Ctrl+Down** to move it to the correct location.

You want the run event to execute after the populate event to ensure that the latest data is in the database before the Cost Analyzer model is generated. If the populate event does not execute or fails, any events following it in the script will not execute either. This ensures that the Cost Analyzer Model will not be generated if the data did not populate correctly.

Your script should now look like this:

6 Save the script to a name and location for future use.

**Other Cost Analyzer Model Builder Proxy options**

The Model Builder Proxy can execute a task immediately or execute a task for a specific month and year. By default, the Model Builder Proxy runs for the current month and year.

**To run a Model Builder Proxy task manually**

1 In the Cost Analyzer Model Builder Proxy, click the **Submit Task** button.

The program communicates with the configured Cost Analyzer Server and retrieves a list of Model Build Tasks.
The Run Task Now dialog displays as shown in the following figure:

2 In the Run Task Now dialog box, select a task from the **Model Build Task Name** list.

3 In the **Billing period to run for** field, specify the year and month in which to run the task.

   Use the format **YYYY/MM**, where valid values for MM are 01 through 12. For example, enter **2013/05** for May 2013.

4 Click **Submit**.

   Cost Analyzer builds a model for the specified year and month using information from the selected Model Build Task.

**To run a Model Builder Proxy task as an argument**

1 Specify the year and month as an argument to the Automator Run event or the Windows Task Scheduler arguments list.

   Use the format **YYYY/MM**, where valid values for MM are 01 through 12. For example, enter **2013/05** for May 2013.

**To run a Model Builder Proxy task from the Command line**

1 On the Command line, specify `SCAModelBuildProxy "taskName" YYYY/MM` where "**taskName**" is the name of the task, **YYYY** is the year, and **MM** is the month.

   For example, enter `SCAModelBuildProxy "My Task" 2013/01` to run the task named My Task for January 2013, using either the default Cost Analyzer Server settings or the Cost Analyzer Server settings that the user previously specified.
Verifying and editing the CPC Configuration

After building cost models, Cost Analyzer uses IBM default rules for sub-capacity licensing to produce a configuration of your CPCs. The configuration defines the default pricing metric type and PricingPlex grouping for each CPC. You should verify and, if needed, edit the configuration so that each CPC has correct values defined.

Cost Analyzer uses the most recent cost model to produce the configuration; you have access to the configuration after running the initial Model Builder Task. For more information, see “Scheduling Model Builder Tasks” on page 57.

Overview of the CPC Configuration Editor

For each CPC, the CPC Configuration Editor lists the default pricing metric type applied to the cost models for all MLC products on that CPC. If applicable, the configuration also specifies the PricingPlex that aggregates the MSU utilization of the CPC into a group for pricing purposes.

Note

CPC configuration within a PricingPlex is applicable only if your CPCs are combined into a PricingPlex as allowed by your IBM license agreement. If no PricingPlex exists for a CPC based on the information from the cost models, the PricingPlex name should be blank.
Figure 9 on page 64 shows a sample CPC Configuration Editor:

Figure 9: Sample CPC Configuration Editor

How the configuration determines the pricing metric type

In general, the Pricing Metric Type default is determined by the CPU type you are using. However, depending upon your contractual agreement with IBM, your Pricing Metric Type may vary from these established defaults. The CPC Configuration Editor provides you with the ability to edit the value of the Pricing Metric Type to account for any variation that may exist for your enterprise.

How the configuration determines the PricingPlex parameter

Cost Analyzer defines the PricingPlex for each CPC by determining the most active Sysplex to which the CPC is connected. However, your actual PricingPlex groupings may be different, so you can use the CPC Configuration Editor to add or change the PricingPlex parameter. If a CPC is not part of a PricingPlex, you can also edit the PricingPlex parameter so that its designation is blank, indicating that a PricingPlex does not apply to this CPC.
After you verify or change the PricingPlex parameter for each CPC, Cost Analyzer does not apply the changes to the costs that are generated in the Monthly Summary Report unless the Use Sysplex Pricing? toggle is set to Yes.

If the Use Sysplex Pricing? is set to No, the PricingPlex groupings indicated in the PricingPlex column have no affect on cost calculations.

**Note**

IBM allows CPCs to be aggregated across a qualified Parallel Sysplex (“Sysplex Pricing”) only when certain criteria are met. Before using Sysplex Pricing with Cost Analyzer, you must confirm that your IBM contract contains this arrangement. Cost Analyzer does NOT verify Sysplex Pricing criteria and does not use Sysplex Pricing automatically. It is the responsibility of the administrator to set Use Sysplex Pricing? correctly.

After verifying and editing the CPC Configuration, you do not need to rebuild the cost models. Any changes to the CPC Configuration parameters will take effect immediately and the resulting changes to the costing data can be viewed by generating a Monthly Summary Report. For more information, see Using the CPC Configuration Editor on page 66.

**CPC Configuration updates**

Each time a Model Builder Task runs and a Cost Model is built, the CPC Configuration is updated from the most recent costing data. **However, Cost Analyzer only applies the updates to the parameters that are saved in the CPC Configuration Editor when certain conditions are met.** Updates to the parameters saved in the CPC Configuration Editor are applied as follows:

- Cost Analyzer adds any new CPCs to the CPC configuration with a default Pricing Metric Type and PricingPlex designation that requires your verification.

- Cost Analyzer does not change any values that you previously edited in the CPC Configuration Editor. Values that you defined for the CPC override the updates.

- Based on the most recent cost model, Cost Analyzer updates all values that you have not previously edited.

- Preexisting CPCs in the CPC Configuration that no longer exist in the most recent Cost Model are not changed. These CPCs remain listed in the CPC Configuration Editor, but they are inactive and their parameters do not affect the costing data.
Using the CPC Configuration Editor

Use the following procedure to verify that your CPCs are configured correctly to their Pricing Metric Type and applicable PricingPlex names. If necessary, you can edit the information to align the CPCs with the correct values.

**Before you begin**

You must run one Model Builder Task before using the CPC Configuration Editor. For more information, see “Defining Model Builder Tasks” on page 52.

**To verify and edit the CPC configuration**

1. From the console, click **Administration Tools**.

2. From the Administration Tools dialog, click **CPC Configuration Editor**.

   The CPC Configuration Editor lists CPCs, their Pricing Metric Type, and if applicable, the names of their PricingPlex.

3. Check that each CPC has the correct Pricing Metric Type and PricingPlex name (if applicable).

   The configuration does not require editing unless a discrepancy exists. If the CPC is configured correctly, no further action is necessary and you can skip to Step 6 on page 67.

4. *(optional)* For any CPC that you want to edit, perform the following actions:
   
   - Using the **Pricing Metric Type** drop-down box, select the Pricing Metric Type that applies to the CPC.
   
   - Using the **PricingPlex** drop-down box, select the PricingPlex name that applies to the CPC.

   **Note**

   To remove the PricingPlex name from a CPC, click the blank space in the list of names.

5. *(optional)* To add a PricingPlex name that is not on the list, perform the following actions:

   a. Click the **Add** link.

   b. In the Add PricingPlex dialog, enter the name of the PricingPlex.

   c. Click **Accept** to add the name to the list.
d Find the CPC to which you want to add the new PricingPlex name, and select the new name from that CPC's PricingPlex drop-down box.

The PricingPlex name displays in the box configured to the CPC.

e Repeat Step 5.d on page 67 for each CPC to which you want to add the new PricingPlex name.

6 When finished, click Save Changes.

Where to go from here

If you edited the CPC configuration, apply the changes to the cost models by generating a Monthly Summary Report; you can view the report to see how the configuration changes affect your costs.
Generating cost-analysis reports

This section describes how to use the Reporting Tool to generate Monthly Summary Reports and how to utilize the report's interactive capabilities in your cost analysis.

Reporting Tool overview

You can use the Reporting Tool to generate and analyze monthly cost reports.

The Reporting Tool provides a tool panel where you can perform the following tasks:

- Generate a Monthly Summary Report
- Export the Monthly Summary Report to a PDF

Figure 10: Sample tool panel

You can display or hide the tool panel by clicking the icon.

For more information, see “Working with the Reporting Tool panel” on page 71.
## Monthly Summary Report

The Monthly Summary Report and its interactive features provide you with the ability to identify and understand the key contributing factors to your monthly costs.

The report contains comprehensive breakdowns of monthly cost data; you can compare actual costs, MSUs, or both in varying degrees of detail and contexts. You can use the report to identify areas for cost reduction and perform the following analysis:

- Identify all monthly peak 4HRA MSU Utilizations by MLC product.
- Identify the date and time of the first and second peaks of 4HRA MSU Utilizations.
- Analyze the percent of total cost breakdown by MLC product, CPC, and LPAR.
- Compare cost data of MLC products running on specific CPCs or LPARs.
- Convert chart data into exportable data grids that list:
  - For any CPC, the hourly MSU Utilizations for all MLC products running on it
  - For any MLC product, the hourly MSU Utilization across LPARs

The report also provides dynamic and interactive data views of:

- LPAR 4HRA MSU Utilization curves
- Baseline software license costs correlated with workload utilization and 4HRA KPIs
- Charts that compare workload MSU Utilization across LPARs
- Charts that compare average hourly MSU Utilization to the 4HRA
- Funnel charts that break down the cost information into separate segments
- MSU Utilizations for Priced Features of MLC products

Additionally, the Monthly Summary Report features hyperlinks that navigate to more detailed levels of the report; for example, you can access an interactive charting area to compare charts for comprehensive analysis of all factors that affect your monthly costs.

By comparing charts that contain 4HRA information correlated with business activity and license costs, you can perform an informed analysis of:
Working with the Reporting Tool panel

From the Reporting Tool panel, you can generate a Monthly Summary Report and export the report to a PDF.

**To set up and generate a Monthly Summary Report**

1. From the Cost Analyzer console, click the **Reporting Tool** tab.

2. Click the icon to display the tool panel (if not displayed).

3. From the tool panel, select the month and year of the cost model from the list of **Available Cost Models** indicated on the calendar.

4. From the list of **Available CPCs**, select one or more CPC to include in the report.

5. Select the output type:
   - To view the report on your screen, click the **Generate Summary Report** button. The Reporting Tool panel closes and the Monthly Summary Report displays.
   - To view the report as a PDF, click the **Generate PDF Report** button. A dialog opens and prompts you to either include Priced Features by clicking **Yes** or exclude Priced Features by clicking **No**. After making your selection, the Reporting Tool generates a PDF that you can either open in your browser or save locally to your computer.

**Quick tour of the Monthly Summary Report**

The Monthly Summary Report displays rows that list each MLC product and columns that organize the monthly cost data for ease of comparison. Using the hyperlinks, you can drill down on specific data to see more details and access interactive charts.
Figure 11 on page 72 shows a sample Monthly Summary Report.

**Figure 11: Sample Monthly Summary Report**

Table 16 on page 72 describes the data that each column of the report contains.

**Table 16: Data in the Monthly Summary Report**

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
</table>
| MLC Product                            | Monthly License Charge product that qualifies for sub-capacity pricing  
The product ID is indicated in parentheses under the MLC product name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CPC Name (PricingPlex Name)            | Name of the CPCs on which this MLC product was active during some intervals of the reporting period  
The PricingPlex name is indicated in parentheses under the CPC name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4HRA MSU Utilization                   | Preview chart of the aggregated 4HRA MSU Utilization of the LPARs where this product was running  
The preview chart for each LPAR includes only those intervals where the product was running. The red dot on the chart represents the high or peak value.  
You can expand or contract the chart data by adjusting the column width. When hovering over the chart, a tooltip displays chart statistics that provide more details about the chart data, as described in “Chart statistics display” on page 73.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4HRA First Peak Cost                   | Monthly license cost determined by the First Peak 4HRA value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| % of Total Cost                        | The percentage that the product contributes to the total monthly cost  
Additional percentages are provided to break down the cost contribution of each CPC running the MLC Product.  
**Note:** In an MLC Product Name row, the percentage indicates this product's contribution to Total Monthly cost. In a CPC row, the percentage indicates this CPC's contribution to total Monthly Cost for this particular product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
<p>| Average Cost/MSU                       | Total product cost on a particular CPC divided by the First Peak 4HRA value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |</p>
<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
</table>
| Incremental Cost/MSU         | Cost of one additional MSU for this product on this CPC  
**Note:** Cost tables are not linear, so the cost of an additional MSU depends on the current First Peak 4HRA value. |
| 4HRA First peak (MSU)        | 4HRA value in MSUs at the first peak  
To the right of the 4HRA value, the number in parentheses indicates the number of occurrences of the same value during the reporting period. |
| 4HRA First Peak Date         | Date and time the first peak occurred                                                                                                                                 |
| 4HRA Second Peak (MSU)       | 4HRA value in MSUs at the second peak  
To the right of the 4HRA value, the number in parentheses indicates the number of occurrences of the same value during the reporting period.  
**Note:** The 4HRA Second Peak value and Date/Time value do not affect MLC but do provide useful information. For example, if the first peak has only one occurrence and the second peak is significantly smaller than the first peak, either an abnormal situation occurred or you have an opportunity to decrease the cost. |
| 4HRA Second Peak Date        | Date and time when the second peak occurred                                                                                                                                 |

In the CPC column, a sticky note (--) indicates that an adjustment has been made to the cost calculation for the data in that row. Hover over the sticky note to view the adjustment message.

**Chart statistics display**

By hovering over any 4HRA MSU Utilization chart in the list, you can display chart statistics that provide more details about the chart data. *Table 17 on page 73* describes the chart statistics.

**Table 17: Chart statistics for the Monthly Summary Report**

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum 4HRA MSU</td>
<td>Minimum MSU value for the given month</td>
</tr>
<tr>
<td>Maximum 4HRA MSU</td>
<td>Maximum MSU value (peak value) for the given month</td>
</tr>
<tr>
<td>Average 4HRA MSU</td>
<td>Average MSU value for the given month</td>
</tr>
<tr>
<td>Spread 4HRA MSU</td>
<td>Difference between the Maximum and Minimum 4HRA MSU</td>
</tr>
<tr>
<td>Linear Trend Start</td>
<td>Starting MSU value for linear trend projection for the given month</td>
</tr>
<tr>
<td>Linear Trend End</td>
<td>Ending MSU value for linear trend projection for the given month</td>
</tr>
<tr>
<td>Linear Trend Direction</td>
<td>➡ or ← indicates if the 4HRA linear trend projection is trending upwards or downwards</td>
</tr>
</tbody>
</table>
Data hyperlinks

In some columns, the data also serves as hyperlinks that let you drill down to details about specific CPCs and MLC products. These levels also provide you with interactive capabilities to analyze and compare charts of the 4HRA MSU Utilizations.

Note

Hovering over a hyperlink displays a tooltip indicating the next level of detail.

Table 18 on page 74 lists the columns that contain data hyperlinks and describes the details that you can access:

Table 18: Hyperlinks in the Monthly Summary Report

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLC Product</td>
<td>MLC products in the list that have Priced Features</td>
<td>Hyperlinks to details that list the Priced Features for the MLC product and their relevant 4HRA MSU Utilization data</td>
</tr>
</tbody>
</table>
| CPC Name (PricingPlex Name)    | Any CPC name in the column                     | Hyperlinks to CPC details that list all MLC products running on the CPC and their relevant 4HRA MSU Utilization data  
  Note: Although these products are running on the same CPC, the 4HRA charts and corresponding peak values can be different if the products are running on different LPARs or during different intervals. |
| 4HRA MSU Utilization           | Any preview chart in the column                | Drills down in the context of the MLC product corresponding to the selected preview chart  
  The hyperlink will navigate to LPAR details that list all of the LPARs on which the selected MLC product is running, and their relevant 4HRA MSU Utilization data.  
  Note: For each LPAR, the hyperlink displays only the intervals in which the selected product was running. |
| % of total cost                | Any percentage in the breakdown                | Displays a funnel chart that graphically represents cost distribution details |

Data display controls

Table 19 on page 75 describes the Monthly Summary Report icons that you can use to adjust the view and to access the Reporting Tool panel.
Table 19: Icons for the Monthly Summary Report

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sorts a column’s data in alphabetic or numeric order&lt;br&gt;The arrow toggle controls whether the sort is in either ascending or descending order. <strong>Note:</strong> If a column’s data can be sorted, the column’s header becomes highlighted when you hover the mouse over the header.</td>
</tr>
<tr>
<td></td>
<td>Displays or hides the Reporting Tool panel</td>
</tr>
<tr>
<td></td>
<td>Adjusts the column width</td>
</tr>
<tr>
<td></td>
<td>Expands or collapses row data</td>
</tr>
</tbody>
</table>

Drill-down levels

You can access the drill-down levels by using the hyperlinks in the Monthly Summary Report.

Using the drill-down levels, you can analyze:

- A specific CPC to compare the 4HRA MSU Utilizations for each MLC Product<br>  For more information, see “CPC level” on page 76.
- A particular MLC Product to compare the 4HRA MSU Utilizations for each LPAR on which the MLC product is active<br>  For more information, see “MLC Product level” on page 76.

Using the hyperlinks available at each level, you can:

- Compare average hourly MSUs to the 4HRA<br>  For more information, see Comparing average hourly MSUs to the 4HRA on page 81.
- Compare MSU Utilizations of workloads operating on LPARs<br>  For more information, see Viewing aggregated workloads across LPARs on page 82.
CPC level

Figure 12 on page 76 shows a sample of a Monthly Summary Report's CPC level that lists the MLC Products running under a particular CPC and the 4HRA MSU Utilization data.

Figure 12: Sample Monthly Summary Report CPC level

Some of the columns in the CPC level contain hyperlinks to details or views of the data as described in Table 18 on page 74:

Note
The drill-down data is displayed in the context of the selected CPC.

Table 20: Hyperlinks of the CPC level

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4HRA MSU Utilization</td>
<td>Any chart in the column</td>
<td>Hyperlinks to the 4HRA MSU Utilization details for each LPAR on which this MLC product is running</td>
</tr>
<tr>
<td>% of total cost</td>
<td>Any percentage in the breakdown</td>
<td>Opens a display of a funnel chart that graphically represents the cost distribution details for all MLC Products on the CPC</td>
</tr>
</tbody>
</table>

MLC Product level

Figure 13 on page 77 shows a sample of a Monthly Summary Report's MLC Product level that lists the LPARs on which the MLC Product is running and the
4HRA MSU Utilization data. The information in this drill-down view is determined by the CPC context and the MLC Product context of the hyperlink.

**Figure 13: Sample Monthly Summary Report MLC Product level**

![Sample Monthly Summary Report MLC Product level](image)

**Table 21: MLC Product level column header descriptions**

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4HRA MSU Utilization Weight</td>
<td>Percentage this LPAR contributed to the CPC First Peak 4HRA value.</td>
</tr>
<tr>
<td>LPAR MSU at CPC First Peak</td>
<td>Value is determined by the sum of 4HRA of the LPARs on which this MLC product was running during this interval.</td>
</tr>
</tbody>
</table>

**Table 22 on page 77** lists the columns that contain data hyperlinks and describes the details of what you can access by using the link:

**Table 22: Hyperlinks of the MLC Product level**

<table>
<thead>
<tr>
<th>Data Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4HRA MSU Utilization</td>
<td>Any preview chart in the column</td>
<td>Opens a detailed view of a chart that compares average hourly MSUs to the 4HRA MSU Utilization of the LPAR</td>
</tr>
<tr>
<td>% of total cost</td>
<td>Any percentage in the breakdown</td>
<td>Displays a funnel chart that graphically represents the distribution of the 4HRA First Peak value for the context CPC and MLC Product by individual LPARs</td>
</tr>
</tbody>
</table>
Icons

The CPC level and MLC Product level of the report contain icons to change the display of data and navigate between the levels as described in Table 19 on page 75.

Table 23: Icons for CPC and MLC Product levels

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Back Arrow" /></td>
<td>Navigates back to the previous data level</td>
</tr>
<tr>
<td><img src="image" alt="Home" /></td>
<td>Returns to the Monthly Summary Report</td>
</tr>
<tr>
<td><img src="image" alt="Chart" /></td>
<td>Displays the chart of the 4HRA MSU Utilization in the charting area</td>
</tr>
</tbody>
</table>

Table 24 on page 78 describes the charting area icons.

Table 24: Icons for charting area

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Data Grid View](image) | Opens the Data Grid View window that contains a tabular view of the charting area data  
You can view the data in the window or export the data to a CSV file saved locally. |
| ![Chart Window](image) | Opens a separate window that displays the chart |
| ![Chart Export](image) | Exports the chart as an image that can be saved on your local computer |

Working with the charting area

You can use the charting area to compare charts of 4HRA MSU Utilizations.
The Monthly Summary Report provides a charting area when analyzing data in a drill-down level for a specific CPC or MLC Product. Figure 14 on page 79 and Figure 15 on page 79 show samples of CPC and MLC Product levels with charts in the charting area.

Figure 14: Sample CPC level with charts in charting area

Figure 15: Sample MLC Product level with charts in charting area

To add or remove charts from the charting area

1. Using the hyperlinks, drill down to a CPC level or MLC Product level.

2. In the Visibility column, click the dot next to the MLC Product (in a CPC level report) or next to an LPAR (in a MLC Product level report) to add this product's chart to the charting area.

The charting area displays the 4HRA MSU Utilization chart for the selected MLC product or LPAR, and the Visibility indicator (○) displays next to the selected object in the list.

To assist in the analysis of the chart, you can perform any of the following actions:
Hover the mouse over any point on the chart to view the MSU value as well as the date and hour it occurred.

Click and drag between any two points on the chart to zoom in on the selected area.

Click the edge of the bottom scroll bar, and then expand or contract the control bar to adjust the zoom feature. Alternatively, you can click Zoom Out to expand the view to show more of the chart.

Click Show All to restore the view to show the chart for the entire month.

Click the Data Grid View link to open a window that displays a tabular view of the charting area data.

Click the Pop Out button to view a pop out chart in a separate window.

Click the Save chart as image button button to export the chart.

In the CPC level, you can control the intensity of the chart display in the charting area by using the On/Off toggle switches located in the Intensity column. Setting the toggle switch to Off dims the display of the selected chart.

**Note**

On the MLC Product-level chart and selected LPAR 4HRA area charts, a grayed out total CPC 4HRA line shows a red dot marking the First Peak. All of these charts are displayed in the context of the selected MLC Product.

---

**Working with funnel charts**

Some report data can be viewed as a funnel chart that can be exported.

Using hyperlinks, the following data can be viewed as a funnel chart:

- Any % of Total Cost value in a CPC level
- Any 4HRA Utilization weight value in a MLC Product level

**To view data as a chart**

1. From the appropriate column of the report, click the hyperlink.
A window displays the funnel chart (Figure 16 on page 81).

**Figure 16: Sample funnel chart**

By default, the segment corresponding to where the chart was accessed is separated from the rest of the funnel. You can click any colored segment of the funnel and set it apart from the whole.

2 *(optional)* Click the **Save chart as image** button ( ) to export the chart.

**Comparing average hourly MSUs to the 4HRA**

For any MLC Product running on a particular LPAR, you can compare the average hourly MSUs to the 4HRA.

1 Using the hyperlinks, navigate to the MLC Product level of the MLC Product you want to analyze by performing one of the following actions:

- From the Monthly Summary Report, find the MLC Product from the list and click the corresponding 4HRA MSU Utilization preview chart.
From the CPC level, find the MLC Product from the list and click it.

2 Find the LPAR listed in the LPAR Name column, and click its 4HRA MSU Utilization preview chart.

A window displays a chart that compares the average hourly MSUs to the 4HRA MSU Utilization (Figure 17 on page 82).

Figure 17: Sample chart comparing average hourly MSUs to the 4HRA

With this chart, you can perform the same interactive actions as described in “Drill-down levels” on page 75.

You can also click the Visibility indicators ( ) to control which curves are displayed.

**Note**

The Defined Capacity control either displays or hides a background to contrast the charts against the LPAR Defined Capacity. If the Defined Capacity value is 0 MSUs, no background is displayed.

**Viewing aggregated workloads across LPARs**

Use the following procedure to compare charts and MSU Utilization of workloads across LPARs.
For this procedure, you use the Aggregated (by LPARs) Workload Viewer. Figure 18 on page 83 shows a sample of the viewer.

**Figure 18: Sample Aggregated (by LPARs) Workload Viewer**

For workloads and LPARs, the bar graphs visually represent the contribution of this element to the CPC peak. By hovering over any bar graph, a tooltip displays the contribution as a percentage.

**Aggregated (by LPARs) Workload Viewer legend**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Refresh Workload List</td>
<td>Refresh button for refreshing the view of the charting area</td>
</tr>
<tr>
<td>2</td>
<td>List of LPARs</td>
<td>LPARs contributing to the workloads</td>
</tr>
<tr>
<td>3</td>
<td>List of Workloads</td>
<td>Name of the workloads categorized under the Workload type</td>
</tr>
<tr>
<td>4</td>
<td>Show CPC 4HRA chart</td>
<td>Toggle switch that displays or hides the CPC’s MSU Utilization chart</td>
</tr>
<tr>
<td>5</td>
<td>Tabs of Workload types</td>
<td>Tabs to access the Workload types available for viewing</td>
</tr>
<tr>
<td>6</td>
<td>Data Grid View</td>
<td>Link that opens the Data Grid View window that contains a tabular view</td>
</tr>
<tr>
<td>7</td>
<td>Chart view selectors</td>
<td>Buttons that change the view of the charts in the charting area</td>
</tr>
<tr>
<td>8</td>
<td>Export as chart</td>
<td>Button that exports the chart as an image that can be saved on your local computer</td>
</tr>
</tbody>
</table>

To open the Aggregated (by LPARs) Workload Viewer and compare charts:

1. Using the hyperlinks, navigate to the MLC product level of the product that you want to analyze by performing one of the following actions:
From the Monthly Summary Report, find the MLC product from the list and click the corresponding 4HRA MSU Utilization preview chart.

From the CPC level, find the MLC product from the list and click the product name.

From the list of Aggregated Workload Views, click the workload that you want to view.

The Aggregated (By LPARs) Workload Viewer window is displayed (Figure 18 on page 83).

From the list of workloads, select the workloads to add to the charting area by clicking the dot next to the workload bar graph and name.

Tip
You can use the Select link to select or unselect all of the workloads. Also, you can click Sort by to rearrange the workloads by:

- Name
- 4HRA Contribution (in descending order)
- Importance (most important to least)

Selecting a workload displays a chart. The chart represents the contribution of the workload to the total CPC peak value, aggregated for all of the listed LPARs.

In the charting area, you can perform the same interactive actions as described in “Drill-down levels” on page 75.

4 (optional) To add or remove the contribution of particular LPARs from the workloads, perform the following actions:

a From the list of LPARS, select the LPARs whose contribution you want to add or remove from the workloads.

b Click Refresh Workload List.

The charts in the charting area are refreshed and the view is updated based on the selected LPARs.
Usage scenarios

This topic contains usage scenarios that describe how a user might use the Monthly Summary Report to access relevant information for cost reduction.

What's my monthly IBM bill breakdown?

Challenge:
A company executive wants to know what the IBM software bill was for the last month and how it is distributed between different products or CPCs. The IBM SCRT report provides only Peak R4HA values, but does not provide actual cost. The actual bill from IBM typically arrives two months after report was submitted.

Cost Analyzer solution:
After updating the company cost coefficients in the MSU Cost Editor, the Monthly Summary Report provides the total cost and its absolute and relative components in a clear and concise form.

Which LPAR is costing me the most?

Challenge:
A budget planner needs to know which LPARs contributed the most to the total cost of a product on a particular CPC.

Cost Analyzer solution:
Clicking the 4HRA MSU Utilization preview chart of this CPC displays the LPAR view of this CPC for a particular MLC Product. Each LPAR's activity is displayed only during the intervals where the selected product was active.

How can the report help me know how to reduce costs?

Challenge:
An administrator needs to cut the IT consumption costs by 10%.

Cost Analyzer solution:
By analyzing the SCA Monthly Summary Report, the administrator discovers that the First Peak R4HA is significantly higher than the Second Peak R4HA. SCA provides a possibility to investigate the period around the first peak and determine what LPARs contributed to it.

After determining what factors contributed to the differences in the peaks, use the Planning Tool to determine which workloads were executed on these LPARs at that time. If this is a normal situation, (that is, the peak was not caused by an accidental, "runaway" program), the administrator can reduce the cost by moving some work or imposing a Defined Capacity limit.

This option can be further researched in the Planning Tool. For more information, see “Developing cost-reduction plans” on page 87.
Developing cost-reduction plans

This section describes how to use the Planning Tool to create cost optimization plans and evaluate the effects of different cost optimization actions.

Planning Tool overview

Use the Planning Tool to create interactive and customizable cost optimization plans where you can perform cost reduction exercises.

When creating a plan, you select a complete usage month and a workload type. The Planning Tool then enables you to perform operations on these objects.

You can use Cost Optimization Plans to:

- Evaluate the effects of expected workload growth or decline
- Estimate the effects of different cost-reduction actions

Each plan uses existing historical monthly models as a starting point or baseline for exercises that demonstrate the effects of changes to your system. You can perform the following actions to see the effects on your monthly costs:

- Delete LPARs from a CPC
- Move LPARs to another CPC
- Introduce or change the Defined Capacity of an LPAR
- Delete workloads from an LPAR
- Move the whole workload or part of it to a different LPAR on the same or on a different CPC
- Scale (increase or decrease) workload activity
- Delete or move MLC Product licenses when deleting or moving workloads
After performing any of these actions, the Planning Tool evaluates the cost model and then generates a Plan Evaluation Summary Report that contains the cumulative results. You can view the report after each operation, or add multiple operations and then view all of the results.

The Plan Evaluation Summary Report shows the cumulative effects of:

- All operations of the plan on the individual MLC product costs
- All previous changes on the individual Workloads, LPARs, and CPCs

At any time during the exercise, you can also view charts and data that detail the effects of the operations. You can compare:

- Peak CPC 4HRA values and their dates and time
- Aggregated CPC 4HRA charts
- 4HRA charts for individual LPARs and their contribution to CPC Peak 4HRA
- 4HRA charts of individual workloads and their contribution to CPC Peak value

**Note**

Depending on your changes and on Workload/LPAR Utilization patterns, new Peaks can appear at different moments during the usage month.

**Launching the Planning Tool**

Use the following procedure to launch the Planning Tool.

1. From the Cost Analyzer console, click the **Planning Tool** tab.
The Planning Tool Start Page displays as shown in the following figure:

![Sample Planning Tool Start Page](image)

You can perform the following Plan Actions:

- “Creating plans” on page 89
- “Opening a plan” on page 91
- “Deleting a plan” on page 92

Creating plans

Use the following procedure to create a plan.

**To create a plan**

1. From the Cost Analyzer console, click the Planning Tool tab.
2. From the Actions pane, click Create Plan.

The Create Plan dialog displays as shown in the following figure:
3 In the Create plan dialog, enter the appropriate information in the required fields based on Table 25 on page 90:

**Table 25: Create Plan dialog fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan Name</td>
<td>Enter a name for the plan.</td>
</tr>
<tr>
<td>Plan Description</td>
<td><em>(optional)</em> Enter a description to identify the plan.</td>
</tr>
<tr>
<td>Usage Month</td>
<td>Click the Calendar icon to browse the application server and select an available usage month cost model.</td>
</tr>
<tr>
<td>Workload Type</td>
<td>From the drop-down list, select the workload type. For more information, see “Cost Analyzer workloads” on page 14.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The Planning Tool bases the list of Workload types on the selected Month Cost Model.</td>
</tr>
<tr>
<td>Available CPCs</td>
<td>From the list of available CPCs, select the CPCs that you want to include.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The list of available CPCs depends on the selected workload type.</td>
</tr>
</tbody>
</table>

4 When finished, click the **Create Plan** button.
Cost Analyzer creates the plan and makes it available for an exercise so you can explore potential reduction operations.

**Opening a plan**

Use the following procedure to open a plan.

1. From the Cost Analyzer console, click the **Planning Tool** tab.
2. From the Actions pane, click **Open Plan**.
3. From the Open Plan dialog, select the plan you want to open and click **Open Plan**.

The Planning Tool opens the Plan as shown in figure.

**Figure 20: Sample Plan**

![Sample Plan](image)

**Plan legend**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Toolbar buttons</td>
<td>You can use the toolbar buttons to perform the actions described in Table 26 on page 92:</td>
</tr>
<tr>
<td>2</td>
<td>Information message</td>
<td>Date and time the plan was last saved</td>
</tr>
<tr>
<td>3</td>
<td>List of LPARs on the CPC</td>
<td>You can click an LPAR to view LPAR level reports and charts.</td>
</tr>
<tr>
<td>4</td>
<td>List of CPCs</td>
<td>You can click a CPC to view CPC level reports and charts.</td>
</tr>
</tbody>
</table>
### Table 26: Planning Tool toolbar buttons

<table>
<thead>
<tr>
<th>Toolbar button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Wrench icon" /></td>
<td>View changes made to the plan</td>
</tr>
<tr>
<td><img src="image" alt="Location icon" /></td>
<td>View plan evaluation results</td>
</tr>
<tr>
<td><img src="image" alt="Close icon" /></td>
<td>Close the plan</td>
</tr>
</tbody>
</table>

4. Perform one of the following actions:

- Click a CPC to view CPC level reports and charts.
- Click an LPAR to view LPAR level reports and charts.

   The Planning Tool opens the selected object. Depending on which level you select, you can perform operations on the objects of the CPC level or LPAR level. For more information, see “Working with plans” on page 93.

### Closing a plan

Use the following procedure to close a plan.

1. From the Actions pane, click the red close button ( ■ ).

   Cost Analyzer closes the plan. Any changes that you made are automatically saved.

### Deleting a plan

Use the following procedure to delete a plan.

---

**WARNING**

Deleting a plan cannot be undone.
1. From the Cost Analyzer console, click the **Planning Tool** tab.

2. From the Actions pane, click **Delete Plan**.

3. From the Delete Plan dialog, select the plan you want to delete and click **Delete Plan**.

   The Planning Tool deletes the selected plan.

---

## Working with plans

Within any plan that you create, you can work at the CPC level and perform actions against LPARs running on the CPC, or you can work at the LPAR level and perform actions against the workloads running on the LPAR.

---

**Note**

All LPAR level operations for a particular LPAR must be performed before any operation for another LPAR.

For a particular LPAR, the Defined Capacity operation must be performed before any Workload operation.

---

## Working with a plan at the CPC level

Use the following procedure to view CPC-level reports or charts and perform CPC-level operations.

1. From the Cost Analyzer console, click the **Planning Tool** tab.

2. From the Actions pane, click the CPC with which you want to work.
The selected CPC object opens in the viewer as shown in the following Figure 21 on page 94:

**Figure 21: Plan CPC level**

---

**Note**

For each LPAR, the data represents the complete activity for the selected usage month. The list shows all LPARs on the particular CPC for which there is data.

You can display individual LPAR charts in the charting area by clicking the Visibility indicator (/ajax) for each LPAR.

For a description of the charting area actions and icons, see “Working with the charting area” on page 78.

You can click any preview chart in the 4HRA MSU Utilization column to open a pop-up window that displays a chart that shows the comparison of the average hourly MSUs to the 4HRA MSU Utilization.

You can also hyperlink to the LPAR level for any LPAR in the list by clicking the LPAR’s name.

To learn about the LPAR actions that you can perform, see “Moving an LPAR” on page 94 and “Deleting an LPAR” on page 96.

---

**Moving an LPAR**

Use the following procedure to move an LPAR to another CPC.
**Example**

You might notice that the incremental cost per MSU gets much smaller as the Peak 4HRA value grows. For example, assume that you have two CPCs, one with 2000 Peak 4HRA and the other with 200. Moving an LPAR that uses 50 MSUs from the second CPC to the first can provide a substantial savings in your costs.

---

**To move an LPAR to another CPC**

1. In the LPAR Actions column, click the arrow (➡️) for the LPAR you want to move.

   The Move LPAR to CPC dialog displays as shown in the following figure:

   ![Move LPAR to CPC dialog](image)

2. From the dialog, specify where you want to move the LPAR by selecting a target CPC.

3. Click **Move LPAR**.

   The Planning Tool applies changes to the model and performs an evaluation. When the evaluation is successful, a dialog prompts you with the option to view the evaluation results.

4. Click **Yes** to view the evaluation results now, or click **No** to return to working on the CPC in the plan.

   Clicking **No** closes the dialog, and the viewer displays the results of moving the LPAR from the CPC.
Deleting an LPAR

Use the following procedure to delete an LPAR from the CPC in the plan.

**WARNING**
Deleting an LPAR from a CPC removes all product licenses as well as its activity from the plan. This action cannot be undone.

Many reasons exist for deleting LPARs. For example, if you have a separate LPAR for each customer, you might need to delete a customer’s LPAR because the contract expired and was not renewed. Also, you might want to consolidate two or more LPARs by moving all workloads and then deleting the LPARs that are not being used.

**To delete an LPAR from a CPC in a plan**

1. In the LPAR actions column, click the red delete button (❌) for the LPAR you want to delete.

2. When prompted, click **Yes** to delete the LPAR, or **No** to return to working in the plan.

   The Planning Tool applies changes to the model and performs an evaluation. When the evaluation is successful, a dialog prompts you with the option to view the plan Evaluation Summary Report. For more information, see “Viewing the Plan Evaluation Summary Report” on page 103.

Working with a plan at the LPAR level

Use the following procedure to view LPAR level reports and charts and to perform LPAR level operations.

**Note**
In your plan, it is recommended that you complete all operations against a particular LPAR before performing operations against another LPAR.

1. From the Actions pane or from the list of LPARs in the report, click the LPAR you want to view.
The selected LPAR object opens in the viewer as shown in the following Figure 22 on page 97:

Figure 22: Plan LPAR level

The LPAR level shows rows that list all workloads running on the LPAR and columns that detail the activity of each workload. The Workload R4 at Peak column contains values that represent the R4 MSU contribution for each workload at the time of the first CPC peak.

In the charting area, the gray line is a chart of the total R4 for the LPAR. You can use the Show LPAR visibility indicator to show or hide this line. When you change the Defined Capacity value, the charting area indicates the new Defined Capacity as a solid black line. You can use the Show Defined Capacity indicator to show or hide this line.

You can view any workload contribution to total LPAR R4 in the charting area by clicking the Visibility indicator for each workload you want to analyze.

For descriptions of the charting area actions and icons, see “Working with the charting area” on page 78.

You can view a list of MLC products for the LPAR by clicking the link in the pane to the left.

You can also perform the following actions against workloads on this LPAR:

- “Changing the Defined Capacity” on page 98
- “Moving a workload” on page 99
- “Scaling a workload by percentage” on page 101
- “Deleting a workload from the LPAR” on page 101
Changing the Defined Capacity

Use the following procedure to change the Defined Capacity for the LPAR.

The Defined Capacity can be changed for individual LPARs only.

When Cost Analyzer evaluates the operations on the model based on the changes made in a plan, the plan steps execute not in the order in which you defined them, but according to the priority of the operation. Changing the Defined Capacity is the highest priority operation that can be performed on the LPAR level. When you change the Defined Capacity, the workload might change; Defined Capacity changes must be completed before any workload changes take effect.

Note
For a particular LPAR, the Defined Capacity operation must be performed before any Workload operation.

To change the Defined Capacity

1. In the Defined Capacity adjustment control, enter the Defined Capacity MSU value you want to set or use the +/− buttons to set the MSUs value.

2. When finished, click Apply.

   The Planning Tool applies changes to the model and performs an evaluation.

3. When prompted to view the evaluation results, click Yes to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 103) or No to continue working.

   If you continue working, a straight black line in the viewer’s charting area indicates the new Defined Capacity.

   When you change the Defined Capacity, any activity in a workload that operates above the new limit shifts to the next interval. If the next interval is still above the limit, this process continues until the total LPAR R4 drops sufficiently below the Defined Capacity to absorb all activity that could not be executed in previous intervals because of the new limit.

   Cost Analyzer modifies not only the total LPAR, but also the workload values. The modification shifts the least important work to the next interval. If the shift is not enough to bring LPAR usage below the new Defined Capacity, the process repeats for the next-least-important workload. This procedure models the actions of WLM corresponding to decreasing the Defined Capacity or introducing a Defined Capacity to a system that previously did not have it.
Moving a workload

Use the following procedure to move a workload to another LPAR.

For any MLC product running on an LPAR, the charge is calculated for total LPAR activity. By moving high-consuming batch jobs from an LPAR, you can reduce the license cost not only for z/OS on this LPAR, but also for DB2, IMS, CICS, and MQSeries.

On the other hand, if you have a small CICS region on an LPAR where a lot of batch jobs and IMS are running, you can incur high CICS license charges. By moving the workload containing this CICS region to other LPARs where many other CICS regions are also running, you can significantly decrease your costs.

To move a workload to another LPAR in a plan

1 In the Workload actions column, click the arrow (2) for the Workload you want to move.

The Move Workload to LPAR dialog displays as shown in the following figure:
2 In section 1 of the dialog, specify where you want to move the workload by selecting a target LPAR.

You can move the workload to an LPAR in the same CPC or an LPAR on a different CPC.

**Note**
Moving a workload to a different LPAR on the same CPC may not affect the licensing cost of z/OS; however it can change other product costs because you can move workloads to LPARs that may not have some of the product licenses existing on the source LPAR. When you execute such a change, you can affect the overall cost of the MLC product.

3 In section 2 of the dialog, specify which licensed products to add to the target LPAR or remove from the source LPAR by selecting the appropriate boxes from the list.

When you move workloads from the LPAR, it is impossible to determine automatically from the measurement data if this is a batch that does not require any additional licensed software except for z/OS, or if this workload is the last CICS region on this LPAR. To account for these types of conditions, the Planning Tool provides the option to specify any licenses that need to be added or removed.

**Note**
Cost Analyzer allows you to remove the licensed product from the source LPAR without adding the same licensed product to the target LPAR. You must ensure that the target LPAR has the licensed product so that proper cost calculations can be performed.

4 In section 3 of the dialog, specify what percent of the workload you want to move to the target LPAR by using the slider tool.

For example, you cannot move all 100,000 batch jobs from this system, but you can move 20% to reduce the Peak R4 and, as a result, reduce the cost for all products on this LPAR.

5 When finished, click **Move Workload**.

The Planning Tool applies changes to the model and performs an evaluation.

6 When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 103) or **No** to continue working.
Scaling a workload by percentage

Use the following procedure to scale a workload by percentage to see the potential cost savings by limiting the workload activity.

You might also scale a workload to evaluate expected workload changes (for example, changes due to a new advertising campaign or to acquiring a new store).

**Note**
When scaling workload activity, the Planning Tool changes the activity of that workload for the entire usage month by the selected percentage.

To scale a workload by a percentage

1. In the Workload Actions column, enter the percentage number, or use the +/- buttons to set the percentage of the workload you want to change.

   To increase by a certain percentage, add the percentage to the workload's existing value of 100%. For example, if you wanted to increase the workload by 50%, you would adjust the workload's percentage to 150%.

2. When finished, click **Apply**.

   The Planning Tool applies changes to the model and performs an evaluation.

3. When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 103) or **No** to continue working.

   **Note**
   After Cost Analyzer evaluates the model, the modified workload activity becomes the current 100% level.

Deleting a workload from the LPAR

Use the following procedure to delete a workload from an LPAR.

**WARNING**
Deleting a Workload from the LPAR removes all of its activity from the plan. This action cannot be undone.
To delete a workload from an LPAR

1. In the Workload actions column, click the red delete button (❌) for the Workload you want to delete.

   A dialog displays as shown in the following figure:

   ![Delete Workload From LPAR dialog](image)

   The dialog lists all MLC products that exist on this LPAR.

2. From the list of licensed products associated with this workload, select the products that you want to delete.

3. Click **Delete Workload**.

   The Planning Tool applies changes to the model and performs an evaluation.

4. When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 103) or **No** to continue working.
Viewing the Plan Evaluation Summary Report

You can view the changes executed on a CPC, LPAR or workload in a plan. Whenever you make changes to objects within a plan, you can view the results in the Plan Evaluation Summary Report.

To view the Plan Evaluation Summary Report

1. Use either of the following methods to access the report:
   - In the Actions pane, click the note toolbar button (▲).
   - After executing a change in a plan, click Yes when prompted to view the evaluation results.

The Planning Tool opens a Plan Evaluation Summary Report with rows that list MLC Products and columns that display relevant data as shown in the following Figure 23 on page 103:

Figure 23: Sample Plan Evaluation Summary Report

If the data in a column can be sorted, when you hover the mouse over the column header, the header is highlighted.

The columns contain data similar to the Monthly Summary Report. For a description of each column, see “Quick tour of the Monthly Summary Report” on page 71. The Figure 23 on page 103 describes the columns that are unique to this report:

Table 27: Plan Evaluation Summary Report columns

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Change</td>
<td>The change in cost resulting from the changes made to the plan</td>
</tr>
</tbody>
</table>
### Working with plans

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old 4HRA First Peak (MSU)</td>
<td>4HRA value in the cost model that was used to build this plan The old value designates the starting value before the changes were executed.</td>
</tr>
<tr>
<td>Old 4HRA First Peak Date</td>
<td>Date and time of the old 4HRA Peak (MSU)</td>
</tr>
</tbody>
</table>

The Cost Change column details any change to the cost of the MLC Product caused by the LPAR move. A cost reduction is indicated by a green dot (🟢) and the amount of the gain. A cost increase is indicated by a red dot (🔴) and the amount of the loss.

You can scroll to the bottom of the report to view a tally of the gain, loss, and difference.

**To export the Plan Evaluation Summary Report to a PDF**

1. Export the Plan Evaluation Summary Report by clicking the icon and clicking Export to PDF button.

   A dialog indicates that the PDF generation was successful. You can open to view the PDF or save the PDF to your local computer.

2. When finished, close the Plan Evaluation Summary Report.

**Viewing plan changes**

After executing any changes to a plan, you can view a list of the changes.

1. In the Actions pane, click the wrench (🔧).
A pop-up window lists the steps executed against any LPAR, CPC, or workload. The following figure shows a sample:

**Figure 24: Sample Plan Changes pop-up window**

Plan Changes

```

Adjust the Defined Capacity of LPAR [BMCA] on CPC [BRYALS] to 45.
Delete Workload [Imp1] from Logical System [BMCA] on CPC [BRYALS]
  Delete Product: DB2 UDB for z/OS V8 (5625-DB2)


  Add Product: DB2 UDB for z/OS V8 (5625-DB2)
  Add Product: IMS V12 (5635-A03)
  Delete Product: DB2 10 for z/OS (5603-DB2)

  Add Product: DB2 UDB for z/OS V8 (5625-DB2)
  Add Product: IMS V11 (5635-A02)
  Delete Product: DB2 UDB for z/OS V8 (5625-DB2)
  Delete Product: IMS V11 (5635-A02)

  Add Product: IMS V12 (5635-A03)
  Add Product: DB2 V9 for z/OS (5635-DB2)
  Add Product: WebSphere MQ for z/OS V7 (5655-R36)
  Delete Product: IMS V12 (5635-A03)
  Delete Product: DB2 V9 for z/OS (5635-DB2)
  Delete Product: WebSphere MQ for z/OS V7 (5655-R36)

  Add Product: CICS TS for z/OS V4 (5655-997)
  Add Product: CICS TS for z/OS V5 (5655-V04)
  Delete Product: CICS TS for z/OS V4 (5655-997)
```
Displaying Cost Analyzer log files

This topic describes how to display the log files that Cost Analyzer produces. BMC Customer Support might ask you to review these log files as part of problem diagnosis.

To display log files

1. From the Cost Analyzer console, click Administration Tools.
2. Click Application Server Log Viewer.
3. Click the tab for the log file that you want to display (Table 28 on page 107).

Table 28: Types of log files

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Event Logs</td>
<td>Monitoring and troubleshooting information about the product’s core services</td>
</tr>
<tr>
<td></td>
<td>You can limit the type of messages that are displayed to All, Error, Warning, or Informational.</td>
</tr>
<tr>
<td>Model Build Event Logs</td>
<td>Monitoring and troubleshooting information about the Model Build Event process</td>
</tr>
<tr>
<td></td>
<td>You can limit the type of messages that are displayed to All, Error, Warning, or Informational.</td>
</tr>
<tr>
<td>RBA Audit Logs</td>
<td>Temporal tracking about the Role-Based Access (RBA) Audit</td>
</tr>
<tr>
<td>Audit Logs</td>
<td>Temporal tracking information about all transactions associated with the product’s web services</td>
</tr>
<tr>
<td>Model Build Logs</td>
<td>Temporal tracking about the Model Build Tasks</td>
</tr>
</tbody>
</table>
Checklist to install Cost Analyzer for zEnterprise on a MS Windows Server

This appendix defines the steps required to install Cost Analyzer on a Microsoft Windows server, identify the type of expertise needed to complete each step, and provide links where more information can be found.

Required steps

The following topic lists the required steps to install Cost Analyzer on an MS Windows server.

1 “Prepare the Windows server for use with Cost Analyzer” on page 110
2 “Install the CDB server” on page 110
3 “Install Cost Analyzer” on page 110
4 “Set up required plugin on the client machine” on page 111
5 “Install the database client components” on page 111
6 “Set up a database to be used as Cost Analyzer’s CDB repository” on page 111
7 “Set up the CDB to use Windows Authentication” on page 112
8 “Create an ODBC Data Source Name (DSN) entry” on page 112
9 “Add a Database to the Automator Catalog” on page 113
10 “Set up Cost Analyzer” on page 113
Prepare the Windows server for use with Cost Analyzer

This topic explains how to prepare the Windows server for use with Cost Analyzer

**Expertise** – Windows

For a Windows 2008 R2 Server follow this link for an instructional video: [https://kb.bmc.com/infocenter/index?page=content&id=KA390934](https://kb.bmc.com/infocenter/index?page=content&id=KA390934)

For a Windows 2012 Server follow the instructions in this video: [https://kb.bmc.com/infocenter/index?page=content&id=KA391406](https://kb.bmc.com/infocenter/index?page=content&id=KA391406)

Install the CDB server

This topic provides a table with links to the tasks for installing the CDB server.

<table>
<thead>
<tr>
<th>Task</th>
<th>Expertise</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB System requirements</td>
<td>Windows</td>
<td>“CDB system requirements” on page 24</td>
</tr>
<tr>
<td>Before you begin</td>
<td>Windows</td>
<td>“Before you begin” on page 24</td>
</tr>
<tr>
<td>Installing BMC CDB Services</td>
<td>Windows</td>
<td>“Installing BMC CDB Services” on page 25</td>
</tr>
<tr>
<td>Installing BMC CDB Workflow Service</td>
<td>Windows</td>
<td>“Installing BMC CDB Workflow Service” on page 26</td>
</tr>
</tbody>
</table>

Install Cost Analyzer

This topic provides a table with links to the tasks for installing Cost Analyzer.

<table>
<thead>
<tr>
<th>Task</th>
<th>Expertise</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Analyzer System requirements</td>
<td>Windows</td>
<td>“Cost Analyzer system requirements” on page 29</td>
</tr>
<tr>
<td>Installing Cost Analyzer on a web server</td>
<td>Windows</td>
<td>“Installing Cost Analyzer on a web server” on page 31</td>
</tr>
<tr>
<td>Installing Microsoft Silverlight</td>
<td>Windows</td>
<td>“Installing Microsoft Silverlight” on page 34</td>
</tr>
</tbody>
</table>
Set up required plugin on the client machine

This topic provides information about how to set up the required plugin on the client machine.

Expertise – Windows

On the Windows client machine where the Cost Analyzer Web Interface will be accessed, Microsoft's Silverlight Plugin must be installed. For more information on compatible Operating Systems and Browsers and to download the Silverlight plugin use the following link: http://www.microsoft.com/getsilverlight/get-started/install/default.aspx

Install the database client components

This topic provides information about how to install the database client components.

Expertise – DBA/Windows

To access the database from a remote server/client computer, database client components must be installed as follows:

- To set up database client components for SQL Server: https://kb.bmc.com/infocenter/index?page=content&id=KA391287
- To set up database client components for Oracle: https://kb.bmc.com/infocenter/index?page=content&id=KA391312

Set up a database to be used as Cost Analyzer’s CDB repository

This topic provides information about how to set up a database to be used as Cost Analyzer’s CDB repository.

Expertise – DBA

A SQL Server or an Oracle database can be used. If an existing Visualizer CDB is available that database can be used for the Cost Analyzer tables as well.

To set up a SQL Server database to be used with Cost Analyzer or Visualizer see either of the following links:
- To set up a database using SQL Server Authentication: https://kb.bmc.com/infocenter/index?page=content&id=KA286400
- To set up a database using Windows Authentication (Trusted Connection): https://kb.bmc.com/infocenter/index?page=content&id=KA286766
- To set up an Oracle database see the following link: https://kb.bmc.com/infocenter/index?page=content&id=KA389475

**Set up the CDB to use Windows Authentication**

This topic provides a link to set up the CDB to use Windows Authentication.

**Note**

This task is only required if you are using SQL Server Windows Authentication.

**Expertise** – Windows

To set up Windows Authentication in CDB see the following link: https://kb.bmc.com/infocenter/index?page=content&id=KA392449

**Create an ODBC Data Source Name (DSN) entry**

This topic provides information and links for creating an ODBC Data Source Name (DSN) entry.

**Expertise** – Windows

Visualizer/CDB accesses the database through Microsoft's Open Database Connectivity interface (ODBC). See the following links to set up an ODBC entry:

- To create an ODBC entry for a SQL Server database using SQL Server Authentication: https://kb.bmc.com/infocenter/index?page=content&id=KA390536
- To create an ODBC entry for a SQL Server database using Windows Authentication: https://kb.bmc.com/infocenter/index?page=content&id=KA391030
Add a Database to the Automator Catalog

This topic provides information about how to add a Database to the Automator Catalog.

**Expertise** – Windows

Before a database can be used by CDB it must be added to the Automator Catalog. See the following link to set up an Automator Catalog entry: [https://kb.bmc.com/infocenter/index?page=content&id=KA390544](https://kb.bmc.com/infocenter/index?page=content&id=KA390544)

Set up Cost Analyzer

This topic provides a table with links to the tasks for setting up Cost Analyzer.

<table>
<thead>
<tr>
<th>Task</th>
<th>Expertise</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of setup tasks</td>
<td>Windows</td>
<td>“Overview of setup tasks” on page 35</td>
</tr>
<tr>
<td>Assigning users to BMC Cost Analyzer Groups</td>
<td>Windows</td>
<td>“Assigning users to BMC Cost Analyzer User Groups” on page 37</td>
</tr>
<tr>
<td>Using the MSU Cost Editor</td>
<td>Windows</td>
<td>“Using the MSU Cost Editor” on page 44</td>
</tr>
<tr>
<td>Defining connections to CDB Servers</td>
<td>Windows</td>
<td>“Defining connections to CDB servers” on page 49</td>
</tr>
<tr>
<td>Defining Model Builder Tasks</td>
<td>Windows</td>
<td>“Defining Model Builder Tasks” on page 52</td>
</tr>
</tbody>
</table>

Set up scheduled operations for Cost Analyzer

This topic provides a table with links to the tasks for setting up Cost Analyzer.

<table>
<thead>
<tr>
<th>Task</th>
<th>Expertise</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing the Cost Analyzer Model Builder Proxy</td>
<td>Windows</td>
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</tr>
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</tr>
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<td>-----------</td>
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</tr>
</tbody>
</table>
UIE Command NO89

This appendix describes the use of the UIE NO89 command.

MLC products and Priced Features without SMF Type 89 Records

Your enterprise may be using MLC products or Priced Features that do not create SMF Type 89 records. For these products, you must use the Universal Information Exchange (UIE) command NO89 to include their cost data in the cost models.

The NO89 command provides information for products and priced features which do not create SMF Type 89 records. Unless this command is specified in the JCL that runs the Universal Information Exchange batch job, products and Priced Features that do not generate Type 89 records will not exist in the cost data that builds the Cost Analyzer Cost Models.

For more information, see the Universal Information Exchange User Guide.

The following commands need to be added to the UIE JCL:

- For a product that does not create SMF Type 89 records:
  \[\text{NO89 } productID=\text{parName},... \mid *\text{All} \]

  \[\text{Example} \]
  
  NO89 5697-WSZ=LPAR1,LPAR2
  NO89 5697-WSZ=AB37:LPAR1,CD17:LPAR2
  NO89 5655-018=*ALL
  NO89 5655-018=AB37:*ALL

- For a Priced Feature that does not create SMF Type 89 records:
  \[\text{NO89 } productID:featureCode=\text{parName},... \mid *\text{All} \]
Table 29 on page 116 defines the values of the variables:

Table 29: NO89 command variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>productID</td>
<td>IBM product number</td>
</tr>
<tr>
<td>lparName</td>
<td>List of LPAR names separated by commas</td>
</tr>
<tr>
<td></td>
<td>Note: You must enter the LPAR name and not the SID.</td>
</tr>
<tr>
<td>featureCode</td>
<td>IBM priced feature number</td>
</tr>
</tbody>
</table>

Note: When there are LPARs with identical names on the CPCs processed in the same UIE run, you can use LPAR names preceded by the CPC serial number as follows:

NO89 productID=serialNumber:lparName,...

The serialNumber variable represents the last 4 digits of the CPC serial number.
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