BMC Cost Analyzer for zEnterprise User Guide

Supporting
Version 2.1 of BMC Cost Analyzer for zEnterprise
September 2016
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■ 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
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- In the United States and Canada, call 1 800 537 1813. Outside the United States and Canada, contact your local support center for assistance.
## Contents

### About this book
- Related publications .......................................................... 9
- Conventions ........................................................................ 10
- Syntax statements .............................................................. 10
- Summary of changes ......................................................... 11

### Chapter 1 Overview of Cost Analyzer
- How Cost Analyzer works .................................................. 13
- Cost Analyzer architecture ............................................... 14
- Terminology ....................................................................... 15
- Cost Analyzer workloads .................................................. 18
- BMC Cost Analyzer User Groups ...................................... 19
- Cost Analyzer tools .......................................................... 21
- Signing in to Cost Analyzer ............................................... 24
- Cost Analyzer console ...................................................... 26
- Where to go from here ...................................................... 28

### Chapter 2 Installation
- Installing UIE on the mainframe ......................................... 29
- Installing the CDB server .................................................. 29
- CDB system requirements ................................................. 30
- Before you begin .............................................................. 31
- Installing BMC CDB Services ........................................... 31
- Installing BMC CDB Workflow Service ............................... 32
- Installing Cost Analyzer .................................................... 36
- Cost Analyzer system requirements .................................... 36
- Installing Cost Analyzer on a web server ......................... 38
- Installing Microsoft Silverlight ........................................ 41

### Chapter 3 Setting up Cost Analyzer
- Overview of setup tasks .................................................... 43
- Assigning users to BMC Cost Analyzer User Groups .......... 46
- Populating your mainframe data into the CDB server .......... 47
- Creating and scheduling the Automator script ................. 47
  - Creating an Automator populate event ......................... 48
  - Scheduling the Automator script ................................. 49
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining connections to CDB servers</td>
<td>50</td>
</tr>
<tr>
<td>Defining Model Builder Tasks</td>
<td>52</td>
</tr>
<tr>
<td>Scheduling Model Builder Tasks</td>
<td>59</td>
</tr>
<tr>
<td>Overview of Cost Analyzer scheduled operations</td>
<td>60</td>
</tr>
<tr>
<td>Installing the Cost Analyzer Model Builder Proxy</td>
<td>61</td>
</tr>
<tr>
<td>Updating the Cost Analyzer Model Builder Proxy event</td>
<td>63</td>
</tr>
<tr>
<td>Other Cost Analyzer Model Builder Proxy options</td>
<td>67</td>
</tr>
<tr>
<td>Using Cost Analyzer Scheduling Services to run a Model Builder Task</td>
<td>68</td>
</tr>
<tr>
<td>Running the Model Builder Task manually</td>
<td>70</td>
</tr>
<tr>
<td>Monitoring Model Builder Tasks</td>
<td>72</td>
</tr>
<tr>
<td>Manage Software Contracts</td>
<td>73</td>
</tr>
<tr>
<td>Defining software contracts</td>
<td>74</td>
</tr>
<tr>
<td>Contract Period Details example</td>
<td>79</td>
</tr>
<tr>
<td>Cost table change event overview</td>
<td>81</td>
</tr>
<tr>
<td>Adding a change event to the software contract</td>
<td>82</td>
</tr>
<tr>
<td>Verifying and editing the CPC Configuration</td>
<td>84</td>
</tr>
<tr>
<td>Overview of the CPC Configuration Editor</td>
<td>85</td>
</tr>
<tr>
<td>Using the CPC Configuration Editor</td>
<td>88</td>
</tr>
<tr>
<td>Editing the cost coefficients</td>
<td>89</td>
</tr>
<tr>
<td>Overview of the MSU Cost Editor</td>
<td>91</td>
</tr>
<tr>
<td>Using the MSU Cost Editor</td>
<td>95</td>
</tr>
<tr>
<td>Integrating Cost Analyzer with Compuware Strobe and iStrobe products</td>
<td>109</td>
</tr>
<tr>
<td>Configuring the Compuware iStrobe web location</td>
<td>110</td>
</tr>
<tr>
<td>Chapter 4  Generating cost-analysis reports</td>
<td>113</td>
</tr>
<tr>
<td>Creating and working with multiple views of reports</td>
<td>113</td>
</tr>
<tr>
<td>Working with the Monthly Reporting tool</td>
<td>114</td>
</tr>
<tr>
<td>Monthly Reporting tool overview</td>
<td>114</td>
</tr>
<tr>
<td>Monthly Summary Report</td>
<td>115</td>
</tr>
<tr>
<td>Working with the Monthly Reporting selection panel</td>
<td>116</td>
</tr>
<tr>
<td>Quick tour of the Monthly Summary Report</td>
<td>117</td>
</tr>
<tr>
<td>Drill-down levels</td>
<td>121</td>
</tr>
<tr>
<td>Usage scenarios</td>
<td>143</td>
</tr>
<tr>
<td>Working with the Software Contract Reporting tool</td>
<td>144</td>
</tr>
<tr>
<td>Software Contract Reporting tool overview</td>
<td>144</td>
</tr>
<tr>
<td>Software Contract Summary Report</td>
<td>145</td>
</tr>
<tr>
<td>Working with the Software Contract Reporting selection panel</td>
<td>146</td>
</tr>
<tr>
<td>Quick tour of the Software Contract Summary Report</td>
<td>147</td>
</tr>
<tr>
<td>Quadrant charts</td>
<td>150</td>
</tr>
<tr>
<td>Guide to the charts of the Software Contract Summary Report</td>
<td>151</td>
</tr>
<tr>
<td>Contract Summary quadrant</td>
<td>152</td>
</tr>
</tbody>
</table>
Chapter 5         Developing cost-reduction plans 179
Planning tool overview ................................................................. 179
  Launching the Planning tool .................................................. 181
  Creating plans ........................................................................ 182
  Opening a plan ....................................................................... 185
  Closing a plan ........................................................................ 187
  Deleting a plan ...................................................................... 187
Overview of LPAR and Workload plans ........................................ 188
  Working with a plan at the CPC level ..................................... 188
  Working with a plan at the LPAR level ................................. 194
Overview of Job and STC plans .................................................. 200
  Working with Job and STC plans ........................................... 202
  Working with the Job/STC Items report ................................. 207
  Performing Job/STC Operations in a plan ............................. 212
Viewing the Plan Evaluation Summary Report ............................. 217
Viewing and removing plan changes ......................................... 219
Changing the Evaluation Cost Table for a plan ......................... 220

Appendix A         Managing Country Multiplex Pricing 225
Overview of Cost Analyzer support for CMP ............................... 225
Setting up Cost Analyzer to support CMP .................................. 226
Working with Country Multiplex Pricing reports ......................... 231
Understanding Country Multiplex Pricing reports ....................... 236
Estimating the CMP Base values ................................................ 237

Appendix B         Cost Analyzer log files 239
Displaying Cost Analyzer log files ............................................. 239
Enabling Trace messages to the log file ..................................... 241
Model Build Logs ...................................................................... 243
Filtering the messages displayed in a log .................................... 246

Appendix C         Checklist to install Cost Analyzer for zEnterprise on a MS Windows Server 249
Required steps .......................................................................... 249
Prepare the Windows server for use with Cost Analyzer .............. 250
Install the CDB server .............................................................. 250
Install Cost Analyzer ............................................................... 250
Set up required plugin on the client machine .............................................................. 251
Install the database client components ........................................................................ 251
Set up a database to be used as Cost Analyzer’s CDB repository ............................. 251
Set up the CDB to use Windows Authentication ......................................................... 252
Create an ODBC Data Source Name (DSN) entry ....................................................... 252
Add a Database to the Automator Catalog ............................................................... 253
Set up Cost Analyzer ....................................................................................................... 253
Set up scheduled operations for Cost Analyzer ........................................................... 254
Set up Cost Analyzer - iStrobe integration ................................................................. 254

Appendix D    UIE and SCRT commands 255

NO89 command .............................................................................................................. 255
   Adding the NO89 command to a Model Builder Task ............................................. 256
   Adding the NO89 command to the UIE JCL ......................................................... 259
   Adding the NO89 command in SCRT ................................................................. 260
   NO89 command examples .................................................................................. 261
EXCLUDE89 command ................................................................................................. 261
   Adding EXCLUDE89 commands to a Model Builder Task ................................. 262
   Adding EXCLUDE89 commands to the UIE JCL ............................................... 267
   Adding EXCLUDE commands in SCRT ............................................................. 268
   EXCLUDE89 command examples ..................................................................... 268
VISFILE command ........................................................................................................... 269
About this book

This book contains detailed product information and is intended for system administrators and database administrators (DBAs).

Like most BMC documentation, this book is available in printed and online formats. To request printed books or to view online books and notices (such as release notes and technical bulletins), see the support website at http://www.bmc.com/support.

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  - Support Central (at http://www.bmc.com/support/mainframe-demonstrations)
  - BMC Mainframe YouTube channel (https://www.youtube.com/user/BMCSoftwareMainframe)

Products with online interfaces also offer online Help via the **F1** key or, for graphical user interfaces (GUIs), via a **Help** button.

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### Conventions

This document uses the following special conventions:

- All syntax, operating system terms, and literal examples are presented in this typeface.

- Variable text in path names, system messages, or syntax is displayed in italic text: `testsys/instance/fileName`

- Menu sequences use a symbol to convey the sequence. For example, **Actions => Create Test** instructs you to choose the **Create Test** command from the **Actions** menu.

### Syntax statements

This topic explains conventions for showing syntax statements.

A sample statement follows:

```
COMMAND KEYWORD1 [KEYWORD2 | KEYWORD3] KEYWORD4={YES | NO} fileName...
```

The following table explains conventions for syntax statements and provides examples:
<table>
<thead>
<tr>
<th>Convention</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items in italic type represent variables that you must replace with a name or value. If a variable is represented by two or more words, initial capitals distinguish the second and subsequent words.</td>
<td>alias&lt;br&gt;databasedirectory&lt;br&gt;serverHostName</td>
</tr>
<tr>
<td>Brackets indicate optional items. Do not type the brackets when you enter the option. A comma means that you can choose one or more of the listed options. You must use a comma to separate the options if you choose more than one option.</td>
<td>[tableName, columnName, field]&lt;br&gt;[-full, -incremental, -level]</td>
</tr>
<tr>
<td>Braces indicate that at least one of the enclosed items is required. Do not type the braces when you enter the item.</td>
<td>{DBDName</td>
</tr>
<tr>
<td>A vertical bar means that you can choose only one of the listed items. In the example, you would choose either commit or cancel.</td>
<td>{commit</td>
</tr>
<tr>
<td>An ellipsis indicates that you can repeat the previous item or items as many times as necessary.</td>
<td>columnName...</td>
</tr>
</tbody>
</table>

Summary of changes

This topic summarizes product changes and enhancements by version number and release date.

Version 2.1.00, September 2016

This release includes the following enhancements:

- Adds support for IBM Country Multiplex Pricing (CMP) in Monthly Summary Reports, cost tables, and cost models.

  For more information, see “Managing Country Multiplex Pricing” on page 225.

Version 2.0.00, September 2015

This release includes the following enhancements:

- Job/STC reporting, consisting of interactive reports that detail key metrics for the most active jobs for particular workloads on specific LPARs
Summary of changes

- Expansion of the Planning tool, by providing "What-If" capabilities that can be performed against batch jobs

- Integration with the Compuware iStrobe web-based application, enabling you to launch iStrobe from a Monthly Summary Report to access information about a specific LPAR during a selected time range

- Workload filtering enhancements, enabling a Model Builder Task to process large data files with or without filters
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.

How Cost Analyzer works

Cost Analyzer is a tool for analysis, optimization, and planning software license cost of IBM System z Sub-Capacity Charges for Monthly License Charge (MLC) products.

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 the following tools for your cost analysis:

  — Software Contract Reporting tool presents an array of quadrant charts that serve as portals to access comprehensive charting data about your actual and projected spending for the entire duration of your software contract.

  — Monthly Reporting tool provides information about MLC products existing in your data center environment, and components that impact the overall cost.

  — 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
- (Microsoft Windows) Cost Analyzer application server
- (Web Browser Client) Microsoft Silverlight Rich Internet Application (RIA)

Figure 1 on page 15 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>
<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                                                                                                                                                                    |
| CDB                                       | Capacity Management Database                                                                                                                                                                               |
| CMP                                       | Country Multiplex Pricing                                                                                                                                                                                  |
| CMLC                                      | Country Multiplex 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                                                                                                                                                                              |
| Job/STC                                   | Batch job or started task that is running in a z/OS environment                                                                                                                                              |
| 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 WebSphere 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>MVM</td>
<td>Multiple Version Measurements</td>
</tr>
<tr>
<td>MzNALC</td>
<td>Multiplex System z New Application License Charges</td>
</tr>
<tr>
<td>Rolling 4 hour average (R4HA)</td>
<td>CPU consumption, measured in MSUs. R4HA 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 R4HA metric is available only for the host LPAR (the LPAR in which this record is created). <strong>Note:</strong> The Rolling 4 hour average or R4HA is sometimes called 4HRA.</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>SVC</td>
<td>Single Version Charges</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>Term</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>VWLC</td>
<td>Variable Workload License Charges</td>
</tr>
</tbody>
</table>
| Workload   | 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 18. |
| zNALC      | IBM System z New Application License Charges                                                                                                  |
| z/OS       | 64-bit operating system for IBM mainframe computers                                                                                           |
| z/OS image | An instance of z/OS running in an LPAR or as VM guest  
z/OS images can run in an LPAR or inside an instance of the z/VM operating system as a guest.                                                |
| z/VM       | IBM Virtual Machine operating system for mainframe computers                                                                                   |

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
- Report Class
- 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 19 describes each workload type:
Table 2: Cost Analyzer Workload types

<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>
<tr>
<td>Service Class name</td>
<td>Activity is aggregated by Service Class.</td>
</tr>
<tr>
<td>Report Class</td>
<td>Activity is aggregated by Report Class</td>
</tr>
<tr>
<td>Suites</td>
<td>Suites are user-defined groups of jobs and STC.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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).</td>
</tr>
<tr>
<td></td>
<td>All other activity is aggregated into workload OTHER_WORK.</td>
</tr>
</tbody>
</table>

**Note**

You can use a workload filter for Suites, Service Class, and Report Class workloads to reduce the size of the data that is processed.

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 46.

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 as described in the following table:
Table 3: BMC Cost Analyzer groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Members can access</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC Product Administrators</td>
<td>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.</td>
</tr>
<tr>
<td>BMC Cost Analyzer MLC Administrators</td>
<td>All MLC administration functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Capacity Planners</td>
<td>All product components and can view MLC cost information but cannot access Administration Tools or edit the cost table.</td>
</tr>
<tr>
<td>BMC Cost Analyzer System Programmers</td>
<td>Limited application functionality but cannot view MLC cost information.</td>
</tr>
<tr>
<td>BMC Cost Analyzer Application Support</td>
<td>Limited application functionality but cannot view MLC cost information.</td>
</tr>
<tr>
<td>BMC Cost Analyzer Executives</td>
<td>Limited application functionality and can view MLC cost information.</td>
</tr>
<tr>
<td>BMC Cost Analyzer Managers</td>
<td>Limited application functionality and can view MLC cost information.</td>
</tr>
<tr>
<td>BMC Cost Analyzer iCap User</td>
<td>Application functionality of <em>only</em> the iCap Policy Definition Tool</td>
</tr>
</tbody>
</table>

*Note:* The BMC Intelligent Capping *for zEnterprise* product is also known as iCap.

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

Table 4: BMC Cost Analyzer groups and component access control

<table>
<thead>
<tr>
<th>User Group</th>
<th>Monthly Reporting</th>
<th>Planning</th>
<th>Software Contract Reporting</th>
<th>Administration Tools</th>
<th>iCap Configuration Tool</th>
<th>Tool functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC Product Administrators</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>Yes</td>
<td>Yes</td>
<td>Full functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Capacity Planners</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>No</td>
<td>Full functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer System Programmers</td>
<td>Yes (no cost information)</td>
<td>No</td>
<td>No</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 19.

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 duration and parameters for IBM software contracts
- Configure CPC pricing metrics and PricingPlex
- Specify cost coefficient values for MLC products
- View Application, Services, and Model Build log files
- Configure Cost Analyzer with Compuware's iStrobe

*Table 5 on page 22* provides details about the Administration Tools:

<table>
<thead>
<tr>
<th>User Group</th>
<th>Monthly Reporting</th>
<th>Planning</th>
<th>Software Contract Reporting</th>
<th>Administration Tools</th>
<th>iCap Configuration Tool</th>
<th>Tool functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMC Cost Analyzer Application Support</td>
<td>Yes (no cost information)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Executives</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer Managers</td>
<td>Yes (with cost information)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Limited functionality</td>
</tr>
<tr>
<td>BMC Cost Analyzer iCap User</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Limited functionality</td>
</tr>
</tbody>
</table>
### Table 5: Cost Analyzer Administration Tools

<table>
<thead>
<tr>
<th>Administration Tool</th>
<th>Description</th>
</tr>
</thead>
</table>
| Manage CDB Server Profiles           | Add, modify, or remove CDB server profiles  
This tool also provides a list of the available CDB Server profiles once they have been added by the administrator.  
See “Defining connections to CDB servers” on page 50.                                                                                                                      |
| Manage 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  
■ Schedule the Model Builder Task to run on specific days and hours  
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 and “Scheduling Model Builder Tasks” on page 59.                                                                                 |
| Manage Software Contracts            | Add, modify or remove software contracts  
You can perform the following tasks:  
■ Define the duration, total budget, and periods of your IBM contract  
■ Specify the budget amount for specific months during a period  
■ Account for any Cost Table change events that will take affect during the term of the contract  
See “Manage Software Contracts” on page 73.                                                                                                                                       |
| CPC Configuration Editor             | Configure default Pricing Metrics and PricingPlex information  
See “Using the CPC Configuration Editor” on page 88.                                                                                                                        |
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 95 and “Managing multiple cost tables” on page 103.

Application Server Log Viewer

View the following types of logs:
- MLC Contract Build logs
- Model Build logs
- Model Build Event logs
- Service Event logs
- RBA Audit logs
- Audit logs

See “Displaying Cost Analyzer log files” on page 239.

iStrobe Configuration Tool

Configure the Compuware iStrobe web location

See “Configuring the Compuware iStrobe web location” on page 110.

---

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software Contract Reporting</strong></td>
<td>Generate Software Contract Summary Report and perform comparative analysis of budgeted allocations, actual monthly costs, and future cost projections for the entire duration of a contract</td>
</tr>
<tr>
<td><strong>Monthly Reporting</strong></td>
<td>Generate monthly MSU Summary Reports and perform comparative analysis of R4HA MSU Utilizations by MLC Product, CPC, LPAR, or Workload</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td>Create sub-capacity licensed product cost optimization plans for future activity and data center environment changes</td>
</tr>
</tbody>
</table>

---

**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 16 describes the available assigned component tools:

Table 6: Cost Analyzer group-based component tools
Signing in to Cost Analyzer

Use the following procedure to access Cost Analyzer.

Before you begin

Before you can sign in 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 46.

To sign in 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.

The Cost Analyzer for zEnterprise Home page displays.

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

Note

When enabled, the Home page provides links to a variety of information including:
   - The Cost Analyzer for zEnterprise User Guide
   - The BMC Cost Optimization website
   - Daily news and tidbits from BMC MainFrame on Twitter
To enable this feature, contact Customer Support.

2. Click Sign In.

The Sign In dialog displays as shown in the following figure:
3 In the Sign In dialog, type your user name (in the format `domain\userName`) and password, and click **Sign in**.

The BMC Cost Analyzer console is displayed. For more information, see “Cost Analyzer console” on page 26.

You can select **Remember me on this computer**, to save your sign in credentials for 31 days. When selected, this will enable an automatic sign in for your next Cost Analyzer session.

**Note**

When you elect to save your sign in credentials, they are saved for only the browser you are using. If you want to access Cost Analyzer from another browser or another computer, you will need to re-enter your sign in credentials.

After you finish your Cost Analyzer session, you can:

- Close the browser or the browser tab to end your session.
- Sign out to delete your saved credentials.

**Signing out from Cost Analyzer**

1 Perform one of the following actions:

- If you want to sign out from your session, from the Cost Analyzer console, click **Sign Out**.
  
  If you sign out, you will need to reenter your credentials when you want to start your next Cost Analyzer session.

- If you want to close your session and utilize the automatic sign in process, close the browser tab or close the browser.
Note
The automatic sign in process is only enabled if you selected **Remember me on this computer** when you signed in. For more information, see Step 2 on page 24.

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:

**Toolbar button**

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

Table 7: 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>
</tbody>
</table>
### Administration Tool

<table>
<thead>
<tr>
<th>Administration Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage Model Builder Tasks</td>
<td>Add, remove, or modify Model Builder Tasks.</td>
</tr>
<tr>
<td><strong>Note</strong>: With the Manage Model Builder Tasks tool, you can also set up a schedule to specify when to run Model Builder Tasks or run a Model Builder Task manually.</td>
<td></td>
</tr>
<tr>
<td>Manage Software Contracts</td>
<td>Add, modify or remove software contracts</td>
</tr>
<tr>
<td>CPC Configuration Editor</td>
<td>Configure CPC pricing metrics and PricingPlex</td>
</tr>
<tr>
<td>MSU Cost Editor</td>
<td>Specify cost coefficient values for MLC Products</td>
</tr>
<tr>
<td>Application Server Log Viewer</td>
<td>View all available Application Server log files</td>
</tr>
</tbody>
</table>

### Tool tabs

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 19.

### Table 8: Cost Analyzer Tool Tabs

<table>
<thead>
<tr>
<th>Tool Tab</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Contract Reporting</td>
<td>Generate a Software Contract Summary Report based on budgeted, actual, and projected costs for analysis. You can run a report that provides details on budgeted allocations, actual usage, and future cost projections. Using the comprehensive view of the entire contract, you can track the cost changes that occur over time, monitor the performance of budgeted cost against actual cost, and analyze the cost contribution of MLC products, CPCs and R4HA.</td>
</tr>
<tr>
<td>Monthly Reporting</td>
<td>Generate Monthly Summary Reports for analysis. You can run reports and use interactive features to explore and analyze the results.</td>
</tr>
<tr>
<td>Planning</td>
<td>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.</td>
</tr>
</tbody>
</table>
View tabs

The view tabs can be used to open multiple views of reports and to toggle between the views. (Multiple views are available for only Software Contract Reporting and Monthly Reporting.)

Task status indicator

The task status indicator gives information about the current state of Model Builder Tasks (whether running or sleeping) and provides access to a popup with details about the most recent task activity.

Links

The links provide access to signing out, online Help, social communications, 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 29.
- To perform the administrative setup tasks that will prepare BMC Cost Analyzer for use, see “Setting up Cost Analyzer” on page 43.
- When you are ready to start using BMC Cost Analyzer, see “Generating cost-analysis reports” on page 113 and “Developing cost-reduction plans” on page 179.
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 1.2.07 or higher 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 9: CDB system requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>CDB Studio Tools on the following server class operating systems:</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft Windows Server 2012 R2 (64 bit)</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2012 (64 bit)</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2008 R2 (64 bit)</td>
</tr>
<tr>
<td></td>
<td>CDB Server Studio Tools on:</td>
</tr>
<tr>
<td></td>
<td>■ Windows 10</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>Database</td>
<td>■ Microsoft SQL Server 2016</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft SQL Server 2012</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft SQL Server 2008</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 12.1</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 11.2</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 11.1</td>
</tr>
<tr>
<td>Additional OS features and roles</td>
<td>■ You must install Microsoft .NET Framework 4.5. or higher</td>
</tr>
<tr>
<td></td>
<td>■ You must install and run Microsoft message Queuing Server (MSMQ)</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft Internet Information Services (IIS)</td>
</tr>
<tr>
<td></td>
<td>You must install IIS and then enable the following components:</td>
</tr>
<tr>
<td></td>
<td>— IIS ASP.NET</td>
</tr>
<tr>
<td></td>
<td>— IIS Windows Authentication</td>
</tr>
<tr>
<td></td>
<td>— IIS Metabase</td>
</tr>
<tr>
<td></td>
<td>— IIS WCF HTTP Activation</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 13 or higher
  - Capacity Management Database CDB 1.2.07 or higher

- 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.
   
   **Note**
   
   The installation program checks for the requirements described in “CDB system requirements” on page 30. If any requirement is not satisfied, the installation program notifies you and stops. Before restarting the installation program, you must satisfy the missing requirements.

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 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**
If prompted, 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.
The installation program checks for the requirements described in “CDB system requirements” on page 30. If any requirement is not satisfied, the installation program notifies you and stops. Before restarting the installation program, you must satisfy the missing requirements.

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 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 34, 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</td>
</tr>
<tr>
<td></td>
<td>If BMC CDB Services is installed on the same machine, you can specify <strong>localhost</strong>. The default value is <em>fullComputerName</em>.</td>
</tr>
<tr>
<td>Port</td>
<td>Port number of the BMC CDB Services server</td>
</tr>
<tr>
<td></td>
<td>The default port numbers are as follows:</td>
</tr>
<tr>
<td></td>
<td>- HTTP — 80</td>
</tr>
<tr>
<td></td>
<td>- HTTPS — 443</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: Select <strong>Use SSL</strong> to use HTTPS protocol.</td>
</tr>
<tr>
<td>Virtual Directory</td>
<td>Virtual directory where BMC CDB Services is installed</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>where BMC CDB Services is installed</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Password</td>
<td>(optional) 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 35, 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**

![CDB Workflow Service Account Information page](image)

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.

10 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 10 on page 35 manually.

**Table 10: 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>Firewall setting</td>
<td>Value</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------</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>

11 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.

It is recommended to install the CDB server on the same virtual machine (VM) underlying a relational database management system (RDBMS) (such as Microsoft SQL Server or Oracle), or at least on the same hardware.

Network delays between the CDB Server and RDBMS can significantly affect Cost Analyzer performance for the model build process and Job/STC reporting and planning operations.

---

**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 11: 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 (64 bit)</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2012 (64 bit)</td>
</tr>
<tr>
<td></td>
<td>■ Windows Server 2008 R2 (64 bit)</td>
</tr>
<tr>
<td>Database</td>
<td>■ Microsoft SQL Server 2016</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft SQL Server 2012</td>
</tr>
<tr>
<td></td>
<td>■ Microsoft SQL Server 2008</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 12.1</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 11.2</td>
</tr>
<tr>
<td></td>
<td>■ Oracle 11.1</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 Services (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 WCF HTTP 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 12: 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 10</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 44 or earlier</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 36. 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 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.

d 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 13: 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 46.
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 Software Contract Reporting, Monthly 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 Software Contract Reporting, Monthly Reporting, and Planning tools can be used, you need to complete the administration setup tasks described in Figure 5 on page 44:

**Figure 5: Setup tasks flowchart**

The following table provides hyperlinks to the topics that explain how to complete the administration setup tasks:
### Overview of 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 46</td>
</tr>
<tr>
<td>Create and schedule the Automator script</td>
<td>“Creating and scheduling the Automator script” on page 47</td>
</tr>
<tr>
<td>Note: You can skip this task if the following conditions are met:</td>
<td></td>
</tr>
<tr>
<td>You are currently using BMC Capacity Management for Mainframes (CMM)</td>
<td></td>
</tr>
<tr>
<td>The Automator script is scheduled and populating data into the CDB server</td>
<td></td>
</tr>
<tr>
<td>Define connections to CDB servers</td>
<td>“Defining connections to CDB servers” on page 50</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 61</td>
</tr>
<tr>
<td>Update the Automator script</td>
<td>“Updating the Cost Analyzer Model Builder Proxy event” on page 63</td>
</tr>
<tr>
<td>Add software contracts</td>
<td>“Defining software contracts” on page 74</td>
</tr>
<tr>
<td>Verify/edit CPC Configuration</td>
<td>“Verifying and editing the CPC Configuration” on page 84</td>
</tr>
<tr>
<td>Edit cost tables</td>
<td>“Editing the cost coefficients” on page 89</td>
</tr>
</tbody>
</table>

### Tip

You need to add at least one user to a BMC Cost Analyzer Group before you can login and use 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 249.

**Cost Analyzer - iStrobe configuration**

In order to set up and use the integration of Cost Analyzer, you must perform the following procedures:

- Configure the Compuware iStrobe web location
- From a Workloads View in a Monthly Summary report, launch iStrobe for a specific LPAR
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.
   
   **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 19.

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 47.

*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.

However, you can skip this task only if the following conditions are met:

■ If you are currently using BMC Capacity Management for Mainframes (CMM)
■ The Automator script is scheduled and populating data
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 ODBC 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 48.
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.

---

### 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:

   ![Manage CDB Server Profiles dialog](image)

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:

![Add CDB Server Profile dialog](image)

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                                  |
**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 Software Contract Reporting, Monthly Reporting, and Planning tools.

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.

However, if you want to run a Model Builder Task for multiple workload types, you can specify only one filter. If you need to specify different filters for different

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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>

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.
workloads, you need to create a separate Model Builder Task for each workload that you want to filter.

**Note**  
If you are using multiple CDB Servers or multiple data sources on the same CDB Server, 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
- Enable trace messages to the log file to assist in diagnostics

**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 50.

Cost models are built referencing the active Cost Table. If you have multiple cost tables, you need to ensure that the cost table you want to reference for cost calculations is set as the active cost table. For more information, see “Managing multiple cost tables” on page 103.

**To define Model Builder Tasks**

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

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

The Manage Model Builder Tasks dialog opens, listing all of the tasks that have been defined:
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:
4 Complete each field based on Table 15 on page 55:

**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>
</tbody>
</table>
### Field | Description
--- | ---
**Workload type** | Click one or more of the following types:
- Suites*
- Service Class*
- Report Class*
- Subsystem Address Space
- Importance
- Workload Manager

**Note:** The * indicates that you can specify a filter for the workload. For more information, see “Cost Analyzer workloads” on page 18.

**Workload Filter** | Filter for the workload
Workload filters can be specified for Suites, Service Class, and Report Class workloads. For these workloads, you can enter a list of comma delimited workload names or wildcard character patterns to be used as a filter to reduce the size of the cost model.

**Note:** 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.

**Source CDB Server** | Desired CDB Server Profile

**Source CDB Database** | Desired CDB Database accessible from the specified CDB Server
The database needs to be compatible with Cost Analyzer.

**Time Zone Offset** | Desired time zone offset
You can specify an offset from the time zone of the data in the CDB database.

**Note:** When using the Planning tool, all CPCs included in the plan must be built with the same time zone offset.

5 *(optional)* If you want to exclude particular LPARs from the cost calculation, designate zNALC LPARs, specify NO89 commands, or enable Trace messages, click **Advanced Options**.

The Advanced Options dialog displays as shown in the following figure:
a To designate zNALC LPARs, 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.

b To exclude LPARs from the cost calculation click the **Exclude LPARs** tab, enter the name of the LPAR you want to exclude and then click **Add**.

**Note**
**Exclude LPARs** should be used *only if all activity* for a particular LPAR needs to be completely excluded from the cost calculation. If you need to exclude just data for a specific time period or for the activity of a specific MLC Product, you must use the **EXCLUDE** command. For more information, see “**EXCLUDE89 command**” on page 261.

c To specify the **NO89** command for a MLC product or a priced feature that does not create SMF Type 89 records, click the **NO89 command** tab, then enter the command as follows:

\[
\text{NO89 \textit{productID}}[\textit{featureCode}]=\textit{[CPCSN:]lparName},... | \textit{*All}
\]

The following table defines the value of the 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>featureCode</td>
<td>IBM priced feature number</td>
</tr>
<tr>
<td>CPCSN</td>
<td>The CPC serial number</td>
</tr>
<tr>
<td>lparName</td>
<td>List of LPAR names separated by commas</td>
</tr>
</tbody>
</table>

**Note:** You must enter the LPAR name and not the SID

---

The following guidelines apply with regard to NO89 commands:

- You must enter a separate command for each MLC product or priced feature that does not create SMF type 89 records.
- If the NO89 command was already specified in the JCL that runs the Universal Information Exchange batch job, you do not need to enter a command for that particular MLC product or priced feature.

For more information, see “NO89 command” on page 255.

---

d To specify an EXCLUDE command for an interval that must be excluded from the peak R4HA calculation, click the **EXCLUDE89 commands** tab, then enter the command as follows:

```
EXCLUDE89 CPC=xxxx IMAGE_ID=lparName.... | *ALL
PRODUCT_ID=productID,...|*ALL
START=yyyy/mm/dd hh
RESUME=yyyy/mm/dd hh
ACTIVE=Y|N
```

**WARNING**

When you specify an EXCLUDE89 command in a Model Builder Task, all previous EXCLUDE89 commands added to the UIE JCL for any other intervals are ignored. In order to maintain the correct cost data in the cost models, all of these EXCLUDE89 commands need to be added to the Model Builder Task. For more information, see “EXCLUDE89 command” on page 261.

---

e To enable Trace messages, click the **Trace** tab, change the toggle switch to **Yes**.

**Note**

Enabling Trace messages can dramatically increase the size of the log file and should only be enabled for troubleshooting.

---

f When finished with Advanced Options, click **Accept**.

6 When finished with all selections, click **Add Task**.
The task appears as a listing in the Model Builder Tasks dialog.

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

**Where to go from here**

After defining your Model Builder Tasks, schedule them to run on a nightly basis for use with the Software Contract Reporting, Monthly Reporting, and Planning tools. For more information, see “Scheduling Model Builder Tasks” on page 59.

**Note**

If necessary, Model Builder Tasks also provides you with the option to run the task immediately by utilizing **Run 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 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.

You can select from the following methods:

- Program the Model Builder Task to automatically execute after the Automator script completes its daily run and populates the data into the CDB server. This is the recommended method; it ensures that all data has been populated into the CDB server before the Model Builder Task runs. For more information, see **Installing the Cost Analyzer Model Builder Proxy** on page 61.
Use Cost Analyzer Scheduling Services to execute the Model Builder task at a specified time.

If you do not want to program the Model Builder Task to run automatically in your existing Automator script, you can specify the time to execute the task. However, for best results, the time that you select should be after all of the data has been populated into the CDB server.

For more information, see “Using Cost Analyzer Scheduling Services to run a Model Builder Task” on page 68.

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.
  - 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 R4HA 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.
  - You must use the same GMT Offset value in the GMTOFF command for all UIE Jobs that produce data for both the CDB Database and for Cost Analyzer cost models.

- 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 6 types of Workload models per CPC.

After Model Builder Tasks execute, Cost Analyzer makes the cost models available for use with the Software Contract Reporting, Monthly Reporting, and Planning tools 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 located in an application in the Cost Analyzer product installation directory.

**Note**

If you are using Cost Analyzer Scheduling Services to run the Model Builder Task at a specific time, you can skip this task.

### To install Cost Analyzer Model Builder Proxy

1. Find the proxy application 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.exe`.
The following figure shows a sample location for the proxy application.

Figure 6: Sample location for proxy application

2 In the proxy file, run the **SCAModelBuildProxy.exe** program.

The Cost Analyzer Model Builder Proxy dialog is displayed:

![CAzE Model Builder Proxy dialog](image)

By default, the dialog fills the field data for you.
3 Check the field data for accuracy and click Close.

**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.

---

**Note**
If you are using Cost Analyzer Scheduling Services to run the Model Builder Task at a specific time, you can skip this task.

---

**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 **SCAModelBuildProxy** file, and select the **SCAModelBuildProxy.exe** file.

4 In the **Arguments** field, type the name of the Model Build Task created in Cost Analyzer.

You can use multiple command-line parameters for execution. The basic format is as follows:

```
SCAModelBuildProxy.exe -t taskName [-d YY/MM][-s serverName][-v virtualPath][-p portNumber][-l logName]
```

Replace the variables as shown in the following table:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-t <strong>taskName</strong></td>
<td>Required</td>
<td>Name of the Model Builder Task to run</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter can appear anywhere on the command line but must be immediately followed by the task name. If the task name contains spaces, it must be surrounded by quotes. For example, &quot;My Task&quot;.</td>
</tr>
</tbody>
</table>
**Parameter | Requirement | Description**
--- | --- | ---
-d \*YY/MM\* | Optional | Specifies the date (year and month) to use when executing a run of the Model Builder Task. This parameter can appear anywhere on the command line, but must be immediately followed by the year and month in the following format \*YY/MM\*. Since the parameter is optional, the following conditions apply:

- If specified, the year and month must be the second parameter to the SCAModelBuildProxy application.
- The (\*YY/MM\*) format must be used.

**Example:** For March 2015 use 15/03.

-s serverName | Optional | Name of the fully qualified Cost Analyzer server, e.g. "myserver.myco.com". The default is "LocalHost". This parameter can appear anywhere on the command line, but must be immediately followed by the server name.

**Note:** Depending on the DNS resolution, it may not be necessary in all cases to fully qualify the name. Since the parameter is optional, the following conditions apply:

- If specified, the specified server name will override any saved server name setting (or the default).
- When not specified, execution of the command uses the server name setting saved as part of the interactive Model Build Proxy session or "Localhost".
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-v virtualPath</td>
<td>Optional</td>
<td>Virtual Path to the Cost Analyzer installation (by default &quot;BMCSCA&quot;)&lt;br&gt; This parameter can appear anywhere on the command line but must be immediately followed by the virtual path.&lt;br&gt; Since the parameter is optional, the following conditions apply: ■ If specified, the virtual path specified overrides any saved Virtual Directory setting (or the default). ■ When not specified, execution of the command uses the virtual directory setting saved as part of the interactive Model Build Proxy session or &quot;BMCSCA&quot;.</td>
</tr>
<tr>
<td>-p portNumber</td>
<td>Optional</td>
<td>Server port number used by Cost Analyzer&lt;br&gt; The default is 80.&lt;br&gt; This parameter can appear anywhere on the command line but must be immediately followed by the port number.&lt;br&gt; Since the parameter is optional, the following conditions apply: ■ If specified, the specified port number overrides any saved Port Number setting (or the default). ■ When not specified, the execution of the command uses the port number setting saved as part of the interactive Model Build Proxy session or &quot;80&quot;.</td>
</tr>
<tr>
<td>-l logName</td>
<td>Optional</td>
<td>Name and path to write the log file messages&lt;br&gt; Since the parameter is optional, the following conditions apply: ■ When specified, the log file messages are also written to the specified log file ■ When not specified, by default, messages are written to the Windows Event Viewer This parameter can appear anywhere on the command line but must be immediately followed by the log file name.</td>
</tr>
</tbody>
</table>
Tip
Command line switches can be specified using any of the following forms: ",","/", "."
For example:

```
SCAModelBuildProxy -t "MyTask" \d 2015/03 /s "MyServer"
```

Example
Some examples are provided as follows:

- **SCAModelBuildProxy -t "My Task"**
  
  This runs run the proxy against the model builder task "My Task" for the most recent month of data in the database and uses all defaults or user-configured options for the Cost Analyzer server.

- **SCAModelBuildProxy -t "My Task" -d "15/03"**
  
  This runs the proxy against the model builder task "My Task" for March, 2015 only and uses all defaults or user-configured options for the Cost Analyzer server.

- **SCAModelBuildProxy -t "My Task" -s "MyCAzEServer"**
  
  This runs the proxy against the model builder task "My Task" on the server "MyCAzEServer" for the most recent month of data in the database and uses defaults only for the port number and virtual directory.

- **SCAModelBuildProxy -d "2015/03"**
  
  This command syntax fails because no Model Builder Task was specified.

Note
If you are upgrading Cost Analyzer, the product continues to support previously existing command-line parameters. However, BMC strongly recommends that you update the parameters as described in the previous table.

The following obsolete syntax is supported:

```
SCAModelBuildProxy.exe<TaskName>|[YY/MM]|s|-p|-l]
```

You should not mix positional parameters with "switched" parameters. You can specify switched parameters in any order after you specify the positional parameters.

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:

![Image of Automator - [b1auto2] Event Script](image)

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 most recent month of data in the database.

**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.

### Using Cost Analyzer Scheduling Services to run a Model Builder Task

If you do not want to alter your existing Automator script or cannot access it for alterations, you can schedule the Model Builder task to run using Cost Analyzer Scheduling Services, which is available in the Manage Model Builder Tasks Administration tool.

*Note*

If you have added the Model Builder Task to a new or existing Automator script, you can skip this procedure. The Model Builder Task will execute automatically after the mainframe data has populated into the CDB server.

Use the following procedure to specify when to run the Model Builder Task. After you have established the schedule, the Model Builder task will run automatically at the specified time.
To schedule a Model Builder Task to run at a specific time

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

2. From Administration Tools dialog, select **Manage Model Builder Tasks**.

   The Manage Model Builder Tasks dialog lists the defined Model Builder Tasks as shown in the following figure:

   ![Manage Model Builder Tasks dialog](image)

3. Find the Model Builder Task you want to schedule and click **Schedule**.

   The Task Scheduling Options dialog displays as shown in the following figure:

   ![Task Scheduling Options dialog](image)
4 Select **I want the Cost Analyzer Scheduling Services to run the task at a specific time** and then specify the days and time to run the Model Builder Task.

In order to build your cost models with the most current information, specify a time that occurs after the Automator script has populated the most recent data.

**Example**

Assume that the Automator script runs at 3:00 A.M. and takes about 30 minutes to complete. Consequently, it should be safe to schedule the Model Builder Task to run at 4:00 A.M. If you scheduled the Model Builder Task to run at 3:00 A.M. or earlier, the previous day’s data might not be available in the CDB database. In that case, your generated cost model would not include any data from the previous day.

5 When finished making your selections, click **Accept**.

The Task Scheduling Options dialog closes.

6 To save your changes, click **Save Changes**.

Cost Analyzer saves your changes and the Manage Model Builder Tasks dialog closes.

**Running the Model Builder Task manually**

You can run a Model Builder Task at any time without interfering with its scheduled run time. Use the following procedure to run the Model Builder Task manually.

**Note**

Model Builder Task runs require time to complete. The results of the task run will not be available for use with the Cost Analyzer tools until the task has completed.

**To run the Model Builder Task manually**

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:
3 From the list, select the Model Builder Task you want to run and click **Run Now**.

The Run Task Now dialog opens:

4 From the calendar in the dialog, select the usage month for the model you want to build.

The usage month starts on the 2nd day of the month and ends on the 1st day of the following month.

5 Click **Submit**.
Cost Analyzer runs the Model Builder Task. Check the indicator at the top right of the console for the status of the task.

**Monitoring Model Builder Tasks**

Use the following procedure to check the current status of all defined Model Builder Tasks on your system.

From the Cost Analyzer console, you can check the status of your Model Builder Tasks. The following figure shows the console task status indicator:

**Figure 7: Model Builder Task status indicator**

The following table explains each status message.

<table>
<thead>
<tr>
<th>Status message</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service unavailable.</td>
<td>Red</td>
<td>The BMCSCAService is not running.</td>
</tr>
<tr>
<td>No tasks have been created.</td>
<td>Grey</td>
<td>No Model Builder Tasks exist.</td>
</tr>
<tr>
<td>All tasks are sleeping.</td>
<td>Grey</td>
<td>No Model Builder Tasks are being built at the present time.</td>
</tr>
<tr>
<td>Tasks currently pending.</td>
<td>Yellow</td>
<td>A Model Builder Task is pending execution.</td>
</tr>
<tr>
<td>Tasks currently running.</td>
<td>Green</td>
<td>A Model Builder Task is being built.</td>
</tr>
<tr>
<td>Updating contracts.</td>
<td>Green</td>
<td>Software contracts are being updated.</td>
</tr>
</tbody>
</table>
To check the status of all Model Builder Tasks

1. From the Cost Analyzer console, hover over the task status message to display status details for all Model Builder Tasks.

Figure 8: Sample Model Builder Task status details

Table 17 on page 73 lists the column headers and describes their meaning:

Table 17: Model Builder Task status columns

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Builder Task</td>
<td>Shows the user-defined name assigned to the Model Builder Task</td>
</tr>
<tr>
<td>Current state</td>
<td>Indicates the current state of the task</td>
</tr>
<tr>
<td>Last Status</td>
<td>Indicates the result of the last time the task was run</td>
</tr>
<tr>
<td>Last Build</td>
<td>Indicates the last time the task was run</td>
</tr>
<tr>
<td>Run Now</td>
<td>Provides a link where you can manually run the task now</td>
</tr>
<tr>
<td>Next Scheduled Build</td>
<td>Indicates the next date and time the task will run</td>
</tr>
</tbody>
</table>

Note: The Run Now link is only available if you are a member of the BMC Product Administrators group or the BMC Cost Analyzer MLC Administrators group. For more information, see “BMC Cost Analyzer User Groups” on page 19.

Manage Software Contracts

The Manage Software Contracts administration tool provides you with the ability to define your software contracts.

The definition of your software contract parameters are used by the Software Contract Reporting tool to provide reports that compare your monthly budgets for MLC product costs with actual MSU usage.

You can use this administration tool to:
• Designate the total amount of the contract budget

• Define the duration or length of the term of the contract

• Assign budget allocations to contract periods and period months

• Specify events that affect software costs during the contract

Defining software contracts

Use the following procedure to manage your IBM software contracts.

Note

Please refer to your IBM MLC contract for budget amounts and period details described in the following procedure.

To define a software contract

1 From the Cost Analyzer console, click Administration Tools.

2 In the Administration Tools window, click Manage Software Contracts.

The Manage Software Contracts dialog opens, listing all of the available Software Contracts that have been defined by the user:

From the dialog you can add, modify, or remove Software Contracts.
3 Perform one of the following actions:

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

*Note*

When modifying an existing contract, you need to unlock the dialog by unlocking the lock toggle (🔒) before you can modify the fields or values in the dialog. When prompted, confirm that you want to enable modifications by clicking **Yes**.

The Add Software Contract dialog or the Modify Software Contract dialog displays, depending on your selection. The Add Software Contract dialog is shown in the following figure:

![Add Software Contract dialog](image)

4 Complete each field based on Table 18 on page 76:
### Table 18: Add Software Contract fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Name</td>
<td>Name to be assigned to the software contract</td>
</tr>
<tr>
<td>Contract description</td>
<td><em>(optional)</em> Description of the software contract</td>
</tr>
<tr>
<td>Starting Month</td>
<td>Click the calendar and designate the month and year that the contract starts</td>
</tr>
</tbody>
</table>
| Duration                   | Specify the total number of months that determine the duration of the contract  
                             | You can specify the duration of the contract in months from 1 to 5 years  
                             | (either 12, 48, 36, 48, or 60 months).                                        |
| Budget                     | Total budget of the contract                                                |
|                            | Refer to your IBM contract for the total value budgeted for the contract.     |
| Months in first period     | Specify the number of months in the first period of the contract            |
|                            | Typically, IBM contracts are divided into yearly periods. Depending on your  
                            | contract with IBM, enter the number of months that determine the first  
                            | period of the contract.                                                      |
|                            | **Note:** In most contracts, the number of months in the first period is 12.   
                            | However, business circumstances might require that the first period of the  
                            | contract be less than one year. In order to account for this situation, the  
                            | proper value can be selected from the drop down. All subsequent periods    
                            | are generated automatically depending on this value and the duration of the  
                            | contract.                                                                    |
| Cost Table change events   | Specify any Cost Table change events                                        |
|                            | If the cost table will change over the course of a contract, you need to add  
                            | a Cost Table change event to account for the change in the pricing structure.|
|                            | For more information, see “Cost table change event overview” on page 81.     |

5 Configure the monthly budget allocations for each period by clicking Edit Period Details.

The Contract Period Details window opens as shown in the following figure.
By default, Cost Analyzer divides the total budget amount of the contract by the number of months indicated as the contract duration and allocates this value as the monthly budget amount for each month of each period. In order to reflect your exact monthly budget figures, however, you need to edit the details of each individual month so that the values correspond to your actual budgeted allocations.

a For the period you want to edit, click the triangle (•) to display the monthly values allocated for each month.

The following figure shows the monthly values for Period 1.
b Adjust the values allocated for each individual month based on the actual monthly budget allocations that exist for this period of the contract.

**Note**
If the monthly budget values change the total budget amount established for that period, Cost Analyzer recalculates and updates the total budget amount for that period and also recalculates the total amount of the entire contract.

c *(optional)* Adjust the value allocated for a period to change the monthly budget allocation for each month of that period.

When adjusting the budget amount for a period, Cost Analyzer automatically distributes the new budget amounts across the months of the period, maintaining the existing proportion of each month. For an example, see “Contract Period Details example” on page 79.

d When finished editing the values of each individual month of each period, click **Accept**.

6 When finished entering values for all fields, perform one of the following actions:

- If you are adding a software contract, click **Add Contract**.
- If you are modifying a software contract, click **Modify Contract**.

The dialog closes.
In the Manage Software Contracts dialog, click **Save Changes**.

**Contract Period Details example**

The following example demonstrates the dynamic features enabled by editing the budgeted values in the Contract Period dialog.

In the following example, the following values define the Software Contract:

- Start month: Jan 2015
- Duration: 36
- Budget: $360,000,000
- Months in first period: 12

After adding the software contract parameters the dialog displays as shown in the following figure:
When you click **Edit Period Details**, the Contract Period Details dialog displays. For demonstration purposes, Period 3 has been expanded in the figure.

As you can see, each period is allocated $120,000,000 and each individual month in each period would be allocated $10,000,000.

If the 3rd Period's costs are going to increase by 10% ($12,000,000), you can change the value for Period 3 to $132,000,000.

The following figure shows the results of the 10% increase for Period 3.
As you can see, Period 3 has been changed to $132,000,000 and Cost Analyzer has automatically increased the value for each month to $11,000,000. The New Budget total ($372,000,000) also displays.

The budget figures for your enterprise may be much more complicated and the proportions less obvious. It is import to note that Cost Analyzer calculates the proportion each individual month contributes to the total for a period and updates the values for each individual month based on this proportion.

Cost table change event overview

Over the duration of a contract, there may be changes that affect which cost table is used to calculate the cost data. When defining your software contract, you can specify the starting month for using a new, modified, or different cost table when calculating the cost data for use with the Software Contract Reporting tool.

This change of cost table is known as a Cost Table change event.

Since the active cost table is used as a default to calculate the cost models used by the Software Contract Reporting tool, changes to the cost table that will occur in the future can only be accounted for by adding a Cost Table change event, which overrides the default cost table.

Note

Cost table change events are applied only to the projected costs of future months. When the month specified in the Cost Table change event arrives in actual time, the new Cost Table needs to be set as active in the MSU Cost Editor in order for the new pricing information to be used when building cost models. For more information see, “Setting a cost table as active” on page 106.

Adding a Cost Table change event to your software contact does not affect the budget amounts of the contract. The Software Contract Reporting tool uses the event to change the cost table that is used when calculating projected costs that occur on and after the starting month.

By specifying the Cost Table change event, you select the month to begin using a different cost table, so your cost data remains in synch with any cost table changes that you know will occur in the future. When adding or modifying a software contract, use Cost Table change events to assign the appropriate cost table to use for calculating all cost data that occurs on and after the event.

If you do not specify a Cost Table change event, the Software Contract Reporting tool uses the active cost table for the entire term of the contract when generating a report.
Note
It is the responsibility of the administrator to manage changes to the Cost Table that will also necessitate adding or modifying Cost Table change events so that the definition of your software contract remains consistent with changes to MLC costs that may occur during the course of a contract.

Adding a change event to the software contract

Use the following procedure to add a Cost Table change event to the definition of your software contract.

To add a Cost Table change event

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

2. In the Administration Tools window, click Manage Software Contracts.

   The Manage Software Contracts dialog opens, listing all of the available Software Contracts that have been defined by the user.

3. From the list, select the Software Contract that needs a Cost Table change event, and then click Modify.

   Note
   If you are adding a new Software Contract, you can also add a Cost Table change event as you define all of the contract parameters. In this case, click Add instead of Modify.

The Modify Software Contract dialog is displayed as shown in the following figure.
4 Unlock the Modify Contract dialog by unlocking the lock toggle (), and when prompted, confirm that you want to enable modifications by clicking Yes.

5 Click the Add button to the right of the Cost Table change events box.

   The Event Details dialog displays as shown in figure:

6 In the Starting Month box, use the calendar to select the month and year the Cost Table change event occurs.
7 From the list of Cost Tables, select the Cost Table to be used for cost model calculations when the change event occurs.

The selected Cost Table will be used from the beginning of the selected Starting Month until the last month of the contract.

**Note**
You can have more than one Cost Table change event over the duration of the contract. In this instance, the Cost Table will be used at the start of the selected Starting Month and its use will end at the next change event.

8 When finished, click **Add Event**.

The Event Details dialog closes.

The starting month and year as well as the name of the Cost Table that will be used at that time are displayed in the **Cost Table change events** box of the dialog.

9 Click **Modify Contract** to close the dialog.

**Note**
If you are adding a software contract, click **Add Contract**.

10 In the Manage Software Contracts dialog, click **Save Changes**.

Cost Analyzer saves the changes and closes the Manage Software Contracts tool.

### 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 initial 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 a Model Builder Task for the first time. For more information, see “**Scheduling Model Builder Tasks**” on page 59.

After the initial configuration, any new CPCs are added automatically, but any changes to the existing configuration will not be recorded. For instance, you must manually update the configuration if the PricePlex of a CPC or the Pricing Metric changes.
Overview of the CPC Configuration Editor

Use the CPC Configuration Editor to configure the CPCs of your enterprise with your IBM contract so that all pricing arrangements are accounted for and included in the cost models.

The CPC Configuration Editor enables you to control the pricing method to apply to each CPC when building the cost models. For each CPC, you can specify one of the following methods:

- Sysplex Pricing
- Country Multiplex Pricing

**Note**
When you enable Country Multiplex Pricing:

- The pricing metrics for all CPCs default to CMLC
- Any LPARs specified as zNALC are changed to MzNALC

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.

Figure 9 on page 85 shows a sample CPC Configuration Editor:

**Figure 9: Sample CPC Configuration Editor**
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.

### 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 County Multiplex Pricing

Cost Analyzer cannot automatically determine whether Country Multiplex Pricing applies to your enterprise. However, you can specify to use Country Multiplex Pricing when building cost models by setting the Use Country Multiplex Pricing? toggle to Yes.

After you set the toggle to use Country Multiplex Pricing, the CPC Configuration editor changes the display to indicate CMLC (Country Multiplex Licensing Charge) as the pricing metric type for each CPC. If you use Country Multiplex Pricing, CMLC is the only supported pricing metric type.

Once you have changed the configuration to use Country Multiplex Pricing and have built at least one cost model based on the new configuration, you can see the effect of the pricing method in the Monthly Summary report. For more information, see “Managing Country Multiplex Pricing” on page 225.

### 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.

---

### How the CPC Configuration is updated

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 the configuration only when:
  - The CPC configuration does not yet exist.
  - The CPC model does not exist in the current configuration.
- 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.

---

**Note**

When using the CPC Configuration editor, all changes to the configuration take effect for the current month's cost model **only after a model build process has been run.** Any cost models that have already been built for a previous month remain unaffected and reflect the pricing method that was in effect when they were built.
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 7 on page 89.
4. (optional) For any CPC that you want to edit, perform the following actions:
   
   ■ 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.
   
   ■ Using the Pricing Metric Type drop-down box, select the Pricing Metric Type that applies to the CPC.

5. (optional) To add a PricingPlex name that is not on the list, perform the following actions:
   
   a. Click the Manage link.
   b. In the Manage 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 89 for each CPC to which you want to add the new PricingPlex name.

6  *(optional)* To remove a PricingPlex name that is on the list, perform the following actions:

   a  Click the **Manage** link.

   b  In the Manage PricingPlex dialog, select the names of the PricingPlexes from the list of Existing PricingPlexes that you want to remove.

   c  Click **Remove**.

      The PricingPlexes are removed from the list of Existing PricingPlexes.

   d  Click **Accept** to close the Manage PricingPlexes dialog.

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

**Where to go from here**

After editing the CPC configuration, the changes are applied to the next scheduled Model Builder Task run and affect only the cost model for the current month.

If the CPC configuration changes should be applied to a previous month, you need to rebuild the cost models for those months by running the Model Builder Task manually and selecting the appropriate months to rebuild. For more information, see “Running the Model Builder Task manually” on page 70.

**Editing the cost coefficients**

This section describes how to use the MSU Cost Editor to edit your cost coefficients and manage multiple cost tables.

You can use the MSU Cost Editor to:

- Edit the cost coefficients for each MLC product
- Create multiple Cost Tables to manage future changes to MLC product costs or alternative pricing arrangements
Set the active Cost Table to be referenced by the Model Builder Tasks when building cost models

Update and install changes to the Product Table

**Note**

During installation, Cost Analyzer creates a default cost table with zero as the value for all cost coefficients and sets this cost table as active. The name of this default cost table is SPRDFIL.

If your installation replaces a previous version of Cost Analyzer, all cost coefficients from your previous cost table are preserved in the SPRDFIL cost table.

When setting up Cost Analyzer, use the MSU Cost Editor to 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, complete the following tasks with the MSU Cost Editor:

- 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 95

- 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 100

- 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 101

- Change the reporting locale
  
  For more information, see “Changing the reporting locale” on page 103

**Note**

Modifications to the cost tables will affect the cost models that are used by the Software Contract Reporting, Monthly Reporting, and Planning tools.
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. You can create and manage multiple cost tables.

**Note**

When you create multiple cost tables, one of them must be set as the active cost table. When first setting up Cost Analyzer, the SPRDFIL cost table is automatically set as the active cost table.

Only the active cost table is referenced to build your cost models. For more information, see “Managing multiple cost tables” on page 103.

If you want to change which cost table is active, see “Setting a cost table as active” on page 106.

The active cost table always opens when you launch the MSU Cost Editor. However, if you are setting up Cost Analyzer for the first time, a default cost table created by the installation process displays. The name of this cost table is SPRDFIL and it is automatically set as the active cost table. When setting up your first cost table, you should edit the coefficients in SPRDFIL.

After you have completed the editing, you can:

- Make a clone of the SPRDFIL cost table
- Give the cloned Cost Table a new name
- Set the cloned Cost Table as active
  
For more information, see “Managing multiple cost tables” on page 103.

For any cost table that you want to edit, use the MSU Cost Editor to insert the cost coefficients from your IBM License Agreement. As indicated in the sample in Figure
10 on page 92, the MSU Cost Editor lists all of the MLC products on a system and enables you to account for every provision in your contract with IBM.

Figure 10: Sample MSU Cost Editor

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reporting Locale Settings</td>
<td>Accesses a dialog where you can change the reporting locale. For more information, see “Changing the reporting locale” on page 103.</td>
</tr>
<tr>
<td>2</td>
<td>Pencil icon</td>
<td>Indicates that the cost coefficient tables for the product have been edited. Note: If a MLC product's cost coefficients have not been edited, but the product features cost coefficients have been edited the pencil icon displays by the Product name column.</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>Cost Table name</td>
<td>Unique name that identifies the cost table. Note: A check mark icon indicates the cost table is active.</td>
</tr>
<tr>
<td>5</td>
<td>Open Cost Table button</td>
<td>Accesses a dialog where you can select an existing cost table for editing or viewing.</td>
</tr>
<tr>
<td>6</td>
<td>Type</td>
<td>The license type used by the products on your system. Note: Cost Analyzer supports only Monthly License Charge (MLC) products at this time.</td>
</tr>
<tr>
<td>#</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Group</td>
<td>The IBM software family of the product (CICS, DB2, IMS, MQ, ZOS, or OTH)</td>
</tr>
<tr>
<td>8</td>
<td>Product Family</td>
<td>The IBM product family of the product</td>
</tr>
<tr>
<td>9</td>
<td>Create Cost Table button</td>
<td>Accesses a dialog where you can create a new cost table or a clone of an existing cost table. You can create multiple cost tables to manage any changes to your MLC product cost arrangements.</td>
</tr>
<tr>
<td>10</td>
<td>Product ID</td>
<td>The product's identification designation</td>
</tr>
<tr>
<td>11</td>
<td>Delete Cost Table button</td>
<td>Accesses a dialog where you can select and delete cost tables. The following Cost Tables cannot be deleted:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ The active Cost Table.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Any Cost Table referenced by the cost model of a historical month.</td>
</tr>
<tr>
<td>12</td>
<td>Product Name</td>
<td>The name of the product</td>
</tr>
<tr>
<td>13</td>
<td>Modify Cost Coefficients button</td>
<td>Accesses a dialog where you can modify the cost coefficients for a Group or a Pricing Metric type by a specific percentage</td>
</tr>
<tr>
<td>14</td>
<td>Feature ID</td>
<td>The feature's identification designation</td>
</tr>
<tr>
<td>15</td>
<td>CMP Base Factor Estimator button</td>
<td>Accesses a dialog where you can calculate an estimate of the CMP Base Values (MLC Base, MSU Base, and Base Factor) for all Products and Product Features active in a selected month and the two previous months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Estimating the CMP Base values” on page 237.</td>
</tr>
<tr>
<td>16</td>
<td>Feature Name</td>
<td>The name of the feature</td>
</tr>
<tr>
<td>17</td>
<td>NO89 Req.</td>
<td>Indicates whether a Universal Information Exchange (UIE) command NO89 is required in order to include the MLC product's cost data in the cost models</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The requirements are as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ YES – Indicates a UIE NO89 command must be defined in the UIE before cost information can be included in the cost model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ NO – Indicates a UIE NO89 command is not required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “NO89 command” on page 255.</td>
</tr>
<tr>
<td>#</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>----</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>18</td>
<td>Edit</td>
<td>Link that provides access to the cost coefficient tables for a particular product Clicking on the link accesses the cost coefficient table where you can 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 95. When you hover over the Edit link, tooltip icons display to enable you to copy, paste, or clear the pricing metrics. For more information, see “Copying pricing metrics” on page 97.</td>
</tr>
<tr>
<td>19</td>
<td>Cost Coefficients</td>
<td>Contains the Edit link for editing the cost coefficient tables and provides a list of pricing metric types that have had their cost tables edited <strong>Note:</strong> The absence of a list of pricing metrics indicates that no pricing metrics have been edited for this product.</td>
</tr>
<tr>
<td>20</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) <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 101.</td>
</tr>
<tr>
<td>21</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 For more information, see “Overriding the pricing metric type” on page 100 and “Using the CPC Configuration Editor” on page 88.</td>
</tr>
<tr>
<td>22</td>
<td>Update indicator</td>
<td>Indicates whether the cost table is up to date The Update indicator is only available if this feature has been enabled by the Administrator. For more information, contact customer support. <strong>Note:</strong> If a Product Table Update is available, the MSU Cost Editor provides a button that can be used to update the cost table. For more information, see “Updating the Product Table” on page 108.</td>
</tr>
</tbody>
</table>
**Note**
The MSU Cost Editor uses the Product Table from IBM to display the list of MLC products in your cost tables.
When you open the MSU Cost Editor, Cost Analyzer automatically checks for an update to the Product Table. If an update is available, the MSU Cost Editor displays the **Product Table Update** button.
For more information see, “Updating the Product Table” on page 108.

**Adjusting the MSU Cost Editor 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 Software Contract Reporting, Monthly Reporting, or Planning tools. 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 10 on page 92.
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 11 on page 96).

**Figure 11: Sample MSU Cost Table**

![Sample MSU Cost Table](image)

**Note**

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

- If you are editing cost coefficients for CMP, see “Setting up Cost Analyzer to support CMP” on page 226.

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.

Note
You can perform the following functions to all of the cost coefficients in the cost table:

■ Click Reset to defaults to reset the values of the selected Price Metric to zero.

■ Specify a percentage and click Apply to increase or decrease the cost coefficients by a percentage.

7 If you want to edit the cost table for another Pricing Metric Type, repeat Step 4 on page 96 through Step 6 on page 97.

8 When finished editing cost coefficients, click Accept.

Cost Analyzer applies your changes and closes the dialog.

9 Repeat Step 3 on page 25 through Step 8 on page 97 for each MLC product you want to edit.

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

Copying pricing metrics

Use the following procedure to copy pricing metrics for an MLC product or priced feature and paste them to another product or priced feature that shares the same cost-coefficient values.
After you edit cost coefficients for a particular product or price feature, this procedure facilitates making the same changes for other products or features.

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

2. From the Administration Tools dialog, click **MSU Cost Editor**.
   The MSU Cost Editor displays the active cost table.

3. In the MSU Cost Editor, hover over the **Edit** link of the product or priced feature whose pricing metrics you want to copy and the **copy/paste/clear** buttons display as shown in the following figure:

   ![Edit Link Display](image1.png)

4. Click the copy button ⌨️.
   The Copy Cost Coefficients dialog displays as shown in the following figure:

   ![Copy Cost Coefficients Dialog](image2.png)

5. In the dialog, select one or more pricing metrics to copy, and then click **Copy Selected**.
   The MSU Cost Editor saves the pricing metrics to the clipboard.

6. Hover over the **Edit** link of the product or priced feature where you want to copy the pricing metrics and then click the paste icon 📋.
Tip
When you hover over the Edit link, a tooltip list displays the pricing metrics that have been copied to the clipboard and can be pasted to the selected product.

The MSU Cost Editor copies the pricing metrics to the selected product or priced feature.

Clearing pricing metrics

You can clear the edited pricing metrics from any product or priced feature to remove them from the cost coefficient tables.

1. From the console, click Administration Tools.

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

   The MSU Cost Editor displays the active cost table.

3. In the MSU Cost Editor, hover over the Edit link of the product or priced feature whose pricing metrics you want to copy to display the copy/paste/clear icons as shown in the following figure:

   ![Cost Coefficients Table](image)

4. Click the clear icon.

   The Clear Cost Coefficients dialog displays as shown in the following figure:

   ![Clear Cost Coefficients Dialog](image)
5. In the dialog, select one or more pricing metrics to clear, click **Clear Selected** and when prompted confirm that you want to clear the selected pricing metrics by clicking **Yes**.

The MSU Cost Editor clears the selected pricing metrics from the cost coefficients tables.

### 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 88.

---

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 19 on page 100:

---

**Table 19: Workload License Charge types**

<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>
</tbody>
</table>

---

100  *BMC Cost Analyzer for zEnterprise User Guide*
**Workload License Charge** | **Description**
--- | ---
EWLC | Entry Workload License Charges
FWLC | Flat Workload License Charges
VWLC | Variable Workload License Charges
ZNALC | System z New Application License Charges
CMLC | Country Multiplex License Charges

*Note:* When changing to CMLC, you need to set the **CMLC MSU Base** and **CMLC Base Factor** values. For more information, see “Setting up Cost Analyzer to support CMP” on page 226.

MzNALC | Multiplex System z New Application License Charges

*Note:* After you enable Country Multiplex Pricing, MzNALC should be specified as the pricing metric for any CPC that uses zNALC.

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 100 through Step 4 on page 100 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.

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:
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 edit.

The Edit Single Version Charge dialog displays as shown in the following figure:

The dialog lists the Current product and provides a drop-down list of MLC product versions that can be selected.

c In the dialog, use the drop-down list of MLC product versions to select the old version of the product covered by the SVC agreement, then click Accept.

The MSU editor creates a link between the associated versions of the MLC products and populates the link in the Single Version Charge column. The link identifies the Product IDs of the associated versions and specifies which version is linked.

When necessary, you can break the links established between MLC Products by clicking Clear in the Single Version Charge column and confirming that you want to remove the link when prompted.

d Repeat Step 3.a on page 102 through Step 3.c on page 102 for each product that has an SVC agreement.
4 Repeat Step 3 on page 101 through Step 3.c on page 102 for each MLC product you want to edit.

5 When finished editing, click Save Changes.

Cost Analyzer retrieves SVC data from the cost table and applies that data to the cost model when you generate a report.

**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 Reporting Locale Settings.

4 In the Reporting Locale Settings dialog, select the locale that you want from the list of Available Locales.

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.

**Managing multiple cost tables**

Use the following procedures to create and manage multiple cost tables.

The following list describes the features of working with multiple cost tables:

- Cost Analyzer has one active cost table. Whenever you open the MSU Editor, the active cost table displays and is indicated by the green check mark (✔).
After the MSU Editor is open, you can:

— Open an existing cost table
— Create a new cost table
— Delete a cost table

When you create a new cost table or open a cost table that is not active, the MSU Editor provides the **Set as "active" cost table** button, which can be used to set this cost table as active. For more information, see “Setting a cost table as active” on page 106.

For any existing cost table, you can create a clone of the cost table and rename it.

**Note**

When Cost Analyzer builds the cost models, only the active cost table is referenced to calculate the cost data.

For more information, see “Overview of the MSU Cost Editor” on page 91.

To create a new cost table

1. From the MSU Editor, click **Create Cost Table**.

   The Create Cost Table dialog opens as shown in Figure 12 on page 104:

   **Figure 12: Sample Create Cost Table dialog**

   ![Create Cost Table dialog](image)

2. In the **Cost Table Name** field, enter a unique name.
3 (optional) In the Description field, enter a description that pertains to the cost table.

4 From the list of Cost Tables, select a cost table template based on the following options:
   ■ Select New Cost Table to create a cost table that lists all MLC Products, but does not contain any cost coefficients.
   ■ Select an existing Cost Table to create a clone of that cost table, which can then be modified as needed.

5 Click Create Cost Table.

Cost Analyzer creates and displays the cost table in the MSU Cost Editor. You can modify the cost table and perform actions as described in “Using the MSU Cost Editor” on page 95.

To open an existing Cost Table

1 From the MSU Cost Editor, click Open a Cost Table.

   The Open Cost Table dialog is displayed, listing the existing cost tables.

2 From the list of existing Cost Tables, select the Cost Table you want to open and then click Open Cost Table.

   Cost Analyzer opens and displays the cost table in the MSU Cost Editor.

To delete a Cost Table

1 From the MSU Cost Editor, click Delete Cost Tables.

   The Delete Cost Tables dialog is displayed, listing the existing cost tables.

   Note

   The following Cost Tables cannot be deleted and are not listed in the dialog:

   ■ The active Cost Table.
   ■ Any Cost Table referenced by a cost model of a historical month.

2 From the list of existing Cost Tables, select one or more Cost Tables that you want to delete.
3 Click **Delete Cost Table** and when prompted confirm that you want to delete the cost tables.

Cost Analyzer deletes the selected cost tables and closes the dialog.

---

**Note**

Deleting a cost table cannot be undone.

---

### Setting a cost table as active

Use the following procedure to set a cost table as active.

When working with multiple cost tables, one table is always required to be set as the active cost table. When the daily Model Builder Task runs, the active cost table is used to build the cost model. Whenever required, you can change which cost table is set as the active cost table.

Whenever you open the MSU Cost Editor, the currently active cost table is automatically displayed.

**To set a cost table as active**

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

2. From the Administration Tools dialog, click **MSU Cost Editor**.
   
   The MSU Cost Editor displays the active cost table.

3. Click **Open Cost Table**.
   
   The **Open Cost Table** dialog displays a list of available Cost Tables as shown in the following figure.
A green check mark indicates which cost table is currently active.

4 From the list, select the Cost Table you want to set as active, then click **Open Cost Table**.

The MSU Cost Editor opens the selected cost table.

5 Click **Set as "active" Cost Table**.

6 Click **Save Changes**.

The MSU Cost Editor saves your changes and closes. The following results apply after changing the active cost table:

- Cost Analyzer uses the newly active cost table in your future Model Builder Tasks to build the cost models.

- When you open the MSU Cost Editor, the newly active cost table is displayed.

**Note**
Changing the active Cost table does not affect previously built cost models. If you want to use the newly active cost table to calculate your previously built cost models, you need to rebuild them.
**Updating the Product Table**

Use the following procedure to update the Product Table used by the MSU Cost Editor to display the list of MLC Products.

*Note*

Product Table Updates are only available if this feature has been enabled by the Administrator. For more information, contact customer support.

**To update the Product Table**

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

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

   The MSU Cost Editor displays the active cost table.

3. Click **Product Table Update Available**.

   The Update Product Table dialog opens as shown in the following sample figure.

   ![Update Product Table Dialog](image)

4. Click **Install Updates** and, when prompted to confirm the installation click **Yes**.

   Cost Analyzer downloads and installs the new Product Table. Then, the MSU Cost Editor reloads and displays the updated cost table.
Modifying cost coefficients by a specific percentage

Use the following procedure to modify the cost coefficients for IBM Groups or pricing metrics by a specific percentage.

**Note**
When editing a cost table, you can also modify the cost coefficients of a particular Pricing Metric Type by a specific percentage. For more information, see “Using the MSU Cost Editor” on page 95.

1. From the console, click Administration Tools.
2. From the Administration Tools dialog, click MSU Cost Editor.
3. Open the cost table whose cost coefficients you want to modify, and then click Modify Cost Coefficients.
4. In the Modify Cost Coefficients dialog, select the IBM Group or pricing metrics that you want to modify, and set the percentage of the change that you want to apply.
5. Click Apply Changes, and click Yes when prompted to confirm the changes.
6. When finished, click Save Changes.

Integrating Cost Analyzer with Compuware Strobe and iStrobe products

Cost Analyzer can be configured to launch the Compuware iStrobe web-based application from any Monthly Summary Report to obtain additional metrics about a selected LPAR and time range. The iStrobe metrics offer additional details about CPU consumption and factors contributing to the R4HA peak.

The integration is enabled by the iStrobe Configuration tool, which can be accessed in the Administration Tools. Once the configuration is complete, Cost Analyzer becomes iStrobe Aware and provides features and functions in the Monthly Reporting tool to launch the iStrobe web-based application and access its information about a specific LPAR during a selected time range.

**Compuware Strobe and iStrobe requirements**

In order to utilize the integration, you must have the following Compuware Strobe and iStrobe products installed:
- Strobe V5.2 with PTFs SBC107A and SBC 512A
- iStrobe V16.3

**Configuring the Compuware iStrobe web location**

Use the following procedure to configure the Compuware iStrobe web location.

**Before you begin**

You will need to know the server and port number that are associated with Cost Analyzer at your site.

The default URL for the iStrobe location is `http://server:port/istrobe/jsp/BMC/analysis.jsp`. However, your full URL can differ if your site did not use default folders for iStrobe installation.

**To configure the Compuware iStrobe web location**

1. From the Cost Analyzer console, click Administration Tools.
2. In the Administration Tools window, click iStrobe Configuration Tool.
   
   The iStrobe Configuration Tool dialog opens.

3. Enter the iStrobe web location as follows, replacing the variables with your site’s server name and port number:


4. (optional) Click Verify to confirm that the URL has been entered correctly.

   Your browser attempts to connect to the web location. If successful, the iStrobe application opens, indicating the configuration is verified and correct.
If unsuccessful, confirm that you entered the URL correctly and that you used the correct server name and port number.

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

Cost Analyzer saves the URL and closes the iStrobe Configuration Tool.
Generating cost-analysis reports

This chapter explains how to use the Monthly Reporting tool and the Software Contract Reporting tool.

Creating and working with multiple views of reports

Use the following procedure to create a reporting view for viewing multiple reports at the same time. This procedure applies for both the Software Contract Reporting tool and the Monthly Reporting tool.

For more information, view the Quick Course Multi-month Software Contract Reporting. You must have a BMC Support ID to view the Quick Course.

To create a reporting view

1. At the bottom of either the Software Contract Reporting tool or the Monthly Reporting tool, click Create Reporting View.

   A reporting View tab opens at the bottom of the tool.

2. Use the selection panel to generate a Software Contract Summary Report or a Monthly Summary Report.

   For more information, see “Working with the Software Contract Reporting selection panel” on page 146 or “Working with the Monthly Reporting selection panel” on page 116.

3. Repeat Step 1 on page 24 and Step 2 on page 25 for each report you want to view.

4. When finished with a view, click the x to close the view.
Working with the Monthly Reporting tool

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

Monthly Reporting tool overview

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

Note

By using the view tabs, you can add views that allow you to generate multiple reports and give you the ability to toggle between the views. For more information see, “Creating and working with multiple views of reports” on page 113.

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

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

Figure 13: Sample Monthly Summary Report selection panel

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

For more information, see “Working with the Monthly Reporting selection panel” on page 116.
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.

Analysis of 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 R4HA MSU Utilizations by MLC product.
- Identify the date and time of the first and second peaks of R4HA 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

Report views

The report provides dynamic and interactive data views of:

- LPAR R4HA MSU Utilization curves
- Baseline software license costs correlated with workload utilization and R4HA KPIs
- Charts that compare workload MSU Utilization across LPARs
- Charts that compare average hourly MSU Utilization to the R4HA
- Bar charts and funnel charts that break down the cost information into separate segments
- MSU Utilizations for Priced Features of MLC products
- Workload reports that breakdown the contribution of batch jobs to the R4HA
Interactive charts

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 R4HA information correlated with business activity and license costs, you can perform an informed analysis of:

- System activity
- The impact of peak periods (or exceptions) on software costs

Country Multiplex Pricing

If your enterprise uses Country Multiplex Pricing, the Monthly Summary Report displays data for MLC Product families and for individual MLC Product versions. For more information, see “Managing Country Multiplex Pricing” on page 225.

iStrobe integration

Once you have configured the iStrobe integration, you can launch the Compuware iStrobe web-based application from a Monthly Summary Report to obtain additional metrics about a selected LPAR and time range.

The launch pad is available from the Workload Views level in any Monthly Summary Report.

Working with the Monthly Reporting selection panel

From the Monthly Reporting selection panel, you can generate a Monthly Summary Report to view on your screen or to export as a PDF.

To set up and generate a Monthly Summary Report

1. From the Cost Analyzer console, click the Monthly Reporting tab.

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

3. From the selection panel, select the usage month and year of the cost model from the list indicated on the calender.
You can only select a usage month if there is an available cost model that has been built for that month. If a cost model is not available for a particular month, the month on the calendar is greyed-out and cannot be selected.

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

**Note**
If Sysplex pricing is enabled in the CPC configuration editor, you need to select all the CPCs of a given PricingPlex in order to generate a report.

5 Select the output type:

- To view the report on your screen, click the **Screen Report** button.
  

  **Note**
  You can generate multiple reports for viewing by clicking on the **Create Reporting View** button ( ) to add a view. After the view is added, repeat Step 3 on page 116 through Step 5 on page 117.

- To view the report as a PDF, click the **PDF Report** button.
  
  A dialog opens and prompts you to click **Save As** to save the PDF to your local computer or click **Open** to view the PDF in a separate window of your browser.

### 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.

The top of each report identifies:

- Usage Month – The month when the MSU utilizations occurred.
- Billing Month – The month that IBM invoices for payment.
- Monthly MLC Total – The total cost of the MLC charges for the month.

By clicking on the **More** link, you can access additional information that includes:

- Whether sysplex or CMP pricing applies to the report.
The cost table that applies to the report.

Additional cost factors that apply to the report.

Figure 14 on page 118 shows a sample Monthly Summary Report.

Figure 14: Sample Monthly Summary Report

Table 20 on page 118 describes the data that each column of the report contains.

Table 20: Data in the Monthly Summary Report

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
</table>
| Product                       | MLC 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 (if one exists), is indicated in parentheses under the CPC name.                                               |
| R4HA MSU Utilization          | Preview chart of the aggregated R4HA 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 119. |
<p>| R4HA First Peak Cost          | Monthly license cost determined by the First Peak R4HA value |</p>
<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Total Cost</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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.</td>
</tr>
<tr>
<td>Average MLC/MSU</td>
<td>Total product cost on a particular CPC divided by the First Peak R4HA value.</td>
</tr>
<tr>
<td>Incremental MLC/MSU</td>
<td>Cost of one additional MSU for this product on this CPC. <strong>Note:</strong> Cost tables are not linear, so the cost of an additional MSU depends on the current First Peak R4HA value.</td>
</tr>
<tr>
<td>R4HA First peak (MSU)</td>
<td>R4HA value in MSUs at the first peak. To the right of the R4HA value, the number in parentheses indicates the number of occurrences of the same value during the reporting period.</td>
</tr>
<tr>
<td>R4HA First Peak Date</td>
<td>Date and time the first peak occurred.</td>
</tr>
<tr>
<td>R4HA Second Peak (MSU)</td>
<td>R4HA value in MSUs at the second peak. To the right of the R4HA value, the number in parentheses indicates the number of occurrences of the same value during the reporting period. <strong>Note:</strong> The R4HA 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.</td>
</tr>
<tr>
<td>R4HA Second Peak Date</td>
<td>Date and time when the second peak occurred.</td>
</tr>
</tbody>
</table>

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

**Chart statistics display**

By hovering over any R4HA MSU Utilization chart in the list, you can display chart statistics that provide more details about the chart data. Table 21 on page 120 describes the chart statistics.
Table 21: Chart statistics for the Monthly Summary Report

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum R4HA MSU</td>
<td>Minimum MSU value for the given month</td>
</tr>
<tr>
<td>Maximum R4HA MSU</td>
<td>Maximum MSU value (peak value) for the given month</td>
</tr>
<tr>
<td>Average R4HA MSU</td>
<td>Average MSU value for the given month</td>
</tr>
<tr>
<td>Spread R4HA MSU</td>
<td>Difference between the Maximum and Minimum R4HA 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 4RHA linear trend projection is trending</td>
</tr>
<tr>
<td></td>
<td>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 R4HA MSU Utilizations.

**Note**

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

Table 22 on page 120 lists the columns that contain data hyperlinks and describes the details that you can access:

Table 22: 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 R4HA MSU Utilization data</td>
</tr>
<tr>
<td>CPC Name (PricingPlex Name)</td>
<td>Any CPC name in the column</td>
<td>Hyperlinks to CPC details that list all MLC products running on the CPC and their relevant R4HA MSU Utilization data</td>
</tr>
</tbody>
</table>

**Note:** Although these products are running on the same CPC, the R4HA charts and corresponding peak values can be different if the products are running on different LPARs or during different intervals.
Table 23: Icons for the Monthly Summary Report

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔖</td>
<td>Displays or hides the Monthly 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.

Data display controls

Table 23 on page 121 describes the Monthly Summary Report icons that you can use to adjust the view and to access the Monthly Reporting tool panel.

Table 23: Icons for the Monthly Summary Report

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔖</td>
<td>Displays or hides the Monthly 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>
Using the drill-down levels, you can analyze:

- A specific CPC to compare the R4HA MSU Utilizations for each MLC Product
  For more information, see “CPC level” on page 123.

- A particular MLC Product to compare the R4HA MSU Utilizations for each LPAR
  on which the MLC product is active
  For more information, see “MLC Product level” on page 123.

Using the hyperlinks available at each level, you can:

- Compare average hourly MSUs to the R4HA
  For more information, see “Comparing average hourly MSUs to the R4HA” on
  page 129.

- Compare MSU Utilizations of workloads operating on LPARs
  For more information, see “Viewing aggregated workloads across LPARs” on
  page 130.

- Generate and view Job/STC Reports that show details about the 50 most active
  batch jobs.
  For more information, see Viewing Job/STC Reports for workloads on page 133
  and Working with the Job/STC Report on page 136.
**CPC level**

Figure 15 on page 123 shows a sample of a Monthly Summary Report’s CPC level that lists the MLC Products running under a particular CPC and the R4HA MSU Utilization data.

**Figure 15: 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 22 on page 120:

---

**Note**

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

---

**Table 24: Hyperlinks of the CPC level**

<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4HA MSU Utilization</td>
<td>Any chart in the column</td>
<td>Hyperlinks to the R4HA 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 16 on page 124 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
R4HA 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 16: Sample Monthly Summary Report MLC Product level**

Table 25: MLC Product level column header descriptions

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4HA MSU Utilization Weight</td>
<td>Percentage this LPAR contributed to the CPC First Peak R4HA value.</td>
</tr>
<tr>
<td>LPAR MSU at CPC First Peak</td>
<td>Value is determined by the sum of R4HA of the LPARs on which this MLC product was running during this interval.</td>
</tr>
</tbody>
</table>

Table 26 on page 124 lists the columns that contain data hyperlinks and describes the details of what you can access by using the link:

Table 26: Hyperlinks of the MLC Product level

<table>
<thead>
<tr>
<th>Data Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4HA 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 R4HA 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 R4HA First Peak value for the context CPC and MLC Product by individual LPARs</td>
</tr>
<tr>
<td>Data Column</td>
<td>Hyperlink</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Aggregated Workload Views</td>
<td>Any workload link in the list</td>
<td>Hyperlinks to the Aggregated Workload Viewer where you can compare workloads across LPARs. For more information, see Viewing aggregated workloads across LPARs on page 130</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 23 on page 121.

**Table 27: 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="Go Back" /></td>
<td>Navigates back to the previous data level</td>
</tr>
<tr>
<td><img src="image" alt="Go 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 R4HA MSU Utilization in the charting area</td>
</tr>
</tbody>
</table>

Table 28 on page 125 describes the charting area icons.

**Table 28: Icons for charting area**

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Data Grid View" /></td>
<td>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.</td>
</tr>
<tr>
<td><img src="image" alt="Chart Editor" /></td>
<td>Opens a separate window that displays the chart</td>
</tr>
<tr>
<td><img src="image" alt="Export Image" /></td>
<td>Exports the chart as an image that can be saved on your local computer</td>
</tr>
</tbody>
</table>

**Working with the charting area**

You can use the charting area to compare charts of R4HA 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 17 on page 126 and
Figure 18 on page 126 show samples of CPC and MLC Product levels with charts in the charting area.

Figure 17: Sample CPC level with charts in charting area

![Figure 17: Sample CPC level with charts in charting area](image)

Figure 18: Sample MLC Product level with charts in charting area

![Figure 18: Sample MLC Product level with charts in charting area](image)

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, select the box 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 R4HA MSU Utilization chart for the selected MLC product or LPAR.

   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 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 R4HA area charts, a grayed out total CPC R4HA 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 and bar 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 R4HA 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 19 on page 128).

**Figure 19: 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 (_nums) to export the chart.

3  *(optional)* Click the **Bar Chart** tab to view the data in a bar chart form.
A window displays the funnel chart (Figure 20 on page 129).

Figure 20: Sample bar chart

Comparing average hourly MSUs to the R4HA

For any MLC Product running on a particular LPAR, you can compare the average hourly MSUs to the R4HA.

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 R4HA MSU Utilization preview chart.
- From the CPC level, find the MLC Product from the list and click the corresponding R4HA MSU Utilization preview chart.

2 Find the LPAR listed in the LPAR Name column, and click its R4HA MSU Utilization preview chart.
A window displays a chart that compares the average hourly MSUs to the R4HA MSU Utilization (Figure 21 on page 130).

Figure 21: Sample chart comparing average hourly MSUs to the R4HA

With this chart, you can perform the same interactive actions as described in “Drill-down levels” on page 121.

You can also click the Visibility indicators (2) 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.

3 (optional) To export the chart as an image or export the data to a CSV file, perform one of the following actions:

- Click the Export chart as image button (2) to export the chart.
- Click the Export To CSV button (3) to export the data as a CSV file.

A dialog opens prompting you to save the file or image on your local computer.

Viewing aggregated workloads across LPARs

Use the following procedure to compare charts and MSU Utilization of workloads across LPARs.

For this procedure, you drill-down to the Workload Views level. The Workload Reports are accessible from any MLC product level within a Monthly Summary Report.
For more information, see Drill-down levels and data hyperlinks. Figure 22 on page 131 shows a sample of the Workload Views level:

Figure 22: Sample Workload Views level

<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 Adam</td>
</tr>
<tr>
<td>2</td>
<td>iStrobe Aware indicator</td>
<td>Indicates that Cost Analyzer is configured with Compuware's iStrobe web-based application.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The configuration provides features and functions in the Monthly Reporting tool to launch the iStrobe web-based application. For more information, see “Configuring the Compuware iStrobe web location” on page 110 and “Launching iStrobe for a specific LPAR” on page 140.</td>
</tr>
<tr>
<td>3</td>
<td>List of LPARs</td>
<td>LPARs contributing to the workloads</td>
</tr>
<tr>
<td>4</td>
<td>List of Workloads</td>
<td>Name of the workloads categorized under the Workload type</td>
</tr>
<tr>
<td>5</td>
<td>Job Details Reports</td>
<td>Links to view Job/STC Item reports for all workloads or for selected workloads</td>
</tr>
<tr>
<td>6</td>
<td>Tabs of Workload types</td>
<td>Tabs to access the Workload types available for viewing in the Aggregated (by LPARs) Workload Viewer</td>
</tr>
<tr>
<td>7</td>
<td>Data Grid View</td>
<td>Link that opens the Data Grid View window that contains a tabular view of the charting area data</td>
</tr>
<tr>
<td>8</td>
<td>Chart view selectors</td>
<td>Buttons that change the view of the charts in the charting area</td>
</tr>
<tr>
<td>9</td>
<td>Export as image</td>
<td>Button that exports the chart as an image that can be saved on your local computer</td>
</tr>
</tbody>
</table>
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.

**To drill-down to the Workload Views level 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 R4HA MSU Utilization preview chart.
   - From the CPC level, find the MLC product from the list and click the corresponding R4HA MSU Utilization preview chart.

2. From the list of Workload Reports, click the workload that you want to view.

   The Workload Views level for the MLC product is displayed (Figure 22 on page 131).

3. From the list of workloads, select the workloads to add to the charting area by selecting the box 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
   - R4HA 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 121.

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.

**Where to go from here**

You can use the Job Details Report links to view reports about the top 50 jobs that contributed to the peak interval. For more information, see “Viewing Job/STC Reports for workloads” on page 133.

**Viewing Job/STC Reports for workloads**

When viewing aggregated workloads across LPARs for any MLC product, you can generate and view Job/STC Reports that show details about the 50 most active jobs contributing to the peak R4HA.

After making a selection of LPARs and workloads, Cost Analyzer generates the Job/STC Report. The report displays the contribution of each job to the R4HA peak in each of the 4 hours that comprise the peak interval.

---

**Note**

Job/STC Reports are accessible from the Workloads Views drill-down level. For more information, see “Viewing aggregated workloads across LPARs” on page 130.

---

**To view Job/STC Reports for workloads**

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 R4HA MSU Utilization preview chart.

   - From the CPC level, find the MLC product from the list and click the corresponding R4HA MSU Utilization preview chart.

2. From the list of Workload Reports, click the workload type that you want to view.
The Workload Views level for the MLC product is displayed (Figure 23 on page 134).

Figure 23: Sample Workload Views level

3 From the list of LPARs, select the LPAR or LPARs that you want to include in the Job/STC Report.

The Job/STC Report displays a list of only the top 50 jobs that contributed to the R4HA peak. Thus, the list of the top 50 jobs will vary depending on your selection of LPARs. As you add LPARs to be included in the report, you subsequently add the jobs on these LPARs to the set of jobs that will be evaluated for inclusion in the report.

After you have made your selection of LPARs to evaluate in the report, this set of jobs is then analyzed for their contribution to the peak R4HA and for inclusion in the list. You can widen or narrow the set of jobs to be included in the report by your selection of LPARs.

4 Click Refresh Workload list.

Each time you change the selection of LPARs, you are changing the perspective of the Workload View. Whenever this perspective is changed, you must refresh the Workload List so Cost Analyzer can recalculate and display the chart based on your new selection of LPARs. Furthermore, the available workloads might change, depending on which LPARs have been selected.

5 Perform one of the following actions:

■ To view a Job/STC Report for all workloads, click View Job/STC Report for all workloads.
To view a report of selected workloads, select the workloads to include in the report from the list, and then click **View Job/STC Report for selected workloads**.

Similar to the selection of LPARs, the selection of workloads includes all the jobs contained in the selected workloads that run on the selected LPARs. The subsequent list of the top 50 jobs that contributed to the peak R4HA will vary depending on your selections.

**Tip**
When you select a workload, its MSU utilization is added to the charting area. By comparing this workload’s contribution to the peak utilization for the entire workload (indicated by the red dot), you can determine if this workload contributed significant MSU utilization to the peak R4HA.

When you have identified the workloads that contributed to the peak, by viewing a report of the top 50 jobs that consumed this workload utilization, you can identify the jobs that contributed to the peak and were a major factor in the MLC product cost.

After you click on the desired link, Cost Analyzer generates and displays the Job/STC Report based on your selections.

**Figure 24: Sample Job/STC Report**

6 When finished examining the report, click **Go Back** to return to the Workloads View.

**Where to go from here**

The Job/STC Report provides interactive features to:

- Change the interval to display metrics based on any 4-hour interval that occurred in the month
- Filter the report to refine the job list results
- Export the report to a CSV file
Sort the column data

For more information, see “Working with the Job/STC Report” on page 136.

**Working with the Job/STC Report**

The Job/STC Report shows the contribution of each job to the R4HA peak in each of the 4 hours that comprise the peak interval. Using the interactive features of the report, you can:

- Sort the column data to reorganize the list based on the column criteria
- Filter the list to further refine the list of jobs
- Change the interval to recalculate the report and display the metrics of any 4-hour period

Figure 25 on page 136 shows a sample Job/STC Report.

**Figure 25: Sample Job/STC Report**

Table 29 on page 136 describes the data that each column of the report contains.

**Table 29: Job/STC Report columns**

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job/STC Name</td>
<td>Job name and its Job Entry System (JES) number</td>
</tr>
<tr>
<td>LPAR Name</td>
<td>LPAR where the job is processed</td>
</tr>
<tr>
<td>Workload Name</td>
<td>Name of the workload that contains the job</td>
</tr>
</tbody>
</table>
This section of the report provides columns that list the date and times of each of the four hours that comprise the peak interval. For each job in the list, the column data displays the individual MSU contribution to the peak R4HA.

The blue segment of each hour provides a visual aide to identify the relative value of the metric. The size of the blue segment is based on the highest hourly value in the list. The blue segment for each hour is a graphic representation of the ratio between the hourly value for the job and the highest value.

**Example:** For example, if the highest value for any hour in the list is 10, then any hour where the value is 5 will display a half-blue segment. Any hour where the value is 2.5 will display a quarter-blue segment and so on.

The four individual hours that are displayed represent the hours that were used to calculate the R4HA peak. In general for all metrics, the peak hour column is the last date and time. The other 3 hours are the hours that preceded the peak hour and thus contributed to the calculation of the R4HA.

**Note:** The metrics that are displayed in the columns can be varied. See Table 30 on page 137 for a description of the metrics.

For each of the 4 hours that comprise the peak interval, you can select which metrics you want to display in the report. The following table describes the metrics that can be displayed.

**Table 30: Job/STC Report metrics**

<table>
<thead>
<tr>
<th>Metric type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak R4HA Contribution (MSUs)</td>
<td>Number of Millions of Service Units (MSUs) that the activity of the job in the current hour contributed to peak R4HA</td>
</tr>
<tr>
<td></td>
<td>This value is calculated as:</td>
</tr>
<tr>
<td></td>
<td>[0.25 \times (\text{MSUs used by the Job in the current hour})]</td>
</tr>
<tr>
<td>CPU Seconds</td>
<td>General Purpose Processor seconds used by the Job in the current hour</td>
</tr>
<tr>
<td>MSU Used</td>
<td>General Purpose Processor MSUs used by the Job during the current hour</td>
</tr>
<tr>
<td></td>
<td>This value is calculated as:</td>
</tr>
<tr>
<td></td>
<td>[(\text{CPU second used}) \times (\text{Software Service Units coefficient}) / 1000000]</td>
</tr>
<tr>
<td>Metric type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Cost Contribution   | Contribution of Job’s activity in the current hour to the cost of all products that have Peak R4HA in the selected interval.  
  This value is calculated as:  
  \[(\text{Average Cost per MSU of all such Products}) \times \text{(Job Peak R4HA contribution)}\] |
| ZIIP Eligible seconds | CPU seconds used on the General Purpose Processor that are eligible to be used on zIIP processor. |
| ZIIP seconds        | zIIP seconds used by the Job in the current hour.                            |

**Note**

Hovering over any metric in the list displays the corresponding value for each of the metric types.

The report also provides a visual cue to indicate whether a job was processing during the hour before or after the 4-hour peak interval. A forward job-in-progress arrow (») after a metric indicates that the job continued into the next hour. Similarly, a backward job-in-progress arrow («) before a metric indicates that the job was processing in the previous hour.

The report has interactive and dynamic features to assist in your analysis of the report data. Use the following procedures to examine the report.

**To sort the report data by the column values**

1. Click any column header.

   Cost Analyzer sorts the data based on the selected column and displays the results.

   The column header displays (↑) to indicate that the report is sorted by this column's values.

**To filter to the LPARs or Workloads in the report**

1. Click Filter Workloads.

   The Filter Workloads dialog displays as shown in the following figure:
2 In the Filter Workloads dialog, deselect the LPARs or workloads that you want to remove from the report display.

3 Click **Apply Filter**.

Cost Analyzer applies the selected filter and displays the results in the report.

**To change the interval of the report**

The Job/STC Report uses the peak interval as a default and displays data based on the hour when the peak value occurred and the 3 hours that preceded it. You can change this interval and recalculate the report to display metrics from any 4-hour period that occurred in the month.

1 From the Job/STC Report, click **Change Interval**.

The report displays a chart of the MSU utilization activity for the month and indicates the peak with a red dot as shown in the following sample figure:
2 Hover over the chart and click the date and hour you want to set as the final hour of the interval.

Cost Analyzer marks the selected hour with an X, recalculates the metrics based on the selected interval, and then displays the results.

3 When finished viewing the results of the interval change, click **Close Chart**.

**Note**
To restore the report to the original results for the peak interval, you need to repeat this procedure and in Step 2 on page 25 select the peak hour in the chart.

To export the report to a CSV file

1 From the Job/STC Report, click **Export to CSV**.

A dialog opens prompting you to save the report as a CSV file on your local computer.

**Note**
The exported report only contains data for the metric type that is currently displayed. You need to export a separate CSV file for every metric type you want to examine in a CSV file. For more information, see Table 30 on page 137.

2 Name the CSV file, and then click **Save**.

**Launching iStrobe for a specific LPAR**

From a Workload View, use the following procedure to launch the iStrobe application and get more information about a specific LPAR and time range.
In order to launch the Compuware iStrobe application from Cost Analyzer, you need to select a Workload View and then select the LPAR and time range that you want to examine.

**To launch iStrobe for a specific LPAR**

1. Using the Monthly Reporting tool, select a usage month and year, and then generate a screen report.

2. Using the hyperlinks, navigate to the MLC product level of the product that you want to analyze.

   Specifically, from either the Monthly Summary Report or the CPC level, find the MLC product from the list and click the corresponding R4HA MSU Utilization preview chart.

3. From the list of Workload Reports, click the workload type that you want to view.

   The Workload Views level for the MLC product is displayed.

4. In the list of LPARs, click any LPAR name.

   Cost Analyzer enables the Compuware iStrobe Launch Pad and displays the date-range selector in the charting area.
5 Click and drag the launch pad's date-range selection handles (shown in Figure 26 on page 142) as needed.

Figure 26: Compuware iStrobe Launch Pad in a sample Cost Analyzer Workload View

You can use your mouse to widen or narrow the date-range selector, which enables you to highlight a section of the chart that represents the range of time you want to examine within iStrobe. The left edge of the range sets the range's starting date and time, and the right edge sets the ending date and time.

You can also click the date-range selector and drag it over the section of the chart that you want to highlight. For your convenience, when you click the date-range selector, a tooltip displays the time range to assist you in making your selection.

If you need to adjust the view of the chart, click the edge of the scroll bar at the bottom of the charting area and zoom the chart as needed.

6 Click the Launch button.

7 In the Confirmation dialog, confirm your selection by clicking Yes.
Cost Analyzer opens a new window in your browser, where iStrobe displays data for the selected LPAR and time range.

**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 R4HA 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 179.

Working with the Software Contract Reporting tool

This section describes how to use the Software Contract Reporting tool to generate Software Contract Summary Reports and how to utilize the report's quadrants and capabilities in your cost analysis.

Software Contract Reporting tool overview

You can use the Software Contract Reporting tool to generate and analyze MLC Software Contract summary reports.

*Note*

By utilizing the reporting view tabs at the bottom of the Software Contract Reporting tool, you can generate MLC Contract summary reports for multiple MLC Software Contracts. For more information see, “Creating and working with multiple views of reports” on page 113.
The Software Contract Reporting tool provides a selection panel where you can browse existing MLC Software Contracts and generate MLC Software Contract Summary Reports.

**Figure 27: Sample Software Contract Summary Report selection panel**

![Sample Software Contract Summary Report selection panel](image)

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

For more information, see “Working with the Software Contract Reporting selection panel” on page 146.

**Software Contract Summary Report**

The Software Contract Summary Report and its interactive features provide you with the ability to compare charts of current and projected spending by billing month. Both historical and projected monthly data can also be compared against the monthly budgeted allocations.

The report contains quadrants of specific charts as identified in Table 31 on page 145.

**Table 31: Software Contract Summary Report quadrants**

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>For more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Summary</td>
<td>“Contract Summary quadrant” on page 152</td>
</tr>
<tr>
<td>MLC Cost by Billing Month</td>
<td>“MLC Cost By Billing Month quadrant” on page 167</td>
</tr>
<tr>
<td>Cost Efficiency Rating</td>
<td>“Cost Efficiency Rating quadrant” on page 161</td>
</tr>
<tr>
<td>Cost Variance by Billing Month</td>
<td>“Cost Variance by Billing Month quadrant” on page 173</td>
</tr>
</tbody>
</table>

The quadrant charts each have unique drill-down levels that provide you with the ability to view a breakdown of:
Software cost by MLC product

Peak R4HA costs by CPCs

Cumulative aggregated MLC costs by billing month

Workload activity views of individual MLC products that detail:

— Current R4HA usage on CPCs and across LPARs
— Changes in both monthly cost and R4HA over previous months

For any month of the duration of the contract, the report also provides you with the ability to open and view:

■ The actual Monthly Summary Report for any month in the past.
■ The projected Monthly Summary Report for any month in the future.

**Working with the Software Contract Reporting selection panel**

From the Software Contract Reporting selection panel, you can generate a Software Contract Summary Report.

**To generate a Software Contract Summary Report**

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

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

3. From list of software contracts on the selection panel, select the software contract that you want for a screen report.

4. Click **Screen Report**.

**Note**

You can generate multiple reports for viewing by clicking on the **Create Reporting View** button ( ) to add a view. After the view is added, repeat Step 2 on page 116 through Step 4 on page 117.
Quick tour of the Software Contract Summary Report

The Software Contract Summary Report displays chart quadrants that serve as portals to launch detailed analysis of historical and projected MLC product spending based on your IBM contract, budget allocations, actual MSU usage and projected spending expenditures.

Using the drill-down features unique to each quadrant and hyperlinks to the Monthly Summary Report, you can view charts and data in a variety of forms for comprehensive analysis of MLC product costs for the entire duration of your contract.

Figure 28 on page 147 shows a sample Software Contract Summary Report.

Figure 28: Sample Software Contract Summary Report

Table 32 on page 147 describes the initial charts displayed in each quadrant.

Table 32: Quadrant charts

<table>
<thead>
<tr>
<th>Quadrant chart</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Summary</td>
<td>View charts that compare spending against budgeted amounts for both the current expenditures and the projected total cost of the entire term of the contract.</td>
</tr>
<tr>
<td>MLC Cost by Billing Month</td>
<td>View charts that compare actual and projected monthly costs against budget allotments.</td>
</tr>
<tr>
<td>Cost Efficiency Rating</td>
<td>View charts that compare the ratio of average monthly MSU utilizations to the monthly Peak R4HA.</td>
</tr>
<tr>
<td>Cost Variance by Billing Month</td>
<td>View charts that compare the cost difference between the budgeted allocations and the monthly spending costs for both actual and projected spending.</td>
</tr>
</tbody>
</table>

Each quadrant provides navigation buttons to access drill-down level, change chart display options, and toggle between views as described in Table 33 on page 148.
Table 33: Navigation buttons

<table>
<thead>
<tr>
<th>Navigation Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>maximize</td>
<td>Maximizes the displays of the quadrant</td>
</tr>
<tr>
<td>minimize</td>
<td>Minimizes the display of the quadrant</td>
</tr>
<tr>
<td>drilldown</td>
<td>Opens a window to access a drilldown link to a chart view unique to the quadrant</td>
</tr>
<tr>
<td>selection</td>
<td>Opens a window to access selection options for available chart views and contract period view types</td>
</tr>
<tr>
<td>toggle</td>
<td>Provides the ability to toggle between views of charts specific to that quadrant</td>
</tr>
</tbody>
</table>

Chart options provide you with the ability to select from the available chart views or change the presentation of the display of the chart by selecting a contract period view type. For more information about the unique chart views available for a quadrant, see “Quadrant charts” on page 150.

Table 34 on page 148 describes the contract period view type options.

Table 34: Contract Period View Types

<table>
<thead>
<tr>
<th>Contract Period View Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Period View</td>
<td>Displays a chart of all periods with every month of the contract arranged in sequential order</td>
</tr>
<tr>
<td>Stacked Period View</td>
<td>Displays a chart for each period of the contract with each period chart stacked in sequential order and aligned by months</td>
</tr>
<tr>
<td>Grouped Period View</td>
<td>Displays a chart of all periods grouped together by billing month For every month, the monthly data for that month from each period is displayed side-by-side.</td>
</tr>
</tbody>
</table>

For more information about the hyperlinks and drill-down links available for each quadrant, see the following topics:

- “Contract Summary quadrant” on page 152
- “MLC Cost By Billing Month quadrant” on page 167
- “Cost Efficiency Rating quadrant” on page 161
- “Cost Variance by Billing Month quadrant” on page 173
Working with chart options

Use the following procedure to change the chart period view type with the Chart Options icon (○).

To change the chart options

1. In the quadrant chart you want to change, click Chart Options icon (○).
   The Chart Options window displays.

2. Perform any of the following actions:
   - Select a Chart View from the dropdown list
     The chart is displayed in the viewer.
   - Click a Contract Period View Type.
     When you select a Contract Period View Type, the view type is changed for all charts in the quadrant. After you select the Contract Period View Type, if you click the toggle dots (●) the selected view type remains consistent for the alternative chart views.

3. Click Close to close the Chart Options window.

Working with drilldown links

Use the following procedure to display the drilldown chart with the Drilldown Links icon (○).

To display a drilldown link chart

1. In the quadrant chart, click the Drilldown Links icon (○).
   The Drilldown Links window displays.

2. Click the hyperlink to display the chart.
   Cost Analyzer generates and displays the selected hyperlink chart.

Tip

If you want to return to the Software Contract Summary Report, click Go Home (Go Home) or Go Back (Go Back).
Quadrant charts

This section describes the quadrant charts, drill-down levels, and hyperlinks of the Software Contract Summary Report that can be used for comprehensive analysis of budgeted, historical and projected spending.

Billing Month vs. Usage Month

The billing month is the month IBM invoices for payment of MLC costs that accrued from a usage month in the past. In all cases, the billing month is one month after the end of a usage month. For example, the billing month of March corresponds to the usage month of January.

The Software Contract Summary Report displays all cost data based on the billing month. It is important to note that when using the billing month in a chart to hyperlink to the Monthly Summary Report, Cost Analyzer opens the corresponding usage month in the Reporting tool.

Tip
Since the view tabs at the bottom of the Monthly Summary Reporting tool identify the Usage Month, use the banner at the top of the Monthly Summary Report to identify the Billing Month.

Source of cost data

The charts of the Software Contract Summary Report contain the following types of monthly cost data as described in Table 35 on page 150.

Table 35: Cost data types

<table>
<thead>
<tr>
<th>Cost data</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgeted</td>
<td>Budgeted amounts are based on values contained in the Software Contract and defined by the administrator.</td>
</tr>
</tbody>
</table>
Usage data are based on cost models built from Model Builder Tasks. A usage month starts on the 2nd of the current month, and ends on the 1st of the next month.

Once all cost models from a usage month have been built, they serve as the historical record of the monthly spending and are accessed by the Software Contract Reporting tool when calculating the cost data of the report.

Actual usage data for a month replaces projected spending only after all cost models have been built for the complete month.

**Note:** All cost models for a complete usage month are usually available starting from 0000 hours of the third day of the next month, but this availability cannot be assumed because it depends on whether all the data for the usage month has been processed.

Projected costs are based on historical usage, LPAR MSU usage, and Product LPAR licensing.

Projected spending extends for the duration of the contract. The projections differentiate weekly shift periodicity and distinguish day-of-month, hourly variance. Linear projections are made for each shift for each LPAR and LPAR Licensed Product, with detailed results available through the monthly cost model reporting.

**Note:** Projected spending does not contain any seasonal adjustments.

### Guide to the charts of the Software Contract Summary Report

The following topic provides a quick reference table that contains links for more information about the charts of the Software Contract Summary Report.

**Table 36 on page 151** describes the charts available in the Software Contract Summary Report quadrants.

#### Table 36: Charts of the Software Contract Summary Report

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Charts</th>
<th>For more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Summary</td>
<td>Contract Summary</td>
<td>“Contract Summary quadrant” on page 152</td>
</tr>
<tr>
<td></td>
<td>MLC Product Summary View</td>
<td>“Accessing the MLC Product Summary View” on page 155</td>
</tr>
<tr>
<td></td>
<td>MLC Product Activity View</td>
<td>“Accessing the MLC Product Activity View” on page 157</td>
</tr>
<tr>
<td>Quadrant</td>
<td>Charts</td>
<td>For more information</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>MLC Cost by Billing Month</td>
<td>MLC Cost by Billing Month</td>
<td>“Accessing the Aggregated MLC Cost by Billing Month chart” on page 169</td>
</tr>
<tr>
<td></td>
<td>Aggregated MLC Cost by Billing Month</td>
<td>“Accessing the Aggregated MLC Cost by Billing Month chart” on page 169</td>
</tr>
<tr>
<td></td>
<td>Software Cost by MLC Product</td>
<td>“Accessing and working with the Software Cost by MLC Product view” on page 171</td>
</tr>
<tr>
<td>Cost Efficiency Rating</td>
<td>Cost Efficiency Rating</td>
<td>“Cost Efficiency Rating quadrant” on page 161</td>
</tr>
<tr>
<td></td>
<td>Average MSU used to Peak R4HA (Ratio)</td>
<td>“Accessing the Average MSU Used to Peak R4HA (Ratio) chart” on page 162</td>
</tr>
<tr>
<td></td>
<td>Peak R4HA by Billing Month</td>
<td>“Accessing the Peak R4HA by Billing Month chart” on page 164</td>
</tr>
<tr>
<td></td>
<td>MLC Contract: CPC Usage</td>
<td>“Accessing and working with the MLC Product: CPC Usage chart” on page 165</td>
</tr>
<tr>
<td>Cost Variance by Billing Month</td>
<td>Cost Variance by Billing Month</td>
<td>“Cost Variance by Billing Month quadrant” on page 173</td>
</tr>
<tr>
<td></td>
<td>Cost Variance to Date</td>
<td>“Accessing the Cost Variance to Date chart” on page 175</td>
</tr>
<tr>
<td></td>
<td>Software Cost by MLC Product</td>
<td>“Accessing and working with the Software Cost by MLC Product view” on page 171</td>
</tr>
</tbody>
</table>

**Contract Summary quadrant**

The Contract Summary quadrant displays a chart that compares spending against budgeted amounts for both the current expenditures and the projected total cost of the entire term of the contract.

*Note*

The current month designation does not refer to the month of the present time. Cost Analyzer determines your current month as the most recent month from the past that has a complete set of cost models built.

For example, if today is January 16, 2015, and there are a complete set of cost models built for December, 2014, then your current month is December.

However, if for some reason the cost models for December and November were never built, and the most recent month that has a complete set of cost models built is October. Then, your current month is October.
Figure 29 on page 153 shows a sample Contract Summary that displays charts that show the current spend and the projected spend compared to their corresponding budgeted allocations.

**Figure 29: Sample Contract Summary quadrant**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contract end month with cost difference</td>
<td>The date identifies the month the contract ends and the amount indicates the cost difference between the accumulated Projected Spend amount and the accumulated Budgeted amount.</td>
</tr>
<tr>
<td>2</td>
<td>Toggle dots</td>
<td>Click the dots to toggle between available chart views. These dots let you switch between the following views:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ MLC Contract Summary View</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ MLC Product Summary View</td>
</tr>
<tr>
<td>3</td>
<td>Contract billing month with cost difference</td>
<td>The date identifies the current billing month of the contract and the amount indicates the cost difference between the current spending amount and the current budget amount.</td>
</tr>
<tr>
<td>4</td>
<td>Year over Year Cost</td>
<td>The amount indicates the difference between what was spent in the current month relative to how much was spent in the same month a year ago.</td>
</tr>
<tr>
<td>5</td>
<td>Ending date of contract</td>
<td>The date and year of the last month of the contract.</td>
</tr>
<tr>
<td>6</td>
<td>Starting Date of contract</td>
<td>The date and year of the starting month of the contract.</td>
</tr>
</tbody>
</table>
## Quadrant charts

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Current spend amount</td>
<td>The amount indicates the total MLC product spending from the start of the contract through the current billing month.</td>
</tr>
<tr>
<td>8</td>
<td>Volume chart of current spend and current budget</td>
<td>The bar chart indicates the cumulative volume level of both the current spending and the current budget amounts. The bar represents the accumulated spending from the start of the contract through the current billing month. The color (whether green or red) indicates whether the current spending is over or under the budgeted amount allocated.</td>
</tr>
<tr>
<td>9</td>
<td>Current budget</td>
<td>The amount indicates the total budgeted for spending from the start of the contract through the current billing month.</td>
</tr>
<tr>
<td>10</td>
<td>Contract name</td>
<td>The name assigned to the contract.</td>
</tr>
<tr>
<td>11</td>
<td>Projected spend</td>
<td>The amount indicates the total MLC product spending from the start of the contract through the end of the contract.                                                                                   <strong>Note:</strong> The amount includes a sum of both actual and projected cost amounts.</td>
</tr>
<tr>
<td>12</td>
<td>Volume chart of projected spend and total budget</td>
<td>The bar chart indicates the cumulative volume level of both the total projected spending and the total budget amounts. The bar represents the accumulated spending from the start of the contract through the end of the contract. The color (whether green or red) indicates whether the projected spending is over or under the budgeted amount allocated.</td>
</tr>
<tr>
<td>13</td>
<td>Total budget</td>
<td>The total amount budgeted for the contract.</td>
</tr>
<tr>
<td>14</td>
<td>Minimize/maximize control button</td>
<td>A control button to maximize or minimize the chart view.</td>
</tr>
</tbody>
</table>

**Note**

For any value in the chart, the arrow color (whether green or red) indicates whether the value is over (▲) or under (▼) the budgeted amount.

The **Contract Summary** contains an alternative Chart View (**MLC Product Summary View**) where you can also access hyperlinks to the **MLC Product Activity View**.

For information about drill-down levels and hyperlinks of the **MLC Contract Summary View**, see “Accessing the MLC Product Summary View” on page 155.

### Drill-down levels and links (Contract Summary)

This section describes the drill-down levels and links available in the MLC Contract Summary View quadrant.

The following views are available:
“Accessing the MLC Product Summary View” on page 155

“Accessing the MLC Product Activity View” on page 157

For quick reference, Table 37 on page 155 describes how to access the drill-down levels and hyperlink views.

Table 37: Accessing drill-down and hyperlink views

<table>
<thead>
<tr>
<th>To access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLC Product Summary View</td>
<td>In the MLC Contract Summary View, click the grayed-out dot (●).</td>
</tr>
<tr>
<td>MLC Product Activity View</td>
<td>In the MLC Product Summary View, click any cost change value in the MoM, QoQ, or YoY columns.</td>
</tr>
</tbody>
</table>

Accessing the MLC Product Summary View

By accessing the MLC Product Summary View, you can view a breakdown of the MLC Contract Summary View into its individual MLC Products and their contributions to the Current Usage and Projected Costs. The toggle dots (●) at the bottom of the quadrant provide you with the ability to toggle between the available views.

Tip

By hovering over the toggle dot, a popup tooltip indicates the view it displays.

To access the MLC Product Summary view

1 In the MLC Contract Summary View, click the grayed-out toggle dot (●).

The MLC Product Summary View displays as shown in Figure 30 on page 155.

Figure 30: Sample MLC Product Summary View
The *MLC Product Summary View* shows a breakdown of the cost of every MLC product in the contract. The view details each individual MLC Product’s contribution to the Current Usage Cost and the Projected Total Cost.

Table 38 on page 156 describes the data that each column contains.

**Table 38: Data in the MLC Product Summary View**

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLC Product</td>
<td>Name of the MLC product</td>
</tr>
<tr>
<td>Current Usage Cost</td>
<td>Total Usage Cost of the MLC product</td>
</tr>
<tr>
<td></td>
<td>The amount indicated is the sum of the actual usage costs from the contract starting month to the current billing month. The percentage represents the contribution of the MLC product to the total usage cost.</td>
</tr>
<tr>
<td>Projected Total Cost</td>
<td>Total Projected Cost of the MLC Product</td>
</tr>
<tr>
<td></td>
<td>The amount indicated is the sum of the actual usage costs and the projected costs from the contract starting month to the contract ending month. The percentage represents the contribution of the MLC product to the total contract cost.</td>
</tr>
<tr>
<td>Current Vs. Projected</td>
<td>Bar graph of the current usage cost and the projected costs</td>
</tr>
<tr>
<td></td>
<td>The bar graph indicates the current contribution with a solid blue bar and the projected cost contribution with a striped bar. By hovering over the bar graph, a popup displays the numeric amount of the costs.</td>
</tr>
<tr>
<td>MoM Cost Change</td>
<td>Month Over Month cost change</td>
</tr>
<tr>
<td></td>
<td>The amount indicates the difference between the cost of the MLC Product for the current billing month and the MLC Product cost of the previous month. The percentage represents the percent difference from the previous month.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The cost change value is a hyperlink to the Activity View of the MLC product. For more information see, “Accessing the MLC Product Activity View” on page 157.</td>
</tr>
<tr>
<td>QoQ Cost Change</td>
<td>Quarter Over Quarter cost change</td>
</tr>
<tr>
<td></td>
<td>The amount indicates the difference between the cost of the MLC product for the current month and the MLC Product cost for the month that was 3 months prior to that. The percentage represents the percent difference between the monthly costs.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The cost change value is a hyperlink to the Activity View of the MLC product. For more information see, “Accessing the MLC Product Activity View” on page 157.</td>
</tr>
</tbody>
</table>
The amount indicates the difference between the cost of the MLC Product for the current month and the MLC Product cost that was 12 months prior to that. The percentage represents the percent difference from the previous year.

**Note:** N/A (Not Available) indicates that Cost Analyzer does not have the cost data needed to calculate the value.

The cost change value is a hyperlink to the Activity View of the MLC product. For more information see, “Accessing the MLC Product Activity View” on page 157.

---

**Tip**

By clicking the column headers, you can sort any of the columns in the report either by alphabetic order or by ascending or descending values.

The *MLC Product Summary View* contains hyperlinks to the *Activity View of the MLC Product*.

The Activity Views can be accessed from data hyperlinks in the following columns:

- MoM Cost Change
- QoQ Cost Change
- YoY Cost Change

For information about the hyperlinks to the Activity Views of the MLC products, see “Accessing the MLC Product Activity View” on page 157.

---

**Accessing the MLC Product Activity View**

The *MLC Product Activity View* provides a report of the current usage activity that affects the cost of a particular MLC product by contributing to the total Peak R4HA value, and the activity changes from a previous month, quarter, or year.

**To access the Activity View of any MLC Product**

1. In the *MLC Product Summary View*, click any cost change value in the following columns:

   - MoM Cost Change
   - QoQ Cost Change
- **YoY Cost Change**

The **MLC Product Activity View** for the MLC Product initializes and displays as shown in Figure 31 on page 158.

![Figure 31: Sample MLC Product Activity View](image)

**MLC Product Activity View legend**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Generate Report button</td>
<td>Generates a report based on the selection of CPC, LPARs and Workloads from the tree</td>
</tr>
<tr>
<td>2</td>
<td>Workloads</td>
<td>List of Workloads for the LPAR</td>
</tr>
<tr>
<td>3</td>
<td>LPARs</td>
<td>LPARs on the CPC</td>
</tr>
<tr>
<td>4</td>
<td>CPC</td>
<td>CPC name</td>
</tr>
<tr>
<td>5</td>
<td>Variance Filter</td>
<td>Filter dropdown menu to change the data display in the report</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can select which change data to display in the report. Use the dropdown menu to select the change data as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Change from Last Month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Change from Last 3 Months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Change from Last 12 Months</td>
</tr>
<tr>
<td>6</td>
<td>Go Back</td>
<td>Navigates back to the MLC Product Summary View</td>
</tr>
<tr>
<td>7</td>
<td>Go Home</td>
<td>Navigates back to the MLC Product Summary View</td>
</tr>
</tbody>
</table>
When initializing the Activity View, the report displays the CPC and LPAR (and Workload, if available) that contribute the largest difference in cost for that MLC product. For any report display formation, the largest contribution status for any CPC, LPAR, or Workload is indicated by a flag (※).

Table 39 on page 159 describes the data that each column contains.

### Table 39: Data in the MLC Product Activity View

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPC:LPAR:WORKLOAD</td>
<td>Name of the CPCs, LPARs and Workloads The following icons indicate the sysplex component type:</td>
</tr>
<tr>
<td></td>
<td>□ (CPC)</td>
</tr>
<tr>
<td></td>
<td>□ (LPAR)</td>
</tr>
<tr>
<td></td>
<td>□ (Workload)</td>
</tr>
<tr>
<td>Type</td>
<td>Indicates the sysplex component type (whether CPC, LPAR, or Workload)</td>
</tr>
<tr>
<td>Actual Cost</td>
<td>Actual usage cost of the MLC Product for the current billing month</td>
</tr>
<tr>
<td>Current R4HA</td>
<td>Peak R4HA value of the current billing month</td>
</tr>
<tr>
<td>Monthly Cost Change Over Previous Month/3 Months/12 Months</td>
<td>Difference between the actual cost and previous costs over a specific length of time The cost change can be displayed for the previous month, previous 3 months, or previous 12 months. You change the display by using the Variance Filter dropdown menu.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Cost changes are available only for the CPC. For LPARS and Workloads the cost change amounts are not calculated because the cost changes are calculated as a whole for the CPC.</td>
</tr>
</tbody>
</table>
## Working with the MLC Product Activity View

The *MLC Product Activity View* provides the ability to generate the activity data in a variety of forms to facilitate the analysis of the data.

### To generate Activity View reports

1. Open the Activity View for the MLC Product you want to display.

   For more information, “Accessing the MLC Product Activity View” on page 157.

2. From the Workload tabs, select the Workload you want to examine.

3. Perform one or more of the following actions:

   - Above the tree, click **Select Highest**. The Activity Viewer automatically generates a report that shows the highest contributing CPC, LPAR, and, if available, the Workload.

### Note

For any Cost Change or R4HA Change column a red triangle (▲) indicates the value is higher than the current billing month, while a green triangle (▼) indicates the value is lower.
Above the tree, click Select All. The Activity view automatically generates a report that shows all CPCs, LPARs, and Workloads.

From the tree, select the individual CPCs, LPARs and Workloads you want to display, then click Generate Report.

**Note**
Press and hold the Shift key to select an element and its children.

Click the Variance Filter drop-down menu and select from the following options:

—Change From Last Month
—Change From Last 3 Months
—Change From Last 12 Months

The Activity View automatically generates a report based on the selection.

**Tip**
By clicking the column headers, you can sort any of the columns in the report either by alphabetic order or by ascending or descending values.

---

**Cost Efficiency Rating quadrant**

The Cost Efficiency Rating quadrant displays charts that show the current and projected cost efficiency ratings as percentages.

Figure 32 on page 161 shows a sample Cost Efficiency Rating quadrant.

**Figure 32: Sample Cost Efficiency Rating quadrant**
The current rating indicates the cost efficiency of the total MLC product spending from the start of the contract through the current billing month and is generated only from actual spending.

The projected rating shows the cost efficiency of the total MLC product spending from the start of the contract through the end of the contract and is generated from both actual and projected spending.

A system operating at 100% cost efficiency would indicate that the Peak R4HA (which determines cost) and the Average MSU Used (which determines the theoretical minimal value of the Peak R4HA) are equal.

Accordingly, the percentages that are shown provide insight as to how close your system is tuned to the maximum efficiency that is possible. The closer the cost efficiency rating is to 100 percent, the more the MSU usage has been optimized to reduce costs.

From the Cost Efficiency Rating quadrant, you can access drill-down charts to compare the Peak R4HA and the Average MSU Used for the entire contract period. For more information, see:

- “Accessing the Average MSU Used to Peak R4HA (Ratio) chart” on page 162
- “Accessing the Peak R4HA by Billing Month chart” on page 164
- “Accessing and working with the MLC Product: CPC Usage chart” on page 165

**Accessing the Average MSU Used to Peak R4HA (Ratio) chart**

The Average MSU Used to Peak R4HA (Ratio) chart can be used as an indicator of whether your system is tuned for cost optimization. The metric utilized to determine cost optimization is the ratio of the average MSU Used to the Peak R4HA.

The average MSU Usage indicates the theoretical minimal value of the Peak R4HA that a system could have been charged during a month, if all activity was evenly distributed between the hours of the month. The Peak Four-hour Rolling Average (R4HA) represents the utilization level that determines the actual cost that will be charged for using MLC products during that month.

Since the peak R4HA utilization is always greater than the average MSU used, their ratio indicates whether your actual average MSU usage approaches the peak usage level that determines the cost. The closer the ratio is to 1, the closer the system is optimized for cost efficiency. In the chart, this is represented by the yellow optimal ratio line at the top.
No matter what the ratio, a relatively level charting over time (a flat line) indicates the system's month-to-month cost stability. Similarly, dips and valleys in the charting indicate months where the cost optimization was not operating effectively.

**To access the Average MSU Used to Peak R4HA (Ratio) chart**

1. Perform one of the following actions:
   - In the *Cost Efficiency Rating* quadrant, click the greyed-out toggle dot ( • ).
   - Click the Chart Options icon ( ⚙ ), and then select **Average MSU Used to Peak R4HA (Ratio)** from the Chart Views list.

The Average MSU Used to Peak R4HA (Ratio) chart displays as shown in Figure 33 on page 163.

**Figure 33: Sample Average MSU Used to Peak R4HA (Ratio)**

![Figure 33: Sample Average MSU Used to Peak R4HA (Ratio)](image)

The chart shows every month that comprises the software contract. For any billing month from the past, the ratio is based on actual costs and is indicated by a solid blue dot. For any future billing month, the ratio is based on projected costs and is indicated by a grey dot.

You can use the toggle dots ( • ) to switch between the following chart views:

- Peak R4HA by Billing Month
- Cost Efficiency Rating

You can use the Chart Options icon ( ⚙ ) to change the display of the chart as follows:

- Single period view
- Stacked period view
Grouped period view

For more information about these views, see “Quick tour of the Software Contract Summary Report” on page 147.

The Average MSU Used to Peak R4HA (Ratio) chart contains an alternative Chart View (Peak R4HA by Billing Month) and a drill-down level to examine the Peak R4HA by Billing Month charts for CPCs.

For more information, see the following topics:

■ “Accessing the Peak R4HA by Billing Month chart” on page 164
■ “Accessing and working with the MLC Product: CPC Usage chart” on page 165

Accessing the Peak R4HA by Billing Month chart

By accessing the Peak R4HA by Billing Month chart, you can view separate charting lines for both the Peak R4HA and the Average MSU Used. The toggle dots at the bottom of the quadrant provide you with the ability to toggle between the available views.

To access the Peak R4HA by Billing Month chart

1 Perform one of the following actions:

■ In the Cost Efficiency Rating quadrant, click the greyed-out toggle dot (●).

■ Click the Chart Options icon (●), and then select Peak R4HA by Billing Month from the Chart Views dropdown list.

The Peak R4HA by Billing Month chart displays as shown in Figure 34 on page 164.

Figure 34: Sample Peak R4HA by Billing Month
By viewing the coefficients of the ratio as separate charts, you can identify which one was more responsible for any dip or valley of the ratio chart.

In general, if the chart for the average MSU for a month contains a sudden drop and the Peak R4HA for the same month remains level, it indicates that during this month the system was underutilized. In this case, you should investigate why there is a wide discrepancy between the actual cost of MSU usage and the average amount of MSU being utilized.

On the other hand, if the chart for the Peak R4HA for a month contains a sudden spike and the Average MSU Usage for the same month remains level, it indicates that during this month, there may have been a problem. In this case, you should investigate what event occurred to cause the surge in the Peak R4HA.

At any time, you can use the toggle dot (•) to switch to the Average MSU to Peak R4HA (Ratio) chart.

The Peak R4HA by Billing Month chart also contains a link to the MLC Product: CPC Usage drill-down chart. This chart can be accessed from the drill-down links button (•).

For information about the MLC Product: CPC Usage chart, see “Accessing and working with the MLC Product: CPC Usage chart” on page 165.

Accessing and working with the MLC Product: CPC Usage chart

The MLC Product: CPC Usage chart contains separate charting of the Peak R4HA by Billing Month for each CPC of the system.

To access the MLC Product: CPC Usage chart

1 From the Average MSU Used to Peak R4HA chart or the R4HA by Billing Month chart, click the Drilldown Links button (•).

   The Drilldown links window displays.

2 In the Drilldown links window, click on the MLC Product: CPC Usage hyperlink.
The MLC Contract: CPC Usage view displays as shown in Figure 35 on page 166.

**Figure 35: Sample Peak R4HA by Billing Month**

3 *(optional)* From the list of CPCs, select which CPCs to display in the viewer.

Use the following options to change the CPCs displayed in the chart:

- Scroll through the list of Contract CPCs and select the CPCs to display in the chart.
- Click **Select All** to select all CPCs for display in the chart.

To assist in the analysis of the chart, you can perform any of the following actions:

- 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.
- Hover the mouse over any point on the chart to view the value as well as the date it occurred.

4 *(optional)* To view alternative chart options, perform one of the following actions:

- Click the toggle dots to access the following Chart Views:
  - Peak R4HA by Billing Month
  - Average Monthly MSU Used by CPC
  - Average MSU Used to Peak R4HA (Ratio)
- Click the Chart Options button (°), then select one of the Chart Views from the dropdown list.
Figure 36 on page 167 shows a sample Average Monthly MSU Used by CPC.

**Figure 36: Sample Average Monthly MSU Used by CPC**

Figure 37 on page 167 shows a sample Average MSU Used to Peak R4HA (Ratio).

**Figure 37: Sample Average MSU Used to Peak R4HA (Ratio)**

**MLC Cost By Billing Month quadrant**

The MLC Cost by Billing Month quadrant contains a bar chart that displays the actual costs and projected costs for every billing month of the contract. Additionally, a line at the top of the chart represents the budgeted costs for each billing month.
Figure 38 on page 168 shows a sample MLC Cost By Billing Month chart.

**Figure 38: Sample MLC Cost by Billing Month**

![Sample MLC Cost by Billing Month chart](image)

Table 40 on page 168 describes the elements of the chart.

**Table 40: Chart elements of the MLC Cost by Billing Month**

<table>
<thead>
<tr>
<th>Chart element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid bar</td>
<td>Actual cost of the billing month</td>
</tr>
<tr>
<td>Striped Bar</td>
<td>Projected cost of the billing month</td>
</tr>
<tr>
<td>Black/gray point</td>
<td>Budgeted cost of the billing month</td>
</tr>
</tbody>
</table>

The toggle dots (•) of the quadrant provide you with the ability to toggle between the following chart views:

- MLC Cost By Billing Month
- Aggregated MLC Cost By Billing Month

You can also use the Chart Options icon (⚙️) to select the alternative chart or to change the display of the chart as follows:

- Single period view
- Stacked period view
- Grouped period view

For more information see about these views, see “Quick tour of the Software Contract Summary Report” on page 147.
Hyperlinks to the Monthly Summary Report

Each bar of the chart (whether solid or striped) is a hyperlink to the Monthly Summary Report for that billing month. By clicking the bar, Cost Analyzer opens the Monthly Reporting tool and generates the Monthly Summary Report for that billing month.

Figure 39 on page 169 shows the Monthly Summary Report for a projected billing month.

**Figure 39: Sample Monthly Summary Report (*Projected*)**

You can drill-down into the Monthly Summary Report for in-depth analysis of the utilization data. For more information, see “Drill-down levels” on page 121.

At any time, when you want to return to the Software Contract Report, click on the Software Contract Reporting tool tab.

The **MLC Cost By Billing Month quadrant** contains an alternative Chart View (Aggregated MLC Cost by Billing Month) and a drill-down level to examine the Software Cost by MLC Product.

For more information, see the following topics:

- “Accessing the Aggregated MLC Cost by Billing Month chart” on page 169
- “Accessing and working with the Software Cost by MLC Product view” on page 171

**Accessing the Aggregated MLC Cost by Billing Month chart**

By accessing the **Aggregated MLC Cost by Billing Month** chart, you can view a cumulative chart that displays the actual costs and projected costs for every billing month of the contract. Additionally, the sloped line at the top represents the cumulative budget costs for each billing month.
The toggle dots at the bottom of the quadrant provide you with the ability to toggle between the available Chart Views.

To access the Aggregated MLC Cost by Billing Month chart

1. Perform one of the following actions:
   - In the MLC Cost By Billing Month quadrant, click the grayed-out toggle dot (●).
   - Click the Chart Options icon (●), and then select Aggregated MLC Cost by Billing Month from the Chart Views dropdown list.

The Aggregated MLC Cost by Billing Month displays as shown in Figure 40 on page 170.

Figure 40: Sample Aggregated MLC Cost by Billing Month

Table 41 on page 170 describes the elements of the chart.

Table 41: Chart elements of the Aggregated MLC Cost by Billing Month

<table>
<thead>
<tr>
<th>Chart element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid bar</td>
<td>Actual cumulative cost of the billing month</td>
</tr>
<tr>
<td>Striped Bar</td>
<td>Projected cumulative cost of the billing month</td>
</tr>
<tr>
<td>Black/gray point</td>
<td>Budgeted cost of the billing month</td>
</tr>
</tbody>
</table>

You can use the Chart Options icon (●) to select the alternative chart or to change the display of the chart as follows:

- Single period view
Stacked period view

Grouped period view

For more information about these views, see “Quick tour of the Software Contract Summary Report” on page 147.

Each bar in the chart is a hyperlink to the Monthly Summary Report and operates as described in “MLC Cost By Billing Month quadrant” on page 167.

By viewing the aggregated chart, you can see a cumulative view of monthly the MLC Costs for the entire term on the contract. At any time, you can use the toggle dot (•) to switch to the MLC Cost by Billing Month chart.

The Aggregated MLC Cost by Billing Month chart also contains a link to the Software Cost by MLC Product chart. This chart can be accessed from the drill-down links button (φ).

For information about the Software Cost by MLC Product chart, see “Accessing and working with the Software Cost by MLC Product view” on page 171.

Accessing and working with the Software Cost by MLC Product view

The Software Cost by MLC Product view displays a chart of the actual costs and projected costs for every billing month of the contract and provides you with the ability to view the individual contributions of MLC Products.

To access the Software Cost by MLC Product view

1 From the MLC Cost by Billing Month chart or the Aggregated MLC Cost by Billing Month chart, click Drilldown Links (φ).

The Drilldown Links window displays.

2 In the Drilldown Links window, click the Software Cost by MLC Product hyperlink.
The Software Cost by MLC Product view displays as shown in Figure 41 on page 172.

**Figure 41: Sample Software Cost by MLC Product chart**

![Sample Software Cost by MLC Product chart](image)

Table 42 on page 172 describes the elements of the chart.

**Table 42: Chart elements of the Software by MLC Product view**

<table>
<thead>
<tr>
<th>Chart Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid colors</td>
<td>Actual cost of MLC product for the billing month</td>
</tr>
<tr>
<td>Striped colors</td>
<td>Projected cost of the MLC Product for the billing month</td>
</tr>
<tr>
<td>Black point</td>
<td>Actual total monthly cost for all MLC Products</td>
</tr>
<tr>
<td>Gray point</td>
<td>Projected total monthly cost for all MLC products</td>
</tr>
</tbody>
</table>

3 (optional) From the MLC Product List, select which MLC products to display in the viewer.

Use the following options to change the MLC Products displayed in the chart:

- Scroll through the MLC Product List to select individual products to display in the chart.
- Click **Select All** to select all MLC Products for display in the chart.

To assist in the analysis of the chart, you can perform any of the following actions:

- Use the **Show Total Monthly Cost** toggle, if you want to show or hide a charting of the total monthly cost across all months of the chart.
- 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.

- Hover the mouse over any bar on the chart to view the value as well as the date it occurred.

4 (optional) To view alternative chart options, perform one of the following actions:

- Click the toggle dots (●) to access the following Chart Views:
  - MLC Products: MLC Cost by Billing Month
  - MLC Products: Cost to Date

- Click the Chart Options button (⊕), then select one of the Chart Views from the dropdown list.

Figure 42 on page 173 shows a sample MLC Products: MLC Cost to Date view.

**Figure 42: Sample MLC Products: MLC Cost to Date**

**Cost Variance by Billing Month quadrant**

The Cost Variance by Month quadrant contains a bar chart that displays the cost difference between the budgeted amount and actual or projected cost for every billing month of the contract.
Figure 43 on page 174 shows a sample Cost Variance by Billing Month chart.

**Figure 43: Sample Cost Variance by Billing Month**

Table 43 on page 174 describes the elements of the chart.

**Table 43: Chart elements of the Cost Variance by Billing Month**

<table>
<thead>
<tr>
<th>Chart Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid bar</td>
<td>Actual cost difference of the billing month</td>
</tr>
<tr>
<td>Striped Bar</td>
<td>Projected cost difference of the billing month</td>
</tr>
<tr>
<td>Green Bar</td>
<td>Indicates the actual or projected cost was less than the budgeted cost for the billing month</td>
</tr>
<tr>
<td>Red Bar</td>
<td>Indicates the actual or projected cost was greater than the budgeted cost for the billing month</td>
</tr>
</tbody>
</table>

The toggle dots (●) of the quadrant provide you with the ability to toggle between the following chart views:

- Cost Variance by Month
- Cost Variance to Date

You can also use the Chart Options icon (●) to select the alternative chart or to change the display of the chart as follows:

- Single period view
- Stacked period view
- Grouped period view

For more information see about these views, see “Quick tour of the Software Contract Summary Report” on page 147.
Hyperlinks to the Monthly Summary Report

Each bar of the chart (whether solid or striped) is a hyperlink to the Monthly Summary Report for that billing month. By clicking on the bar, Cost Analyzer opens the Monthly Reporting tool and generates the Monthly Summary Report for that billing month. For more information, see “MLC Cost By Billing Month quadrant” on page 167.

The Cost Variance by Month quadrant contains an alternative Chart View (Cost Variance to Date) and a drill-down level to examine the Software Cost by MLC Product.

For more information, see the following topics:

- “Accessing the Cost Variance to Date chart” on page 175
- “Accessing and working with the Software Cost by MLC Product view” on page 171

Accessing the Cost Variance to Date chart

By accessing the Cost Variance to Date chart, you can view a chart that displays the cumulative amount of difference between the actual costs and projected costs for every billing month of the contract.

**Note**

The toggle dots at the bottom of the quadrant provide you with the ability to toggle between the available Chart Views.

To access the Cost Variance to Date chart

1. Perform one of the following actions:
   - In the Cost Variance by Billing Month quadrant, click the grayed-out toggle dot (•).
   - Click the Chart Options icon (ге), and then select Cost Variance to Date from the Chart Views dropdown list.
The *Cost Variance to Date* chart displays as shown in Figure 44 on page 176.

**Figure 44: Sample Cost Variance to Date**

Each bar in the chart is a hyperlink to the Monthly Summary Report and operates as described in “MLC Cost By Billing Month quadrant” on page 167.

By the viewing the *Cost Variance to Date* chart, you can see a cumulative view of monthly the MLC Cost differences between budgeted and actual costs for the

---

**Table 44: Chart elements of the Cost Variance to Date**

<table>
<thead>
<tr>
<th>Chart Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid bar</td>
<td>Actual cumulative cost difference of the billing month</td>
</tr>
<tr>
<td>Striped Bar</td>
<td>Projected cumulative cost difference of the billing month</td>
</tr>
<tr>
<td>Green Bar</td>
<td>Indicates the actual or projected cumulative cost was less than the cumulative budgeted cost from the contract starting month up to the billing month</td>
</tr>
<tr>
<td>Red Bar</td>
<td>Indicates the actual or projected cumulative cost was greater than the cumulative budgeted cost from the contract starting month up to the billing month</td>
</tr>
</tbody>
</table>

---

Table 44 on page 176 describes the elements of the chart.

You can use the Chart Options icon (※) to select the alternative chart or to change the display of the chart as follows:

- Single period view
- Stacked period view
- Grouped period view

For more information see about these views, see “Quick tour of the Software Contract Summary Report” on page 147.

Each bar in the chart is a hyperlink to the Monthly Summary Report and operates as described in “MLC Cost By Billing Month quadrant” on page 167.
entire term on the contract. At any time, you can use the toggle dot (•) to switch
to the Cost Variance by Billing Month chart.

The Cost Variance to Date chart also contains a link to the Software Cost by MLC
Product chart. This chart can be accessed from the drill-down links button (φ).

For information about the Software Cost by MLC Product chart, see “Accessing
and working with the Software Cost by MLC Product view” on page 171.
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.

The Planning tool provides the following plan types:

- LPAR and Workload plans
- Job and STC plans

When creating either type of plan, you select a complete usage month, evaluation cost table, workload type, and CPCs. The Planning tool then enables you to perform operations on these objects. The operations you can perform depend on the plan type. The following sections describe the features of each type of plan and details the operations that can be performed in them.

LPAR and Workload plans

You can use LPAR and Workload 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
Clone an LPAR

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

**Note**

As you perform exercises in the plan, you can view the results of any action immediately. If necessary, you can undo any action to restore the plan to a previous point in the exercise. For more information, see “Overview of LPAR and Workload plans” on page 188.

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 R4HA values and their dates and time
- Aggregated CPC R4HA charts
- R4HA charts for individual LPARs and their contribution to CPC Peak R4HA
- R4HA 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.
Job and STC plans

You can use Job and STC Cost Optimization Plans to:

- Evaluate modifications to the existing batch workload configurations
- 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:

- Delay the execution of batch jobs
- Move batch jobs to a different LPAR on the same or different CPC
- Scale batch jobs
- Delete batch jobs from a system

After execution of any of these operations, the plan is re-evaluated and the cost impact report will be generated.

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:

Figure 45: Sample Planning tool Start Page
You can perform the following Plan Actions:

- “Creating plans” on page 182
- “Opening a plan” on page 185
- “Deleting a plan” on page 187

**Note**
The Actions pane displays a list of Recent Plans. As a shortcut, you can click any plan in the list to open the plan.

## 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 **Plan Name** field, enter a name for the plan.

4 *(optional)* In the **Plan Description** field, enter a description to identify the plan.

5 In the **Usage Month** field, click the Calendar icon to browse the application server and select an available usage month cost model.

   **Note**

   The selection of the usage month automatically loads the name of the referenced cost table for the selected month into the **Evaluation Cost Table** field.

6 Select an **Evaluation Cost Table** for the plan.

You must select a cost table to be used by Cost Analyzer for the cost evaluations in the plan. This cost table can be the same cost table that was active during the usage month or can be a different cost table. Your selection of the Evaluation Cost Table depends on the operations you want to perform in the plan.

To make your selection, perform one of the following actions:

- If you want the calculations of the exercises performed in the plan to be based on the **same** cost table that was used during the usage month, you do not need
to change the selection. When you selected the usage month, Cost Analyzer automatically loaded the name of the referenced cost table that was active during that month; consequently, you can skip to Step 7 on page 184.

If you want the calculations of the exercises performed in the plan to be based on a different cost table, click the selector to display the Select Cost Table dialog as shown in the following figure:

The dialog lists all of the available cost tables. A green check mark indicates the current active cost table. The calendar icon (📅) indicates that this cost table was the active cost table for the selected usage month.

From the list of cost tables in the dialog, click the cost table you want to use and then click Select Cost Table.

The selected cost table is loaded into the Evaluation Cost Table field.

---

**Note**

For every plan, a baseline of the MLC product costs is always calculated from the cost table that was active during the selected usage month. This baseline of costs is unaffected by the selection of the Evaluation Cost Table.

The baseline of costs is used so you can compare the actual costs of the month against the cost changes affected by the operations you perform in the plan.

---

7 In the **Workload Type** field, use the drop-down list to select the workload type for the plan.

For more information about workloads, see “Cost Analyzer workloads” on page 18.

184  *BMC Cost Analyzer for zEnterprise User Guide*
8 In the **Plan Operation type** field, click the type of plan you want to create.

The plan operation type determines the operations that you can perform. You can select from the following plan types:

- LPAR and Workloads – to perform operations on LPARs and CPCs
- Job and STC – to perform operations relating to batch jobs

For more information about the operations you can perform in each type of plan, see “Planning tool overview” on page 179.

9 In the **Select Plan CPCs** field, select the CPCs you want to use for the plan.

**Note**

The list of available CPCs depends on the selected workload type.

10 When finished making your selections, click **Create Plan**.

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.

**Note**

After launching the Planning tool, the Actions pane displays a list of Recent Plans. As a shortcut, you can click any plan in the list to open the plan.

1 From the Cost Analyzer console, click the Planning tool tab.

2 Perform one of the following actions:

- From the Actions pane, click **Open Plan**.
- From the list of Recent Plans, click the plan that you want to open.

The Planning tool opens the Plan as shown in Figure 46 on page 186.
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 46 on page 186.

**Figure 46: Sample Plan**

---

**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 45 on page 186:</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>
<tr>
<td>5</td>
<td>Plan Name</td>
<td>Hovering over the plan name displays a tooltip of the plan details</td>
</tr>
<tr>
<td>6</td>
<td>Plan Usage Month</td>
<td>Month and year of plan</td>
</tr>
</tbody>
</table>

**Table 45: Planning tool toolbar buttons**

<table>
<thead>
<tr>
<th>Toolbar button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="refresh_icon" /></td>
<td>View changes made to the plan</td>
</tr>
<tr>
<td><img src="image" alt="chart_icon" /></td>
<td>View plan evaluation results</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 “Overview of LPAR and Workload plans” on page 188.

### Closing a plan

Use the following procedure to close a plan.

1. From the Actions pane, click the 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.
Overview of LPAR and Workload plans

This section describes in detail how to perform actions in a LPAR and Workload plan against your monthly historical models that demonstrate the effects of changes to your system. Through the exercises in a LPAR and Workload plan, you can develop alternative structures for your sysplex to view the effect on the monthly costs. Since MLC Products are priced based on the R4HA, a LPAR and Workload plan can show you configurations that reduce MSU Utilizations, limit the contribution to peak values, and provide a way to explore options to discover the most cost-efficient structure for your enterprise.

Within any LPAR and Workload plan that you create, you can:

■ Work at the CPC level and perform actions against LPARs running on the CPC.
■ Work at the LPAR level and perform actions against the workloads running on the LPAR.

As you perform exercises and make changes to your plan, the Planning tool executes and records the changes sequentially. At any time, you can view a list of the changes made to the plan. If you want to undo any action that was executed, you can use the viewer to remove the change. For more information, see “Viewing and removing plan changes” on page 219.

Tip
When performing an exercise in a LPAR and Workload plan, the following suggestions apply:

■ All LPAR level operations for a particular LPAR should be performed before any operation for another LPAR.
■ For a particular LPAR, the Defined Capacity operation should 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 47 on page 189:

**Figure 47: Plan CPC level**

<table>
<thead>
<tr>
<th>LPAR Name</th>
<th>Group Name</th>
<th>Squeeze Name</th>
<th>R4HA MSU Utilization</th>
<th>LPAR R4HA at Peak</th>
<th>LPAR Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPAR1</td>
<td>Group1</td>
<td>Squeeze1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPAR2</td>
<td>Group2</td>
<td>Squeeze2</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPAR3</td>
<td>Group3</td>
<td>Squeeze3</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPAR4</td>
<td>Group4</td>
<td>Squeeze4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPAR5</td>
<td>Group5</td>
<td>Squeeze5</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPAR6</td>
<td>Group6</td>
<td>Squeeze6</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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 ( )* for each LPAR.

For a description of the charting area actions and icons, see “Working with the charting area” on page 125.

You can click any preview chart in the R4HA MSU Utilization column to open a pop-up window that displays a chart that shows the comparison of the average hourly MSUs to the R4HA 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 190
- “Deleting an LPAR” on page 192
- “Cloning an LPAR” on page 191
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 R4HA value grows. For example, assume that you have two CPCs, one with 2000 Peak R4HA 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 LPARs to CPC dialog displays as shown in the following figure:

   ![Move LPARs to CPC dialog](image)

2. From the list of LPARs, select the LPARs that you want to move to a target CPC.

3. From the list of target CPCs, specify where you want to move the LPARs by selecting a target CPC.

4. Click Move LPARs.

   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.

5. 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.

**Note**
You can view the evaluation results at any time by clicking View plan evaluation results button ( ) in the Actions pane. For more information, see “Viewing the Plan Evaluation Summary Report” on page 217.

### Cloning an LPAR

You can create a clone of any LPAR for use when working with an LPAR and Workload plan. Use the following procedure to clone an LPAR.

A clone of an LPAR is a copy of a particular LPAR that replicates the original LPAR and contains all:

- LPAR activity
- Workload types
- MLC product license information

**To clone an LPAR**

1. In the LPAR Actions column, click for the LPAR that you want to clone.

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

   ![Clone LPAR to CPC dialog](image)

2. In the Clone LPAR to CPC dialog, enter a new name for the cloned LPAR.

   By default, the new LPAR name is already shown as Clone_Of_originalLparName, but you can change it.
Note
If you change the name, you must choose a unique name that does not already exist on the target CPC.

3 (optional) If you want to keep the cloned LPAR as a member of a group, select Keep in LPAR group.

Note
This option is available only when the original LPAR is a member of a group.

4 From the list of target CPCs, select the target CPC where you want the cloned LPAR to reside.

5 Click Clone 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.

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

Note
You can view the evaluation results at any time by clicking View plan evaluation results button (●) in the Actions pane. For more information, see “Viewing the Plan Evaluation Summary Report” on page 217.

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. You can undo this action by viewing the Plan Changes and marking the deletion for removal. For more information, see “Viewing and removing plan changes” on page 219.

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 **Delete LPAR from current CPC** button (●) for the LPAR you want to delete.

A dialog displays as shown in the following figure:

![Delete LPARs from current CPC dialog](image)

2 From the list of LPARS, select one or more LPARS that you want to delete.

3 Click **Delete LPARS**.

4 When prompted to confirm that you want to delete the LPARs from the CPC, click **Yes**.

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

5 When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 217) or **No** to continue working.
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 48 on page 194:

   **Figure 48: Plan LPAR level**

   ![Image of LPAR level](image)

   The LPAR level shows rows that list all workloads running on the LPAR and columns that detail the activity of each workload. The Workload R4HA at Peak column contains values that represent the R4HA 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. The CPC peak is indicated by a red dot. Individual MLC products peaks are indicated by the black dots. By hovering over the CPC peak or any product peak, you can display a popup that shows information about the MLC product, the MSU utilization, and the date and hour when the peak occurred.
**Note**

You can select the product peaks that you want to display in the chart by clicking **Select one or more MLC Products to view their R4HA peak on the LPAR chart**. For more information about this feature, see “Working with Job and STC plans” on page 202.

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 125.

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 195
- “Moving workloads” on page 196
- “Scaling a workload by percentage” on page 198
- “Deleting workloads from the LPAR” on page 199

**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 should 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 217) 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 workloads

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 (▼) 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, select the workloads that you want to move to a target LPAR.

3. In section 1 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 of this workload.

4. In section 2 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.
5 In section 3 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.

6 When finished, click **Move Workloads**.

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

7 When prompted to view the evaluation results, click **Yes** to view them (as
described in “Viewing the Plan Evaluation Summary Report” on page 217) 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 217) or **No** to continue working.

---

**Note**

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

---

## Deleting workloads from the LPAR

Use the following procedure to delete workloads from an LPAR.

---

**WARNING**

Deleting a Workload from the LPAR removes all of its activity from the plan. You can undo this action by viewing the Plan Changes and marking the deletion for removal. For more information, see “Viewing and removing plan changes” on page 219.

---

### To delete a workload from an LPAR

1 In the Workload actions column, click the **Delete Workload From LPAR** button (○) for the Workload you want to delete.

   A dialog displays as shown in the following figure:
The dialog lists all MLC products that exist on this LPAR.

2 From the list of Workloads, select one or more Workloads that you want to delete.

3 (optional) From the list of licensed products associated with this LPAR, select the products that you want to delete.

4 Click **Delete Workloads**.

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

5 When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 217) or **No** to continue working.

---

**Overview of Job and STC plans**

This section describes in detail how to perform actions in a Job and STC plan against your monthly historical models that demonstrate the effects of changes to your system.

Through the exercises in a Job and STC plan, you can enact modifications to the existing batch workload configurations and view the effect on the monthly costs. Since MLC products are priced based on the R4HA, a Job and STC plan can show you configurations that reduce MSU utilizations during the critical 4 hour peak interval that is used to determine costs.
Within any Job and STC plan that you create, you can:

- Generate and view lists of Job/STC Items

- Perform any of the following operations to affect the activity of a job or group of jobs:
  - Shift the activity to a different time interval
    By shifting the time when batch jobs are performed on an LPAR, you can discover ways to reduce the contribution to peak values.
  - Scale the activity
    By utilizing scaling, you can model any anticipated changes to job activity to examine the effect on the MLC product costs.
  - Move the activity to a different LPAR
  - Delete the activity

By providing the means to move and delete jobs, you can also explore options to discover the most cost-efficient structure for the batch jobs that are executed on your systems.

When performing any of the Job/STC operations, a charting area lets you compare the current activity with a preview of the activity changes before you execute the changes in the plan. Using these charts can assist you in selecting effective operations to perform.

After you are satisfied with the operations you have performed, you can apply the changes to view a report that shows how costs are affected. When you apply the operations to the job activity, the Planning tool evaluates the changes, recalculates the effect to the MSU utilizations, and makes the results available in the Plan Evaluation Summary Report. By viewing the report, you can examine the results of the changes to the cost. For more information, see “Viewing the Plan Evaluation Summary Report” on page 217.

Cost Analyzer records any changes made to the Job and STC plan sequentially. At any time, you can view a list of the changes made to the plan. If you want to undo any action that was executed, you can use the viewer to remove the change. For more information, see “Viewing and removing plan changes” on page 219.
**Tip**
When performing exercises in a Job and STC plan, the following rules apply:

- After applying changes to any job or group of jobs on an LPAR, you cannot perform additional operations to the affected jobs.

- To ensure accurate results in your plans, you should limit the number of operations that you apply to a list of Job/STC Items because multiple actions against LPARs are not recommended.

---

**Working with Job and STC plans**

In preparation to modify the existing batch workload configurations on an LPAR, use the following procedure to generate and view a Job/STC Items report.

**Note**
In a Job and STC plan, Job/STC operations can be performed only at the LPAR level. Within the plan, you can still access CPC level reports and charts to analyze the data, but there are no plan actions available at this level.

While working with a Job and STC plan, you can adjust the LPAR level view as follows:

- Add individual workloads in the charting area
- Show the Defined Capacity for the LPAR
- Change the defined capacity for the LPAR
- Show a chart of the R4HA for the LPAR
- Show the individual peak MSU utilizations for the MLC products on this LPAR

These views are controlled through identical operations, as described in “Working with a plan at the LPAR level” on page 194.

During the following procedure and before you can perform Job/STC operations, you will generate a report of the top 50 jobs that contributed to the CPC peak or any one of the MLC product peaks.

The report can be generated from all workloads on the LPAR or from a selection of workloads that you determine. If you want to generate a list of jobs from a selection of workloads, you must first add the workloads to the charting area.
To generate and view a Job/STC Items report

1. Open an existing Job/STC plan or create a new Job/STC plan.

For more information, see the following:

- “Opening a plan” on page 185
- “Creating plans” on page 182

2. From the Actions pane, click the LPAR with which you want to work.

The selected LPAR object opens in the viewer as shown in the following figure:

The charting area shows a gray chart of the R4HA for the month, indicating the CPC peak MSU utilization with a red dot and the product peak utilizations for MLC products with black dots. If available for the selected LPAR, a black chart for the Defined Capacity is also displayed.

You can hover over the CPC peak or any product peak to display information about the MLC product, the MSU utilization, and the date and hour when the peak occurred.

3. (optional) If you want to change the view from showing all of the R4HA peaks for individual MLC products, click Select one or more MLC products to view their R4HA peak on the LPAR chart.

The Available MLC Products dialog displays as shown in the following figure:
MLC products that contributed to the peak R4HA for the month are indicated with a red dot in the CPC R4HA First Peak column.

4 In the dialog, perform the following actions:

a From the list of MLC products, deselect any MLC products to remove the R4HA peak on the LPAR chart.

b When finished with your selections, click Accept.

The Available MLC products dialog closes and the LPAR chart displays only the Product Peaks for the selected MLC products.

Tip

Viewing the individual peaks of MLC products can assist in your analysis, especially when you plan to perform Job/STC Operations to jobs that do not pertain to the peak R4HA for the LPAR.

5 Click the following link: Click here to perform Job and STC What-If operations.

The peak interval query selection panel displays as shown in the following figure:
Use the drop-down box to select the CPC peak or any one of the MLC product peaks to use for the Job/STC query.

The specification of a peak determines the query interval. The query interval is the R4HA interval that is used to generate the Job/STC Items report.

6 Perform one of the following actions:

- To generate and view a Job/STC Items report for all workloads, use the Click here for Job and STC What-If Operations for all Workloads link.

- To generate and view a Job/STC Items report from selected workloads, use the list of workloads and their R4HA MSU Utilization data above the charting area to select the workloads you want to include in the query, and then use the Click here for Job and STC What-If Operations for selected Workloads link.

When you select a workload, its colored MSU utilization chart is added to the charting area. You can use this chart to determine whether the workload contributed to the peak R4HA for the CPC or for individual MLC products.

The selection of workloads affects the job set that is evaluated in the query. The subsequent list of the top 50 jobs that contributed to the specified peak will vary depending on your selections. As you add workloads, you subsequently add all of the jobs that are executed in these workloads for evaluation and consideration when generating the list.

After you have made your selection of workloads, the entire set of jobs from the selected workloads will be analyzed for their contribution to the specified peak and for inclusion in the list of the top 50 Job/STC Items. You can widen or narrow the set of jobs to be included in the list by your selection of workloads.
When you select a workload, its MSU utilization is added to the charting area. By comparing an individual workload's contribution to the peak utilization for the entire LPAR (indicated by the red dot) or for individual MLC products (indicated by the black dots), you can determine if this workload contributed significant MSU utilization to the peak R4HA.

When you have identified the workloads that contributed to the peak, by viewing a report of the top 50 jobs that consumed this workload utilization, you can identify the jobs that contributed to the peak and were a major factor in the MLC product cost.

After you have made your selections and clicked on the link, Cost Analyzer generates and displays a Job/STC Items report based on your selections. The following figure shows a sample Job/STC Items report.

**Figure 49: Sample Job/STC Items report**

<table>
<thead>
<tr>
<th>Job/STC Name</th>
<th>Workload Name</th>
<th>Peak MSU Contribution</th>
<th>Peak MSU Contribution Total</th>
<th>Starting Date/Time</th>
<th>Service Class</th>
<th>Report Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.40</td>
<td>0.80</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.50</td>
<td>1.00</td>
<td>0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.60</td>
<td>1.20</td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.70</td>
<td>1.40</td>
<td>0.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.80</td>
<td>1.60</td>
<td>0.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Where to go from here**

The Job/STC Items report provides interactive features to:

- Change the interval to display metrics based on any 4 hour interval that occurred in the month
- Filter the report to refine the job list results
- Export the report to a CSV file
- Sort the column data
Perform Job/STC Operations

For more information, see Working with the Job/STC Items report on page 207 and “Performing Job/STC Operations in a plan” on page 212.

**Working with the Job/STC Items report**

The Job/STC Items report displays data that pertains to the contribution of each job to the R4HA peak in each of the 4 hours that comprise the query interval. Using the interactive features of the report, you can:

- Sort the column data to reorganize the list based on the column criteria
- Filter the list to further refine the list of jobs
- Change the interval to recalculate the report and display the metrics of any four hour period

You can also perform Job/STC Operations. For more information see “Performing Job/STC Operations in a plan” on page 212.

Figure 50 on page 207 shows a sample Job/STC Items report.

Figure 50: Sample Job/STC Items report

Table 29 on page 136 describes the data that each column of the report contains.
Table 46: Job/STC Items report columns

<table>
<thead>
<tr>
<th>Column header</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job/STC Name</td>
<td>Job name and its Job Entry System (JES) number</td>
</tr>
<tr>
<td>Workload Name</td>
<td>Name of the workload that contains the job</td>
</tr>
<tr>
<td>Peak R4HA Contribution</td>
<td>Four hour period that determined the R4HA peak value</td>
</tr>
<tr>
<td></td>
<td>This section of the report provides columns that list the date and times of</td>
</tr>
<tr>
<td></td>
<td>each of the four hours that comprise the peak interval. For each job in the</td>
</tr>
<tr>
<td></td>
<td>list, the column data displays the individual MSU contribution to the peak</td>
</tr>
<tr>
<td></td>
<td>R4HA.</td>
</tr>
<tr>
<td></td>
<td>The blue segment of each hour provides a visual aide to identify the relative</td>
</tr>
<tr>
<td></td>
<td>value of the metric. The size of the blue segment is based on the highest</td>
</tr>
<tr>
<td></td>
<td>hourly value in the list. The blue segment for each hour is a graphic</td>
</tr>
<tr>
<td></td>
<td>representation of the ratio between the hourly value for the job and the</td>
</tr>
<tr>
<td></td>
<td>highest value.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> For example, if the highest value for any hour in the list is</td>
</tr>
<tr>
<td></td>
<td>10, then any hour where the value is 5 will display a half-blue segment. Any</td>
</tr>
<tr>
<td></td>
<td>hour where the value is 2.5 will display a quarter-blue segment and so on.</td>
</tr>
<tr>
<td></td>
<td>The four individual hours that are displayed represent the hours that were</td>
</tr>
<tr>
<td></td>
<td>used to calculate the R4HA peak. In general for all metrics, the peak hour</td>
</tr>
<tr>
<td></td>
<td>column is the last date and time. The other 3 hours are the hours that</td>
</tr>
<tr>
<td></td>
<td>preceded the peak hour and thus contributed to the calculation of the R4HA.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The metrics that are displayed in the columns can be varied. See</td>
</tr>
<tr>
<td></td>
<td>Table 30 on page 137 for a description of the metrics.</td>
</tr>
<tr>
<td>Contribution to Peak</td>
<td>Total amount of MSUs that the job contributed to the peak R4HA</td>
</tr>
<tr>
<td>Starting Date/Time</td>
<td>Starting date and time of the job</td>
</tr>
<tr>
<td>Suite Name</td>
<td>Name of the user-defined group of jobs and STC</td>
</tr>
<tr>
<td>Service Class</td>
<td>Name of the Service Class for the job</td>
</tr>
<tr>
<td>Report Class</td>
<td>Name of the Report Class for the job</td>
</tr>
</tbody>
</table>

For each of the four hours that comprise the peak interval, you can select which metrics you want to display in the report. The following table describes the metrics that can be displayed.

Table 47: Job/STC Items report metrics

<table>
<thead>
<tr>
<th>Metric type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak R4HA Contribution (MSUs)</td>
<td>Number of Millions of Service Units (MSUs) that the activity of the job in</td>
</tr>
<tr>
<td></td>
<td>the current hour contributed to peak R4HA</td>
</tr>
<tr>
<td></td>
<td>This value is calculated as:</td>
</tr>
<tr>
<td></td>
<td>$0.25 \times (MSUs \text{ used by the Job in the current hour})$</td>
</tr>
<tr>
<td>Metric type</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CPU Seconds</td>
<td>General Purpose Processor seconds used by the Job in the current hour</td>
</tr>
<tr>
<td>MSU Used</td>
<td>General Purpose Processor MSUs used by the Job during the current hour</td>
</tr>
<tr>
<td></td>
<td>This value is calculated as:</td>
</tr>
<tr>
<td></td>
<td>(CPU second used) * (Software Service Units coefficient) / 1000000</td>
</tr>
<tr>
<td>Cost Contribution</td>
<td>Contribution of Job's activity in the current hour to the cost of all products that have Peak R4HA in the selected interval</td>
</tr>
<tr>
<td></td>
<td>This value is calculated as:</td>
</tr>
<tr>
<td></td>
<td>(Average Cost per MSU of all such Products) * (Job Peak R4HA contribution)</td>
</tr>
<tr>
<td>ZIIP Eligible seconds</td>
<td>CPU seconds used on the General Purpose Processor that are eligible to be used on zIIP processor</td>
</tr>
<tr>
<td>ZIIP seconds</td>
<td>zIIP seconds used by the Job in the current hour</td>
</tr>
</tbody>
</table>

**Note**

By hovering over any metric in the list, a popup displays the corresponding value for each of the metric types.

The report also provides a visual cue to indicate whether a job was processing during the hour before or after the 4 hour peak interval. A job-in-progress arrow (››) that is displayed after a metric indicates that the job continued into the next hour. Similarly, a job-in-progress arrow (‹‹) that is displayed before a metric indicates that the job was processing in the previous hour.

The report has interactive and dynamic features to assist in your analysis of the report data. Use the following procedures to examine the report:

**To sort the report data by the column values**

1. Click any column header.

   Cost Analyzer sorts the data based on the selected column and displays the results. The column header displays (↑) to indicate that the report is sorted by this column's values.

**To apply a filter to the Workloads in the report**

You can refine the job list in the report by applying a filter to limit the display to specific LPARs or workloads.

1. Click **Filter Workloads**.
The Filter Workloads dialog displays as shown in the following figure:

2 In the Filter Workloads dialog, deselect the LPARs or workloads that you want to remove from the report display.

3 Click **Apply Filter**.

Cost Analyzer applies the selected filter and displays the results in the report.

**To change the interval of the report**

The Job/STC Report uses the peak interval as a default and displays data based on the hour when the peak value occurred and the 3 hours that preceded it. You can change this interval and recalculate the report to display metrics from any four-hour period that occurred in the month.

1 From the Job/STC Report, click **Change Interval**.
The report displays a chart of the MSU utilization activity for the month and indicates the peak with a red dot as shown in the following sample figure:

Figure 51: Sample Job/STC Items report with chart

Note

Product peaks are indicated by a black dot, but can be displayed only if you selected them for viewing prior to generating the list of Job/STC Items. For more information, see “Working with Job and STC plans” on page 202.

2 Hover over the chart and click the date and hour you want to set as the final hour of the interval.

Cost Analyzer marks the selected hour with a black X, recalculates the metrics based on the selected interval, and then displays the results.

3 When finished viewing the results of the interval change, click Close Chart.

Note

To restore the report to the original results for the peak interval, you need to repeat this procedure and in Step 2 on page 211 select the peak hour in the chart.

To export the report to a CSV file

1 From the Job/STC Report, click Export to CSV.

A dialog opens prompting you to save the report as a CSV file on your local computer.
Note

The exported report only contains data for the metric type that is currently displayed. You need to export a separate CSV file for every metric type you want to examine in a CSV file. For more information, see Table 30 on page 137.

2 Name the CSV file, and then click Save.

Where to go from here

The list of Job/STC Items provides the ability to perform Job/STC Operations. For more information, see “Performing Job/STC Operations in a plan” on page 212.

Performing Job/STC Operations in a plan

Use the following procedure to perform Job/STC Operations.

Before you begin

In order to perform Job/STC operations in a plan, you must generate a list of Job/STC Items. For more information, see “Working with Job and STC plans” on page 202.

Example

By combining scaling, shifting, and moving Job/STC operations, you can model the effects of changes to your business activities. For instance, if you scale the activity of the jobs to 50% and then move the activity to a different LPAR, you can see the effect of splitting the activity of these jobs in half and moving half of this activity to a different LPAR.

To perform Job/STC operations

1 From the list of Job/STC Items, select the jobs with which you want to perform Job/STC Operations.

   You can select an individual job or a group of jobs. When you select a group of jobs, the Job/STC Operations that you perform will be executed on all of them simultaneously.

2 Click Job/STC Operations.

   Cost Analyzer generates and displays the Job/STC Operations report. Figure 52 on page 213 shows a sample Job/STC Operations report that displays the
Current chart and an Evaluation Preview chart that show the MSU utilization for the LPAR:

**Figure 52: Sample Job/STC Operations view**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Evaluation Preview chart</td>
<td>Displays a preview of any Job/STC Operations you perform based on an evaluation of the operation’s approximate effect. Initially, the Evaluation Preview chart is identical to the Current chart. When you specify any Job/STC Operations, the change is automatically displayed in the Evaluation Preview chart. You can hover over the chart to display a popup that indicates the total MSU activity for the LPAR and the aggregated MSU activity for the selected jobs. <strong>Note:</strong> The zoom feature operates in tandem to control the view of both the Current chart and the Evaluation Preview chart. Any change of the zoom view affects the view of both charts.</td>
</tr>
<tr>
<td>2</td>
<td>Aggregated MSU Activity</td>
<td>Indicates the jobs selected for the Job/STC Operations report and their individual and aggregated MSU Activity.</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>Current chart</td>
<td>Displays a chart of the total activity with a red dot indicating the CPC peak R4HA. You can hover over the chart to display a popup that indicates the total MSU activity for the LPAR and the aggregated MSU activity for the selected jobs. On the chart, the aggregated activity for the selected jobs is indicated by the blue areas. These blue areas represent the combined MSU activity and indicate graphically the portion of the total MSU activity that these jobs consumed. <strong>Note:</strong> Product peaks are indicated by a black dot, but can be displayed only if you selected them for viewing prior to generating the list of Job/STC Items. For more information, see “Working with Job and STC plans” on page 202.</td>
</tr>
</tbody>
</table>
| 4 | Job/STC Operations       | Provides a list of the Job/STC Operations you can perform and the means to activate them in the Evaluation Preview chart. You can perform any of the following Job/STC Operations:  
  ■ Delete the activity from the LPAR.  
  ■ Scale the activity on the LPAR by a specified factor.  
  ■ Shift the activity to a different time interval on the LPAR.  
  ■ Move the activity to a different LPAR.  
  **Note:** Any operation that you select to perform activates a preview of the effect in the Evaluation Preview chart. By adjusting the settings of the operations, you can use the Evaluation Preview chart to view the effect before the changes are applied to the jobs. |

3 *(optional)* If you want to delete the activity from the LPAR, toggle the **Delete the selected activity?** switch to **Yes**.

The selected activity is deleted from the LPAR and the effect of this action is displayed in the Evaluation Preview chart. When you are satisfied with the results, skip to Step 7 on page 217

**Note**  
When deleting the activity of the selected jobs, no further Job/STC Operations can be made on the selected jobs.
4 (optional) If you want to scale the activity, specify the scale factor in the scaling box as a percent to either reduce or increase the activity.

You can enter the percentage number, or use the +/- buttons to set the percentage of the workload you want to change. The activity is scaled by the selected factor and the effect is displayed in the Evaluation Preview chart.

--- Example ---

Use the scaling operation when you want to analyze the effect of a known change to the monthly activity of a job or a group of jobs.

For instance, if you know that the activity of these jobs will double in a subsequent month, you can scale the work by 200% and view the effect to the total LPAR activity.

If you want to perform additional operations, continue to Step 5 on page 215. If you are finished with your operations, skip to Step 7 on page 217.

5 (optional) If you want to shift the activity to a different time on the chart, specify the number of hours to shift the occurrence of the activity in the shift activity box.

The activity is shifted by the number of hours you specify and the effect is displayed in the Evaluation Preview chart. You can continue to change the number of hours and view the results in the Evaluation Preview chart, until the activity is shifted to a desired time interval.

You can use the chart of the total LPAR activity to identify the best time interval to shift the activity in order to bring about a desired affect to any R4HA peak. Through the shifting of the time interval, you can immediately view the affect to either the CPC peak or the MLC product peaks.

--- Tip ---

Job/STC Operations can be performed individually or in combination to determine the effect on the activity.

In keeping with the previous example, now that the activity of the selected jobs will double, you can move the jobs to a different time interval and then view the affect to the total LPAR activity and any affect to the R4HA peak.

If you want to perform additional operations, continue to Step 6 on page 215. If you are finished with your operations, skip to Step 7 on page 217.

6 (optional) If you want to move the activity to a different LPAR, perform the following actions:

a In the boxes provided, specify a target CPC and a target LPAR, and then click Move.
Cost Analyzer moves the activity to the target LPAR and displays an Evaluation Preview chart of the target LPAR with the new activity included in its total LPAR activity.

If you want to perform additional operations, return to Step 4 on page 215 and Step 5 on page 215. If you are finished with your operations, continue to Step 7 on page 217.

---

**Note**

After viewing the results in the Evaluation Preview chart, if you want to abort this move to the target LPAR, click the CPC drop-down and select the blank space. The target CPC and LPAR are removed from the boxes. To restore the activity to the original LPAR, click **Move**. The Evaluation Preview chart displays the original LPAR chart and restores the activity. (Alternatively, you can abort the move of the activity to the target LPAR and select a new target.)

---

b Click **Apply Changes**.

The MLC Product License dialog displays as shown in the following figure:

![MLC Product License dialog](image)

---

c In the MLC Product License 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 jobs 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 job 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.

**Note**

After making your selections in the MLC Product License dialog, click **Apply**.

The Planning tool applies changes to the model and performs an evaluation of the batch job configurations. Skip to **Step 8 on page 193**.

**Note**

After applying changes, you can view the Evaluation Summary Report to examine the results to the MLC costs. You can also continue performing operations to other LPARs in the plan. However, it is not recommended to perform additional operations to any LPAR that you have used as a target when moving jobs.

7 When you have finished making your operations, click **Apply Changes**.

The Planning tool applies changes to the model and performs an evaluation of the batch job configurations.

8 When prompted to view the evaluation results, click **Yes** to view them (as described in “Viewing the Plan Evaluation Summary Report” on page 217) or **No** to continue working in the list of Job/STC Items.

**Note**

If you select **No**, you can continue working in the list of Job/STC Items, but any jobs that have already had operations performed on them cannot be selected for further operations.

9 When finished performing operations, click **Go Back** to return to the LPAR level for the Job and STC plan.

**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 **View plan evaluation results** 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 53 on page 218:

*Figure 53: 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 117.

*Table 48 on page 218* describes the columns that are unique to this report:

*Table 48: 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>
<tr>
<td>Old R4HA First Peak (MSU)</td>
<td>R4HA value in the cost model that was used to build this plan</td>
</tr>
<tr>
<td></td>
<td>The old value designates the starting value before the changes were executed.</td>
</tr>
<tr>
<td>Old R4HA First Peak Date</td>
<td>Date and time of the old R4HA 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 triangle (▼) and the amount of the gain. A cost increase is indicated by a red triangle (▲) 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 and removing plan changes

After executing changes to a plan, you can view a list of the changes in the order they were executed. You can use this view to see the overall changes that have been made to your plan. Additionally, you can use the viewer to remove any change that is unwanted. Any unwanted change can be undone and removed from the plan by marking it for removal. However, since the plan changes are listed sequentially, you must work from the last change executed and remove each change in reverse order until you remove the unwanted change.

1. In the Actions pane, click the View changes made to this plan button (⊕).
A pop-up window lists the steps executed against any LPAR, CPC, workload, or job. The following figure shows a sample:

**Figure 54: Sample Plan Changes pop-up window**

![Plan Changes pop-up window](image)

2 Starting with the final change made to the plan, click **Remove Plan Change** for each change you want to remove.

As you mark the plan changes for removal, the Plan Change is designated **Marked for Removal** and is greyed-out. To restore the Plan Change and keep it in the list, click **Marked for Removal** again.

Alternatively, you can select or deselect all Plan Changes by clicking on **Remove All** or **Keep All**.

3 When ready to remove the changes, click **Update Plan**.

**Changing the Evaluation Cost Table for a plan**

Use the following procedure to change the Evaluation Cost Table for a plan.

When creating a plan, you select an Evaluation Cost Table that determines which cost table is used when making the cost evaluations based on the exercises and actions you perform. At any time, you can change your selection without having to create a new plan.

1 Perform one of the following actions:
- From the Actions pane, click **Open Plan**.
  The Open Plan dialog displays as shown in the following figure.

![Open Plan Dialog](image_url)

Select the plan for which you want to change the Evaluation Cost Table and then click **Open Plan**.

- From the list of Recent Plans, click the plan that you want to open.

  The Planning tool opens the Plan.

2. In the Actions pane, click the **View changes made to this plan** button (🔗).
A pop-up window displays, listing the steps executed against any LPAR, CPC, or workload. The following figure shows a sample:

**Figure 55: Sample Plan Changes pop-up window**

At the bottom of the dialog, the current Evaluation Cost Table established for this plan is displayed.

3. Click **Change Cost Table**.

The Select Cost Table dialog displays as shown in the following figure:

4. From the list in the dialog, select the cost table that you want to use during the evaluation process, and then click **Select Cost Table**.
The Select Cost Table dialog closes and the Plan Changes dialog displays your new Evaluation Cost Table selection.

5 Click Update Plan.

The Plan Changes dialog closes and the Planning tool updates the plan. When calculating and evaluating your plan exercises, the Planning tool will use the Evaluation Cost Table that you selected for any new actions you perform.
Managing Country Multiplex Pricing

This appendix describes Cost Analyzer's support for Country Multiplex Pricing (CMP). If you are about to transition to CMP or have already made the transition to CMP, the information in this appendix helps you to understand:

- How to set up Cost Analyzer to support CMP
- How CMP affects the Monthly Summary Report

Overview of Cost Analyzer support for CMP

Cost Analyzer provides full support for Country Multiplex Pricing (CMP) so that you can build cost models that are based on this new sub-capacity offering.

For more information about CMP, see the following IBM documents:

- IBM Country Multiplex Pricing announcement
- IBM System z Software Pricing
- Country Multiplex License Charges (CMLC) and Multiplex zNALC (MzNALC)

Cost Analyzer supports CMP in Monthly Summary Reports by providing a breakdown of MLC Product MSU utilizations by family and version. You can:

- View reports of MSU utilizations for MLC product families
- Identify all monthly peak R4HA MSU utilizations by MLC product family
- Compare cost data of MLC product families running on specific CPCs or LPARs
- Analyze the percent of total cost breakdown by MLC product family, CPC, and LPAR
View workload reports that itemizes the contribution of batch jobs to the R4HA

Setting up Cost Analyzer to support CMP

The following procedure describes how to change the setup of Cost Analyzer and enable the support of CMP.

CMP changes the pricing metrics, cost coefficient values, and reporting methods that are used to determine your MLC product costs. In order to enable Cost Analyzer to support CMP, you need to:

- Edit the CMLC or MzNALC cost coefficients in the active cost table using the MSU Cost Editor
- Change the pricing method to CMP using the CPC Configuration Editor
- Rebuild the cost models for any month where CMP Pricing was in effect using the Run Task Now feature in the Manage Model Builder Task administration tool

To set up Cost Analyzer to support CMP

1. From the console, click Administration Tools.
2. From the Administration Tools dialog, click MSU Cost Editor.
3. In the MSU Cost Editor, open the cost table that will be active when Country Multiplex Pricing is in effect.
4. In the Cost Coefficients column, click Edit for an MLC product version that is affected by Country Multiplex Pricing.

   The Edit Pricing Metrics dialog is displayed.

5. From the Pricing Metric Type drop-down menu, click CMLC (or, if necessary, MzNALC) to select the pricing metric cost table for editing.

   **Note**

   For any LPAR that used zNALC, you should select MzNALC.

   The Edit Pricing Metrics dialog displays the selected cost table as shown in the following sample figure:
6 In the **Base WLC** box, enter the value provided by IBM.

7 Edit the **Cost Coefficient** values in the cost table, entering the coefficients provided by IBM.

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

---

**Note**

You can perform the following functions to all of the cost coefficients in the cost table:

- Click **Reset to defaults** to reset the values of the selected Price Metric to zero.
- Specify a percentage and click **Apply** to increase or decrease the cost coefficients by that percentage.

---

8 In the **MSU Base** and **Base Factor** boxes, enter the IBM baseline values.

The MSU Base and Base Factor values are used to determine the monthly cost adjustment that IBM adds to the monthly cost of using this MLC product. If you want to know the cost adjustment value, click **Recalculate** and the amount is displayed in the **Cost Adjustment** box. If at any time the MSU Base or Base Factor change, you can reenter the new values and click **Recalculate** to view the new cost adjustment amount.
It is important to note that when you enter values for MSU Base and Base Factor, Cost Analyzer automatically calculates the cost adjustment. You do not need to click **Recalculate** in order for the cost adjustment to take effect.

**Note**

If your enterprise is considering switching to CMP and you want to estimate the MSU Base and Base Factor values, see “Estimating the CMP Base values” on page 237.

9 When finished editing the CMLC pricing metric, click **Accept**.

Cost Analyzer applies your changes and closes the dialog. In the **Cost Coefficients** column of the MSU Cost Editor, CMLC should appear in the list of edited pricing metrics as shown in the following figure:

![Cost Coefficients](image)

**Note**

For each MLC product version affected by CMP, you must edit and complete a pricing metric cost table for CMLC. All changes, however, are not saved until you click **Save Changes**. When editing multiple cost tables, you may want to save your changes and reopen the cost table to continue working. This can ensure your edits have been saved as editing cost coefficients for every MLC product can take a long time to complete.

10 Repeat Step 4 on page 226 through Step 9 on page 228 for each active MLC product in the cost table.

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

Cost Analyzer saves the changes to the cost table, which now includes cost coefficients for Country Multiplex Pricing.

12 From the Administration Tools dialog, click **CPC Configuration editor**.

The CPC Configuration Editor is displayed as shown in the following figure:
13 At **Use Country Multiplex Pricing?**, select **Yes**.

Cost Analyzer applies the change and in the CPC Configuration Editor, each CPC displays CMLC as the Pricing Metric Type.

14 Click **Save Changes**.

The CPC Configuration Editor saves the changes and closes. Cost Analyzer will update the cost model for the current month with CMP after running the next scheduled cost model.

15 *(optional)* If Country Multiplex Pricing was in effect for a previous month, perform the following actions:

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

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

The Model Builder Tasks dialog lists all of the tasks that you have defined:
c From the list, select the Model Builder Task you want to run and click **Run Now**.

The Run Task Now dialog opens:

![Run Task Now dialog]

**Run Task Now**

Select the usage month *(2nd day of month to 1st day of following month)* for the model you want to build.

![Calendar]

**2015**

- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- Dec

**Submit…**  **Cancel**

**d** From the calendar in the dialog, select the usage month when Country Multiplex Pricing was in effect.

The usage month starts on the 2nd day of the month and ends on the 1st day of the following month.
e Click **Submit**.

Cost Analyzer runs the Model Builder Task. Check the indicator at the top right of the console for the status of the task.

f Repeat **Step 15.d on page 230** through **Step 15.e on page 231** for every month that Country Multiplex Pricing was in effect.

You can now generate Monthly Summary Reports for each month affected by CMP costs.

---

**Working with Country Multiplex Pricing reports**

Monthly Summary Reports generated when Country Multiplex Pricing (CMP) is in effect differ significantly from those generated without CMP in effect.

This topic describes the differences and provides general information about how to drill down in the report to determine the factors that impacted MSU utilizations and affected your monthly costs.

Country Multiplex Pricing changes the method by which IBM determines the peak R4HA MSU utilization value that is used to calculate your monthly MLC costs. When multiple versions of an MLC product are running on the same CPC, IBM creates a "family" for that product and appends "ALL" to the product name (For example, z/OS ALL). IBM then calculates the MLC cost for that product based on the combination of all versions running on that CPC, treated as a single MLC Product.
The following figure shows a sample Monthly Summary Report that was generated from a cost model that used Country Multiplex Pricing.

**Figure 56: Sample Monthly Summary Report with Country Multiplex Pricing**

As the figure shows, the report groups product families into separate sections that are divided by lines. The top row of each section presents the MLC Product family name (appended with the word *All*). The MLC Product family entry provides the monthly cost data determined by the peak R4HA MSU utilization value, which represents the combined utilizations for all versions of the MLC product.

Under the MLC Product family name is a list of each version of the MLC Product that was running during the month. These entries provide the peak values of the R4HA MSU Utilizations for each individual version of the MLC product. However, because the monthly cost is based on the peak value of all versions combined, the monthly summary report cannot provide data for actual costs, the percentage of total costs, or the average and incremental costs per MSU. These values will always be zero.

**Note**

Even though the individual charts and peaks are provided for each version of the MLC product, they do not affect the actual cost. They are provided in the report to give you additional information of the utilizations at the product version level.

In Country Multiplex Pricing, IBM uses Multiplex Version Measurement (MVM). MVM considers all versions of the product as a single version, and the whole family is priced at the cost coefficients of the latest product version. For more information, see IBM Country Multiplex Pricing announcement.

For each chart, distinct peak indicators show different types of peak values. The following table lists the peak indicator types and describes their meaning and effect on the monthly cost.
### Peak name | Peak indicator | Description
---|---|---
Multiplex Peak Contribution (MSU) | ![Peak Icon] | Indicates the peak value of the combined R4HA MSU utilization activity from all CPCs. IBM uses this value to determine the monthly costs for this MLC Product family.
CPC First Peak (MSU) | ![Peak Icon] | Indicates the peak R4HA MSU utilization for the individual CPC. This peak value is not used to determine the monthly costs for this version of the MLC Product.
Both Peaks | ![Peak Icon] | Indicates that the Multiplex Peak and CPC First Peak occurred at the same interval.

By clicking the black triangle (▲), you can expand any entry of the report to show this information:

- A breakdown of the monthly cost data for each CPC.
- The contribution of each CPC to the Multiplex Peak (that is, the total 4HRA MSU utilization of each CPC in the interval of the Multiplex Peak).

By clicking any column header of the report, you can sort the report based on that column's data. For instance, click the % of Total Cost column to configure the report to show the data based on the highest to lowest percentage of the total cost. To restore the family sections, click the MLC Product column header.

As with all Monthly Summary Reports, the data also serves as hyperlinks that let you drill down to details about specific CPCs and MLC products. The following table describes the columns that contain data hyperlinks:

### Column | Hyperlink | Description
---|---|---
MLC Product | Any MLC Product family name or MLC Product version name that has Priced Features. **Note:** If the name appears in blue text, this indicates a link is available. | Hyperlinks to details that list the Priced Features for the MLC product and their relevant R4HA.
<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
</table>
| CPC Name   | Any CPC name in the column | Hyperlinks to CPC details  
You can:  
- Work with the charting area to compare R4HA MSU Utilizations of one or more MLC products  
- Access hyperlinks to the CPC R4HA details, which shows a breakdown of the utilizations by LPAR  
See the information about CPC level and MLC level in “Drill-down levels” on page 121. |
<table>
<thead>
<tr>
<th>Column</th>
<th>Hyperlink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4HA MSU Utilization</td>
<td>Any MLC Product family chart or MLC Product version chart</td>
<td>Hyperlinks to individual CPC R4HA details for the selected MLC Product family or MLC product version</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Work with the charting area for the Multiplex R4HA MSU Utilizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Working with the charting area” on page 125.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Access hyperlinks to Workload Reports that show Workload views for the MLC Product family on ALL CPCs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Understanding Country Multiplex Pricing reports” on page 236.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Any CPC chart</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperlinks to the R4HA MSU Utilization details for each LPAR on which this MLC Product family or MLC product version is running</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Compare average hourly MSUs to the R4HA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Comparing average hourly MSUs to the R4HA” on page 129.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Compare MSU Utilizations of workloads operating on LPARs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see “Viewing aggregated workloads across LPARs” on page 130.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Generate and view Job/STC Reports that show details about the 50 most active batch jobs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, see Viewing Job/STC Reports for workloads on page 133 and Working with the Job/STC Report on page 136.</td>
</tr>
</tbody>
</table>
Understanding Country Multiplex Pricing reports

This topic describes general information about how to analyze the MLC Product family data in a Monthly Summary report that is based on Country Multiplex Pricing.

A Monthly Summary report with CMP provides data that you can use to:

- Verify that the Multiplex Peak MSUs are lower than or equal to the sum of the individual CPC First Peak MSUs
- Determine which workloads are making contributions to the Multiplex peak

How to determine which workloads are contributing to the Multiplex peak

By clicking on the R4HA MSU Utilization chart for the MLC Product family, you can access a report for all CPCs that contains hyperlinks to the Workload Reports. For this example, assume that you clicked the z/OS All family chart to display the following information:

Figure 57: Sample Monthly Summary Report - Workload Report links

The Workload Report links are located in the lower left of the console. The Workload Reports can provide insight into which workloads contributed to the multiplex peak that determined the cost for the month.
Clicking the **Workloads by Importance** link displays the corresponding report:

**Figure 58: Sample Workload by Importance report**

In this example, the charting area displays the contribution of Imp5 across all CPCs in the Multiplex (shown in blue); the chart also shows the 4HRA MSU utilization across all CPCs for the selected MLC Product Family or MLC Product Version (indicated by the grey line). By hovering the mouse over the multiplex peak interval (indicated by the red dot), you can determine the MSU utilization for the Imp5 workload. Significantly, the workload of least importance contributed to over 60% of the total peak value that determined the cost.

By clicking the tabs and examining the other reports, you can analyze and identify all of the workloads that contributed to the peak utilization interval. From this type of analysis, you can get a clear picture of which workloads contributed to the multiplex peak that determined the cost.

**Estimating the CMP Base values**

You can use the CMP Base Factor Estimator to calculate the CMP Base values (MLC Base, MSU Base, and Base Factor) for all products and product features active in a selected month and the two previous months.

1. From the console, click **Administration Tools**.
2. From the Administration Tools dialog, click **MSU Cost Editor**.
3. Open the cost table whose CMP Base Factor values you want to estimate, and click **CMP Base Factor Estimator**.

The CMP Base Factor Estimator dialog is displayed as shown in the following figure:
4 In the dialog, select the month to use for making the calculation.

Up to three months of non-CMP data are necessary to estimate the CMP Base Factor values. When you select a month, the estimator automatically includes the two previous months when making the calculation.

**Note**
The cost tables used in the three monthly models must have CMLC and MzNALC cost coefficients for all MLC products and features that are active in these three months.

5 Click **Estimate**, and click **Yes** to confirm that you want to overwrite the current CMP Base values if they exist.

Cost Analyzer calculates an estimate of the CMP Base Factor values and applies the changes to the open cost table.

6 When finished, click **Save Changes**.
Cost Analyzer log files

This appendix describes how to access the log files using the Application Server Log Viewer that is available in the Administration Tools and how to use the viewer to see all available Application Server log files.

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.

**Note**

Cost Analyzer does not automatically send Trace messages to the log file. If you want to view Trace messages, you need to enable the sending of Trace messages. For more information, see “Enabling Trace messages to the log file” on page 241.

To display log files

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

2. Click Application Server Log Viewer.
The Application Server Log Viewer displays as shown in Figure 59 on page 240.

**Figure 59: Sample Application Server Log Viewer**

![Sample Application Server Log Viewer](image)

3 Click the log tabs for the log file that you want to display (Table 49 on page 240).

**Table 49: Types of log files**

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLC Contract Build logs</td>
<td>Temporal tracking about the building of CAzE defines MLC Contracts</td>
</tr>
<tr>
<td>Model Build Logs</td>
<td>Temporal tracking about the Model Build Tasks</td>
</tr>
<tr>
<td></td>
<td>For more information, see “Model Build Logs” on page 243.</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>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>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>
</tbody>
</table>

4 *(optional)* Click the filter tabs to refine the list by message type.

For more information, see “Filtering the messages displayed in a log” on page 246.
Enabling Trace messages to the log file

Cost Analyzer does not automatically send Trace messages to the log file. When the Model Builder Tasks do not run as expected or encounter problems that render the costing data unusable, you may want to enable Trace messages to assist the troubleshooting process.

Once enabled, the Trace messages can dramatically increase the size of the log file, but can be instrumental in resolving problems.

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

2. From the Administration Tools dialog, select **Manage Model Builder Tasks**.

3. From the list of Model Builder Tasks, select the task that you want to enable for Trace messages, then click **Modify**.

   The Modify Model Build Tasks dialog displays as shown in the following figure:
4 Click **Advanced Options**, then select the **Trace** tab.

The Advanced Options dialog displays as shown in the following figure:

![Advanced Options dialog](image)

5 Change the toggle switch to **Yes**, then click **Accept**.

The Advanced Option dialog closes.
6 From the Model Build Task dialog, click **Modify Task**.

The Model Build Task dialog closes.

7 From the Manage Model Build Tasks dialog, click **Save Changes**.

Cost Analyzer enables all Trace messages for the selected task to be sent to the log viewer. The Trace messages will be available in the log viewer after the next model builder task runs.

Since model builder tasks are usually scheduled for nightly runs, if you need to view Trace messages immediately, you must run the task manually by performing **Run Now**. For more information, see “Running the Model Builder Task manually” on page 70.

**Note**

Enabling Trace messages applies only to the selected Model Builder Task. If you have more than one task that needs Trace messages, you need to enable the messages for each task individually.

After you have finished troubleshooting, remember to disable Trace messages in order to dramatically reduce the number of messages in the log.

---

**Model Build Logs**

You can use Model Build Logs to find detailed information about every run of your Model Builder Tasks. You access the Model Build logs by using the Application Server Log Viewer to display the log files.
Figure 60 on page 244 is a sample of a Model Build Logs view that shows each defined Model Builder Task in a tree and lists every run by the date and time it occurred.

**Figure 60: Sample Model Build Logs in the Application Server Log Viewer**

**Model Build Logs legend**

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CPCs and Summary logs</td>
<td>List of CPCs logs and summary log for the Model Builder Task run</td>
</tr>
<tr>
<td>2</td>
<td>Task run date time</td>
<td>List of Model Builder Task run date times</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Each run date time has a final status marker and an invoker icon. For a description of their meanings see the following tables:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Table 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Table 2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Model Builder Task</td>
<td>Defined Model Builder Tasks with logs</td>
</tr>
<tr>
<td>4</td>
<td>Reload contents button</td>
<td>Refresh button to reload contents from application server</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Reloading the contents from the application server only reloads the contents for the CPC list of messages or summary list of messages that are currently displayed in the Log Viewer.</td>
<td></td>
</tr>
</tbody>
</table>
A marker by the Model Builder Task name and the date time of each run indicates the final status of the run as described in the following table:

**Table 50: Final status markers**

<table>
<thead>
<tr>
<th>Marker</th>
<th>Status description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Indicates the run of the task was successful</td>
</tr>
<tr>
<td>☢</td>
<td>Indicates the run of the task failed</td>
</tr>
<tr>
<td>❌</td>
<td>Indicates that errors occurred during the run of the task, but the processing continued</td>
</tr>
</tbody>
</table>

**Note**

The status of the *most recent* run of the Model Builder Task is indicated by the marker next to the Model Builder Task name.

The icon by the Model Builder Task name and the date time of each run indicates how the task was invoked as described in the following table:

**Table 51: Invoker icons**

<table>
<thead>
<tr>
<th>Invoker icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🖥</td>
<td>Indicates the task was invoked by the Model Build Proxy</td>
</tr>
<tr>
<td>⌎</td>
<td>Indicates the task was invoked by Cost Analyzer Scheduling Services</td>
</tr>
</tbody>
</table>
Invoker icon | Description
--- | ---
[Image] | Indicates the task invocation is unknown
Previous releases of Cost Analyzer were not collecting and recording invocation data for Model Builder Tasks. The unknown icon indicates that the Model Build logs are from a previous release of Cost Analyzer and occurred before the invocation data was tracked and recorded.

[Image] | Indicates the task was invoked by executing a Run Now

You can click any of the entries in the list of Model Builder Task runs to display the messages that were generated for that run. The messages display in the viewer as indicated by the following table:

<table>
<thead>
<tr>
<th>Click this entry in the list</th>
<th>Description of viewer display</th>
</tr>
</thead>
</table>
| Model Builder Task name | Displays a list of the log run date, detailing the status and number of logs
The number of logs is determined by the existence of a separate log for each CPC that is included in the task and a summary log for the entire run. |
| Task run date time | Displays a table that lists the CPC and summary logs with a corresponding tally of all messages categorized by message severity level |
| CPC name or Summary | Displays a scrollable list of all messages arranged by message severity level
Summary messages are informational and provide general information that applies to the entire run and all of the CPCs included in the task. |

Filtering the messages displayed in a log

You can apply a filter to the logs to refine the list of messages. Use the following procedure to apply the filters.

**Note**
The filters are available only for MLC Contract Build Logs and Model Build Logs.

1. Click the tab for the MLC Contract Build Logs or the Model Build Logs that you want to filter.

In the log of messages, the filter tabs are color-coded to indicate whether a message type is displayed in the list. A blue filter tab indicates that the message type is displayed. A white filter tab indicates that these messages are not displayed.
2 (optional) Click any blue filter tab to remove the message type from the list of messages.

The filter is applied and the list of filtered log messages are displayed in the viewer.

3 (optional) Click any white filter tab to add this message type to the list of messages displayed in the viewer.
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 250
2. “Install the CDB server” on page 250
3. “Install Cost Analyzer” on page 250
4. “Set up required plugin on the client machine” on page 251
5. “Install the database client components” on page 251
6. “Set up a database to be used as Cost Analyzer’s CDB repository” on page 251
7. “Set up the CDB to use Windows Authentication” on page 252
8. “Create an ODBC Data Source Name (DSN) entry” on page 252
9. “Add a Database to the Automator Catalog” on page 253
10. “Set up Cost Analyzer” on page 253
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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000036633

For a Windows 2012 Server follow the instructions in this video: https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000070649

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 30</td>
</tr>
<tr>
<td>Before you begin</td>
<td>Windows</td>
<td>“Before you begin” on page 31</td>
</tr>
<tr>
<td>Installing BMC CDB Services</td>
<td>Windows</td>
<td>“Installing BMC CDB Services” on page 31</td>
</tr>
<tr>
<td>Installing BMC CDB Workflow Service</td>
<td>Windows</td>
<td>“Installing BMC CDB Workflow Service” on page 32</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 36</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 38</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](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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000096067](https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000096067)
- To set up database client components for Oracle: [https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000099637](https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000099637)

### 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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000106521

- To set up a database using Windows Authentication (Trusted Connection): https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000106542

- To set up an **Oracle** database see the following link: https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000097433

**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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000099667

**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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000097441

To create an ODBC entry for a SQL Server database using Windows Authentication: https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000097442

To create an ODBC entry for an Oracle database: https://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000097437

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://bmcsites.force.com/casemgmt/sc_KnowledgeArticle?sfdcid=000097439

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 43</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 46</td>
</tr>
<tr>
<td>Defining connections to CDB Servers</td>
<td>Windows</td>
<td>“Defining connections to CDB servers” on page 50</td>
</tr>
<tr>
<td>Defining Model Builder Tasks</td>
<td>Windows</td>
<td>“Defining Model Builder Tasks” on page 52</td>
</tr>
<tr>
<td>Defining software contracts</td>
<td>Windows</td>
<td>“Defining software contracts” on page 74</td>
</tr>
<tr>
<td>Verifying and editing the CPC Configuration</td>
<td>Windows</td>
<td>“Verifying and editing the CPC Configuration” on page 84</td>
</tr>
<tr>
<td>Using the MSU Cost Editor</td>
<td>Windows</td>
<td>“Using the MSU Cost Editor” on page 95</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>
<td>“Installing the Cost Analyzer Model Builder Proxy” on page 61</td>
</tr>
<tr>
<td>Creating an Automator populate event</td>
<td>Windows</td>
<td>“Creating an Automator populate event” on page 48</td>
</tr>
<tr>
<td>Adding the Cost Analyzer Model Builder proxy event</td>
<td>Windows</td>
<td>“Updating the Cost Analyzer Model Builder Proxy event” on page 63</td>
</tr>
<tr>
<td>Scheduling the Automator script</td>
<td>Windows</td>
<td>“Scheduling the Automator script” on page 49</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> If you are using Cost Analyzer Scheduling Services to run the Model Builder Task at a specific time, you can skip this task.</td>
</tr>
<tr>
<td>Scheduling the Model Builder Task with Cost Analyzer Scheduling Services</td>
<td>Windows</td>
<td>“Using Cost Analyzer Scheduling Services to run a Model Builder Task” on page 68</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> If you have added the Model Builder Task to a new or existing Automator script, you can skip this task.</td>
</tr>
<tr>
<td>Other Cost Analyzer Model Builder Proxy options</td>
<td>Windows</td>
<td>“Other Cost Analyzer Model Builder Proxy options” on page 67</td>
</tr>
</tbody>
</table>

Set up Cost Analyzer - iStrobe integration

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

<table>
<thead>
<tr>
<th>Task</th>
<th>Expertise</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configure the iStrobe web location</td>
<td>Windows</td>
<td>“Configuring the Compuware iStrobe web location” on page 110</td>
</tr>
</tbody>
</table>
UIE and SCRT commands

This appendix explains the Universal Information Exchange (UIE) and Sub-Capacity Reporting Tool (SCRT) commands that can be used in association with Cost Analyzer.

You can use UIE and SCRT input data commands to provide information about how the input data should be selected and processed so that the cost models built by Cost Analyzer are consistent with specific exceptions and conditions of your mainframe system.

You can enter these commands by specifying them in:

- Model Builder Tasks
- UIE JCL
- IBM Sub-Capacity Reporting Tool (SCRT)

The following UIE and SCRT commands are described:

- “NO89 command” on page 255
- “EXCLUDE89 command” on page 261
- “VISFILE command” on page 269

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

NO89 command

Your enterprise might use MLC products or Priced Features that do not create SMF Type 89 records. For those products or features, you must use the NO89 command to include their cost data in the cost models.
You can use the following methods to specify the NO89 command:

- “Adding the NO89 command to a Model Builder Task” on page 256
- “Adding the NO89 command to the UIE JCL” on page 259
- “Adding the NO89 command in SCRT” on page 260

Adding the NO89 command to a Model Builder Task

Use the following procedure to add NO89 commands to a Model Builder Task for each MLC product or Priced Feature that does not create SMF Type 89 records. After the next scheduled run of the Model Builder Task, your cost models will include cost data for the MLC products or Priced Features that you cite in these NO89 commands.

**Note**

If the NO89 command was already specified in the JCL that runs the Universal Information Exchange batch job, you do not need to enter a command for that particular MLC product or priced feature in the Model Builder Task.

1. From the Cost Analyzer console, click Administration Tools.
2. In the Administration Tools window, click Manage Model Builder Tasks.

The Manage Model Builder Tasks dialog lists all of the tasks that have been defined:
3 Select the task for which you need to add the NO89 command, and click **Modify**.

The Modify Model Build Task dialog is displayed as shown in the following figure:

![The Modify Model Build Task dialog](image)

4 On the Modify Model Build Task dialog, click **Advanced Options** and then select the **NO89 Commands** tab.

The Advanced Options dialog displays as shown in the following sample figure:
In the box, enter the command as follows:

```
NO89 productID[:featureCode]=[CPCSN:]lparName,... | *ALL
```

The following table defines the value of the variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>productID</strong></td>
<td><em>(required)</em> IBM product number, which is typically a seven-digit number in the form of <code>XXXX-XXX</code></td>
</tr>
<tr>
<td><strong>featureCode</strong></td>
<td><em>(optional)</em> IBM priced feature number</td>
</tr>
<tr>
<td><strong>CPCSN</strong></td>
<td><em>(optional)</em> CPC serial number</td>
</tr>
<tr>
<td></td>
<td><code>CPCSN</code> can either be the full or partial CPC serial number. The partial CPC serial number is the last four hex digits of the full CPC serial number.</td>
</tr>
<tr>
<td><strong>lparName</strong></td>
<td><em>(required)</em> One or more LPAR names, separated by commas, or *ALL</td>
</tr>
</tbody>
</table>

*Note:* You must enter the LPAR name and not the SID

---

**Note**

The following condition apply:

- The command syntax for variables *is not* case sensitive.
- Enter a separate command for each MLC product or priced feature that does not create SMF type 89 records
- Each NO89 command must start on a new line
6 When finished, click **Accept**.

The Advanced Options dialog closes.

7 In the Modify Model Build Task dialog, click **Modify Task**.

The NO89 command is added to the Model Builder Task.

8 In the Manage Model Builder Tasks dialog, click **Save Changes** to save the Model Builder Task to the server.

After the next scheduled run of the Model Builder Task, cost data for the MLC product or the priced feature that does not generate Type 89 records will exist in the cost models.

---

**Adding the NO89 command to the UIE JCL**

Use the following information to specify the NO89 command in the JCL that runs the Universal Information Exchange (UIE) batch job.

For more information, see “**NO89 command**” on page 255 and the *Universal Information Exchange User Guide*.

1 In the UIE JCL, add NO89 commands for each MLC product or Priced Feature that does not create SMF Type 89 records:

- For each affected MLC product, enter this command:

  \[ \text{NO89 productID}=\text{1parName},... | *ALL} \]

  **Example**

  \[ \begin{align*}
  \text{NO89 5697-WSZ=&1parName,LPAR1,LPAR2} \\
  \text{NO89 5697-WSZ=AB37:LPAR1,CD17:LPAR2} \\
  \text{NO89 5655-018=*ALL} \\
  \text{NO89 5655-018=AB37:*ALL}
  \end{align*} \]

- For each affected Priced Feature, enter this command:

  \[ \text{NO89 productID:featureCode}=\text{1parName},... | *ALL} \]

  **Example**

  \[ \begin{align*}
  \text{NO89 5655-018:S00151M=*ALL} \\
  \text{NO89 5655-018:S00151N=1234:*ALL} \\
  \text{NO89 5655-DB2:S00MVJ4=AB37:LPAR1,CD17:LPAR3} \\
  \text{NO89 5655-DB2:S00MVJ4=LPAR1,LPAR2,LPAR3,LPAR4}
  \end{align*} \]

The following table defines the values of the variables:

---

Appendix D  **UIE and SCRT commands** 259
### Variable Description

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>productID</strong></td>
<td><em>(required)</em> IBM product number, which is typically a seven-digit number in the form of XXXX-XXX</td>
</tr>
<tr>
<td><strong>lparName</strong></td>
<td><em>(required)</em> One or more LPAR names, separated by commas, or *ALL</td>
</tr>
<tr>
<td><strong>featureCode</strong></td>
<td>IBM priced feature number</td>
</tr>
</tbody>
</table>

**Note:**

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

```plaintext
NO89 productID=serialNumber:lparName,...
```

In this example, `serialNumber` can either be the full or partial CPC serial number. The partial CPC serial number is the last four hex digits of the full CPC serial number.

---

### Adding the NO89 command in SCRT

Use the following procedure to add a NO89 command in the IBM Sub-Capacity Reporting Tool (SCRT) so that products and Priced Features that do not generate Type 89 records will be included when Cost Analyzer builds your cost models.

1. In SCRT, enter `productID=listOfLpars`, replacing the variables as described in the following table:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>productID</strong></td>
<td>IBM product number, which is typically a seven-digit number in the form of XXXX-XXX</td>
</tr>
<tr>
<td><strong>listOfLpars</strong></td>
<td>List of LPAR names separated by commas, or *ALL or *NONE</td>
</tr>
</tbody>
</table>

**Note:** The LPAR name can be preceded by the CPC serial number such as `serialNumber:LparName`, where `serialNumber` is the CPC machine type (typically, a 4-digit number) and the serial number is a five digit code. These are optional parameters, recommended only when there are LPARs with identical names on the CPCs processed in the same UIE run.
NO89 command examples

The following examples are valid syntax for entering the UIE NO89 command in a Model Builder Task.

For a product that does not create SMF Type 89 records:

```
NO89 productID=[CPCSN:]lparName,... | *ALL
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:

```
NO89 productID:featureCode=[CPCSN:]lparName,... | *ALL
NO89 5655-018:S00151M=*ALL
NO89 5655-018:S00151N=1234:*ALL
NO89 5655-DB2:S00MVJ4=AB37:LPAR1,CD17:LPAR3
NO89 5655-DB2:S00MVJ4=LPAR1,LPAR2,LPAR3,LPAR4
```

EXCLUDE89 command

If you are authorized, IBM permits you to use the special Exclude control statement to direct SCRT to exclude the processing of certain data that is reported on SMF and SCRT89 records.

The EXCLUDE89 command permits you to specify intervals to exclude from Peak R4HA calculation. You can exclude intervals with abnormal activity that can affect the MLC sub-capacity cost.

You can exclude records for:

- All LPARs and MLC products
- A specific list of LPARs and MLC products
If you have excluded records in your cost data, you can use the following methods to specify the EXCLUDE89 command:

- “Adding EXCLUDE89 commands to a Model Builder Task” on page 262
- “Adding EXCLUDE89 commands to the UIE JCL” on page 267
- “Adding EXCLUDE commands in SCRT” on page 268

Note
If you have previously specified EXCLUDE89 commands in the UIE JCL, BMC recommends that you replace all of these commands in the Model Builder Task.

Adding EXCLUDE89 commands to a Model Builder Task

You can specify the EXCLUDE89 command in a Model Builder Task, so that certain intervals are excluded from the Peak R4HA calculation for selected MLC products and LPARs.

WARNING
When you specify an EXCLUDE89 command in a Model Builder Task, Cost Analyzer ignores all previous EXCLUDE89 commands that were added to the UIE JCL for any other intervals. To maintain the correct cost data in the cost models, all of the previous EXCLUDE89 commands from the UIE JCL must be added to the Model Builder Task.

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

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

   The Manage Model Builder Tasks dialog opens, listing all of the tasks that have been defined:
From the dialog, select the Model Builder Task that you want to add an EXCLUDE89 command to, and then click **Modify**.

The Modify Model Build Task dialog is displayed as shown in the following figure:
3 Click Advanced Options and then select the EXCLUDE89 Commands tab. The Advanced Options dialog displays as shown in the following figure:
4 In the dialog, enter the command as follows:

```
EXCLUDE89 CPC=XXXX [IMAGE_ID=IparsName,... | *ALL] [PRODUCT_ID=productId,...|*ALL] 
START=yyyy/mm/dd/hh 
RESUME=yyyy/mm/dd/hh 
[ACTIVE=Y|N]
```

The following table defines the parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPC=XXXX</td>
<td><em>(required)</em> CPC serial number</td>
</tr>
<tr>
<td></td>
<td>XXXX can either be the full or partial CPC serial number.</td>
</tr>
<tr>
<td></td>
<td>The partial CPC serial number is the last four hex digits of the full CPC</td>
</tr>
<tr>
<td></td>
<td>serial number.</td>
</tr>
<tr>
<td>IMAGE_ID=IparsName,...</td>
<td><em>(optional)</em> One or more LPAR names, separated by commas.</td>
</tr>
<tr>
<td></td>
<td>If not specified, the default is *ALL.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> The following examples show valid syntax:</td>
</tr>
<tr>
<td></td>
<td>IMAGE_ID=LPARA,LPARB</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>IMAGE_ID=*ALL</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The LPAR name is not the SYSTEM name or the SMFID.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>PRODUCT_ID=productID,...</td>
<td><em>(optional)</em> One or more IBM product numbers, separated by commas. The IBM product number is typically a seven-digit number in the format of NNNN-XXX. If not specified, the default is *ALL. Example: For z/OS Version 1, you would enter: PRODUCT_ID=5694-A01</td>
</tr>
<tr>
<td>START=yyyy/mm/dd/ hh</td>
<td><em>(required)</em> Starting date of excluded period</td>
</tr>
<tr>
<td>RESUME=yyyy/mm/dd/ hh</td>
<td><em>(required)</em> Ending date of the excluded period</td>
</tr>
<tr>
<td>ACTIVE=Y</td>
<td><em>(optional)</em> Indicates the command is active or should be ignored. If not specified, the default is Yes. This parameter is included for complete compatibility with UIE command syntax.</td>
</tr>
</tbody>
</table>

---

**Note**

The following rules apply to the EXCLUDE89 command:

- The command syntax for parameters and variables is not case sensitive.

- For the excluded intervals, Cost Analyzer saves the LPAR activity in the cost model and considers that activity when calculating the Peak R4HA of LPARs or MLC Products that are not specified in the command. All Planning tool plans also take this activity into account. The EXCLUDE89 command affects only baseline cost calculation in the Planning tool.

- The EXCLUDE command has slightly different syntax rules from the EXCLUDE89 command. If you use EXCLUDE as the command (instead of EXCLUDE89), then you need to put multiple product IDs or LPAR names into parentheses.

  The differences are necessary so that the syntax matches the EXCLUDE command syntax in SCRT.

5 When finished, click **Accept**. The Advanced Options dialog closes.

6 In the Modify Model Build Task dialog, click **Modify Task**. The EXCLUDE89 command is added to the Model Builder Task.
In the Manage Model Builder Tasks dialog, click **Save Changes** to save the Model Builder Task to the server.

After the next scheduled run of the Model Builder Task, cost data for the specified interval and MLC product will be excluded in the cost models.

### Adding EXCLUDE89 commands to the UIE JCL

You can exclude intervals from Peak R4HA calculation for selected MLC Products and LPARs by adding an EXCLUDE89 command in the UIE JCL.

1. Enter the following command to the UIE JCL:

   ```plaintext
   EXCLUDE89 CPC=xxxx IMAGE_ID=parName,... | *ALL
   PRODUCT_ID=productID,... | *ALL
   START=yyyy/mm/dd/hh
   RESUME=yyyy/mm/dd/hh
   ACTIVE=Y|N
   ```

   For more information about the variables, see “Adding EXCLUDE89 commands to a Model Builder Task” on page 262.

   Inserting the EXCLUDE89 command into the UIE command stream writes the corresponding information into the VIS file and subsequently stores the information in the CDB.

   While building the cost model, Cost Analyzer extracts this information from the CDB and uses it to exclude specified intervals when calculating Peak R4HA for the specified LPARs and MLC products.

   The EXCLUDE89 command is associated with the billing month of the interval that needs to be excluded. Thus, it is sufficient to include the EXCLUDE89 command in only one UIE JCL run during a particular billing month.

   You cannot delete the EXCLUDE89 command, but you can make it inactive. To do this, insert another EXCLUDE89 command into the Model Builder Task with the same parameters, but specify `ACTIVE=N`. Cost Analyzer ignores all inactive EXCLUDE89 commands.

   **Note**

   If you want to use a list of MLC products or LPARs in these parameters, the EXCLUDE89 command needs to be split into multiple commands in the UIE JCL. You can then individually deactivate each of these commands.
Adding EXCLUDE commands in SCRT

You can exclude intervals from Peak R4HA calculation for selected MLC Products and LPARs by adding an EXCLUDE command in SCRT.

1  Enter the following command in SCRT:

```
EXCLUDE CPC=CPCserial,IMAGE_ID=SID_list,PRODUCT_ID=PID_list,
START=yyyy/mm/dd/hh,RESUME=yyyy/mm/dd/hh
```

Replace the variables as described in the following table:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPCserial</td>
<td>CPC Serial Number&lt;br&gt;The IBM serial format is tttt-nnnnn, where tttt is the CPC serial number and nnnnn is the LPAR name.</td>
</tr>
<tr>
<td>SID_list</td>
<td>List of windows security identifiers (SIDs)&lt;br&gt;If multiple SIDs are specified, list the SID names in parentheses separated by commas as follows: (SID1,SID2,SID3) Note: A single SID does not require parenthesis.</td>
</tr>
<tr>
<td>PID_list</td>
<td>List of IBM product IDs (PIDs)&lt;br&gt;If multiple PIDs are specified, list the PIDs in parenthesis separated by commas as follows: (5491-001,5696-002) A single PID does not require parenthesis&lt;br&gt;If PRODUCT_ID is missing, then all products are excluded.</td>
</tr>
<tr>
<td>yyyy/mm/dd/hh</td>
<td>Dates that define the time of the exclude period&lt;br&gt;START and RESUME times might be formatted as yyyy/mm/dd/hh/UTC.</td>
</tr>
</tbody>
</table>

**Example**

```
Exclude CPC=2097-23456,Image_Id=PRODEAST,Product_Id=(5655-L82,5655-N14),Start=2015/10/05/00,Resume=2015/10/06/00
```

**Example**

```
Exclude CPC=2827-12345,Image_Id=(LPAR1,LPAR2,LPAR3,LPAR4),Product_Id=(5655-L82,5655-018,5655-N14),Start=2015/02/02/00/UTC,Resume=2015/02/03/01
```

EXCLUDE89 command examples

The following examples are valid syntax for the EXCLUDE89 command.
The following example applies if you are processing SMF data daily:

### Task

After the processing data for January 15th, loading them into the CDB server, building the cost models, and looking at the reports, you determine that you want to exclude some utilization hours from January 15th.

### Solution

You need to insert the EXCLUDE89 command into the UIE job processing any date from January 16th to Feb 1st, 23:59 inclusive. Alternatively, you can insert the EXCLUDE89 command into the job reprocessing data for any period from January 2nd to January 15th.

The following example excludes the hours 1000:1100 and 1100:1200 from calculation of Peak R4HA for products 5655-018 and 5697-WSZ on LPARs LPARA and LPARB on CPC with serial F123:

```
EXCLUDE89 CPC=F123 IMAGE_ID=LPARA,LPARB
   PRODUCT_ID=5655-018,5697-WSZ
   START=2014/12/02/10
   RESUME=2014/12/02/12
   ACTIVE=Y
```

The following example excludes the hours 1000:1100 and 1100:1200 from calculation of Peak R4HA for all products on all LPARs on CPC with serial FE77:

```
EXCLUDE89 CPC=FE77 IMAGE_ID=*ALL
   PRODUCT_ID=*ALL
   START=2014/12/02/10
   RESUME=2014/12/02/12
   ACTIVE=Y
```

## VISFILE command

This topic describes using a subcommand in the VISFILE command in UIE to enable collecting batch job data.

If you want to collect information for use in Job/STC reports, you must include the following subcommand in the VISFILE command:

```
VISFILE INCLUDETBL=JOBD
```
VISFILE command
Index

.NET Framework requirement
Cost Analyzer server 30, 37

4HRA
 defined 16

A
accessing
 Aggregated MLC Cost by Billing Month 170
 Application Server Log Viewer 239
 Cost Variance to Date 175
 CPC level 123
 CPC level in a plan 188
drill-down data 121
 Job/STC What If Operations 202
 LPAR level in a plan 194
 Manage CDB Server Profiles 50
 MLC Product Activity View 157
 MLC product level 123
 MLC Product Summary View 155
 MLC Product:CPC Usage 165
 Model Build log files 243
 Model Builder Tasks 52
 Monthly Summary Report 116
 MSU Cost Editor 95
 Peak R4HA by Billing Month 164
 Plan Evaluation Summary Report 217
 Planning tool 181
 Software Contract Summary Report 146
 software contracts 74
 Software Cost by MLC Product 171
adding
CDB server profile 50
Cost Table change event 82
EXCLUDE89 command 262
Model Builder proxy event 63
Model Builder Tasks 52
NO89 command 256
SCRT commands 260, 268
software contracts 74
UIE JCL commands 259, 267
users to Cost Analyzer user groups 46
Administration setup tasks 43
 adding Model Builder proxy event 63
 assigning users to user groups 46
 creating Automator populate event 48
 defining connections to CDB Servers 50
 defining Model Builder Tasks 52
 defining software contracts 74
 editing the cost coefficients 89
 installing Model Builder Proxy 61
 MSU Cost Editor 95
 scheduling Automator script 49
 verifying the CPC configuration 84
Administration Tools
 Application Server Log Viewer 239
 CPC Configuration Editor 88
 defined 21
 iStrobe Configuration Tool 110
 Manage CDB server profiles 50
 Manage Model Builder Tasks 52
 Manage Software Contracts 73
 MSU Cost Editor 91
 AEWLC
 defined 16
 Aggregated MLC Cost by Billing Month
 overview 170
 working with 170
 Aggregated Workload Viewing
 working with 130
 aggregation
 workloads 18
architecture
product 14
Average MSU Used to Peak R4HA (Ratio) chart
overview 162
AWLC
defined 16

B
binding information, CDB Workflow Service 33
BMC Cost Analyzer User Groups 19
assigning users to 46
assignment functionality 19
defined 19

C
CDB
defined 16
CDB server
defining connections 50
installation requirements 30
installing 31
CDB server profile
adding 50
modifying 50
CDB Services, installing 31
CDB Workflow Service
installing 32
port number 33
Change events
explanation 81
See also Cost table change events
changes to the product 11
changing
Evaluation Cost Table 220
interval in a Job/STC Items Report 210
interval in Job/STC Report 139
Reporting Locale 103
chart options
working with 149
charting area
LPAR level in a plan 194
charts
adding charts to charting area 126
Average MSU Used to Peak R4HA (Ratio) 162
charting area 125
comparing average hourly MSUs 129
funnel 127
removing charts 126
working with charting area 125
clearing
pricing metrics 99
closing
plans 187
CMLC
defined 16
CMP
defined 16
column header descriptions
Monthly Summary Report 118
Plan Evaluation Summary Report 218
command examples
EXCLUDE89 268
NO89 261
Compuware iStrobe
configuring with Cost Analyzer 110
integration with Cost Analyzer 109
launching from a Monthly Summary Report 140
configuring
Compuware iStrobe 110
Country Multiplex Pricing 85, 226
CPCs 88
Microsoft Windows Firewall 35
Pricing Metric Types 85
Sysplex pricing 85
console
links 26
tool tabs 26
toolbar buttons 26
Contract period view types
Software Contract Summary Report 147
Contract Summary quadrant
overview 152
conventions, documentation 10
copying
pricing metrics 98
Cost Analyzer
application server requirements 36
architecture 14
code 26
installation 36
logging on 24
overview 13
plans 179
terminology 15
tools 21
web-browser requirements 37
workloads 18
cost coefficients
editing 95
modifying 109
Cost Efficiency
defined 161
Cost Efficiency Rating quadrant
overview 161
cost table
editing 95
setting the active cost table 106
Cost table change event
overview 81
Cost Table change event
adding 82
cost tables
creating 103
deleting 103
managing multiple cost tables 103
opening 103
Cost Variance by Billing Month quadrant
overview 173
Cost Variance to Date
overview 175
working with 175
Country Multiplex Pricing
changing CPC configuration 86
CPC first peak 231
estimating Base Values 237
Monthly Summary Report 231
Multiplex peak 231
setting up 226
CPC
configuring 88
defined 16
MLC products running on 123
CPC configuration
updating 87
CPC Configuration
editor overview 85
verifying 84
CPC Configuration Editor
overview 85, 88
using 88
CPC First peak
defined 231
CPC level
hyperlinks 123
in a plan 188
Monthly Summary Report 123
creating
Automator populate event 48
plans 182

D

data display controls
Monthly Summary Report 118
Defined Capacity. See plans
defining
software contracts 74
deleting
LPAR from a plan 192
plans 187
workload from an LPAR in a plan 199
deleting pricing metrics. See clearing pricing metrics
displaying
log files 239
Model Build log files 243
documentation information 9
drill-down levels
Contract Summary quadrant 154
CPC 123
defined 121
MLC product 123
drilldown links
working with 149

E

editing
cost tables 95
CPC Configuration 84
electronic documentation 9
enabling
Trace messages 241
estimating
CMP Base values 237
Evaluation Cost Table
defined 182, 183
EWLC
defined 16
exporting
  Monthly Summary Report 116
  Plan Evaluation Summary Report 219
  Software Contract Summary Report 146

F
filtering
  jobs in Job/STC Report 138
  log messages 246
  workloads in a Job/STC Items Report 209
firewall settings 35
funnel charts
  working with 127
FWLC
defined 16

G
generating reports
  Job/STC Items report 202
  Monthly Summary Report 116
  Plan Evaluation Summary Report 217
  Software Contract Summary Report 146

H
Help
  online 9
hyperlinks
  CPC level 123
  CPC level in plan 188
  MLC product level 124
  Monthly Summary Report 118

I
icons
  charting area 125
  CPC level 125
  MLC product level 125
  Monthly Summary Report 118
installation requirements
  .NET Framework 30, 37
  CDB server 30
  Cost Analyzer 36
  Internet Information Services (IIS) 30, 37
  Message Queuing Server (MSMQ) 30, 37
installing
  CDB server 29
  CDB Services 31
  CDB Workflow Service 32
  Cost Analyzer on a web server 38
  Cost Analyzer server 36
  Microsoft Silverlight 41
  Model Builder Proxy 61
integrating
  Compuware iStrobe 109
Internet Information Services (IIS) requirement
  Cost Analyzer server 30, 37
Invoker icons
defined 245
iStrobe web location. See Compuware iStrobe

J
Job/STC
defined 16
Job/STC Items report metrics
defined 208
Job/STC Items Reports
  working with in a plan 207
Job/STC Operations
  performing 212
Job/STC Operations view 213
Job/STC plans
defined 181
  overview 200
  working with 202
  working with Job/STC Items Reports 207
Job/STC Reports
  viewing 133
  working with 136
Launching
  iStrobe 140
log messages
  filtering 246
  logging on 24
LPAR
  changing the Defined Capacity 195
  cloning 191
  defined 16
  deleting from a CPC 192
  deleting workloads from 199
  moving to another CPC 190
  running MLC products 123
LPAR and Workload plans
  defined 179
  overview 188
LPAR level in a plan 194

M

Manage Model Builder Tasks
  enabling trace messages 241
managing
  CDB server profiles 50
  Country Multiplex Pricing 225
  Model Builder Tasks 52
  software contracts 73
Message Queuing Server (MSMQ) requirement
  Cost Analyzer server 30, 37
Microsoft Silverlight, installing 41
Microsoft Windows Firewall, configuring 35
MLC Cost By Billing Month quadrant
  overview 167
MLC Product
  defined 17
MLC Product Activity View
  overview 160
  working with 160
MLC product level
  hyperlinks 124
  Monthly Report Summary View 123
MLC Product Summary View
  overview 155
  working with 155
MLC Product:CPC Usage
  overview 165
  working with 165
MLC products
  running on a CPC 123
  running on LPARs 123
MLCs
  defined 17
Model Build Logs
  log viewer 243
Model Builder Proxy
  installing 61
Model Builder proxy event
  adding 63
  command line parameters 63
  using arguments 63
Model Builder Tasks
  determining invocation 245
  EXCLUDE89 command 262
  monitoring 72
  NO89 command 256
  run manually 70
  scheduling 59
  using Scheduling Services to run 68
modifying
  CDB server profile 50
  cost coefficients 109
  Cost Table change event 82
  Model Builder Tasks 52
  software contracts 74
monitoring
  Model Builder Tasks 72
Monthly Reporting tool
  defined 23
  working with 116
Monthly Summary Report
  column header descriptions 118
  Country Multiplex Pricing 231
  data hyperlinks 118
  defined 115
  exporting 116
  generating 116
  icons 118
  quick tour 118
MSU Cost Editor
  clearing pricing metrics 99
  copying pricing metrics 98
  estimating CMP Base values 237
  modifying cost coefficients 109
  overview 91
  specifying Single Version Charging 101
  updating product table 108
  using 95
MSUs
  comparing average hourly MSUs 129
  defined 16
Multiplex peak
  defined 231
MVM
  defined 17
MzNALC
  defined 17

N
navigation buttons
  Software Contract Summary Report 147
NET Framework requirement
  Cost Analyzer server 30, 37

O
online Help 9
opening
  plans 185
overview
  Aggregated MLC Cost by Billing Month 170
  Average MSU Used to Peak R4HA (Ratio) chart
    162
  Contract Summary quadrant 152
  Cost Analyzer 13
  Cost Analyzer scheduled operations 60
  Cost Efficiency Rating quadrant 161
  Cost Variance by Billing Month quadrant 173
  Cost Variance to Date 175
  Country Multiplex Pricing 225
  Job/STC plans 200
  LPAR and Workload plans 188
  MLC Cost By Billing Month quadrant 167
  MLC Product Activity View 160
  MLC Product Summary View 155
  MLC Product:CPC Usage 165
  Monthly Reporting tool 114
  Peak R4HA by Billing Month 164
  Planning tool 179
  setup tasks 43
  Software Contract Reporting tool 144
  Software Cost by MLC Product 171
Overview
  Cost table change event 81

P
pasting pricing metrics. See copying pricing metrics
Peak R4HA by Billing Month
  overview 164
  working with 164
performing

BMC Cost Analyzer for zEnterprise User Guide
Aggregated MLC Cost by Billing Month 170
cost data defined 150
Cost Variance to Date 175
MLC Product Activity View 157
MLC Product Summary View 155
MLC Product:CPC Usage 165
Peak R4HA by Billing Month 164
Software Cost by MLC Product 171
quadran charts descriptions
Software Contract Summary Report 147
quadrants
Contract Summary 152
Cost Efficiency Rating 161
Cost Variance by Billing Month 173
MLC Cost By Billing Month 167
Quick tour
Monthly Summary Report 118
Software Contract Summary Report 147

R

R4HA
comparing average hourly MSUs 129
defined 17
related publications 9
removing
CDB server profile 52
Cost Table change event 82
Evaluation Cost Table 220
Model Builder Tasks 52
software contracts 74
Reporting Locale
changing 103
reports
Country Multiplex Pricing 231
Evaluation Summary Report 217
Monthly Summary Report 115
Software Contract Summary Report 145
requirements
CDB server 30
Compuware Strobe 109
Cost Analyzer application server 36
web-browser 37

S

scenarios
usage 143
scheduling
Automator script 49
Model Builder Proxy manually 67
Model Builder Proxy manually as argument 67
Model Builder Proxy manually from the
Command line 67
Model Builder Tasks 59
using Cost Analyzer Scheduling Services 68
SCRT
defined 17
SCRT command
EXCLUDE command 268
NO89 command 260
selecting
Evaluation Cost Table 183
service account information, CDB Workflow
Service 34
setting up
CDB server connections 50
cost tables 95
Country Multiplex Pricing 226
Model Builder tasks 52
software contracts 74
user groups 46
Silverlight, Microsoft 41
Software Contract Reporting tool
defined 23
working with 146
Software Contract Summary Report
defined 145
exporting 146
generating 146
navigation buttons 147
quadran charts descriptions 147
quick tour 147
software contracts
defining 74
managing 73
Software Cost by MLC Product
overview 171
working with 171
sorting
columns in a Job/STC Items Report 209
columns in Job/STC Report 138
Specifying
Single Version Charging 101
Sub-Capacity
defined 17
summary of changes 11
SVC
defined 17
syntax statement conventions 10
Sysplex Pricing
  changing CPC configuration 86

T

tool functionality
  user groups 19
tools
  Administration Tools 21
  Application Server Log Viewer 239
  CPC Configuration Editor 88
  defined 21
  Group based component tools 23
  iStrobe Configuration tool 110
  Manage CDB Server Profiles 50
  Manage Software Contracts 73
  Model Builder Tasks 52
  Monthly Reporting tool 114
  MSU Cost Editor 95
  Planning tool 179
  Software Contract Reporting tool 144
Trace messages
  enabling 241

U

UIE
  defined 17
UIE command
  EXCLUDE89 261
  EXCLUDE89 command 267
  NO89 command 259
  VISFILE sub-command 269
UIE Command NO89 255
UIE commands 255
understanding
  Country Multiplex Pricing reports 236
updating
  CPC configuration 87
  product table 108
user groups. See BMC Cost Analyzer User Groups
using
  chart options 149
  drilldown links 149

V

verifying
  CPC Configuration 84
viewing
  charts 125
  Job/STC Items report in a plan 202
  Job/STC Reports 133
  log files 239
  Model Build log files 243
  plan changes 219
  Plan Evaluation Summary Report 217
viewing multiple reports
  Monthly Summary Report 116
  Software Contract Summary Report 146
VWLC
  defined 18

W

web-browser requirements, Cost Analyzer 37
What If Operations. See Job/STC What If Operations
working with
  Country Multiplex Pricing 231
  Job/STC Items Reports 207
  Job/STC Reports 136
workload
  defined 18
  Workload Views level
    Job/STC Reports 133
    working with 130
    working with Job/STC Reports 136
workloads
  defined 18
  deleting from an LPAR 199
  Importance 19
  moving from an LPAR 196
  Report Class 19
  scaling percentage in a plan 198
  Service Class name 19
  Subsystem address space 19
  Suites 19
  WLM Workload name in WLM Policy 19
Z

z/OS
  defined 18
z/OS image

defined 18
z/VM
  defined 18
zNALC
  defined 18