CHAPTER 3

Provisioning BAMS

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Overview

This chapter provides information and examples on how to provision the Billing and Measurements Server (BAMS), both at the system level and at the node level.

Note Before following the steps in this chapter, ensure that BAMS is correctly set up and installed. For more information, see Chapter 2, "Setup and Installation."

You must provision BAMS tables to specify such attributes as alarm parameters, polling information, node parameters, billing outputs, and disk-space parameters and thresholds. Before starting a provisioning session, read through the procedures at the beginning of this chapter to understand how to provision BAMS according to your system configuration and output requirements, and consult the provisioning examples in the rest of this chapter to assist you in deciding on the best provisioning strategy for your system.

Provisioning Commands

Use the MML **prov-add** (add), **prov-ed** (edit), and **prov-dlt** (delete) commands to modify BAMS tables (tag IDs). Use the **prov-dply** command to deploy your provisioning changes.Use the **prov-rtrv** (retrieve) command to view existing values in the tables, and to verify your provisioning changes.

Additionally, you can use the **prov-exp** (export) command to export existing values, for one table or for the entire system, to a file. You can use the **prov-cpy** (copy) command to copy one or more tables from one node to the current node.

Note For more information about MML commands, see Chapter 4, "Using MML Commands" or the MML online help. For more information about BAMS tables, see Chapter 5, "Using BAMS Tag IDs."

System-level Provisioning

System-level provisioning for Cisco BAMS is optional because default values are set during installation. You should maintain the default values unless you have specific reasons that require modifying them.

To provision BAMS three system-level tables, perform the following steps:

Step 1 Log in as the BAMS user, and start an MML session.

Step 2 Execute the **set-node:sys:** command to ensure that you are at the system level.

Step 3 Execute the **prov-sta** command.

Step 4 Provision the Alarm Parameters table (ALM-PARMS tag ID), or use the default values.

Step 5 Provision the MSC Thresholds table (MSC-THRES tag ID), or use the default values.

Step 6 Provision the MSC Parameters (MSC-PARMS tag ID), or use the default values.

Note The default values in the MSC Parameters table are set fairly high, so evaluate your disk-space limitations and make any necessary changes to the values in this table. For more information, see "Setting Up Disk Monitoring Thresholds" section on page 2-18.

Step 7 Execute the **prov-dply** command at the system level.

Node-level Provisioning

For every Cisco MGC to be polled by BAMS, you must define and provision a BAMS node for it. For example, if there are eight Cisco MGCs, you must provision eight BAMS nodes. You need to perform the following steps for each node. You can also create a multi-node batch file to provision more than one node at the same time. For more information, see the "Provisioning Commands and Examples" section on page 3-5.

To provision BAMS node-level tables for one BAMS node, perform the following steps:

Step 1 Execute the **set-node** command to go to the desired node (for example, Node1).

Step 2 Start a provisioning session with the **prov-sta** command.

Step 3 Execute the **set-nodename** command.

Step 4 Provision the Poll table (POLL tag ID).

Step 5 Provision the Node Parameters table (NODEPARMS tag ID).

Note Any values that you do not specify when provisioning the Node Parameters table are automatically assigned the default values.

Step 6 Provision the Trunk Group table (TRUNKGRP tag ID).

Step 7 For Cisco SC2200 configurations, provision the Nailed Connection table (SIGPATH tag ID).

QoS Output Provisioning

To provision the Cisco BAMS to produce QoS output, enable the QoS output in the NODEPARNMS table (NODEPARMS tag ID).

For information about QoS output, see Chapter 11, "Configuring BAMS for QoS Output."

Billing Output Provisioning

You can provision BAMS to output billing data in BAF, 1110 Binary, NICS, or P01 formats.

BAF Output

To provision BAMS to produce BAF output, perform the following steps:

Step 1 Ensure that BAF output is enabled in the Node Parameters table (NODEPARMS tag ID).

Step 2 Provision the Switch Information table (SWITCHINFO tag ID).

Step 3 Provision the Map Type table (MAPTYPE tag ID).

Step 4 Provision the Zone Information table (ZONE-INFO tag ID).

Step 5 Provision the NPANXX table (NPANXX tag ID).

Step 6 Provision the Rating Type table (RATING-TYPE tag ID).

Step 7 Provision the Tollfree table (TOLLFREE tag ID).

Step 8 If applicable, provision the Country table (COUNTRY tag ID).

Note For more information about BAF output, see Chapter 6, "Configuring BAMS for BAF Output."

1110 Binary Output

To provision BAMS to produce 1110 Binary output, perform the following steps:

Step 1 Ensure that 1110 Binary output is enabled in the Node Parameters table (NODEPARMS tag ID).

Step 2 Provision the 1110 Binary table (BIN1110 tag ID).

Note For more information about 1110 Binary output, see Chapter 10, "Configuring BAMS for 1110 Binary Output."

NICS Output

To provision BAMS to produce NICS output, perform the following steps:

Step 1 Ensure that NICS output is enabled in the Node Parameters table (NODEPARMS tag ID).

Step 2 Provision the Trunk Group Prefix table (TKGPREFIX tag ID).

Note For more information about NICS output, see Chapter 9, "Configuring BAMS for NICS Output."

P01 Output

To provision BAMS to produce P01 output, perform the following steps:

Step 1 Ensure that P01 output is enabled in the Node Parameters table (NODEPARMS tag ID).

Step 2 Provision the P01 Filter table (P01FILTER tag ID).

Note For more information about P01 output, see Chapter 8, "Configuring BAMS for P01 Output."

Threshold Crossing Alarms (TCA) Provisioning

To provision BAMS to produce threshold crossing alarms, perform the following steps:

Step 1 Provision the TCA-TBL table (TCA-TBL tag ID).

Note The Skip CDB and Skip CDE tables should only be provisioned as directed by Cisco, or left with the default values.

Deploying Node-level Provisioning

To deploy your configuration and output changes for one node, perform the following steps:

Step 1 Execute the **prov-dply** command at the node level.

Note If you are provisioning a redundant BAMS system, the **prov-dply** command automatically synchronizes the provisioning tables for that node on both units.

Step 2 Provision the next node. Return to the "Node-level Provisioning" section on page 3-2 and repeat the above steps.

Provisioning Commands and Examples

The **prov-add** (add), **prov-ed** (edit), and **prov-dlt** (delete) commands can be used in conjunction with any of the tag IDs shown below to modify BAMS tables. Use the **prov-rtrv** (retrieve) command to view existing values in the tables.

- ALM-PARMS
- BIN1110
- COUNTRY
- MAPTYPE
- MSC-PARMS
- MSC-THRES
- NODEPARMS
- NPANXX
- P01FILTER
- POLL
- RATE-EXC
- RATING-TYPE
- SIGPATH
- NODEPARMS
- SKIPCDB
- SKIPCDE
- SWITCHINFO
- TCA-TBL
- TKGPREFIX
- TOLLFREE
- TRUNKGRP
- ZONE-INFO

For more information about these tag IDs, see the "Tag IDs and Field Names" section on page 5-1.

Starting a Provisioning Session

In order to modify BAMS tables, you must first start a provisioning session with the **prov-sta** command. For example:

```
mml:sys>prov-sta::srcver=active,dstver=test10

Billing and Measurements Server - BAMS-00 2004-10-19 14:15:08
B  COMPLD
   ;
```

Note The value assigned to dstver must be a unique string, unless you use **confirm** to overwrite an existing configuration. When a provisioning session is started, a directory with the specified name is created. The directory is created under the directory name of the destination directory, /opt/CiscoBAMS/files/mml/*dirname*.

In the example above, the /opt/CiscoBAMS/files/mml/test10 directory was created. For more information about using the **prov-sta** command, see the "prov-sta—Provision Start" section on page 4-16.

Provisioning Multiple Records with a Single Command

You can provision multiple records with a single command if you use the **prov-add**, **prov-dlt**, or **prov-ed** command. Specify the parameter values by a range so that multiple records can be provisioned. Here are examples:

Example 1:

```
prov-add:SIGPATH:sigpath=0x140004,trunkgrp=805
```

This command adds 32 records to the SIGPATH table. Each record has sigpath=0x140004, trunkgrp=805.

Example 2:

```
prov-dlt:SIGPATH:sigpath=0x140001-0x140005
```

This command deletes five records from the SIGPATH table.

Example 3:

```
prov-ed:TRUNKGRP:trunkgrp=100-199,connection="T"
```

This command edits 100 records in the TRUNKGRP table. For each record where trunkgrp falls within the range 100–199, the connection parameter is set to "T."

Note To view the current settings in a table, use the **prov-rtrv** command. For details, see the "prov-rtrv—Provision Retrieve" section on page 4-16.

Deploying Changes

Use the **prov-dply** command when changes have been made and you must deploy them to the specified location. In the following example, a provisioning session is started and a change is made and then deployed.

Example:

```
mml:1>prov-sta::srcver=active,dstver=test10901,confirm

Billing and Measurements Server - BAMS-00 2004-10-08 16:30:25
B  COMPLD
   ;
mml:1>prov-add:NPANXX:npanxx=301829,lata=00001,zone=0000001

Billing and Measurements Server - BAMS-00 2004-10-08 16:31:09
B  COMPLD
   "NPANXX"
   ;
mml:1>prov-dply::srcver=test10901

Billing and Measurements Server - BAMS-00 2004-10-08 16:33:28
B  COMPLD
   ;
```

For more information about using the **prov-dply** command, see the "prov-rtrv—Provision Retrieve" section on page 4-16.

Making Changes Using Batch Files

Consult the examples in this section, which show sample provisioning sessions, if you want to provision BAMS using a batch file.

Note A BAMS provisioning batch file must have a **prov-sta** command at the beginning (right after the **set-node** command) and end with a **prov-dply** command. These commands denote the beginning and the end of the provisioning session.

The command-line instruction to execute a provisioning batch file is as follows:

```
mml -b filename [-o outputfilename]
```

BAMS does not monitor each command's execution status, but the results are placed in the MML session log file. You specify the log filename (that is, *outputfilename*) with the -o parameter, as shown above.

Using a batch file, you can provision the system as follows:

- System-level only
- One node only
- Multiple nodes (with or without the system level)

Note For ease of troubleshooting, it is recommended that you provision only one or two nodes at a time.

System-Level Example

This section provides an example of system-level provisioning.

Note System-level provisioning for Cisco BAMS is optional because default values are set during installation. You should maintain the default values unless you have specific reasons that require modifying them.

```
set-node:sys:
prov-sta::srcver=new,dstver=bams_system,confirm
prov-add:ALM-PARMS:maxlines=10000,msgdisclvl=5,msgfwdlvl=3
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="baf*bin",
polled=2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="acc_h*",polled=1
,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="acc_d*",polled=1
,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="acc_r*",polled=1
,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="cdr*bin",
polled=2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="*finished",
polled=1,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="elkup*",polled=1
,alarm=6,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="esyn*",polled=1,
alarm=6,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="esem*",polled=1,
alarm=6,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="ebaf*",polled=1,
alarm=6,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="cdr*csv",polled=
2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="baf*csv",polled=
2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/CDR/archive",subdirs="Y",type="cdr*",
polled=1,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="ext*csv",
polled=2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="p01_*bin",
polled=2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="CDR*",polled=2,
alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="cdr*BIN",
polled=2,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-add:MSC-THRES:interval=10,put=80,plt=60,uut=95,iut=950000,mil=80,mal=85,crl=90
prov-add:MSC-PARMS:active="Y",dir="/opt/CiscoBAMS/data",subdirs="Y",type="QOS_STAT_*csv",
polled=1,alarm=5,agealarm=30,agelevel=6,delage=30,delalarm=6
prov-dply::
```

One-Node Example

This section provides an example of one-node provisioning.

```
set-node:1:
prov-sta::srcver=active,dstver=node1,confirm
set-nodename::name="PGW_hostname"
prov-add:TRUNKGRP:trunkgrp=8888,connection="D"
prov-add:TRUNKGRP:trunkgrp=2632,connection="D"
prov-add:TRUNKGRP:trunkgrp=5511,connection="D"
prov-add:TRUNKGRP:trunkgrp=2066,connection="D"
prov-add:TRUNKGRP:trunkgrp=9600,connection="D"
prov-add:TRUNKGRP:trunkgrp=5200,connection="D"
prov-ed:NODEPARMS:activate=1,statoutput=1,asciioutput=2,extasciioutput=2
prov-add:POLL:host-name1="PGW_hostname",rem-dir1="/opt/CiscoMGC/var/bams",file-prefix1="cd
r*",file-suffix1=".bin",action="R",interval=5,timeout=5,maxtries=5,protocol="FTP"
prov-add:TCA-TBL:ID="global/0",egr-call-blkd=5,ttl-failed-cong=5,ttl-maint-use=10,igr-pct-
trk-use=90,egr-pct-trk-use=90,ttl-term-abnorm=10
prov-dply::
```

Multiple-Node Example

This section provides an example of multi-node provisioning.

```
set-node:1:
prov-sta::srcver=active,dstver=node1,confirm
set-nodename::name="va-okinawa"
prov-add:TRUNKGRP:trunkgrp=8888,connection="D"
prov-add:TRUNKGRP:trunkgrp=2632,connection="D"
prov-add:TRUNKGRP:trunkgrp=5511,connection="D"
prov-add:TRUNKGRP:trunkgrp=2066,connection="D"
prov-add:TRUNKGRP:trunkgrp=9600,connection="D"
prov-add:TRUNKGRP:trunkgrp=5200,connection="D"
prov-ed:NODEPARMS:activate=1,statoutput=1,asciioutput=2,extasciioutput=2
prov-add:POLL:host-name1="va-okinawa",rem-dir1="/opt/CiscoMGC/var/bams",file-prefix1="cdr*
",file-suffix1=".bin",action="R",interval=5,timeout=5,maxtries=5,protocol="FTP"
prov-add:TCA-TBL:ID="global/0",egr-call-blkd=5,ttl-failed-cong=5,ttl-maint-use=10,igr-pct-
trk-use=90,egr-pct-trk-use=90,ttl-term-abnorm=10
prov-dply::
set-node:2:
prov-sta::srcver=active,dstver=node2,confirm
set-nodename::name="node2_reston"
prov-add:TRUNKGRP:trunkgrp=9000,connection="D"
prov-add:TRUNKGRP:trunkgrp=8000,connection="D"
prov-add:TRUNKGRP:trunkgrp=7000,connection="D"
prov-add:TRUNKGRP:trunkgrp=6000,connection="D"
prov-add:TRUNKGRP:trunkgrp=5000,connection="D"
prov-add:TRUNKGRP:trunkgrp=4000,connection="D"
prov-ed:NODEPARMS:activate=1,statoutput=1,asciioutput=2,extasciioutput=2
prov-add:POLL:host-name1="va-reston",rem-dir1="/opt/CiscoMGC/var/bams",file-prefix1="cdr*"
,file-suffix1=".bin",action="R",interval=5,timeout=5,maxtries=5,protocol="FTP"
prov-add:TCA-TBL:ID="global/0",egr-call-blkd=5,ttl-failed-cong=5,ttl-maint-use=10,igr-pct-
trk-use=90,egr-pct-trk-use=90,ttl-term-abnorm=10
prov-dply::
```

Executing the Batch File

Once the batch file is created, it must be executed from outside of MML:

```
mml -b <filename>
Example:

$mml -b node01_script


Copyright (C) 1998-2003, Cisco Systems, Inc.
Processing...
mml:sys>set-node:1:
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:20
B  COMPLD
   ;
mml:1:node01>prov-sta::srcver=active,dstver=node1,confirm
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:20
B  COMPLD
   ;
mml:1:node01>set-nodename::name="PGW_hostname"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=8888,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=2632,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=5511,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=2066,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=9600,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-add:TRUNKGRP:trunkgrp=5200,connection="D"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:21
B  COMPLD
   "TRUNKGRP"
   ;
mml:1:node01>prov-ed:NODEPARMS:activate=1,statoutput=1,asciioutput=2,extasciioutput=2
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:22
B  COMPLD
   "NODEPARMS"
   ;
mml:1:node01>prov-add:POLL:host-name1="PGW_hostname",rem-dir1="/opt/CiscoMGC/var/bams",
file-prefix1="cdr*",file-suffix1=".bin",action="R",interval=5,timeout=5,maxtries=5,
protocol="FTP"
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:22
B  COMPLD
   "POLL"
```

```
   ;
mml:1:node01>prov-add:TCA-TBL:ID="global/0",egr-call-blkd=5,ttl-failed-cong=5,
ttl-maint-use=10,igr-pct-trk-use=90,egr-pct-trk-use=90,ttl-term-abnorm=10
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:22
B  COMPLD
   "TCA-TBL"
   ;
mml:1:node01>prov-dply::
Billing and Measurements Server - BAMS-00 2008-12-19 10:09:22
B  COMPLD

   /* Synchronizing remote BAMS ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/zoneinfo.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/TrunkGroup.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/alm_parms.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/bin1110.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/country.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/maptype.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/nodeParm.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/NpaNxx.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/p01Filter.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/poll.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/RatingType.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/RatingException.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/NailedConn.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/skipcdb.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/skipcde.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/switchinfo.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/thresholds.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/tollfree.CTL ... */

   /* Transferring file /opt/CiscoBAMS/files/s01/TrunkPrefix.CTL ... */
   ;
mml:1:PGW_hostname>
```