CHAPTER 5

Configuring the Cisco MGC Software

This chapter describes how to configure Release 9 of the Cisco Media Gateway Controller (MGC) software.

Quick Guide to Configuring the Cisco MGC Software

Note The Cisco MGC software files and processes are located in the **/opt/CiscoMGC directory**.

The following table provides an overview of the configuration procedure. Go to the page indicated in the right most column for more detailed information.

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Note For further information on configuring the Cisco MGC software, see the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide.*

Before You Start

Before you start, verify the following:

- Have your company's internal support and Cisco support contact information readily available so you can get help with the installation if needed. (If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii of the Cisco support contact information.)
- Ensure that you have access to the console port on your Cisco MGC host.

Caution The Cisco MGC software is case-sensitive. Ensure that you enter parameter names correctly, or the maximum number of configurations will not be modified.

Software Directory Structure

Table 5-2 shows the Cisco MGC software directory structure.

Caution Do not edit any .dat files (except for the XECfgParm.dat and trigger.dat files). Use MML or the GUI provisioning tool to make changes to your configuration. In addition, only make changes to the call screening database by using MML or the GUI provisioning tool.

Table 5-2 Software Directory Structure

Directory	Contents
/etc/init.d	Control scripts, including scripts used to stop and start the software.
/opt/CiscoMGC	Root location of base software installation.
/opt/CiscoMGC/local	User accounts home directory.
/opt/CiscoMGC/etc	Contains active configuration data files and the configuration library.
/opt/CiscoMGC/etc/CONFIG_LIB	Library of all configuration data files.
/opt/CiscoMGC/etc/CONFIG_LIB/new	The initial startup configuration supplied with a new installation of the software.
/opt/CiscoMGC/etc/active_link	The active running configuration that has been committed or deployed.
/opt/CiscoMGC/etc/prov_link	The latest provisioned configuration that has not yet been committed or deployed.
/opt/CiscoMGC/etc/cust_specific	Location of configurations that have been exported using the prov-exp MML command.
/opt/CiscoMGC/man	MML help files.
/opt/CiscoMGC/lib	System software libraries of *.so object files (including protocol and system libraries).
/opt/CiscoMGC/snmp	SNMP support directory. MIBs are named *.my and are in ASN.1 syntax.

Table 5-2 Software Directory Structure (continued)

Directory	Contents
/opt/CiscoMGC/var	Contains the log, spool, and trace file directories.
/opt/CiscoMGC/var/log	Default platform informational and error logs.
/opt/CiscoMGC/var/spool	Spool files for CDRs and measurements.
/opt/CiscoMGC/var/trace	Location of trace files created by using the sta-trc MML command.
/opt/TimesTen	Call screening database files. Do not edit the database.
/opt/Toolkit	The Toolkit application files.
/opt/sun_install	Contains the scripts used to install Solaris patches (part of the CSCh007.pkg).

Initial Cisco MGC Software Configuration

When configuring the Cisco MGC software for the first time, use the MGC Environment Configuration Tool XECfg program to modify the XECfgParm.dat file. The MGC Environment Configuration Tool is a utility that is based on the Tool Command Language/Toolkit (Tcl/Tk). This utility uses an initialization wizard to facilitate the initial configuration of the XECfgParm.dat file.

The following required configuration parameters in the XECfgParm.dat file (see Table 5-3) are critical to bringing up the system. For more information on XECfgParm.dat files, refer to the "Cisco MGC 9.x XECfgParm.dat File Parameter Definitions" section on page A-2.

Note The XECfgParm.dat file must be provisioned with the installation of every system. The file consists of set of parameters that are necessary to bring up the system. This set of required parameters is configured via the MGC Environment Configuration Tool.

When you exit the MGC Environment Configuration Tool, the slave file is sent via FTP to the appropriate system.

Caution **During Initial Cisco MGC Configuration**: We recommend that you put an initial configuration on the active **host, otherwise both the active and standby hosts will remain in the stopped state**. **Do not start the standby host if the active host is not yet provisioned.**

When the initial configuration on the active **host** is deployed, you must change the **pom.dataSync parameter to true in the XECfgParm.dat file in the standby host. After setting this parameter to true, you can start the Cisco MGC on the standby host. As the Cisco MGC comes up, the data on the standby host is synchronized with the data on the active host. Initiate switchover to bring the active host to the standby state.**

To accommodate failover conditions where the current active host can become the standby host, you must also set the pom.dataSync parameter to true on the current active host.

When Upgrading the Cisco MGC software: You must set the pom.dataSync parameter to false on the current active host to preserve configuration files.

Table 5-3 Configuration Parameters

Parameter	Description
*.CPUTimerInterval	Samples the frequency of CPU utilization. Prior to Release 9.4(1), this parameter must be set to **0** during the initial configuration of any platform with a single CPU (including Sun Netra t 100/105, Sun Netra V 120, and Sun Netra 120). For Release 9.4(1) and up, this parameter is set automatically when you specify a Cisco MGC type in the engine.SysVirtualSwitch parameter. Any attempt to modify this parameter is overwritten.
*.desiredPlatformState	Specifies the operating mode of the Cisco MGC.
*.ipAddr1 through ipAddr4	Specify the IP addresses being used by the system. Note that *.ipAddrLocalA, and *.ipAddrLocal2 are the same as *.ipAddr1, and *.ipAddr2, respectively.
*.ownClli	Specifies ANSI CLLI code.
pom.dataSync	Indicates that the Provisioning Object Manager (POM) should synchronize the provisioning data at startup.
*.SyscheckpointEnabled	Specify true if the master/slave operating mode is being used.

Table 5-3 Configuration Parameters (continued)

Parameter	Description
***.SysConnectDataAccess**	Controls whether data access is enabled or disabled (if the engine attempts to connect to the MMDB or to call screening database at startup). Values: • **true** = connect to MMDB or call screening database • **false** = do not connect to MMDB or call screening database Default: **false** **Note** This parameter must be set to ***true*** in calling scenarios where Euro-LNP, A Number Screening, or other features requiring real time database access are required. Otherwise, it can remain ***false*** for an increase in the available system memory usable for call processing. **Note** This parameter replaces the **engine.sysScreeningCheck** parameter in Cisco MGC 7.4.
engine.SysVirtualSwitch	Specifies the Cisco MGC type. Indicates whether the Cisco MGC host functions as a signaling controller or a virtual switch controller. Values: • **0** = signaling controller (nailed trunks, no auditing is initiated) • **1** = virtual switch controller (switched trunks) Default: **0** **Note** For Release 9.4(1) and up, the values of the parameters listed below are automatically set based on the Cisco MGC type you select, to maximize performance for that configuration. Any attempt to change the values of these parameters is overwritten. engine.SysMdlMemoryReduction engine.CALL_MEM_BLOCK_SIZE engine.CALL_MEM_CHUNK_SIZE *.CPUTimerInterval *.numberOfThreads

Parameters Required for Initial Setup

The following table lists the parameter values that must be defined during the initial installation.

Note These parameters are located at the top of the XECfgParm.dat file, thus making it easier to find the parameters required for initial setup.

Table 5-4 Parameters Required for Initial Setup

Item	Parameter Name	Default Value	Changed Values
1	PlatformId	1	1, if slave
2	TranspathId	01	02, if slave
3	DesiredPlatformState	Standalone	Master,slave,standalone
4	SyscheckpointEnabled	False	True, if redundant system
5	IpAddrLocalA	0.0.0.0	Ifconfig(hme0)
6	IpAddrLocalB	0.0.0.0	Ifconfig(hme1)
7	IpAddrPeerA	0.0.0.0	Slave(ifconfig(hme0))
8	IpAddrPeerB	0.0.0.0	Slave(ifconfig(hme1))
9	IPAddr1	0.0.0.0	Ifconfig(hme0)
10	IPAddr2	0.0.0.0	Ifconfig(hme1)
11	IPAddr3	0.0.0.0	Ifconfig(hme2)
12	IPAddr4	0.0.0.0	Ifconfig(hme3)
13	StPort	0	7000, if Master or 7001 if Slave
14	Engine.SysVirtualSwitch	0	1 for Switched solution
15	Foverd.ipLocalPortA (con 1)	0	1051, if Master or 1052 if Slave
16	Foverd.ipPeerPortA (con 1)	0	1052, if Master or 1051 if Slave
17	Foverd.ipLocalPortA (con 2)	0	1053, if Master or 1054 if Slave
18	Foverd.ipPeerPortA (con 2)	0	1054, if Master or 1053 if Slave
19	Pom.dataSync	False	True if Master or Slave, both sides
20	Diskmonitor.OptFileSys	<blank>	../var/log
21	NumberOfThreads	0	Prior to 9.4(1): 0,1,2 depends of CPUs in system 9.4(1) and up: Depends on the setting for engine.SysVirtualSwitch.
22	OwnClli	12233344445	ANSI(CLLI of Switch)
23	*.SysConnectDataAccess	False	call screening using the database

Note For an example of an updated configuration file, see the "Updated Configuration File Sample" section on page D-10.

Using the Cisco MGC Environment Configuration Tool

You must configure the basic parameters required to bring the system to an operational mode. To use the MGC Environment Configuration Tool XECfg program:

Step 1 Run the MGC Environment Configuration Tool. Log in as mgcusr, type the following at the command prompt, and press **Enter**:

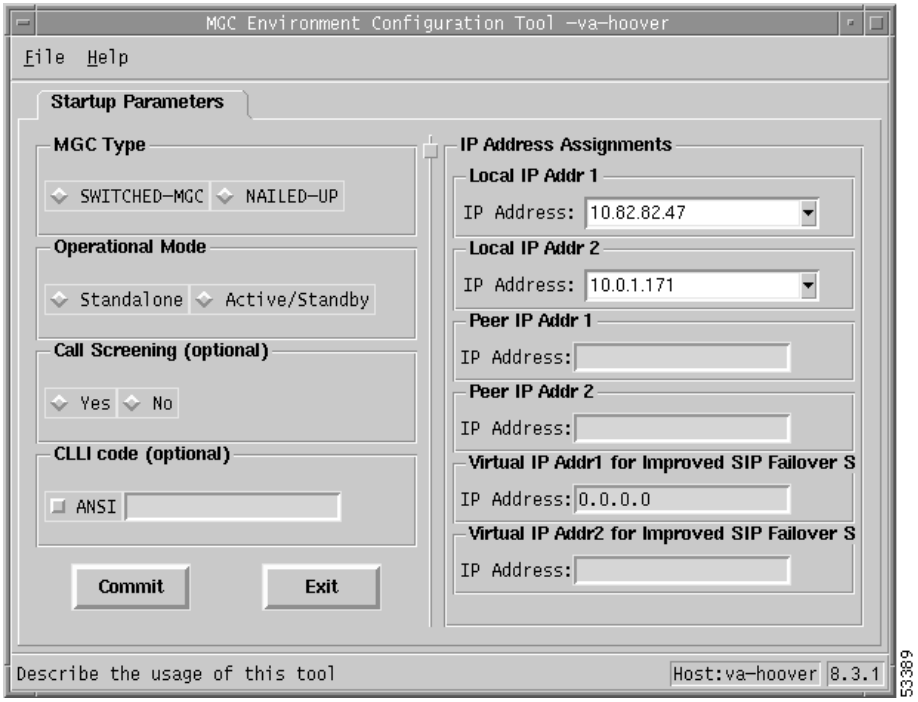
```
MGC_Setup
```

A dialog box is displayed, warning that the MGC Environment Configuration Tool is for initial system set up only and asks if you wish to continue running the XECfg program.

Step 2 Select **Yes**.

A screen similar to the following is displayed:

Figure 5-1 MGC Environment Configuration Tool



Optionally, you can run the MGC Environment Configuration Tool in detail mode by selecting the detail parameter at the command line.

a. Type the following command and press **Enter**:

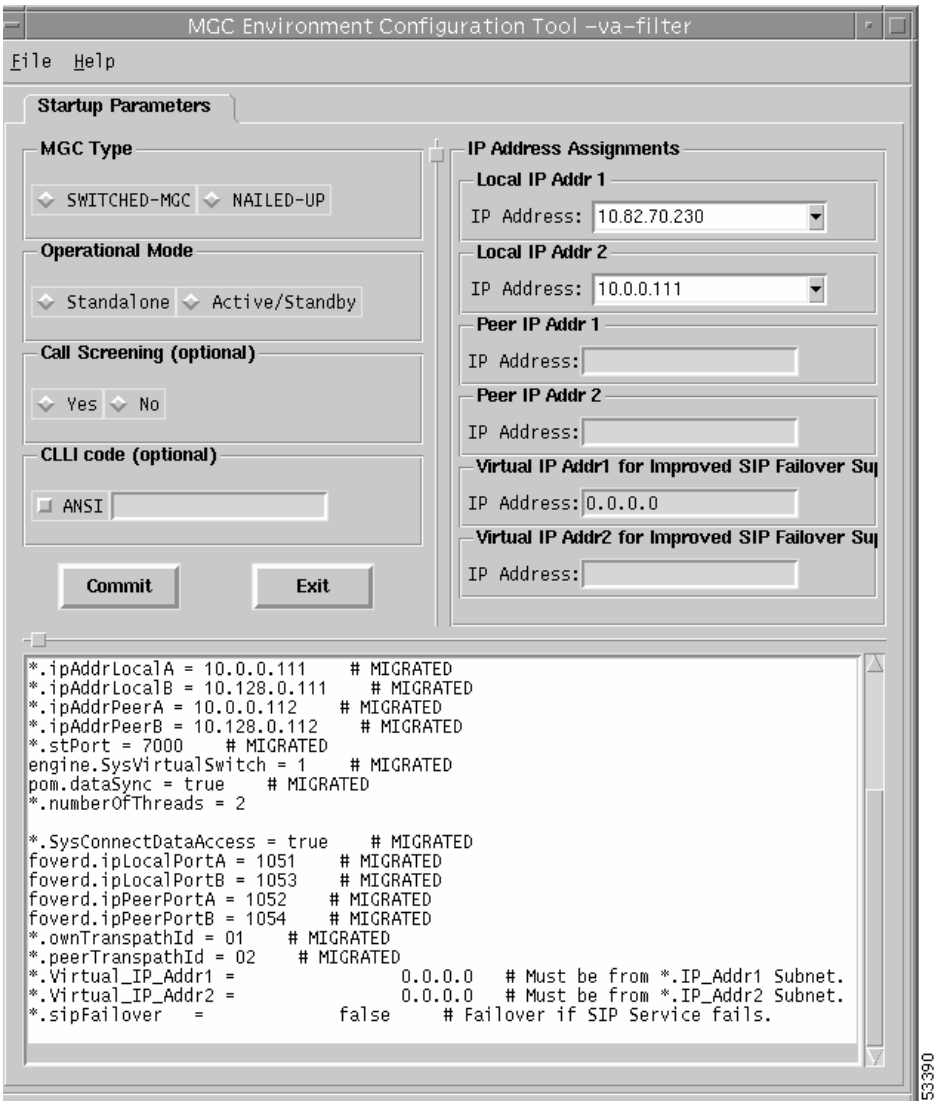
```
MGC_Setup -detail
```

A dialog box is displayed, warning that the MGC Environment Configuration Tool is for initial system set up only, and asks if you wish to continue running XECfg.

b. Select **Yes**.

The MGC Environment Configuration Tool screen expands to provide detailed information from the XECfgParm.dat file (see Figure 5-2).

Figure 5-2 MGC Environment Configuration Tool—Detail Mode



Step 3 You can configure your system to operate either as a standalone system or as a fault-tolerant system.

If you configure your system to be in fault-tolerant mode, you must do the following:

a. Supply a set of IP addresses for the back-up/standby machine. By default, these backup IP addresses are set to 0.0.0.0.

b. Type the backup IP addresses in the Slave IP field in the Master-Slave IP Map section of the MGC Environment Tool screen.

Step 4 Click the **Commit** button to implement changes after you have completed configuring the parameters.

Note The required parameters are the Cisco MGC type and its operating mode. There are no default parameters defined when you bring up the XECfg program.

After committing the changes, the XECfg program backs up the current XECfgParm.dat file into XECfgParm.dat.xyz, where xyz can be between 0 and 19. The earliest version of the XECfgParm.dat file is version 0 and the latest is version 19.

If the operating mode is stand-alone, the XECfgParm.dat file is updated with new parameters. If the operating mode is fault-tolerant, the XECfgParm.dat file is updated and the XECfgParm.data.slave file is generated, based on the XECfgParm.dat file. There is no backup for the XECfgParm.dat.slave file.

Old parameters are commented out and new parameters are inserted. Use the comment line to keep file history. A history line is inserted every time a change is made against parameters. All required parameters are moved up to the top of the file for ease of use. However, the configuration tool does not depend on the location of the parameters.

Step 5 When you exit the application, the XECfg program prompts you to determine whether you wish to transfer the XECfgParm.dat.slave file to the remote machine (this is done through the FTP operation). If you choose to transfer the file to the remote machine, you must enter a password before the FTP is performed successfully. Alternately, you can exit the application without performing the FTP operation.

Configuring Groups and Users

You must set up groups and users for the Cisco MGC software on each host server. A user must be a member of the "mgcgrp" group to use certain Cisco MGC software functions, such as Man-Machine Language (MML). (MML is an interface that enables you to communicate with the Cisco MGC. Users with full MML privileges have monitor and control access; users with minimal MML privileges have only monitor access. For more information on MML, see the *Cisco Media Gateway Controller Software Release 9 Provisioning Guide* and the *Cisco Media Gateway Controller Software Release 9 MML Command Reference*.)

Verifying the mgcgrp Group

To verify the mgcgrp group, complete the following steps:

Step 1 Log in to the Cisco MGC host as root.

Step 2 Change to the /etc directory.

Step 3 Edit the group file to verify the entry for the mgcgrp group. The file should contain the following line:

```
mgcgrp::20000:
```

Step 4 Save and close the group file.

Step 5 Edit the passwd file to verify the entry for the mgcusr user. The file should contain the following line:

```
mgcusr:x:20000:20000::/opt/CiscoMGC/local:/bin/csh
```

If the file does not contain the line, add it.

Step 6 Save and close the password file.

This completes the procedures for verifying the mgcgrp group.

Adding a User with Full MML Privileges

To add a user with full MML privileges, complete the following steps.

Caution If your user's home directory differs from /opt/CiscoMGC/local, you must perform Step 6 through Step 9 before using MML.

Step 1 Log in to the Cisco MGC host as root.

Step 2 Enter the following command:

```
# useradd -u UID -g mgcgrp -d /opt/CiscoMGC/local -s /bin/csh -m username
```

UID is a user ID that is an integer from 0 through 2147483647 (excluding the numbers 0, 1, 2, 3, 4, 5, 9, 37, 71, 60001, 60002, and 65534, because they are used by the operating system).

Step 3 Add the new username to the mgcgrp group in the group file:

```
# mgcgrp::20000:username
```

Note The group file is a comma-separated list of user names. If you add more than one user, use commas (with no spaces) to separate one name in the list from another.

Step 4 Enter the following command and press **Enter**:

```
passwd username
```

Step 5 Type the user's *password* and press **Enter** twice when prompted.

Step 6 **If your user's home directory differs from /opt/CiscoMGC/local:** Log in to the Cisco MGC.

Step 7 Enter the following command and press **Enter**:

```
cd /opt/CiscoMGC/local
```

Step 8 Enter the following command and press **Enter**:

```
source .cshrc
```

Step 9 Enter the following command and press **Enter**:

```
mml
```

This completes the procedures for adding a user with full MML privileges.

Adding a User with Minimal MML Privileges

To add a user with minimal MML privileges, follow the steps in the "Adding a User with Full MML Privileges" section on page 5-11, but do not add the user to the mgcgrp group.

This completes the group and user configuration. Continue to the "Configuring SNMP Support Resources" section on page 5-12. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Configuring SNMP Support Resources

The Cisco MGC software includes a Simple Network Management Protocol (SNMP) agent subsystem that provides an alarm management interface on the Cisco MGC. It uses SNMP to report events, or traps (such as alarms), to your SNMP Manager and to provide access to the Cisco MGC Management Information Base (MIB).

Note SNMP MIB measurements are only valid on the active node. They are not replicated on the standby node.

The SNMP agent subsystem reports the following event categories to your SNMP Manager:

1. Communications
2. Quality of Service
3. Processing
4. Equipment
5. Environment

In a fault tolerant configuration, the SNMP agent subsystem runs on both the active and standby machines.

Note If your system is running Cisco MGC software 9.3(2) or later, go to the "Migrating the SNMP Configuration to a More Secure Environment (for MGC 9.3(2) or Later)" section on page 5-13 for SNMP configuration procedures.

If your system is running an earlier version of Cisco MGC software 9.3(2), such as version 7.4(x), go to the "Setting up the SNMP Community for Software Releases Before Cisco MGC 9.3(2)" section on page 5-24 for SNMP configuration procedures.

Note For a sample snmpd.cnf file, see the "Sample Configured snmpd.cnf File" section on page D-11.

Note Use any of the following to configure SNMP community names and trap destinations:

– config-snmp utility (for Cisco MGC software 9.3(2) or later)
– vi editor (for Cisco MGC software 9.2(2) or earlier)

Note SNMP managers such as the Cisco Media Gateway Controller Node Manager (MNM) or HP OpenView can be used to receive traps.

Note The **config-snmp** utility is case-sensitive. It will accept "name1" and "NAME1" as two different entries.

Migrating the SNMP Configuration to a More Secure Environment (for MGC 9.3(2) or Later)

If your system is running Cisco MGC software version 9.3(2) or later, Cisco recommends that your SNMP configuration be migrated to a more secure environment by running the **config-snmp** utility. Use the **config-snmp** utility to perform the following:

- Modify the **snmpd.cnf** file to automatically migrate old configuration files to a secure environment.
- Facilitate the addition or deletion of the community string and trap destination.

Note There is no limit to the number of community strings that can be added to the configuration.

Note The **config-snmp** script only allows you to add or delete an entry to your **snmpd.cnf** file.

Basic Tasks

The following is an overview of the major tasks you must perform to get the SNMP security provided by the **config-snmp** utility:

1. Run **config-snmp** utility. See the "Running the config-snmp Utility" section on page 5-14.
2. Add a new snmpCommunityEntry. See the "Adding an SNMP Community Entry" section on page 5-15
3. Make sure that the new snmpCommunityEntry string is recognized and can communicate with your Cisco MGC hosts. See the "Activating the New Settings" section on page 5-21.
4. Delete the old entry that you were using. See the "Deleting an SNMP COMMUNITY" section on page 5-18.

Before You Run the config-snmp Utility

Note If you have completed a first-time installation of the Cisco MGC softare with Release 9.6(1) and its associated patches, you must copy the snmpd.cnf.tmpl to snmpd.cnf before your run the config-snmp utility. Users who have upgraded to Release 9.6(1) from a previous release do not have to perform this procedure. To copy the snmpd.cnf.tmpl to the snmp.cnf, perform the following steps:

1. Log in as root and enter the following UNIX commands:
```
cd /opt/CiscoMGC/snmp
cp snmpd.cnf.tmpl snmpd.cnf
```

2. Enter the following UNIX commands to restart the snmp daemon:
```
ps -ef |grep snmpdm
```
The system will display the process ID for the snmp daemon. Restart the daemon using the following command:
```
kill -9 snmpdm_pid
```
Where *snmpdm_pid* is the process ID for the snmp daemon.

Note that the first instance of ReadAndNotifyToAll in the snmpCommunityEntry will be the only CommunityName used in the Trap.

For example, if your **snmpd.cnf** file has the following snmpCommunityEntry, you will find only the CommunityName of Iron1 in the Trap.

```
#Entry type: snmpCommunityEntry
#Format:  snmpCommunityIndex  (text)
#         snmpCommunityName  (text)
#         snmpCommunitySecurityName  (text)
#         snmpCommunityContextEngineID  (octetString)
#         snmpCommunityContextName  (text)
#         snmpCommunityTransportTag  (text)
#         snmpCommunityStorageType  (nonVolatile, permanent, readOnly)
snmpCommunityEntry  Iron1 ron1 ReadAndNotifyToAll localSnmpID - - nonVolatile
snmpCommunityEntry  Iron2 ron2 ReadWriteAll localSnmpID - - nonVolatile
snmpCommunityEntry  Iron3 ron3 ReadAndNotifyToAll localSnmpID - - nonVolatile
snmpCommunityEntry  admin WBnAGZ54 PGWInternalSignal localSnmpID - localAccess \
    nonVolatile
snmpCommunityEntry  readonly public ReadAndNotifyToAll localSnmpID - - \
    nonVolatile
```

Running the config-snmp Utility

Perform the following steps to run the **config-snmp** utility:

Step 1 Make sure your system has the latest Cisco MGC patches on both Host A and Host B. Refer to the *Release Notes for Cisco Media Gateway Controller Software Release 9* for the patches' installation procedures.

Step 2 On Host A, log in as **root** user.

Step 3 Check whether the **snmpdm** or **critagt** process is running.

Note If **snmpdm** or **critagt** are not running, call Cisco TAC or contact your Field Engineer for assistance.

Type one of the following commands and press **Enter**:

a. To check **snmpdm**:

```
ps -ef |grep snmpdm
```

If the **snmpdm** process is running, text similar to the following is displayed:

```
root 12098 27888  0   Jun 16 ?
0:00 /opt/CiscoMGC/snmp/snmpdm -tcplocal -d
```

b. To check **critagt**:

```
ps -ef |grep critagt
```

If the **critagt** process is running, text similar to the following is displayed:

```
root 27888     1  0   May 19 ?
0:15 /opt/CiscoMGC/snmp/critagt -d
```

Step 4 To start the **config-snmp** utility, type the following command and press **Enter**:

```
config-snmp
```

The following screen is displayed:

```
Migrating snmpd.cnf into a more secure setting...

==================   SNMPD Configuration Main Menu  ==================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:
```

Step 5 To view the configuration entries, type **1** and press **Enter**.

The Entries Menu is displayed and you are prompted to make a selection:

```
==================   Entries Menu  ==================

1.  sysDescr
2.  sysObjectID
3.  sysLocation
4.  sysContact
5.  sysName
6.  snmpEnableAuthenTraps
7.  MAX_THREADS
8.  MAX_PDU_TIME
9.  MAX_OUTPUT_WAITING
10. MAX_SUBAGENTS
11. subagent
12. snmpCommunityEntry
13. communityEntry
14. snmpEngineBoots
15. usmUserEntry
16. vacmAccessEntry
17. vacmSecurityToGroupEntry
18. vacmViewTreeFamilyEntry
19. snmpNotifyEntry
20. snmpTargetAddrEntry
21. snmpTargetParamsEntry
22. snmpNotifyFilterProfileEntry
23. snmpNotifyFilterEntry
24. httpUserNameEntry
Enter a selection (1 through 24) or 'q' to quit to Main Menu:
```

Step 6 Enter your selection number (1 through 24) to view your configuration entries.

Adding an SNMP Community Entry

Continuing from Step 6, above (of the section Running the config-snmp Utility):

Step 1 Enter **12** to select **snmpCommunityEntry** and view the entries:

Text similar to the following and the SNMPD Configuration Main Menu are displayed.

```
#Entry type: snmpCommunityEntry
#Format:  snmpCommunityIndex  (text)
#         snmpCommunityName  (text)
```

```
#         snmpCommunitySecurityName  (text)
#         snmpCommunityContextEngineID  (octetString)
#         snmpCommunityContextName  (text)
#         snmpCommunityTransportTag  (text)
#         snmpCommunityStorageType  (nonVolatile, permanent, readOnly)
snmpCommunityEntry  IT555 T555 ReadWriteAll localSnmpID - - nonVolatile
snmpCommunityEntry  Ijammmy jammmy ReadAndNotifyToAll localSnmpID - -     nonVolatile
snmpCommunityEntry  admin za8RQzBg PGWInternalSignal localSnmpID - localAccess
nonVolatile


==================   SNMPD Configuration Main Menu  ===================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:
```

Step 2 You are prompted to make a selection. Enter **2** to add an SNMP Community.

The Add CommunityString Menu is displayed and you are asked if you would like to proceed with adding a community string:

```
==================   Add CommunityString Menu ===================

SnmpCommunityName       CommunitySecurityName

T555                    ReadWriteAll
jammmy                  ReadAndNotifyToAll

-- Where:

CommunitySecurityName   SecurityModel   Read              Write           Notification

ReadWriteAll            snmpv1          AllMibObjects     AllMibObjects   -
ReadWriteAll            snmpv2c         AllMibObjects     AllMibObjects   -
ReadAndNotifyToAll      snmpv1          AllMibObjects     -               AllMibObjects
ReadAndNotifyToAll      snmpv2c         AllMibObjects     -               AllMibObjects


Would you like to proceed with the Add  [n]/[y]?
```

Step 3 Enter **y** to proceed (if you enter **n** to cancel the addition, you return to the SNMPD Configuration Main Menu).

The following text is displayed, prompting you to enter an snmpCommunityName.

```
Enter snmpCommunityName:
```

Note The snmpCommunityName should be at least three characters in length. The snmpCommunityName can contain numeric characters, but should begin with an alpha character.

Step 4 Enter an snmpCommunityName (the following name is an example):

```
comname1
```

Text similar to the following is displayed:

```
Enter CommunitySecurityName (ReadAndNotifyToAll or ReadWriteAll):
```

Step 5 Enter a community security name (the following security name entry is an example):

```
ReadAndNotifyToAll
```

Note The CommunitySecurityName (ReadAndNotifyToAll or ReadWriteAll) is case sensitive.

Text similar to the following text is displayed:

```
snmpCommunityName: comname1 is about to be added.  Are you sure that you want to add this
snmpCommunity Name  [y]/[n]?
```

Step 6 Enter **y** to add the **snmpCommunityName** (if you enter **n** to cancel the addition, you return to the SNMPD Configuration Main Menu):

Text similar to the following is displayed:

```
Adding snmpCommunity:
snmpCommunityEntry  Icomname1 comname1 ReadAndNotifyToAll localSnmpID - - nonVolatile


==================   SNMPD Configuration Main Menu  ===================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:
```

Step 7 Enter a selection number, 1 through 6. For steps on how to execute the selections from the SNMPD Configuration Main Menu, refer the following sections:

- Adding an SNMP Community Entry, page 5-15
- Deleting an SNMP COMMUNITY, page 5-18
- Adding a Trap Destination, page 5-19
- Deleting a Trap Destination, page 5-20
- Activating the New Settings, page 5-21
- Verifying the SNMP Configuration Migration, page 5-22

Note To complete the migration of the SNMP configuration to a more secure environment, see the "Activating the New Settings" section on page 5-21.

The procedure for adding an SNMP Community Entry is now complete.

From the SNMPD Configuration Main Menu, choose option 6 (Activate the New Settings) to commit the changes, or select other options (1 through 5) to add or delete a community name or trap.

Deleting an SNMP COMMUNITY

From the SNMPD Configuration Main Menu:

Step 1 If you select **3** (Delete an SNMP Community) from the SNMPD Configuration Main Menu, the delete CommunityString Menu is displayed:

Note The SNMP Community Names listed in the following display are examples.

```
==================   Delete CommunityString Menu ==================

SnmpCommunityName       CommunitySecurityName

comname1                ReadAndNotifyToAll
T555                    ReadWriteAll
jammmy                  ReadAndNotifyToAll

-- Where:

CommunitySecurityName   SecurityModel   Read              Write           Notification

ReadWriteAll            snmpv1          AllMibObjects     AllMibObjects   -
ReadWriteAll            snmpv2c         AllMibObjects     AllMibObjects   -
ReadAndNotifyToAll      snmpv1          AllMibObjects     -               AllMibObjects
ReadAndNotifyToAll      snmpv2c         AllMibObjects     -               AllMibObjects


Would you like to proceed with the Delete  [n]/[y]?
```

Step 2 Enter **y** to delete SNMP Community (if you enter **n** to cancel the deletion, you return to the SNMPD Configuration Main Menu):

Text similar to the following is displayed:

```
Enter snmpCommunityName:
```

Step 3 Enter an SnmpCommunityName. Select an SnmpCommunityName from the list that is displayed in Step 1. The SnmpCommunityName **T555,** is an example:

```
T555
```

Text similar to the following is displayed:

```
snmpCommunityName: T555 is about to be deleted.  Are you sure that you want to delete this
snmpCommunity Name  [y]/[n]?
```

Step 4 Enter **y** to confirm the deletion (if you enter **n** to cancel the deletion, you return to the SNMPD Configuration Main Menu).

Text similar to the following is displayed and you are returned to the SNMPD Configuration Main Menu:

```
Deleting snmpCommunity= T555


==================   SNMPD Configuration Main Menu  ==================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
```

```
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:
```

Step 5 Enter your selection. For detailed procedures for your selection, refer to the following list:

- Adding an SNMP Community Entry, page 5-15
- Deleting an SNMP COMMUNITY, page 5-18
- Adding a Trap Destination, page 5-19
- Deleting a Trap Destination, page 5-20
- Activating the New Settings, page 5-21
- Verifying the SNMP Configuration Migration, page 5-22

The procedure for deleting an SNMP Community Entry is now complete. Proceed to the selection you entered in the SNMPD Configuration Main Menu.

Adding a Trap Destination

From the SNMPD Configuration Main Menu:

Step 1 Select option **4** (Add a Trap Destination) from the SNMPD Configuration Main Menu and press **Enter** to add a Trap Destination.

The Add Trap Menu is displayed:

Note The IP Address (Target Address) listed below is an example of existing Trap entries.

```
=================== Add Trap Menu  ===================

1. TargetAddress: 6.6.6.6:0 , TargetAddrParams: v1ExampleParams , IP Mask:
255.255.255.255:0

Would you like to proceed with the Add  [n]/[y]?
```

Step 2 Enter **y** to add a Trap Destination (if you enter **n** to cancel the addition, you return to the SNMPD Configuration Main Menu).

Text similar to the following is displayed:

```
Enter IP Address (x.x.x.x):
```

Step 3 Enter the IP address listed in Step 1:

7.7.7.7

Text similar to the following is displayed:

```
Enter Trap Type (v1 or v2c):
```

Step 4 Enter the Trap Type based on your SNMP manager. The following entry is an example:

```
v1
```

Text similar to the following is displayed:

```
'snmpTargetAddrEntry  483 snmpUDPDomain 6.6.6.6:0 100 3 TrapSink  v1ExampleParams
nonVolatile 255.255.255.255:0 2048
' is about to be added.  Are you sure that you want to add this Trap Entry  [n]/[y]?
```

Step 5 Enter **y** to add a Trap Destination (if you enter **n** to cancel the addition, you return to the SNMPD Configuration Main Menu).

Text confirming the addition of the Trap Destination is displayed, followed by the SNMPD Configuration Main Menu:

```
Adding Trap: snmpTargetAddrEntry  483 snmpUDPDomain 7.7.7.7:0 100 3 TrapSink
v1ExampleParams nonVolatile 255.255.255.255:0 2048



==================   SNMPD Configuration Main Menu  ===================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:

ENTER YOUR SELECTION.
```

Step 6 Enter your selection. For detailed procedures for your selection, go to the section listed below:

- Adding an SNMP Community Entry, page 5-15
- Deleting an SNMP COMMUNITY, page 5-18
- Adding a Trap Destination, page 5-19
- Deleting a Trap Destination, page 5-20
- Activating the New Settings, page 5-21
- Verifying the SNMP Configuration Migration, page 5-22

The procedure for adding a Trap Destination is now complete. Proceed to the selection you entered in the SNMPD Configuration Main Menu.

Deleting a Trap Destination

From the SNMPD Configuration Main Menu:

Step 1 To delete a Trap Destination, enter **5** (Delete a Trap Destination):

Text similar to the following is displayed:

```
================== Delete Trap Menu  ==================

1. TargetAddress: 7.7.7.7:0 , TargetAddrParams: v1ExampleParams ,
IP Mask: 255.255.255.255:0
2. TargetAddress: 6.6.6.6:0 , TargetAddrParams: v1ExampleParams ,
IP Mask: 255.255.255.255:0
```

```
Would you like to proceed with the Delete  [n]/[y]?
```

Step 2 Enter **y** to delete a Trap Destination (if you enter **n** to cancel the deletion, you return to the SNMPD Configuration Main Menu):

Text similar to the following is displayed:

```
Enter a selection (1 through 2):
```

Note The Target Addresses (1 through 2) shown above are examples only.

Step 3 Enter **1** to select the TargetAddress to be deleted:

Text similar to the following is displayed:

```
Trap is about to be deleted.  Are you sure that you want to delete this Trap Entry
[n]/[y]?
```

Step 4 Enter **y** to confirm the deletion (if you enter **n** to cancel the deletion, you return to the SNMPD Configuration Main Menu).

Text confirming the deleted Trap Entry is displayed and you are returned to the SNMPD Configuration Main Menu. Note that **483** (below) is an internal Trap snmpTargetAddrName.

```
Deleting Trap snmpTargetAddrName = 483


==================   SNMPD Configuration Main Menu  ==================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings

Enter a selection (1 through 6) or 'q' to quit:
```

Step 5 Enter your selection. For detailed procedures for your selection, refer to the following list:

- Adding an SNMP Community Entry, page 5-15
- Deleting an SNMP COMMUNITY, page 5-18
- Adding a Trap Destination, page 5-19
- Deleting a Trap Destination, page 5-20
- Activating the New Settings, page 5-21
- Verifying the SNMP Configuration Migration, page 5-22

The procedures for deleting a Trap Destination is now complete. Proceed to the selection you entered in the SNMPD Configuration Main Menu.

Activating the New Settings

From the SNMPD Configuration Main Menu:

Step 1 Enter **6** to activate the new settings:

```
6
```

Text similar to the following is displayed:

```
Backing up the current snmpd.cnf to snmpd.cnf.backup.

snmpd.cnf.backup already exists. Do you want to overwrite the file  [y]/[n]?
```

Note If you choose **n**, your backup file will not be updated.

Step 2 Enter **y** to activate the new settings.

```
y

Are you sure you would like to Activate the New Settings  [y]/[n]?
```

Note If you choose **y**, your SNMPD.dat file will be updated and you will be exited from the utility.

If you choose **n**, your SNMPD.dat file will not be updated and you will be exited from the utility.

Step 3 Enter **y** to activate the new settings (if you enter **n** to cancel the activation, you return to the SNMPD Configuration Main Menu).

Text similar to the following is displayed:

```
snmpd.cnf file has been updated.
```

The procedure for activating the new settings is now complete and you are exited from the config-snmp utility. Proceed to the following section, "Verifying the SNMP Configuration Migration".

Verifying the SNMP Configuration Migration

Perform the following steps to verify that your changes were applied by running the **config-snmp** utility:

Step 1 To start the **config-snmp** utility, type the following command and press **Enter**:

```
config-snmp
```

Text similar to the following is displayed:

```
Migrating snmpd.cnf into a more secure setting...
```

When the SNMPD Configuration Main Menu is displayed, you are prompted to make a selection:

```
====================   SNMPD Configuration Main Menu  ====================

1. View Configuration Entries
2. Add an SNMP Community
3. Delete an SNMP Community
4. Add a Trap Destination
5. Delete a Trap Destination
6. Activate the New Settings
```

```
Enter a selection (1 through 6) or 'q' to quit: 1
```

Step 2 Enter **1** to view the configuration entries.

The Entries Menu is displayed and you are prompted to make a selection:

```
==================   Entries Menu  ==================

1. sysDescr
2. sysObjectID
3. sysLocation
4. sysContact
5. sysName
6. snmpEnableAuthenTraps
7. MAX_THREADS
8. MAX_PDU_TIME
9. MAX_OUTPUT_WAITING
10. MAX_SUBAGENTS
11. subagent
12. snmpCommunityEntry
13. communityEntry
14. snmpEngineBoots
15. usmUserEntry
16. vacmAccessEntry
17. vacmSecurityToGroupEntry
18. vacmViewTreeFamilyEntry
19. snmpNotifyEntry
20. snmpTargetAddrEntry
21. snmpTargetParamsEntry
22. snmpNotifyFilterProfileEntry
23. snmpNotifyFilterEntry
24. httpUserNameEntry
Enter a selection (1 through 24) or 'q' to quit to Main Menu:
```

a. If you select 12 from the SNMPD Configuration Main Menu, the snmpCommunityEntry is displayed, showing the changes you made:

Note The following entries are examples only.

```
#Entry type: snmpCommunityEntry
#Format:  snmpCommunityIndex  (text)
#         snmpCommunityName  (text)
#         snmpCommunitySecurityName  (text)
#         snmpCommunityContextEngineID  (octetString)
#         snmpCommunityContextName  (text)
#         snmpCommunityTransportTag  (text)
#         snmpCommunityStorageType  (nonVolatile, permanent, readOnly)
snmpCommunityEntry  Icomname1 comname1 ReadWriteAll localSnmpID - - nonVolatile
snmpCommunityEntry  Ijammmy jammmy ReadAndNotifyToAll localSnmpID - -     nonVolatile
snmpCommunityEntry  admin VD6FZbov PGWInternalSignal localSnmpID - localAccess
nonVolatile
```

b. If you select 20 from the SNMPD Configuration Main Menu, the Trap Destination information is displayed, showing the changes you made:

Note The following entries are examples only.

```
#Entry type: snmpTargetAddrEntry
#Format:  snmpTargetAddrName  (text)
#         snmpTargetAddrTDomain  (snmpUDPDomain, snmpIPXDomain, etc.)
```

```
#          snmpTargetAddrTAddress  (transport address,i.e. 192.147.142.254:0)
#          snmpTargetAddrTimeout  (integer)
#          snmpTargetAddrRetryCount  (integer)
#          snmpTargetAddrTagList  (text)
#          snmpTargetAddrParams  (text)
#          snmpTargetAddrStorageType  (nonVolatile, permanent, readOnly)
#          snmpTargetAddrTMask  (transport mask, i.e. 255.255.255.255:0)
#          snmpTargetAddrMMS  (integer)
snmpTargetAddrEntry  531 snmpUDPDomain 6.6.6.6:0 100 3 TrapSink     v1ExampleParams
nonVolatile 255.255.255.255:0 2048
snmpTargetAddrEntry  local snmpUDPDomain 127.0.0.1:0 100 3 localAccess -
nonVolatile 255.255.255.255:0 2048
```

The SNMP support resource configuration is now complete. Continue to the "Configuring the Execution Environment" section on page 5-27 to configure the execution environment. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Setting up the SNMP Community for Software Releases Before Cisco MGC 9.3(2)

If your software release is earlier than Cisco MGC software release 9.3(2), you must edit your files using the vi editor. You can either use the existing SNMP community (public) or create your own.

To create a new SNMP community, log in to the Cisco MGC as **root** and use the vi editor to modify the **/opt/CiscoMGC/snmp/snmpd.cnf** file. This file has three default access security levels:

- Guest (read-only)
- User (read-write for most of the MIBS)
- SuperUser (read-write).

Adding a New Community

To add a new community called **myCommunity** (for example, a community with an access level of User), do the following procedures:

Step 1 Add a line in the snmpCommunityEntry as follows:

```
snmpCommunityEntry myUser myCommunity private localSnmpID - - nonvolatile
```

Step 2 Change the access level. To change the access level to Guest, replace "private" by "public". To change the access level to SuperUser, replace "private" by "mgcusr".

Setting the Destination for Traps

Do the following procedures to add a trap destination, which is a machine named manager-host with the IP address of 10.10.10.5. Traps will be sent to this destination by the MGC SNMP agent.

Step 1 In the snmpNotifyEntry section, add the following line:

```
snmpNotifyEntry  50 myTrap trap nonvolatile
```

Note You can replace the number 50 with any unique number. You can also use any unique name in place of myTrap. To send inform instead of traps, replace trap by inform.

Step 2 In the snmpTargetAddrEntry section, add the following two lines:

```
snmpTargetAddrEntry 51 snmpUDPDomain 10.10.10.5:0 100 3 myTrap \
    v2cExampleParams nonVolatile 255.255.255.255:0 2048
```

There must be nothing (not even a space or any other invisible characters) after the \ on the first line. You can change the following entries in the above line:

- **51** is a unique index of the snmpTargetAddEntry. Use a different number if 51 is already in use; make sure you are using a unique number.
- **10.10.10.5** is the IP address of the snmp manager.
- **100** specifies the round trip timeout of 1 second (100 of 100th second) for an inform. This number is not used for traps.
- **3** is the number of retries the agent will attempt to retransmit an inform when a response is not received. This number is not used for traps.
- **myTrap** is the name defined in the snmpNotifyEntry.
- **v2cExampleParams** specifies that SNMP v2c traps will be sent. To send v1 traps, use v1cExampleParams.

Configuring SNMP Entries

To configure the SNMP resources, perform the following steps:

Step 1 Log in to the Cisco MGC and change to the /etc directory.

Step 2 Using FTP, transfer the following MIBs (located in /opt/CiscoMGC/snmp) from the Cisco MGC to the machine on which the SNMP Manager runs:

- CISCO-SMI.my
- v3-tgt.my
- tp.my
- measurement.my

Step 3 Load the MIBs into the SNMP Manager.

For example, you can use the **xnmnloadmib -load** command from HP OpenView.

Tip For more detailed information about configuring HP OpenView, see Appendix B, "HP OpenView Sample SNMP Configuration."

Note See your SNMP Manager documentation for more information. We do not recommend an SNMP Manager; however, this chapter gives examples using the Hewlett-Packard (HP) OpenView Network Node Manager.

Example 5-1 HP OpenView Example

```
If you are using HP OpenView Network Node Manager as your SNMP manager, follow
these procedures to load your MIB:
(a) Select Options from the File Menu and choose Load/Unload MIBs:SNMP.
(b) From the Load/Unload MIBs: SNMP window (on the lower left of your screen).
(c) Click the Load... button.
(c) From the "Load/Unload MIBs:SNMP /Load MIB from File" window, select the MIB to
load (for example, tp.my).
(d) Click OK.
```

Step 4 Connect the SNMP events to an event category to display the event. As Cisco MGC events are connected, you can alter the format of the event messages for easier viewing.

Note On many SNMP Managers, event categories can be added so that customer-specific events can be mapped to corresponding categories.

Example 5-2 HP OpenView Event Configuration Example

```
If you are using HP OpenView Network Node Manager, follow these procedures to
configure an event:

(a) Select Options from the File Menu and choose Event Configuration.
(b) From the Event Configuration window, in the Enterprise Identification list,
select transpath.
(c) In the Event Identification list, double click on each of the event types, one
at a time.
(d) If desired, change the event information display. To change the format of an
event, from the Event Configurator / Modify Event window, enter a format in the
Event Log Message Box to change the format and labels for received events of this
type.

The following example shows how an event can be reformatted using the HP OpenView
Network Node Manager.

ID# $13   Name $12   Set $10   MMLname $4   CatDesc    $11  \nCompDesc $3
Severity $8   CompID $6   CompType $5   CatID $14\nAlarmNotify $9   AlarmTime$1
ParentID $2   AlarmReported $7\n$o
```

Tip For more detailed information about configuring HP OpenView, see Appendix B, "HP OpenView Sample SNMP Configuration."

Step 5 Configure where to set Cisco MGC traps using any of the following:

- Cisco MNM
- HP OpenView
- vi editor

Step 6 Verify that your SNMP Manager shows the traps from the Cisco MGC. If you do not see the events in your SNMP Manager, you might have a port mismatch or an incorrect IP address in your configuration.

This completes the SNMP support resource configuration. Continue to the following section, "Configuring the Execution Environment", to configure the execution environment. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Configuring the Execution Environment

This section provides instructions for configuring the Cisco MGC execution environment and contains the following topics:

The configuration data file, or XECfgParm.dat file (located in /opt/CiscoMGC/etc/XECfgParm.dat), lists all the components in the Cisco MGC and defines how it operates. You must edit the execution environment parameters in the XECfgParm.dat file to initialize and configure the Cisco MGC software application. For more detailed information on XECfgParm.dat parameters, refer to Appendix A, "XECfgParm.dat File Parameters" and the *Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guid*e.

For samples of configured XECfgParm.dat files, see the "Sample Configured Cisco MGC 9.2(2) XECfgParm.dat Files" section on page D-14.

Caution To ensure that your system works as intended, **edit only the XECfgParm.dat file parameters which are listed below**, and remember that all parameters are case-sensitive.

Do not modify the **processes.dat** file. This XECfgParm.dat file should remain unmodified, as delivered with the MGC software. If this file is modified, procM may core dump when you start the MGC software.

Changing XECfgParm.dat File Parameters

For a complete list of the parameters found in the XECfgParm.dat file and how they are used by the Cisco MGC, see *Appendix A, "XECfgParm.dat File Parameters."*

If you have a fault tolerant system with two Cisco MGC hosts, the XECfgParm.dat files are different for each host. For examples of these XECfgParm.dat files, see the "Sample Configured Cisco MGC 9.2(2) XECfgParm.dat Files" section on page D-14 and the "Sample Configured Cisco MGC 9.1(5) XECfgParm.dat Files" section on page D-21.

To change the XECfgParm.dat file parameters, perform the following steps:

Step 1 Log in as root and go to the # prompt.

Step 2 If the Cisco MGC software is running, enter the following command:

```
/etc/init.d/CiscoMGC stop
```

Wait until the system returns the following response:

```
Signalling procM to shut down
...shutdown complete
```

Step 3 Change to the **/opt/CiscoMGC/etc** directory, which contains the XECfgParm.dat file used by your system.

Step 4 Open the XECfgParm.dat file with any text editor, such as vi.

Step 5 Save your changes and close the editor.

Step 6 Restart the Cisco MGC software by entering the following command:

```
/etc/init.d/CiscoMGC start
```

Note Do not restart the software yet if you need to configure SCP queries or initialize the call screening database. Complete the instructions in the appropriate sections of this chapter before restarting the software.

Continue to "Changing XECfgParm.dat File Parameters in a Running Fault Tolerant System" to change parameters without call interruption. Continue to the "Configuring SCP Queries" section on page 5-45 to configure Service Control Point (SCP) queries using transaction capabilities application part (TCAP). If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Changing XECfgParm.dat File Parameters in a Running Fault Tolerant System

To change parameters in a running fault tolerant system without call interruption, perform the following steps:

Step 1 Log in to the active host (Host X) and make your changes. See "Changing XECfgParm.dat File Parameters" section on page 5-27 for more specific instructions.

Step 2 Log in to the standby host (Host Y) and stop the Cisco MGC software by entering the following command:

```
/etc/init.d/CiscoMGC stop
```

Step 3 Restart the Cisco MGC software on the standby box (Host Y) by entering the following command:

```
/etc/init.d/CiscoMGC start
```

Step 4 Perform switchover on the active host (Host X). Log in to the active host (Host X) and stop the Cisco MGC software by entering the following command:

```
/etc/init.d/CiscoMGC stop
```

Stopping the software on Host X causes switchover to the standby, Host Y. Host Y becomes active and takes over call processing.

Tip If Host Y does not take over call processing after switchover, restart the software on Host X to take over the calls. Check the parameters you changed on Host Y and make sure you have the correct values.

Step 5 Restart the Cisco MGC software on the now standby host, Host X, by entering the following command:

```
/etc/init.d/CiscoMGC start
```

Step 6 On Host Y, the currently active host, enter the following MML command to switch call processing from Host Y to the newly changed Host X. Host X becomes active:

```
SW-OVER::CONFIRM
```

Tip If Host X does not take over call processing after switchover, restart the software on Host Y to take over the calls. Check the parameters you changed on Host X and make sure you have the correct values.

Configuring Basic System Information

Note For descriptions of the parameters found in the XECfgParm.dat file and how they are used by the Cisco MGC, see Appendix A, "XECfgParm.dat File Parameters."

To configure basic system information required for your system to function, modify the following parameters in the first section of the XECfgParm.dat file:

Parameter	Modification
***.transpathId**	To identify the local Cisco MGC host in a fault tolerant system, enter any one- or two-digit integer. **Note** If you have two Cisco MGC hosts in a fault tolerant system, this number must be different in the XECfgParm.dat file for each host.
***.ownTranspathId**	To identify the local Cisco MGC host in a fault tolerant system, enter the same value that you used for *.transpathID. **Note** If you have two Cisco MGC hosts in a fault tolerant system, enter this value in the *.peerTranspathID field in the XECfgParm.dat file on the second host server. If you have a simplex system, leave this value blank.
***.peerTranspathId**	To identify the peer Cisco MGC host in a fault tolerant system, enter any one- or two-digit integer. The IDs must be unique in an active and standby pair. **Note** If you have two Cisco MGC hosts in a fault tolerant system, enter the same value that you used for *.transpathID in the XECfgParm.dat file of the second host server in this field. If you have a simplex system, leave it blank.

Parameter	Modification
***.desiredPlatformState**	To determine the desired platform state at initialization, enter one of the following values: • **master**—If you have two (active and standby) Cisco MGC hosts, and you are editing the file on the active host • **slave**—If you have two (active and standby) Cisco MGC hosts, and you are editing the file on the standby host • **standalone**—If you have a simplex system **Note** If you have two Cisco MGC hosts in a fault tolerant system, make sure that the active Cisco MGC is set to master and the standby host is set to slave.
***.SyscheckpointEnabled**	To enable or disable checkpointing, enter one of the following values: • **false—**Disables checkpointing. Calls are not preserved during a switchover, and status messages are not sent to the replicator (default). • **true—**Enables checkpointing. Calls that are in the talking state are preserved and survive a control switchover. All status checkpointing information is sent to the replicator on the active side. **Note** If you have two Cisco MGC hosts in a switchover configuration, enter **true**. If you have a standalone configuration, enter **false**.
*.numberOfThreads	Prior to Release 9.4(1), the number of threads generated by multithreaded processes such as the engine and the log master, is specified by entering one of the following values: • **0**—Single CPU (default) • **1**—Two CPUs • **2**—Four CPUs **Note** If you have a multi-CPU system, the **engine.SysGeneratedCode parameter must be left as true (the default)**. For Release 9.4(1) and up, this parameter is set automatically when you specify a Cisco MGC type in the engine.SysVirtualSwitch parameter. Any attempt to modify this parameter is overwritten.
*.OverdecadicDigitsSupported	This parameter controls the method of loading dial plan tables and instructs the system whether to expect overdecadic (base 16) or regular decadic (base 10) digits in dial plans, routing, and other digit streams. Correct setting of this parameter depends on local network interconnect agreements and the expected data format. Enter **true** to use overdecadic digits (0-F).

Parameter	Modification
***.stPort**	Port number used between peer components or processes. Enter any unused port number (for example, **7000**). If your configuration uses a Cisco SLT, enter the port number on the Cisco SLT. **Note** If you have two Cisco MGC hosts in a failover configuration, enter a different number for this value in the XECfgParm.dat file on the secondary host (for example, **7001**). **Note** On a new configuration, we recommend that this parameter be set to **0**. This value allows the SLT port to be defined using the **PEERPORT** parameter of the **SESSIONSET**. **Note** **SESSIONSET** reads the port value that is defined. However, if an ***.stPort** value other than 0 is defined in XECfgParm.dat (for example, ***.stPort=7001**), the **SESSIONSET** value gets overridden by the value in XECfgParm.dat.
*.OwnClli	Common language location identifier. To initiate circuit query validation if circuit queries are supported, enter an alphanumeric string of as many as 24 characters. Default: **TTT-SS-BB-XXX** Example: **1-22-33-444**

Specifying IP Addresses

To specify IP addresses, modify the following parameters in the first section of the XECfgParm.dat file:

Note If there are two Ethernet interfaces defined on the Cisco MGC, it is mandatory to have these on distinct subnets.

For example, consider the following configuration:

```
*.ipAddrLocalA = 172.22.119.108
*.ipAddrLocalB = 172.22.119.54
```

This is not a valid combination because they are on the same subnet. The following example illustrates a valid combination:

```
*.ipAddrLocalA = 172.22.119.108
*.ipAddrLocalB = 172.22.120.54
```

In this example, the subnet mask is 255.255.255.0 (or 255.255.255.128).

If the two Ethernet interfaces are on the same subnet, then one of them must be physically disconnected from the existing subnet and then connected to a different subnet. The new IP address must be appropriately configured on the system. Refer to the manual pages for the UNIX command **ifconfig** for more information.

Parameter	Modification
***.ipAddrLocalA**	Enter the first local IP address; used for checkpointing and switchover heartbeats. **Caution** This address is the same value as *.IP_Addr1, and is the hme0 interface. **Caution** No other machine on the network should have ***.ipAddrLocalA set to 0.0.0.0.**
***.ipAddrPeerA**	Enter the first corresponding peer IP address; used for checkpointing and switchover heartbeats. **Note** If you have two Cisco MGC hosts in a fault tolerant configuration, this value is set to the IP address of the second host.
***.ipAddrLocalB**	Enter the second local IP address; used for checkpointing and switchover heartbeats. This is the address of the hme1 interface. **Note** If your configuration does not use a secondary Ethernet adapter, leave this address set to the default value, **0.0.0.0**.
***.ipAddrPeerB**	Enter the second corresponding peer IP address; used for checkpointing and switchover heartbeats. This is the address of the hme1 interface on the second host. **Note** If your configuration does not use a secondary Ethernet adapter, leave this address set to the default value, **0.0.0.0**.
***.IP_Addr1**	Enter the IP address of the hme0 interface.
***.IP_Addr2**	Enter the IP address of the hme1 interface (if configured).
***.IP_Addr3**	Enter the IP address of the hme2 interface (if configured).
***.IP_Addr4**	Enter the IP address of the hme3 interface (if configured).

Configuring Engine Parameters

For the engine to run correctly, you must modify the following parameters in the Engine section of the XECfgParm.dat file:

Parameter	Modification
engine.CALL_MEM_BLOCK_SIZE	Block of memory allocated per call. Used by MDL. Default: Prior to Release 9.4(1): **0** • For memory-critical configurations, use the default value. • For performance-critical configurations, set this value to **110000**. Release 9.4(1) and up: **set automatically based on the type of Cisco MGC selected in engine.SysVirtualSwitch. Any attempt to modify this value is overwritten**.
engine.CALL_MEM_CHUNK_SIZE	Memory chunks allocated from the block of memory designated with **engine.CALL_MEM_BLOCK_SIZE**. Default: Prior to Release 9.4(1): **0** • For memory-critical configurations, use the default value. • For performance-critical configurations, set this value to **110000**. Release 9.4(1) and up: **set automatically based on the type of Cisco MGC selected in engine.SysVirtualSwitch. Any attempt to modify this value is overwritten**.
engine.SendHardwareBlock	To enable the Cisco MGC to send hardware-oriented blocking messages for any blocks that originate from the media gateways: • **true**—Sends hardware-oriented blocking messages for any blocks that originate from the media gateways. • **false**—Sends only maintenance-oriented blocking messages for all blocking cases (default). **Note** The functionality for this parameter is added in a patch for Release 9.3(2) and up. If your system is running Release 9.3(2) or Release 9.4(1) you must enter this parameter in the XECfgParm.dat file manually after installing the patch. If your system is running Release 9.5(2), the parameter is automatically added to the XECfgParm.dat file during the patch installation.
engine.SysCdrCollection	To designate the format of call detail records (CDRs), enter one of the following values: • **true**—Generates old-style non-tagged CDRs • **false**—Generates new tag, length, and value (TLV) format CDRs (default) **Note** Typically, this value should be **false**.

Parameter	Modification
engine.SysVirtualSwitch	To indicate whether the Cisco MGC host functions as a signaling controller or a virtual switch controller, enter one of the following values: • **0**—Signaling controller (nailed trunks, no auditing is initiated) • **1**—Virtual switch controller (switched trunks) **Note** For Release 9.4(1) and up, the values of the parameters listed below are automatically set based on the Cisco MGC type you select, to maximize performance for that configuration. Any attempt to change the values of these parameters is overwritten. engine.SysMdlMemoryReduction engine.CALL_MEM_BLOCK_SIZE engine.CALL_MEM_CHUNK_SIZE *.CPUTimerInterval *.numberOfThreads
engine.SysGRSTimerInterval	To specify the interval between blocks of Circuit Group Reset (GRS) messages when the engine.SysGRSBlockSize parameter is used, set to the value required (in milliseconds).
engine.SysGRSBlockSize	Many Circuit Group Reset (GRS) messages can become due for sending at the same time. This situation occurs if you have set the *.GRSEnabled parameter to true during provisioning. The *.GRSEnabled parameter is a property that is set on an SS7 signaling service (in the CMM) or an SS7 path (in MML). GRS messages can be staggered by sending in blocks. Set the engine.SysGRSBlockSize parameter to the number of messages to be sent in each block. Use the engine.SysGRSTimerInterval parameter to set the time from the start of one block to the start of the next. Default: **0** **Note** This parameter operates independently for each SS7 route (each OPC/DPC pair).

Parameter	Modification
engine.SysGeneratedCode	To determine whether compiled or interpreted code is used, enter one of the following values: • **true**—System uses compiled code (default). • **false**—System uses interpreted code (used only for engineering and debugging). **Note** Compiled code runs faster than interpreted code. Typically, this value should be **true**. If your configuration uses multiple CPUs, this value *must* be **true**.
*.SysConnectDataAccess	This parameter controls if data access is enabled or disabled and if the engine attempts to connect to the MMDB at startup. Set this parameter to **true** for calling scenarios where European LNP, A-number screening, or other features requiring real-time database access are used. If you do not need real-time database access, set this parameter to **false** to increase the available system memory that can be used for call processing.

Enabling Call Screening

To initialize the database that stores call screening information, modify the following parameter in the Engine section of the XECfgParm.dat file:

Parameter	Modification
***.SysConnectDataAccess**	Controls whether data access is enabled or disabled (whether the engine attempts to connect to the MMDB at startup. Values: • **true** = connect to MMDB • **false** = do not connect to MMDB Default: **false** **Note** In calling scenarios where Euro-LNP, A Number Screening, or other features requiring real time database access are required, this parameter must be set to ***true***. Otherwise, it can remain ***false*** for an increase in the available system memory usable for call processing. **Note** This parameter replaces the SysScreeningCheck parameter.

Configuring Call Detail Record File Output

To configure call detail record (CDR) file output, modify the following parameters in the Data Dumper and Engine sections of the XECfgParm.dat file:

Parameter	Modification
engine.CDRencodingFormat	To specify the call detail record (CDR) file encoding format, enter one of the following values: • **AnsiCDB**—North American (default) • **ItuCDB**—European
engine.CDRmessageTypes	To specify the Call Detail Blocks (CDBs are the accounting records written at various points in a call) that are generated during a call, enter one of the following sets of values (each number represents a point in a call): • **1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080**—These are considered the "event-based" set of values. Use this event-based list when you want to receive all CDR records at predefined points in the call. Although each of these CDBs can be specified independently, Cisco suggests that you use the event-based set as a "package" of CDBs for full accounting purposes. **Note** The event-based setting is required when operating the Cisco MGC in conjunction with the BAMS adjunct. • **1060, 1110**—Use this value if you want end-of-call summary-type records only. • **1071**—Use this set of values for BAMS measurements. Refer to the chapter "Detailed CDB Description" in the *Cisco Media Gateway Controller Software Release 9 Billing Interface Guide* for details on each CDB.
engine.CDRtimeStamp	Specifies the time stamp unit in seconds or milliseconds. To specify the CDR file time-stamp unit, enter one of the following values: • **S**—Seconds (default). • **M**—Milliseconds. Use this parameter if your configuration uses TCAP or if you want the millisecond granularity in all of your CDR records. **Note** The **M** setting is mandatory when operating the Cisco MGC in conjunction with the BAMS adjunct.

Parameter	Modification
cdrDmpr.callDetail	Specifies that call detail record (CDR) files may be automatically converted from binary format to ASCII, comma-delimited format. Default: **/opt/CiscoMGC/local/cdbscript.sh** Optional: **/opt/CiscoMGC/bin/converter** (if binary CDR files need to be converted to ASCII) **Note** The default CDR file format has changed from an ASCII format in Release 4 to a binary format in Release 7. The ASCII file has a .csv extension. For more information on generating and viewing CDR files, see the *Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide*.
dmpr.openCDR	Specifies whether the standard data dumper should write out CDR files. Values: • **true** = Standard data dumper opens a CDR file and log the call data blocks (CDB). • **false** = Standard data dumper does not open a CDR file and does not log CDBs. Default: **true** **Note** The default format for CDR files has been changed since release 4 from an ASCII format to a binary format. Use the **dmpr.callDetail** parameter to convert the files to an ASCII format, if necessary.

Configuring the Clearing Location and Default Location Parameters

This property overrides the Clearing Location and Default Location fields in Call Context. Change the clearing location value if you need a value other than the default to be sent to the switch. Change the default location value if you need to define a customer-specific default location for your system that can differ from the default location set in the type definition of the protocol.

Parameter	Modification
ClearingLocation	This property overrides the Clearing Location field in Call Context. Change this value if you need a value other than the default to be sent to the switch. Valid values are: • 0—The Cisco MGC software uses the default Clearing Location in Call Context. • 1—The Cisco MGC software overrides the Clearing Location in Call Context with LOCATION_USER • 2—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ PRIVATE_LOCAL • 3—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ PUBLIC_LOCAL • 4—The Cisco MGC software overrides the Clearing Location in Call Context with LOCATION_TRANSIT • 5—The Cisco MGC software overrides the Clearing Location in Call Context with LOCATION_ PUBLIC_REMOTE • 6—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ PRIVATE_REMOTE • 7—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ INTERNATIONAL • 8—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ INTERWORKING • 9—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ LOCAL_INTERFACE • 10—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ LOCAL_LOCAL • 11—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ LOCAL_REMOTE • 12—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ PACKET_MANAGER • 13—The Cisco MGC overrides the Clearing Location in Call Context with LOCATION_ UNKNOWN

Parameter	Modification
DefaultLocation	This property overrides the Default Location field in Call Context. Change this value if you need to define a customer-specific default location for your system that can differ from the default location set in the type definition of the protocol. Valid values are: • **0—The Cisco MGC software uses the Default Location in Call Context** • **1—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_USER • **2—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ PRIVATE_LOCAL • **3—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ PUBLIC_LOCAL • **4—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_TRANSIT • **5—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ PUBLIC_REMOTE • **6—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ PRIVATE_REMOTE • **7—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ INTERNATIONAL • **8—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ INTERWORKING • **9—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ LOCAL_INTERFACE • **10—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ LOCAL_LOCAL • **11—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ LOCAL_REMOTE • **12—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ PACKET_MANAGER • **13—The Cisco MGC software** overrides the Default Location in Call Context with LOCATION_ UNKNOWN

Configuring Switchover

To configure switchover, modify the following parameters in the **foverd** section of the XECfgParm.dat file.

:

Parameter	Modification
foverd.conn1Type	To set the connection type for connection number 1, enter **serial** or **socket**. **Note** Typically, set this value to **socket**.
foverd.ipLocalPortA	To define the local port number used for IP communication, enter a unique number, keeping the following in mind: • Typically, if **Type** is socket, set this value to **1051**. • If you have two Cisco MGC hosts in a fault tolerant configuration, enter the foverd.ipLocalPortA value in the foverd.ipPeerPortA field in the XECfgParm.dat file on the secondary host. **Caution** **The value of foverd.ipLocalPortA must be unique for every host on the network. Otherwise, active and standby hosts cannot communicate properly.** In the instance discussed here, no other machine on the network can have **foverd.ipLocalPortA set to 1051. If that happens, the active and standby hosts cannot perform proper switchover.**
foverd.ipPeerPortA	To define the peer port number used for IP communication, enter a unique number, keeping the following in mind: • Typically, if **Type** is socket, set this value to **1052**. • If you have two Cisco MGC hosts in a switchover configuration, enter the foverd.ipPeerPortA value in the foverd.ipLocalPortA field in the XECfgParm.dat file on the secondary host. **Caution** **The value of foverd.ipPeerPortA must be unique for every host on the network. Otherwise, active and standby hosts cannot communicate properly.** In the instance discussed here, no other machine on the network can have **foverd.ipPeerPortA set to 1052. If that happens, the active and standby hosts cannot perform proper switchover.**
foverd.conn2Type	To set the connection type for connection number 2, enter **serial** or **socket**. **Note** Typically, set this value to **socket**.

Parameter	Modification
foverd.ipLocalPortB	To define the secondary local port number used for IP communication, enter a unique number, keeping the following in mind: • Typically, if **Type** is socket, set this value to **1053**. • If you have two Cisco MGC hosts in a switchover configuration, enter this value in the foverd.ipPeerPortB field in the XECfgParm.dat file on the secondary host. **Caution** **The value of foverd.ipLocalPortB must be unique for every host on the network. Otherwise, active and standby hosts cannot communicate properly.** In the instance discussed here, no other machine on the network can have **foverd.ipLocalPortB set to 1053. If that happens, the active and standby hosts cannot perform proper switchover.**
foverd.ipPeerPortB	To define the secondary local port number used for IP communication, enter a unique number, keeping the following in mind: • Typically, if **Type** is socket, set this value to **1054**. • If you have two Cisco MGC hosts in a switchover configuration, enter this value in the foverd.ipLocalPortB field in the XECfgParm.dat file on the secondary host. **Caution** **The value of foverd.ipPeerPortB must be unique for every host on the network. Otherwise, master and slave hosts cannot communicate properly.** In the instance discussed here, no other machine on the network can have **foverd.ipPeerPortB set to 1054. If that happens, the master and slave hosts cannot perform proper switchover.**
foverd.conn3Type	To set the connection type for connection number 3, enter **serial** or **socket**. **Note** Typically, set this value to **serial**.
foverd.conn3Addr	To specify the address of the peer system, enter a location; for example, **/dev/term/a**. If your configuration does not use connection number 3, enter **/dev/null** (default). **Note** If your configuration uses an 8-port connector as a serial connection for switchover, you must modify the read-write permissions for the connection.

Parameter	Modification
foverd.abswitchPort	To specify the port used for communication with the A/B switch, enter a location; for example, **/dev/term/a**. **Note** If your configuration does not use an A/B switch, use the default value (/dev/null).
foverd.heartbeatInterval	Specifies the maximum time in milliseconds between heartbeat messages from the peer switchover daemon. This interval defines the frequency with which the switchover daemon exchanges heartbeat messages with its peer. Default: 1000 milliseconds (1 second).

Note For more information on switchover, see *Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide*.

Initializing the Provisioning Object Manager

To configure the Provisioning Object Manager (POM), modify the following parameters in the POM section of the XECfgParm.dat file:

Parameter	Modification
pom.dataSync	Used in a fault tolerant system to indicate that the POM should synchronize the provisioning data at startup. • If you have a standalone system, set this value to **false**. • If you have a fault tolerant system, set this value to **true**. ⚠ **Caution** If **pom.dataSync is set to true for a fault tolerant system, you must ensure that you are running the same version of the Cisco MGC software on both active and standby machines. Otherwise, the wrong version of your data files may be copied to the other machine.** **Note** When the initial Cisco MGC configuration on the active **host** is deployed, you must change the **pom.dataSync parameter to true in the XECfgParm.dat file in the standby host. After setting this parameter to true, you can start the Cisco MGC on the standby host. As the Cisco MGC comes up, the data on the standby host is synchronized with the data on the active host and the active host goes into the standby state.** **To accommodate failover conditions where the current active host can become the standby host, you must also set the pom.dataSync parameter to true on the current active host.**
pom.port	Used in a fault tolerant configuration to indicate the port number that the POM uses to communicate with its peer. Enter any integer from **4001** through **4050**, or **default**. **Note** This is a platform-specific value and depends on your system installation. You should modify this value only if the default port (**4001**) is being used by another process or application.

Configuring SCP Queries

The SCP translates routing information for the Advanced Intelligent Network (AIN) database queries over TCAP. This section provides instructions for selecting the type of translation you use to enable SCP database queries. If your site or network requires changes, you can enable SCP queries by manually editing the parameters in the trigger.dat file. The trigger.dat file (located in /opt/CiscoMGC/etc) contains the message-sending table that contains translation values.

This section contains the following topics:

Warning **Do not edit trigger.dat file parameters that are not listed below, and remember that all parameters are case-sensitive. Otherwise, your system might not work as intended.**

Note The following Bellcore Standards are supported for US 800 toll-free services:

IN/1 Toll Free Service support : GR-1428
AIN 0.1 Toll Free Service support : GR-2902

Before You Start

If you are changing an ANSI query and you need a different Translation Type, you need to know the Translationtype value from the Global Title Translation tables on the Signal Transfer Point (STP). Get this value from the administrator of your STP.

Configuring the trigger.dat File Attributes

Note The trigger.dat file is not overwritten during software installation. All changes to the trigger.dat file are contained in a file called trigger.template that is installed with the new software. If you modify the trigger.dat file after installing a new software release, you need to view the trigger.template file and copy any changes in that file to your trigger.dat file.

Caution Improper editing of the trigger.dat file can cause service interruption and prevent the Cisco MGC from correctly performing SCP database queries.

You can configure the following Cisco MGC trigger.dat file attributes to perform a Transaction Capabilities Application Part (TCAP) query:

- Global Title Translation
- Service Key Value
- Translation Type

Configuring the Global Title Translation Attribute

Perform the following steps to configure the Global Title Translation attribute:

Step 1 Back up the trigger.dat file.

Step 2 Determine the Trigger Number that you need to edit. You can get this information from your network administrator.

Step 3 Navigate to directory /opt/CiscoMGC/etc.

Step 4 Open the trigger definition file in an ASCII text editor and search for the string *$TriggerTable*.

Step 5 Starting after the $TriggerTable line, count the number of rows equal to the TriggerType beginning from the number 1.

Note Do not count any row that is blank or that begins with a pound sign (#).

Step 6 When you find your row, note down the second number in that row. This number is the index to the $MessageSending table.

Step 7 Edit the file as follows:

a. In the $MessageSending table, select column 9, gtSsn (see Table 5-5).

b. In the table for your translation type, change the Global Title Translation value (column F9) to either 0 or 1. You can get this information from your network administrator. If the number is 0, use GTT. If the number is 1, use PC/SSN.

c. If you change the gtSsn value to 0, you must go to gtFormat in column 16 and reset the value to 0. If you set the value to 1, you must also set column 16 to a non-zero value.

Note See Table 5-5 for table values.

Step 8 Save your changes and close the editor.

Step 9 For your changes to take effect you must reboot the Cisco MGC by entering the following command:

```
# /etc/init.d/CiscoMGC start
```

Note If you have installed the Solaris DiskSuite package (CSCOh016) on your system, the messages below are displayed during system boot-up. They are normal Solaris DiskSuite start-up messages and do not indicate any problem with your system.

```
WARNING force load of misc /md-trans failed
WARNING force load of misc /md-raid failed
WARNING force load of misc /md-hotspares failed
WARNING force load of misc /md-sp failed
```

Configuring the Service Key Value Attribute

Perform the following steps to configure the Service Key Value (tcv_sk) attribute:

Step 1 Back up the trigger.dat file.

Step 2 Determine the Trigger Number that you need to edit. You can get this information from your network administrator.

Step 3 Navigate to directory /opt/CiscoMGC/etc.

Step 4 Open the trigger.dat file in an ASCII text editor and search for the string *$TriggerTable*.

Step 5 Starting after the $TriggerTable line, count the number of rows equal to the TriggerType beginning from the number 1.

Note Do not count any row that is blank or that begins with a pound sign (#).

Step 6 When you find your row, note down the second number in that row. This number is the index to the $MessageSending table.

Caution **Do not change TCVs**. You must verify that column 2 is equal to 1 before changing tcv_sk. If column 2 is not equal to 1, this is not an ETSI trigger and column 6 is a TCV, not an SK.

Step 7 Edit the trigger.dat file as follows:

a. In the $MessageSending table, select tcv_sk, in column 6 (see Table 5-5).

b. In the table, change the value for tcv_sk to a value from 0 through 255. You can get this information from your network administrator.

Step 8 Save your changes and close the editor.

Step 9 Restart the Cisco MGC software by entering the following command:

```
# /etc/init.d/CiscoMGC start
```

Configuring the Translation Type Attribute

Perform the following steps to configure the Translation Type (translationType) attribute:

Step 1 Back up the trigger.dat file.

Step 2 Determine the Trigger Number that you need to edit. You can get this information from your network administrator.

Step 3 Navigate to directory /opt/CiscoMGC/etc.

Step 4 Open the trigger definition file in an ASCII text editor and search for the string *$TriggerTable*.

Step 5 Starting after the $TriggerTable line, count the number of rows equal to the TriggerType beginning from the number 1.

Note Do not count any row that is blank or that begins with a pound sign (#).

Step 6 When you find your row, note down the second number in that row. This number is the index to the $MessageSending table.

Caution You must verify that column 2 is equal to 2 or 3 before changing Translation Type. If column 2 is not equal to 2 or 3, this is not an ANSI trigger and Translation Type is not used.

Step 7 Edit the file as follows:

a. In the $MessageSending table, select translationType, in column 7 (see Table 5-5).

b. In the table for your translation type, change the value for translationType to a value from 0 through 255. You can get this information from your network administrator.

Step 8 Save your changes and close the editor.

Step 9 For your changes to take effect you must reboot the Cisco MGC by entering the following command:

```
# /etc/init.d/CiscoMGC start
```

Note If you have installed the Solaris DiskSuite package (CSCOh016) on your system, the messages below are displayed during system boot-up. They are normal Solaris DiskSuite start-up messages and do not indicate any problem with your system.

```
WARNING force load of misc /md-trans failed
WARNING force load of misc /md-raid failed
WARNING force load of misc /md-hotspares failed
WARNING force load of misc /md-sp failed
```

Table 5-5 $MessageSending Table Values

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21
Transport	tcapType	stpScpGroupIndex	msg	asn1Encoding	tcv_sk	translationType	tcapBodyType	gtSsn	dpcPres	ssnPres	dpcNetwork	dpcCluster	dpcMember	ssn	gtFormat	OS1	OS2	OS3	OS4	OS5
# MS 1: xxxxxx LNP																				
1	2	0	6	0	0	255	1	0	0	1	0	0	0	0	2	1	0	0	0	0
# MS 2: Generic LNP																				
1	2	0	6	0	37	255	1	0	0	1	0	0	0	0	2	2	0	0	0	0
# MS 3: xxxxxxx 800																				
2	1	1	1	0	0	0	1	0	0	1	0	0	0	0	2	3	0	0	0	0
# MS 4: ANSI AIN 800 NPA																				
1	2	0	6	0	4	255	1	0	0	1	0	0	0	0	2	4	0	0	0	0
# MS 5: ANSI AIN 800 NPA-NXX																				
1	2	0	6	0	5	255	1	0	0	1	0	0	0	0	2	4	0	0	0	0
# MS 6: ANSI AIN 800 NPA-NXX-XXX																				
1	2	0	6	0	8	255	1	0	0	1	0	0	0	0	2	4	0	0	0	0
# MS 7: ANSI AIN 800 Termination information																				
1	2	0	5	0	0	255	1	0	0	1	0	0	0	0	2	5	0	0	0	0
# MS 8: ANSI PRE AIN 800																				
1	3	0	6	0	0	254	2	0	0	1	0	0	0	0	2	6	0	0	0	0
# MS 9: ANSI PRE AIN 800 Termination information																				
1	3	0	5	0	0	254	2	0	0	1	0	0	0	0	2	7	0	0	0	0

Sample trigger.dat File

```
#--//*************************************************************************
#--//* Table_9.trigger                                                       *
#--//*                                                                       *
#--//* TRIGGER TABLES                                                        *
#--//*                                                                       *
#--//* (c) 1999-2000 CISCO SYSTEMS, INC. ALL RIGHTS RESERVED.                *
#--//* THIS SOFTWARE CONTAINS CONFIDENTIAL INFORMATION AND TRADE SECRETS OF   *
#--//* CISCO SYSTEMS, INC. USE, DISCLOSURE, OR REPRODUCTION IS PROHIBITED    *
#--//* WITHOUT THE PRIOR EXPRESS WRITTEN PERMISSION OF THE CISCO SYSTEMS, INC.*
#--//*                                                                       *
#--//*************************************************************************
# "$Id: Table_9.trigger,v 1.11.2.3 1999/09/20 18:20:51 xxxxxxxx Exp $";
# "(c) 1999-2000 Cisco Systems, Inc. All Rights Reserved."


##############
$TriggerTable
##############
# All fields are pointers to records of other types
# F1   F2   F3   F4   F5   F6   F7
# MA   MS   RR1  RR2  RR3  RR4  RR5

#----------------------------------
# TT 1: xxxxxx LNP
#----------------------------------
  1    1    1    2    0    0    0

#----------------------------------
# TT 2: Generic LNP
#----------------------------------
  2    2    1    3    0    0    0

#----------------------------------
# TT 3: xxxxxxx 800
#----------------------------------
  3    3    10   4    5    0    0

#----------------------------------
# TT 4: ANSI AIN 800 NPA
#----------------------------------
  4    4    10   6    7    0    0

#----------------------------------
# TT 5: ANSI AIN 800 NPA-NXX
#----------------------------------
  4    5    10   6    7    0    0

#----------------------------------
# TT 6: ANSI AIN 800 NPA-NXX-XXXX
#----------------------------------
  4    6    10   6    7    0    0

#----------------------------------
# TT 7: ANSI AIN 800 Termination Information
#----------------------------------
  5    7    10   0    0    0    0

#----------------------------------
# TT 8: ANSI PRE AIN AIN 800
#----------------------------------
  4    8    10   8    9    0    0
```

```
#---------------------------------
# TT 9: ANSI PRE AIN 800 Termination Information
#---------------------------------
  5    9    10   0    0    0    0


###############
$MessageAction
###############
#
# F1   F2   F3   F4   F5   F6   F7   F8   F9   F10
# ACT1 REQ  ACT2 REQ  ACT3 REQ  ACT4 REQ  ACT5 REQ

#-------------------------------------------------
# MA 1: xxxxxx LNP
#-------------------------------------------------
  1    1    3    0    0    0    0    0    0    0

#-------------------------------------------------
# MA 2: Generic LNP
#-------------------------------------------------
  1    1    2    1    3    0    0    0    0    0

#-------------------------------------------------
# MA 3: xxxxxxx 800
#-------------------------------------------------
  1    1    3    0    0    0    0    0    0    0

#-------------------------------------------------
# MA 4: ANSI AIN 800 / ANSI PRE AIN 800
#-------------------------------------------------
  1    1    3    0    0    0    0    0    0    0

#-------------------------------------------------
# MA 5: ANSI AIN 800 Termination Information / PRE AIN 800 Termination Information
#-------------------------------------------------
  4    1    0    0    0    0    0    0    0    0


################
$MessageSending
################
#
# gtFormat Values
# GTFORMAT_DO_NOT_USE_GLOBAL_TITLE                 := 0
# GTFORMAT_USE_GLOBAL_TITLE_TRANSLATION_TYPE_NUMBERING_SCHEME_ENCODING_SCHEME := 1
# GTFORMAT_USE_GLOBAL_TITLE_TRANSLATION_TYPE       := 2
# GTFORMAT_USE_GLOBAL_TITLE_ONLY                   := 3
# GTFORMAT_UNKNOWN                                 := 4
#
```

Note To see proper formatting for the table below, see Table 5-5.

```
# F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16 F17 F18 F19 F20 F21
# transport tcapType stpScpGroupIndex msg asn1Encoding tcv_sk translationType tcapBodyType
gtSsn dpcPres ssnPres dpcNetwork dpcCluster dpcMember ssn gtFormat OS1 OS2 OS3 OS4 OS5

#-------------------------------------------------------------------------------------------
# MS 1: xxxxxx LNP
#-------------------------------------------------------------------------------------------
1 2 0 6 0 0 255 1 0 0 1 0 0 0 0 2 1 0 0 0 0
```

```
#-------------------------------------------------------------------------------------------
# MS 2: Generic LNP
#-------------------------------------------------------------------------------------------
1 2 6 37 255 0 1 0 0 2 0 0 0 0

#-------------------------------------------------------------------------------------------
# MS 3: xxxxxxx 800
#-------------------------------------------------------------------------------------------
2 1 1 0 1 0 0 0 2 0 0

#-------------------------------------------------------------------------------------------
# MS 4: ANSI AIN 800 NPA
#-------------------------------------------------------------------------------------------
1 2 0 6 0 4 255 1 0 0 1 0 0 0 0 2 4 0 0 0 0

#-------------------------------------------------------------------------------------------
# MS 5: ANSI AIN 800 NPA-NXX
#-------------------------------------------------------------------------------------------
1 2 0 0 255 0 1 0 0 4 0 0

#-------------------------------------------------------------------------------------------
# MS 6: ANSI AIN 800 NPA-NXX-XXX
#-------------------------------------------------------------------------------------------
1 2 0 6 0 8 255 1 0 0 1 0 0 0 0 2 4 0 0 0 0

#-------------------------------------------------------------------------------------------
# MS 7: ANSI AIN 800 Termination information
#-------------------------------------------------------------------------------------------
1 2 0 5 0 0 255 1 0 0 1 0 0 0 0 2 5 0 0 0 0

#-------------------------------------------------------------------------------------------
# MS 8: ANSI PRE AIN 800
#-------------------------------------------------------------------------------------------
1 3 0 6 0 0 254 2 0 0 1 0 0 0 0 2 6 0 0 0 0

#-------------------------------------------------------------------------------------------
# MS 9: ANSI PRE AIN 800 Termination information
#-------------------------------------------------------------------------------------------
1 3 0 5 0 0 254 2 0 0 1 0 0 0 0 2 7 0 0 0 0

#################
$OperationSending
#################
#
# F1            F2            F3            F4              F5
# componentType opClass       opCodeFamily  opCodeSpecifier opCodeFlag
# F6                   F7
# correlationRequired  PS

#-------------------------------------------------------------------------------------------
# OS 1: xxxxxx LNP
#-------------------------------------------------------------------------------------------
6 1 3 0

#-------------------------------------------------------------------------------------------
# OS 2: Generic LNP
#-------------------------------------------------------------------------------------------
6 100 4 2

#-------------------------------------------------------------------------------------------
# OS 3: xxxxxxx 800
#-------------------------------------------------------------------------------------------
1 0 4 3
```

```
#-------------------------------------------------------------------------------------------
# OS 4: ANSI AIN 800
#-------------------------------------------------------------------------------------------
6 100 4 0 4

#-------------------------------------------------------------------------------------------
# OS 5: ANSI AIN 800 Termination Information Should have correlationRequired = 1
#-------------------------------------------------------------------------------------------
6 1 103 4 4 0 5

#-------------------------------------------------------------------------------------------
# OS 6: ANSI PRE AIN 800
#-------------------------------------------------------------------------------------------
6 1 3 1 3 0 6

#-------------------------------------------------------------------------------------------
# OS 7: ANSI PRE AIN 800 Termination Information
#-------------------------------------------------------------------------------------------
2 1 0 0 0 0 7


#################
$ParameterSending
#################
#
# F1   F2   F3   F4   F5   F6   F7   F8   F9   F10  F11  F12  F13  F14  F15  F16  F17 F18
# PA1  REQ  PA2  REQ  PA3  REQ  PA4  REQ  PA5  REQ  PA6  REQ  PA7  REQ  PA8  REQ  PA9 REQ
# F19  F20
# PA10 REQ

#-------------------------------------------------------------------------------------------
# PS 1: xxxxxx LNP
#-------------------------------------------------------------------------------------------
100 1 101 1 102 1 0 0 0 0 0 0 0 0 0 0 0 0 0

#-------------------------------------------------------------------------------------------
# PS 2: Generic LNP
#-------------------------------------------------------------------------------------------
100 1 101 1 102 1 103 1 0 0 0 0 0 0 0 0 0 0 0

#-------------------------------------------------------------------------------------------
# PS 3: xxxxxxx 800
#-------------------------------------------------------------------------------------------
200 1 201 1 202 1 0 0 0 0 0 0 0 0 0 0 0 0 0

#-------------------------------------------------------------------------------------------
# PS 4: ANSI AIN 800 (All types)
#-------------------------------------------------------------------------------------------
100 1 101 1 102 1 103 1 104 1 109 0 110 0 111 0 112 0 113 0

#-------------------------------------------------------------------------------------------
# PS 5: ANSI AIN 800 Termination Information
#-------------------------------------------------------------------------------------------
105 1 106 1 107 0 108 0 0 0 0 0 0 0 0 0 0 0 0

#-------------------------------------------------------------------------------------------
# PS 6: ANSI PRE AIN 800
#-------------------------------------------------------------------------------------------
17 1 2 1 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0

#-------------------------------------------------------------------------------------------
# PS 7: ANSI PRE AIN 800 Termination Information
#-------------------------------------------------------------------------------------------
```

```
21 1 20 1 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


##################
$ReceivedResponse
##################
#
# F1   F2
# MR   RA

#-------------------------------------------------------------------------------------------
# RR 1: xxxxxx LNP / Generic LNP Default
#-------------------------------------------------------------------------------------------
0    1

#-------------------------------------------------------------------------------------------
# RR 2: xxxxxx LNP 1st expected
#-------------------------------------------------------------------------------------------
1    2

#-------------------------------------------------------------------------------------------
# RR 3: Generic LNP 1st expected
#-------------------------------------------------------------------------------------------
1    3

#-------------------------------------------------------------------------------------------
# RR 4: xxxxxxx 800 1st expected (Result)
#-------------------------------------------------------------------------------------------
2    1

#-------------------------------------------------------------------------------------------
# RR 5: xxxxxxx 800 2st expected (Error)
#-------------------------------------------------------------------------------------------
3    4

#-------------------------------------------------------------------------------------------
# RR 6: ANSI AIN 800 With termination status notification
#-------------------------------------------------------------------------------------------
4    5

#-------------------------------------------------------------------------------------------
# RR 7: ANSI AIN 800
#-------------------------------------------------------------------------------------------
5    6

#-------------------------------------------------------------------------------------------
# RR 8: ANSI PRE AIN 800 With termination status notification
#-------------------------------------------------------------------------------------------
6    7

#-------------------------------------------------------------------------------------------
# RR 9: ANSI PRE AIN 800
#-------------------------------------------------------------------------------------------
7    8

#-------------------------------------------------------------------------------------------
# RR 10: ANSI AIN 800 / PRE AIN 800 Default
#-------------------------------------------------------------------------------------------
0    9


##################
$MessageReceiving
##################
```

```
#
# F1   F2   F3   F4   F5   F6   F7   F8   F9   F10  F11
# MSG  OR1  REQ  OR2  REQ  OR3  REQ  OR4  REQ  OR5  REQ

#-----------------------------------------------------
# MR 1: xxxxxx LNP / Generic LNP
#-----------------------------------------------------
  8    1    1    0    0    0    0    0    0    0    0

#-----------------------------------------------------
# MR 2: xxxxxxx 800 (Result)
#-----------------------------------------------------
  3    2    1    0    0    0    0    0    0    0    0

#-----------------------------------------------------
# MR 3: xxxxxxx 800 (Error)
#-----------------------------------------------------
  3    3    1    0    0    0    0    0    0    0    0

#-----------------------------------------------------
# MR 4: ANSI AIN 800 with termination status notification
#-----------------------------------------------------
  8    4    1    5    1    0    0    0    0    0    0

#-----------------------------------------------------
# MR 5: ANSI AIN 800
#-----------------------------------------------------
  8    4    1    0    0    0    0    0    0    0    0

#-----------------------------------------------------
# MR 6: ANSI PRE AIN 800 with termination status notification
#-----------------------------------------------------
  8    6    1    7    1    0    0    0    0    0    0

#-----------------------------------------------------
# MR 7: ANSI PRE AIN 800
#-----------------------------------------------------
  8    6    1    0    0    0    0    0    0    0    0


####################
$OperationReceiving
####################
#
# F1             F2           F3               F4           F5          F6
# componentType opClass      opCodeFamily opCodeSpecifier opCodeFlag PR

#-------------------------------------------------------------------------
# OR 1: xxxxxx LNP / Generic LNP
#-------------------------------------------------------------------------
  6              1            101          1               4           1

#-------------------------------------------------------------------------
# OR 2: xxxxxxx 800 (Result)
#-------------------------------------------------------------------------
  1              1            0            20              4           2

#-------------------------------------------------------------------------
# OR 3: xxxxxxx 800 (Error)
#-------------------------------------------------------------------------
  3              1            0            0               4           3

#-------------------------------------------------------------------------
# OR 4: ANSI AIN 800
```

```
#-----------------------------------------------------------------------
  6             1            101          1               4          4

#-----------------------------------------------------------------------
# OR 5: ANSI AIN 800 Request for status notification
#-----------------------------------------------------------------------
  6             1            103          5               4          5

#-----------------------------------------------------------------------
# OR 6: ANSI PRE AIN 800
#-----------------------------------------------------------------------
  6             1            4            1               3          6

#-----------------------------------------------------------------------
# OR 7: ANSI PRE AIN 800 Request for status notification
#-----------------------------------------------------------------------
  6             1            6            1               4          7


####################
$ParameterReceiving
####################

# F1   F2   F3   F4   F5   F6   F7   F8   F9   F10  F11  F12  F13  F14  F15  F16
# PA1  REQ  ACT  PA2  REQ  ACT  PA3  REQ  ACT  PA4  REQ  ACT  PA5  REQ  ACT  PA6
  REQ  F17  F18  F19  F20  F21  F22  F23  F24  F25  F26  F27  F28  F29  F30
  ACT  PA7  REQ  ACT  PA8  REQ  ACT  PA9  REQ  ACT  PA10 REQ  ACT

#-------------------------------------------------------------------------------------------
# PR 1: xxxxxx LNP / Generic LNP
#-------------------------------------------------------------------------------------------
102  1    1    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------------------------
# PR 2: xxxxxxx 800 (Result)
#-------------------------------------------------------------------------------------------
205  1    1    206  1    1    204  1    3    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------------------------
# PR 3: xxxxxxx 800 (Error)
#-------------------------------------------------------------------------------------------
205  1    1    206  1    1    204  1    3    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------------------------
# PR 4: ANSI AIN 800 Result
#-------------------------------------------------------------------------------------------
102  1    1    110  0    2    113  0    2    114  1    2    115  1    2    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------------------------
# PR 5: ANSI AIN 800 Status request
#-------------------------------------------------------------------------------------------
105  1    4    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------------------------
# PR 6: ANSI PRE AIN 800 Result
#-------------------------------------------------------------------------------------------
8    0    2    4    1    1    18   0    2    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0
```

```
#-------------------------------------------------------------------------------------
# PR 7: ANSI PRE AIN 800 Status request
#-------------------------------------------------------------------------------------
20   1    4    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
0    0    0    0    0    0    0    0    0    0    0    0


################
$ResponseAction
################
#
# F1   F2   F3   F4   F5   F6   F7   F8   F9   F10  F11  F12  F13  F14  F15
# ACT1 REQ  DAT  ACT2 REQ  DAT  ACT3 REQ  DAT  ACT4 REQ  DAT  ACT5 REQ  DAT

#-------------------------------------------------------------------------
# RA 1: xxxxxx LNP Default & Generic LNP Default
#-------------------------------------------------------------------------
  4    1    2    0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 2: xxxxxx LNP 1st Expected
#-------------------------------------------------------------------------
  4    1    2    0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 3: Generic LNP 1st Expected
#-------------------------------------------------------------------------
  1    1    0    4    1    2    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 4: xxxxxxx (Error)
#-------------------------------------------------------------------------
  0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 5: ANSI AIN 800 with termination status notification
#-------------------------------------------------------------------------
  2    0    1    4    1    3    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 6: ANSI AIN AIN 800
#-------------------------------------------------------------------------
  4    1    3    0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 7: ANSI PRE AIN 800 with termination status notification
#-------------------------------------------------------------------------
  2    0    4    4    1    3    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 8: ANSI PRE AIN 800
#-------------------------------------------------------------------------
  4    1    3    0    0    0    0    0    0    0    0    0    0    0    0

#-------------------------------------------------------------------------
# RA 9: 800 Default
#-------------------------------------------------------------------------
  4    1    3    0    0    0    0    0    0    0    0    0    0    0    0

############
$ActionData
############
#
# F1   F2   F3   F4   F5
```

```
#-----------------------

# AD 1: ANSI AIN 800  Data for RESULT_ACTION_RE_TRIGGER_VIA_LCM (to send termination
information)
# Trg  Pic   Null Null Null
#--------------------------
  7    13    0    0    0

# AD 2: ANSI LNP Data for RESULT_ACTION_SEND_ACTION_TO_LCM
# Act  Null Null Null  NULL
#--------------------------
  1    0     0    0    0

# AD 3: ANSI AIN / PRE AIN 800 Data for RESULT_ACTION_SEND_ACTION_TO_LCM
# Act  Null Null Null  NULL
#--------------------------
  2    0     0    0    0

# AD 4: ANSI PRE AIN 800  Data for RESULT_ACTION_RE_TRIGGER_VIA_LCM (to send termination
information)
# Trg  Pic   Null Null Null
#--------------------------
  9    13    0    0    0
```

This completes the SCP configuration. Continue to the next section to initialize the call-screening database. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Initializing the Call Screening Database

This section contains the following topics:

Caution Cisco does not support the direct use of TimesTen commands (files found in **/opt/TimesTen/32/bin**). Incorrect use of these commands can cause database corruption.

During installation, the installation script (**install.sh**) installs and initializes the Main Memory Database (MMDB) that the Cisco MGC can use for the following:

- Store call-screening information for calling- and called-number analysis
- Ported Numbers
- Number Termination
- Multiple Dial Plan
- Advice of Charge II

You might want to perform white and black list screening to include or exclude calls from certain numbers. You can provision white lists that specify allowed A-numbers (calling numbers) or B-numbers (called numbers). Black lists block specified A-numbers (calling numbers) or B-numbers (called numbers). For more details, see the *Cisco MGC Software Release 9 Dial Plan Guide*.

The call screening database is stored in the /opt/TimesTen/datastore directory. The database name is **howdydb**. The maximum database size, 256 MB, is specified in the .odbc.ini file shown in the .odbc.ini File Information section, below.

Caution Do not change the database name.

.odbc.ini File Information

The .odbc.ini file specifies the location of the database storage. Unless you installed the software to other than the default directory, the .odbc.ini file is located in the /opt/CiscoMGC/local directory. The following is an example of an .odbc.ini file:

```
[ODBC Data Sources]
howdydb=TimesTen 4.1 Driver
[howdydb]
Driver=/opt/TimesTen4.1/32/lib/libtten.so
DataStore= /opt/TimesTen4.1/datastore/howdydb
DurableCommits=0
ExclAccess=0
ThreadSafe=1
WaitForConnect=0
Size=256
[ODBC]
Trace=0
TraceFile=
Installdir=/opt/TimesTen4.1/32
```

Setting Up Replication

If you have two Cisco MGC hosts in a fault tolerant system, you must set up database replication between the two hosts. During replication, any updates applied to the database on one host are replicated on the other. Data is transferred real time and does not require committing or deploying a configuration.

Replication copies data changes to either database after the initial setup. If you have data in one database and want to retain it, go to the host that has the data that you want to retain (usually this is the active host), then follow the procedures below, "Initializing Database Replication" section on page 5-60.

Note Before you can initialize the databases, you must install the Cisco MGC software on both machines.

Network Requirements

In most replication schemes, you need to identify the name of the host machine on which your data store resides. The operating system translates this host name to an IP address. This section describes how to configure your host names to ensure they use the correct IP addresses.

Identifying data store hosts (UNIX and VxWorks)

If your Unix or VxWorks host has a single IP address and hostname, you can use the host name returned by the hostname command on UNIX or the hostname() call on VxWorks. If a host contains multiple network interfaces (with different IP addresses), TimesTen replication tries to connect to the IP address in the same order as returned by the gethostbyname() call on UNIX or the hostGetByName() call on VxWorks. It will try to connect using the first address; if a connection cannot be established, it tries the remaining addresses in order until a connection is established. TimesTen replication uses this same sequence each time it establishes a new connection to a host. If a connection to a host fails on one IP address, TimesTen replication attempts to re-connect (or fall back) to another IP address for the host in the same manner described above.

There are two basic ways you can configure a host to use multiple IP addresses on UNIX platforms: DNS or /etc/hosts files. On VxWorks platforms you use the hostAdd() call. For example, the following entry in the /etc/hosts file on a UNIX platform describes a server named Machine1 with two Ethernet IP addresses:

```
10.10.98.102 Machine1
192.168.1.102 Machine1
```

To specify the same configuration for DNS, your entry in the domain zone file would look like:

```
Machine1 IN A 10.10.98.102
IN A 192.168.1.102
```

In either case, you only need to specify Machine1 as the hostname in your replication scheme and replication will use the first available IP address when establishing a connection. In an environment in which multiple IP addresses are used, you can also assign multiple host names to a single IP address in order to restrict a replication connection to a specific IP address. For example, you might have an entry in your /etc/hosts file that looks like:

```
10.10.98.102 Machine1
192.168.1.102 Machine1 RepMachine1
```

Or a DNS zone file that looks like:

```
Machine1 IN A 10.10.98.102
IN A 192.168.1.102
RepMachine1 IN A 192.168.1.102
```

Should you want to restrict replication connections to IP address 192.169.1.102 for this host, you can specify RepMachine1 as the hostname in your replication scheme. (Another option is to simply specify the IP address as the hostname in the CREATE REPLICATION statement used to configure your replication scheme.)

The following are example hosts files from an active PGW host and an associated peer PGW host:

Active PGW Host /etc/hosts

```
27.0.0.1 localhost
192.168.11.1 UK-A-Netra1125-1 loghost
192.168.12.1 UK-A-Netra1125-1.hme1
192.168.11.2 UK-A-Netra1125-2
192.168.12.2 UK-A-Netra1125-2.hme1 UK-A-Netra1125-2 <----- Peer PGW hostname
```

Peer PGW Host /etc/hosts

```
127.0.0.1 localhost
192.168.11.2 UK-A-Netra1125-2 loghost
192.168.12.2 UK-A-Netra1125-2.hme1
```

```
192.168.11.1 UK-A-Netra1125-1 1
92.168.12.1 UK-A-Netra1125-1.hme1 UK-A-Netra1125-1 <----- Peer PGW hostname
```

Initializing Database Replication

To set up the initial replication, perform the following steps:

Step 1 Log in to the active host as **mgcusr** and enter the following command:

setup_replication.sh *standbyhost* **active**

Where *standbyhost* is the name (not IP address) of your standby host. In the example below, the active host is hostx and the standby host is hosty.

Caution Do not use IP addresses when setting up database replication. If you do, replication will fail.

Example 5-3 Initializing Database Replication on the Active Host

```
hostx% setup_replication.sh hosty active

   Setting up replication to node hosty for DSN howdydb
   Adding cisco.whitelist_a
   Adding cisco.blacklist_a
   Adding cisco.whitelist_b
   Adding cisco.blacklist_b
   Adding cisco.portednumbers
   Adding cisco.numberterm
RAM Residence Policy            : inUse
RAM Residence Grace (Secs)      : 0
Manually Loaded In Ram          : False
Purge Logs for Data Store       : True
Logging Enabled                 : True
Replication Manually Started    : True
```

Step 2 Log in to the standby host as the root user and stop the MGC software by entering the following UNIX command:

```
/etc/init.d/CiscoMGC stop
```

Step 3 Log back in to the standby host as mgcusr.

Step 4 At the standby host, enter the following command:

setup_replication.sh *activehost* **standby**

where *activehost* is the name (not IP address) of your active host. In the example below, the active host is hostx and the standby host is hosty.

Caution Do not use IP addresses when setting up database replication. If you do, replication will fail.

Example 5-4 Initializing Database Replication on the Standby Host

```
Configuring replication for DSN=howdydb
Restoring file /opt/TimesTen4.1/datastore/howdydb.ds0 from backup
Restoring file /opt/TimesTen4.1/datastore/howdydb.log0 from backup
RAM Residence Policy            :inUse
```

```
Manually Loaded In Ram          :False
Replication Agent Policy        :manual
Replication Manually Started    :True
Oracle Agent Policy             :manual
Oracle Agent Manually Started   :False
Replication setup completed.
```

Step 5 Start the Cisco MGC by entering the following command:

```
/etc/init.d/CiscoMGC start
```

Proceed to "Verifying Database Replication".

Verifying Database Replication

To verify that replication is working, perform the following steps:

Step 1 Log in to the active host and start an MML session by entering **mml**.

Step 2 Add an entry into the B white list database using the numan-add MML command. For example:

```
hostx mml> numan-add:bwhite:custgrpid="S018",svcname="testsvc",cli="9998"
   VSC-01 - Media Gateway Controller 2000-08-30 11:31:25
M  COMPLD
   "bwhite"
   ;
```

Step 3 Log in to the standby host and start an MML session by entering **mml**.

Step 4 Enter the numan-rtrv MML command to verify that the entry you added in Step 3 was replicated to the database on the standby host. For example:

```
hosty mml> numan-rtrv:bwhite:custgrpid="S018",svcname="testsvc",cli="9998"
   VSC-01 - Media Gateway Controller 2000-08-30 11:33:52
M  RTRV
   "session=test:bwhite"
   /* The cli :9998: exists.   */
   ;
```

Troubleshooting the Main Memory Database Replication

If you have problems during replication, try stopping and restarting the replication as follows:

Step 1 Stop the replication by entering:

```
# /etc/init.d/ttreplic stop
```

Step 2 Restart the replication by entering:

```
# /etc/init.d/ttreplic start
```

Displaying the Main Memory Database Replication Status

The script **replication_status.sh** displays the status of the MMDB replication, if it is configured.

Run the script by typing the following command:

```
replication_status.sh
```

The output shows the following replication status:

```
Peer name         Host name                 Port    State  Proto
---------------  ------------------------ ------  ------- -----
HOWDYDB           VA-DEALE                  Auto   Start       5

Last Msg Sent  Last Msg Recv  Latency  TPS      RecordsPS  Logs
-------------  -------------  -------  -------  ---------  ----
   -                 -         -1.00    -1        -1        1
```

Note If the value for Last Msg Recv is more than a few seconds, or Logs is more than 1, then this indicates that replication is not occurring.

Verifying Database Synchronization

The **script db_count.sh** provides the number of records configured in each of the database tables. This is useful for checking whether two machines have the same database data configured in them.

Run the script by typing the following command:

```
db_count.sh
```

The output shows the rows counted in each database table:

```
CISCO.A_CHARGE_ORIGIN   < 0 >
CISCO.A_NUMBERDIALPLANSELECTION < 0 >
CISCO.BLACKLIST_A       < 0 >
CISCO.BLACKLIST_B       < 0 >
CISCO.NUMBERTERM        < 0 >
CISCO.PORTEDNUMBERS     < 0 >
CISCO.WHITELIST_A       < 0 >
CISCO.WHITELIST_B       < 3 >
```

Synchronizing Databases

If you have data in the databases in the active and standby hosts, but both databases are out of synch or do not match, re-synchronize both databases by following the steps listed below. Otherwise, contact Cisco TAC for assistance in merging the databases.

Assuming the active host is the "better" database, do the following on the standby host:

Step 1 Log in as **mgcusr**.

Step 2 Stop the Cisco MGC software by entering the following command:

```
/etc/init.d/CiscoMGC stop
```

Step 3 Stop MMDB replication by entering the following command:

```
/etc/init.d/ttreplic stop
```

Step 4 Copy the active host database to the standby host database by entering the following command:

```
setup_replication <active host> standby
```

Step 5 Start the Cisco MGC by entering the following command:

```
/etc/init.d/CiscoMGC start
```

Checking for Installation Errors

If you still have problems, retry the commands listed in the "Verifying Database Replication" section on page 5-61. If your output differs from the example in that section, or if you suspect problems or errors in the database installation, try the following:

Step 1 Ensure that the database is installed in the /opt/TimesTen directory.

Step 2 Check the log file for installation errors. (The log file is in the directory /var/adm/MGC.install.log.)

Reinstalling CSCOga002

If necessary, remove and reinstall the CSCOga002 package, as follows:

Step 1 Remove the CSCOga002 package using the **pkgrm** command. To remove the package file, enter the following command:

```
# pkgrm CSCOga002
```

Step 2 Reinstall the package using the **pkgadd** command by entering the following command:

```
# pkgadd -d CSCOga002.pkg
```

This completes the Cisco MGC software installation. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii. If you do not need to install or remove patches, proceed to configure your Cisco SLTs.

Configuring Cisco SLTs

Note For configuration information, refer to the document *Cisco Signaling Link Terminal* and the *Release Notes for the Cisco Media Gateway Controller Software Release 9*.

Configuring Disk Monitor During Initial Software Configuration

The setting of the disk monitor parameters in the XECfgParm.dat file typically occurs while you are performing the initial configuration procedures for your Cisco MGC software. To configure the disk monitor settings in the XECfgParm.dat file during initial software configuration, perform the following steps:

Step 1 While configuring your settings in the XECfgParm.dat file, find the disk monitor parameters in the file (they are near the end of the file).

Step 2 To change the number of days to preserve logged data before trimming is initiated, modify the value of the diskmonitor.Limit parameter. The default value is 7.

Step 3 To change the list of optional file systems that are checked by the disk monitor script, modify the value of the diskmonitor.OptFileSys parameter.

Note Files in optional directories are not trimmed by disk monitor.

Step 4 To change the percentage of disk usage at which alarming and disk trimming is initiated, modify the value of the diskmonitor.Threshold parameter. The default value is 80.

Step 5 To change the number of days that finished CDR files are kept in the log directory, modify the value of the diskmonitor.CdrRmFinished parameter. The default value is 0, which means that finished CDRs are immediately sent to the spool directory.

Step 6 If you want to change what action is taken once the number of days threshold set in the diskmonitor.Limit parameter is reached, change the value of the diskmonitor.SoftLimit parameter. If this parameter is set to *true*, disk monitor decrements the value in the diskmonitor.Limit parameter one day at a time (that is, from 7 down to 6 then down to 5 and so on), until the utilization level drops below the threshold. If this parameter is set to *false*, disk monitor exits and the system generates a DISK alarm. The default value is true.

Step 7 To change the number of days that core dump files are kept in the log directory, modify the value of the diskmonitor.CoreRmDays parameter. The default value is 1, which means that core dump files are kept for one day before disk monitor removes them automatically.

Step 8 You can control the maximum number of configurations that can be stored in the configuration library using the diskmonitor.CfgRmDirs parameter. The valid values are the range of integers from 3 through 64. The default value is 64. This parameter is not present in the XECfgParm.dat file initially. If you want to modify the value, you must enter the parameter manually into the file.

Note If you want to ensure the proper functioning of the **prov-sync** MML command, set this parameter to a value between 50 and 60.

Note Entering a value outside of the range of valid values (3 through 64) disables monitoring of the number of entries stored in the configuration library.

Step 9 Save your changes.

This completes the procedures for configuring disk space monitoring. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Configuring the Data Dumper

The data dumper is a Cisco MGC software function that controls the destinations for active and archived log files for CDRs, measurements, and alarms, and controls when the active files are archived. The data dumper runs automatically and works correctly with a default configuration. However, you can customize the dumper settings by editing the **dmprSink.dat** file.

The following is an example of the contents of the dmprSink.dat file:

```
"callDetail" bin "cdr" "../var/log" "../var/spool" 1000 0 15
"measReport" csv "meas" "../var/log" "../var/spool" 500 0 15
"almState" csv "alm" "../var/log" "../var/spool" 500 0 15
```

Table 5-6 lists the fields that can be modified depending on your needs.

Table 5-6 Dumper Sink Log File Parameters

Field Name	Default Value	Description
maxRecs	1000	The maximum number of records a file can contain before it is flushed or moved to the spool area. If this value is set to 0, the number of records is unlimited. You can improve system performance by increasing the value of this record to a larger value, such as 50000. This results in fewer log record files being generated during periods of high call volume.
maxSize	0	The maximum size of the file in bytes before it is moved to the spool area. If this value is set to 0, the size of the file is limited only by the disk space available.
maxTime	15	The maximum time, in minutes, the file is allowed to remain open, before it is flushed or moved to the spool area. If there is no data in the file, it will not be flushed when the time limit expires. If this value is set to 0, there is no time limit.
		Note One or more of the above fields *must* be set to a value other than zero (0) for each record in the dmprSink.dat file.
		Caution ***Do not*** modify or change any of the following log file configuration values.
recordFormat	**csv**	The translation of the records being placed in the capture file. Valid values are csv (comma-separated values) or bin (binary).
logDirectory	**/var/log**	The directory where the current dumper logs reside.
logSpoolDir	**/var/spool**	The directory to which historic logs are copied after being closed.

To configure the **dmprSink.dat** file fields, use the following procedure:

Step 1 If you are not already logged in, log into a Cisco MGC as **root**.

Step 2 Change to the /opt/CiscoMGC/etc directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc
```

Step 3 Use a text editor, such as vi, to open and edit the **dmprSink.dat** file fields you want to change.

Note If you are going to use the BAMS to collect CDRs, proceed to the "Configuring the Data Dumper to Support BAMS" section on page 5-66, for information on how to configure the data dumper to support BAMS.

Step 4 Save your changes and exit the text editor.

Step 5 Change to the /opt/CiscoMGC/etc/CONFIG_LIB/new directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc/CONFIG_LIB/new
```

Step 6 Stop and start the standby host.

Step 7 Perform sw-over on the active host.

Step 8 Stop and start the newly-standby host (formerly active host).

Step 9 Repeat Step 3 and Step 4 for the version of dmprSink.dat stored in this directory.

Step 10 Change to the /opt/CiscoMGC/etc/active_link directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc/active_link/
```

Step 11 Repeat Step 3 and Step 4 for the version of dmprSink.dat stored in this directory.

Step 12 If your system is equipped with a second Cisco MGC, repeat Step 1 through Step 10 on this second Cisco MGC.

This completes the procedures for configuring the data dumper. If your system uses BAMS, continue to the "Configuring the Data Dumper to Support BAMS" section on page 5-66. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.

Configuring the Data Dumper to Support BAMS

If your system will use BAMS to retrieve CDRs from the Cisco MGC, perform the following procedure to configure the data dumper to support BAMS:

Step 1 If you are not already logged in, log into a Cisco MGC as **root**.

Step 2 Change to the /opt/CiscoMGC/etc directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc
```

Step 3 Use a text editor, such as vi, to open and edit the **dmprSink.dat** file fields you want to change.

Step 4 Save your changes and exit the text editor.

Step 5 Change to the /opt/CiscoMGC/etc/CONFIG_LIB/new directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc/CONFIG_LIB/new
```

Step 6 Stop and start the standby host.

Step 7 Perform sw-over on the active host.

Step 8 Stop and start the newly-standby host (formerly active host).

Step 9 Repeat Step 3 and Step 4 for the version of dmprSink.dat stored in this directory.

Step 10 Change to the /opt/CiscoMGC/etc/active_link directory by entering the following UNIX command:

```
cd /opt/CiscoMGC/etc/active_link/
```

Step 11 Repeat Step 3 and Step 4 for the version of dmprSink.dat stored in this directory.

Step 12 If your system is equipped with a second Cisco MGC, repeat Step 1 through Step 10 on this second Cisco MGC.

This completes the procedures for configuring the data dumper to support BAMS. If you have questions or need assistance, see the "Obtaining Documentation, Obtaining Support, and Security Guidelines" section on page xvii.