



Release Notes for Cisco Media Gateway Manager, Release 3.0

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Introduction

Cisco Media Gateway Manager (MGM) is a component of the network management strategy for the MGX 8000 series Carrier Voice Gateway (CVG) products. This strategy has five major aspects:

- Provides a common, carrier class element management (EM) system for MGX 8000 series CVG networks in VoIP applications that have an IP core transport.
- Provides a common, carrier class network management system to support an integrated EM layer and network concept across Cisco and third party voice network elements via interfaces to EMSs.
- Supports integration with upstream NML/OSS applications via a common CORBA IDL interface.
- Where possible, provides EMS integration with partner and Cisco call agent EMSs.
- Provides open standards-based interfaces across element and network management systems.



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These release notes describe new features and caveats in system software release 3.0 for the Cisco MGM. Use these release notes in conjunction with the documentation listed in the “[Related Documentation](#)” section on page 11.

System Requirements

Cisco MGM and MGX 8000 Series hardware and software requirements are listed in the following sections.

Cisco MGM Hardware Requirements

The hardware resources you need for Cisco MGM depend on the number of Cisco MGX 8000 Series CVGs and associated MGCs that Cisco MGM will manage. The following table lists the server and client requirements for small and large Cisco MGM installations.

Table 1 Cisco MGM Platform Requirements

Resource	Cisco MGM Server		Cisco MGM Client
	Small Installation ¹	Large Installation ²	
Workstation	Sun Netra t1400 ³	Sun Netra t1400 ³	Sun Ultra 10
Operating system	Solaris 8 ⁴	Solaris 8 ⁴	Solaris 8 ⁴
Memory	2 GB RAM	4 GB RAM	256 MB RAM
Disk space	Two hard disks, each one 18 GB or larger	Four hard disks, each one 18 GB or larger	One hard disk, 9 GB or larger
Processor	2 x 440 MHz	4 x 440MHz	440 MHz
Swap space	5 GB ⁵	9 GB ⁵	2 GB
Monitor	17-inch color	17-inch color	17-inch color
Graphics card	24-bit	24-bit	24-bit
Power supply	1	2 (second power supply optional for high availability installations)	1
Miscellaneous Resources	Local or remote CD ROM DAT tape backup	Local or remote CD ROM DAT tape backup	Local or remote CD ROM

1. Up to 10 fully-loaded MGX CVGs
2. Between 10 to 50 fully-loaded MGX CVGs
3. Netra platforms are supported, but not required. Alternate platforms that have been tested include: Sun Ultra 60, 220r, 420r, 280r, and Netra 20. Sun UltraSPARC III servers and desktops are also supported by Cisco MGM.
4. Testing conducted using Solaris 8 patch 108528-17.
5. If CiscoView is running on the same system as Cisco MGM, you will need an additional 1 GB swap space.

Cisco MGM Supported Hardware

Cisco MGM manages Cisco MGX 8000 Series CVGs based on the Cisco processor switch modules (PXM1, PXM1-E, and PXM45). In addition, Cisco MGM provides management of VISM, VISM-PR, RPM-PR, RPM-XF, SRM, SRM-E, AXSM, and AXSM-E cards. The following table lists the processor switch and services modules supported by chassis.

Table 2 Cisco MGM Supported Hardware

Modules	Chassis			
	MGX 8230	MGX 8250	MGX 8830	MGX 8850
PXM1	Yes	Yes	N/A	Yes
PXM1-E	N/A	N/A	Yes	Yes
PXM45	N/A	N/A	N/A	Yes
VISM	Yes	Yes	N/A	Yes
VISM-PR	Yes	Yes	Yes	Yes
RPM-PR	Yes	Yes	Yes	Yes
RPM-XF	N/A	N/A	N/A	Yes
SRM/SRM-E	Yes	Yes	Yes	Yes
AXSM/AXSM-E	N/A	N/A	N/A	Yes

In the preceding table, “yes” indicates that the module listed in the left-hand column is supported by the chassis type displayed at the top of the column. An entry of “N/A” indicates that the module listed in the left-hand column is not supported by the chassis type displayed at the top of the column.

For information on card-to-card compatibility, see the appropriate Cisco MGX software release notes.

Cisco MGM Software Requirements

This version of Cisco MGM requires the following software components:

- Cisco EMF Release 3.2 Service Pack 4 or greater
- CiscoView 5.4
- WANCV package release 4.11 (included with Cisco MGM 3.0 package)



Note

To ensure optimal system performance and the inclusion of critical security updates, it is recommended that you install the latest Solaris patches available. Cisco MGM 3.0 has been tested against Solaris 8 patch 108528-17.

Cisco MGX 8000 Series Software Requirements

The Cisco processor switch and service modules require the installation of specific firmware releases in order to function properly in Cisco MGX 8000 series chassis running Cisco MGM. Depending on the Cisco processor switch module present in the chassis, different service modules may be supported. For each processor module and service module within a particular chassis, the firmware release may vary.

The following table lists Cisco MGM and Cisco MGX 8000 Series CVG compatibility, including the supported firmware release. Other firmware versions may be used; however, some functionality may not be compatible with other firmware releases.

Table 3 Cisco MGM and Cisco MGX 8000 Series CVG Compliance Matrix

Chassis	Module		Supported Firmware Release ¹
	Processor Module	Service Module	
MGX 8230	PXM1	N/A	MGX 1.2.10
MGX 8250		VISM/VISM-PR	VISM 3.1
MGX 8850		RPM-PR	RPM 1.2.13
		SRM/SRM-E	N/A
MGX 8830	PXM1-E	N/A	MGX 3.0.20
MGX 8850		VISM-PR	VISM 3.1
		RPM-PR	RPM 1.2.13
		SRM/SRM-E	N/A
MGX 8850	PXM45	N/A	MGX 3.0.20
		VISM-PR	VISM 3.1
		RPM-PR/RPM-XF	RPM 1.2.13
		SRM/SRM-E	N/A
		AXSM/AXSM-E	AXSM 3.0.20

1. For other Cisco MGX firmware versions, see the corresponding Cisco MGX software release notes to determine the appropriate firmware version supported for the specific service module(s).

Media Gateway Controller Software Requirements

Cisco EMF and Cisco MGM provide integrated connection to the management interfaces of the following Media Gateway Controllers (MGCs):

- Cisco BTS 10200 Softswitch
- Tekelec VXi Media Gateway Controller (MGC)
- NexVerse ipVerse ControlSwitch

The following table shows the software requirements for each supported MGC.

Table 4 *Media Gateway Controller Software Requirements*

Cisco BTS 10200	Release 3.3
Tekelec Vxi	Release 4.0
NexVerse ipVerse	Release 5.1

New Features

In addition to all of the features supported in Cisco MGM release 2.0, Cisco MGM 3.0 enhances the Cisco EMF to support MGX 8830/8850 (PXM1E-based) and MGX 8850 (PXM45-based) CVGs which support features of the VISM and VISM-PR cards. The following features have been added or enhanced in Cisco MGM 3.0:

- [VISM/VISM-PR Specific Features](#)
- [Cisco MGX 8000 Series CVG Auto Discovery](#)
- [Cisco MGX 8000 Series CVG Subchassis Discovery and Synchronization](#)
- [Cisco MGX 8000 Series CVG Trap Handling and Forwarding](#)
- [Cisco MGX 8000 Series CVG Chassis Maintenance Administration](#)
- [Cisco MGX 8000 Series CVG Configuration Save/Restore and Image Download](#)
- [Media Gateway Controller EMS Integration](#)

VISM/VISM-PR Specific Features

Cisco MGM 3.0 provides integration to automatically detect CiscoView installation and install the WANCV package into the CiscoView core.

Cisco MGX 8000 Series CVG Auto Discovery

Cisco MGM 3.0 enhances the Cisco EMF auto discovery function by recognizing all of the MGX8830/8850 (PXM1E-based) and MGX8850 (PXM45-based) CVGs in the discovery domain and creating the corresponding nodes on the Map Viewer.

Cisco MGX 8000 Series CVG Subchassis Discovery and Synchronization

Cisco MGM 3.0 discovers the subchassis inventory on MGX8830/8850 (PXM1E-based) and MGX8850 (PXM45-based) CVGs and writes the data into the Cisco MGM database for display and other processing purposes. Subchassis synchronization is periodically performed with all of the MGX8830/8850 (PXM1E-based) and MGX8850 (PXM45-based) CVGs in the network.

Cisco MGX 8000 Series CVG Trap Handling and Forwarding

All traps emitted from MGX8830/8850 (PXM1E-based) and MGX8850 (PXM45-based) CVGs are recognized by Cisco MGM 3.0 and are reported in the Cisco EMF Event Browser. Traps received by Cisco MGM 3.0 are forwarded to a remote management system if the forwarding entry is defined in the Cisco EMF trap forward configuration file. Forwarded traps are delivered in the same order as they are received by Cisco EMF Trap Manager.

Cisco MGX 8000 Series CVG Chassis Maintenance Administration

A chassis maintenance feature is provided to allow the temporary suspension of selected nodes in Cisco MGM from receiving traps or performing other operations. A chassis maintenance window is provided for the gateway objects and can be launched on a per-chassis basis.

Cisco MGX 8000 Series CVG Configuration Save/Restore and Image Download

Cisco MGM 3.0 allows for the gateway configuration to be saved and uploaded to a predetermined location on the Cisco MGM server. The configuration can be restored by downloading the specified configuration file to the gateway. Cisco MGM 3.0 also facilitates the image download operation for MGX8830/8850 (PXM1E-based) and MGX8850 (PXM45-based) CVGs.

Media Gateway Controller EMS Integration

Cisco MGM 3.0 supports BTS 10200 Release 3.3. This version of Cisco MGM carries the MGX 8000 series CVG package (cmgmpkgm/c) along with the BTS media gateway controller package in the release image.

Tekelec VXi Media Gateway Controller (MGC) is also integrated with Cisco MGM 3.0. This allows for the auto discovery of VXi MGCs from Cisco MGM, the ability to launch the VXi MGC EMS from the MapViewer, and the inclusion of Tekelec VXi traps/alarms into the Cisco MGM Event Browser.

Cisco MGM 3.0 also supports the integration with the NexVerse ipVerse ControlSwitch EMS. This package allows for the auto discovery of NexVerse ipVerse MGC nodes, the ability to launch the NexVerse ipVerse EMS from the MapViewer, and the inclusion of NexVerse ipVerse traps and alarms into the Cisco MGM Event Browser.

Limitations and Restrictions

- Cisco MGM 3.0 supports only Solaris 8.
- Cisco MGM 3.0 GUI does not support the Open Windows environment.
- The CiscoView 5.4 server can run on a local or remote machine. If it is running on a remote machine, you must manually run the CiscoView security integration script and WanCV installation by executing the following commands from the Cisco MGM CD on the remote machine:


```
/cdrom/cmgm3.0pkg/ciscoview/cvsecurity/cvsecurityinstall
/cdrom/cmgm3.0pkg/ciscoview/wancv/wancvinstall
```
- Cisco MGX 8000 Series CVGs do not send traps to Cisco MGM when you enter **clralcnf** commands. The **clralcnf** command erases the gateway configuration in Cisco MGM, but this does not show in the Map Viewer because no trap is sent. You must perform a manual chassis synchronization from Cisco MGM to reset the gateway configuration in the Map Viewer.
- The system reset CLI command may cause the chassis to be out-of-reach from the network, which leads to loss of traps from the device to the Cisco MGM management server. Redundant card failover may not report all the necessary information in the alarm for Cisco MGM to recovery its configuration on the Map Viewer. If the operator executes a **resetsys** command on a chassis or if Cisco MGM receives traps indicating card failover, the Cisco MGM operator should perform a manual sub-chassis synchronization. The 24-hour periodic resync task will eventually pick up the correct inventory for all the chassis managed by Cisco MGM as well.
- Cisco MGM v3.0 coresidency, as described in the *Cisco Media Gateway Manager User Guide*, has not been verified at this time.

Installation Notes

- Installing the latest Solaris patches available ensures optimal system performance and the inclusions of critical security updates.
- If the Cisco MGM server does not have DNS or NIS service, add the following line to the server `/etc/hosts` file to access the Cisco MGM user guide:


```
198.133.219.25    www.cisco.com    www.cisco.com
```
- Before uninstalling the Cisco MGM server or client, backup your Cisco EMF database according to the procedures described in the *Cisco Element Management Framework Installation and Administration Guide*, Chapter, 10, “Cisco EMF Database Backup and Restore”.
- Uninstalling Cisco MGM does not uninstall WanCV and other CiscoView integration files that were previously installed. The following directory and files remain in your CiscoView installation:


```
<CiscoView Root>/www/classpath/ems
<CiscoView Root>/www/classpath/cvpars.properties
<CiscoView Root>/www/classpath/com/cisco/nm/cvw/devpkgs/MGX8*.zip
<CiscoView Root>/htdocs/CmgmSessionTimeout.html
```

For detailed Cisco MGM installation instructions, refer to the *Cisco Media Gateway Manager User Guide*.

Important Notes

- Do not interrupt the Cisco MGM installation or uninstallation with **Ctrl-C** or the **kill** command. After such an interruption, the system might not successfully install or uninstall Cisco MGM when you try to perform these actions again, or the system might enter an abnormal state.
- Do not interrupt the cemf backup operation using **Ctrl-C** or the **kill** command.
- In rare cases, installation fails with a pkgadd error. If this occurs, manually set the file permissions for the /tmp directory to rwx.
- Always run **cemf stop** to gracefully shut down Cisco EMF and Cisco MGM processes before rebooting the machine. If the machine is accidentally rebooted (or restarted due to a power failure), the Cisco MGM database integrity can be damaged, and you might need to run **cemf reset** and rediscover the network to restore normal operation. Running low on swap space leads to the same problem. Make sure that a minimum of 2 GB of swap space is allocated on the server machine.
- If the **cemf stop** operation hangs while suspending the participant service, wait for at least 1 hour for the **cemf stop** command to complete. If the **cemf stop** command continues to hang, enter the **/opt/cemf/bin/sysmgrClient -q** command to stop Cisco EMF core processes, and then run **cemf stop** and **cemf reset** to reset the database.
- If the following error messages appear when you are running **cemf session**, run **cemf stop** and **cemf start** to restart the Cisco EMF and Cisco MGM processes.

```
ERROR: "/opt/cemf/config/scripts/session" command failed.  
ERROR: Cannot connect to Session
```

- Do not use the Deployment menu on the Cisco MGM GUI to delete site objects that contain chassis underneath them. Doing so might cause the MapViewer window to stop working correctly. If this occurs, close the MapViewer window and reopen it from the Cisco EMF LaunchPad. Always delete chassis one at a time.
- Before launching CiscoView from a Cisco MGM session, make sure that you do not have any Netscape processes already running. (If a Netscape process is running before you launch CiscoView for the first time in your Cisco MGM session, Netscape will incorrectly prompt you to install the java plug-in every time CiscoView is launched.)
- The object indicator color on the Cisco MGM GUI represents the highest severity of alarm on the object, but not necessarily the status of the resource on the chassis. To find out the status of the resource that the object represents, use the Object Configuration window.
- The alarm indicator next to the object name on the left side of the Cisco MGM GUI sometimes does not show the correct color of the highest outstanding alarm. If this occurs, close the MapViewer window and open a new one. For information about Cisco MGM alarm colors, refer to the *Cisco MGM User Guide*, Chapter 6, "Fault and Performance Management".

Caveats

The following caveats exist in Cisco MGM 3.0. Generally, caveats include unexpected behaviors or defects in the software release. This document addresses caveats which directly impact user functionality and indicates alternative approaches (workarounds) where available. A complete listing of caveats is available in the Cisco bug tracking tool (<http://www.cisco.com/support/bugtools>).

- CSCdy73770

Symptom: Image download failure; creates new file of 0 byte size

Conditions: For a PXM1-based MGX 8000 Series chassis, the ComMat.dat file is overwritten on the MGX 8000 when firmware images are downloaded using the Image Download dialog in Cisco Media Gateway Manager (CMGM). This is not a problem for PXM-45 or PXM1-E based MGX 8000 Series chassis.

Workaround: Have a valid ComMat.dat file in the same directory as the firmware files on the CMGM server.

- CSCdz28089

Symptom: CMGM install gives ERROR while CV security files install

Conditions: While running the CiscoView Security script (cvsecurityinstall), that will be executed if CiscoView is installed on the same workstation as Cisco Media Gateway Manager (CMGM), an ERROR message could appear. However, the install of the CV Security is successful.

Workaround: Ensure that the CiscoView processes are running after the error message is displayed.

- CSCdz32875

Symptom: Customer cannot upgrade the CiscoView device package for the MGX 8000 Series Voice Gateway because a lack of documentation.

Conditions: CMGM does not support CiscoView device package upgrading. CMGM installs a version of the CiscoView device package for the MGX 8000 Series Voice Gateway.

Workaround: Refer to CiscoView documentation to upgrade the CiscoView device packages.

- CSCdz69509

Symptom: Install script does not recognize local CiscoView on multiple IP server.

Conditions: When the CMGM Server has multiple IP addresses during installation, the CiscoView security install script (cvsecurityinstall) and WAN CiscoView (wancvinstall) install scripts are not executed. The CMGM install script (cmgminstall) determines if CiscoView is installed on the same workstation that the cmgminstall script is running on. The IP address that is entered during install is compared to the IP address determined by the cmgminstall script. If the IP addresses are equal, CiscoView is installed on the workstation and the CiscoView scripts are run automatically. In this case the IP addresses are not equal because another IP address is determined for the local IP. The CiscoView scripts are not run automatically

Workaround: Execute the CiscoView Security install script (cvsecurityinstall) and WAN CiscoView (wancvinstall) install script manually as outlined in the CMGM User's Guide.

- CSCdz78023

Symptom: functionModuleState is not updated after VISM switchover.

Conditions: VISM redundancy is setup on the MGX 8000 Series Voice Gateway. After the VISM switchover due to failure, the functionModuleState is not updated with the proper values for the new Active and Standby VISM after the switchover. Only DS1 lines are reparented.

Workaround: No workaround is currently available.

- CSCdz80286
Symptom: MapViewer adjustments (Region) and object reassignments are not saved.
Conditions: Map Viewer allows the user to reorganize chassis, but then resets back to default after the next sub chassis sync up. This makes it difficult for the customer to organize his chassis into meaningful regions.
Workaround: Set the SNMP variable "sysLocation" to the container name; for example, set sysLocation to "East" or "West" on the MGX 8000. This will put the CMGM chassis in a "CMGM_Site_East" or "CMGM_Site_West" site on the Map Viewer. The SNMP set on "sysLocation" can be performed by selecting the MGX 8000 and selecting "Tools -> Open Object Configuration ...". A new Object Configuration dialog is displayed. Select "SNMPv2-MIB.systemCMGMVMGX..." for the Object Type, enter the new value in the "sysLocation" text box, and select "File -> Save".
- CSCuk33887
Symptom: Cisco MGM documentation must clarify how to change CMGM_Default_Site name.
Conditions: An improvement will be implemented whereby sites can be added through a CEMF dialog. The user guide should provide more explanations on the feature.
Workaround: The CMGM site name can be changed by performing a SNMP set on the SNMP variable "sysLocation". The SNMP set can be performed using the Object Configuration dialog from the Map Viewer.
- CSCuk35100
Symptom: CiscoView security and wancv packages are not installed without DNS
Conditions: The CMGM install script (cmgminstall) determines if CiscoView is installed on the same workstation that the cmgminstall script is running on. The IP address that is entered during install is compared to the IP address that is determined by the cmgminstall script. If the IP addresses are equal, CiscoView is installed on the workstation and the CiscoView scripts are run automatically. In this case, the IP addresses are not equal because the nslookup fails and the CiscoView scripts will not execute automatically.
Workaround: Execute the CiscoView Security install script (cvsecurityinstall) and WAN CiscoView (wancvinstall) install script manually as outlined in the CMGM User's Guide.
- CSCuk36859
Symptom: Cisco MGM does not download ComMat.dat file into the PXM card.
Conditions: In CMGM 3.0, when the user downloads a PXM image, the ComMat.dat file is downloaded for PXM1 firmware images; it is not tied to RPM images.
Workaround: Have a "ComMat.dat" file in the same directory as the firmware files for PXM1 based devices. This is not a problem for PXM45 or PXM1E based MGX Voice Gateways.

Related Documentation

The following Cisco publications contain additional information related to the operation of Cisco MGM:

- Cisco EMF
 - *Quick Start Guide Cisco EMF Version 3.2 SP4
Cisco Element Manager November 2002 Upgrade*
 - *Cisco Element Management Framework Installation and Administration Guide
Version 3.2 Service Pack 4 (Cisco Element Manager November 2002 Upgrade)*
 - *Cisco Element Management Framework User Guide Version 3.2 Service Pack 4
(Cisco Element Manager November 2002 Upgrade)*
 - *Release Notes for Cisco Element Management Framework v3.2 Service Pack 4
Cisco Element Manager November 2002 Upgrade*
- Cisco MGM:
 - *Cisco Media Gateway Manager User Guide, Release 3.0*
 - *Release Notes for Cisco Media Gateway Manager, Release 3.0*
- Cisco BTS:
 - *Release Notes for the Cisco BTS 10200, Release 3.3*
 - *Cisco BTS 10200 System Description*
 - *Cisco BTS 10200 Command Line Interface Reference Guide*
 - *Cisco BTS 10200 Application Installation Procedures*
 - *Cisco BTS 10200 Softswitch CORBA Installation and Programmer's Guides*
 - *Cisco BTS 10200 Cabling Procedures*
- CiscoView:
 - *Using CiscoView 5.4*
 - *WAN CiscoView Release 3 for the MGX 8230 Edge Concentrator, Release 1*
 - *WAN CiscoView Release 3 for the MGX 8250 Edge Concentrator, Release 1*
 - *WAN CiscoView Release 3 for the MGX 8850 Edge Switch, Release 1*
 - *WAN CiscoView Release 2 of the MGX 8850*
- Cisco MGX 8000 Series CVGs:
 - *Cisco MGX 8850 and MGX 8950 Switch Software Configuration Guide*
 - *Cisco MGX 8850 (PXM1E) and MGX 8830 Switch Software Configuration Guide*
 - *Cisco MGX 8850 (PXM45) and MGX 8950 Switch Software Configuration Guide*
 - *Cisco MGX 8230 Multiservice Gateway Command Reference*
 - *Cisco MGX 8250 Multiservice Gateway Command Reference*
 - *Cisco MGX 8830, MGX 8850 (PXM45 and PXM1E), and MGX 8950 Command Reference*

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

International Cisco web sites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

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<http://www.cisco.com/go/subscription>

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http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm

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- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:
<http://www.cisco.com/en/US/partner/ordering/index.shtml>
- Registered Cisco.com users can order the Documentation CD-ROM (Customer Order Number DOC-CONDOCCD=) through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com, which includes the Cisco Technical Assistance Center (TAC) Website, as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from the Cisco TAC website. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC website, including TAC tools and utilities.

Cisco.com

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Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The avenue of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

We categorize Cisco TAC inquiries according to urgency:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Cisco TAC Website

You can use the Cisco TAC website to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC website, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://tools.cisco.com/RPF/register/register.do>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

<http://www.cisco.com/en/US/support/index.html>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC website so that you can describe the situation in your own words and attach any necessary files.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:
http://www.cisco.com/en/US/products/products_catalog_links_launch.html
- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary*, *Internetworking Technology Handbook*, *Internetworking Troubleshooting Guide*, and the *Internetworking Design Guide*. For current Cisco Press titles and other information, go to Cisco Press online at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco monthly periodical that provides industry professionals with the latest information about the field of networking. You can access *Packet* magazine at this URL:
http://www.cisco.com/en/US/about/ac123/ac114/about_cisco_packet_magazine.html
- *iQ Magazine* is the Cisco monthly periodical that provides business leaders and decision makers with the latest information about the networking industry. You can access *iQ Magazine* at this URL:
http://business.cisco.com/prod/tree.taf%3fasset_id=44699&public_view=true&kbns=1.html
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in the design, development, and operation of public and private internets and intranets. You can access the *Internet Protocol Journal* at this URL:
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