



Release Notes for the Cisco ATA 186 and Cisco ATA 188 Release 2.16.ms

March 28, 2003

These release notes describe newly incorporated features, changed features or changed behavior, resolved issues, and open issues for the Cisco ATA 186 and the Cisco ATA 188 for Release 2.16.ms (MGCP and SCCP protocols).



Note

The term *Cisco ATA* refers to both the Cisco ATA 186 and the Cisco ATA 188.

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Introduction to the Cisco ATA Analog Telephone Adaptor

The Cisco ATA is an analog telephone adaptor that allows regular analog telephones to operate on IP-based telephony networks. The Cisco ATA supports two voice ports, each with its own independent telephone number.

Two Cisco ATA products are available to Cisco customers—the Cisco ATA 186 and the Cisco ATA 188. Both products run the same software and have two voice ports. The difference between these products is that the Cisco ATA 186 has one RJ45 port that provides access to an Ethernet network, while the Cisco ATA 188 has an Ethernet switch and two RJ45 ports. The Cisco ATA 188 has one RJ45 port for access to an Ethernet network and a second RJ45 port for connecting a downstream Ethernet device such as a PC.

Downloading and Upgrading the Software

Before you can use the Cisco ATA Release 2.16.ms, you must first download and upgrade the Cisco ATA software. You can download the software, after logging in, at:

<http://www.cisco.com/cgi-bin/tablebuild.pl/ata186>



Note

If you are using the Cisco ATA executable-file-upgrade method, check with the administrator of the Cisco CallManager (if you are using SCCP) and TFTP server to make sure that the TFTP upgrade method is disabled. Otherwise, the Cisco ATA might downgrade to an old image via TFTP.

For more information about downloading and upgrading software, see the Cisco ATA administrator's guides for the signaling protocol you are using. The administrator's guides can be found at the following location:

<http://www.cisco.com/univercd/cc/td/doc/product/voice/ata/ataadmn/index.htm>

Important Cisco CallManager Registration Change for SCCP

In releases prior to 2.16.ms, the Cisco ATA first attempts to register with Cisco CallManager as device type **Cisco ATA 186** (for either the Cisco ATA 186 or the Cisco ATA 188). If the Cisco ATA cannot register as a Cisco ATA 186 device type, it then attempts to register with Cisco CallManager as device type **Cisco 7960**. This behavior was created specifically for the Cisco ATA in conjunction with Cisco CallManager 3.0 and 3.1 because those releases of Cisco CallManager do not support the device type **Cisco ATA 186**.

This behavior has been modified in Release 2.16.ms to prevent the possibility that the Cisco ATA might register incorrectly as a **Cisco 7960** device type with Cisco CallManager 3.2 if the first registration attempt is delayed for any reason.

You can now configure the Cisco ATA ConnectMode parameter (bit 27) to specify which device type the Cisco ATA should use when registering with Cisco CallManager 3.2 or later:

- Set bit 27 of the ConnectMode parameter to 0 (default) to register the Cisco ATA as device type **Cisco ATA 186** if you are running Cisco CallManager 3.2 or later.
- Set bit 27 of the ConnectMode parameter to 1 to register the Cisco ATA as device type **Cisco 7960** if you are running Cisco CallManager versions 3.0 or 3.1.

New Features in Release 2.16.ms

This section contains information on new features for Cisco ATA Release 2.16.ms:

- [General Features, page 3](#)
- [New Features for MGCP, page 8](#)
- [New Features for SCCP, page 8](#)

General Features

This section contains information on new features for Cisco ATA Release 2.16.ms for both MGCP and SCCP:

- [Local Tone Playout Reporting, page 3](#)
- [Real-Time Transfer Protocol \(RTP\) Statistics Reporting, page 4](#)
- [Using Voice Configuration Menu for Status Reporting Prior to Getting IP Connectivity, page 5](#)
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- [Pipelined DNS Query, page 7](#)
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- [New CDP Discovery Implementation, page 7](#)

Local Tone Playout Reporting

The Cisco ATA inserts tone type IDs into its debug log.

To help analyze call flows, the tone locally played by the Cisco ATA to the FXS port is reported by means of the prserv debug log. Local tones are different from other tones because local tones are not carried within the inband audio. Instead, the Cisco ATA is prompted by a network event to play the tone, and the Cisco ATA generates the tone for the exclusive purpose of playing it to the attached telephone handset. For example, during a call between the Cisco ATA and a far-end phone, the far-end user might press a digit on the dial pad, thus sending an AVT Named Signaling Event to the Cisco ATA. This event prompts the Cisco ATA to generate a DTMF tone and to play the tone locally to the Cisco ATA phone.

[Table 1](#) lists the tone type identifier and its description for local tone reporting.

Table 1 *Tone Type Identifiers*

Tone Type ID	Description
0	Dial tone
1	Busy tone
2	Reorder tone
3	Ringback tone
4	Call-waiting tone
5	Warning or confirmation tone
6	DTMF digit 0
7	DTMF digit 1

Table 1 *Tone Type Identifiers (continued)*

Tone Type ID	Description
8	DTMF digit 2
9	DTMF digit 3
10	DTMF digit 4
11	DTMF digit 5
12	DTMF digit 6
13	DTMF digit 7
14	DTMF digit 8
15	DTMF digit 9
16	DTMF digit A
17	DTMF digit B
18	DTMF digit C
19	DTMF digit D
20	DTMF digit *
21	DTMF digit #
22	CPE alert signal (for off-hook Caller ID generation)
23	Outside dial tone
24	Prompt tone
25	Beep tone

**Note**

For information on the prserv debug tool, see the “Configuring and Debugging Fax Services” section in the Cisco ATA administrator’s guides.

Real-Time Transfer Protocol (RTP) Statistics Reporting

To monitor the quality of service for the media stream, you can access RTP packet statistics of the two voice ports and their channels by opening the following page on the Cisco ATA Web server:

```
<Cisco ATA IP address>/rtps
```

The following RTP packet statistics are reported:

- rxDuration—the number of seconds since the beginning of reception
- rxPktCnt—the total number of RTP packets received
- rxOctet—the total number of RTP payload octets received (not including RTP header)
- latePktCnt—the total number of late RTP packets received
- totalLostPktCnt—the total number of lost RTP packets received (not including late RTP packets)
- avgJitter—an estimate of statistical variance of the RTP packet inter-arrival time, measured in timestamp unit. (Calculation is based on the formula in RFC1889.)
- txDuration—the number of seconds since the beginning of transmission

- txPktCnt—the total number of RTP packets transmitted
- txOctet—the total number of RTP payload octets transmitted

Using the refresh feature on the RTP Statistics page, you can obtain updated, real-time RTP statistics during a call.

Resetting Cisco ATA counters

To reset the Cisco ATA counters, do the following:

- Click the [Refresh] link to refresh the current counter values.
- Click the [Line 0] link to reset line 0 counter values.
- Click the [Line 1] link to reset line 1 counter values.



Note

Inactive lines will be indicated as such.

Using Voice Configuration Menu for Status Reporting Prior to Getting IP Connectivity

Using voice configuration menu code **3123#**, you can obtain basic network status to use for diagnostic purposes. After you enter this code, the Cisco ATA announces a message in the following format:

```
e123.D.0xX
```

where:

- D is the VLAN ID (this is a non-zero value if the Cisco ATA has entered a VLAN)
- 0xX is a bitmap value in hexadecimal format. The definition of each bit is shown in [Table 2](#).

Table 2 Voice Configuration Menu Network Status Bitmap

Bit Number	Description
0	Cisco ATA sent CDP request
1	VLAN ID acquired via CDP
2	Cisco ATA sent DHCP request
3	DHCP server offered IP address
4	Cisco ATA obtained IP address from DHCP server
5	Cisco ATA web server is ready

Example

If the hexadecimal value provided by the voice configuration menu is 0x1d, the network status of the Cisco ATA is shown in [Table 3](#).

Table 3 *Voice Configuration Menu Example Network Status*

Bit Number	Description	Boolean Value
0	Cisco ATA sent CDP request	True
1	VLAN ID acquired via CDP	False
2	Cisco ATA sent DHCP request	True
3	DHCP server offered IP address	True
4	Cisco ATA obtained IP address from DHCP server	True
5	Cisco ATA web server is ready	False

Using Web Configuration Page for Status Reporting After Getting IP Connectivity

The Cisco ATA Stats Web page (<http://<Cisco ATA IP address>/stats>) displays the following information:

- VLAN ID: D0
- tftpFile: S
- NTP: D1,D2,D3
- tftp: 0xX

where:

- D0 is the VLAN ID. It should be non-zero if the Cisco ATA has entered a VLAN.
- S is the tftp filename, which can be either ata<macaddress> or the filename supplied by the DHCP server.
- D1 is the local time on the Cisco ATA.
- D2 is the last NTP contact time.
- D3 is the last successful NTP contact time.

D1, D2, D3 values are shown in number of seconds since 00:00:00 UTC, 1970-01-01. If no NTP response has been received from the NTP server, the values of D1, D2, and D3 are 0.

- 0xX is a bitmap value in hexadecimal format. The definition of each bit is shown in [Table 4](#).

Table 4 *Web Configuration Menu Network Status Bitmap*

Bit Number	Description
0	Cisco ATA sent request for configuration file, ata<macaddress>, to TFTP server
1	Cisco ATA sent request for configuration file, atadefault.cfg, to TFTP server
4	Cisco ATA sent request for image file to TFTP server
5	Cisco ATA failed to upgrade to the downloaded image file
8	Configuration file is not found
9	Bad configuration file
10	Checksum error for configuration file
11	Decode error for configuration file (encryption related)
12	Configuration file is processed successfully

Example

If the hexadecimal value provided by the web configuration menu is 0x1011, the network status of the Cisco ATA is shown in [Table 5](#).

Table 5 *Web Configuration Menu Example Network Status*

Bit Number	Description	Boolean Value
0	Cisco ATA sent request for configuration file, ata<macaddress>, to TFTP server	True
1	Cisco ATA sent request for configuration file, atadefault.cfg, to TFTP server	False
4	Cisco ATA sent request for image file to TFTP server	True
5	Cisco ATA failed to upgrade to the downloaded image file	False
8	Configuration file is not found	False
9	Bad configuration file	False
10	Checksum error for configuration file	False
11	Decode error for configuration file (encryption related)	False
12	Configuration file is processed successfully	True

Pipelined DNS Query

In this release, the Cisco ATA performs a DNS query by first sending its request to DNS server number 1. Then, if DNS server number 1 does not respond to this request within one second, the Cisco ATA sends the same request to DNS server number 2. The Cisco ATA accepts the first response from either of the DNS servers, thereby reducing the time the Cisco ATA requires for name resolution if DNS server number 1 is down or not responding.

New Bit for DNS Name Resolution

The OpFlags parameter now uses a control bit (Bit 13, mask 0x2000) to allow DNS name resolution using both statically configured DNS IP addresses (by means of configuration parameters DNS1IP and DNS2IP) and DHCP server-supplied DNS IP addresses. Therefore, the Cisco ATA can query as many as four DNS IP addresses in one DNS query.

New CDP Discovery Implementation

CDP Discovery behavior is implemented as follows:

- Sends 3 CDP Discovery packets at one-second intervals.
- Wait five seconds after sending packets, then selects the CDP response with the highest auxiliary VLAN ID.
- Processes CDP packets that have an 802.1Q tag.



Note

CDP packets do not normally have an 802.1Q tag.

New Features for MGCP

There is one new MGCP-specific feature in Cisco ATA Release 2.16.ms:

- MGCP embedded events

The embedded event action (E) can be used to reduce response time and increase bandwidth efficiency of MGCP signaling.

Without embedded events, multiple MGCP messages would be required to achieve the same behavior that one message with embedded events can achieve. Also, the time for a dial tone to sound after the user goes off-hook is delayed when embedded events are not used in MGCP messages.

The Cisco ATA supports one level of embedded commands that are compliant with the MGCP 1.0 and MGCP 1.0 NCS profiles. An embedded NotificationRequest that adheres to this limitation must not contain another embedded NotificationRequest.

The service provider has the responsibility of configuring the MGCP Call Agent.

Example

```
R: hd(A, E(S(dl), R(oc, [0-9#T](D)), D((1xxxxxxxxxxx|9011x.T))))
```

In this example, the Cisco ATA requests to be notified of an off-hook event, at which time the Cisco ATA directs the end-point device to play a dial tone and to collect DTMF digits on such event.



Note

The Cisco ATA does not need to be configured to handle MGCP embedded events.

New Features for SCCP

This section contains information on new SCCP-specific features for Cisco ATA Release 2.16.ms:

- [Survivable Remote Site Telephony \(SRST\), page 8](#)
- [Polarity, page 9](#)
- [Alternate TFTP server, page 9](#)
- [Distinctive Ring \(Internal versus External Calls\), page 10](#)

Survivable Remote Site Telephony (SRST)

During normal Cisco ATA operation, keepalive packets are exchanged between Cisco CallManagers and Cisco ATAs. When the WAN link fails, the Cisco ATA detects that it can no longer exchange keepalive packets with the Cisco CallManager, so the Cisco ATA registers with the SRST router.

The Cisco ATA is configured to query the SRST router as a backup call-processing source when the central Cisco CallManager does not acknowledge keepalive packets. The SRST router performs call setup and processing.

When the WAN link is restored, the Cisco ATA switches back to the central Cisco CallManager, and the SRST router purges its call processing database and reverts to SRST-standby mode. Cisco ATAs that are in use are not interrupted by the WAN link recovery and switch back to the central Cisco CallManager after the call is terminated.

**Note**

SRST is configured on an SRST-enabled router and on the Cisco CallManager. The Cisco ATA does not need to be configured to utilize SRST.

Polarity

You can control line polarity of the Cisco ATA FXS ports when a call is connected or disconnected by configuring the Polarity bitmap parameter as follows:

- Bit 0: CALLER_CONNECT_POLARITY. Reverse line polarity when the Cisco ATA is the caller and the call is connected.
 - 0 = Forward (Default)
 - 1 = Reverse
- Bit 1: CALLER_DISCONNECT_POLARITY. Reverse line polarity when the Cisco ATA is the caller and the call is disconnected.
 - 0 = Forward (Default)
 - 1 = Reverse
- Bit 2: CALLEE_CONNECT_POLARITY. Reverse line polarity when the Cisco ATA is the callee and the call is connected.
 - 0 = Forward (Default)
 - 1 = Reverse
- Bit 3: CALLEE_DISCONNECT_POLARITY. Reverse line polarity when the Cisco ATA is the callee and the call is disconnected.
 - 0 = Forward (Default)
 - 1 = Reverse

The voice configuration menu access code is 304.

Bits 4-31 are reserved.

Alternate TFTP server

In Release 2.16.ms, you can configure an alternate TFTP server to use if the primary TFTP server fails.

You configure an alternate TFTP server by using either the Cisco ATA configuration parameter AltTftpURL or DHCP option 150.

If you use the AltTftpURL parameter to configure the alternate TFTP server, you must enter a non-zero value containing either the IP address or URL of the alternate TFTP server.

However, if you wish to use DHCP option 150 to configure the alternate TFTP server, you must set the value of the AltTftpURL parameter to 0. DHCP option 150 allows you to enter IP addresses for both the primary TFTP server and an alternate TFTP server (if an alternate TFTP server exists). The Cisco ATA would then use the alternate TFTP server IP address specified in DHCP option 150 as its alternate TFTP server.

More Information about AltTftpURL Parameter

Other pertinent information about the AltTftpURL parameter follows:

- Usage— From the voice configuration menu, you can enter only the IP address of the alternate TFTP server. From the Cisco ATA Web configuration page, you can enter the actual URL of this server.
- Voice configuration menu access Code: 935
- Parameter type: Alphanumeric string (31 characters maximum)
- Default: 0

Use the default value of 0 in two scenarios:

- If you do not have an alternate TFTP server to configure
- If you have an alternate TFTP server but wish to configure this server by using DHCP option 150 and not by means of the AltTftpURL parameter

Distinctive Ring (Internal versus External Calls)

The Cisco ATA provides a distinction in the ringer sound for internal and external calls. Internal calls generate one ring, while external calls generate two rings with a very short pause between the rings. No configuration is required and the ring patterns are not configurable.

Changes in Release 2.16.ms

This section contains information on changed features for Release 2.16.ms and contains the following topics:

- [Changes for MGCP, page 10](#)
- [Changes for SCCP, page 11](#)
- [Changes for Both MGCP and SCCP, page 11](#)

Changes for MGCP

The name of the example configuration file that comes with the Cisco ATA MGCP software has changed to *mgcp_example.txt* (from *sk_example.txt*).

Changes for SCCP

The following changes are specific to the SCCP protocol:

- Changes to the Cisco ATA registration process with Cisco CallManager. For details, see the [“Important Cisco CallManager Registration Change for SCCP” section on page 2](#).
- Changes to Cisco ATA behavior when the far-end party that is in a call with the Cisco ATA disconnects that call:
 - Behavior prior to Release 2.16.ms:

If the phone that is connected to the Cisco ATA stays off-hook after the far-end party disconnects the call, the Cisco ATA does not play any tone to its FXS port. This means that there will be silence on the phone that is connected to the Cisco ATA. When new calls arrive for this Cisco ATA, the caller will receive a ringback tone and the Cisco ATA will play the call-waiting tone to its FXS port. This is defined as the off-hook-ringing feature.
 - Behavior change for Release 2.16.ms:

The Cisco ATA now can be configured to allow for PSTN-like behavior in the scenario just described. If the phone that is connected to the Cisco ATA stays off-hook after the far-end party disconnects the call, the Cisco ATA will play a fast-busy tone to its FXS port. When any new calls arrive for this Cisco ATA, the caller will receive a busy tone.

The amount of waiting time before the Cisco ATA plays a fast-busy tone to its FXS port can be configured using bits 22-25 of the SigTimer parameter, as follows:

Range—0 to 15

Default—0 (4 seconds)

Other values: 1-14 in seconds; 15 (never play a fast-busy tone but enable the off-hook ringing feature).
- Bit 0 of the AudioMode parameter is now obsolete. Silence suppression for SCCP now must be configured by means of the Cisco CallManager service parameters page.
- ConnectMode parameter bits 4-5 and 20-21 (DTMF transmission method) are not used for SCCP.
- As of Release 2.15.ms, the NumTxFrames parameter is not used for SCCP. The Cisco ATA uses the packet-size value configured on the Cisco CallManager.

Changes for Both MGCP and SCCP

The following changes in Release 2.16.ms apply to both the MGCP and SCCP protocols:

- Support of a separate TOS values for audio and signaling packets. The UDPTOS parameter has been renamed to TOS. With the TOS parameter, you can specify separate TOS bits for signaling and audio packets, as follows:
 - Bits 7-0 of TOS specify the TOS bit value of the audio packets.

If Bits 7-0 are 0, the TOS bit value for audio packets defaults to 0xB8.
 - Bits 15-8 of TOS specify the TOS bit value of the signaling packets.

If Bits 15-8 are 0, the TOS bit value for signaling packets defaults to 0x68.
 - Other bits are reserved and undefined at this time.



Note The previous value of the UDPTOS parameter is carried forward to the TOS parameter during a Cisco ATA upgrade.

- The VLANSetting parameter now allows you to specify different Class of Service (COS) bit values in the VLAN tag for audio and signaling packets. This is different from the previous Cisco ATA implementation, in which the VLANSetting parameter allowed you to specify separate COS bit values in the VLAN tag for UDP and TCP packets.

Resolved Issues in Cisco ATA Release 2.16.ms

This section lists the issues in previous releases of the Cisco ATA that are resolved in Release 2.16.ms:

- [Resolved MGCP Issues, page 12](#)
- [Resolved SCCP Issues, page 13](#)
- [Resolved MGCP and SCCP Issues, page 14](#)

Resolved MGCP Issues

This section lists the issues in previous releases of the Cisco ATA that are resolved in Cisco ATA Release 2.16.ms for MGCP only.

- CSCdy70985
When the notified-entity parameter value is a domain name with a specific port number, the Cisco ATA should contact the MGCP Call Agent at the port number instead of using the default value.
- CSCdy81953
The Cisco ATA 186 may send a Notify (NTFY) message with an empty Observed Events (O:) parameter.
- CSCdz01185
The Cisco ATA should automatically append the Call Agent domain name to the machine name before sending a query to the DNS server.
- CSCdz39091
The Cisco ATA must return its preferred-codecs list based on the ordered preference of the Call Agent.
- CSCdz46738
The Reset and Refresh commands cannot be individually executed if web access is disabled.
- CSCdz51386
Bit 16 of the Cisco ATA ConnectMode parameter needs to allow the selection of full or simple Session Description Protocol (SDP) in MGCP 0.1 and 1.0.
- CSCea45678
The Cisco ATA does not ignore unknown/unsupported SDP "a=" attributes.

Resolved SCCP Issues

This section lists the issues in previous releases of the Cisco ATA that are resolved in Cisco ATA Release 2.16.ms for SCCP only.

- CSCdy08968
Change Cisco ATA reset behavior when both phone lines go to the idle state.
- CSCdy43324
It is not possible to make a fourth-party conference call with the Cisco ATA 186 using the TAPI application.
- CSCdy52578
The Cisco ATA 186 image for Cisco CallManager 3.3(0.243) is out of date.
- CSCdy59058
Initially setting a password through the Web configuration page does not require confirmation.
- CSCdy63199
Cisco ATA 186 may require a special device type for each version of Cisco CallManager.
- CSCdy76146
The Cisco ATA multicast music-on-hold feature causes the Cisco CallManager to drop the call.
- CSCdy84513
Could not open Cisco ATA Web configuration page after multiple failover/fallbacks.
- CSCdy86262
The Cisco ATA is not sending KeepAlive messages to the Cisco CallManager when the KeepAlive Interval was configured through the Cisco CallManager.
- CSCdz05164
DTMF digits A, B, C, and D cannot be relayed through Cisco CallManager.
- CSCdz28936
The Cisco ATA 188 does not mark Type of Service (TOS) bits for SCCP packets that are destined for the Cisco CallManager.
- CSCdz28943
The Cisco ATA 188 does not properly mark Type of Service (TOS) bits for media packets.
- CSCdz51702
DHCP/CDP discovery is not working properly on voice VLANs if the Native VLAN ID is not equal to 1.
- CSCdz63096
In a Cisco ATA-to-IP-Phone call, the Cisco ATA hangs when the IP phone disconnects first.
- CSCea16956
The Cisco ATA sends out RTP packets even when the G.729 codec with silence suppression has been set.

Resolved MGCP and SCCP Issues

This section lists the protocol-generic issues in previous releases of the Cisco ATA that are resolved in Release 2.16.ms for both MGCP and SCCP.

- CSCdz02790
Duplexity mismatch occurs in Cisco Discovery Protocol (CDP) information.
- CSCdz09747
Standard G3 fax transmissions are failing because the echo canceller is disabled when it should remain enabled.
- CSCdz47475
The Cisco ATA plays a garbled voice configuration menu prompt.
- CSCdz54919
The Cisco ATA does not allow caller ID to display on a phone that has two lines.
- CSCdz88561
The Cisco ATA 186, when running v2.15 ata186 (Build 020911b), permits the **http://<ATA IPaddress>/reset** command to take effect without requiring a username or password.
- CSCea55168
Out-of-band DTMF RTP packets are not sent repeatedly for redundancy purposes, as with the Cisco AS5350.

Open Issues in Cisco ATA Release 2.16.ms

This section contains the following topics:

- [Open Issues for MGCP, page 14](#)
- [Open Issues for SCCP, page 14](#)
- [Open Issues for MGCP and SCCP, page 14](#)

Open Issues for MGCP

There are no MGCP-specific open issues in Cisco ATA Release 2.16.ms.

Open Issues for SCCP

There are no SCCP-specific open issues in Cisco ATA Release 2.16.ms.

Open Issues for MGCP and SCCP

There are no open issues for both MGCP and SCCP in Cisco ATA Release 2.16.ms.

Related Documentation

Use these release notes in conjunction with the documents located at this index:

- *ATA 186 and ATA 188 Analog Telephone Adaptor*
<http://www.cisco.com/univercd/cc/td/doc/product/voice/ata/index.htm>

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

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

<http://www.cisco.com>

Translated documentation is available at the following URL:

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

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

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You can order Cisco documentation in these ways:

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<http://www.cisco.com>

Technical Assistance Center

The Cisco Technical Assistance Center (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 Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- 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.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site 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 Web Site, 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 Web Site. The Cisco TAC Web Site requires 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://www.cisco.com/register/>

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

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

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

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.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section on page 15.

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