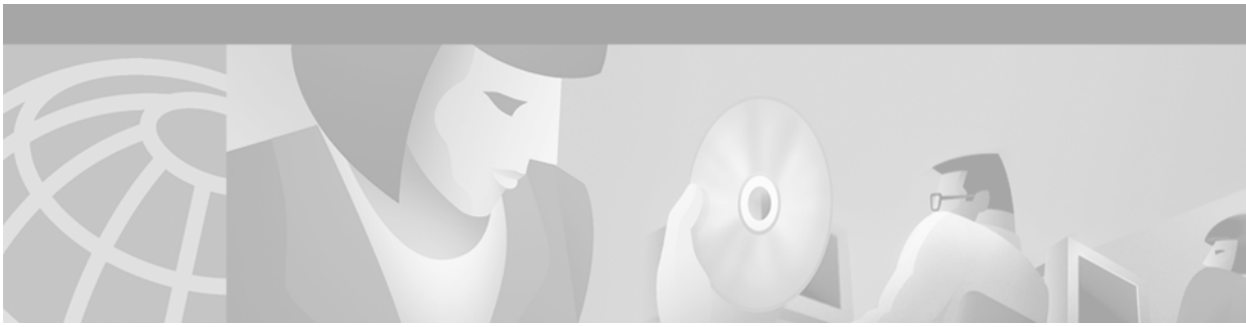

Release Notes for Cisco Telephony Controller Software Release 4.2(20)

December 18, 2000

These release notes describe the features and caveats in the software for the Cisco Telephony Controller software release 4.2(20).

This introductory section lists the contents of this document and describes the system and software.

Document Contents

CISCO SYSTEMS

Corporate Headquarters: Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

78-11771-01

Product Description

The Cisco Telephony Controller software is part of several solutions designed to perform call processing, protocol conversion, and call switching and routing functions.

The Telephony Controller software runs on a Sun Microsystems host server and is used in a variety of solutions. Currently, the software is available as part of a Cisco Virtual Switch Controller (VSC) or Cisco Dial Access Solution (DAS). See also the “Platform Support” section on page 3.

Note This software is also used with the TransPath 2000 (also referred to as TransPath Classic) configuration tool. This tool is no longer being marketed; however, existing installations are supported.

See the “Acronyms and Abbreviations” section on page 14 for definitions of terms and abbreviations used in these release notes.

Related Documentation

In addition to these release notes, this software release is supported by the following documents:

- Telephony controller documentation:

  http://www.cisco.com/univercd/cc/td/doc/product/access/sc/index.htm
- *Cisco Dial Solutions Quick Configuration Guide*:

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/12supdoc/dsqcg3/index.htm
- *Cisco Dial Solutions Configuration Guide*:

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed_cr/dial_c/index.htm
- *Cisco Dial Solutions Command Reference*:

  http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed_cr/dial_r/index.htm
- Cisco Access Server documentation:

  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/index.htm
- Cisco Network Access Server configuration:

  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/cfios/
- Cisco IOS and Catalyst Software Release Notes: See the “Access Devices and Trunking Gateways” section on page 3.
- SS7 tutorial:

  http://www.iec.org/

  Click on **Web ProForum Tutorials (Online Tutorials, Communications Networks)**, then scroll down the list and click **Signaling System #7 (SS7)**.

Platform Support

The Cisco SC22xx is available in high-availability (redundant) or simplex configurations. Supported platforms include the following:

- Cisco SC2201: Simplex configuration of Sun Netra t1100 or Netra t1120 (NEBS, DC)
- Cisco SC2202: High-availability configuration of two Sun Netra t1100s or Netra t1120s (NEBS, DC)
- Cisco SC2211: Simplex configuration of Sun Enterprise 450 (AC)
- Cisco SC2212: High-availability configuration of two Sun Enterprise 450s (AC)

The Cisco VSC27xx is available in high-availability or simplex configurations. Supported platforms include the following:

- Cisco VSC2701: Simplex configuration of Sun Netra t1120 (NEBS, DC)
- Cisco VSC2702: High-availability configuration of two Sun Netra t1120s (NEBS, DC)

The telephony controller software runs on these platforms. The Configuration Tool (CT) and Dial Plan Provisioning (DPP) run on a separate server; see the “Related Hardware Components” section, which follows.

Related Hardware Components

The Cisco SC22xx requires the hardware components listed in the following sections.

Note The Cisco TransPath Classic does not use an access device.

Access Devices and Trunking Gateways

Access Devices[1]	• Cisco AS5200 • Cisco AS5300 • Cisco AS5800
Trunking Gateways	• Catalyst 5500 • Catalyst 8510 MSR • Catalyst 8540 MSR • Cisco LS1010

1. Contain MICA modems running Portware 2.6.1.0 and Cisco IOS 11.3(7)AA or later, or 12.03(T) or later

Note The Cisco LS1010 can be used as a multiplexing device if your system requires one.

CT and DPP Windows NT Server

The configuration tool (CT) and dial plan provisioning (DPP) require a standalone Windows NT server with the following specifications:

- 200 MHz Pentium CPU
- 128 MHz RAM
- 2-GB hard drive
- Additional 4-GB hard drive
- Keyboard, mouse, floppy drive, internal 8X CD ROM drive
- 3COM Etherlink III network interface card
- Internal HP SureStore 6000 4 mm DAT
- SVGA video adapter (4 MB VRAM)
- Motorola 56-KB internal modem

Telephony Controller Ancillary Equipment

- E1/T1 cards manufactured by ITK or PTI
- V.35 cards manufactured by PTI
- Sun FastEthernet PCI card
- Sun asynchronous interface card
- Alarm Relay Unit (ARU)
- Switchover controller (or A/B switch)—for high-availability configurations only
- Patch panel
- Serial port expander
- Ethernet hub

Software Required

The Cisco VSC3000 requires the following software:

Sun host server	Sun Solaris 2.5.1
MGW and trunking gateways	• Cisco IOS Release 11.2(7)AA or later, or 12.0(3)T or later • Catalyst software Release 12.0(3x)W5(9)
CT and DPP	• Netscape Navigator, Versions 4.03 to 4.51 • Windows NT server running WWW services and Option Pack 3 • Microsoft Access 97

Memory Requirements

Access Devices

For Cisco IOS memory requirements, see the following Cisco IOS release notes:

Cisco AS5200	http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/as5200/ios52/index.htm
Cisco AS5300	http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/iosrn/index.htm
Cisco AS5800	http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/as5800/58_iosrn/index.htm

Trunking Gateways

For trunking gateway software memory requirements, see the following release notes:

Catalyst 8510 MSR	http://www.cisco.com/univercd/cc/td/doc/product/atm/c8510/wa5/12_0/12_9/rn641202.htm
Catalyst 8540 MSR	http://www.cisco.com/univercd/cc/td/doc/product/atm/c8540/wa5/12_0/12_3/rn619005.htm
Catalyst 5500 and Cisco LS1010	http://www.cisco.com/univercd/cc/td/doc/product/atm/ls1010s/wa5/12/12_0_9/rel_nts/rn619104.htm

CT and DPP

The CT and DPP require a standalone Windows NT server with 128 MHz RAM, a 2-GB hard drive, and an additional 4-GB hard drive.

Important Notes

Upgrade Procedures

To upgrade from an earlier version of the Telephony Controller software to release 4.2(20), you must remove the existing telephony controller software first (including the configuration tool software, telephony controller software, and dial plan provisioning software), then reinstall. You can find procedures for software removal and installation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/sc/r2/sc22tct.htm

Note These instructions apply to the removal and installation of any telephony controller software version.

Required Patches

Release 4.2(20) requires you to install patches PF0000001, PF0000002, and PF0000003 after you install release 4.2(20). A brief summary of each patch is provided below.

Before installing a patch, the user must shut down the Cisco MGC application, as the affected programs are part of the running system. In order to ensure that the MGC application has been shut down, execute the following command:

```
sudo /etc/init.d/transpath stop
```

Now that the MGC application has been shut down, installation can begin.

The general patch installation procedure is as follows:

Step 1 Install version 4.2(20) of the Telephony Controller software according to the instructions referenced in the "Upgrade Procedures" section on page 5. Remain logged in as the root user.

Step 2 At the UNIX prompt, enter:

```
cd cdrom/cdrom0
cd PATCHES
pkgadd -d PF9900###.pkg
```

where ### represents the patch number.

Step 3 Follow the on-screen prompts. Answer **Y** to each prompt that requires a response.

Step 4 When the system returns you to the UNIX prompt, enter:

```
pkgadd -d PF0000###.pkg
```

where ### represents the patch number.

Step 5 Follow the on-screen prompts. Answer **Y** to each prompt that requires a response.

To remove a patch, log in as the root user root, and then type the following:

```
pkgrmPF0000###
```

where ### represents the patch number.

Patch removal will restore the data to its state prior to the upgrade. Files will be copied from the backup directories, and these backup directories will be removed.

PF0000001.pkg

The purpose of this patch package is to provide showstopper and/or test-stopper bug fixes to NSSU customers, be they devtest, solution test, customers, etc., for the 4.2(20) software release. Specifically, this patch resolves the following new DDTS ticket:

- CSCds33066

This patch provides the following updates to:

- SAGT

Additional information:

- The problem that is fixed in this patch occurred as follows:

  The 4.2(20) release SNMP trap agent registers the system MIB table, but does not respond to the query. Therefore, NMS resends the query once it times out. The NMS is tuned to send query every second to SNMPDM. This can cause the SNMPDM to use all of the threads, so it cannot respond.

This patch prevents this from happening because it causes a response to be returned to the NMS query.

PF0000002.pkg

The purpose of this patch package is to provide showstopper and/or test-stopper bug fixes to NSSU customers, be they devtest, solution test, customers, etc., for the 4.2(20) software release. Specifically, this patch resolves the following new DDTS ticket:

- CSCds70464
- CSCds08534

This patch provides the following updates to:

- ioChanMgr

PF0000003.pkg

The purpose of this patch package is to provide showstopper and/or test-stopper bug fixes to NSSU customers, be they devtest, solution test, customers, etc., for the 4.2(20) software release. Specifically, this patch resolves the following new DDTS ticket:

- CSCds68645
- CSCdt17397
- CSCdt18341
- CSCdr90481

This patch provides the following updates to:

- engine
- protocols
- ASP
- DPNSS
- ISDNPRI
- ISDNIP

In addition to the general prerequisites for installing patches, before installing patch PF0000003, you need to install patches PF0000001 and PF00000002.

Installing the ITK Driver

In order to provide enhancements that may impact the resolution of caveat CSCdr48971, it is necessary to build and deliver the ITK Driver package.

To install this package, follow these steps:

Step 1 Type the command **su**

Step 2 Remove the existing ITK driver by typing **pkgrm -d ITKP40AA**

Step 3 Type **Y** when prompted

Step 4 Type **pkgadd -d ITK-HDLCP40AA.pkg**

Step 5 Press Return to accept the default prompt

Step 6 Type **Y** to install the new patch

The system will reboot automatically after installing the new ITK Driver.

The LED indications on the ITK Card provide comprehensive visual indication of the ITK Card status, as follows:

LED	Status	Indication
top	solid green	Layer 1 of the ISDNPRI or SS7 Link terminating into the ITK Card is OK
top	solid red	Layer 1 of the ISDNPRI or SS7 Link terminating into the ITK Card is broken
bottom	blinking green	Communication Link between the ITK Card and the SC2200 software is OK
bottom	blinking red/solid green/solid red	Communication Link between the ITK Card and the SC2200 is broken

The blinking rate of the bottom LED is directly proportional to the rate at which the ITK Card processes data.

The fix also puts a timestamp on the date the ITK Driver was created. This helps track the version of the ITK software. Use the following command at the UNIX prompt to find out the date:

```
modinfo | grep itk
```

Limitations and Restrictions

The signaling software does not currently support 7-digit dialing in the United States.

General Issues

Addition of Services During System Operation

Release 4.2(20) does not support dynamic reconfiguration during operation (for example, adding new components or making other configuration changes). The application must be shut down to add needed services during routine maintenance.

For instructions on shutting down the telephony controller, see Chapter 3, “Operating Your Telephony Controller,” in the *Telephony Controller Release 4 Software Operations and Maintenance Guide*.

Configuration Tool Client/Browser Session Problems

In release 4.2(20), a configuration tool session that has been inactive for 2 minutes may time out or have other difficulties such as an inability to view existing data. You may also experience problems when resizing your browser window or if the Netscape client hard disk cache is less than 8 MB.

If you experience problems, exit the affected configuration tool session and initiate a new configuration tool session.

The Orbix Web server may experience confusion resulting in a **10191 Orbix not running** error message. If this occurs, or if the Orbix daemon fails, stop and restart the system.

Configuration Tool Scroll Bar

The line scroll bar in the configuration tool may lose its position on a list box refresh due to an unresolved situation with the underlying third-party technology.

Configuration Tool Requires Full Host Table Entries When Not Using DNS

On systems that are not using DNS entries or networks where DHCP is being used without DNS entries, you must fully qualify complete host table entries in the **C:\winnt\system32\drivers\etc\hosts** file as follows:

```
171.17.193.101 hostname hostname.domain.com
```

Workaround: Your hosts file on the server must contain the IP address, computer name, and network address of each computer you want to access. For example:

```
172.29.12.113          your-pc            your-pc.company.com

172.17.192.101         ms-tel1            ms-tel1.company.com

172.17.192.102         ms-tel2            ms-tel2.company.com
```

Ensure that DNS is enabled on the server (even if you do not have any DNS server entries). Also be sure you give it a host name and domain on the DNS screen. You must have a **c:\windows\hosts** on your client because you cannot use the IP address as the URL. Then close down the **server.bat** windows and delete the two files in **c:\lightspeed\orbixweb\config\NamingRepository** (**root** and **No_0**).

Release 4.2(20) Caveats

This section describes issues and caveats (possibly unexpected behavior) of the Telephony Controller software release 4.2(20).

Open Caveats

Table 1 provides a summary list of caveats open for release 4.2(20) as of 01/24/01 Additional details and any workarounds are provided after the table. See Table 3 for definitions of the acronyms used in Table 1.

Table 1 Open Caveats, Release 4.2(20)

Identifier	Severity	Component	Description	Explanation/Workaround
CSCdm80449	2	Engine	Failure of COT sends CCR, which will hang the circuit after timer T26, 27.	None available
CSCds09205	3	ioccpriip	**set-sc-state** takes out both links to the NAS - OOS	In a SC2200 with two redundant signaling (RLM) links to a AS5x00, if one of the two signaling paths is taken out of service, the other one may also go into a configured out-of-service state. Workaround: bring the second link back in service with the **set-sc-state** command.
CSCds40772	3	dumper	CDR: In Protocol Id not set properly	Symptom: Problem is related to Cisco SS7 Interconnect for Access Gateway Solutions Configuration. In CDR "In Protocol Id" field is set as 5; it should have been set as 1. Condition: In Cisco SS7 Interconnect for Access Gateway Solutions Configuration with RLM links. Workaround: None.
CSCds40779	3	MML	Management Inhibiting: Logs out of Sync	Symptom: Functionality Works, but there's a mismatch between Alarm and MML responses. Condition: Mismatch in responses will be seen whenever link inhibition/uninhibition is done. Workaround: As the functionality works fine, ignore the MML and Alarm Responses.
CSCds40787	3	iocm	Many IOCM Alarms on LIF/LOS	Symptom: Problem is related to LIF/LOS. Functionality works fine, however there are many IOCM Alarms responses. Condition: This occurs during LIF/LOS. Workaround: As the functionality works fine, ignore the IOCM Alarm responses.

Table 1 Open Caveats, Release 4.2(20) (continued)

Identifier	Severity	Component	Description	Explanation/Workaround
CSCds77892	3	engine	After E1 trunks bounces, CICs stay in LOCMAN	In a TransPath Classic configuration, after the reset of some of the bearers on on site, CICs may stay in LOCMAN state. Workaround: Reset or unblock the CICs.
CSCds84905	3	alrmm	Multiple LIF/LOS alarms when removing cable from ITK card	When removing the cable from the ITK card, you receive multiple 'SET/CLEARED' LIF LOS Alarms. More precisely, you get for n 'state=cleared', n+1 state=SET, but the last alarm may be a 'cleared'
CSCdt08261	3	protocol	Cisco MGD Software Release 4.2(x): ISUPv1 to Q931 skips called/caller party number in Q931 Setup	When using ISUPv1 in Cisco SS7 Interconnect for Access Gateway Solutions 2.0, the ISDN Q931 setup message will not contain Called and Called Party number. Workaround: None..

Resolved Caveats

Caveats listed in Table 2 have been resolved in this release. See Table 3 for definitions of the acronyms used in Table 2.

Table 2 Resolved Caveats, Release 4.2(20)

Identifier	Severity	Component	Headline
CSCds08534	1	ioccc7	Link, Linkset, Route and PC going down by receiving SIPO message
CSCds68645	1	flovr	Service Controller (SC) takes the RLM links down. The RLM links keep bouncing
CSCdm78944	2	Protocol	UK-IUP SC does not send REL after CNA if outgoing circuit is REMMAN.
CSCdm83376	3	IOCCC7	Italian ISUP unable to inhibit links (local or remote).
CSCdm71123	1	Execution environment	Will not support 30 cps at peak load, 50,000 calls active.
CSCdm71320 CSCdm71126	1	IOCCCETSI	IOCCC measurements cause outages above 32 PRI D channels.
CSCdm84089	1	Protocol	BT dial testing: GRS resending timer broken.
CSCdm86638	1	IOS	ITK package install fails without warning.

Table 2 Resolved Caveats, Release 4.2(20) (continued)

Identifier	Severity	Component	Headline
CSCdm92066	1	IOCCPRIIP	IOCC-PRIIP unstable. Active NASs drop when new NASs come online.
CSCdm42240	2	Engine	EISUP/SS7 glare causes call to hang up in LCM.
CSCdm50118	2	Execution environment	ASN feature calls fail; engine produces core dump.
CSCdm54539	2	Protocol	SW-EISUP SC2200 does not propagate route identity information parameter.
CSCdm65234	2	IOCCC7	Controlled rerouting performed for all destinations when TFA/TFR.
CSCdm68802	2	IOCCC7	Link restart after receipt of SIB UK ISUP.
CSCdm71823	2	Protocol	VSC2700: Mobile calls into PingNet (customer) failing.
CSCdm76958	2	Protocol	UK-IUP SC does not send further REL when TO-12 is expired.
CSCdm77790	2	Protocol	UK-IUP SC does not stop timer TO-09 after sending ACI or ASUI.
CSCdm77806	2	Protocol	UK-IUP SC does not send any message when RELCOMP with reason received.
CSCdm78966	2	Protocol	UK-IUP SC sends CNA when OverlapDigitTimeValue is set more than TO17.
CSCdm79115	2	Protocol	UK-IUP unexpected messages in idle state cause circuits to hang.
CSCdm80494[1]	2	Protocol	SS7 will not resume call attempts after a bearer is connected.
CSCdm81790	2	Protocol	KR_ISUP transient state does not work properly for CQM.
CSCdm82461	2	Dumper	BT dial testing: Cannot change time period for Stat File output.
CSCdm87488	2	Protocol	KR_ISUP “Pass on” in parameter compatibility does not work properly.
CSCdm87566	2	Protocol	KR_ISUP “Pass on impossible” in parameter compatibility does not work.
CSCdm88478	2	Protocol	OKC7-EISUP-OKC7 no response generated for GRS.
CSCdr48971	2	sun	Cannot bring up system with 7 ITK cards (E450)
CSCds33066	2	SNMP	SNMPDM stops sending traps after a few traps are sent.
CSCds70464	2	IOCM	Cisco MGC Software Release 4.2(x): IOCM: Commanded OOS of NAS Link (or destination) causes IOCM loop
CSCdm44834	3	IOCCC7	BTNR 146 MTP error not logged for overlength message.

Table 2 Resolved Caveats, Release 4.2(20) (continued)

Identifier	Severity	Component	Headline
CSCdm69884	3	MML	**rtrv-tc:** <sigpath> and <sigPath> do not work.
CSCdm70714	3	MML	**rtrv-lset** returns wrong value; needs refinement.
CSCdm71132	3	Protocol	SS7 IUP—Non-rejection of reserved SHP values.
CSCdm71194	3	Engine	UK-IUP **mml>reset-cic** command causes one of the circuits to hang.
CSCdm74117	3	Failover	Master should accept switchover if it knows slave cannot read its NAK.
CSCdm74924	3	IOCM	MML shows a LINH link in the OOS state after auto UNINHIBIT.
CSCdm75151	3	Protocol	UK-IUP REL maps to REL(48) instead of REL(47) without reason.
CSCdm76678	3	Protocol	Italian Interconnect-Italian Interconnect does not set “subscriber free” in connect message.
CSCdm77284	3	Protocol	ANSI to ANSI—T12 timer was changed to 6 seconds.
CSCdm77367	3	Protocol	UK-IUP SC sends SEM SOO and CNG after it has sent ACM.
CSCdm78070	3	Protocol	UK-IUP IFAM (SHP=1/CPI=1) causes call to hang.
CSCdm80878	3	Protocol	ANSI-ANSI: Call stays up after receiving an RSC.
CSCdm81268	3	Protocol	CGUA accepted with non-matching supervisor type.
CSCdm81766	3	Protocol	CGUA accepted with non-matching supervisor type.
CSCdm84092	3	IOCCC7	Italian ISUP OOS link is inhibited, even though LIA not received.
CSCdm84503	3	Protocol	KR_ISUP BLO is not sent when IAM is received on LMB circuit.
CSCdm85179[1]	3	IOCCC7	Link left OOS overnight. To bring IS up, ITK must be reloaded.
CSCdm88978	3	Protocol	SW—SWISS (V2) ISUP timers 16 (& 17?) are wrong.
CSCdp61991	3	IOCCC7	ITK does not send SIB message when it is overloaded.
CSCdt17397	3	engine	SC2200 continuously tries to bring sigPath IS, but it is already IS.
CSCdt18341	3	engine	ACC feature in Cisco MGC Software Releases 7.4(x) and 4.2(x)
CSCdr90481	3	engine	ISDN PRI destination gets stuck in P-IS state permanently.

1. Unreproducible.

Acronyms and Abbreviations

Table 3 Acronyms and Abbreviations

Term	Description
A/B switch	Switchover controller.
ANSI	American National Standards Institute.
ARU	Alarm Relay Unit.
ASN	Auxiliary Signaling Network.
BLO	Block.
BT	BT Cellnet (customer).
BTNR	British Telecommunications Network Requirement.
CCO	Cisco Connection Online.
CCR	Continuity Check Request.
CDR	Call Detail Record.
CGB	Circuit Group Blocking; message sent to block voice circuits from being used for voice calls.
CGBA	Circuit Group Block Acknowledgment; message used to acknowledge receipt of a circuit group blocking message. Indicates that circuits have been blocked.
CGU	Circuit Group Unblocking; message sent to unblock voice circuits that were previously blocked.
CGUA	Circuit Group Unblocking Acknowledgment message.
CIC	Circuit Identification Code.
CNA	Channel Not Available
COOS	Commanded out-of-service.
COT	Continuity Test.
CPC	Calling Party Category.
CQM	Circuit Group Query Message.
CT	Configuration tool.
DAS	Dial Access Solution. A distributed system used for interconnecting Cisco media gateways (MGWs) to a circuit-switched time-division multiplexing (TDM) network via Signaling System 7 (SS7) protocols for signaling.
DNS	Domain Naming System; mechanism that translates host computer names into Internet addresses.
DPP	Dial plan provisioning.
EISUP	Extended ISDN User Part.
FIFO	First in, first out. In telephony, the process of handling calls in a queue where the first call in is the first call to be handled.
FOOS	Forced out-of-service.
Glare	When both ends of a line or trunk are seized at the same time but for different uses or users (system should prioritize and switch one to another line or trunk).

Term	Description
GRA	Group Reset Acknowledgment; message used to acknowledge receipt of a Group Reset message. Indicates that the reset has been performed.
GRS	Group Reset; message used to reset a group of voice circuits.
IAM	Initial Address Message; mandatory message; sends routing information.
I/O	Input-output.
IOCC	Input-output channel controller.
IOCCCETSI	Input-output channel controller European Telecommunication Standards Institute.
IOCCC7	Input-output channel controller C7 link.
IS	In-Service.
ISDN	Integrated Services Digital Network.
ISUP	ISDN User Part; controls calls on SS7 network (setup, coordination, take down) and provides other information.
ITK	Digi International AG (formerly known as IT Telekommunikations AG).
IUP	Interconnect User Part.
KR	Korea.
LCM	Lightspeed Call Model.
LIA	Link Inhibit Acknowledgement message.
LINH	Local Inhibit.
LMB	Locally manually blocked.
MCID	Malicious Caller ID.
MML	Man-machine language.
MTP	Message Transfer Part; in SS7 protocol it provides basic signaling routing; 3 levels (MTP1, MTP2, MTP3).
NAK	Negative acknowledgment.
NAS	Network access server.
NEBS	Network Equipment Building Standards developed by Bellcore (now Telcordia Technologies).
NEMS	Network element management system.
NOA	Nature of address.
OKC7	Russian ISDN User Part.
OOS	Out-of-service.
PRI	Primary Rate Interface; fast ISDN designed for telephone switches, computer telephony, and voice processing systems; BRI is slower ISDN.
PRIIP	Primary Rate Interface Internet Protocol.
REL	Release message.
RELCOMP	Release complete message.
REMMAN	Remotely, manually blocked.
RSC	Reset Circuit.
SC	Service Controller.

Term	Description
SIB	Status Indication Busy.
SLS	Signaling Link Selection; used to distribute load among redundant routes.
SLTM	Signaling Link Test Message.
SNMP-AGT	Simple Network Management Protocol Agent.
SS7	Signaling System 7; a digital signaling system.
STP	Signal transfer point; the packet switch in a Common Channel Interoffice Signaling system.
SW	Sweden, Switzerland.
TAC	Cisco Technical Assistance Center.
TFA	Transfer allowed. An MTP3 message sent to notify adjacent signaling points that it can receive messages.
TFR	Transfer restricted. An MTP3 message sent to notify adjacent signaling points to choose another route if possible.
TNT	Ascend TNT.
UK	United Kingdom.
VoIP	Voice over IP.
VSC	Virtual Switch Controller. Provides the call control functions for a virtual switch.
Y2K	Year 2000.

Service and Support

You have 24-hour support via Cisco TAC. To initiate a case, contact the closest TAC and tell them your problem. You will be issued a case number that you can check via the phone or the Web. The telephone numbers for the TAC offices can be found at the following URL:

http://www.cisco.com/offices

Click Cisco Technical Assistance Center for business hours, languages available, and other information.

You can also initiate your case online via the Internet at www.cisco.com. Outside these locations, contact the Cisco regional sales office nearest you, or contact your local authorized Cisco distributor. See also the next section, “Cisco Connection Online.”

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems’ primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco’s customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and

it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: http://www.cisco.com
- WWW: http://www-europe.cisco.com
- WWW: http://www-china.cisco.com
- Telnet: cco.cisco.com
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@cisco.com.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM, part of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

If you are reading Cisco product documentation on the World Wide Web, you can submit comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, for your convenience many documents contain a response card behind the front cover. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.
Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate and value your comments.