



Cisco BTS 10200 Softswitch Release Notes for Release 4.2

May 14, 2007

The Cisco BTS 10200 Softswitch is a class-independent software switch (softswitch) that provides next-generation integrated voice and data switching solutions for packet networks.

For detailed descriptions of the features, functions, and applications of the Cisco BTS 10200 Softswitch see the [Cisco BTS 10200 Softswitch Release 4.1 System Description](#).

Contents

These release notes for the Cisco BTS 10200 Softswitch describe the enhancements and new features provided in Release 4.2 (900-04.02.00.Vxx).

Each Cisco BTS 10200 Softswitch release may include a series of maintenance Vxx releases following the initial release. The release notes for the Vxx releases are updated only if they contain new information about the release. For more information on release descriptions, see [Definition of Major, Point and Maintenance Releases, page 25](#).

This document includes the following sections:

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These release notes are updated periodically on an as needed basis. Please read the applicable sections in their entirety, because they contain important operational information that can impact your network.



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System Requirements

This section details the Cisco BTS 10200 Softswitch supported hardware platforms, their supported options and configurations, and the supported software releases.

There are four hardware options available. Service providers should consult with their Cisco account team and choose the option that best suits their network applications and traffic levels.

- **Medium Platform AXmp Option**—Requires four Continuous Computing AXmp host machines (AC or DC powered), supplied as part of a complete system ordered directly from Cisco Systems.
- **Medium Platform Netra 20 Option**—Requires four Sun Microsystems Netra 20 hosts machines (AC or DC powered). This hardware option can be supplied as part of a complete system ordered directly from Cisco Systems, or it can be supported as part of a reference sale.
- **Small Platform Option**—Requires four Sun Microsystems SunFire V120 (AC-powered) or four Netra 120 (DC-powered). This hardware option can be supplied as part of a complete system ordered directly from Cisco Systems, or it can be supported as part of a reference sale.
- **2 AXmp/2 AXi Option**—Supported in release 4.x (dependent on system load and not going over maximum supported configurations).

The physical plant requirements for installation of the Cisco BTS 10200 Softswitch are documented in the [Cisco BTS 10200 Softswitch Building Environment and Power Site Survey](#).

The Cisco BTS 10200 Softswitch consists of the following equipment:

- Call Agent/Feature Server (CA/FS)—Two application servers.
- Element Management System/Bulk Data Management System (EMS/BDMS) server—Two application servers.
- Two switch routers.
- IP Transfer Point (ITP)—Required for SS7 interconnectivity. If using SS7, you must purchase ITP.



Note

Release 4.1 and later supports only the SIGTRAN ITP configuration for the SS7 interface. Previous versions of the Cisco BTS 10200 Softswitch used Ulticom SS7 interface cards. These Ulticom SS7 interface cards can be decommissioned in place; they do not have to be removed from the Call Agent.

- Power distribution unit (PDU) for both AC and DC systems.
 - DC-powered systems require two (redundant) feeds of 40A at -48 VDC.
 - AC-powered systems require two (redundant) circuits of 20A at 120 VAC.



Note

Both AC and DC systems require two redundant feeds. Cisco highly recommends that uninterruptable power supplies be provided for both AC and DC systems.

- Alarm Panel that includes a terminal server.

**Note**

You can order just the Cisco BTS 10200 Softswitch software for use in a Cisco Systems solution where you supply the Cisco-specified hardware. The Cisco TAC will only support Cisco software running on Cisco-approved hardware configurations. The software is not supported on any other hardware.

Sun Microsystems hardware can be ordered directly from the vendor or a Sun Value Added Reseller; however, Cisco TAC does not support hardware when purchased directly from Sun or another vendor. Hardware support contracts should be purchased from Sun, or the Sun Value Added Reseller.

Hardware Requirements

The hardware available from Cisco Systems Inc. for North American region customers is listed below. Continuous Computing (CCPU) is available only in the United States; Sun hardware is available outside the U.S.

Determine if you need AC or DC, and if you want the hardware in a cabinet or ready to mount in a customer rack. Work with a Cisco BTS 10200 product manager to determine the appropriate load for your customer. This base software includes 1,000 subscriber/DS0 licenses and 5 CPS. You will need to order RTU and CPS licenses as appropriate if additional subscribers are needed.

The Cisco BTS 10200 Softswitch is available only in duplex (continuous-service) configurations.

[Table 1](#) lists the hardware requirements for the Cisco BTS 10200 Softswitch Call Agent (CA) and Feature Server (FS) platform.

**Caution**

Before choosing a hardware configuration, consult with your Cisco representative to determine the hardware that will give you the best results based on your network configuration, proposed traffic, and desired call processing power. In particular, called-number analysis or screening, long call hold times, and service control point (SCP) queries might require additional resources.

Table 1 Host Hardware Requirements

Component	Number of Boxes	Processors	Disk Drives	RAM (per Box)
CCPU	4	AXmp with 4 440 MHz Processors with SUN QFE card and DVD ROM drive per box	2*36-GB per box	4 GB
Sun Netra 20 ¹	4	2 * UltraSPARC® III @ 1200 MHz with 1 SUN QFE card and DVD ROM Drive per box	2*73-GB per box	4 GB
Sun Netra 120 ¹	4	1 * UltraSPARC® Iii @ 650 MHz with 1 SUN QFE card and DVD ROM Drive per box	2*36-GB per box	2 GB
Sun Fire V120 ¹	4	1 * UltraSPARC® Iii @ 650 MHz with 1 SUN QFE card and DVD ROM Drive per box	2*36-GB per box	2 GB

1.Sun Microsystems hardware can be purchased from Cisco Systems, from Sun, or a Sun Value Added Reseller.

**Note**

The 2 AXmp/2 AXi configuration is supported in release 4.x (dependent on system load and not going over maximum supported configurations), but customers should plan to upgrade prior to migrating to later releases of the Cisco BTS 10200 Softswitch software.

Spare Hardware

In addition to the hardware required above, Cisco recommends purchasing a spare server in case of hardware issues. The server types include:

- For a 4 AXMP Sun Netra 20 or 120 system, Cisco recommends a spare 1 AXMP on site
- For a 2 AXMP/2AXI system, Cisco recommends a 1 AXMP and a 1 AXI on site

AC Systems

[Table 2](#) lists the recommended spare hardware for AC systems.

Table 2 Spare Hardware Elements for AC Systems

Part Number	Description
BTS10200-AXMP3-AC=	Continuous Computing Field Replaceable AXMP Unit - AC Power
BTS10200-N120-AC=	Sunfire 120 AC Spare
BTS10200-N20-AC=	Sun Netra 20 AC Spare
BTS10200-ALRM=	BTS 10200 Alarm Panel
BTS10200-AXMPDRV=	Replacement disk drive for AXMP

DC Systems

[Table 3](#) lists the recommended spare hardware for DC systems.

Table 3 Spare Hardware Elements for DC Systems

Part Number	Description
BTS10200-AXMP3-DC=	Continuous Computing Field Replaceable AXMP Unit - DC Power
BTS10200-N120-DC=	Sun Netra 120 DC Spare
BTS10200-N20-DC=	Sun Netra 20 DC Spare
BTS10200-ALRM=	BTS 10200 Alarm Panel
BTS10200-AXMPDRV=	Replacement disk drive for AXMP

Required Swap Space

**Caution**

You need at least 2 GBs of swap space for the Cisco BTS 10200 Softswitch software. The amount of swap space needed depends on the amount of traffic to be handled. For assistance in determining swap space requirements, consult the Cisco TAC. **Do not change any Solaris configuration parameters.**

Interface Options

The Cisco BTS 10200 Softswitch interface configurations are documented in the *Cisco BTS 10200 Softswitch Release 4.1 Cabling Procedures*.



Note

In Release 4.2, all boxes use a 2/2 physical Ethernet LAN configuration, even if additional Ethernet LANs are available. For performance enhancement and system simplification you can run the CA/FS boxes with just two Ethernet interfaces. All systems in Release 4.2 and later releases should be configured to work on 2/2 Ethernet interfaces—each to a different LAN.

Ancillary Hardware

If the customer uses reference sale hardware, the following pieces of ancillary hardware are required for use with the Cisco BTS 10200 Softswitch.

For AC systems:

You need two AC system switch routers configured as listed in [Table 4](#).

Table 4 *Ancillary Hardware for AC Systems*

Part Number	Description
WS-C2924M-XL-EN	Cisco Catalyst 2924m xl AC 10/100 Autosensing Fast Ethernet Switch
WS-X2931-XL	1 Port 1000BaseX uplink for Catalyst 2900 XL
WS-G5484=	1000Base-SX GBIC Module (multi-mode shortwave)

For DC Systems:

You need two DC system switch routers configured as listed in [Table 5](#).

Table 5 *Ancillary Hardware for DC Systems*

Part Number	Description
WS-C2924M-XL-EN-DC	Cisco Catalyst 2924m xl DC 10/100 Autosensing Fast Ethernet Switch
WS-X2931-XL	1 Port 1000BaseX uplink for Catalyst 2900 XL
WS-G5484=	1000Base-SX GBIC Module (multi-mode shortwave)

For All Systems:

You need one alarm panel as listed in [Table 6](#).

Table 6 *Ancillary Hardware for all Systems*

Part Number	Description
BTS10200-ALRM	Cisco BTS 10200 Alarm Panel

Cisco ITP Signaling Gateways

The Cisco IP Transfer Point (ITP) is a comprehensive product for transporting Signaling System 7 (SS7) traffic over traditional time-division multiplexing (TDM) networks or advanced SS7-over-IP (SS7oIP) networks. Cisco ITP Signaling Gateways are required to provide SS7 interconnectivity for the Cisco BTS 10200 Softswitch in Release 4.2. If using SS7, you must purchase ITP equipment as described here.

The Cisco IP Transfer Point is implemented on the Cisco 2600XM Series Router (2650XM & 2651XM), the Cisco 7200 Series Router (7204VXR, 7206VXR), the Cisco 7301 Router and the Cisco 7500 Series Router (7507, 7513). All hardware models function similarly by performing MTP3 and SCCP routing over SS7 TDM links or over an IP (or dual IP) network.

The Cisco ITP 2651, 7301, and 7507 Signaling Gateways are carrier class routers with a transparent SS7oIP convergence solution. The 26xx offers 2 or 4 SS7 links, the 73xx supports up to 80 SS7 links, while the 7507 provides from 32 to 256+ SS7 links.

The following three tables list the part numbers and quantities of boxes necessary for the Cisco ITP configurations that support the Cisco BTS 10200 Softswitch in Release 4.2. For more information see the [Cisco ITP Product Data Sheet](#).

Table 7 Ancillary Hardware for Cisco ITP 2651

Part Number	Quantity	Description
Chassis		
Cisco 2651XM	2	High Performance Dual 10/100 Modular Router
MEM-2650-32U64D	2	32 to 64MB DRAM Factory Upgrade
MEM2650-8U32FS	2	8 to 32 MB Flash SIMM Upgrade
SS7		
VWIC-2MFT-T1	2 or 4 ¹	2-Port RJ-48 Multiflex Trunk T1
or VWIC-2MFT-E1	2 or 4 ¹	2-Port RJ-48 Multiflex Trunk E1
ITP Software		
S75ITP-MX IOS	2	IP Transfer Point - M3UA/SUA

1. Order quantity 4 if 8 links are needed.

Table 8 Ancillary Hardware for Cisco ITP 7301

Part Number	Quantity	Description
Chassis		
Cisco 7301	1	Router
MEM-7301-FLD128	1	Flash Disk 128MB
SS7		
PA-MCX-8TE1	1	8-port SS7 Port Adapter
ITP Software		
S73ITPSG-12218SW	1	IP Transfer Point - M3UA/SUA

Table 9 Ancillary Hardware for ITP 7507

Part Number	Quantity	Description
Chassis		
Cisco 7507/8X2-MX	1	7 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS
MEM-RSP8-FLC32M	2	32MB Flash Card
MEM-RSP8-256M	1	256MB DRAM Option
Ethernet		
FEIP2-DSW-2TX	2	2-port Fast Ethernet
SS7		
VIP4-80	1	Versatile Interface Processor 4 Model 80
PA-MCX-8TE1	1	8-port SS7 Port Adapter
ITP Software		
S75ITP-MX IOS	1	IP Transfer Point

Software Requirements

The Cisco BTS 10200 Softswitch Release 4.2 (900-04.02.00.Vxx) software is required to run the Cisco BTS 10200 Softswitch on the hardware platforms listed above.



Note

Network Time Protocol (NTP) software is installed with Sun Solaris. Be sure to configure your Cisco BTS 10200 Softswitch to use NTP or the equivalent time synchronization software. For information on how to reconfigure the NTP, refer to the Release 4.2 installation procedure.

In the pre-3.5.3 releases, each Call Agent (CA) and EMS was configured to individually synchronize up to a specified NTP server. In later releases, configuring NTP changes with the new XNTP package. NTP is now configured so that the EMSs synchronize directly to the NTP server and the Call Agent's synchronize to the EMS.



Caution

Users should never attempt to modify the system date or time in their Cisco BTS 10200 Softswitch host machines while system components (CA, FS, EMS, and BDMS) are running. This could cause the system to have serious problems. Allow the Solaris OS to obtain the time automatically through NTP services.

Optional Software

The following optional software can also be used with Cisco BTS 10200 Softswitch Release 4.2.

Cisco Extensible Provisioning Object Manager

You can use the Cisco Extensible Provisioning Object Manager (EPOM) Release 4.2 software as a provisioning tool for Cisco BTS 10200 Softswitch Release 4.2. EPOM is free and downloadable from the Web.

The previous version of EPOM was Release 2.1; the version number jumped from Release 2.1 to Release 4.2.

EPOM is not supported when run on the EMS; EPOM requires its own server. For more information, refer to the [Cisco EPOM Getting Started Guide](#) or the [Cisco BTS 10200 Softswitch EPOM Provisioning guide](#).

**Note**

The Cisco BTS 10200 Softswitch Release 4.2 software uses OpenORB as the CORBA interface. When using EPOM with this release, you must upgrade to EPOM Release 4.2.

Cisco Self-Service Phone Administration

You can use the Cisco Self-Service Phone Administration (SPA), Version 1.0, which allows phones to be organized into accounts and managed by end users to manipulate existing features and query account information without service provider intervention. This reduces service provider costs while enhancing the user's product experience. When the service provider has installed Cisco SPA and configured it using the Cisco SPA operation and configuration tool, all that remains is creating accounts for users to manage using their own phones. The Cisco SPA application and the Cisco SPA operation and configuration tool are described in the [Cisco SPA Installation and Users Guide](#).


Component Interoperability

Table 10 lists the specific peripheral platforms, functions, and software loads that have been tested by Cisco for interoperability with the Cisco BTS 10200 Softswitch Release 4.2 software. Earlier or later releases of platform software might be interoperable and it might be possible to use other functions on these platforms. This list certifies only that the required interoperation of these platforms, the functions listed, and the protocols listed has been successfully tested with the Cisco BTS 10200 Softswitch.

Table 10 *Component Interoperability Matrix*

Platform(s) Tested	Function(s) Tested	Protocol(s) Tested	Load(s) Tested
Cognitronics CX500	Announcement Server	MGCP 1.0	K0.00
IP Unity	Media Server	MGCP 1.0	1.5D.20
IP Unity	Application Server	SIP RFC3261	2.516
SS8 Networks Xcipio SSDF	CALEA Server	CALEA	3.4.0
Cisco CallManager	Call Processing (IP PBX)	H.323	3.3 and 4.0(1)
Cisco ATA	Residential Gateway SIP end point	MGCP 1.0, SIP, H.323	3.1.0
Cisco IAD 2421	Residential/Business Gateway	MGCP 1.0	12.3(7)T2
Cisco IAD 2431	Residential/Business Gateway	MGCP 1.0	12.3(7)T2
Cisco 2600	Gateway	H.323	12.3(7)T
Cisco 3640	Trunking Gateway	MGCP 1.0	12.3(7)T
Cisco 3660	Trunking Gateway	MGCP 1.0, TGCP	12.3(7)T
Cisco 3660 Telco	Trunking Gateway	MGCP 1.0, TGCP	12.3(7)T
Cisco 3725	Trunking Gateway	MGCP 1.0	12.3(7)T
Cisco MGX 8850 VISM	Trunking Gateway	MGCP 1.0, TGCP	3.2
Cisco AS5300	Trunking Gateway ¹	MGCP 1.0, TGCP, H.323	12.3(7)T
Cisco AS5350	Trunking Gateway ¹	MGCP 1.0, TGCP, H.323	12.3(7)T
Cisco AS5400	Trunking Gateway	MGCP 1.0, TGCP, H.323	12.3(7)T
Cisco 2651 ITP	SS7 Signaling Gateway	SIGTRAN M3UA/SUA	12.2(21)SW
Cisco 7507 ITP	SS7 Signaling Gateway	SIGTRAN M3UA/SUA	12.2(21)SW
Cisco 2600	Gatekeeper	H.323	12.2(13)T9
Cisco 3600	Gatekeeper	H.323	12.2(13)T9
Cisco 7200	Gatekeeper	H.323	12.2(13)T9
Cisco uBR7246VXR Router	CMTS	PacketCable	12.2(15)BC2
Cisco ESR10012 Router	CMTS	CALEA SII	12.0(24)S
Embedded MTAs:			
Arris TTM420	eMTA	NCS 1.0, IPSEC	TS030204_111303.bin.telnet_on
Motorola SBV4200	eMTA	NCS 1.0, IPSEC	7.3.2

Table 10 Component Interoperability Matrix (continued)

Platform(s) Tested	Function(s) Tested	Protocol(s) Tested	Load(s) Tested
Toshiba	eMTA	NCS 1.0, IPSEC	3.02
			 Note Future releases will not include Toshiba eMTAs.
SIP Endpoints:			
Cisco ATA	SIP Endpoint	SIP	3.1(0)
Cisco 7905	SIP Phone	SIP	1.0(1)
Cisco 7912	SIP Phone	SIP	6.2
Cisco 7940	SIP Phone	SIP	POS3-06-2-00
Cisco 7960	SIP Phone	SIP	POS3-06-2-00
Video Phones			
Leadtek BVP8770	Video phone	H.323	Version 1.2
Vizufon CIP-4500	Video phone	H.323	CHIUNICOM v1.2

1. The Cisco AS5300 and AS5350 have also been tested as Announcement Servers

Operator Access

Operator access to the Cisco BTS 10200 Softswitch is available only by secure shell (SSH) session to the EMS over Ethernet. Cisco BTS 10200 will not support non-secure FTP; to FTP to any other system, your Cisco BTS 10200 system must have secure FTP (SFTP) capabilities.

Installation Notes

For detailed installation procedures for the Release 4.2 software, refer to the [Cisco BTS 10200 Softswitch Application Installation Guide](#).

New Features for Release 4.2

The Cisco BTS 10200 Softswitch contains the following new features in Release 4.2:

- [H.323 Video, Routing, and Transparency Features](#)
- [New Call Detail Record Field](#)
- [SIP-T](#)

H.323 Video, Routing, and Transparency Features

This document describes the H.323 video, routing, and transparency feature enhancements for Release 4.2 of the Cisco BTS 10200 Softswitch. It also describes the tasks and commands for provisioning and using these capabilities. The following enhancements are provided in this release:

- Support for video capability on H.323-based subscriber phones
- Support for video on H.323-based trunk groups
- H.323 routing enhancements for inbound and outbound call legs
- ANI-based screening and routing enhancements
- Additional H.323 and video-related billing records
- Enhanced interoperability with other endpoints, including Cisco CallManager, using H.323 protocol interface
- Improved message tunneling and protocol transparency for H.323-based transit traffic
- Additional H.323-related feature enhancements

These enhancements can be applied to managed H.323 networks that contain the Cisco BTS 10200 Softswitch and the following network element types:

- H.323-based IP PBX systems, including Cisco CallManager
- Analog phones connected to customer premises equipment (CPE) such as integrated access devices (IADs)
- H.323 primary rate interface (PRI) gateways (GWs)
- H.323 IP-to-IP GWs
- H.323-based gatekeepers (GKs)
- H.323-based video phones
- H.323-based audio phones

For information provision and use these capabilities, refer to the [Cisco BTS 10200 Softswitch H.323 Video, Routing, and Transparency Features for Release 4.2](#) document.

New Call Detail Record Field

An Original Originating number was added to the Call Detail Records (CDR).

SIP-T

Changes were made to the SIP trunk PRACK flag in Release 4.2. Provisional responses in SIP telephony calls represent backward alerting and progress signaling messages, which are important when interoperating with PSTN networks. Therefore, for SIP-T calls on the Cisco BTS 10200, reliable provisional responses are mandatory. They are optional for regular SIP calls.

For more information about the change, refer to the Reliable Provisional Responses sections of the *Cisco BTS 10200 Softswitch SIP Protocol User Guide* and the *Cisco BTS 10200 Softswitch SIP Protocol Provisioning Guide*.

Calling Party Number Options for Outgoing SETUP Message

This feature allows the service provider to control the calling party number (CPN) data sent in the outbound SETUP message on redirected calls outbound from the Cisco BTS 10200 Softswitch to the PSTN. You can provision this option (via CLI command) using the SEND-RDN-AS-CPN token in the TRUNK-GRP table.

For more information about this feature, refer to the [Calling Party Number Options for Outgoing SETUP Message](#) feature module.

Enhancements for Release 4.2

The following enhancements were made to Cisco BTS 10200 Softswitch Release 4.2.

PacketCable

The PacketCable-based function was enhanced in Cisco BTS 10200 Release 4.2—a new rule was added regarding source and destination identifiers in the IPSEC-POLICY table.



Note

For detailed information on compliance to specific paragraphs of the Internet Engineering Task Force (IETF) standards (for TGCP, IP Security, NCS, and so forth), please contact your Cisco account team.

New Field for Signaling 68 Event/Trap

In previous Cisco BTS 10200 releases, if a media gateway was down, a signaling 68 event was generated. The event contained the gateway description and the TSAP-ADDR. However, it did not contain information about the media gateway location, or the media gateway's subscribers.

In Release 4.2, a new field was added to the SNMP Trap Signaling 68 event/trap. The new field contains a Subscriber's Information (ID, DN1, ADDRESS1).

CODEC Negotiation

Release 4.2 contains an enhancement for the interworking function to use the standardized/Cisco-supported SDP format for the G723ar53/63 CODEC.

Previously, calls might be blocked if G723ar56/63 was the only CODEC specified. For example, if the CODEC on a SIP gateway was set to G723ar53, and a call was made to an H.323 gateway, the Cisco BTS 10200 might block the call.

T.38 CA Mode Fax

In Release 4.2, Cisco BTS 10200 supports Call Agent controlled T.38 Fax for trunks/line controlled using the MGCP protocol using 'fxr' package. Cisco BTS 10200 supports T.38 call agent controlled mode fax between SS7 trunk, ISDN trunk and Subscriber lines. In Release 4.2, the mode also can be used for either of the following fax scenarios:

- Faxes transmitted between a Cisco IOS MGCP-based MGW and an H.323 GW
- Faxes transmitted between two MGCP-based MGWs

To enable this mode, be sure to configure the following:

1. In the QOS table for Subscriber/trunk-grp:

```
FAX_PREF_MODE=FAX_T38_CAMODE
```

2. In the MGW-PROFILE table for TGW/RGW:

```
MGCP_T38_CAMODE_SUPP=Y
```

3. Enable the T.38 fxr package in MGW (if using Cisco IAD, only specific releases support this).

Enhanced Call Forwarding on Busy Support

Previously, SIP phones could only use the Call Forwarding on Busy (CFB) feature with another SIP phone either two or three times. With Release 4.2, CFB can be used with another SIP phone multiple times, without restrictions.

Hook-Flash with Hot-Line Feature

In Release 4.2, a subscriber on a warmline call can originate a multi-party call, as well as activate or deactivate certain features by hook-flashing and dialing either a DN or a star code. The system does not block such calls.

Flash Archive and Disk Mirroring

Flash archive does not work well with Disk Suite mirroring; therefore, Cisco recommends that users create the archive without disk mirroring.

New Documentation for Release 4.2

- [Installation Documentation \(Release 4.2\)](#)
- [Upgrade Procedures \(Release 4.2\)](#)
- [Cisco BTS 10200 Softswitch Release 4.2 System Description](#)
- [Cisco BTS 10200 Softswitch Release 4.2 Provisioning Guide](#)
- [Cisco BTS 10200 Softswitch Release 4.2 Operations, Maintenance, and Troubleshooting Manual](#)

- [*Cisco BTS 10200 Softswitch Release 4.2 Command Line Interface Reference Guide*](#)
- [*Cisco BTS 10200 Softswitch Release 4.2 System Security*](#)
- [*Cisco BTS 10200 Softswitch Release 4.2 Packet Cable Feature Guide*](#)

New Feature Modules

H.323 Video and Signaling Enhancements

Previous 4.x Releases

The following information was implemented in prior 4.x Cisco BTS 10200 Softswitch releases. The features are not new to Release 4.2.

Release 4.1

With Release 4.1, Cisco BTS 10200 Softswitch introduces new features to enhance its capabilities. This section describes the new features available in Release 4.1, which include the following:

- [Reduced Physical Interfaces, page 16](#)
This feature reduces the number of network interfaces on the Cisco BTS 10200 Call Agent/Feature Server and the EMS/BDMS hosts to two network interfaces per host computer.
- [Signaling Capabilities, page 16](#)
The Cisco BTS 10200 Softswitch Release 4.1 provides SIGTRAN SS7 signaling, which allows quick turn-around on the development of new International SS7 variants, such as China ISUP, as well as SS7 support domestically.
- [OpenORB Support, page 18](#)
OpenORB was added as the CORBA interface in an earlier release. Starting with Release 4.1, OpenORB replaces Inprise Visibroker as the CORBA interface for the Cisco BTS 10200.
- [Billing Subsystem Redesign, page 19](#)
The Cisco BTS 10200 Softswitch Release 4.1 can generate either traditional Call Data Block (CDB) or PacketCable Event Message (EM) billing data, but not both simultaneously.
- [PacketCable-Based Features, page 20](#)
New PacketCable-based features and functions were introduced in Cisco BTS 10200 Release 4.1.
- [H.323 Annex E Redundancy, page 20](#)
The UDP-based Annex E feature of ITU-T Recommendation H.323 is now supported by the Cisco BTS 10200 Softswitch Release 4.1.
- [IP Manager, page 21](#)
IPManager is a UNIX shell script that manages a set of logical interfaces to provide another layer of redundancy.
- [SS7 CIC Audits, page 21](#)
The CIC audit feature enables the Cisco BTS 10200 Softswitch to recognize when an SS7 trunk is in the hung state and to restore the trunk to a usable state.
- [Process Restartability, page 21](#)
Cisco BTS 10200 Softswitch processes might exit due to an internal error or termination by the platform. This new feature enables restart of the processes that shut down, preserving stable calls.
- [SIP Devices, page 22](#)
Release 4.1 supports many SIP devices and endpoints.
- [OAMP Enhancements, page 22](#)
Several new commands are supported in Release 4.1.

- [New Documentation for Release 4.1, page 23](#)

This section provides a listing of, and links to, all of the Release 4.1 user documentation.

Reduced Physical Interfaces

The Reduced Physical Interfaces feature reduces the number of network interfaces on the Call Agent/Feature Server and the EMS/BDMS hosts to two network interfaces per host computer. The reduction allows the Cisco BTS 10200 to run on smaller, or less expensive, host computers, since the number of required router ports is reduced. In addition, it creates redundant local area networks (LANs) for the management of the Cisco BTS 10200 Softswitch.

For more information, refer to the [Cisco BTS 10200 Softswitch Reduced Physical Interfaces Feature Module](#).

Signaling Capabilities

Currently, routing on Cisco gateways is based on generic parameters such as originating number, destination number, and port source. Adding support for SS7 ISUP messages allows the VoIP network to use additional routing enhancements found in traditional TDM switches.

Cisco BTS 10200 Release 4.1 implements SIGTRAN-based SS7 signaling and includes the following embedded SS7 ISUP variants:

- [SIGTRAN-Based SS7 ANSI Signaling](#)
- [SS7 ITU ISUP](#)
- [China SS7 ISUP](#)
- [Mexico SS7 ISUP Support](#)

SIGTRAN-Based SS7 ANSI Signaling

Release 4.1 introduces SIGTRAN-based ANSI support in the an SS7 ANSI implementation

The Cisco BTS 10200 Softswitch SS7 ANSI ISUP feature implements North America ISUP through a signaling transportation (SIGTRAN)-based ANSI signaling gateway, providing the ability to port SIGTRAN (SCTP/M3UA) and the upper SS7 layers (ISUP, SCCP, TCAP, AIN) to an IP network.

For more information, see the [Cisco BTS 10200 Softswitch SS7 ANSI Implementation Feature Module](#) and the [Cisco BTS 10200 Softswitch SS7 ANSI ISUP Implementation Feature Module](#).

SS7 ANSI ISUP also implements new traffic statistic measurements for these signaling protocols:

- M3UA
- ISUP
- SCCP
- SCTP
- TCAP

Refer to the [Cisco BTS 10200 Softswitch Release 4.1 Operations, Maintenance, and Troubleshooting Manual](#). for more information about all existing Cisco BTS 10200 Softswitch traffic measurements.

SS7 ITU ISUP

Cisco BTS 10200 Release 4.1 supports ITU-based SS7 ISUP messages based on Q.761 and Q.767. Specific country variants supported include China and Mexico.

China SS7 ISUP

The International Telecommunications Union (ITU) Signaling System 7 (SS7) Integrated Services Digital Network (ISDN) User Part (ISUP) feature implements China ISUP via SIGTRAN to a SIGTRAN-based Signaling Gateway. The Cisco BTS 10200 Softswitch is coupled to the SS7 signaling network via an external SIGTRAN signaling gateway, one of three models of Cisco IP Termination (IPT) devices. The Cisco IPT provides an interconnection to many ISUP and MTP signaling variants.



Note

For the complete list of available ISUP variants, contact the Cisco BTS 10200 product management.

The China SS7 ISUP feature allows a Cisco BTS 10200 to connect between an international SS7 network and a local voice network, supporting basic calls, caller identity, call redirection, and voice mail. The same call control and supplementary services provided over an ANSI SS7 network can also be provided over an ITU SS7 network.

China SS7 ISUP also offers support for the following features:

- China and ITU ISUP Conformance
- ITU Channel Management and Circuit Selection
- China ISUP to MGCP/H323/SIP Interworking
- China ISUP to Voice Mail (IP Unity)
- China Supplementary Services via Centrex
- Subscriber Features

The Traffic Management Subsystem provides the following functions:

- Collects statistics
- Clears counters
- Saves 48 hours of statistical data in persistent store
- Displays of summary reports
- Provides on-demand report queries
- Issues events as appropriate

For more information, refer to the [Cisco BTS 10200 Softswitch China ITU SS7 Support Feature Module](#).

[Table 11](#) identifies the new ISUP traffic measurements collected for China ISUP support.

Table 11 *China ISUP Measurements*

Measurement	Description
OPRs Transmitted	Count every OPR sent
OPRs Received	Count every OPR received
MPMs Transmitted	Count every MPM sent
MPMs Received	Count every MPM received
CCLs Transmitted	Count every CCL sent
CCLs Received	Count every CCL received

For detailed information about Cisco BTS 10200 Softswitch traffic measurements provisioning and reporting, refer to the [Cisco BTS 10200 Softswitch Release 4.1 Operations, Maintenance, and Troubleshooting Manual](#).

Mexico SS7 ISUP Support

Cisco BTS 10200 Softswitch Release 4.1 introduces the base Q.767 MDL code and the Mexico ISUP variant, based on the ITU-T Q.767 specification, *Application of the ISUP for International ISDN Connections*. The Mexico ISUP variant support is similar to the China SS7 ISUP variant support.

OpenORB Support

In Release 3.5.2, OpenORB was added as an option for the CORBA interface. Starting with this release, and going forward, OpenORB now replaces Inprise Visibroker as the CORBA interface. Inprise Visibroker is no longer supported for Release 4.1 or later.

OpenORB is an open source software, and supports the latest CORBA specifications (OMG CORBA 2.4.2). During installation, you can now select only OpenORB.

Installation



Note

EPOM 2.1 was designed to work with OpenORB. If running previous EPOM releases such as EPOM 1.3, upgrade to EPOM 2.1 and use OpenORB.

The procedure used to install the OpenORB package is virtually unchanged from the Visibroker install package. The old CORBA Interface Servant (CIS) is removed with a package remove command in Solaris, and the “cis-install.sh” command is invoked. Once the installation is complete, all components are installed and the Name Service and CIS application are running. You can perform the process on the active EMS without switching over.

For more information on OpenORB, visit <http://openorb.sourceforge.net/>.

Cisco OSS Applications

The switch to OpenORB by the Cisco BTS 10200 does affect existing Cisco OSS applications that utilize the CORBA interface.



Note

Cisco OSS/NMS applications include EPOM and PTC. Partner applications include CEON IPS, all of which have specific adapters for the particular ORB.

The bulk of OSS application processing involves this interface and this component of the client application should be totally unaffected. Existing customers are affected in that the client side or OSS application must use a fully compliant ORB that can interoperate with an ORB using CORBA 2.4.2 via IIOP. The original Visibroker POA was specific to the vendors’ implementation of the POA.

The IDL and XML interfaces are not affected by the OpenORB migration.

Name Service Feature

You must navigate to the Cisco BTS 10200 EMS by using the Name Service feature in CORBA. At this time, each Cisco BTS 10200 creates a Name Service instance and binds the Cisco BTS 10200 objects to this local name service. Obtaining these object references for the Cisco BTS 10200 requires communication with its local Name Service.

Billing Subsystem Redesign

The billing subsystem has been redesigned in Release 4.1. Enhancements were made to Call Detail File Management, and to the CLI commands for managing the files stored on the BDMS platform at any given time. Examples of the commands include:

- **report billing-file filename=%;**—Displays all file names stored in /opt/bms/ftp/billing.
- **report billing-file filename=xxx;**—Displays the specified filename and the current state of the file.
- **report billing-file state=xxx;**—Displays all filenames that are in the specified state.

The following is a list of the command line tokens associated with this command and the valid values and purpose of each:

- **filename**—name of the billing file
- **state**—the current state of a given file. Valid values are:
 - OPEN**—the file is currently being written to
 - PRIMARY**—the file has been sent to, and acknowledged by, the billing mediation system.
 - SECONDARY**—the file has been sent to, and acknowledged by, the billing mediation system
- **start-row**—The row to start displaying from in the returned result set. Range is determined by the size of the result set. (Default = 1).
- **limit**—The maximum number of rows to display from the result set. (Default = 50).
- **display**— The data columns to display from those supported by this command. The default is to display all available columns.
- **order**—The column by which to sort the displayed result set. Valid values are:
 - FILENAME**—Sort by filename.
 - STATE**—Sort by state.
- **auto-refresh**—Specifies if a new result set is to be created or to use the existing one if there is one available. The default value is Y.

Billing Data Generation

The Cisco BTS 10200 Softswitch Release 4.1 has the ability to provision billing support using one of the following billing data generation methods:

- Call Detail Blocks (CDBs)—This is traditional post-call billing data, which is assembled into Call Detail Records (CDRs) by an external billing mediation system or billing server.
- PacketCable event messages (EMs)—This is real-time call data flow, which is transferred to an external Record Keeping Server (RKS) that assembles CDRs from the EMs.

The Cisco BTS 10200 can be provisioned to generate either EMs or CDBs. For the detailed procedures for provisioning EM or CDB generation of billing data see the [Packet Cable Feature Module](#).

PacketCable-Based Features

The following PacketCable-based features and functions have been introduced in the Cisco BTS 10200 Release 4.1 software, including:

- PacketCable-based signaling security features, including implementation of IP security architecture (IPsec), key management using Internet Key Exchange (IKE), and Kerberos
- PacketCable-based media security
- Common Open Policy Service (COPS) interface measurements
- DQoS gate coordination function
- TGCP support

In addition, the following PacketCable-based features have been updated:

- Alarms and events
- Command line interface (CLI) provisioning



Note

CLI provisioning is disabled by default at Release 4.1 installation. CLI provisioning is not allowed until database licenses are applied to the Cisco BTS 10200.

H.323 Annex E Redundancy

The UDP-based Annex E feature of ITU-T Recommendation H.323 is supported by the Cisco BTS 10200. The Cisco BTS 10200 is a class-independent network switch. In addition to performing switching functions, it can also emulate up to four instances of an H.323 gateway (GW).

Annex E implementation allows for transporting H.323 signaling between the Cisco BTS 10200 and the far-end H.323 end point using UDP (connectionless) signaling instead of TCP (connection-oriented) signaling. The choice of UDP or TCP signaling is important in a Cisco BTS 10200 CA failover scenario.

If a CA failover occurs, a remote H.323 end point using TCP signaling cannot reestablish the connection with the previously-active CA, therefore clearing the stable call(s) on that connection. However, a remote H.323 end point using UDP to communicate with the Cisco BTS 10200 in a connectionless session continues to communicate with the newly-active side of the CA using the same connectionless session. This allows the remote end point to preserve and support the active call.

Using the Annex E feature is optional and configurable in the Cisco BTS 10200. Each H.323 trunk group (TG) in the Cisco BTS 10200 can be independently provisioned to support either Annex E UDP-based signaling or TCP-based signaling. Each H.323 GW instance can have multiple active outgoing TGs, with each TG independently configured for Annex E UDP or regular TCP signaling.

For more information, refer to the [Cisco BTS 10200 Softswitch Annex E Support Feature Module](#) or the “[H.323 Annex E UDP Support](#)” section of Chapter 2, “[Supported Signaling Protocols](#),” in the [Cisco BTS 10200 Softswitch Release 4.1 System Description](#).

Call Manager/H.323 Interworking

Release 4.1 enhances H.323 protocol interoperability between the Cisco BTS 10200 Softswitch, Cisco CallManager (CCM), and Cisco IOS H.323 Gateways. Interoperability of these network elements enhances the delivery of call control features between enterprise and service provider networks.

For more information, refer to the “[Interoperability of Cisco BTS 10200 Softswitch with Cisco CallManager](#)” section of Chapter 2, “[Supported Signaling Protocols](#),” in the [Cisco BTS 10200 Softswitch Release 4.1 System Description](#).

IP Manager

The Cisco IP manager provides a virtual single IP address to different signaling protocol components (such as MGCP, H.323, SIP) for remote devices in the Primary and Secondary Cisco BTS 10200 boxes. IP Manager is responsible for detecting Cisco BTS 10200 platform failover (from Primary to secondary and vice-versa) and migrating the IP address to the Current Active side.

In this release, the IP manager is an integral part of each platform (such as CallAgent and FeatureServer), and thereby provides faster response to platform failovers. Note that the IP Manager only migrates IP addresses on the same subnet. In the case of a multi-homed platform, when one of the interfaces fails, the IP Manager does not migrate the IP address to a different interface.

SS7 CIC Audits

The Cisco BTS 10200 Softswitch system may experience a “hung” SS7 trunk when an idle trunk is incorrectly perceived by the call agent to be busy. When this occurs, the call agent never selects the trunk to service new calls. This condition occurs primarily during a failover when the standby system becomes active. A call is released and the new idle call state is not replicated to the newly active call agent, who continues to perceive the trunk as busy.

The CIC audit feature enables the Cisco BTS 10200 Softswitch to recognize when an SS7 trunk is in the hung state and to restore the trunk to a usable state. A CIC audit can be performed in response to a:

- Demand request
- Switchover
- Scheduled audit request
- Long duration call
- Exception event

The CIC audit feature implements the following new audit types for the active call agent:

- Switchover audit
- SS7 audit
- MGCP audit
- Demand audit
- Exception audit
- Long-duration audit

Process Restartability

When a Cisco BTS 10200 Softswitch process exits due to an internal error (such as SIGSEGV on Unix) or is terminated by the platform, the platform restarts the processes that is exited, thereby preserving stable calls. Restarting the process is a preferred alternative to switching over to the mate.

When a process is restarted, the process audits information such as resource states, and attempts to repair inconsistencies. As compared to a switchover, process restarts preserve transient calls that are not affected by that process.

In the Cisco BTS 10200, the restartability of a process is indicated by the ‘Maximum restart rate’ field in the platform.cfg configuration file. A zero value indicates that the process is non-restartable, while a positive value indicates that the process is restartable.

SIP Devices

Support for SIP trunks existed in previous releases of the Cisco BTS 10200 Softswitch, but support for SIP devices is new to Release 4.1.

The SIP support feature provided in Release 4.1 was built on the existing Cisco BTS 10200 Softswitch software and hardware platform. The Cisco BTS 10200 Softswitch uses SIP and SIP for telephones (SIP-T) signaling to communicate with other SIP-based network elements. The implementation is based upon the evolving industry standards for SIP, including IETF document RFC 3261, SIP: Session Initiation Protocol. The Cisco BTS 10200 Softswitch supports both SIP trunks and SIP-based subscriber lines (SIP devices), and provides the following SIP-related functions:

- Protocol conversion between SIP and several other protocols, including SS7, PRI, ISDN, H.323, MGCP, and CAS.
- Tandem back-to-back user agent for direct SIP-to-SIP calls (trunk to trunk, phone to phone, and trunk to/from phone), and SIP-to-SIP-T calls.
- SS7 bridging between Softswitches using SIP-T methods.

For SIP feature details and applicable procedures, see the [Cisco BTS 10200 Softswitch SIP Protocol Guide](#) and the [Cisco BTS 10200 Softswitch SIP Protocol Provisioning Guide](#).

SIP Endpoints

Release 4.1 supports SIP endpoints such as SIP devices and phones, including authentication and registration management. (For example, the Cisco BTS 10200 Softswitch maintains the current location of SIP subscribers.)

To see the supported SIP endpoints, refer to the SIP Endpoints field in [Table 10](#). For feature details and applicable procedures, see the [Cisco BTS 10200 Softswitch SIP Protocol Guide](#) and the [Cisco BTS 10200 Softswitch SIP Protocol Provisioning Guide](#).

OAMP Enhancements

Several new commands are supported in Release 4.1, including:

- **SNMP Trap Transmission**—The retransmission of traps via SNMP is similar to “controlling” a node ins/oos/equip/etc via SNMP SETs. That is, the trap retransmission table contains the following columns: start time, end time, start sequence number, end sequence number, NMS address, and commit.
- **Morning Report**—Morning reports are stored in a table for 30 days (4 weeks) and can be accessed by the following command:

```
report system_health [start-day=[MM-DD-YYYY]] ; [end-day=[MM-DD-YYYY]] ;
```
- **DB Connection Status and Control**—These commands display the current status and allow control over the DB connection used in Oracle.
- **User login discriminator**—The existing user command will have new parameters added to them to allow the operator to modify the login control mechanism.

New Documentation for Release 4.1

Release 4.1 introduces a new set of user documentation specifically written for the Cisco BTS 10200 Softswitch Release 4.1 software and hardware. When used in conjunction with the following manuals, these Release Notes provide a comprehensive guide to the Release 4.1 features and operations:

- *[Cisco BTS 10200 Softswitch Release 4.1 System Description](#)*—An updated and detailed technical overview of the Cisco BTS 10200 Softswitch system.
- *[Cisco BTS 10200 Softswitch Release 4.1 Provisioning Guide](#)*—Contains procedures that show users how to provision the Cisco BTS 10200 and the specific features used by subscribers
- *[Cisco BTS 10200 Softswitch Release 4.1 Operations, Maintenance, and Troubleshooting Manual](#)*— Contains information on system management, maintenance, and troubleshooting.
- *[Cisco BTS 10200 Softswitch Release 4.1 Command Line Interface Reference Guide](#)*—A comprehensive reference to provisioning Cisco BTS 10200 Softswitch system tables.

These Cisco BTS 10200 documents were also modified to reflect the new information for Release 4.1:

- *[Cisco BTS 10200 Softswitch Release 4.1 Physical and Network Site Surveys and Data Sheets](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Cabling Procedures](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Jumpstart Server Procedures](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Application Installation Procedures](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Billing Interface Guide](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 System Security](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 CORBA Programmer's Guide](#)*

These feature modules were also updated or added to the Cisco BTS 10200 documentation set:

- *[Cisco BTS 10200 Softswitch Release 4.1 Packet Cable Feature Guide](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 SIP Protocol Support Guide](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 ISDN Provisioning and Troubleshooting](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Annex E UDP Support](#)*
- *[Cisco BTS 10200 Softswitch Release 4.1 Interoperability with Cisco Call Manager](#)*



Note

All Cisco BTS 10200 Softswitch user documentation can be accessed through the following location:
<http://www.cisco.com/univercd/cc/td/doc/product/voice/bts10200/index.htm>.

Cisco BTS 10200 Softswitch Release 4.1 user documentation is password protected. Consult your Cisco representative for access.

Caveats

Open and resolved caveats are no longer listed in the Release Notes. Instead, the latest information on caveats is available through a new online tool, **Bug Toolkit**, available for customers to query defects according to their own needs.

To find new features or enhancements that have been added to a release, or to read about caveat fixes from previous releases, you should run a query whenever a new Cisco BTS 10200 version is distributed.

To access Bug Toolkit, you must have an Internet connection and a Web browser as well as a Cisco.com username and password.

To use Bug Toolkit, follow this procedure.

-
- Step 1** Click [here](#) to log onto Bug Toolkit. You must have a Cisco.com user name and password.
- Step 2** Click the **Launch Bug Toolkit** hyperlink.
- Step 3** If you are looking for information about a specific caveat, enter the ID number in the “Enter known bug ID:” field.

To view all caveats for Cisco BTS 10200, go to the “Search for bugs in other Cisco software and hardware products” section, and start typing **BTS** in the Product Name field.



Note

Cisco BTS 10200 Softswitch appears after typing the first two letters, B and T.

- Step 4** Click **Next**. The Cisco BTS 10200 Softswitch search page appears.
- Step 5** Select the filters to query for caveats. You can choose any or all of the available options:



Note

To make queries less specific, use the All wildcard for the Major/Minor release, Features/Components, and keyword options.

- Step 6** By version:
- Select **Major** for the major releases (i.e., 4.1, 3.5, 3.3, 3.2, 3.1).
 - Select **Minor Release** for more specific information—for example, selecting Major version 3.5 and Minor version 3 queries for Release 3.5.3 caveats.
 - Select the **Features or Components** to query.
 - Use keywords to search for a caveat title and description.
 - Select the **Advanced Options**, including the Bug Severity level, Bug Status Group and Release Note Enclosure options.
 - Click **Next**.
- Bug Toolkit returns the list of caveats based on your query.
-

Definition of Major, Point and Maintenance Releases

The following section describes the differences between major, point and maintenance releases.

Major Release

A major release is a software release with significant new features, enhancements, architectural changes and/or defect fixes. The Major Release number increments with each new version, and numbers may NOT be skipped when delivering to customers. This release is based on previous Main release and receives defect fixes synced from previous Main releases throughout the life of this release.

Minor Release

A minor software release has only a few new features of limited scope, enhancements and/or defect fixes. The Minor Release number increments as content is added and numbers may be non-sequential (skipped) when delivering to customers. This release is based on a previous Major/Minor release and receives defect fixes synced from previous Major/Minor releases throughout the life of this release.

Maintenance Release

A maintenance software release has defect fixes included to address specific problems. The Maintenance Release number increments as content is added and numbers may be non-sequential (skipped) when delivering to customers.

Release Naming Conventions

The Cisco BTS 10200 product release version numbering is defined as either:

1. BTS 10200 uu.ww.xx.yzz (for example, in the Release Notes)
2. 900-uu.ww.xx.yzz (as a part number on a CD; also noted in Packaged-IN-XX.XX(XX) DDTS enclosure)

where:

- uu is the (major) Release ID (0-99)—for example: 900-03.ww.xx.yzz
- ww is a point (minor) release (within a major) (0-99)—for example: 900-03.05.xx.yzz
- xx is the maintenance package number (within a point) (0-99)—for example: 900-03.05.03.yzz
- y is the Software State, such that—for example: 900-03.05.03V00
 - D = Development load
 - I = Integration load
 - Q = System test load
 - F = Field verification Ready
 - V = Verified (specified for externally available)

Some naming convention examples are:

- 900-03.05.02V04
- 900-03.05.03V00

- 900-04.01.00V03

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

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

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>



Note

Documentation for the Cisco BTS 10200 Softswitch on the World Wide Web sites listed above is currently available only through password access. Contact your Cisco representative for assistance.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships 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 as an annual subscription.



Note

Documentation for the Cisco BTS 10200 Softswitch is not currently available on the Documentation CD-ROM.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order Documentation CD-ROMs 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 corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

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

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

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

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

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides [Cisco.com](http://www.cisco.com) as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For [Cisco.com](http://www.cisco.com) registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

[Cisco.com](http://www.cisco.com) is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

[Cisco.com](http://www.cisco.com) provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through [Cisco.com](http://www.cisco.com), you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on [Cisco.com](http://www.cisco.com) to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access [Cisco.com](http://www.cisco.com), go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

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

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

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

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

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

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

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

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

