



Release Notes for *Cisco 3200 Series Mobile Access Routers* for Cisco IOS Release 12.3(2)XF

April 20, 2004

These release notes for the Cisco 3200 Series Mobile Access Router describe the enhancements provided in Cisco IOS Release 12.3(2)XF. Use these release notes with [Cross-Platform Release Notes for Cisco IOS Release 12.3 T](#) located on [Cisco.com](#) and the Documentation CD.

For a list of the software caveats that apply to Cisco IOS Release 12.3(2)XF, see the “[Caveats](#)” section on [page 11](#) and [Caveats for Cisco IOS Release 12.3\(2\) T](#). The caveats document is updated for every maintenance release and is located on [Cisco.com](#) and the Documentation CD.

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System Requirements

This section describes the system requirements for Cisco IOS Release 12.3(2)XF and includes the following sections:

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Memory Requirements

[Table 1](#) provides the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.3(2)XF on the Cisco 3200 Series Mobile Access Router.

Table 1 Recommended Memory for the Cisco 3200 Series Mobile Access Router

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory	Runs from
Cisco 3250 Mobile Access Router	Cisco 3250 Mobile Access Router IOS ENTERPRISE BASE	ENTERPRISE BASE	c3250-entbase-mz	32MB	128MB	RAM
Cisco 3250 Mobile Access Router	Cisco 3250 Mobile Access Router IOS ADVANCED ENTERPRISE	ADVANCED ENTERPRISE	c3250-adventerprisek9-mz	32MB	128MB	RAM
Cisco 3220 Mobile Access Router	Cisco 3220 Mobile Access Router IOS ADVANCED ENTERPRISE	ADVANCED ENTERPRISE	c3220-adventerprisek9-mz	32 MB	128 MB	RAM

Hardware Supported

Cisco IOS Release 12.3(2)XF supports the Cisco 3200 Series Mobile Access Router.

For descriptions of existing hardware features and supported modules, see the configuration guides and additional documents specific to the Cisco 3200 Series Mobile Access Router, which are available on Cisco.com at the following location:

http://www.cisco.com/univercd/cc/td/doc/product/access/mar_3200/index.htm

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco router, log in to the router and enter the **show version** EXEC command. The following sample displays command output from a Cisco 3200 series router running Cisco IOS Release 12.3(2)XF:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 3200 Software (C3250-ENTBASE-M), Release 12.3(2)XF
! text deleted
Configuration register is 0x0
```

Upgrading to a New Software Release

You can download either a software image or a configuration file via TFTP or via the console port. After downloading, the file is saved to the Flash memory.

Use console download when you do not have access to a TFTP server.

If you are using a PC to download a Cisco IOS image over the router console port at 115,200 bps, ensure that the PC serial port is using a 16550 universal asynchronous transmitter/receiver (UART). If the PC serial port is not using a 16550 UART, we recommend using a speed of 38,400 or less when downloading a Cisco IOS image over the console port.

Configure the PC communications port to match the router console port as follows:

- 9600 baud
- 8 data bits
- no parity
- 1 stop bit

Follow the steps below to run Xmodem:

-
- Step 1** Move the image file to the local drive on your PC connected to the router.
- Step 2** Enter the **xmodem** command at the `rommon >` prompt.

Following is the syntax and descriptions for the **xmodem console download** command:

```
xmodem [-ucyrx] destination_file_name
```

u	(Optional) Performs an upgrade of the ROMMON. System reboots after the file is upgraded.
c	(Optional) Performs the download using 16-bit cyclic redundancy check (CRC-16) error checking to validate packets. Default is 8-bit CRC.
y	(Optional) Sets the router to perform the download using Ymodem protocol. Default is Xmodem protocol. The protocols differ as follows: <ul style="list-style-type: none"> • Xmodem supports a 128-block transfer size. Ymodem supports a 1024-block transfer size. • Ymodem uses (CRC)-16 error checking to validate each packet. Depending on the device that the software is being downloaded from, this function might not be supported by Xmodem.
r	(Optional) Image is loaded into DRAM for execution. Default is to load the image into Flash memory.
x	(Optional) Image is loaded into DRAM without being executed.
destination_file_name	The name of the system image file or the system configuration file. In order for the router to recognize it, the name of the configuration file must be in the form of router_config.

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images, depending on the platform. Each feature set contains a specific set of Cisco IOS features. Cisco IOS Release 12.3(2)XF supports the same feature sets as Cisco IOS Release 12.3(2)T, but Cisco IOS Release 12.3(2)XF can include new features supported by the Cisco 3200 series router.

[Table 2](#) lists the features and feature sets supported in Cisco IOS Release 12.3(2)XF.

The table uses the following conventions:

- “In” column—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, “12.3(2)XF” indicates that a feature was introduced in 12.3(2)XF. If a cell in this column is empty, the feature was included in a previous release or the initial base release.
- “Platform and Feature Sets” column
 - Yes—The feature is supported in the software image.
 - No—The feature is not supported in the software image.



Note

These feature set tables contain only a list of selected features. These tables are not cumulative—nor do they comprehensively list all the features in each image.

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
AAA Server, RADIUS, TACACS			
RADIUS	12.2(11)YQ	Yes	Yes
TACACS	12.2(11)YQ	Yes	Yes
Quality of Service			
Generic Traffic Shaping (GTS)	12.2(11)YQ	Yes	Yes
Class-Based Weighted Fair Queuing (CBWFQ)	12.2(11)YQ	Yes	Yes
Committed Access Rate (CAR)	12.2(11)YQ	No	Yes
DiffServ Compliant WRED	12.2(11)YQ	Yes	Yes
Flow-Based WRED	12.2(11)YQ	Yes	Yes
Low Latency Queuing (LLQ)	12.2(11)YQ	Yes	Yes
Priority Queuing (PQ)	12.2(11)YQ	Yes	Yes
QoS Packet Marking	12.2(11)YQ	Yes	Yes
Random Early Detection (RED)	12.2(11)YQ	Yes	Yes
Weighted Fair Queuing (WFQ)	12.2(11)YQ	Yes	Yes
Weighted RED (WRED)	12.2(11)YQ	Yes	Yes
LFI	12.2(11)YQ	Yes	Yes
RSVP	12.2(11)YQ	No	Yes
Class-Based Ethernet CoS Matching and Marking (802.1p CoS)	12.2(11)YQ	Yes	Yes
802.1p CoS Features Service	12.2(11)YR	Yes	Yes
PPP and Related Protocols			
PPP	12.2(11)YQ	Yes	Yes
Multilink PPP	12.2(11)YQ	Yes	Yes
PPP over Frame Relay	12.2(11)YQ	Yes	Yes
Challenge Handshake Authentication Protocol (CHAP)	12.2(11)YQ	Yes	Yes
MS-CHAP Support	12.2(11)YQ	Yes	Yes
Password Authentication Protocol (PAP)	12.2(11)YQ	Yes	Yes
Easy IP, DHCP, AutoInstall			
Easy IP (Phase I)	12.2(11)YQ	Yes	Yes
DHCP Client	12.2(11)YQ	Yes	Yes
DHCP Relay	12.2(11)YQ	Yes	Yes
DHCP Relay Agent Support for Unnumbered I/F	12.2(11)YQ	Yes	Yes
DHCP Server	12.2(11)YQ	Yes	Yes

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router (continued)

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
DHCP Server Options - Import and Autoconfig	12.2(11)YQ	Yes	Yes
DHCP Server - Easy IP Phase 2	12.2(11)YQ	Yes	Yes
AutoInstall using DHCP for LAN interfaces	12.2(11)YQ	Yes	Yes
HTTP Security	12.2(11)YQ	Yes	Yes
NAT			
NAT - Support for NetMeeting Directory (ILS)	12.2(11)YQ	Yes	Yes
Dialer			
Dial Backup	12.2(11)YQ	Yes	Yes
Dial-on-Demand	12.2(11)YQ	Yes	Yes
Dialer Idle Timer Inbound Traffic Configuration	12.2(11)YQ	Yes	Yes
Dialer Profiles	12.2(11)YQ	Yes	Yes
Firewall			
Firewall Feature Set	12.2(11)YQ	No	Yes
Firewall Intrusion Detection System	12.2(11)YQ	No	Yes
Context-Based Access Control (CBAC)	12.2(11)YQ	No	Yes
Port to Application Mapping (PAM)	12.2(11)YQ	No	Yes
Frame Relay			
Frame Relay	12.2(11)YQ	Yes	Yes
Frame Relay Encapsulation	12.2(11)YQ	Yes	Yes
Frame Relay End-to-End Keepalive	12.2(11)YQ	Yes	Yes
Frame Relay Fragmentation (FRF.12)	12.2(11)YQ	Yes	Yes
Frame Relay FRF.9 Payload Compression	12.2(11)YQ	Yes	Yes
Frame Relay PVC Interface Priority Queuing	12.2(11)YQ	Yes	Yes
Frame Relay Switching Diagnostics and Troubleshooting	12.2(11)YQ	Yes	Yes
Frame Relay Traffic Shaping (FRTS)	12.2(11)YQ	Yes	Yes
IP Routing and Other Routing Protocols			
IPv4	12.2(11)YQ	Yes	Yes
IPv6	12.2(11)YQ	No	Yes
IP Enhanced IGRP Route Authentication	12.2(11)YQ	Yes	Yes
IP Named Access Control List	12.2(11)YQ	Yes	Yes
IP Precedence for GRE Tunnels	12.2(11)YQ	Yes	Yes
IP Summary Address for RIPv2	12.2(11)YQ	Yes	Yes
Cisco Discovery Protocol (CDP)	12.2(11)YQ	Yes	Yes
Open Shortest Path First (OSPF)	12.2(11)YQ	Yes	Yes

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router (continued)

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
OSPF Flooding Reduction	12.2(11)YQ	Yes	Yes
OSPF Not-So-Stubby Areas (NSSA)	12.2(11)YQ	Yes	Yes
OSPF Packet Pacing	12.2(11)YQ	Yes	Yes
Routing Information Protocol (RIP)	12.2(11)YQ	Yes	Yes
Enhanced IGRP (EIGRP)	12.2(11)YQ	Yes	Yes
Enhanced IGRP Stub Routing	12.2(11)YQ	Yes	Yes
Generic Routing Encapsulation (GRE)	12.2(11)YQ	Yes	Yes
Hot Standby Router Protocol (HSRP)	12.2(11)YQ	Yes	Yes
HSRP support for ICMP Redirects	12.2(11)YQ	Yes	Yes
Integrated Routing and Bridging (IRB)	12.2(11)YQ	Yes	Yes
Internet Protocol Control Protocol (IPCP) Address Negotiation	12.2(11)YQ	Yes	Yes
Policy-Based Routing (PBR)	12.2(11)YQ	Yes	Yes
RTP Header Compression	12.2(11)YQ	Yes	Yes
STAC Compression	12.2(11)YQ	Yes	Yes
Transparent Bridging	12.2(11)YQ	Yes	Yes
UDLR Tunnel ARP and IGMP Proxy	12.2(11)YQ	Yes	Yes
Unidirectional Link Routing (UDLR)	12.2(11)YQ	Yes	Yes
IP CEF			
Cisco Express Forwarding (CEF) Support for IP Routing between IEEE 802.1Q VLANs.	12.2(11)YQ	Yes	Yes
Cisco Express Forwarding/distributed Cisco Express Forwarding (CEF/dCEF)	12.2(11)YQ	Yes	Yes
VLANs and Layer 2 Protocols			
Spanning-Tree Protocol (STP)	12.2(11)YR	Yes	Yes
Spanning-Tree Protocol (STP) Extension	12.2(11)YQ	Yes	Yes
Turbo Flooding of UDP Datagrams	12.2(11)YQ	Yes	Yes
IEEE 802.1Q VLAN Support	12.2(11)YQ	Yes	Yes
Virtual LAN	12.2(11)YR	Yes	Yes
Port-Based VLAN	12.2(11)YR	Yes	Yes
802.1q Trunking Support	12.2(11)YR	Yes	Yes
Inter-Virtual LAN Routing Support	12.2(11)YR	Yes	Yes
Virtual Terminal Protocol (VTP) Support	12.2(11)YR	Yes	Yes
IP Multicast			
PIM Version 1	12.2(11)YQ	Yes	Yes
PIM Version 2	12.2(11)YQ	Yes	Yes

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router (continued)

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
IGMP Version 1	12.2(11)YQ	Yes	Yes
IGMP Version 2	12.2(11)YQ	Yes	Yes
IP Multicast Load Splitting Across Equal-Cost Paths	12.2(11)YQ	Yes	Yes
IGMP Snooping	12.2(11)YR	Yes	Yes
VPN			
Virtual Private Dial-Up Network (VPDN)	12.2(11)YQ	Yes	Yes
VPN Tunnel Management	12.2(11)YQ	Yes	Yes
L2TP Dial-Out	12.2(11)YQ	Yes	Yes
L2TP Layer 2 Tunneling Protocol	12.2(11)YQ	Yes	Yes
L2TP Tunnel Preservation or IP Type of Service (ToS)	12.2(11)YQ	Yes	Yes
IPSEC			
IPSec Network Security	12.2(11)YQ	No	Yes
IPSec Triple DES (3DES)	12.2(11)YQ	No	Yes
IKE Extended Authentication (Xauth)	12.2(11)YQ	No	Yes
IKE Mode Configuration	12.2(11)YQ	No	Yes
IKE Security Protocol	12.2(11)YQ	No	Yes
IKE Shared Secret Using Authentication, Authorization, and Accounting (AAA) Server	12.2(11)YQ	No	Yes
Certification Authority Interoperability (CA)	12.2(11)YQ	No	Yes
Wildcard Pre-Shared key	12.2(11)YQ	No	Yes
Dynamic Crypto Map	12.2(11)YQ	No	Yes
Tunnel Endpoint Discovery	12.2(11)YQ	No	Yes
Manual Security Association	12.2(11)YQ	No	Yes
Secure Shell Version 1			
Secure Shell (SSH) Version 1 Integrated Client	12.2(11)YQ	No	Yes
SSH Version 1 Server Support	12.2(11)YQ	No	Yes
Mobile IP			
Mobile IP	12.2(11)YQ	Yes	Yes
Mobile Networks	12.2(11)YQ	Yes	Yes
Home Agent/Mobile Router Redundancy	12.2(11)YQ	No	No
Mobile Router Preferred Interfaces	12.2(11)YQ	Yes	Yes
Mobile Router Reverse Tunneling	12.2(11)YQ	Yes	Yes
Mobile Router Asymmetric Links	12.2(11)YQ	Yes	Yes
Mobile Router Static and Dynamic Networks	12.2(11)YQ	Yes	Yes

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router (continued)

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
Static CCOA	12.2(11)YQ	Yes	Yes
AAA Server and Mobile IP	12.2(11)YQ	Yes	Yes
Mobile IP - Mobile Networks Deployment MIB	12.3(2)XF	Yes	Yes
X.25			
X.25	12.2(11)YQ	Yes	Yes
X.25 Closed User Group	12.2(11)YQ	Yes	Yes
X.25 Failover	12.2(11)YQ	Yes	Yes
X.25 Load Balancing	12.2(11)YQ	Yes	Yes
X.25 over Frame Relay (Annex G)	12.2(11)YQ	Yes	Yes
X.25 over TCP (XOT)	12.2(11)YQ	Yes	Yes
X.25 Remote Failure Detection	12.2(11)YQ	Yes	Yes
X.25 Switch Local Acknowledgement	12.2(11)YQ	Yes	Yes
X.28 Emulation	12.2(11)YQ	Yes	Yes
PAD Sub-Addressing	12.2(11)YQ	Yes	Yes
CUG Selection Facility Suppress Option	12.2(11)YQ	Yes	Yes
X.25 Switch Function (routing/PVC)	12.2(11)YQ	Yes	Yes
SA Agent			
Service Assurance (SA) Agent	12.2(11)YQ	Yes	Yes
Response Time Reporter (RTR)	12.2(11)YQ	Yes	Yes
RTR Enhancements	12.2(11)YQ	Yes	Yes
SNMP			
SNMP	12.2(11)YQ	Yes	Yes
SNMP Support for VLAN Interfaces	12.2(11)YQ	Yes	Yes
SNMP Version 3.0	12.2(11)YQ	Yes	Yes
SNMPv2C	12.2(11)YQ	Yes	Yes
Interface Index Persistence	12.2(11)YQ	Yes	Yes
Network Management and MIB Support	12.2(11)YR	Yes	Yes
Miscellaneous Features			
NTP	12.2(11)YQ	Yes	Yes
Lock-and-Key	12.2(11)YQ	Yes	Yes
Standard IP Access List Logging	12.2(11)YQ	Yes	Yes
Time-Based Access List	12.2(11)YQ	Yes	Yes
Time-Based Access Lists Using Time Ranges	12.2(11)YQ	Yes	Yes
Command-Line Interface (CLI) String Search	12.2(11)YQ	Yes	Yes
Commented IP Access List Entries	12.2(11)YQ	Yes	Yes

Table 2 Feature List by Feature Set for the Cisco 3200 Series Mobile Access Router (continued)

Feature	In	Platform and Feature Set	
		IP	IP PLUS/IPSEC
Parser Cache	12.2(11)YQ	Yes	Yes
Basic Layer 2 Switching	12.2(11)YR	Yes	Yes
Switch-Based Broadcast/Multicast/Unicast Storm Control	12.2(11)YR	Yes	Yes
Source MAC Address/Secure Port	12.2(11)YR	Yes	Yes
Auto-Negotiation and Auto-Media-Dependent Interface/Media Dependent Interface Crossed-Over (MDI/MDIX)	12.2(11)YR	Yes	Yes
NetFlow	12.3(2)XF	Yes	Yes

New and Changed Information

The following sections list the new software features supported by the Cisco 3200 Series Mobile Access Router for Cisco IOS Release 12.3(2)XF.

Mobile IP - Mobile Networks Deployment MIB

The Mobile Networks Deployment MIB feature provides MIB support for customers who are deploying Cisco Mobile Networks. Mobile IP management using Simple Network Management Protocol (SNMP) is defined in two MIBs: the RFC2006-MIB and the CISCO-MOBILE-IP-MIB.

This feature is useful for customers deploying mobile networks functionality that need to monitor and debug mobile router information via SNMP.

For more details, refer to the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios123/123newft/123t/123t_4/gtmdebug.htm

NetFlow

The NetFlow technology efficiently provides the metering base for a key set of applications including network traffic accounting, usage-based network billing, network planning, as well as denial services monitoring capabilities, network monitoring, outbound marketing, and data mining capabilities for both service provider and enterprise customers. Cisco provides a set of NetFlow applications to collect NetFlow export data, perform data volume reduction, post-processing, and provide easy access to NetFlow data to end user applications. Cisco is currently working with a number of partners to provide customers with comprehensive solutions for NetFlow-based billing, planning and monitoring.

For more details, refer to the following URL:

http://www.cisco.com/en/US/tech/tk648/tk362/tk812/tech_protocol_home.html

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels.

Caveats in Cisco IOS Releases 12.3(2) T are also in Cisco IOS Release 12.3(2)XF. For information on caveats in Cisco IOS Release 12.3T, see [Caveats for Cisco IOS Release 12.3\(2\)T](#). This document lists severity 1 and 2 caveats and are located on [Cisco.com](#) and the Documentation CD-ROM.



Note

If you have an account with Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log into Cisco.com and click **Service & Support: Technical Assistance Center: Tool Index: Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Open Caveats - Cisco IOS Release 12.3(2)XF

This section lists open caveats for Cisco IOS Release 12.3(2)XF. Only severity level 1 through 3 are listed.

CSCin62655

Router crashes on unconfiguring and shutting down the interface.

If a virtual tunnel interface is configured with a serial interface, the MAR might crash and dump buffer content in very rare occasions upon unconfiguring and shutting down the serial interface.

Workaround

None

CSCin58918

Unable to set the value for cmiMrIfDescription object.

CSCin62122

bufferBgFree object shows 49 instead of 50 initially.

The bufferBgFree object of OLD-CISCO-MEMORY-MIB shows the value as 49 initially instead of 50.

The command-line interface (CLI) shows 50.

CSCec50561

Can not disable the hardware flow control on AUX port.

CSCed27956

A vulnerability in the Transmission Control Protocol (TCP) specification (RFC793) has been discovered by an external researcher. The successful exploitation enables an adversary to reset any established TCP connection in a much shorter time than was previously discussed publicly. Depending on the application, the connection may get automatically re-established. In other cases, a user will have to repeat the action (for example, open a new Telnet or SSH session). Depending upon the attacked protocol, a successful attack may have additional consequences beyond terminated connection which must be considered. This attack vector is only applicable to the sessions which are terminating on a device (such as a router, switch, or computer) and not to the sessions that are only passing through the device (for example, transit traffic that is being routed by a router). In addition, this attack vector does not directly compromise data integrity or confidentiality.

All Cisco products which contain TCP stack are susceptible to this vulnerability.

This advisory is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-ios.shtml>, and it describes this vulnerability as it applies to Cisco products that run Cisco IOS® software.

A companion advisory that describes this vulnerability for products that do not run Cisco IOS software is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-nonios.shtml>.

Related Documentation

The following sections describe the documentation available for the Cisco 3200 Series Mobile Access Router. Typically, these documents consist of hardware and software installation guides, Cisco IOS configuration and command references, system error messages, feature modules, and other documents.

Documentation is available as electronic documents, except for feature modules and the Cisco IOS release notes, which are available online on Cisco.com and the Documentation CD-ROM.

Use these release notes with the documents listed in the following sections:

- [Release-Specific Documents](#)
- [Platform-Specific Documents](#)

Release-Specific Documents

The following documents are specific to Release 12.3 and apply to Cisco IOS Release 12.3(2)XF. They are located on [Cisco.com](http://www.cisco.com) and the Documentation CD (under the heading Service & Support):

- To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.3(2)T*, click this path:
Technical Documents: Cisco IOS Software: Release 12.3: Release Notes: Cisco IOS Release 12.3 T
- To reach product bulletins, field notices, and other release-specific documents, click this path:
Technical Documents: Product Bulletins
- To reach the *Caveats for Cisco IOS Release 12.3* and *Caveats for Cisco IOS Release 12.3 T* documents, which contain caveats applicable to all platforms for all maintenance releases of Release 12.3, click this path:
Technical Documents: Cisco IOS Software: Release 12.3: Caveats

**Note**

If you have an account with [Cisco.com](http://www.cisco.com), you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log in to [Cisco.com](http://www.cisco.com), and click **Service & Support: Technical Assistance Center: Tool Index: Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Platform-Specific Documents

Hardware installation guides, configuration and command reference guides, reference sell guides, and additional documents are available for the Cisco 3200 Series Mobile Access Router on [Cisco.com](http://www.cisco.com) and on the Documentation CD-ROM.

Cisco 3200 Series Mobile Access Router

Documentation specific to the Cisco 3200 Series Mobile Access Router is available on [Cisco.com](http://www.cisco.com) and the Documentation CD at the following location:

http://www.cisco.com/univercd/cc/td/doc/product/access/mar_3200/index.htm

Feature Navigator

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a particular set of features and which features are supported in a particular Cisco IOS image. Feature Navigator is available 24 hours a day, 7 days a week.

To access Feature Navigator, you must have an account on [Cisco.com](http://www.cisco.com). If you have forgotten or lost your account information, e-mail the Contact Database Administration group at cdbadmin@cisco.com. If you do not have an account on [Cisco.com](http://www.cisco.com), go to <http://www.cisco.com/register> and follow the directions to set up an account.

To use Feature Navigator, you must have a JavaScript-enabled web browser such as Netscape 3.0 or later, or Internet Explorer 4.0 or later. Internet Explorer 4.0 always has JavaScript enabled. To enable JavaScript for Netscape 3.x or Netscape 4.x, follow the instructions provided with the web browser. For JavaScript support and enabling instructions for other browsers, check with the browser vendor.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. You can access Feature Navigator at the following URL:

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

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents that are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference. The Cisco IOS software documentation set is available on Cisco.com and on the Documentation CD-ROM.

On Cisco.com:

Products & Services: IOS Software: Cisco IOS Software Releases 12.3 Mainline: Technical Documentation: Master Indices

On the Documentation CD-ROM at:

Product Documentation: Cisco IOS Software: Cisco IOS Release 12.3: Configuration Guides and Command References

Release 12.3 Documentation Set

[Table 3](#) describes the contents of the Cisco IOS Release 12.3 software documentation set, which is available in both electronic and printed form.



Note

You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.



Note

Some aspects of the complete Cisco IOS Release 12.3 software documentation set might not apply to the Cisco 3200 series router.

Table 3 Cisco IOS Release 12.3 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • Cisco IOS Configuration Fundamentals Configuration Guide • Cisco IOS Configuration Fundamentals Command Reference 	Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • Cisco IOS Bridging and IBM Networking Configuration Guide • Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2 • Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2 	Transparent Bridging SRB Token Ring Inter-Switch Link Token Ring Route Switch Module RSRB DLSW+ Serial Tunnel and Block Serial Tunnel LLC2 and SDLC IBM Network Media Translation SNA Frame Relay Access NCIA Client/Server Airline Product Set DSPU and SNA Service Point SNA Switching Services Cisco Transaction Connection Cisco Mainframe Channel Connection CLAW and TCP/IP Offload CSNA, CMPC, and CMPC+ TN3270 Server
<ul style="list-style-type: none"> • Cisco IOS Dial Technologies Configuration Guide: Dial Access • Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications • Cisco IOS Dial Technologies Command Reference, Volume 1 of 2 • Cisco IOS Dial Technologies Command Reference, Volume 2 of 2 	Dial Access Modem and Dial Shelf Configuration and Management ISDN Configuration Signaling Configuration Point-to-Point Protocols Dial-on-Demand Routing Dial Backup Dial Related Addressing Service Network Access Solutions Large-Scale Dial Solutions Cost-Control Solutions Internetworking Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	LAN Interfaces Serial Interfaces Logical Interfaces
<ul style="list-style-type: none"> • Cisco IOS IP Configuration Guide • Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services • Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols • Cisco IOS IP Command Reference, Volume 3 of 3: Multicast 	IP Addressing IP Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • Cisco IOS AppleTalk and Novell IPX Configuration Guide • Cisco IOS AppleTalk and Novell IPX Command Reference 	AppleTalk Novell IPX

Table 3 Cisco IOS Release 12.3 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide • Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • Cisco IOS Voice, Video, and Fax Configuration Guide • <i>Cisco IOS Voice, Video, and Fax Command Reference</i> 	Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support
<ul style="list-style-type: none"> • Cisco IOS Quality of Service Solutions Configuration Guide • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms
<ul style="list-style-type: none"> • Cisco IOS Security Configuration Guide • <i>Cisco IOS Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options Supported AV Pairs
<ul style="list-style-type: none"> • Cisco IOS Switching Services Configuration Guide • Cisco IOS Switching Services Command Reference 	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • Cisco IOS Wide-Area Networking Configuration Guide • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • Cisco IOS Mobile Wireless Configuration Guide • Cisco IOS Mobile Wireless Command Reference 	General Packet Radio Service

Table 3 Cisco IOS Release 12.3 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • Cisco IOS Terminal Services Configuration Guide • Cisco IOS Terminal Services Command Reference 	ARA LAT NASI Telnet TN3270 XRemote X.28 PAD Protocol Translation
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Guide Master Index</i> • <i>Cisco IOS Command Reference Master Index</i> • Cisco IOS Debug Command Reference • Cisco IOS Software System Error Messages • New Features in 12.3-Based Limited Lifetime Releases • New Features in Release 12.3T • Release Notes (Release note and caveat documentation for 12.3-based releases and various platforms) 	

Service and Support

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- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

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<http://www.cisco.com>

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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](http://www.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](http://www.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.

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