



Release Notes for Cisco 800 Series Routers for Cisco IOS Release 12.1 T

February 22, 2001



Note

You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hardcopy documents were printed.

These release notes for the Cisco 800 series routers describe the enhancements provided in Cisco IOS Release 12.1 T. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T* that accompanies these release notes. The caveats document is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.1* on Cisco.com and the Documentation CD-ROM.

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Early Deployment Releases

These release notes describe the Cisco 800 series routers for Cisco IOS Release 12.1 T, which is an early deployment (ED) release based on Cisco IOS Release 12.1. Early deployment releases contain fixes for software caveats and support for new Cisco hardware and software features.

The following list shows the recent early deployment releases of the Cisco 801–804 routers:

- Release 12.0(1)XB
- Release 12.0(2)T to 12.0(7)T
- Release 12.0(7)XV
- Release 12.1 T, up to 12.1(5)T
- Release 12.1(3)XG

The following list shows the recent early deployment releases of the Cisco 805 router:

- Release 12.0(4)XM
- Release 12.0(7)T
- Release 12.1 T, up to 12.1(5)T
- Release 12.1(3)XG

The following list shows the recent early deployment releases of the Cisco 811 and Cisco 813 routers:

- Release 12.1(2)XF
- Release 12.1(2)T, up to 12.1(5)T

For more information, see the “Platform-Specific Documents” section on page 30 about accessing related release note documents.

System Requirements

This section describes the system requirements for Cisco IOS Release 12.1 T:

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Memory Requirements

Table 1 Memory Requirements for the Cisco 800 Series

Platforms	Image Name	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
Cisco 801–804 Routers	IP	c800-y6-mw	8 MB	4 MB	RAM
	IP Plus	c800-sy6-mw	8 MB	8 MB	RAM
	IP/IPX Plus	c800-nsy6-mw	8 MB	8 MB	RAM
	IP/Firewall	c800-oy6-mw	8 MB	4 MB	RAM
	IP/Firewall Plus	c800-osy6-mw	8 MB	4 MB	RAM
	IP/FW/Plus/IPSEC 56	c800-osy656i-mw	8 MB	12 MB	RAM
	IP/IPX/FW/IPSEC 56 Plus	c800-nosy656i-mw	8 MB	12 MB ¹	RAM
Cisco 805 Router	IP	c805-y6-mw	4 MB	8 MB	RAM
	IP Plus	c805-sy6-mw	8 MB	8 MB	RAM
	IP/IPX Plus	c805-nsy6-mw	8 MB	8 MB	RAM
	IP/Firewall	c805-oy6-mw	4 MB	8 MB	RAM
	IP/Firewall Plus	c805-osy6-mw	8 MB	8 MB	RAM
	IP/FW/Plus/IPSEC 56	c805-osy656i-mw	8 MB	12 MB	RAM
	IP/IPX/FW/IPSEC 56/Plus	c805-nosy656i-mw	8 MB	12 MB ¹	RAM
Cisco 811–813 Routers ²	IP	c800-y6-mw	4 MB	8 MB	RAM
	IP Plus	c800-sy6-mw	8 MB	8 MB	RAM
	IP/IPX Plus	c800-nsy6-mw	8 MB	8 MB	RAM
	IP/FW	c800-oy6-mw	4 MB	8 MB	RAM
	IP/FW Plus IPsec 56	c800-osy656i-mw	8 MB	12 MB	RAM
	IP/IPX/FW Plus IPsec 56	c800-nosy656i-mw	8 MB	12 MB	RAM

1. 8 MB in Cisco IOS Releases 12.1(1)T and 12.1(2)T.

2. These platforms were introduced in Cisco IOS Release 12.1(2)XF.

Hardware Supported

Cisco IOS Release 12.1 T supports the Cisco 800 series routers:

- Cisco 801
- Cisco 802
- Cisco 803
- Cisco 804
- Cisco 805
- Cisco 811—Introduced in Cisco IOS Release 12.1(2)XF.
- Cisco 813—Introduced in Cisco IOS Release 12.1(2)XF.

For detailed descriptions of the new hardware features, see the “New and Changed Information” section on page 16.

Table 2 Supported Interfaces for the Cisco 800 Series

Router	Ethernet Ports	ISDN Ports	Serial Ports	ADSL Ports	Telephone Ports	Console Ports
Cisco 801	One 10BaseT (RJ-45)	ISDN BRI S/T (RJ-45)	–	–	–	RJ-45
Cisco 802	One 10BaseT (RJ-45)	ISDN BRI U, integrated Network Termination 1 (NT-1) (RJ-45)	–	–	–	RJ-45
Cisco 803	Four-port 10BaseT (RJ-45) hub	ISDN BRI S/T (RJ-45)	–	–	Two (RJ-11)	RJ-45
Cisco 804	Four-port 10BaseT (RJ-45) hub	ISDN BRI U, integrated NT-1 (RJ-45)	–	–	Two (RJ-11)	RJ-45
Cisco 805	One 10BaseT (RJ-45)	–	One smart serial (RS-232, RS-449, RS-530, RS-530A, X.21 and V.35)	–	–	RJ-45

Table 2 Supported Interfaces for the Cisco 800 Series (continued)

Router	Ethernet Ports	ISDN Ports	Serial Ports	ADSL Ports	Telephone Ports	Console Ports
Cisco 811	Ethernet LAN: <ul style="list-style-type: none"> • One 10BaseT (RJ-45) Ethernet WAN: <ul style="list-style-type: none"> • One ISDN BRI U, integrated DSU (RJ-11) • One ISDN BRI S/T (RJ-45) 	–	–	–	–	RJ-45
Cisco 813	Ethernet LAN: <ul style="list-style-type: none"> • One 10BaseT (RJ-45) 4-port hub Ethernet WAN: <ul style="list-style-type: none"> • One ISDN BRI U, integrated DSU (RJ-11) • One ISDN BRI S/T (RJ-45) 	–	–	–	Two (RJ-11)	RJ-45

Cisco 801–804 Routers

The Cisco 801–804 routers provide the following key hardware features:

- Cisco 802 and Cisco 804 routers have an integrated NT-1, which eliminates the need for an external NT-1 in North America.
- Cisco 803 and Cisco 804 routers provide connection to analog telephones, fax machines, or modems, which are connected to telephone services through an ISDN line.
- Flash memory: Default is 8 MB, expandable to 12 MB. (4 MB Flash soldered to the motherboard.)



Note To add additional Flash memory to the Cisco 801-804, you must remove the existing Flash memory card and install the new one.

- Dynamic RAM: Default is 4 MB, expandable to 12 MB. (4MB Dynamic RAM soldered to the motherboard.)
- ISDN B-channel LEDs are a different color from the other LEDs, which make them easy to distinguish.
- Color-coded ports and cable reduce the chance of cabling errors.
- Routers can be stacked or mounted on a wall.

Cisco 805 Router

The Cisco 805 router connects small professional offices over serial lines to corporate networks and to the Internet, and provides the following key features:

- One serial WAN interface that delivers up to 512 kbps for synchronous serial connections (Frame Relay, leased lines, and X.25) or up to 115 kbps for asynchronous dial-up.
- One Ethernet LAN interface.
- Flash memory: Default is 4 MB, expandable to 12 MB. (4 MB Flash soldered to the motherboard.)
- Dynamic RAM: Default is 8 MB, expandable to 16 MB. (8 MB Dynamic RAM soldered to the motherboard.)
- Color-coded ports and cable reduce the chance of cabling errors.
- Routers can be stacked.

Cisco 811 and 813 Routers

The Cisco 811 and 813 routers provide the following key hardware features:

- Flash memory: Default is 4 MB, expandable to 12 MB. Additional Flash memory is installed using Intel "Mini-Card" technology.
- Dynamic RAM: Default is 8 MB, expandable to 16 MB, which must be obtained from Cisco Systems.
- Central processing unit: 33 MHz MPC 850 processor.
- Routers mounted on a wall.

Determining the Software Release

To determine the version of Cisco IOS software running on your Cisco 800 series router, log in to the router and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.1 T Software (C800-Y6-MW), Version 12.1(5)T, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Cisco IOS Upgrade Ordering Instructions* located at:

http://www.cisco.com/warp/public/cc/cisco/mkt/ios/prodlit/957_pp.htm

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 12.1 T supports the same feature sets as Cisco IOS Release 12.1, but Release 12.1 T can include new features supported by the Cisco 800 series routers.

**Caution**

Cisco IOS images with strong encryption (including, but not limited to 168-bit (3DES) data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay due to United States government regulations. When applicable, the purchaser/user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

Cisco 801–804 router features and feature sets are shown in Table 3 and Table 4.

Cisco 805 features and feature sets are shown in Table 5.

Cisco 811 and Cisco 813 features and feature sets are shown in Table 6.

The tables use the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, (2) means a feature was introduced in 12.1(2)T. If a cell in this column is empty, the feature was included in the initial base release.

**Note**

These feature set tables contain only a selected list of features. They are not cumulative or complete in listing all the features in each image. Check the online version of this document on Cisco.com for updates to these tables:
<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121relnt/800/rn800t.htm>

Table 3 Feature List by Feature Set for the Cisco 801–804 Routers

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Address Conservation								
PAT (NAT Overload)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT with H.323		No	No	No	No	No	No	No
Advanced Telephone Features¹								
Call Forward (Sweden and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Forward Variable (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Hold Retrieve (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Transfer (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Call Waiting		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Caller ID Number delivery to POTS ports (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Caller ID Name delivery to POTS ports (North America only)		No	No	No	No	No	No	No
Data-Over-Voice Bearer (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distinctive Ringing		Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN-Voice Priority		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Basic Services								
GRE Tunneling		No	Yes	Yes	No	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes
PAP, CHAP, MSCHAP, Local Password		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial								
Common Application Programming Interface (CAPI)	(2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ease of Use and Deployment								
Auto SPID / Switch Detection		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco ConfigMaker		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco FastStep		Yes	Yes	Yes ²	Yes	Yes	Yes	Yes
Easy IP Phase I and II (IPCP Address Negotiation and DHCP Server)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client and Server		Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAN								
AppleTalk		No	No	No	No	No	No	No
IP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX		No	No	Yes	No	No	No	Yes
NetBIOS Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Transparent Bridging		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management								
Cisco View		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP, Telnet, Console Port		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNTP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syslog		No	Yes	Yes	No	Yes	Yes	Yes

Table 3 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Routing								
BGP		No	No	No	No	No	No	No
EGP		No	No	No	No	No	No	No
IGRP		No	No	No	No	No	No	No
IP Enhanced IGRP (IP-EIGRP)		No	Yes	Yes	No	Yes	Yes	Yes
IPX Enhanced IGRP (IPX-EIGRP)		No	No	No	No	No	No	No
IP Multicast (relay only)		No	Yes	Yes	No	Yes	Yes	Yes
IP-Policy Routing		No	Yes	Yes	No	Yes	Yes	Yes
IPXWAN		No	No	Yes	No	No	No	Yes
OSPF		No	No	No	No	No	No	No
RIP, RIPv2, Triggered RIP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security								
AAA Radius		No	No	No	No	No	No	No
AAA TACACS+		No	Yes	Yes	No	Yes	Yes	Yes
Additional Vendor-Proprietary RADIUS Attributes		No	No	No	No	No	No	No
Authenticating ACL		No	No	No	No	No	No	No
Automated Double Authentication (server functionality)		No	No	No	No	No	No	No
Certificate Authority Interoperability		No	No	No	No	No	Yes	Yes
Internet Key Exchange Security Protocol		No	No	No	No	No	Yes	Yes
IPSec Network Security		No	No	No	No	No	Yes	Yes
IOS Firewall Phase I								
– Context Based Access Control Lists		No	No	No	Yes	Yes	Yes	Yes
– Java Blocking		No	No	No	Yes	Yes	Yes	Yes
– Denial of Service Detection and Prevention		No	No	No	Yes	Yes	Yes	Yes
– Real-time Alerts and Audit Trails		No	No	No	Yes	Yes	Yes	Yes
IPSec Encryption with 56 bit DES		No	No	No	No	No	Yes	Yes
Lock and Key		Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT2P		No	No	No	No	No	Yes	Yes

Table 3 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Named Method Lists for AAA Authentication & Accounting		No	No	No	No	No	No	No
Route and Router Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Token Card - Double Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Voice Technologies								
Called Party Number Port		Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN								
Frame Relay Encapsulation (for ISDN LL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Digital Subscriber Line (ISDL, up to 144 kbps) (Cisco 802 & Cisco 804 only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Inverse ARP		No	No	No	No	No	No	No
ISDN		Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Leased Line (up to 144 kbps)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
ML-PPP, PPP Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mobile IP		No	No	No	No	No	No	No
PPP over Frame Relay (RFC 1973)		No	No	No	No	No	No	No
WAN Optimization								
Always On/Dynamic ISDN (AO/DI)		No	Yes	Yes	No	Yes	Yes	Yes
Bandwidth on Demand (BOD)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial on Demand (DDR)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
HSRP		No	No	No	No	No	No	No
IPX and SPX Spoofing		No	No	Yes	No	No	No	Yes
ISDN Caller ID Callback		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Snapshot Routing		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stac Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-based Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 ID		No	Yes	Yes	No	Yes	Yes	Yes

- Advanced Telephone Features are available on the Cisco 803 and 804 routers only. These features require supplementary services from a telephone company.
- The X.25 configuration feature requires the use of the Cisco command line interface (CLI).

Table 4 Additional Features supported by Cisco 801–804 Routers

Feature	IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSec	IP/FW/Plus/ IPSec Plus
Routed Protocol	IP	IP	IP/IPX	IP	IP	IP	IP/IPX
Routing Protocol	RIP Snapshot	RIP/IP- EIGRP Snapshot	RIP/IP- EIGRP/IPX WAN Snapshot	RIP/IP- EIGRP Snapshot	RIP/IP- EIGRP Snapshot	RIP/IP- EIGRP Snapshot	RIP/IP- EIGRP/IPX WAN Snapshot
Tunneling		GRE	GRE		GRE	GRE	GRE
X.25		X.25	X.25		X.25	X.25	X.25
SNTP (Simple Network Time Protocol)	SNTP	SNTP	SNTP	SNTP	SNTP	SNTP	SNTP
Multicast		IP Multicast Forwarding	IP Multicast Forwarding		IP Multicast Forwarding	IP Multicast Forwarding	IP Multicast Forwarding
Management	SNMP	SNMP/ SYSLOG	SNMP/ SYSLOG	SNMP	SNMP/ SYSLOG	SNMP/ SYSLOG	SNMP/ SYSLOG
Manual ISDN Calls (see reference for commands)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 Feature List by Feature Set for the Cisco 805 Router

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Address Conservation								
PAT (NAT Overload)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT with H.323		No	No	No	No	No	No	No
Basic Services								
GRE Tunneling		No	Yes	Yes	No	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes
PAP, CHAP, MSCHAP, Local Password		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial								
Common Application Programming Interface (CAPI)	(2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ease of Use and Deployment								
Cisco ConfigMaker		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco FastStep		Yes	Yes	Yes ¹	Yes	Yes	Yes	Yes

Table 5 Feature List by Feature Set for the Cisco 805 Router (continued)

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Easy IP Phase I and II (IPCP Address Negotiation and DHCP Server)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client and Server		Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAN								
AppleTalk		No	No	No	No	No	No	No
IP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX		No	No	Yes	No	No	No	Yes
NetBIOS Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Transparent Bridging		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management								
Cisco View		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP, Telnet, Console Port		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNTP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syslog		No	Yes	Yes	No	Yes	Yes	Yes
Routing								
BGP		No	No	No	No	No	No	No
EGP		No	No	No	No	No	No	No
IGRP		No	No	No	No	No	No	No
IP Enhanced IGRP (IP-EIGRP)		No	Yes	Yes	No	Yes	Yes	Yes
IPX Enhanced IGRP (IPX-EIGRP)		No	No	No	No	No	No	No
IP Multicast (relay only)		No	Yes	Yes	No	Yes	Yes	Yes
IP-Policy Routing		No	Yes	Yes	No	Yes	Yes	Yes
IPXWAN		No	No	Yes	No	No	No	Yes
OSPF		No	No	No	No	No	No	No
RIP, RIPv2, Triggered RIP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security								
AAA Radius		No	No	No	No	No	No	No
AAA TACACS+		No	Yes	Yes	No	Yes	Yes	Yes
Additional Vendor-Proprietary RADIUS Attributes		No	No	No	No	No	No	No
Authenticating ACL		No	No	No	No	No	No	No
Automated Double Authentication (server functionality)		No	No	No	No	No	No	No
Certificate Authority Interoperability		No	No	No	No	No	Yes	Yes

Table 5 Feature List by Feature Set for the Cisco 805 Router (continued)

Features	In	Feature Set						
		IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus	IP/FW/Plus/ IPSEC 56 (VPN)	IP/IPX/FW/ IPSEC 56/ Plus (VPN)
Internet Key Exchange Security Protocol		No	No	No	No	No	Yes	Yes
IPSec Network Security		No	No	No	No	No	Yes	Yes
IOS Firewall Phase I								
– Context Based Access Control Lists		No	No	No	Yes	Yes	Yes	Yes
– Java Blocking		No	No	No	Yes	Yes	Yes	Yes
– Denial of Service Detection and Prevention		No	No	No	Yes	Yes	Yes	Yes
– Real-time Alerts and Audit Trails		No	No	No	Yes	Yes	Yes	Yes
IPSec Encryption with 56 bit DES		No	No	No	No	No	Yes	Yes
Lock and Key		Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT2P		No	No	No	No	No	Yes	Yes
Named Method Lists for AAA Authentication & Accounting		No	No	No	No	No	No	No
Route and Router Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Token Card - Double Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN								
Frame Relay Encapsulation (for ISDN LL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Inverse ARP		Yes	Yes	Yes	Yes	Yes	Yes	Yes
ML-PPP, PPP Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mobile IP		No	No	No	No	No	No	No
PPP over Frame Relay (RFC 1973)		No	No	No	No	No	No	No
WAN Optimization								
Bandwidth on Demand (BOD)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial on Demand (DDR)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
HSRP		No	No	No	No	No	No	No
IPX and SPX Spoofing		No	No	Yes	No	No	No	Yes
Snapshot Routing		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stac Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-based Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 ID		No	Yes	Yes	No	Yes	Yes	Yes

1. The X.25 configuration feature requires the use of the Cisco command line interface (CLI).

Table 6 Feature List by Feature Set for the Cisco 811 and 813 Routers

Features	Feature Sets					
	IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX/FW Plus IPSec 56
Address Conservation						
NAT	Yes	Yes	Yes	Yes	Yes	Yes
Ease of Use and Deployment						
Auto SPID/SWITCH Connection	Yes	Yes	Yes	Yes	Yes	Yes
Cisco Fast Step Software, Version 2.5	Yes	Yes	Yes	Yes	Yes	Yes
Configuration Express	Yes	Yes	Yes	Yes	Yes	Yes
Easy IP Phase I and II	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client Server	Yes	Yes	Yes	Yes	Yes	Yes
INS 64 Telephone Features (813 model only)						
Call Blocking on Caller ID	Yes	Yes	Yes	Yes	Yes	Yes
Caller ID	Yes	Yes	Yes	Yes	Yes	Yes
Call Waiting	Yes	Yes	Yes	Yes	Yes	Yes
Distinctive Ringing	Yes	Yes	Yes	Yes	Yes	Yes
E Ya Yo	Yes	Yes	Yes	Yes	Yes	Yes
I Number	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Voice Priority	Yes	Yes	Yes	Yes	Yes	Yes
Nariwake	Yes	Yes	Yes	Yes	Yes	Yes
Troublesome Call Refusing	Yes	Yes	Yes	Yes	Yes	Yes
Voice Warp	Yes	Yes	Yes	Yes	Yes	Yes
Voice Warp Select	Yes	Yes	Yes	Yes	Yes	Yes
LAN						
IP	Yes	Yes	Yes	Yes	Yes	Yes
IPX	No	No	Yes	No	No	Yes
NetBIOS Access Lists, Name Caching	Yes	Yes	Yes	Yes	Yes	Yes
Transparent Bridging	Yes	Yes	Yes	Yes	Yes	Yes
Management						
CiscoView	Yes	Yes	Yes	Yes	Yes	Yes
SNMP, Telnet, Console Port	Yes	Yes	Yes	Yes	Yes	Yes
SNTP	Yes	Yes	Yes	Yes	Yes	Yes
Syslog	Yes	Yes	Yes	Yes	Yes	Yes
TACACS+	No	Yes	Yes	No	Yes	Yes
Routing						
IP Enhanced IGRP	No	Yes	Yes	No	Yes	Yes

Table 6 Feature List by Feature Set for the Cisco 811 and 813 Routers (continued)

Features	Feature Sets					
	IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX/FW Plus IPSec 56
IP Multicast (Relay Only)	No	Yes	Yes	No	Yes	Yes
IP-Policy Routing	Yes	Yes	Yes	Yes	Yes	Yes
IPX WAN	No	No	Yes	No	No	Yes
RIP, RIPv2, Triggered RIP	Yes	Yes	Yes	Yes	Yes	Yes
Security (Basic)						
GRE Tunneling	No	Yes	Yes	No	Yes	Yes
NAT	Yes	Yes	Yes	Yes	Yes	Yes
PAP, CHAP, Local Password, MSCHAP	Yes	Yes	Yes	Yes	Yes	Yes
Route and Router Authentication	Yes	Yes	Yes	Yes	Yes	Yes
Token Card Authentication	Yes	Yes	Yes	Yes	Yes	Yes
Security (Enhanced)						
Cisco IOS Firewall	No	No	No	Yes	Yes	Yes
Context Based Access Control Lists	No	No	No	Yes	Yes	Yes
Denial of Service Detection	No	No	No	Yes	Yes	Yes
IPSec Encryption w/ 56-bit DES	No	No	No	No	Yes	Yes
Java Blocking	No	No	No	Yes	Yes	Yes
Real-time Alerts	No	No	No	Yes	Yes	Yes
Voice Features (Supplementary)						
Call Conference	Yes	Yes	Yes	Yes	Yes	Yes
Call Hold / Retrieve	Yes	Yes	Yes	Yes	Yes	Yes
Call Transfer	Yes	Yes	Yes	Yes	Yes	Yes
Voice Priority	Yes	Yes	Yes	Yes	Yes	Yes
WAN						
Frame Relay (Leased Line Only)	Yes	Yes	Yes	Yes	Yes	Yes
ISDN	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Lease Line	Yes	Yes	Yes	Yes	Yes	Yes
ML-PPP, PPP Compression	Yes	Yes	Yes	Yes	Yes	Yes
WAN Optimization						
BOD	Yes	Yes	Yes	Yes	Yes	Yes
DDR	Yes	Yes	Yes	Yes	Yes	Yes
IPX and SPX Spoofing	No	Yes	No	No	No	Yes
ISDN Caller ID Callback	Yes	Yes	Yes	Yes	Yes	Yes
Snapshot Routing	Yes	Yes	Yes	Yes	Yes	Yes
STAC Compression	Yes	Yes	Yes	Yes	Yes	Yes

Table 6 Feature List by Feature Set for the Cisco 811 and 813 Routers (continued)

Features	Feature Sets					
	IP	IP Plus	IP/IPX Plus	IP/FW	IP/FW Plus IPsec 56	IP/IPX/FW Plus IPsec 56
Weighted Fair Queuing Quality of Service	Yes	Yes	Yes	Yes	Yes	Yes
X.25 ID	No	Yes	Yes	No	Yes	Yes

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 800 series routers for Release 12.1 T.

New Hardware Features in Cisco IOS Release 12.1(5)T

The following new hardware feature is supported by the Cisco 800 series routers for Release 12.1(5)T:

Cisco 811 and 813 Routers

Cisco 811 and 813 routers provide network connectivity for small offices and corporate telecommuters. The Cisco 811 and 813 routers additionally supply value-added services, such as virtual private networks (VPNs), managed network services, point of sale (POS) applications, and secure Internet access. Both routers were first introduced in the special Release 12.1(2)XF.

New Software Features in Cisco IOS Release 12.1(5)T

The following new software features are supported by the Cisco 800 series routers for Release 12.1(5)T:

AutoInstall Using DHCP for LAN Interfaces

The AutoInstall Using DHCP for LAN Interfaces feature replaces the use of the Bootstrap Protocol (BOOTP) with the use of the Dynamic Host Configuration Protocol (DHCP) for Cisco IOS AutoInstall over LAN interfaces. AutoInstall is a Cisco IOS software feature which provides for the configuration of a new routing device automatically when the device is initialized. DHCP (defined in RFC 2131) is based on the Bootstrap Protocol, which provides the framework for passing configuration information to hosts on a TCP/IP network. DHCP adds the capability of automatic allocation of reusable network addresses and additional configuration options. In Cisco IOS Release 12.1(5)T, the IP address procurement phase of the AutoInstall process is now accomplished using DHCP for Ethernet, Token Ring, and FDDI interfaces. Prior to this release, IP addresses for LAN interfaces were obtained using BOOTP during the AutoInstall process. The AutoInstall Using DHCP for LAN Interfaces feature also allows the routing device to recognize IP address allocation messages coming from regular BOOTP servers, providing a seamless transition for those devices already using BOOTP servers for AutoInstall. Additionally, this feature allows for the uploading of configuration files using unicast TFTP. For further details, please see the following document:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121t/121t5/dt_dhcpa.htm

Closed User Group Selection Facility Suppress Option

A closed user group (CUG) selection facility is a specific encoding element that allows a destination data terminal equipment (DTE) to identify the CUG to which the source and destination DTEs belong. The Closed User Group Selection Facility Suppress Option feature enables a user to configure an X.25 data communications equipment (DCE) interface or X.25 profile with a DCE station type to remove the CUG selection facility from incoming call packets destined for the preferential CUG only or for all CUGs. You can also remove the selection facility from a CUG with outgoing access (CUG/OA).

DiffServ Compliant Weighted Random Early Detection

This feature extends the functionality of WRED (Weighted Random Early Detection) to enable support for Differentiated Services (DiffServ) and Assured Forwarding (AF) Per Hop Behavior (PHB). This feature enables WRED to be compliant with the DiffServ standard and the AF PHB standard being developed by the Internet Engineering Task Force (IETF). This feature enables customers to implement AF PHB by coloring packets according to DSCP values and then assigning preferential drop probabilities to those packets. This feature adds two new commands, **random-detect dscp** and **dscp**. It also adds two new arguments, *dscp-based* and *prec-based*, to two existing WRED-related commands—the **random-detect** (interface) command and the **random-detect-group** command.

Enhanced Voice Services

For the Cisco 800 Series

The Enhanced Voice Services Cisco IOS features consist of the following voice capabilities for the Cisco 800 series routers:

- Call Blocking on Caller ID

Allows Cisco 800 series routers to reject an incoming voice call, based on local directory number (LDN) Caller IDs. Using the command-line interface (CLI), you can configure blocking for up to ten Caller ID numbers for each LDN.

- Local Call Waiting

Notifies you with a call-waiting tone of an incoming call while you are already connected to a telephone call. You can put the first call on hold by pressing the on-and-off-hook button (flash), connect to the second call, and then return to the first call after finishing with the second.

The feature uses both B channels of the ISDN line, enabling local call-waiting support on the router. Unlike standard ISDN call waiting, local call waiting does not require a subscription to call waiting from a service provider.

For the Cisco 813 Only

The Enhanced Voice Services Cisco IOS features consist of the following voice capabilities for the Cisco 813 series routers *only*:

- Caller ID—Available in Japan only.

Provides analog Caller ID support for Japanese-language display, Caller ID- equipped, analog telephones. The Cisco 800 series router receives the Caller ID information from the INS-NET-64 switch. The router software prepares the Caller ID with a tone, transmits the Caller ID to plain old telephone service (POTS) port 1 or 2 on the router, and displays the Caller ID on the telephone.

- **E Ya Yo**—Available in Japan only.
 Conceals the caller ID of the outgoing call from the receiving device. To activate the feature, dial 184 before dialing the number of the receiving device, as specified in the Nippon Telegraph and Telephone (NTT) Communications Corporation user manual. This feature is specific to NTT Communications Corporation switches and is offered free of charge. The router handles this feature as a regular outgoing call and requires no special operation.
- **Voice Warp**—Available in Japan only.
 On the INS-NET-64 switch, this feature forwards all incoming calls for a terminal device to another device. Voice-warp registration, activation, and deactivation requests are sent to the switch for each LDN. The routers support the registration, activation, and deactivation requests for devices attached to (POTS) port 1 or 2. The forwarding function itself is performed by the INS-NET-64 switch. This feature can be deactivated after its registration and activation phases.
 During the registration phase of the device, you can:
 - Create a list of forwarding destination numbers and select one as the active destination.
 - Specify whether an announcement is made to the caller, to the forwarding device, or both, when the call is forwarded.
 - Set the no-answer timer parameter from 5 to 60 seconds at 5-second intervals. This setting affects the redirection of calls when the voice-warp feature is activated.
- **Voice Select Warp**—Available in Japan only.
 This feature is a superset of the Voice Warp feature. You create a list of incoming caller IDs for the Voice Select Warp feature. This list of caller IDs could be used in two different ways. First, an incoming call which bears the caller ID in this list will be redirected. Second, an incoming call which does not bear the caller ID in this list will be redirected. You can also choose to ignore this list all together. If so, this is effectively the same as the Voice Warp feature for all incoming calls. All other characteristics and limitations remain the same as the Voice Warp feature.
 For all the operations described above, users can use the keypad dialing sequence as specified in the NTT user manual.
- **Nariwake**—Available in Japan only.
 The Nariwake feature requires the user to be subscribed to the NTT service.
 This feature allows the user to register multiple Caller ID numbers with the ISDN (NTT INS-NET-64) switch based on router's local directory numbers. When calls are presented to the NTT switch with a Caller ID identified on the list of registered numbers, the NTT switch will notify the router that it should provide a distinctive ring to its telephone port to which the local directory number just called will be routed.
 Three different ring cadences are available so the user may choose two of them for each of the following two cases: when calls from registered callers are received and when calls from unregistered callers are received. The default ring cadence setting for unregistered callers is ring 0 where for registered callers is ring 1. The on/off period of ring 0 (normal ringing signals) and ring 1 (ringing signals for Nariwake service) are defined in the NTT user's manual.
 The number of Caller IDs which can be registered at a time is up to a limit defined by the NTT switch. The list of Caller ID numbers shall be entered/removed through the keypad.
- **Trouble Call Blocking**—Available in Japan only.
 This feature requires the user to be subscribed to the NTT service, troublesome call refusing as described in in the NTT user's manual. This feature is also described as nuisance telephone call refusal service by INS Net.

Trouble call blocking causes all incoming calls to a particular number of User A from the troublesome caller's (User B) number to be rejected by the network. This is done without User A having to specify User B's actual phone number. After User A has activated the feature, future calls to User A made by User B will result in the caller hearing an announcement. User A will not be notified of User B's attempts of incoming calls.

Multiple numbers can be blocked at a time up to a limit as defined when the service is provisioned. If the user requests an additional number to be blocked beyond the limit, the oldest number is discarded (unblocked) first, and the new telephone number will be registered.

- I Number—Available in Japan only.

This feature, I Number, allows several terminal devices to be used with one subscriber line. In addition to the subscriber's number, numbers for each port of the router are given by the service provider. When any of the assigned number is dialed, the call will come through the same subscriber's line, and only the corresponding terminal device(s) attached to that port will ring.

NAT - Support for NetMeeting Directory (Internet Locator Service - ILS)

Microsoft NetMeeting is a Windows-based application that enables multi-user interaction and collaboration from a user's PC over the Internet or an intranet. Support for the NetMeeting Directory (ILS) allows connections by name from the directory built into the NetMeeting application. Destination IP addresses do not need to be known in order for a connection to be made.

Parser Cache

The Parser Cache feature optimizes the parsing (translation) of Cisco IOS software configuration command lines by remembering how to parse recently encountered command lines. This feature was developed to improve the scalability of the Cisco IOS software command-line interface (CLI) parser when processing large configuration files. This improvement is especially useful for those cases in which thousands of virtual circuits must be configured for interfaces, or hundreds of access lists (ACLs) are required. The parser chain cache can rapidly recognize and translate configuration lines which differ slightly from previously used configuration lines (for example, pvc 0/100, pvc 0/101, and so on). Testing indicates an improvement to load time of between 30% and 36% for large configuration files when using the parser cache.

The parser cache is enabled by default on all platforms using Cisco IOS 12.1(5)T or later. A new command, **[no] parser cache**, allows the disabling or re-enabling of this feature.

No New Software Features in Cisco IOS Release 12.1(3)T

There are no new software features supported by the Cisco 800 series routers for Release 12.1(3)T.

New Software Features in Cisco IOS Release 12.1(2)T

The following new software features are supported by the Cisco 800 series routers for Release 12.1(2)T:

Common Application Programming Interface (CAPI)

The CAPI is an application programming interface standard used to access ISDN equipment connected to Basic Rate Interfaces (BRIs) and Primary Rate Interfaces (PRIs). RAPI is the CAPI feature configured remotely from a PC client.

The framing protocols supported by CAPI include High-Level Data Link Control (HDLC), HDLC inverted, bit transparent (speech), and V.110 synchronous/asynchronous.

CAPI integrates the following data link and network layer protocols:

- Link Access Procedure on the D-channel (LAPD) in accordance with Q.921 for X.25 D-channel implementation
- Point-to-Point Protocol (PPP)
- ISO 8208 (X.25 DTE-DTE)
- X.25 DCE, T.90NL, and T.30 (fax group 3)

CAPI supports the following features:

- Basic call features, such as call setup and tear-down
- Multiple B channels for data and voice connections
- Multiple logical data link connections within a physical connection
- Selection of different services and protocols during connection setup and on answering incoming calls
- Transparent interface for protocols above Layer 3
- One or more BRIs as well as PRI on one or more Integrated Services Digital Network (ISDN) adapters
- Multiple applications
- Operating-systems-independent messages
- Operating-system-dependent exchange mechanism for optimum operating system integration
- Asynchronous event-driven mechanism, resulting in high throughput
- Well-defined mechanism for manufacturer-specific extensions
- Multiple supplementary services

No New Software Features in Cisco IOS Release 12.1(1)T

There are no new software features supported by the Cisco 800 series in Cisco IOS Release 12.1(1)T.

Limitations and Restrictions

MIBs

Old Cisco Management Information Bases (MIBs) will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs—without affecting existing Cisco IOS products or NMS applications. You can update from deprecated MIBs to the replacement MIBs as shown in Table 7.

Table 7 *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be decided
OLD-CISCO-DECNET-MIB	To be decided
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be decided
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be decided
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be decided



Note

Cisco Management Information Base (MIB) User Quick Reference is no longer published. If you have an account with Cisco.com, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to Cisco.com, press **Login**, and click **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Important Notes

The following sections contain important notes about Cisco IOS Release 12.1 T that can apply to the Cisco 800 series routers.

Last Maintenance Release of Cisco IOS Release 12.1 T

The last maintenance release of the 12.1 T release train is 12.1(5)T. The migration path for customers who need bug fixes for the 12.1 T features is the 12.2 mainline release. The 12.2 mainline release has the complete feature content of 12.1 T and will eventually reach general deployment (GD).

The last maintenance release was renamed from 12.1(4)T to 12.1(5)T to synchronize with its parent software base, the 12.1(5) mainline release, and to reflect that 12.1(5)T has all the bug fixes of the 12.1(5) mainline release. The 12.1 T release train is a superset of the 12.1 mainline release; hence any defect fixed in the 12.1 mainline is also fixed in 12.1 T. The set of features for 12.1(4)T is the same as that for 12.1(5)T. There was no change in the feature content of the release. The release was renamed so that the releases would be consistent with the Cisco release process.

Caveat CSCdr91706 and IOS HTTP Vulnerability

A defect in multiple releases of Cisco IOS software will cause a Cisco router or switch to halt and reload if the IOS HTTP service is enabled, browsing to `http://router-ip/anytext?/` is attempted, and the enable password is supplied when requested. This defect can be exploited to produce a denial of service (DoS) attack.

The vulnerability, identified as Cisco bug ID CSCdr91706, affects virtually all mainstream Cisco routers and switches running Cisco IOS software releases 12.0 through 12.1, inclusive. This is not the same defect as CSCdr36952.

The vulnerability has been corrected and Cisco is making fixed releases available for free to replace all affected IOS releases. Customers are urged to upgrade to releases that are not vulnerable to this defect as shown in detail below.

This vulnerability can only be exploited if the enable password is known or not set.

You are strongly encouraged to read the complete advisory, which is available at <http://www.cisco.com/warp/public/707/ioshttpserverquery-pub.shtml>.

Caller-ID Command

When using the **caller-id** command, which appears under “dial-peer” in the configuration commands, the default setting is “off” for Japan and “on” for the U.S. This command was introduced in Cisco IOS Release 12.1(2)XF.

DHCP Client Support

Perform the following steps to configure the router for DHCP client support:

- Step 1** Configure the BVI interface by entering the command **ip address dhcp client-id Ethernet 0**.
- Specifying the value **client-id ethernet0** causes that the MAC address of the Ethernet interface to be used as the client ID when the DHCP request is sent. Otherwise, the MAC address of the BVI interface is used as the client ID.
- Step 2** Configure NAT:
- Configure the BVI interface by entering the **nat outside** command.
 - Configure the Ethernet interface by entering the **nat inside** command.
 - Create an access list under NAT by entering the **access-list 1 permit ip address** command to match all Ethernet IP addresses.
 - Configure the source list under NAT by entering the command **ip nat inside source list 1 interface BVI 1 overload**.

Sample Configuration

```
Current configuration:
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname c827
!
!
ip subnet-zero
ip dhcp excluded-address 10.10.10.1
!
ip dhcp pool SERVER
network 10.10.10.0 255.255.255.0
default-router 10.10.10.1
import all
!
!
!
bridge irb
!
!
!
!
interface Ethernet0
ip address 10.10.10.1 255.255.255.0
no ip directed-broadcast
ip nat inside
!
```

```

interface ATM0
no ip address
no ip directed-broadcast
no atm ilmi-keepalive
bundle-enable
hold-queue 208 in
!
interface ATM0.1 point-to-point
no ip directed-broadcast
pvc 1/100
    encapsulation aal5snap
!
bridge-group 1
!
interface ATM0.2 point-to-point
ip address 5.0.0.2 255.0.0.0
no ip directed-broadcast
pvc 1/101
    protocol ip 5.0.0.1 broadcast
    protocol ip 5.0.0.5 broadcast
    encapsulation aal5snap
!
!
interface BVI1
ip address dhcp client-id Ethernet0
no ip directed-broadcast
ip nat outside
!
ip nat inside source list 1 interface BVI1 overload
ip classless
ip route 0.0.0.0 0.0.0.0 BVI1
no ip http server
!
access-list 1 permit 10.10.10.0 0.0.0.255
bridge 1 protocol ieee
bridge 1 route ip
!
voice-port 1
timing hookflash-in 0
!
voice-port 2
timing hookflash-in 0
!
voice-port 3
timing hookflash-in 0
!
voice-port 4
timing hookflash-in 0
!
!
line con 0
exec-timeout 0 0
transport input none
stopbits 1
line vty 0 4
password lab
login
!
scheduler max-task-time 5000
end

```

Downloading Images

Delete files in the router Flash memory before attempting to download new images.



Caution

Use the **delete** command, not **erase**, to free up space. Entering **erase** removes all files, including the configuration.

Flash Memory

Cisco 800 series routers use 4 MB of Flash memory for storing internal information such as the ROM monitor. Only the remainder of the Flash memory is available for storing Cisco IOS images and is displayed by using the command **show flash**. For example, if the router reports 8 MB of Flash, the actual amount of onboard Flash memory is 12 MB, even though only 8 MB are displayed and available for Cisco IOS image storage.

Multilink PPP and Interleaving

Multilink PPP fragments large data packets to allow small voice packets to be interleaved between them. However, apart from first-in-first-out (FIFO) queuing, no other kind of output queuing mechanisms are currently supported with PPP over ATM. Consequently, when multilink PPP is configured on the Cisco 800 series routers, large packets are fragmented, but small voice packets are not interleaved between them.

NAT Support for H.323 Signaling

NAT does not support alerting H.225 messages; therefore, NAT communication cannot be established between router end points. NAT support for H.323 signaling is limited to the application Netmeeting.

PPP over AAL5SNAP Encapsulation Support

PPP over AAL5SNAP encapsulation is currently not supported, although the context-sensitive help mentions that it can be configured.

Cisco 800 Series Images Released in 12.1(2)T

Cisco IOS Release 12.1(1)T did not release Cisco 800 series images (c800-*-mw, c805-*-mw). Release 12.1(2)T is the first 12.1 T release that supports the Cisco 800 series images.

Cisco 800 Series Router Clock—CSCdp09409

To run IPSec successfully, the Cisco 800 series router clock needs to be set accurately. Cisco 800 series router clocks are set and maintained using Simple Network Time Protocol (SNTP). For best results, set up a Network Time Protocol (NTP) server to periodically send time information messages to Cisco 800

series routers. See the SNTP configuration and command reference documentation for configuration instructions. If you do not have an NTP server, you must reset the Cisco 800 series router clock using the **clock set** command each time you restart the router.

The SNTP configuration documentation is available in the chapter “Monitoring the Router and Network” in the “System Management” volume of the *Configuration Fundamentals Configuration Guide* in the Cisco IOS documentation set.

The SNTP command reference documentation is available in the chapter “Router and Network Monitoring Commands” in the “System Management Commands” volume of the *Configuration Fundamentals Command Reference* manual in the Cisco IOS documentation set.

Dial Peer Limitation

The **isdn answer1** and **isdn answer2** commands determine which called telephone number (for example, 555-1111 and 555-2222) a Cisco 800 series router can answer. Using these commands limits a router to using the two dial peers that contain the telephone numbers 555-1111 and 555-2222. (When not using these commands, a router can use up to six dial peers.)

A sample scenario in which the **isdn answer1** and **isdn answer2** commands are used is when a Cisco 801 or Cisco 803 router is connected with other ISDN devices to an ISDN S-bus.

Excessive ISDN Line Activation

The following protocols send updates that can cause an ISDN line to be activated excessively thereby increasing your monthly ISDN line cost:

- IP
- User Datagram Protocol (UDP)
- IPX
- Cisco Discovery Protocol (CDP)
- Simple Network Time Protocol (SNTP)

For information on preventing this situation, refer to the *Cisco 800 Series Routers Software Configuration Guide*. This guide contains information on setting up extended access lists to prevent IP, UDP, IPX, and SNTP updates from activating the ISDN line. For CDP, make certain that you enter the **no cdp enable** command to disable CDP.

Hanging During Boot

If an illegal console configuration is issued to the router, the console will then fail the POST test during boot and cause the router to hang. There is no way to recover a unit in this state except for pulling the soldered boot flash and re-burning the boot ROM.

This problem has been resolved in TinyROM version 1.0(3), a downloadable ROM upgrade available from Cisco.com. Please contact Cisco to upgrade to this version or later, and prevent this problem from occurring.

Phone Mate Answering Machine Model 9200

A Phone Mate answering machine model 9200 failed to recognize the ringing signal sent by AMD R79 ringing SLIC. This was confirmed by testing against Phone Mate model 3750 and newer model 9300.

B Channel Activation

When a call comes in, a B channel is activated. If the amount of traffic on the B channel exceeds a threshold, the other B channel is activated. If the amount of traffic falls below the threshold, one of the B channels is deactivated. The B channel that is initially activated when the call comes in is not necessarily B1 nor is the B channel that is deactivated when the traffic level lessens necessarily B2.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

For information on caveats in Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T*.

All caveats in Cisco IOS Release 12.1 are also in Cisco IOS Release 12.1 T.

For information on caveats in Cisco IOS Release 12.1, see *Caveats for Cisco IOS Release 12.1*, which lists severity 1 and 2 caveats and is located on Cisco.com and the Documentation CD-ROM.



Note

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools>.

Caveats for Release 12.1(2)T

This section describes possibly unexpected behavior by Release 12.1(2)T, specific to the Cisco 800 series routers. Only severity 1 and 2 caveats are included.

CSCdp62196

If a Cisco 804 router is running the Cisco IOS Release 12.0(4)T1 IP image and using an electrical phone plugged into a plain old telephone service (POTS) port with the ISDN line provisioned with US Caller ID, the router might have intermittent ringing problems.

This caveat has been resolved in Cisco IOS Release 12.1(3)T.

CSCdr36952

A defect in Cisco IOS software will cause a Cisco router or switch to halt and reload if the IOS HTTP service is enabled and browsing to “[The vulnerability, identified as Cisco bug ID CSCdr36952, affects virtually all mainstream Cisco routers and switches running Cisco IOS Releases 11.1 through 12.1, inclusive. The vulnerability has been corrected, and Cisco is making fixed releases available to replace all affected IOS releases. Customers are urged to upgrade to releases that are not vulnerable to this defect as shown in detail below.](http://<router-ip>/%%” is attempted. This defect can be exploited to produce a denial of service (DoS) attack.</p></div><div data-bbox=)

The vulnerability can be mitigated by disabling the IOS HTTP server, using an access-list on an interface in the path to the router to prevent unauthorized network connections to the HTTP server, or applying an access-class option directly to the HTTP server itself. The IOS HTTP server is enabled by default only on Cisco 1003, 1004, and 1005 routers that are not configured. In all other cases, the IOS http server must be explicitly enabled in order to exploit this defect.

The complete advisory, including software fixes and workarounds, is available at:

<http://www.cisco.com/warp/public/707/ioshttpserver-pub.shtml>

Related Documentation

The following sections describe the documentation available for the Cisco 800 series routers. 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 printed manuals or electronic documents, except for feature modules, which are available online on Cisco.com and the Documentation CD-ROM.

Use these release notes with these documents:

- Release-Specific Documents, page 29
- Platform-Specific Documents, page 30
- Feature Modules, page 31
- Cisco IOS Software Documentation Set, page 31

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.1 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.1*

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Release Notes: Cross-Platform Release Notes

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Release Notes: Cross-Platform Release Notes

- Product bulletins, field notices, and other release-specific documents on Cisco.com at:

Technical Documents

- *Caveats for Cisco IOS Release 12.1*

See *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.1 and Release 12.1 T.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Caveats



Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools>.

Platform-Specific Documents

Cisco 801–804 Routers

These individual and groups of documents are available for the Cisco 801–804 routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 800 Series Router Quick Start Guide*
- *Cisco 800 Series Routers Hardware Installation Guide*
- *Cisco 800 Series Routers Software Configuration Guide*
- Release notes for Cisco 800 series routers
- *Installing and Configuring Cisco 802 IDSL and Cisco 804 IDSL Routers*
- Configuring Cisco IOS software features
- *Cisco 800 Fast Step Quick Start Guide*
- Regulatory compliance and safety information
- Upgrading memory in the Cisco 800 series routers

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Access Routers: Fixed Access Routers: Cisco 801–804 Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Fixed Access Routers: Cisco 801–804 Routers

Cisco 805 Router

These individual and groups of documents are available for the Cisco 805 routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 805 Router Hardware Installation Guide*
- *Quick Start Guide - Setting Up the Cisco 805 Router*
- Regulatory compliance and safety info for the Cisco 805 router
- Release notes for the Cisco 805 router
- *Cisco 805 Router Software Configuration Guide*
- Upgrading memory in the Cisco 800 series routers

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Access Routers: Fixed Access Routers: Cisco 805 Router

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Fixed Access Routers: Cisco 805 Router

Cisco 811 and 813 Routers

These documents are available for the Cisco 811 and 813 Routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 811 and Cisco 813 Routers Hardware Installation Guide*
- *Quick Start Guide: Setting Up Cisco 811 and Cisco 813 Routers*
- *Cisco 800 Series Routers Software Configuration Guide*
- Release Notes for Cisco 800 Routers

On Cisco.com at:

Technical Documents: Documentation Home Page: Access Servers and Access Routers: Fixed Configuration Access Routers: Cisco 811 and Cisco 813 Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Fixed Configuration Access Routers: Cisco 811 and Cisco 813 Routers

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1 T and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated in the next printing of the Cisco IOS documentation set.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation

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 the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, 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.

On Cisco.com and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

Cisco IOS Release 12.1 Documentation Set

Table 8 describes the contents of the Cisco IOS Release 12.1 software documentation set, which is available in electronic form and in printed form ordered.



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.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1

Table 8 Cisco IOS Software Release 12.1 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS System Management
<ul style="list-style-type: none"> <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume I</i> <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume II</i> 	Using Cisco IOS Software Overview of SNA Internetworking Bridging IBM Networking

Table 8 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Services Configuration Guide: Terminal Services</i> • <i>Cisco IOS Dial Services Configuration Guide: Network Services</i> • <i>Cisco IOS Dial Services Command Reference</i> 	<ul style="list-style-type: none"> Preparing for Dial Access Modem Configuration and Management ISDN and Signalling Configuration PPP Configuration Dial-on-Demand Routing Configuration Dial-Backup Configuration Terminal Service Configuration Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Interworking Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	<ul style="list-style-type: none"> Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces
<ul style="list-style-type: none"> • <i>Cisco IOS IP and IP Routing Configuration Guide</i> • <i>Cisco IOS IP and IP Routing Command Reference</i> 	<ul style="list-style-type: none"> IP Addressing and Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	<ul style="list-style-type: none"> AppleTalk and Novell IPX Overview Configuring AppleTalk Configuring Novell IPX
<ul style="list-style-type: none"> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i> 	<ul style="list-style-type: none"> Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS
<ul style="list-style-type: none"> • <i>Cisco IOS Multiservice Applications Configuration Guide</i> • <i>Cisco IOS Multiservice Applications Command Reference</i> 	<ul style="list-style-type: none"> Multiservice Applications Overview Voice Video Broadband
<ul style="list-style-type: none"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	<ul style="list-style-type: none"> Quality of Service Overview Classification Congestion Management Congestion Avoidance Policing and Shaping Signalling Link Efficiency Mechanisms Quality of Service Solutions

Table 8 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i> 	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NetFlow Switching MPLS Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	Wide-Area Networking Overview Configuring ATM Configuring Frame Relay Configuring Frame Relay-ATM Interworking Configuring SMDS Configuring X.25 and LAPB
<ul style="list-style-type: none"> • <i>New Features in 12.1-Based Limited Lifetime Releases</i> • <i>New Features in Release 12.1 T</i> • Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms) • <i>Cisco IOS Debug Command Reference</i> • <i>Cisco IOS Dial Services Quick Configuration Guide</i> 	



Note

Cisco Management Information Base (MIB) User Quick Reference is no longer published. If you have an account with Cisco.com, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to Cisco.com, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Obtaining Documentation

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.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 is updated monthly. Therefore, it is probably more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Registered Cisco.com users can order the Documentation CD-ROM and other Cisco Product documentation through our online Subscription Services at <http://www.cisco.com/cgi-bin/subcat/kaojump.cgi>.

Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco's corporate headquarters (California, USA) at 408 526-4000 or, in North America, call 800 553-NETS (6387).

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Warranty or maintenance contract customers can use the Technical Assistance Center. All customers can submit technical feedback on Cisco documentation using the web, e-mail, a self-addressed stamped response card included in many printed documents, or by sending mail to Cisco.

Cisco.com

Cisco continues to revolutionize how business is done on the Internet. 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's broad range of features and services helps customers and partners to streamline business processes and improve productivity. Through Cisco.com, you will find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online support services, 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 to obtain additional personalized information and services. Registered users may order products, check on the status of an order and view benefits specific to their relationships with Cisco.

You can access Cisco.com in the following ways:

- WWW: www.cisco.com
- Telnet: cco.cisco.com
- Modem using standard connection rates and the following terminal settings: VT100 emulation; 8 data bits; no parity; and 1 stop bit.
 - From North America, call 408 526-8070
 - From Europe, call 33 1 64 46 40 82

You can e-mail questions about using Cisco.com to cco-team@cisco.com.

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to warranty or maintenance contract customers who need technical assistance with a Cisco product that is under warranty or covered by a maintenance contract.

To display the TAC web site that includes links to technical support information and software upgrades and for requesting TAC support, use www.cisco.com/techsupport.

To contact by e-mail, use one of the following:

Language	E-mail Address
English	tac@cisco.com
Hanzi (Chinese)	chinese-tac@cisco.com
Kanji (Japanese)	japan-tac@cisco.com
Hangul (Korean)	korea-tac@cisco.com
Spanish	tac@cisco.com
Thai	thai-tac@cisco.com

In North America, TAC can be reached at 800 553-2447 or 408 526-7209. For other telephone numbers and TAC e-mail addresses worldwide, consult the following web site: <http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>.

Software Configuration Tips on the Cisco Technical Assistance Center Home Page

If you have a Cisco.com log-in account, you can access the following URL, which contains links and tips on configuring your Cisco products:

http://www.cisco.com/public/technotes/tech_sw.html

This URL is subject to change without notice. If it changes, point your Web browser to Cisco.com, press **Login**, and click on this path: **Technical Assistance Center: Technical Tips**.

The following sections are provided from the Technical Tips page:

- **Access Dial Cookbook**—Contains common configurations or recipes for configuring various access routes and dial technologies.
- **Field Notices**—Notifies you of any critical issues regarding Cisco products and includes problem descriptions, safety or security issues, and hardware defects.
- **Frequently Asked Questions**—Describes the most frequently asked technical questions about Cisco hardware and software.
- **Hardware**—Provides technical tips related to specific hardware platforms.
- **Hot Tips**—Describes popular tips and hints gathered from the Cisco Technical Assistance Center (TAC). Most of these documents are available from the TAC Fax-on-demand service. To reach Fax-on-demand and receive documents at your fax machine from the United States, call 888-50-CISCO (888-502-4726). From other areas, call 650-596-4408.
- **Internetworking Features**—Lists tips on using Cisco IOS software features and services.
- **Sample Configurations**—Provides actual configuration examples that are complete with topology and annotations.

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 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.

This document is to be used in conjunction with the documents listed in the “Related Documentation” section on page 28.

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