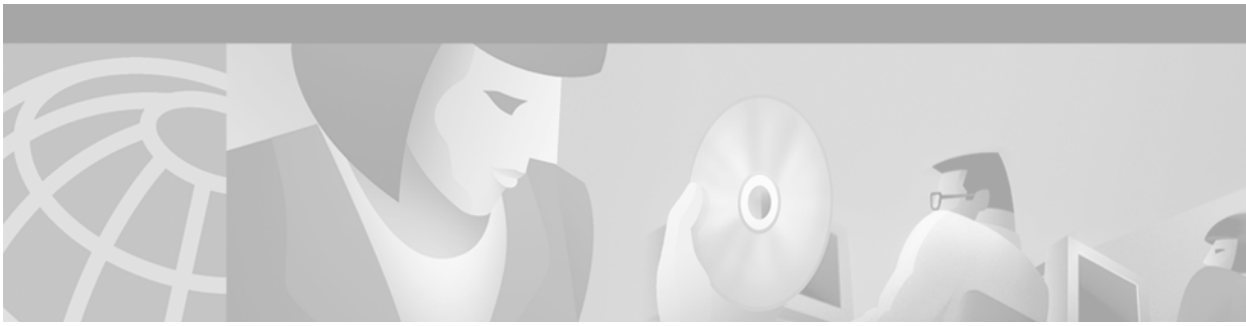

Release Notes for the Cisco 800 Series Routers for Cisco IOS Release 12.1(3)XG

February 20, 2002

These release notes describe new features and significant software components for the Cisco 800 Series Routers that support Cisco IOS Release 12.1(2)XG6. These release notes are updated as needed to describe new memory requirements, new features, new hardware support, software platform deferrals, microcode or modem code changes, related document changes, and any other important changes. Use these release notes with the C*ross-Platform Release Notes for Cisco IOS Release 12.1* located on Cisco.com and the Documentation CD-ROM.

For a list of the software caveats that apply to Release 12.1(3)XG6, refer to the section "Caveats" and to the online *Caveats for Cisco IOS Release 12.1 T* document. The caveats document is updated for every 12.1 T maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Contents

These release notes discuss the following topics:

CISCO SYSTEMS

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

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System Requirements

This section describes the system requirements for Release 12.1(3)XG6 and includes the following sections:

- Memory Requirements
- Hardware Supported, page 3
- Determining Your Software Release, page 5
- Upgrading to a New Software Release, page 5
- Feature Set Tables, page 6

Memory Requirements

This section describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.1(3)XG6 on the Cisco 800 Series Routers.

Table 1 Memory Requirements for the Cisco 800 Series Routers

Platforms	Image Name	Image	Required Flash Memory	Required DRAM Memory	Runs From
Cisco 801–804 routers	Cisco 800 Series IOS IP	c800-y6-mw	8 MB	4 MB	RAM
	Cisco 800 Series IOS IP Plus	c800-sy6-mw	8 MB	8 MB	RAM
	Cisco 800 Series IOS IP/FW	c800-oy6-mw	8 MB	4 MB	RAM
	Cisco 800 Series IOS IP/FW Plus IPSec 56	c800-osy656i-mw	8 MB	12 MB	RAM
	Cisco 800 Series IOS IP/IPX Plus	c800-nsy6-mw	8 MB	8 MB	RAM
	Cisco 800 Series IOS IP/IPX/FW Plus IPSec 56	c800-nosy656i-mw	8 MB	12 MB	RAM
	Cisco 800 Series IOS IP/FW Plus IPSec 3DES	c800-k2osy6-mw	8 MB	12 MB	RAM
	Cisco 800 Series IOS IP/IPX/FW Plus IPSec 3DES	c800-k2nosy6-mw	8 MB	12 MB	RAM
Cisco 805 routers	Cisco 805 Series IOS IP	c805-y6-mw	4 MB	8 MB	RAM
	Cisco 805 Series IOS IP Plus	c805-sy6-mw	4 MB	8 MB	RAM
	Cisco 805 Series IOS IP/FW	c805-oy6-mw	4 MB	8 MB	RAM
	Cisco 805 Series IOS IP/FW Plus IPSec 56	c805-osy656i-mw	8 MB	12 MB	RAM
	Cisco 805 Series IOS IP/IPX Plus	c805-nsy6-mw	8 MB	8 MB	RAM
	Cisco 805 Series IOS IP/IPX/FW Plus IPSec 56	c805-nosy656i-mw	8 MB	12 MB	RAM

Table 1 Memory Requirements for the Cisco 800 Series Routers

Platforms	Image Name	Image	Required Flash Memory	Required DRAM Memory	Runs From
Cisco 805 routers (continued)	Cisco 805 Series IOS IP/FW Plus IPSec 3DES	c805-k2osy6-mw	8 MB	12 MB	RAM
	Cisco 805 Series IOS IP/IPX/FW Plus IPSec 3DES	c805-k2nosy6-mw	8 MB	12 MB	RAM
Cisco 827 and Cisco 827-4V routers	Cisco 820 Series IOS IP	c820-y6-mz	8 MB	16 MB	RAM
	Cisco 820 Series IOS IP/Voice	c820-v6y6-mz	8 MB	24 MB	RAM
	Cisco 820 Series IOS IP/FW Plus IPSec 56	c820-osy656i-mz	8 MB	16 MB	RAM
	Cisco 820 Series IOS IP/FW/Voice Plus IPSec 56	c820-osv6y656i-mz	8 MB	24 MB	RAM
	Cisco 820 Series IOS IP/IPX/Voice Plus	c820-nsv6y6-mz	8 MB	24 MB	RAM
	Cisco 820 Series IOS IP/FW Plus IPSec 3DES	c820-k2osy6-mz	8 MB	24 MB	RAM
	Cisco 820 Series IOS IP/IPX/FW Plus IPSec 3DES	c820-k2nosy6-mz	8 MB	24 MB	RAM
	Cisco 820 Series IOS IP/FW/Voice Plus IPSec 3DES	c820-k2nosv6y6-mz	8 MB	24 MB	RAM

Hardware Supported

Cisco IOS Release 12.1(3)XG6 supports the following Cisco 800 series routers:

- Cisco 801–804
- Cisco 805
- Cisco 827 and Cisco 827-4V

For detailed descriptions of new hardware features, see New and Changed Information, page 17.

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 or fax machines, which are connected to telephone services through an ISDN line.
- Flash memory: Default is 8 MB, expandable to 12 MB. (4MB Flash soldered to the motherboard.)

Note To add additional Flash memory to the Cisco 801-804, you will remove the existing Flash card and install a 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. Table 2 summarizes Cisco 805 router ports.

Table 2 Cisco 805 Router Ports

Port Type	Description
Ethernet Port	One 10BaseT (RJ-45)
Serial Port	One WAN interface (RS-232, RS-449, RS-530 and RS-530A, V.35, and X.21)
Console Port	RJ-45

The Cisco 805 router 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: 4 MB default, expandable to 12 MB.
- Dynamic RAM: 8 MB, expandable to 16 MB.
- Color-coded ports and cable reduce the chance of cabling errors.
- Routers can be stacked or mounted on a wall.

Cisco 827 and Cisco 827-4V Routers

The Cisco 827 and Cisco 827-4V Series Routers provide the following key hardware features:

- The routers provide connection to an ADSL network or telephones and fax machines through an ADSL port.
- Flash memory: Default is 12 MB and is expandable to 20 MB. If 12 MB is Flash is installed, 8 MB is used for the Cisco IOS images and 4 MB hosts the ROMMON and NVRAM. Additional memory can be added using Flash cards.
- Cisco 827 Router Dynamic RAM: Default is 16 MB of DRAM and is expandable to 32 MB.
- Cisco 827-4V Router Dynamic RAM: Default is 24 MB and is expandable to 32 MB. The Cisco 827-4V Router also contains an 8-MB DIMM card.
- The central processing unit is a 50 MHz MPC 855T RISC processor.
- Color-coded ports and cable reduce the chance of cabling errors.
- Routers can be stacked or mounted on a wall.
- The routers provide locking power connectors and a Kensington-compatible locking slot.

Table 3 lists the supported interfaces for the Cisco 827 and Cisco 827-4V routers.

Table 3 Supported Interfaces for the Cisco 827 and Cisco 827-4V Router

Router	Ethernet Ports	ADSL Ports	Telephone Ports	Console Ports
Cisco 827	One 10BaseT (RJ-45)	RJ-45	–	RJ-45
Cisco 827-4V	One 10BaseT (RJ-45)	RJ-45	Four (RJ-11)	RJ-45

Determining Your Software Release

To determine the version of Cisco IOS software currently running on your Cisco 800 series router, log in to the router and enter the **show version** EXEC command. The following sample output from the **show version** command indicates the version number on the second output line:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 800 Software (c800-y6-mw), Version 12.1(3)XG6, RELEASE SOFTWARE
```

Additional command output lines include more information, such as processor revision numbers, memory amounts, hardware IDs, and partition information.

Upgrading to a New Software Release

For information about upgrading to a new software release, refer to the *Cisco IOS Upgrade Ordering Instructions* product bulletin located at the following URL: http://www.cisco.com/warp/public/cc/cisco/mkt/ios/prodlit/957_pp.htm.

Alternatively, the Cisco IOS Software page on Cisco.com has a variety of information, including upgrade information, organized by release. If you have a Cisco.com account and log in, you can go directly to: http://www.cisco.com/kobayashi/sw-center/sw-ios.shtml.

If you have a Cisco.com account and log in, you can reach the new software release upgrade page by going to www.cisco.com and following this path: **Service & Support**: **Software Center**: **Cisco IOS Software**: **Product Bulletins**: **Software**: **General System Software Bulletins**: **Cisco IOS Upgrade Ordering Instructions, No. 957**

You can also reach the Cisco **IOS Upgrade Planner**, which allows you more flexibility to browse for your preferred software, by going to www.cisco.com and following this path: **Service & Support**: **Software Center**: **IOS Upgrade Planner**.

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. Release 12.1(3)XG6 supports the same feature sets as Releases 12.1 and 12.1 T, but Release 12.1(3)XG6 can include new features supported by the Cisco 800 Series Routers. Table 4 lists the feature sets supported by the Cisco 800 Series Routers.

Table 4 Feature Sets Supported by the Cisco 800 Series Routers

Image Name	Feature Set Matrix Terms	Software Image	Platform
Cisco 800 Series IOS IP	IP	c800-y6-mw	Cisco 801–804 routers
Cisco 800 Series IOS IP Plus	IP, Plus	c800-sy6-mw	
Cisco 800 Series IOS IP/FW	IP, FW	c800-oy6-mw	
Cisco 800 Series IOS IP/FW Plus IPSec 56	IP, FW, Plus, IPSec 56	c800-osy656i-mw	
Cisco 800 Series IOS IP/IPX Plus	IP, IPX, Plus	c800-nsy6-mw	
Cisco 800 Series IOS IP/IPX/FW Plus IPSec 56	IP, IPX, FW, Plus, IPSec 56	c800-nosy656i-mw	
Cisco 800 Series IOS IP/FW Plus IPSec 3DES	IP, FW, Plus, IPSec, 3DES	c800-k2osy6-mw	
Cisco 800 Series IOS IP/IPX/FW Plus IPSec 3DES	IP, IPX, FW, Plus, IPSec, 3DES	c800-k2nosy6-mw	
Cisco 805 Series IOS IP	IP	c805-y6-mw	Cisco 805 routers
Cisco 805 Series IOS IP Plus	IP, Plus	c805-sy6-mw	
Cisco 805 Series IOS IP/FW	IP, FW	c805-oy6-mw	
Cisco 805 Series IOS IP/FW Plus IPSec 56	IP, FW, Plus, IPSec 56	c805-osy656i-mw	
Cisco 805 Series IOS IP/IPX Plus	IP, IPX, Plus	c805-nsy6-mw	
Cisco 805 Series IOS IP/IPX/FW Plus IPSec 56	IP, IPX, FW, Plus, IPSec 56	c805-nosy656i-mw	
Cisco 805 Series IOS IP/FW Plus IPSec 3DES	IP, FW, Plus, IPSec, 3DES	c805-k2osy6-mw	
Cisco 805 Series IOS IP/IPX/FW Plus IPSec 3DES	IP, IPX, FW, Plus, IPSec, 3DES	c805-k2nosy6-mw	
Cisco 820 Series IOS IP	IP	c820-y6-mz	Cisco 827 and Cisco 827-4V routers
Cisco 820 Series IOS IP/Voice	IP, Voice	c820-v6y6-mz	
Cisco 820 Series IOS IP/FW Plus IPSec 56	IP, FW, Plus, IPSec 56	c820-osy656i-mz	
Cisco 820 Series IOS IP/FW/Voice Plus IPSec 56	IP, FW, Voice, Plus, IPSec 56	c820-osv6y656i-mz	
Cisco 820 Series IOS IP/IPX/Voice Plus	IP, IPX, Voice, Plus	c820-nsv6y6-mz	
Cisco 820 Series IOS IP/FW Plus IPSec 3DES	IP, FW, Plus, IPSec, 3DES	c820-k2osy6-mz	
Cisco 820 Series IOS IP/IPX/FW Plus IPSec 3DES	IP, IPX, FW, Plus, IPSec, 3DES	c820-k2nosy6-mz	
Cisco 820 Series IOS IP/FW/Voice Plus IPSec 3DES	IP, FW, Voice, Plus, IPSec, 3DES	c820-k2nosv6y6-mz	

Table 5 and Table 6 list the features and feature sets supported by the Cisco 801–804 routers in Cisco IOS Release 12.1(3)XG6. Table 7 lists the features and feature sets supported by the Cisco 805 routers in Cisco IOS Release 12.1(3)XG6. Table 8 lists the features and feature sets supported by the Cisco 827 and Cisco 827-4V routers in Cisco IOS Release 12.1(3)XG6.

Each table uses 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 only contain a selected list of features. These tables are not cumulative—nor do they list all the features in each image.

Table 5 Feature List by Feature Set for the Cisco 801–804 Routers

Features	In	Feature Set							
		IP	IP/Plus	IP/FW	IP/FW/Plus/ IPSec 56	IP/IPX/ Plus	IP/IPX/ FW/Plus/ IPSec 56	IP/FW/ Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
Address Conservation									
PAT (NAT Overload)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT with H.323		No	No	No	No	No	No	No	No
Advanced Telephone Features[1]									
Call Forward (Sweden and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Forward Variable (North America, Denmark, and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Hold Retrieve (North America, Denmark, and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Transfer (North America and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call Waiting		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Caller ID Number delivery to POTS ports (North America, Denmark, Sweden, and Finland only)		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Caller ID Name delivery to POTS ports (North America only)		No	No	No	No	No	No	No	No

Table 5 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set							
		IP	IP/Plus	IP/FW	IP/FW/Plus/ IPSec 56	IP/IPX/ Plus	IP/IPX/ FW/Plus/ IPSec 56	IP/FW/ Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
Caller ID Restriction (Denmark, Finland, and Sweden only)	(3)XG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calling Line Identification Restriction (CLIR) – Temporary Mode (Denmark and Finland only)	(3)XG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data-Over-Voice Bearer (North America only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distinctive Ringing		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
ISDN-Voice Priority		Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Prefix Dialing[2]	(3)XG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Basic Services									
GRE Tunneling		No	Yes	No	Yes	Yes	Yes	Yes	Yes
NAT		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PAP, CHAP, MSCHAP, Local Password		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial									
Common Application Programming Interface (CAPI)	(2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ease of Use and Deployment									
Auto SPID / Switch Detection		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Cisco ConfigMaker		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Cisco FastStep		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Easy IP Phase I and II (IPCP Address Negotiation and DHCP Server)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client and Server		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
IP Routing Protocols									
OSPF Flooding Reduction	(2)	No	No	No	No	No	No	No	No
LAN									
AppleTalk		No	No	No	No	No	No	No	No
IP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX		No	No	No	No	No	Yes	No	No

Table 5 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set							
		IP	IP/Plus	IP/FW	IP/FW/Plus/ IPSec 56	IP/IPX/ Plus	IP/IPX/ FW/Plus/ IPSec 56	IP/FW/ Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
NetBIOS Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Transparent Bridging		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management									
Cisco View		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Service Assurance Agent	(3)XG	No	Yes	No	Yes	Yes	Yes	Yes	Yes
SNMP, Telnet, Console Port		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNTP		Yes	Yes	Yes	Yes	No	Yes	No	No
Syslog		No	Yes	No	Yes	Yes	Yes	Yes	Yes
Routing									
BGP		No	No	No	No	No	No	No	No
EGP		No	No	No	No	No	No	No	No
IGRP		No	No	No	No	No	No	No	No
IP Enhanced IGRP (IP-EIGRP)		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IPX Enhanced IGRP (IPX-EIGRP)		No	No	No	No	No	No	No	No
IP Multicast (relay only)		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IP-Policy Routing		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IPXWAN		No	No	No	No	Yes	Yes	No	Yes
OSPF		No	No	No	No	No	No	No	No
RIP, RIPv2, Triggered RIP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
XOT		No	No	No	No	No	No	No	No
Security									
AAA Radius		No	No	No	No	No	No	No	No
AAA TACACS+		No	Yes	No	Yes	No	Yes	No	No
Additional Vendor-Proprietary RADIUS Attributes		No	No	No	No	No	No	No	No
Authenticating ACL		No	No	No	No	No	No	No	No
Automated Double Authentication (server functionality)		No	No	No	No	No	No	No	No
Certificate Authority Interoperability		No	No	No	Yes	No	Yes	Yes	Yes
Internet Key Exchange Security Protocol		No	No	No	Yes	No	Yes	Yes	Yes

Table 5 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set							
		IP	IP/Plus	IP/FW	IP/FW/Plus/ IPSec 56	IP/IPX/ Plus	IP/IPX/ FW/Plus/ IPSec 56	IP/FW/ Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
IPSec Network Security		No	No	No	Yes	Yes	Yes	Yes	Yes
IOS Firewall Phase I									
– Context Based Access Control Lists		No	No	Yes	Yes	No	Yes	Yes	Yes
– Java Blocking		No	No	Yes	Yes	No	Yes	Yes	Yes
– Denial of Service Detection and Prevention		No	No	Yes	Yes	No	Yes	Yes	Yes
– Real-time Alerts and Audit Trails		No	No	Yes	Yes	No	Yes	Yes	Yes
IPSec Encryption with 56 bit DES		No	No	No	Yes	No	Yes	No	No
IPSec Encryption with 168 bit DES (3DES)		No	No	No	No	No	No	Yes	Yes
Lock and Key		Yes	Yes	Yes	Yes	No	Yes	No	No
LT2P		No	No	No	Yes	No	Yes	Yes	Yes
Named Method Lists for AAA Authentication & Accounting		No	No	No	No	No	No	No	No
Route and Router Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Token Card - Double Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN									
Frame Relay Encapsulation (for ISDN LL and ISDN Dial)	(3)XG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Digital Subscriber Line (IDSL, up to 144 kbps) (Cisco 802 & Cisco 804 only)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Inverse ARP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Leased Line (up to 144 kbps)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ML-PPP, PPP Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PPP over Frame Relay (RFC 1973)		No	No	No	No	No	No	No	No

Table 5 Feature List by Feature Set for the Cisco 801–804 Routers (continued)

Features	In	Feature Set							
		IP	IP/Plus	IP/FW	IP/FW/Plus/ IPSec 56	IP/IPX/ Plus	IP/IPX/ FW/Plus/ IPSec 56	IP/FW/ Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
WAN Optimization									
Always On/Dynamic ISDN (AO/DI)		No	Yes	No	Yes	Yes	Yes	Yes	Yes
Bandwidth on Demand (BOD)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dial on Demand (DDR)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HSRP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX and SPX Spoofing		No	No	No	No	Yes	Yes	No	Yes
ISDN Caller ID Callback		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Snapshot Routing		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stac Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-based Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 ID		No	Yes	No	Yes	Yes	Yes	Yes	Yes

1. Advanced Telephone Features are available on the Cisco 803 and 804 routers only. These features require supplementary services from a telephone company.
2. Prefix Dialing is supported on Cisco 803 and Cisco 804 routers only.

Table 6 Additional Features supported by Cisco 801–804 Routers

Feature	IP	IP/Plus	IP/FW	IP/FW/ Plus/ IPSec 56	IP/IPX/Plus	IP/IPX/FW/ Plus/ IPSec 56	IP/FW/Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
Routed Protocol	IP	IP	IP	IP	IP/IPX	IP	IP	IP/IPX
Routing Protocol	RIP Snapshot	RIP/IP-EIGRP Snapshot	RIP/IP-EIGRP Snapshot	RIP/IP-EIGRP Snapshot	RIP/IP-EIGRP/IPX WAN Snapshot	RIP/IP-EIGRP Snapshot	RIP/IP-EIGRP Snapshot	RIP/IP-EIGRP Snapshot
Tunneling		GRE		GRE	GRE	GRE	GRE	GRE
XXX PAD	No	Yes	No	Yes	Yes	Yes	Yes	Yes
X.25 over B and D	No	Yes	No	Yes	Yes	Yes	Yes	Yes
SNTP (Simple Network Time Protocol)	SNTP	SNTP	SNTP	SNTP	SNTP	SNTP	SNTP	SNTP
Multicast		IP Multicast Forwarding		IP Multicast Forwarding	IP Multicast Forwarding	IP Multicast Forwarding	IP Multicast Forwarding	IP Multicast Forwarding

Table 6 Additional Features supported by Cisco 801–804 Routers (continued)

Feature	IP	IP/Plus	IP/FW	IP/FW/ Plus/ IPSec 56	IP/IPX/Plus	IP/IPX/FW/ Plus/ IPSec 56	IP/FW/Plus/ IPSec/ 3DES	IP/IPX/FW/ Plus/IPSec/ 3DES
Management	SNMP	SNMP/ SYSLOG	SNMP	SNMP/ SYSLOG	SNMP/ SYSLOG	SNMP/ SYSLOG	SNMP/ SYSLOG	SNMP/ SYSLOG
Manual ISDN Calls (see reference for commands)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7 Feature List by Feature Set for the Cisco 805 Router

Features	In	Feature Set							
		IP	IP Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX Plus	IP/IPX/ FW Plus IPSec 56	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES
Address Conservation									
PAT (NAT Overload)		Yes	Yes	Yes	No	Yes	No	No	No
NAT		Yes	Yes	Yes	No	Yes	No	No	No
NAT with H.323		No	No	No	No	No	No	No	No
Basic Services									
GRE Tunneling		No	Yes	No	No	Yes	No	No	No
NAT		Yes	Yes	Yes	No	Yes	No	No	No
PAP, CHAP, MSCHAP, Local Password		Yes	Yes	Yes	No	Yes	No	No	No
Ease of Use and Deployment									
Cisco ConfigMaker		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cisco FastStep		Yes	Yes	Yes	No	Yes[1]	No	No	No
Easy IP Phase I and II (IPCP Address Negotiation and DHCP Server)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client and Server		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAN									
IP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX		No	No	No	No	Yes	No	No	No
NetBIOS Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Transparent Bridging		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management									
Cisco View		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Service Assurance Agent		No	Yes	No	Yes	Yes	Yes	Yes	Yes

Table 7 Feature List by Feature Set for the Cisco 805 Router (continued)

Features	In	Feature Set							
		IP	IP Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX Plus	IP/IPX/ FW Plus IPSec 56	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES
SNMP, Telnet, Console Port		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNTP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syslog		No	Yes	No	Yes	Yes	Yes	Yes	Yes
Routing									
BGP		No	No	No	No	No	No	No	No
EGP		No	No	No	No	No	No	No	No
IGRP		No	No	No	No	No	No	No	No
IP Enhanced IGRP (IP-EIGRP)		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IPX Enhanced IGRP (IPX-EIGRP)		No	No	No	No	No	No	No	No
IP Multicast (relay only)		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IP-Policy Routing		No	Yes	No	Yes	Yes	Yes	Yes	Yes
IPXWAN		No	No	No	No	Yes	Yes	No	Yes
OSPF		No	No	No	No	No	No	No	No
RIP, RIPv2, Triggered RIP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
XOT	(3)XG	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Security									
AAA Radius		No	No	No	No	No	No	No	No
AAA TACACS+		No	Yes	No	Yes	Yes	Yes	Yes	Yes
Additional Vendor-Proprietary RADIUS Attributes		No	No	No	No	No	No	No	No
Authenticating ACL		No	No	No	No	No	No	No	No
Automated Double Authentication (server functionality)		No	No	No	No	No	No	No	No
Certificate Authority Interoperability		No	No	No	Yes	No	Yes	Yes	Yes
Internet Key Exchange Security Protocol		No	No	No	Yes	No	Yes	Yes	Yes
IPSec Network Security		No	No	No	Yes	No	Yes	Yes	Yes

Table 7 Feature List by Feature Set for the Cisco 805 Router (continued)

Features	In	Feature Set							
		IP	IP Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX Plus	IP/IPX/ FW Plus IPSec 56	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES
IOS Firewall Phase I									
– Context Based Access Control Lists		No	No	Yes	Yes	No	Yes	Yes	Yes
– Java Blocking		No	No	Yes	Yes	No	Yes	Yes	Yes
– Denial of Service Detection and Prevention		No	No	Yes	Yes	No	Yes	Yes	Yes
– Real-time Alerts and Audit Trails		No	No	Yes	Yes	No	Yes	Yes	Yes
IPSec Encryption with 56 bit DES		No	No	No	Yes	No	Yes	No	No
IPSec Encryption with 168 bit DES (3DES)		No	No	No	No	No	No	Yes	Yes
Lock and Key		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LT2P		No	No	No	Yes	No	Yes	Yes	Yes
Named Method Lists for AAA Authentication & Accounting		No	No	No	No	No	No	No	No
Route and Router Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Token Card - Double Authentication		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN									
Frame Relay Encapsulation (for ISDN LL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Inverse ARP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ML-PPP, PPP Compression		Yes	Yes	Yes	No	Yes	No	No	No
PPP over Frame Relay (RFC 1973)		No	No	No	No	No	No	No	No
WAN Optimization									
Bandwidth on Demand (BOD)		No	No	No	No	No	No	No	No
Dial on Demand (DDR)		No	No	No	No	No	No	No	No
HSRP		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX and SPX Spoofing		No	No	No	No	Yes	Yes	No	Yes
Snapshot Routing		No	No	No	No	No	No	No	No
Stac Compression		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7 Feature List by Feature Set for the Cisco 805 Router (continued)

Features	In	Feature Set							
		IP	IP Plus	IP/FW	IP/FW Plus IPSec 56	IP/IPX Plus	IP/IPX/ FW Plus IPSec 56	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES
Time-based Access Lists		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
X.25 ID		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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

Table 8 Feature List by Feature Set for the Cisco 827 and Cisco 827-4V Routers

Features	Feature Sets							
	IP	IP/ Voice	IP/FW Plus IPSec 56	IP/FW/ Voice Plus IPSec 56	IP/IPX/ Voice Plus	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES	IP/FW/ Voice Plus IPSec 3DES
Address Conservation								
DHCP Client Address Negotiation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPCP Address Negotiation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT Many to One (PAT)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NAT Many to Many (Multi-NAT)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth Optimization								
NetBIOS Name Caching	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STAC Compression	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Business-Class Quality of Service								
CBR, VBRrt, VBRnrt, UBR Traffic Classes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Class-Based Weighted Fair Queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Policy Routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Per-Virtual Circuit Queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Per-Virtual Circuit Shaping	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weighted Random Early Detection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Business-Class Security								
GRE Tunneling	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP (and IPX when applicable) Basic and Extended Access Lists	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NetBIOS Access Lists	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PAP, CHAP, Local Password	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Route and Router Authentication	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8 Feature List by Feature Set for the Cisco 827 and Cisco 827-4V Routers

Features	Feature Sets							
	IP	IP/ Voice	IP/FW Plus IPSec 56	IP/FW/ Voice Plus IPSec 56	IP/IPX/ Voice Plus	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES	IP/FW/ Voice Plus IPSec 3DES
Ease of Use and Deployment								
Cisco Fast Step Software	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Easy IP Phase I and II	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced Security								
Cisco IOS Firewall	No	No	Yes	Yes	No	Yes	Yes	Yes
Context-Based Access Control Lists	No	No	Yes	Yes	No	Yes	Yes	Yes
Denial-of-Service Detection	No	No	Yes	Yes	No	Yes	Yes	Yes
IPSec Encryption with 3DES and L2TP	No	No	No	No	No	Yes	Yes	Yes
Java Blocking	No	No	Yes	Yes	No	Yes	Yes	Yes
Real-Time Alerts	No	No	Yes	Yes	No	Yes	Yes	Yes
LAN								
IP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX	No	No	No	No	Yes	No	Yes	No
Transparent Bridging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management								
CiscoView	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNTP	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP, Telnet, Console Port	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syslog	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TACACS+ (also a security feature)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TFTP Client and Server	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Routing								
IP Enhanced IGRP	No	No	Yes	Yes	No	Yes	Yes	No
IP Multicast (relay only)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP-Policy Routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IPX RIP/SAP IPX WAN	No	No	No	No	Yes	No	Yes	No
RIP, RIPv2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Voice Features (Cisco 827-4V only)								
G.711, G.729a, G.723.1 Codecs with High-Performance DSP Support	No	Yes	No	Yes	Yes	No	No	Yes

Table 8 Feature List by Feature Set for the Cisco 827 and Cisco 827-4V Routers

Features	Feature Sets							
	IP	IP/ Voice	IP/FW Plus IPSec 56	IP/FW/ Voice Plus IPSec 56	IP/IPX/ Voice Plus	IP/FW Plus IPSec 3DES	IP/IPX/ FW Plus IPSec 3DES	IP/FW/ Voice Plus IPSec 3DES
Loop-Start Key-System or Direct Phone Support	No	Yes	No	Yes	Yes	No	No	Yes
RAS Gatekeeper Communications Protocol	No	Yes	No	Yes	Yes	No	No	Yes
VoIP H.323	No	Yes	No	Yes	Yes	No	No	Yes

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 800 series for Release 12.1(3)XG6 and above:

New Software Features in Release 12.1(3)XG

The following sections list the new software features supported by the Cisco 800 Series Routers for Release 12.1(3)XG.

Prefix Dialing

Cisco 803 and Cisco 804 routers now support prefix dialing. You can add a telephone prefix and create a prefix filter to the dialed number for analog telephone calls. When a telephone number is dialed through the telephone port, the router checks for prefix filters. If the router finds a match, no prefix is added to the dialed number. If no filter match is found, the router adds the user-defined prefix to the called number.

Configuring a Prefix Number

To set a prefix to be added to a telephone number called, use the Cisco IOS **pots prefix number** command in global configuration mode:

pots prefix number *number*

no pots prefix number

where *number* is a prefix number from one to five digits in length. Only one prefix can be configured at a time, and configuring a new number overwrites the existing one.

The following example sets the prefix number to *12345:*

```
router# configure terminal
router(config)# pots prefix number 12345
```

Configuring a Prefix Filter

You can configure a prefix filter that is compared to the digits that you dial. If a match occurs, the prefix number is not added to the called number. To create a prefix filter, use the **pots prefix filter** command in global configuration mode:

pots prefix filter *number*

no pots prefix filter *number*

where *number* is a prefix filter from one to eight digits in length. You can define up to ten filters for your router. If you have reached the maximum number of filters defined, no new filter configurations are accepted until you remove at least one existing filter number using the **no pots prefix filter** *number* command.

The following are examples of how to set prefix filters:

```
router# configure terminal
router(config)# pots prefix filter 192
router(config)# pots prefix filter 1
router(config)# pots prefix filter 9
router(config)# pots prefix filter 0800
router(config)# pots prefix filter 08456
```

Supplementary Telephone Services for the Euro-ISDN Switch

The Cisco 800 series routers now support the following plain old telephone service (POTS) features for the European Telecommunications Standards Institute (ETSI) Euro-ISDN switch type:

- Caller ID presentation and restriction are available for Denmark, Finland, and Sweden. For more information, see "Configuring Caller ID for the Euro-ISDN Switch."
- Calling line identification restriction (CLIR) temporarily prevents your calling ID from being presented to the destination number for an outgoing call. You must configure CLIR prior to each call that you wish to restrict the calling party number from being presented at the destination.
- Call forwarding is enabled using Cisco IOS and dual tone multifrequency (DTMF) commands. For more information, see "Call Forwarding for the Euro-ISDN Switch."
- Call transfer feature enables you to connect two call destinations. The request for this service must originate from an active, outgoing call.

Note The Euro-ISDN switch was previously called the Net3 switch.

Requirements for Supplementary Telephone Services Support

You must subscribe to the following Euro-ISDN switch services for these supplementary telephone services to work:

- Calling line identification presentation (CLIP)
- CLIR in temporary mode
- Call holding
- Call transfer
- Call forwarding
- Call waiting

For information about configuring caller ID calls, see the Cisco IOS documentation set.

Configuring Caller ID for the Euro-ISDN Switch

To enable caller ID on the Euro-ISDN switch for the Nordic countries (Denmark, Sweden, and Finland), configure the country type by using the Cisco IOS **pots country** command in global configuration mode:

pots country {denmark | finland | sweden}

To verify if caller ID is enabled, use the **show pots status** command. The following is an example of the output for the command:

```
router# show pots status

POTS Global Configuration:

   Country:Denmark

   Dialing Method:Overlap, Tone Source:Local, CallerId Support:YES
----------------------
   Out Going Hunt:Disabled
```

Note Caller ID for Denmark, Sweden, and Finland is always enabled, provided the POTS country type is correctly defined as one of them. Caller ID cannot be disabled using the Cisco IOS command-line interface (CLI).

Call Forwarding for the Euro-ISDN Switch

The following types of call forwarding services (for voice calls only) are supported on the Euro-ISDN switch:

- Call forward unconditional (CFU) redirects your calls without restrictions and takes precedence over other call forwarding types.
- Call forward busy (CFB) redirects your call to another number if your number is busy.
- Call forward no reply (CFNR) forwards your call to another number if your number does not answer within a specified period of time.

You can select one or more call forwarding services at a time. However, CFU has higher precedence over CFB and CFNR. If all the three are enabled, CFU overrides CFB and CFNR. The default setting is that no forwarding type is selected.

Note If you had configured call forwarding for a POTS port and the router finds that a dial peer is also configured for that port, call forwarding works only for the number defined in the **destination-pattern** dial peer command and ignores all other numbers for that telephone. If the router does not find a dial peer or if the destination-pattern is not defined, call forwarding works for all numbers allocated to that telephone.

To enable and configure this feature, follow these steps:

Step 1 Enable and select the call forwarding method. See “Configuring the Call Forwarding Method.”

Step 2 Configure your call forwarding service, depending on which method you selected:

- Functional method—Enter DTMF commands on the telephone keypad. For more information, see “Configuring the Call Forwarding Service.”

- Keypad method—Follow the instructions in your Euro-ISDN switch documentation.

Configuring the Call Forwarding Method

You can select the method by which the call forwarding feature is controlled as follows:

- Functional method gives control to the router. If you select this method, use the DTMF commands documented in "Configuring the Call Forwarding Service."
- Keypad method gives control to the Euro-ISDN switch.

To enable the call forwarding method, use the Cisco IOS **pots forwarding-method** command in global configuration mode:

pots forwarding-method {functional | keypad}

[no] pots forwarding-method

Note Use the **pots forwarding-method** command only if the switch is a Euro-ISDN switch type. This command does not work for other switch types. This feature is disabled in the default setting.

The following example configures the call forwarding feature to give control to the router:

```
router# configure terminal
router(config)# pots forwarding-method functional
```

Configuring the Call Forwarding Service

Table 9 shows the DTMF keypad command sequence that you enter to configure the call forwarding service.

Table 9 Configuring the Call Forwarding Service

Task	DTMF Keypad Command
Activate CFU	****21***_number_**#** where *number* is the telephone number to which your calls are forwarded
Deactivate CFU	**#21#**
Activate CFNR	****61***_number_**#** where *number* is the telephone number to which your calls are forwarded
Deactivate CFNR	**#61#**
Activate CFB	****67***_number_**#** where *number* is the telephone number to which your calls are forwarded
Deactivate CFB	**#67#**

When you enable or disable the call-forwarding service, it is enabled or disabled for four basic services (speech, audio at 3.1 kilohertz, telephony at 3.1 kilohertz, and telephony at 7 kilohertz). You should hear a dial tone after you enter the DTMF command if the call-forwarding service is successfully enabled or disabled for at least one of the four basic services. If you hear a busy tone, the command is invalid or the switch does not support any of the four basic services.

Displaying POTS Status

Use the **show pots status** command to display details of the call forwarding type. This status is not stored across reboots. The following is an example of the screen output:

```
router# show pots status

POTS Global Configuration:
Country:Denmark
Dialing Method:Overlap, Tone Source:Local, CallerId Support:YES
Out Going Hunt:Disabled
Forwarding Method:functional method
-------------------------------------

Call Forwarding status:

The Forwarding Method Enabled is CFU

The forwarded to Address is     :33236877
The served user Number(s) are   :33795742

The Forwarding Method Enabled is CFB

The forwarded to Address is     :33236877
The served user Number(s) are   :
    ALL -> Will work for all numbers allocated to the terminal.
```

Configuring CLIR

Configure CLIR by following these steps:

Step 1 Ensure that CLIR in temporary mode is enabled in the Euro-ISDN switch.

Step 2 Remove handset and press ****31#** on the keypad.

Step 3 Listen for the dial tone and then make your call.

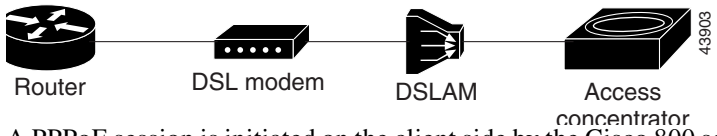
Step 4 Repeat Steps 2 and 3 for each outgoing call for which you wish to restrict your calling identification.

Note The command ****31# DTMF** only has an effect if the switch is a Euro-ISDN switch type. This DTMF command does not have any effect on other switch types.

PPP over Ethernet Support on Cisco 820 Series Routers

Cisco IOS Release 12.1(3)XG running on Cisco 827 and Cisco 827-4V routers supports a PPP over Ethernet (PPPoE) client. Multiple PCs on the LAN are supported. The following figure depicts a typical deployment scenario for PPPoE support:

Figure 1 PPPoE Deployment Scenario



A PPPoE session is initiated on the client side by the Cisco 800 series router. If the session has a timeout or is disconnected, the PPPoE client immediately attempts to reestablish the session.

Follow these steps to configure the router for PPPoE client support:

Step 1 Configure the vpdn group number.

- **a.** Enter the **vpdn enable** command in global configuration mode.
- **b.** Configure the vpdn group by entering the **vpdn group** *tag* command.
- **c.** Specify the dialing direction by entering the **request-dialin** command in the vpdn group.
- **d.** Specify the type of protocol in the vpdn group by entering the **protocol pppoe** command.

Step 2 Configure the Ethernet interface for PPPoE support.

- **a.** Configure the Ethernet interface by entering the **interface ethernet 0** command. (This is the interface to bind to the dialer.)
- **b.** Enable PPPoE on this interface by using the command **pppoe enable**.
- **c.** Bind the dialer to the Ethernet 0 interface by using the command **pppoe-client dial-pool-number 1**.
- **d.** Bring up the Ethernet 0 interface by using the command **no shutdown** on the interface.

Step 3 Configure the dialer interface by entering the **int dialer** *number* command.

- **a.** Configure the IP address as negotiated by entering the **ip address negotiated** command.
- **b.** Optional: Configure authentication for your network by entering the **ppp authentication** protocol command.
- **c.** Configure the dialer pool number by entering the **dialer pool** *number* command.
- **d.** Configure the dialer-group number by entering the **dialer-group** *number* command.

Step 4 Configure a dialer list corresponding to the dialer-group by entering the **dialer-list 1 protocol ip permit** command.

If you enter the **clear vpdn tunnel pppoe** command with a PPPoE client session already established, the PPPoE client session terminates and the PPPoE client immediately tries to reestablish the session.

Configuration Example

The following example shows the configuration of a PPPoE client.

```
vpdn enable
vpdn-group 1
request-dialin
protocol pppoe

int atm0

pvc 1/100
pppoe-client dial-pool-number 1

int dialer 1
ip address negotiated
ppp authentication chap
dialer pool 1
dialer-group 1
```

Cisco 820 Supported Features

The Cisco 820 series routers now support firewall, IPSec, and 3DES features.

Cisco IOS Firewall Feature Set for Cisco 820 Series Routers

The Cisco IOS Firewall feature set is now available on the Cisco 820 series routers. This feature set provides the following capabilities:

- Context-based Access Control (CBAC)
- Java blocking
- Denial-of-service detection and prevention
- Real-time alerts and audit trails

The Cisco IOS Firewall Feature Set feature module provides several sample firewall configurations, including the following examples for small-office environments:

- IP network to Internet
- Remote office network to corporate office network

IPSec and 3DES Feature Set for Cisco 820 Series Routers

The Internet Protocol Security (IPSec) feature is now available on the Cisco 820 series routers. IPSec is a framework of open standards developed by the Internet Engineering Task Force (IETF) that provides security for transmission of sensitive information over unprotected networks such as the Internet. It acts at the network level and implements the following standards:

- IPSec
- Internet Key Exchange (IKE)
- Data Encryption Standard (DES)
- Message Digest 5 (MD5)
- Secure Hash Algorithm (SHA)
- Authentication Header (AH)
- Encapsulating Security Payload (ESP)

Internet Protocol Security (IPSec) services are similar to those provided by Cisco Encryption Technology (CET), a proprietary security solution introduced in Cisco IOS Software Release 11.2. (The IPSec standard was not yet available at Release 11.2.) It provides network data encryption at the IP packet level and implements the following standards:

- Digital Signature Standard (DSS)
- Diffie-Hellman (DH) public key algorithm
- Data Encryption Standard (DES)

IPSec provides a more robust security solution and is standards-based. IPSec also provides data authentication and anti-replay services in addition to data confidentiality services, while CET provides only data-confidentiality services.

The following component technologies implemented for IPSec:

- The Data Encryption Standard (DES) is used to encrypt packet data.
- Cipher Block Chaining (CBC) requires an initialization vector (IV) to start encryption. The IV is explicitly given in the IPSec packet.
- MD5 and SHA are hash algorithms.

Triple Data Encryption Standard Feature Set for Cisco 820 Series Routers

The Triple Data Encryption Standard (3DES) Cisco IOS feature is now available on Cisco 820 series routers. This feature encrypts packet data. Cisco IOS implements the mandatory 56-bit DES-Cipher Block Chaining (CBC) with an Explicit initialization vector (IV).

New Software Features in Release 12.1(1)

For information regarding the features supported in Cisco IOS Release 12.1, refer to the Cross-Platform Release Notes and New Feature Documentation links at the following location on Cisco.com:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/index.htm

This URL is subject to change without notice. If it changes, point your web browser to Cisco.com, and click on the following path:

Service & Support: **Technical Documents**: **Documentation Home Page**: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **Cisco IOS Release 12.1**

Limitations and Restrictions

Cisco 800 Series Router Supported MIBs

Table 10 lists the MIBs supported by the Cisco 800 series routers. Each group of MIBs corresponds to a specific group of images.

Table 10 MIBs Supported by the Cisco 800 Series Routers

Image Names	MIBs
c800-sy6-mw	CISCO-IPMROUTE-MIB
c800-osy6-mw	CISCO-SYSLOG-MIB
c800-osy656i-mw	ENTITY-MIB (added)
c800-nsy6-mw	IPMROUTE-MIB
c800-nosy656i-mw	RFC1382-MIB (X25MIB)
c800-osy6-mw	
c800-nsy6-mw	NOVELL-IPX-MIB
c800-nosy656i-mw	NOVELL-RIPSAP-MIB
	OLD-CISCO-NOVELL-MIB
c800-osy656i-mw	CISCO-IP-ENCRYPTION-MIB
c800-nosy656i-m	

Table 10 MIBs Supported by the Cisco 800 Series Routers

Image Names	MIBs
c800-y6-mw c800-oy6-mw c800-sy6-mw c800-osy6-mw c800-osy656i-mw c800-nsy6-mw c800-nosy656i-mw	CISCO-BULK-FILE-MIB CISCO-CALL-HISTORY-MIB CISCO-CAR-MIB CISCO-IMAGE-MIB (added) CISCO-IP-STAT-MIB CISCO-ISDN-MIB CISCO-ISDNU-IF-MIB CISCO-MEMORY-POOL-MIB CISCO-PING-MIB CISCO-SNAPSHOT-MIB CISCO-TCP-MIB OLD-CISCO-CHASSIS-MIB OLD-CISCO-FLASH-MIB (added) OLD-CISCO-INTERFACES-MIB OLD-CISCO-IP-MIB OLD-CISCO-MEMORY-MIB OLD-CISCO-SYSTEM-MIB OLD-CISCO-TCP-MIB IF-MIB ISDN-MIB SNMPv2-MIB TCP-MIB UDP-MIB RFC1213-MIB (MIBII) RFC1381-MIB (LAPBMIB) RFC1398-MIB (ETHERMIB)

Cisco 820 Series Router Supported MIBs

The following MIBs are supported by the Cisco 820 series routers, including the Cisco 827 and Cisco 827-4V routers:

- ADSL-LINE-MIB
- ADSL-DMT-LINE-MIB
- ATM-FORUM-MIB (not supported per Jenness)
- ATM-FORUM-ADDR-REG (not supported per Jenness)
- ATM-MIB

- CISCO-AAL5-MIB
- CISCO-ADSL-DMT-LINE-MIB
- CISCO-ATM-EXT-MIB
- CISCO-BULK-FILE-MIB
- CISCO-CAR-MIB
- CISCO-DIAL-CONTROL-MIB
- CISCO-FLASH-MIB
- CISCO-IETF-ATM2-PVCTRAP-MIB
- CISCO-IMAGE-MIB
- CISCO-IP-STAT-MIB
- CISCO-MEMORY-POOL-MIB
- CISCO-PING-MIB
- CISCO-QUEUE-MIB
- CISCO-RAS-MIB
- CISCO-SNAPSHOT-MIB
- CISCO-STACKMAKER-MIB
- CISCO-SYSLOG-MIB
- CISCO-TCP-MIB
- CISCO-VOICE-ANALOG-IF-MIB
- CISCO-VOICE-COMMON-DIAL-CONTROL-MIB
- CISCO-VOICE-DIAL-CONTROL-MIB
- CISCO-VOICE-IF-MIB
- DIAL-CONTROL-MIB
- ENTITY-MIB
- IF-MIB
- IGMP-MIB
- INT-SERV-GUARANTEED-MIB
- INT-SERV-MIB
- IPMROUTE-MIB
- NOVELL-IPX-MIB
- NOVELL-RIPSAP-MIB
- OLD-CISCO-CHASSIS-MIB
- OLD-CISCO-CPU-MIB
- OLD-CISCO-INTERFACE-MIB
- OLD-CISCO-IP-MIB
- OLD-CISCO-MEMORY-MIB
- OLD-CISCO-NOVELL-MIB
- OLD-CISCO-SYSTEM-MIB

- OLD-CISCO-TCP-MIB
- PIM-MIB
- RFC1398-MIB (ETHERMIB)
- RFC1213-MIB
- RSVP-MIB
- SNMPv2-MIB
- TCP-MIB
- UDP-MIB
- XGCP-MIB

Important Notes

The following sections contain important notes about Cisco IOS Release 12.1(3)XG6 that can apply to the Cisco 800 Series Routers. (Also, see the "Caveats" section on page 32.)

Caveat CSCdr91706 and IOS HTTP Vulnerability

A defect in multiple releases of Cisco IOS software causes a Cisco router or switch to halt and reload if the IOS HTTP service is enabled and you browse to http://router-ip/anytext?/ and enter the enable password when it is requested. This defect can be exploited to produce a denial of service (DoS) attack. This vulnerability can only be exploited if the enable password is known or not set.

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. Cisco urges all customers to upgrade to releases that are not vulnerable to this defect as listed in the complete advisory, which is available at: http://www.cisco.com/warp/public/707/ioshttpserverquery-pub.shtml. You are strongly encouraged to read the complete advisory.

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.

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" 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 of the Cisco IOS documentation set.

Cisco 800 Series Router Enhancements

Cisco 800 series routers support the following features. For more information about these features, see the Cisco IOS documentation set.

- Hot Standby Routing Protocol (HSRP), which creates a Hot Standby router group with a lead router that services all packets sent to the Hot Standby address. The lead router is monitored by other routers in the group. If it fails, one of these standby routers inherits the lead position and the Hot Standby group address.
- Service Assurance Agent (SAA), which is both an enhancement to and a new name for the Response Time Reporter (RTR) feature that was introduced in Cisco IOS release 11.2. This feature allows you to monitor network performance by measuring key Service Level Agreement (SLA) metrics, such as response time, network resources, availability, jitter, connect time, packet loss, and application performance.
- Triple Data Encryption Standard (3DES), based on the standard cryptographic algorithm developed by the U.S. National Bureau of Standards.
- X.28, X.29, and X.3 emulation for Packet Assembler/Disassembler (PAD), the standard user interface between the data terminal equipment and PAD.
- Frame Relay Inverse Address Resolution Protocol (ARP), which enables a station to request a protocol address corresponding to a given hardware address.
- Frame Relay support for a permanent virtual circuit (PVC) saves bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time.

CiscoView Application Support

The CiscoView application supports the Cisco 800 series routers. The CiscoView application provides dynamic status, statistics, and comprehensive configuration information for Cisco switches, routers, concentrators, and adapters. It displays a graphical view of Cisco devices. This network management tool also provides configuring and monitoring functions and offers basic troubleshooting tips.

Dial Peer Limitation

The **isdn answer1** and **isdn answer2** commands determine which called telephone numbers, 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.

Downloading Images

Before attempting to download new images, you must first delete files in the router Flash memory. Be sure to use the **delete** command, not command **erase**, to free up space. Entering **erase** removes all files, including the configuration.

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)

See the *Cisco 800 Series Routers Software Configuration Guide* to set 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 fails the POST tests during boot and causes the router to halt. The only way to recover from this state is to pull apart the soldered boot Flash and re-burn the Boot ROM. This problem has been resolved in TinyROM version 1.0(3), a downloadable ROM upgrade available from Cisco.com. Contact Cisco to upgrade to this version or later, and to prevent this problem from occurring.

ISDN NI1 Provisioning

If you have any problems with your ISDN NI1 provisioning, visit the Cisco ISDN Web site at http://www.cisco.com/isdn.

Multilink PPP and Interleaving

Multilink PPP fragments large data packets so that small voice packets can be interleaved within 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 827 routers, the big packets are fragmented, but interleaving of small voice packets within them does not occur.

NAT Support for H.323 Signaling

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

Phone Mate Answering Machine Model 9200

A Phone Mate answering machine model 9200 fails 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.

PPP over Frame Relay Support (RFC-1973)

Cisco 800 series routers do not support PPP protocol over Frame Relay.

TACACS+ with AAA

Cisco 800 series routers support the Terminal Access Controller Access Control System Plus (TACACS+) protocol through Telnet. TACACS+ is a Cisco proprietary authentication protocol that provides remote access authentication and related network security services, such as event logging. User passwords are administered in a central database, rather than in individual routers. TACACS+ also supports separate modular authentication, authorization, and accounting (AAA) facilities that are configured at individual routers.

For information on how to configure TACACS+, refer to the "Configuring TACACS+" chapter in the *Security Configuration Guide*. For information on TACACS+ commands, refer to the "TACACS, Extended TACACS, and TACACS+ Commands" chapter in the *Security Command Reference*.

Cisco 800 series routers do not support the following protocols:

- TACACS, an older access protocol now deprecated by Cisco, or Extended TACACS, an extension to the TACACS protocol.
- RADIUS or Kerberos protocols.

ROM Monitor set stop-bits Parameter

This release supports the setting of 1 only, for the ROM monitor **set stop-bits** parameter.

Caveats

Caveats describe unexpected behavior or defects 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.

All caveats in Release 12.1(2)T are also in Release 12.1(3)XG6. For information on caveats in Cisco IOS Release 12.1(2)T, refer to the *Caveats for Cisco IOS Release 12.1 T* document. For information on caveats in Cisco IOS Release 12.1, refer to the *Caveats for Cisco IOS Release 12.1* document. These publications list 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 in toCisco.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.

Resolved Caveats - Release 12.2(3)XG6

This section describes unexpected behavior that is fixed in Release 12.2(3)XG6.

Management

CSCdw65903

An error can occur with management protocol processing. Please use the following URL for further information:

http://www.cisco.com/cgi-bin/bugtool/onebug.pl?bugid=CSCdw65903

Open Caveats—Release 12.1(2)XG4

This section describes possibly unexpected behavior by Release 12.1(2)XG4.

Miscellaneous

CSCds04747

Connection setup improvements.

CSCds32217

D-write community string readable with read-only community, Cisco IOS.

Open Caveats—Release 12.1(2)XG3

This section describes possibly unexpected behavior by Release 12.1(2)XG3.

Miscellaneous

CSCds82106

There is a problem with the twister DSP chip that can cause the router to hang after power up. The Cisco 820 engineering team has implemented a software work around suggested by TI support engineers, which is for the host processor to determine the state of the Host Interrupt bit inside the DSP, before attempting to clear it. This software change will prevent the router from hanging.

Resolved Caveats—Release 12.1(3)XG2

This section describes possibly unexpected behavior by software releases prior to Release 12.1(3)XG2 that have been resolved in Release 12.1(3)XG2 and above.

Miscellaneous

CSCds05811

If secondary IP addresses are configured on either an Ethernet or FastEthernet interface and the running-config is saved to NVRAM, when the router is reloaded the secondary IP addresses disappear from the configuration. This caveat is identical to the caveats: CSCdr51651, CSCdr72866, CSCdr72868, and CSCdr77724, as well as cases A445655, A519050, and A466616. The problem was originally found in Release 12.1(2)T. This caveat is fixed in Cisco IOS Release 12.1(3)XG2.

Open Caveats—Release 12.1(2)XG1

This section describes possibly unexpected behavior by Release 12.1(2)XG1.

Miscellaneous

CSCds27736

On Cisco 801 through 804 routers with rev-B MPC850 CPUs, the output of the command **show version** displays the CPU type as “MPC860” instead of “MPC850” and the CPU is not correctly configured. Incorrect configuration results in various malfunctions both soon after power-up and after prolonged operation. Potential failures can include (but are not limited to): a router halt, intermittent WAN failures, the corruption of DRAM, and protection violations. To work around this problem, upgrade to Cisco IOS release 12.1(3)XG1 or later. Note that these routers cannot be downgraded to previous Cisco IOS releases.

CSCds37736

Cisco 801 through 804 router initialization ignores the CPU type and always loads the micro code for the MPC850.

CSCds52865

Although the old Alcatel microcode 2.58 was compatible with the ADI-based Cisco line card, Alcatel microcode 3.6.66 is not compatible with the Cisco 4xDMT ADI based line card. To work around this problem for Cisco 827 routers, upgrade to Cisco IOS release 12.1(3)XG1. To work around this problem for SOHO 70 series routers, upgrade to Cisco IOS release 12.1(3)XP1. Note that Cisco IOS releases 12.1(3)XG1 and 12.1(3)XP1 contain both 2.58 and 3.6.66 microcode versions, but only use 2.58 microcode for ADSL over ISDN. After upgrading your software, configure the command **dsl operating-mode ansi-dmt** for the ATM0 interface, which allows the router to function with the DMT card of the Cisco DSLAM.

Open Caveats—Release 12.1(3)XG

This section describes possibly unexpected behavior by Release 12.1(3)XG.

Miscellaneous

CSCdr60732

A Cisco 800 series router running a PPPoE client configured from a dialer interface might encounter packet loss while trying to route IPX traffic or might not route IPX packets at all during the PPPoE session. To work around this problem, configure the IPX network as network X on the dialer interface.

CSCdr60739

A Cisco 800 router running a PPPoE client that is performing multilink PPP might fail to establish a session. There is no known workaround.

CSCdr69152

For IPSec to work properly on some IPSec interfaces, fast switching must be explicitly disabled by entering the commands **no ip route-cache** and no **ip mroute-cache**. This might impact IPSec functionality under certain encapsulation modes.

For example, if you use a dialer interface to configure PPP over ATM encapsulation or PPP over Ethernet encapsulation and apply IPSec to the interface, fast switching must be explicitly disabled for IPSec to work. For a bridge group virtual interface to function properly as an IPSec interface, fast switching must also be disabled. IPSec works properly with fast switching enabled when applied on other interfaces, such as ATM or virtual interfaces.

Fast switching is automatically enabled by default. To work around this problem, disable fast switching on IPSec interfaces.

CSCdr70941

After successfully getting certificates and enrolled in a CA server, in config mode the command **no crypto ca certificate chain entrust** generates the message “WARNING! Illegal read access”.

CSCdr90307

If you specify the command **no ip route-cache** for an ATM interface that IPSec is using on both ends of an IPSec tunnel and have a Pagent traffic generator to generate traffic through IPSec tunnel, the following error is generated with traceback messages:

```
SYS-2-MALLOCFAIL : memory allocation of 1684 bytes
failed from 0x800AE838: pool I/O, alignment: 4.
```

The workaround is to specify the command **ip route-cache** in the router configuration for the IPSec interface that has a configured encryption map.

CSCdr97176

The Cisco 800 series router CSM stops dialing to the network if the fist digit is an asterisk (*). This prevents users (in Finland) from using CO features.

CSCdr98616

Cisco 800 series routers do not reject a second incoming voice call when incoming voice priority is set to conditional, and the second data call is not bumped when **isdn voice-priority** ***local-directory-number*** **out always** is set on both of the POTS ports.

Related Documentation

The following sections describe the documentation available for the Cisco 800 Series Routers. 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 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 the documents listed in the following sections:

- Release-Specific Documents
- Platform-Specific Documents
- Feature Modules
- Feature Navigator

Release-Specific Documents

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

- *Release Notes for Cisco IOS Release 12.1*
  - To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.1* from Cisco.com, click on this path (under the heading **Service & Support**):

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

  - To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.1* on the Documentation CD-ROM, click on this path:

    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

  To reach these documents from Cisco.com, click on this path (under the heading **Service & Support**):

  Technical Documents: **Product Bulletins**

- *Caveats for Cisco IOS Release 12.1 and 12.1 T*

  The *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T* documents contain caveats applicable to all platforms for all maintenance releases of Release 12.1.

  - To reach the caveats document from Cisco.com, click on this path (under the heading **Service & Support**):

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

  - To reach the caveats document on the Documentation CD-ROM, click on this path:

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

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 in toCisco.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

These documents are available for the Cisco 800 Series Routers on Cisco.com and the Documentation CD-ROM:

Cisco 801–804 Routers

These documents are available for the Cisco 800 series 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
- *Configuring Cisco IOS Software Features*
- *Cisco 800 Fast Step Quick Start Guide*
- *Cisco Fast Step documentation for the 800 series routes*
- *Regulatory Compliance and Safety Information*
- *Upgrading Memory in the Cisco 800 Series Routers*

On Cisco.com at:

Technical Documents: **Documentation Home Page**: **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 Routers

These documents are available for the Cisco 805 router on Cisco.com and the Documentation CD-ROM.

- *Cisco 805 Router Hardware Installation Guide*
- *Quick Start Guide — Setting up the Cisco 805 Router*
- *Cisco 805 Router Software Configuration Guide*
- *Regulatory Compliance and Safety Info For the Cisco 805 Router*
- *Release Notes for the Cisco 805 Router*

On Cisco.com at:

Service & Support: **Documentation Home Page**: **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 827 Routers

These documents are available for the Cisco 820 series routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 827 Routers Hardware Installation Guide*
- *Quick Start Guide - Setting Up the Cisco 827 Router*
- *Cisco 827 Routers Software Configuration Guide*
- *Quick Start Guide - Setting Up the Cisco 827 Routers*
- *Release Notes for Cisco 827 Routers*

On Cisco.com at:

Technical Documents: **Documentation Home Page**: **Access Servers and Access Routers**: **Fixed Configuration Access Routers**: **Cisco 827 Routers**

On the Documentation CD-ROM at:

Cisco Product Documentation: **Access Servers and Access Routers**: **Fixed Configuration Access Routers**: **Cisco 827 Routers**

Feature Modules

Feature modules describe new features supported by Release 12.1 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.

To reach the Release 12.1 feature modules:

- From Cisco.com, click on this path (under the heading **Service & Support**):

  Technical Documents: **Documentation Home Page**: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **New Feature Documentation**: **New Features in 12.1-Based Limited Lifetime Releases**: **New Features in 12.1X Releases**: **New Features in 12.1(3)X Releases**

- From the Documentation CD-ROM, click on this path:

  Cisco Product Documentation: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **New Feature Documentation**: **New Features in 12.1-Based Limited Lifetime Releases**: **New Features in 12.1X Releases**: **New Features in 12.1(3)X Releases**

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. 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, 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 two types of 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. The Cisco IOS software documentation set is available on Cisco.com and on the Documentation CD-ROM.

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

Release 12.1 Documentation Set

Table 11 describes the contents of the Cisco IOS Release 12.1 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.

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 11 Cisco IOS Software Release 12.1 Documentation Set

Books	Chapter Topics
• *Cisco IOS Configuration Fundamentals Configuration Guide* • *Cisco IOS Configuration Fundamentals Command Reference*	Configuration Fundamentals Overview Using the Command-Line Interface (CLI) Using Configuration Tools Configuring Operating Characteristics Managing Connections, Menus, and System Banners Using the Cisco Web Browser Using the Cisco IOS File System Modifying, Downloading, & Maintaining Configuration Files Loading and Maintaining System Images Maintaining Router Memory Rebooting a Router Configuring Additional File Transfer Functions Monitoring the Router and Network Troubleshooting a Router Performing Basic System Management System Management Using System Controllers Web Scaling Using WCCP Managing Dial Shelves

Table 11 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *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*	Overview of Apollo Domain, Banyan VINES, DECNET, ISO CLNS, and XNS Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring IOS CLNS Configuring XNS
• *Cisco IOS AppleTalk and Novell IPX Configuration Guide* • *Cisco AppleTalk and Novell IPX Command Reference*	AppleTalk and Novel IPX Overview Configuring AppleTalk Configuring Novell IPX
• *Cisco IOS Bridging and IBM Networking Configuration Guide* • *Cisco IOS Bridging and IBM Networking Command Reference, Volume I* • *Cisco Bridging and IBM Networking Command Reference, Volume II*	Configuring Remote Source-Route Bridging Configuring Data-Link Switching Plus+ Configuring Serial Tunnel and Block Serial Tunnel Configuring LLC2 and SDLC Parameters Configuring IBM Network Media Translation Configuring Frame Relay Access Support Configuring NCIA Server Configuring the Airline Product Set Configuring DSPU and SNA Service Point Support Configuring SNA Switching Services Configuring Cisco Transaction Connection Configuring Cisco Mainframe Channel Connection Adapters Configuring CLAW and TCP/IP Offload Support Configuring CMPC and CSNA Configuring CMPC+ Configuring the TN3270 Server
• *Cisco IOS Dial Services Configuration Guide: Terminal Services* • *Cisco IOS Dial Services Configuration Guide: Network Services* • *Cisco IOS Dial Services Command Reference*	Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Internetworking Dial Access Scenarios 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
• *Cisco IOS Interface Configuration Guide* • *Cisco IOS Interface Command Guide*	Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces

Table 11 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS IP and IP Routing Configuration Guide* • *Cisco IOS IP and IP Routing Command Reference*	IP Overview Configuring IP Addressing Configuring DHCP Configuring IP Services Configuring Mobile IP Configuring On-Demand Routing Configuring RIP Configuring IGRP Configuring OSPF Configuring IP Enhanced IGRP Configuring Integrated IS-ISConfiguring BGP Configuring Multicast BGP (MBGP) Configuring IP Routing Protocol-Independent Features Configuring IP Multicast Routing Configuring Multicast Source Discovery Protocol Configuring PGM Router Assist Configuring Unidirectional Link Routing Using IP Multicast Tools
• *Cisco IOS Multiservice Applications Configuration Guide* • *Cisco IOS Multiservice Applications Command Reference*	Multiservice Applications Overview Configuring Voice over IP Configuring Gatekeepers (Multimedia Conference Manager) Configuring Voice over Frame Relay Configuring Voice over ATM Configuring Voice over HDLC Configuring Voice-Related Support Features Configuring PBX Signaling Configuring Store and Forward Fax Configuring Video Support Configuring Head-End Broadband Access Router Features Configuring Subscriber-End Broadband Access Router Features Configuring Synchronized Clocking

Table 11 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco Quality of Service Solutions Configuration Guide* • *Cisco IOS Quality of Service Solutions Command Reference*	Quality of Service Overview Classification Overview Configuring Policy-Based Routing Configuring QoS Policy Propagation via Border Gateway Protocol Configuring Committed Access Rate Congestion Management Overview Configured Weighted Fair Queueing Configuring Custom Queueing Configuring Priority Queueing Congestion Avoidance Overview Configuring Weighted Random Early Detection Policing and Shaping Overview Configuring Generic Traffic Shaping Configuring Frame Relay and Frame Relay Traffic Shaping Signalling Overview Configuring RSVP Configuring Subnetwork Bandwidth Manager Configuring RSVP-ATM Quality of Service Internetworking Link Efficiency Mechanisms Overview Configuring Link Fragmentation and Interleaving for Multilink PPP Configuring Compressed Real-Time Protocol IP to ATM CoS Overview Configuring IP to ATM CoS QoS Features for Voice Introduction
• *Cisco IOS Security Configuration Guide* • *Cisco IOS Security Command Reference*	TACACS+ Commands Access Control Lists: Overview and Guidelines Cisco Secure Integrated Software Firewall Overview Configuring Lock-and-Key Security (Dynamic Access Lists) Configuring IP Session Filtering (Reflexive Access Lists) Configuring TCP Intercept (Prevent Denial-of-Service Attacks) Configuring Context-Based Access Control Configuring Cisco Secure Integrated Software Intrusion Detection System Configuring Authentication Proxy Configuring Port to Application Mapping IP Security and Encryption Overview Configuring IPSec Network Security Configuring Certification Authority Interoperability Configuring Internet Key Exchange Security Protocol Configuring Passwords and Privileges Neighbor Router Authentication: Overview and Guidelines Configuring IP Security Options

Table 11 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS Switching Services Configuration Guide* • *Cisco IOS Switching Services Command Reference*	Configuring MPLS Configuring IP Multilayer Switching Configuring IP Multicast Multilayer Switching Configuring IPX Multilayer Switching Configuring Multicast Distributed Switching Routing Between VLANs Overview Configuring Routing Between VLANs with ISL Encapsulation Configuring Routing Between VLANs with IEEE 802.10 Encapsulation Configuring Routing Between VLANs with IEEE 802.1Q Encapsulation LAN Emulation Overview Configuring LAN Emulation Configuring Token Ring LANE MPOA Overview Configuring the MPOA Client Configuring the MPOA Server Configuring Token Ring LANE for MPOA
• *Cisco IOS Wide-Area Networking Configuration Guide* • *Cisco IOS Wide-Area Networking Command Reference*	Wide-Area Networking Overview Configuring ATM Frame Relay Frame Relay-ATM Internetworking Configuring SMDS Configuring X.25 and LAPB
• *Cisco IOS Configuration Guide Master Index* • *Cisco IOS Command Reference Master Index* • *Cisco IOS Command Summary* • *Cisco IOS Debug Command Reference* • *Cisco IOS Dial Services Quick Configuration Guide* • *Cisco IOS New Features Index* (Cisco.com and Documentation CD only) • *Cisco IOS System Error Messages*	

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

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.

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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

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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.
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- 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.

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This document is to be used in conjunction with the documents listed in the "Related Documentation" section on page 35.