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Release Notes for the Cisco 1401 Router for Cisco IOS Release 12.0(1)XA

November 2, 1998

These release notes describe the new features and significant software components for Cisco IOS Release 12.0(1)XA for the Cisco 1401 router.

Note The Cisco 1401 router supports a subset of the Cisco IOS features described in these release notes. The Cisco IOS features that are available for the Cisco 1401 router are listed in the section “Cisco IOS Feature Sets for the Cisco 1401 Router” on page 3.

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System Requirements

This section describes the system requirements for Release 12.0(1)XA and includes the following sections:

- Memory Requirements, page 2
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- Cisco IOS Feature Sets for the Cisco 1401 Router, page 3
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Memory Requirements

Table 1 describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.0(1)XA on the Cisco 1401 router.

Table 1 Release 12.0 Memory Requirements for the Cisco 1401 Router

Platform/Feature Set	Image Name	Minimum Required Code Memory	Required Main Memory	Release 12.0 Runs from
IP	c1400-ny-mz	4 MB Flash	12 MB DRAM	RAM
IP Plus	c1400-nsy-mz	4 MB Flash	16 MB DRAM	RAM
IP/IPX	c1400-ny-mz	4 MB Flash	12 MB DRAM	RAM
IP/IPX Plus	c1400-nsy-mz	4 MB Flash	16 MB DRAM	RAM

Cisco 1401 Router

The Cisco 1401 router is an ATM-25 router for Digital Subscriber Line (DSL) networks that connects small businesses and remote branch offices to the Internet or to larger, corporate networks. The router features one 10BaseT and one ATM-25 interface to provide a seamless connection from a 10BaseT local area network (LAN) to an ATM network. The ATM-25 interface can be connected to an external, DSL modem to provide a connection of up to 8 Mbps to the Internet or to corporate networks.

Following are some of the key features of the Cisco 1401 router:

- One Ethernet port—For connecting to a 10:BaseT local area network through an Ethernet hub or switch.
- One ATM-25 port—For connecting (through a DSL modem) to a central service provider over an ADSL line.
- Console port—For connecting a terminal or PC to configure and manage the router. Supports up to 115.2 kbps.
- Supports ATM features such as ATM Adaption Layer 5, ATM PVCs, and RFC 1483.
- SNMP support—Router can be managed over a network using Simple Network Management Protocol (SNMP).
- Cisco ATM Management Information Base (MIB) support.

Cisco IOS Feature Sets for the Cisco 1401 Router

The Cisco IOS software is packaged into “feature sets” (also called “software images”). There are many different feature sets available, and each feature set contains a specific subset of Cisco IOS features. The Plus keyword is used to identify feature sets with a value-added option that contains a variable set of additional features depending on the hardware platform selected.

The following list shows which feature sets are supported on the Cisco 1401 router. These feature sets only apply to Cisco IOS Release 12.0(1)XA:

- IP
- IP Plus
- IP/IPX
- IP/IPX Plus

Feature Set Tables

To determine what features are available with each feature set (software image), see Table 2. The table summarizes the features you can use when running a specific feature set on the Cisco 1401 router for Cisco IOS Release 12.0(1)XA. The feature set table uses the following symbol conventions to identify features:

- Yes: the feature is offered in the feature set.
- No: the feature is not offered in the feature set.

Note This feature set table contains only a selected list of features. This table is not a cumulative or complete list of all the features in each image.

Table 2 Cisco IOS Software Feature Sets for the Cisco 1401 Router, Part 1

Features	Feature Set			
	IP	IP Plus	IP/IPX	IP/IPX Plus
IP Routing				
EIGRP	Yes	Yes	Yes	Yes
IGRP	Yes	Yes	Yes	Yes
OSPF	Yes	Yes	Yes	Yes
RIP	Yes	Yes	Yes	Yes
LAN Support				
Virtual Private Network (VPN)	No	Yes	No	Yes
Management				
ATM MIB	Yes	Yes	Yes	Yes
CDP MIB	Yes	Yes	Yes	Yes
Chassis MIB	Yes	Yes	Yes	Yes
Configuration/Management MIB	Yes	Yes	Yes	Yes
Flash MIB	Yes	Yes	Yes	Yes
IP Multicast MIBs	No	Yes	No	Yes

System Requirements

Table 2 Cisco IOS Software Feature Sets for the Cisco 1401 Router, Part 1 (continued)

Features	Feature Set			
	IP	IP Plus	IP/IPX	IP/IPX Plus
Image MIB	Yes	Yes	Yes	Yes
IP MIB	Yes	Yes	Yes	Yes
IP Multicast Route MIB	No	Yes	No	Yes
IPX MIB	Yes	Yes	Yes	Yes
NLSP MIB	No	Yes	No	Yes
OSPF MIB	Yes	Yes	Yes	Yes
Queue MIB	Yes	Yes	Yes	Yes
Remote Monitoring	Yes	Yes	Yes	Yes
RSVP MIB	No	Yes	No	Yes
Round Trip Time Monitor	Yes	Yes	Yes	Yes
Transparent Bridging MIB	Yes	Yes	Yes	Yes
IP Static Route MIB	Yes	Yes	Yes	Yes
VPN MIB	No	Yes	No	Yes
UPD MIB	Yes	Yes	Yes	Yes
SNMP	Yes	Yes	Yes	Yes
Miscellaneous				
Compression	Yes	Yes	Yes	Yes
Protocols				
Border Gateway Protocol (BGP)	No	Yes	No	Yes
Cisco Discovery Protocol (CDP)	Yes	Yes	Yes	Yes
ConnectionLess Network Services (CLNS)	No	Yes	No	Yes
DHCP Client	Yes	Yes	Yes	Yes
DHCP Relay	Yes	Yes	Yes	Yes
DHCP Server	Yes	Yes	Yes	Yes
HTTP	Yes	Yes	Yes	Yes
IP CDP	Yes	Yes	Yes	Yes
IP Compression	Yes	Yes	Yes	Yes
IP Multicast	No	Yes	No	Yes
IP Multicast NAT	No	Yes	No	Yes
IP NAT	Yes	Yes	Yes	Yes
IP NHRP	Yes	Yes	Yes	Yes
IPX	Yes	Yes	Yes	Yes
IPX Compression	Yes	Yes	Yes	Yes
IPX EIGRP	Yes	Yes	Yes	Yes
IPX NHRP	No	Yes	No	Yes
IPX NLSP	No	Yes	No	Yes
Network Address Translation (NAT)	Yes	Yes	Yes	Yes

Table 2 Cisco IOS Software Feature Sets for the Cisco 1401 Router, Part 1 (continued)

Features	Feature Set			
	IP	IP Plus	IP/IPX	IP/IPX Plus
Next Hop Reservation Protocol (NHRP)	Yes	Yes	Yes	Yes
Network Time Protocol (NTP)	No	Yes	No	Yes
Resource Reserve Protocol (RSVP)	No	Yes	No	Yes
Simple Network Time Protocol (SNTP)	Yes	Yes	Yes	Yes
Serial Tunneling (STP)	Yes	Yes	Yes	Yes
Source Route Bridging (SRB)	Yes	Yes	Yes	Yes
Transparent Bridging	Yes	Yes	Yes	Yes
Security				
Access Lists	Yes	Yes	Yes	Yes
IPX Access Lists	Yes	Yes	Yes	Yes
NETBIOS Access Lists	Yes	Yes	Yes	Yes
Radius	Yes	Yes	Yes	Yes
TACACS	Yes	Yes	Yes	Yes
TACACS+	Yes	Yes	Yes	Yes
WAN Services				
Cisco Discovery Protocol over PPP (CCP)	Yes	Yes	Yes	Yes
IPX over WAN	Yes	Yes	Yes	Yes
Layer 2 Forwarding (L2F)	No	Yes	No	Yes
Layer Tunnel Protocol (L2TP)	No	Yes	No	Yes
PPP over ATM	Yes	Yes	Yes	Yes
Traffic Shaping	Yes	Yes	Yes	Yes
Virtual Profiles	Yes	Yes	Yes	Yes
Virtual Template	Yes	Yes	Yes	Yes

New and Changed Information

The following sections list the new features supported by the Cisco 1401 router in Cisco IOS Release 12.0(1)XA.

New Features in Release 12.0(1)XA

The following new features in Cisco IOS Release 12.0(1)XA are available for the Cisco 1401 router. Release 12.0(1)XA also supports the features in Cisco IOS Release 12.0(1)T, which are described in the *Release Notes for Cisco IOS Release 12.0 T*. To access this document, see the section, "Related Documentation."

The following new features in Cisco IOS Release 12.0(1)XA are available for the Cisco 1401 router.

Support for Cisco 1401

This is the first Cisco IOS release to include support for the Cisco 1401 router.

Important Notes

This section describes warnings and cautions about using the Cisco IOS Release 12.0(1)XA software.

Flash defaults to Flash:1 on Multipartition Flash

When using a multipartition flash card, the various flash partitions are referred to as "flash:1:", "flash:2:", etc. If you specify only "flash" in a multipartition flash, the parser assumes "flash:1:." For example, if you type "show flash all" the parser defaults to "show flash:1: all" and only the flash information for the first partition displays. To see information for all flash partitions, type "show flash ?" This will list all of the valid partitions. Then enter "show flash:xx: all" on each valid partition.

Traffic Shaping

On the ATM25 interface of the C1400 there are two types of traffic shaping: hardware-based and software-based. Hardware-based traffic shaping is provided by the ATM SAR chip and is enabled on a per-pvc basis by one of the following IOS PVC configuration commands:

```
ubr      <peak-cell-rate>
ubr+    <peak-cell-rate> <minimum-guaranteed-cell-rate>
vbr-nrt <peak-cell-rate> <sustainable-cell-rate> <maximum-burst-size>
```

The SAR chip has "rate counters" that control the rate at which the current buffer up for segmentation is going to be transmitted. Ideally, the SAR chip could be programmed with values for all of the above command parameters. Unfortunately, it only has the rate counters, which specify a divisor of the basic line rate of 25 Mbps and which really sets the maximum transmission rate (peak-cell-rate) for the channel. Note that with the "ubr" and "ubr+" commands, the rate counter for the PVC is obtained from the <peak-cell-rate> parameter. With the "vbr-nrt" command, the rate counter is obtained from the <sustainable-cell-rate> parameter. While the <minimum-guaranteed-cell-rate> parameter in the "ubr+" command and the <peak-cell-rate> parameter in the "vbr-nrt" command can be specified by the user, they are ignored by the ATM25 driver.

Software-based traffic shaping is enabled on a per-interface basis via the "traffic-shape" interface configuration command. For performance reasons, and since for ATM interfaces you most likely want to do shaping on a per-pvc basis, the ATM driver does not support software-based traffic shaping while fastswitching. However, if fast-switching is disabled and the "traffic-shape" interface configuration command is enabled, then software traffic shaping will occur. (See CSCdk28377 for more information).

Open Caveats—Release 12.0(1)XA

There are no new caveats in Cisco IOS Release 12.0(1)XA. However, the caveats in Cisco IOS Releases 12.0(1) T apply to Release 12.0(1)XA. For descriptions of Cisco IOS Release 12.0 T caveats, see the *Cisco IOS Software Release 12.0 T Caveats*. To access this document, see the section, "Related Documentation."

Related Documentation

The following sections describe the documentation available for the Cisco 1401 router. Typically these documents consist of hardware installation guides, software installation guide guides, Cisco IOS configuration and command references, system error messages, and feature modules, which are updates to the Cisco IOS documentation. Documentation is available as printed manuals or electronic documents, except for feature modules, which are available online only.

The most up-to-date documentation can be found on the Web via Cisco Connection Online (CCO) and on the latest Documentation CD-ROM. These electronic documents might contain updates and modifications made after the paper documents were printed. For information on CCO, refer to the "Cisco Connection Online" section later in this document. For more information on to the CD-ROM, refer to the "Documentation CD-ROM" section later in this document.

The following sections describe the documentation related to these release notes:

- Cisco IOS Software Documentation
- Hardware Documents
- Software Documents

Cisco IOS Software Documentation

Release 12.0(1)XA release notes should be used in conjunction with the *Release Notes for Cisco IOS Release 12.0 T*. This document describes the release from which the current special release is derived.

Additional documentation for Cisco IOS Release 12.0 T is listed below.

To access release-specific documentation on the documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco Product Documentation/Cisco IOS Software Configuration/Cisco IOS Release 12.0

The following documents apply to Cisco IOS Release 12.0(1)T:

- *Cisco IOS 12.0 Configuration Guides, Command References*
- *Cisco IOS 12.0 Dial Solutions Quick Configuration Guide*
- *Cisco IOS 12.0 System Error Messages*
- *Cisco IOS 12.0 Debug Command Reference*

- *Cisco IOS 12.0 Command Summary*
- *Cisco IOS 12.0 New Features*
- *Release Notes for Cisco IOS Release 12.0*
- *Product Specific Release Notes for Cisco IOS Release 12.0*
- *Cisco IOS Software Release 12.0 and 12.0 T Caveats*
- *Cisco IOS 12.0 T New Features*
- *CIP Microcode Release Note and Upgrade Instructions*
- *Cisco IOS 12.0 XA New Features*
- *Feature Pack Information*
- *Channel Port Adapter Microcode Release Notes*

Hardware Documents

Hardware documentation for the Cisco 1401 router is listed below. These documents ship with the Cisco 1401 router.

To access hardware documents on CCO, follow this path:

Products and Ordering: Cisco Documentation: Cisco Product Documentation/DSL Products/Cisco 1401

To access hardware documentation on the documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco Product Documentation/DSL Products/Cisco 1401

The following documents are specific to the Cisco 1401 router:

- *Installing Your Cisco 1401 Router Quick Start Guide*
- *Cisco 1401 Router Installation and Configuration Guide*
- *Regulatory Compliance and Safety Information*

Software Documents

Cisco IOS software documentation is listed in Table 3. Software documentation consists of the Cisco IOS configuration guides and command references and also includes several supporting documents. These documents are shipped with the Cisco 1401 router in electronic form on the Documentation CD-ROM, unless you specifically ordered the printed version of the documents.

To access software documents on CCO, follow this path:

Products and Ordering: Cisco Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0

To access software documentation on the documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0

Table 3 Software Documents for the Cisco 1401 Router

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	Configuration Fundamentals Overview Cisco IOS User Interfaces File Management Interface Configuration System Management
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	IP Addressing IP Services IP Routing Protocols
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	AppleTalk Novell IPX
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering Network Data Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	Dial Business Solutions and Examples Dial-In Port Setup DDR and Dial Backup Remote Node and Terminal Service Cost-Control and Large-Scale Dial Solutions VPDN
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing

Table 3 Software Documents for the Cisco 1401 Router (continued)

Books	Chapter Topics
<ul style="list-style-type: none">• <i>Bridging and IBM Networking Configuration Guide</i>• <i>Bridging and IBM Networking Command Reference</i>	Transparent Bridging Source-Route Bridging Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN NCIA Client/Server Topologies IBM Channel Attach
<ul style="list-style-type: none">• <i>Cisco IOS Software Command Summary</i>• <i>Dial Solutions Quick Configuration Guide</i>• <i>System Error Messages</i>• <i>Debug Command Reference</i>	

Note The *Cisco Management Information Base (MIB) User Quick Reference* publication is no longer being published. For the latest list of MIBs supported by Cisco, see the *Cisco Network Management Toolkit* on Cisco Connection Online. On CCO, go to *Software and Support*, select *Software Center*, and click *Network Management Products*. Next, select *Cisco Network Management Toolkit*, and click *Cisco MIBs*.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section “Service and Support” in the information packet that shipped with your product.

Note If you purchased your product from a reseller, you can access CCO as a guest. CCO is Cisco Systems’ primary real-time support channel. Your reseller offers programs that include direct access to CCO services.

For service and support for a product purchased directly from Cisco, use CCO.

Software Configuration Tips on the Cisco TAC Home Page

The following URL contains links to access helpful tips on configuring your Cisco products:

http://www.cisco.com/kobayashi/serv_tips.shtml

This URL is subject to change without notice. If it changes, point your web browser to <http://www.cisco.com/>, and follow this path: *Software & Support, Technical Tips* (button on left margin).

“Hot Tips” are 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 access fax-on-demand and receive documents at your fax machine from the USA, call 888-50-CISCO (888-502-4726). From other areas, call 415-596-4408.

The following sections are provided from the Technical Tips page:

- **Access Dial Cookbook**—Cisco Configuration Cookbooks offer easy-to-follow “recipes” for sample router configurations. The first cookbook in this new series contains network diagrams, sample configurations, and troubleshooting commands designed to help you set up and use various dial technologies on Cisco access routers.
- **Field Notices**—Designed to provide notification of any critical issues regarding Cisco products. These include problem descriptions, safety or security issues, and hardware defects.
- **Hardware**—Technical Tips related to specific hardware platforms.
- **Internetworking Features**—Tips on using and deploying Cisco IOS software features and services.
- **Sample Configurations**—Actual configuration examples complete with topology and annotations.
- **Software Products**—MultiNet & Cisco Suite 100, Network Management, Cisco IOS Software Bulletins, and CiscoPro Configurations.
- **Special Collections**—Other Helpful Documents, Frequently Asked Questions, Security Advisories, References & RFCs, Case Studies, and the CiscoPro Documentation CD-ROM.

Cisco Connection Online

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

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

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

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

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

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

Documentation CD-ROM

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

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

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