78-5994-05 05/04/99

Release Notes for Cisco Broadband Operating System Release 2.1.0

May 4, 1999

These release notes discuss primary fixes, new features, important caveats, resolved problem reports, open problem reports, and the software upgrade process for the **Cisco Broadband Operating System (CBOS) Release 2.1.0**. Please refer to previous release notes for specific information concerning past releases.

For more detailed information about the features in these release notes, refer to the "Related Documentation" section on page 12. Information about electronic documentation can be found in the "Cisco Connection Online" section on page 12.

1. Contents

These release notes provide the following information:

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2. The Cisco Broadband Operating System (CBOS)

The CBOS is the common operating system for Cisco Customer Premise Equipment (CPE). The CBOS is modeled after Cisco's Internetworking Operating System (IOS) and features a similar command syntax and format. This operating system is bundled with the CPE products listed below and can also be downloaded from Cisco Connection Online.

The CBOS Release 2.1.0 supports the following Cisco ADSL CPE products:

- Cisco 675
- Cisco 675e
- Cisco 676
- Cisco 626

Note These products are collectively referred to as Cisco 6xx equipment.

3. New Features for the CBOS Release 2.1.0

The **CBOS Software Release 2.1.0** supports the following new features:

- Supports Ethernet and ADSL Interface elements for the Enterprise MIB
- Supports RFC1483 Routing
- Provides primary and secondary WINS and DNS support for IPCP and DHCP server
- Provides an IPCP subnet mask option for PPP and DHCP server
- Supports enabling and disabling of DOH Mode
- Supports automatic enabling and disabling of PAP
- Supports a DHCP Relay Agent (plus Enterprise MIB Support)
- Supports virtual IP addresses
- Support for enhancements to DHCP Server
- Support for enhancements to NAT
- Support for multicast proxy option
- Support for clearing the ARP Table, IPCP Parameters, and passwords
- Support for the filtering of broadcast and multicast packets

3.1 Support for Ethernet Elements in the MIB

This feature supports standard Manageable Information Block (MIB) Ethernet elements. This allows you to manage the Ethernet interface on Cisco 6xx equipment using the Simple Network Management Protocol (SNMP).

This feature also supports enhanced ADSL MIB functionality.

3.2 Support for RFC 1483 Routing

This feature provides full routing support for RFC 1483 encapsulation.

3.3 Support for WINS and DNS for IPCP and the DHCP Servers

This feature allows the Cisco 6xx equipment to automatically provide learned Windows Naming Service (WINS) and Domain Named Service (DNS) addresses during Dynamic Host Configuration Protocol (DHCP) negotiation.

3.4 Support for the IPCP Subnet Mask Option

This feature allows the subnet mask to be passed to the Cisco 6xx DHCP server during Internet Protocol Control Protocol (IPCP) negotiation.

3.5 Support for DOH option

This feature allows you enable or disable the Digital Off-Hook (DOH) option using the following command:

set interface wan0 doh {enabled | disabled}

In DOH mode, the unit will not train at start-up or in response to traffic. You must train the unit manually.

Note To use the non-DOH or auto-training service, you must first contact your Service Provider (SP) and subscribe to the service. Non-DOH service gives you a dedicated modem at the SP. If you try to use this service without subscribing to it, the Cisco equipment will train, but the SP will immediately terminate the link. Once the SP terminates the link, you could be prevented from training again for up to 60 minutes.

3.6 Support for PAP password disable option

This feature allows you disable Password Authentication Protocol (PAP) passwords during Point-to-Point (PPP) negotiation. This allows you to run PPP without requiring a PAP user name or password. Use the following command to set this option:

set ppp wan0-x pap enabled | disabled

3.7 Support for a DHCP Relay Agent

This feature enables Cisco 6xx equipment to relay DHCP packets from the Ethernet interface to the Wan interfaces and vice versa.

To enable or disable the DHCP relay agent use the following command:

set dhcp relay {enabled | disabled}

3.8 Support for Virtual IP ports and addresses

This features allows you to create up to three virtual Ethernet ports on the single physical Ethernet port, each with its own IP address and subnet mask. You can configure the new interfaces, `vip0`, `vip1`, and `vip2` just like the primary Ethernet interface.

3.9 Enhancements to DHCP Server

Enhancements to the DHCP Server functionality include:

- IPCP Learn-- The Cisco 6xx DHCP server obtains a base IP address from IPCP during PPP negotiation. Use the following command to invoke this feature:

  set dhcp server learn enabled | disabled

- IP in use check-- Before the Cisco 6xx DHCP server hands out an IP address, it checks to see if the IP address is being used elsewhere on the LAN. This functionality runs in the background and generates a small amount of Ethernet traffic, for which you will see the Ethernet LED blink.

3.10 Enhancements to NAT functionality

Enhancements to Network Address Translation (NAT) functionality include:

- Support for NAT for H.323 -- For example, Microsoft NetMeeting is an H.323 application that has been successfully tested with NAT. Create the following static NAT entries for outside to inside NetMeeting calls to work:

  set nat entry add inside_ip address 1503 outside_ipaddress 1503 tcp

  set nat entry add inside_ip address 1720 outside_ipaddress 1720 tcp

  ---

  Note In the example above, two NAT entries are needed per call. You do not need to create any NAT entries manually for inside to outside call. Because only one public outside address can be assigned to the 6xx NAT router, only one inside host may participate in the NetMeeting.

- Added support for protocols other than TCP, UDP, and ICMP--When protocols other than these are embedded in IP, CBOS software translates the IP header. To use this feature, enter protocol numbers in lieu of protocol names (TCP, UDP, ICMP) when creating or deleting static NAT entries. For example:

  set nat entry add 10.0.0.2 0 201.71.0.100 0 47

  Where 47 corresponds to protocol number 47.

  Also, the **show nat** command also now displays protocol numbers in the protocol column when the protocol is not TCP, UDP, or ICMP protocol.

- Static NAT entry's flags and timers are reset to their original state after their use.

3.11 Support for multicast proxy

This feature adds support for an IP multicast proxy between the Ethernet and Wan0-0 interfaces. With this, Internet Group multicast Protocol (IGMP) messages and User Datagram Protocol (UDP) data addressed to multicast destinations from eth0 are forwarded to wan0-0 and vice versa. This functionality supports applications requiring IGMP Proxy support on the ADSL Router, such as IP/TV.

IP multicast forwarding is enabled by default and can be disabled using the following command:

set multicast forwarding disabled

Use the following command to display current multicast status:

show multicast forwarding

3.12 Support for clearing ARP table, IPCP parameters, and passwords

This feature allows you to manually clear the ARP table, IPCP parameters, and passwords.

Use the following command to clear the ARP table:

set arp clear

Use the following command to clear IPCP parameters:

set ppp wan0-x ipcp clear

Use the following commands to clear the exec or enable passwords:

set password clear exec

set password clear enable

3.13 Support for filtering broadcast packets

This feature allows you to enable and disable forwarding of broadcasts. This feature is helpful in blocking subnet-directed broadcasts to the Cisco 6xx LAN segment. Since the subnet directed broadcasts can only be correctly identified at the border of the destination, it really helps to setup Cisco 6xx not to forward broadcasts to the LAN segment. Network directed broadcasts can be blocked in both directions. Local broadcasts are not affected by this configuration setting.

To enable or disable broadcast forwarding, enter the following:

set broadcast forwarding {enabled | disabled}

To view the current setting for the feature, enter the following:

show broadcast forwarding

3.14 New Commands

The CBOS Release 2.1.0 supports the following new commands:

- **set arp clear**
- **set broadcast forwarding {enabled | disabled}**
- **set dhcp relay {enabled | disabled}**
- **set dhcp server learn {enabled | disabled}**
- **show dhcp server pool 0**
- **show dhcp server allocated**
- **set error combo {enabled | disabled}**
- **set interface wan0 doh {enabled | disabled}**
- **set multicast forwarding {enabled | disabled}**
- **set password clear exec**
- **set password clear enable**
- **set ppp wan0-x ipcp clear**

- **set ppp wan0-x pap {enabled | disabled}**
- **set rfc 1483 {enabled | disabled}**

Refer to the *CBOS User Guide* for detailed information on these commands.

4. Important Notes

The following section describes information important to Release 2.1.0 of CBOS.

4.1 Upgrading to CBOS 2.x

The upgrade process is the same whether you use the Trivial File Transport Protocol (TFTP) or serially download the new file. Once the new file is written to the flash, enter the reboot command from the CBOS command line to reset your system. The new image loads, decompresses two images, and programs the new images to the correct flash memory locations.

Caution Do not reset the system or halt its operation in any way during the upgrade process. Resetting while writing a new image to flash memory ***will corrupt*** the flash.

To serially download the image, enter the following settings through a serial console connected to your system:

- 38.4 Kbaud
- No parity
- 8-data bits
- 1-stop bit
- No flow control

The code sequence (shown below) is an *example* of what is displayed after a new image is serially downloaded; and the system is rebooted.

```
cbos# set download code
Downloading
 -- Download complete --
    Transferred 0009e600 bytes
Hello!
Cisco Broadband Operating System self-update code: Release 2.0.x
NOTE: Do not power off the Cisco 675 until update is finished!
Decompressing router ...
Erasing FLASH ...
Programming ...
Decompressing monitor ...
Programming ...
Hello!
User Access Verification
Password:
cbos>
```

To use TFTP, enable TFTP on the Cisco equipment and use a TFTP client.

4.2 Management Channel

With CBOS versions 2.0 and greater, enabling the management bridge mode does not create a separate management Virtual Circuit (VC). This allows you to manage bridged 67x products over the same VC as you pass data.

See the following directions for the steps to take to enable the management channel:

Step 1 Enable RFC1483 bridging:

```
set bridging rfc1483 enabled
```

Step 2 Save your changes:

```
write
```

Step 3 Reboot the device:

```
reboot
```

Step 4 Enable management of the bridge:

```
set bridging management enabled
set int eth0 ip < ip address >
```

The IP address of the Ethernet port should be an IP address on the same network as that of the “far-end” station.

```
set route default wan0-0
set route default ip < ip address >
```

The default IP address should the IP address of the far-end station that is used to Telnet into the router.

Step 5 Save your changes:

```
write
```

Step 6 To enable your changes, reboot the router:

```
reboot
```

Note The IP address assigned to the router must be an IP address from the same network segment (subnet) that is being bridged. Assigning IP addresses in this fashion enables access, via telnet, to the router for management functions.

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5. Important Caveats for the CBOS Release 2.1.0

The following list describes known issues and functionality details.

- Bridging and routing do not operate simultaneously.
- Only one bridging mode is allowed at any one time (i.e., RFC1483 or PPP/BCP, not both). The RFC1483-support mode uses an AAL5-LLC/SNAP header. This is the default header type for most routers implementing RFC1483.
- When you download a new configuration file, you must name it `nscfg.xxx`, where xxx can be any extension.

- The following **enable** level commands incorrectly list on the **exec** user help screen and should be disregarded. The commands are: **show running**, **show running#**, **show nvram**, and **show nvram#**.
- The **show int eth0** shows excess information in non-managed bridging mode. When this command string is invoked, it reports an IP address and a subnet mask.

6. Resolved Problem Reports as of the CBOS Release 2.1.0

The following tables list all resolved problem reports as of the CBOS Release 2.1.0.

6.1 Resolved Problem Reports for the Cisco 626

The following table lists all resolved problem reports for the Cisco 626 as of the CBOS Release 2.1.0.

Table 1 Resolved Problem Reports for the Cisco 626 as of Release 2.1.0

PR Number	Description
CSCdm06868	c626: misspelling in show interface screen
CSCdm06887	c626: set interface command needs in-line help
CSCdm06897	c626: show interface does not report status of line training
CSCdm06902	c626: syntax for entering scrambling command incorrect
CSCdm06909	c626: show route does not show management interface; cant add route
CSCdm07092	c626: show interface gives inappropriate error message w/bad input
CSCdm07127	c626: stats for ip need more in-line help
CSCdm07143	c626: can not telnet from DSL side; can ping/telnet enabled
CSCdm07156	c626: idle and session timers do not work

6.2 Resolved Problem Reports for the Cisco 675

The following table lists all resolved problem reports for the Cisco 675 as of the CBOS Release 2.1.0.

Table 2 Resolved Problem Reports for the Cisco 675 as of Release 2.1.0

PR Number	Description
CSCdk43359	6100 digital off hook feature does not work, with rfc1483 bridging.
CSCdk51728	Filtering changes submitted through web interface do not show up in
CSCdk51971	c675: set download code does not work after download on other rate
CSCdk66528	Editing Wan connect via Web UI results in config param syntax error
CSCdk66754	DHCP pool changes when client PC releases/renews
CSCdk66780	c675 DHCP pool size automatically changes to subnet size
CSCdk71636	c675: setting prompt can cause CLI problems
CSCdk84046	c675: set i eth0 ip 10.0.0.14 does not add parameter to nvram

Table 2 Resolved Problem Reports for the Cisco 675 as of Release 2.1.0

PR Number	Description
CSCdk84057	c675: Command line editing in CBOS sometimes deletes the prompt
CSCdk85736	DHCP server does not work properly when pool size is 0 or 1
CSCdk86209	675 DHCP server lease time reporting not accurate
CSCdk86220	DHCP feature requests
CSCdk86228	675- show dhcp server pool x command shows all pools
CSCdk86231	675: web server on 675 has wrong address on info screen
CSCdk89411	can not downgrade software
CSCdk91426	Illegal port addresses and masks are allowed.
CSCdm02014	Timer values can exceed stated range (65000)
CSCdm02266	set bridging users does not produce an out of range message.
CSCdm02303	No range check is done for lease in set dhcp server pool
CSCdm02399	No lower limit when: set dhcp server pool .... is executed.
CSCdm02415	set errors clear produces conflicting messages.
CSCdm02450	set rip aging range check not valid.
CSCdm05251	login will fail 4th attempt.
CSCdm05359	Virtual interfaces do not show up in route table.
CSCdm05673	Enabling multiple vcs kills the ability to telnet into the c675
CSCdm07564	Changing IP address from telnet session crashes box.
CSCdm09866	With IPCP enabled on 675, the commander wont discover 675
CSCdm09881	Commander information windows need focus when active.
CSCdm09899	set int wanX up (where X >0) crashes 675
CSCdm11236	A long password will cause buffer overun.
CSCdm11515	NVRAM is not written when configuration is made on the Web.
CSCdm15523	Set route add command changes routing info (IP and Mask)

6.3 Resolved Problem Reports for the Cisco 676

The following table lists all resolved problem reports for the Cisco 676 as of the CBOS Release 2.1.0.

Table 3 Resolved Problem Reports for the Cisco 676 as of Release 2.1.0

PR Number	Description
CSCdk63501	c676 physical layer chipset disabled message from sh i wan0
CSCdk63512	c676 ATM Payload Scrambling negotiation does not work w/ 6200
CSCdk63519	c676 undocumented NVRAM params cannot be written to NVRAM
CSCdk66090	c676 SNR margins of 0 are not reported in sh i wan0
CSCdk66101	c676 Wan goes to line idle without set i wan0 down
CSCdk69782	C676 Previous SNR margin stat in show int wan0 is incorrect
CSCdk71079	c676 Algorithm for dropping line w/o cell delineation != 6200
CSCdk71203	c676 Out of band energy from upstream tone test

Table 3 Resolved Problem Reports for the Cisco 676 as of Release 2.1.0

PR Number	Description
CSCdm04019	c676 Lan link light stops blinking on retrain
CSCdm04178	c676 Monitor does not allow programming of all MAC address octets
CSCdm08570	C676 Loses image after successfully loaded message

7. Open Problem Reports as of the CBOS Release 2.1.0

The following table lists all open problem reports as of the CBOS Release 2.1.0.

7.1 Open Problem Reports for the Cisco 626 as of Release 2.1.0

Table 4 Open Problem Reports for the Cisco 626 as of Release 2.1.0

PR Number	Description
CSCdm06871	c626: data rate on atm1 port not shown or shown incorrectly **Impact:** User can intermittently receive the wrong data rate. **Workaround:** Re-issue the **set interface atm1** again. The error is intermittent in nature.

7.2 Open Problem Reports for the Cisco 675 as of Release 2.1.0

Table 5 Open Problem Reports for the Cisco 675 as of Release 2.1.0

PR Number	Description
CSCdk43830	Larger datagram size pings always fails in PPP/ATM scenario **Impact:** A known issue with the current code is that large pings (large enough to result in IP fragments) may fail (timeout). The exact size varies depending on the current activity level of the box (how much RAM is in use). Under certain conditions this storage of the fragments can exhaust the RAM space available and result in the ping reply failure. **Workaround:** None. The problem will be resolved in Release 2.2.
CSCdm11533	CBOS Version is not shown anywhere in the c675 web home page **Impact:** Users using the Cisco 675 home page will not have access to CBOS. **Workaround:** None. This feature will be added in release 2.2
CSCdm17752	DHCP server pool limited to 252. **Impact:** DHCP server pool will run out of addresses to give to networks with greater that 252 machines. **Workaround:** It is advised that if deploying over 1,000 clients that a standalone DHCP Server be used in a network instead of the Cisco 67x series router.
CSCdm26172	c675 boot-up failure **Impact:** Attachment of the serial cable during boot-up can intermittently result in the 675 failing to boot. This problem may be identified by the lack of alarm light during boot (1 second pulse). Ground-bounce experienced by the attachment of the serial cable during the boot-up procedure can intermittently result in glitching of the Intel 960 J-Tag control signals. **Workaround:** Disconnect serial cable during device boot-up.

Table 5 Open Problem Reports for the Cisco 675 as of Release 2.1.0

CSCdm28983	The c675 exhibits a memory leak when running LLC encapsulated PPP. Typically, the leak is on the level of tens of bytes (i.e. 32) every five seconds. The unit will continue to operate normally quite possibly for one or two days. **Impact:** Eventually, the funtionality of the unit will be severely limited due to the exhaustion of useable RAM. **Workaround:** Use a PPP peer that does not use the optional data fields in echo requests and/or power cycle daily.

7.3 Open Problem Reports for the Cisco 676 as of Release 2.1.0

Table 6 Open Problem Reports for the Cisco 676 as of Release 2.1.0

PR Number	Description
CSCdk50081	c676 wan link stays lit when line goes idle due to ppp errors **Impact:** When PPP ends the ADSL session due to excessive errors, the WAN LNK logic fails to turn off the LED. **Workaround:** Use the **show interface wan0** command to check the ADSL line state, when you believe PPP errors are ending your session.
CSCdk63510	c676 xmodem download does not support DMT firmware update **Impact:** The **set download** command does not recognize the DMT DSP firmware images. **Workaround:** Use the Ethernet port and TFTP the DMT DSP images.
CSCdk66576	c676 set I wan0-0 disable has problems when trained **Impact:** When attempting to reconfigure the wan0-0 parameters after the line has trained, the **set interface wan0-0 disable** command fails to close the wan0-0 connection.This prevents the user from modifying the wan0-0 connection parameters. **Workaround:** Disconnect the wall line to prevent the router from bringing up the WAN interface. Once the router has been configured, re-connect the wall line.
CSCdk89420	low rates (32k)w/ 676s fail large pings. **Impact:** When the WAN line is trained to 32K upstream and 32K downstream, user pings with a data payload greater than 153 bytes begin to fail. **Workaround:** Provision the DSL line rate to a higher speed.
CSCdm04191	c676/c677 DSP firmware download is not user friendly **Impact:** After downloading the DSP firmware code to the router, the router locks up for 30-50 seconds. **Workaround:** None.
CSCdm17613	c67x traling spaces in PPP login and password not visible **Impact:** PPP fails to open a session. Further analysis shows that PAP authentication is failing. **Workaround:** Verify that the PPP login and PPP passwords do not have trailing spaces by examining the CBOS response.The password or login will be immediately followed by a period.The following session shows a login entered with a trailing space: **cbos#set ppp wan0-0 login cisco** User name for wan0-0 has been set to cisco.

8. Related Documentation

Use these release notes in conjunction with the documents listed in this section.

- *Cisco Broadband Operating System User's Guide*
- *Cisco 675 Installation and Operation Manual*
- *Cisco 675E Installation and Operation Manual*
- *Cisco 676 ADSL Router installation and Configuration Manual*
- *Cisco 626 ATM ADSL Modem User's Guide*

9. 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.

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10. 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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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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