FPGA Upgrade Procedures for Cisco Catalyst 6500 Series and the Cisco 7600 Series Communication Media Modules

This upgrade procedure is supported in Cisco IOS Release 12.3(8)XY and 12.3(14)T and is used in conjunction with the following documentation:

- *Cisco Catalyst 6500/Cisco 7600 Communication Media Module*
- *Cisco IOS Release 12.3 T Cross-Platform Release Notes*
- *Release Notes for the Cisco Catalyst 6500 Series and the Cisco 7600 Series Communication Media Module for Cisco IOS Release 12.3(8)XY*

Note The automatic FPGA procedure applies if you are upgrading from a Cisco IOS 12.2(13)ZP image to a Cisco IOS 12.3(8)XY image or from a Cisco IOS 12.3(4)XN image to a Cisco IOS 12.3(8)XY image. If you are upgrading from Cisco IOS Release 12.3(8)XY to another Cisco IOS 12.3(8)XY image or to Cisco IOS Release 12.3(14)T, the FPGA procedure does not apply.

Note For information about disaster recovery, see the *Disaster Recovery for CMM Software Upgrade* s section of the *Catalyst 6500 Series Switch and Cisco 7600 Series Router CMM Installation and Verification Note.*

The CMM wscmm-i6s-mz.123-8.XY image contains a new bundle 4.4.X DSPWare infrastructure. Once downloaded, this software will perform an automatic FPGA upgrade to version 10 (hex 0xA) in order to take advantage of the new bundle 4.4.X DSPWare infrastructure.

After the upgrade, power cycling CMM is required. If you have an ACT module on CMM, you must reconfigure the ACT module with the new FastEthernet interface instead of Ethernet. Any other CMM release before wscmm-i6s-mz.123-8.XY image will require an automatic bundle FPGA upgrade to version 10 (hex 0xA).

See the following sections for upgrade procedures:

- Automatically Upgrading Feature Cards FPGA, page 2
- Downgrading Feature Cards FPGA, page 6

CISCO SYSTEMS

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

Automatically Upgrading Feature Cards FPGA

The first time you are loading the Cisco IOS Release 12.3(8)XY image, any FPGA EPLD B on T1/E1/FXS module and any FPGA EPLD A on the FXS module with a version not set to 10(hex 0xA) will be upgraded automatically to version 10(hex 0xA). This upgrade is necessary to work with the Cisco IOS software 12.3(8)XY image.

1. It is important that you avoid doing the following:

    a. Do not change or save the configuration during FPGA download because feature cards are not enabled, and configurations for these modules will be lost.

    b. Do not reload CMM during the FPGA download. The feature cards may be corrupted if the download is not completed. Downloading each FPGA may take up to six minutes, and you must wait for each individual download to complete.

Note When upgrading the FPGA via Telnet into CMM directly, you need to turn on the terminal monitor to see the messages.

Example:

```
CMM#term monitor ?
<cr>
```

2. You will be prompted to power-cycle CMM when the download is completed. This must be done for feature cards to function. To power cycle CMM, you must perform the following steps from the Catalyst Supervisor administrator:

    a. From Cisco Catalyst OS: enter **set module power down x**; then enter **set module power up x**.

    Note Entering **reset <mod x>** from the switch or **reload** from CMM is not adequate.

    b. From Cisco IOS: enter **hw-module module x reset**.

    An alternative method to the above steps is to remove CMM from the Catalyst 6000chassis and then insert CMM into the chassis again. Before hot swapping CMM, refer to the safety precautions and port adapter removal procedures in the *Catalyst 6500 Series and Cisco 7600 Series CMM Installation and Configuration Note* at the following URL:
    http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_14107.htm

3. Do not load earlier Cisco IOS images (any image before Cisco IOS Release 12.3(8)XY3) because this may crash CMM or corrupted feature cards.

4. Enter **show wscmm sprom** *slot#* to see the output of FPGA. Look for 'EPLD B' to verify that the version number is set to 10 (hex 0XA) after the upgrade.

5. For the FXS module, enter the **show wscmm sprom** *slot#* command to see the output of FPGA. Look for 'EPLD A' to verify that the version number is set to 0xA after the upgrade.

Sample screen logs for upgrade FPGA output are shown in the following section.

Sample Upgrade Screen Logs

In the following examples, the first log shows an upgrade EPLD B on E1, and the second log shows an upgrade EPLD A on FXS.

```
--------- Downloading E1 module EPLD B screen log ------
```

```
System Bootstrap, Version 12.2(1r)T1, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2002 by cisco Systems, Inc.

-SVC-CMM platform with 262144 Kbytes of main memory

Boot config value : 0^M
rommon 1 > b bootflash:wscmm-i6s-mz.xy
Self decompressing the image : #####################################################
########################################################### [OK]

Cisco IOS Software, Cat6K-lc Software (wscmm-I6S-M), Experimental Version 12.3(20040717:0
22843) [atrang-xy 116]^M
Copyright (c) 1986-2004 by Cisco Systems, Inc.
Compiled Fri 27-Aug-04 16:45 by atrang
Image text-base: 0x60010F60, data-base: 0x61100000

controller E1 1/0

controller E1 1/1

controller E1 1/2

controller E1 1/3

 framing NO-CRC4

 linecode ami

ds0-group 1 timeslots 1-15,17-31 type e&m-melcas-wink

controller E1 1/4

controller E1 1/5

framing NO-CRC4

linecode ami

ds0-group 1 timeslots 1-15,17-31 type e&m-melcas-wink

voice-port 1/3:1

echo-cancel coverage 64

voice-port 1/5:1

echo-cancel coverage 64

mediacard 2

port 1/3:1

port 1/5:1

Updating Daughterboard ID/index: 0/73 EPLD B = 3840
Takes a few seconds ...

Press RETURN to get started!

*Mar  1 00:00:09.639: %JAGGER-6-INFO: ms_dsprm_init is NOT ACTIVE, FPGA epld will be upgr
aded
*Mar  1 00:00:09.755: %SYS-6-LOGGERSTART: Logger process started
*Mar  1 00:00:11.639: %SYS-5-CONFIG_I: Configured from memory by console
```

```
*Mar  1 00:00:11.895: %SYS-5-RESTART: System restarted --
Cisco IOS Software, Cat6K-lc Software (wscmm-I6S-M), Experimental Version 12.3(20040717:0
22843) [atrang-xy 116]
Copyright (c) 1986-2004 by Cisco Systems, Inc.
Compiled Fri 27-Aug-04 16:45 by atrang
*Mar  1 00:00:11.895: %SNMP-5-COLDSTART: SNMP agent on host at-jagger is undergoing a col
d start
*Mar  1 00:00:11.899: %EPLD-4-START_WARNING:
        ############### START FPGA DOWNLOAD PROCESS ################
        # All feature cards will not be enabled during FPGA       #
        # download.  Please ignore configuration 'invalid' messages #
        # at boot up time.  Do not change/save configuration       #
        # until after FPGA download is completed and power-cycle    #
        # or configurations for feature cards will be lost...       #
        ##############################################################
*Mar  1 00:00:12.015: %EPLD-3-UPGRADE: Module 1 upgrade FPGA B to version 10
*Mar  1 00:00:12.287: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0,
 changed state to down
*Mar  1 00:00:13.063: %LINK-5-CHANGED: Interface FastEthernet1/0, changed state to admini
stratively down
*Mar  1 00:00:13.295:
*Mar  1 00:00:13.763: %LINK-3-UPDOWN: Interface GigabitEthernet1/0, changed state to up

*Mar  1 00:00:14.239: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, ch
anged state to down
*Mar  1 00:00:21.291: %SCP-5-ONLINE: Module online
*Mar  1 00:00:21.291: %PIM-5-DRCHG: DR change from neighbor 0.0.0.0 to 10.1.1.107 on inte
rface GigabitEthernet1/0 (vrf default)
*Mar  1 00:00:21.407: %EPLD-6-INFO: Start programming FPGA B, this can take up to 6 minut
es per download...

*Mar  1 00:00:22.199: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0,
 changed state to up
*Mar  1 00:00:22.199: %PIM-5-NBRCHG: neighbor 10.1.1.1 UP on interface GigabitEthernet1/0
 (vrf default) MODULE 1 FPGA download completion 5 percent...MODULE 1 FPGA download compl
etion 10 percent...
*Mar  1 00:00:47.879: %HSRP-6-STATECHANGE: GigabitEthernet1/0 Grp 0 state Standby -> Acti
veMODULE 1 FPGA download completion 15 percent...MODULE 1 FPGA download completion 20 per
cent...MODULE 1 FPGA download completion 25 percent...MODULE 1 FPGA download completion 3
0 percent...MODULE 1 FPGA download completion 35 percent...MODULE 1 FPGA download complet
ion 40 percent...MODULE 1 FPGA download completion 45 percent...MODULE 1 FPGA download co
mpletion 50 percent...MODULE 1 FPGA download completion 55 percent...MODULE 1 FPGA downlo
ad completion 60 percent...MODULE 1 FPGA download completion 65 percent...MODULE 1 FPGA d
ownload completion 70 percent...MODULE 1 FPGA download completion 75 percent...MODULE 1 F
PGA download completion 80 percent...MODULE 1 FPGA download completion 85 percent...MODUL
E 1 FPGA download completion 90 percent...MODULE 1 FPGA download completion 95 percent...

Updating Daughterboard ID/index: 0/73 EPLD B = 10
Takes a few seconds ...

*Mar  1 00:04:39.039: %EPLD-6-INFO: FPGA B download slot 1 successfully completed!
*Mar  1 00:04:45.255: %EPLD-4-COMPLETE:

############# FEATURE CARDS FPGA DOWNLOAD COMPLETED #########        ^M
        # In order for feature cards to function, power-cycle CMM   #         ^M
        # immediately!  Do not change/save configuration           #         ^M
        # until after power-cycle or configurations for feature    #         ^M
        # cards will be lost...                                     #         ^M
        ##############################################################        ^M

----------- Downloading FXS EPLD A screen log ------
Updating Daughterboard ID/index: 1/71 EPLD A = 3840
Takes a few seconds ...
```

```
Press RETURN to get started!

*Mar  1 00:00:09.835: %JAGGER-6-INFO: ms_dsprm_init is NOT ACTIVE, FPGA epld will be upgr
aded
*Mar  1 00:00:09.951: %SYS-6-LOGGERSTART: Logger process started
*Mar  1 00:00:10.275: %SYS-5-CONFIG_I: Configured from memory by console
*Mar  1 00:00:10.527: %SYS-5-RESTART: System restarted --
Cisco IOS Software, Cat6K-lc Software (wscmm-I6S-M), Experimental Version 12.3(20040717:0
22843) [atrang-xy 116]
Copyright (c) 1986-2004 by Cisco Systems, Inc.
Compiled Fri 27-Aug-04 16:45 by atrang
*Mar  1 00:00:10.527: %SNMP-5-COLDSTART: SNMP agent on host at-jagger is undergoing a col
d start
*Mar  1 00:00:10.531: %EPLD-4-START_WARNING:
        ############### START FPGA DOWNLOAD PROCESS ###############
        # All feature cards will not be enabled during FPGA       #
        # download.  Please ignore configuration 'invalid' messages #
        # at boot up time.  Do not change/save configuration      #
        # until after FPGA download is completed and power-cycle   #
        # or configurations for feature cards will be lost...      #
        ##########################################################
*Mar  1 00:00:10.647: %EPLD-3-UPGRADE: Module 2 upgrade FPGA A to version 10
*Mar  1 00:00:11.463: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0,
 changed state to down
*Mar  1 00:00:12.163:


*Mar  1 00:00:12.163:
*Mar  1 00:00:12.163: %LINK-5-CHANGED: Interface FastEthernet1/0, changed state to
administratively down
*Mar  1 00:00:12.395: %LINK-3-UPDOWN: Interface GigabitEthernet1/0, changed state to up
*Mar  1 00:00:13.339: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0,
changed state to down
*Mar  1 00:00:13.571: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/0,
changed state to up
*Mar  1 00:00:13.819: %PIM-5-DRCHG: DR change from neighbor 0.0.0.0 to 10.1.1.107 on
interface GigabitEthernet1/0 (vrf default)

*Mar  1 00:00:15.275: %PIM-5-NBRCHG: neighbor 10.1.1.1 UP on interface GigabitEthernet1/0
(vrf default)
*Mar  1 00:00:20.747: %SCP-5-ONLINE: Module online
*Mar  1 00:00:21.927: %EPLD-6-INFO: Start programming FPGA A, this can take up to 5
minutes per download...
ODULE 2 FPGA download completion 5 percent...MODULE 2 FPGA download completion 10
percent...
*Mar  1 00:00:46.499: %HSRP-6-STATECHANGE: GigabitEthernet1/0 Grp 0 state Standby ->
ActiveMODULE 2 FPGA download completion 15 percent...MODULE 2 FPGA download completion 20
percent...MODULE 2 FPGA download completion 25 percent...MODULE 2 FPGA download completion
30 percent...MODULE 2 FPGA download completion 35 percent...
ODULE 2 FPGA download completion 40 percent...MODULE 2 FPGA download completion 45
percent...MODULE 2 FPGA download completion 50 percent...MODULE 2 FPGA download completion
55 percent...MODULE 2 FPGA download completion 60 percent...MODULE 2 FPGA download
completion 65 percent...MODULE 2 FPGA download completion 70 percent..MODULE 2 FPGA
download completion 80 percent...MODULE 2 FPGA download completion 85 percent...MODULE 2
FPGA download completion 90 percent...MODULE 2 FPGA download completion 95 percent...
Updating Daughterboard ID/index: 1/71 EPLD A = 10
Takes a few seconds ...

*Mar  1 00:04:42.495: %EPLD-6-INFO: FPGA A download slot 2 successfully completed!
*Mar  1 00:04:48.827: %EPLD-4-COMPLETE:


        ############## FEATURE CARDS FPGA DOWNLOAD COMPLETED #########        ^M
        # In order for feature cards to function, power-cycle CMM   #        ^M
```

```
# immediately!  Do not change/save configuration        #         ^M
# until after power-cycle or configurations for feature  #         ^M
# cards will be lost...                                   #         ^M
###########################################################        ^M
```

Downgrading Feature Cards FPGA

If you need to downgrade from 12.3(8)XY to 12.2(13)ZP, FPGA must be downgraded for the CMM to function correctly. For more information please see the following ZAM link:

http://www.cisco.com/cgi-bin/tablebuild.pl/cmm

Use the following downgrade procedure:

1. Make sure that anokha_t1_e1.jam and or anokha_fxs.jam files are in bootflash.

2. If CMM is booted from bootflash, make sure that Cisco IOS Release 12.3(8)XY and ZP3 images are in bootflash.

3. Enter **copy running-config bootflash**:*filename.save* to save the current running configuration to bootflash.

4. While CMM is running the Cisco IOS Release 12.3(8)XY3 image, enter the **test fpga downgrade** *slot#* command.

5. Repeat step 4. for all feature cards in CMM.

Note   When downgrading the FPGA via Telnet into CMM directly, you need to turn on the terminal monitor to see the messages.

Example:

```
CMM#term monitor ?
<cr>
```

6. Reload CMM with the Cisco IOS Release 12.3(8)XY3 image to download the FPGA code. The download occurs during bootup.

7. After the download is complete for all feature cards, add boot system flash **bootflash:wscmm-i6s-mz.xxxZP3** in the running configuration. This will make CMM boot up with ZP3 image at the next reboot. You can save the configuration to bootflash, because the configuration for CMM was saved in Step 3 to be used after downgrading FPGA.

8. Set the config-register to 0x2 using the following command:

```
conf t>conf-reg 0x2
```

9. Reload CMM with the Cisco IOS Release 12.2(13)ZP image.

Note   If you run the non-ZP image, CMM may crash and corrupt the feature cards.

10. After CMM boots up with the Cisco IOS Release 12.2(13)ZP image, enter the **copy bootflash:**filename.save **running-config** command to recover the configuration for the feature cards.

11. Enter the **write memory** command to save the configuration.

12. Enter the **show wscmm sprom** *slot#* command to see the output of FPGA. Look for 'EPLD B' to verify that the version number is set to version 2 after the downgrade.

Sample screen logs for downgrade FPGA output are shown in the following section.

Sample Screen Logs For Downgrade FPGA

```
Router# test fpga downgrade 1
####################################################################
### Slot 1 FPGA will be downgraded to version 2.
### Make sure you have <anokha_t1_e1.jam> file for T1/E1 card
### and <anokha_fxs.jam> file for FXS card in bootflash
####################################################################
### MUST RUN ZP IMAGE WITH DOWNGRADE FPGA VERSION 2 AFTER DOWNLOAD!!!
####################################################################
Proceed with downgrade?[confirm]
Updating Daughterboard ID/index: 0/70
Takes a few seconds ...

MUST RELOAD CMM IMMEDIATELY to download FPGA code.

Router# reload
Proceed with reload? [confirm]

*Mar  1 00:35:16.947: %SYS-5-RELOAD: Reload requested by console. Reload
Reason: Reload command.
*Mar  1 00:35:16.947: %HSRP-6-STATECHANGE: GigabitEthernet1/0 Grp 0 state
Active -> Init
System Bootstrap, Version 12.2(1r)T1, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2002 by cisco Systems, Inc.
WS-SVC-CMM platform with 262144 Kbytes of main memory

Boot config value : 2
Autoboot: Executing boot bootflash:wscmm-i6s-mz
Self decompressing the image :
#################################################################################
####################
[OK]


Cisco IOS Software, Cat6K-lc Software (wscmm-I6S-M), Experimental Version
12.3(20040309:050923) [r0308 109]
Copyright (c) 1986-2004 by Cisco Systems, Inc.
Compiled Wed 10-Mar-04 15:18
Image text-base: 0x60010A78, data-base: 0x61000000

        ############################################################
        #                                                          #
        #          FEATURE CARD FPGA UPGRADE/DOWNGRADE             #
        #                                                          #
        # One or more feature card FPGA will be download at boot up #
        # up.  All feature cards will not be enabled during FPGA    #
        # download.  Please ignore all configuration 'invalid'      #
        # message at boot up time.  Do not change/save             #
        # configuration until after FPGA download is completed and  #
        # power-cycle, or configurations for feature cards will be  #
        # lost.                                                     #
        #                                                          #
        ############################################################
controller T1 1/0
      ^
framing sf
```

```
         ^
      linecode ami


      Press RETURN to get started!


      Router>

      *Mar  1 00:00:10.195: %SYS-5-CONFIG_I: Configured from memory by console
      *Mar  1 00:00:10.443: %SYS-5-RESTART: System restarted --

      Cisco IOS Software, Cat6K-lc Software (wscmm-I6S-M), Experimental Version
      12.3(20040309:050923) [r0308 109]
      Copyright (c) 1986-2004 by Cisco Systems, Inc.
      Compiled Wed 10-Mar-04 15:18
      *Mar  1 00:00:10.443: %SNMP-5-COLDSTART: SNMP agent on host at-jagger is
      undergoing a cold start
      *Mar  1 00:00:10.447: %EPLD_B-4-START_WARNING:
            ############### START FPGA DOWNLOAD PROCESS ###############
            # All feature cards will not be enabled during FPGA      #
            # download.  Please ignore configuration 'invalid' messages #
            # at boot up time.  Do not change/save configuration       #
            # until after FPGA download is completed and power-cycle    #
            # or configurations for feature cards will be lost...       #
            ###########################################################
      *Mar  1 00:00:10.563: %EPLD_B-6-INFO: Slot 1: File <anokha_t1_e1.jam>
      opens OK !!!
      *Mar  1 00:00:10.563: %EPLD_B-3-DOWNGRADE: Module 1 downgrade FPGA to
      version V.2
      *Mar  1 00:00:11.259: %LINEPROTO-5-UPDOWN: Line protocol on Interface
      GigabitEthernet1/0, changed state to down
      *Mar  1 00:00:11.727:
      *Mar  1 00:00:12.427: %LINK-3-UPDOWN: Interface GigabitEthernet1/0,
      changed state to up
      *Mar  1 00:00:12.907: MGCP: Codec g711ulaw is not available on this
      router.
      *Mar  1 00:00:12.907: MGCP: Default codec changed to G.711 u-law

      *Mar  1 00:00:13.631: %LINEPROTO-5-UPDOWN: Line protocol on Interface
      GigabitEthernet1/0, changed state to up
      *Mar  1 00:00:21.751: %EPLD_B-6-INFO: Start programming FPGA, this can
      take up to 6 minutes per card...
      *Mar  1 00:00:24.743: %SCP-5-ONLINE: Module online
      *Mar  1 00:00:39.431: MODULE 1 FPGA download completion 5 percent...
      *Mar  1 00:00:46.431: %HSRP-6-STATECHANGE: GigabitEthernet1/0 Grp 0 state
      Standby -> Active
      *Mar  1 00:00:57.551: MODULE 1 FPGA download completion 10 percent...
      *Mar  1 00:01:15.671: MODULE 1 FPGA download completion 15 percent...
      *Mar  1 00:01:33.775: MODULE 1 FPGA download completion 20 percent...
      *Mar  1 00:01:51.923: MODULE 1 FPGA download completion 25 percent...
      *Mar  1 00:02:10.035: MODULE 1 FPGA download completion 30 percent...
      *Mar  1 00:02:28.147: MODULE 1 FPGA download completion 35 percent...
      *Mar  1 00:02:46.283: MODULE 1 FPGA download completion 40 percent...
      *Mar  1 00:03:04.407: MODULE 1 FPGA download completion 45 percent...
      *Mar  1 00:03:22.515: MODULE 1 FPGA download completion 50 percent...
      *Mar  1 00:03:42.283: MODULE 1 FPGA download completion 55 percent...
      *Mar  1 00:04:02.107: MODULE 1 FPGA download completion 60 percent...
      *Mar  1 00:04:21.903: MODULE 1 FPGA download completion 65 percent...
      *Mar  1 00:04:41.687: MODULE 1 FPGA download completion 70 percent...
      *Mar  1 00:05:01.511: MODULE 1 FPGA download completion 75 percent...
      *Mar  1 00:05:21.307: MODULE 1 FPGA download completion 80 percent...
      *Mar  1 00:05:41.095: MODULE 1 FPGA download completion 85 percent...
      *Mar  1 00:06:20.711: MODULE 1 FPGA download completion 95 percent...
```

```
        Updating Daughterboard ID/index: 0/70
        Takes a few seconds ...

        *Mar  1 00:06:35.715: %EPLD_B-6-INFO: FPGA download slot 1 successfully
        completed!
        *Mar  1 00:06:41.815: %EPLD_B-6-INFO: ONLY RUN ZP IMAGE with this module
        or CMM will be CORRUPTED!
        *Mar  1 00:06:41.931: %EPLD_B-4-COMPLETE_ZP:
                ############# FEATURE CARDS FPGA DOWNLOAD COMPLETED #########
                # In order for feature cards to function, power-cycle CMM   #
                # immediately and reload with ZP image!                     #
                # Do not change/save configuration until after power-cycle  #
                # or configurations for feature cards will be lost...        #
                ############################################################
        *Mar  1 00:06:51.931: %EPLD_B-4-COMPLETE_ZP:
                ############# FEATURE CARDS FPGA DOWNLOAD COMPLETED #########
                # In order for feature cards to function, power-cycle CMM   #
                # immediately and reload with ZP image!                     #
                # Do not change/save configuration until after power-cycle  #
                # or configurations for feature cards will be lost...        #
                ############################################################
```

Related Documentation

- *Catalyst 6500 Series Switches*

- *Cisco Catalyst 6500/Cisco 7600 Communication Media Module*

- *Cisco IOS Release 12.3 T Cross-Platform Release Notes*.

- Cisco IOS Release 12.4 documentation index

- *Cisco IOS Voice Configuration Library*

- *Disaster Recovery for CMM Software Upgrade* s section of the *Catalyst 6500 Series Switch and Cisco 7600 Series Router CMM Installation and Verification Note*

- *Release Notes for the Cisco Catalyst 6500 Series and the Cisco 7600 Series Communication Media Module for Cisco IOS Release 12.3(8)XY*

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

    http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

You can send your comments in e-mail to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

http://www.cisco.com/tac

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

http://www.cisco.com/tac/caseopen

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is "down" or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The Cisco Product Catalog describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide, and the Internetworking Design Guide. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

http://www.ciscopress.com

- Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

http://www.cisco.com/go/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

http://www.cisco.com/en/US/learning/index.html

This document is to be used in conjunction with the documents listed in the "Related Documentation" section on page 29.