Cisco 6160 Blower Tray FRU Installation and Replacement Notes

Product Number: 6160-1-BLOWER=

This document provides an overview of and installation and replacement procedures for the Cisco 6160 blower tray. The blower tray is a field-replaceable unit (FRU) in the Cisco 6160 chassis.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Contents

This document includes the following sections:

CISCO SYSTEMS

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Introduction

The Cisco 6160 chassis is equipped with a blower tray, which provides forced air cooling required by all Cisco 6160 system circuit cards.

The Cisco 6160 blower tray is located in the top slot above the *x*TU-C line cards and NI-2 cards. Figure 1 shows the location of the blower tray in the Cisco 6160 chassis.

Figure 1   Blower Tray Location in the Cisco 6160 Chassis
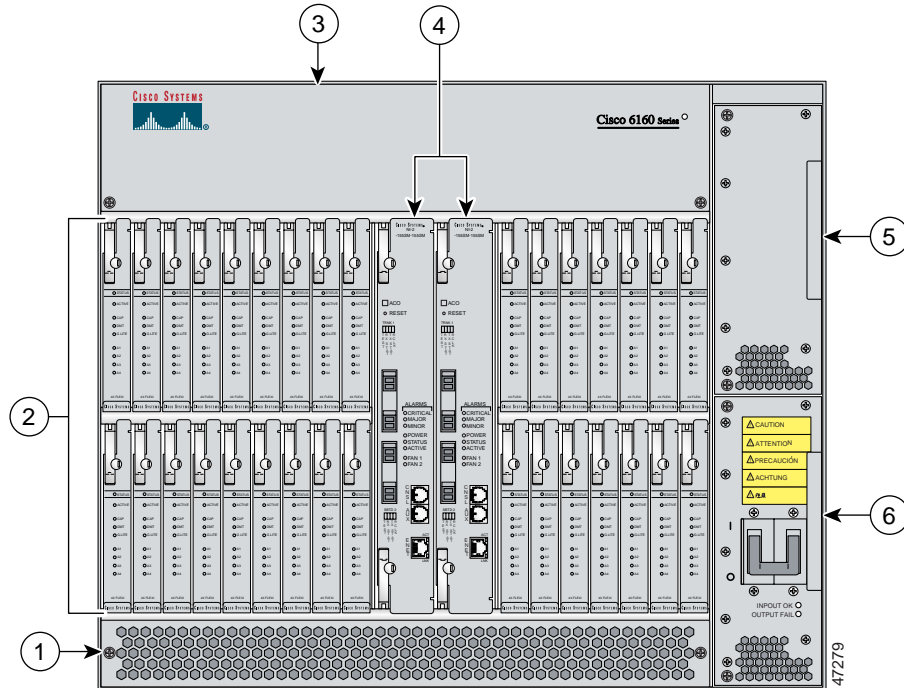
1	Air filter	4	NI-2 card (primary and secondary)
2	*x*TU-C line cards (slots 1 to 9 and 12 through 34)	5	Secondary PEM[1]
3	Blower tray	6	Primary PEM

1. PEM = power entry module

The blower tray

  • Is hot swappable.

  • Contains four blowers in each assembly unit.

  • Is accessible from the front of the Cisco 6160.

  • Has adequate system cooling with a single blower failure.

- Has two speeds, which are controlled by the NI-2 card. By default, it runs run at the lower speed. The blower speed increases when

    - The system senses high temperatures within the chassis.

    - One or more blowers fail.

    The blower speed returns to normal (low speed) when

    - Temperatures within the chassis fall to acceptable levels.

    - All four blowers are operating normally.

- Contains a front panel LED to indicate status of operation.

⚠
Caution   The blowers must run continuously. The system might suffer thermal damage if the blowers stop for more than five minutes.

Faceplate Features

Figure 2 shows a close-up of the blower tray faceplate.
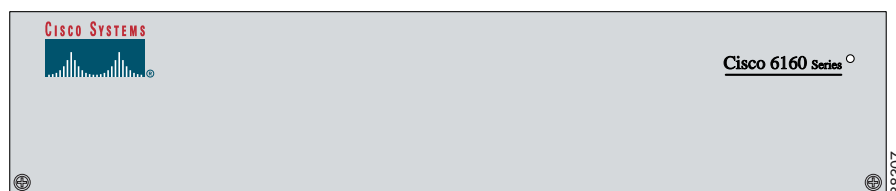
Figure 2   Blower Tray Faceplate

Table 1 describes the LEDs on the blower tray.

Table 1   Blower Tray LEDs

State	Function
Green	The blower tray is operating normally.
Red	One or more blowers have failed. Replace the blower tray.
Off	One of the following has occurred:
	• The blower tray is receiving no power.
	• The blower tray LED is broken.
	• The blower tray has failed.

📝
**Note**   The Fan 2 LED on the NI-2 faceplate does not function in the Cisco 6160.

Air Filter

An air filter is located at the bottom of the chassis (see Figure 1 for location). The air filter must be removed and cleaned periodically.

Refer to the *Cisco 6160 Hardware Installation Guide* for detailed information and removal and cleaning procedures.

Chassis Air Flow

The main air intake vents are located at the bottom front of the chassis, as indicated in Figure 3. All air exhaust vents are located on the rear of the chassis at the top. Do not obstruct the intake and exhaust vents in any way.

Figure 3   Air Flow Through the Cisco 6160 Chassis
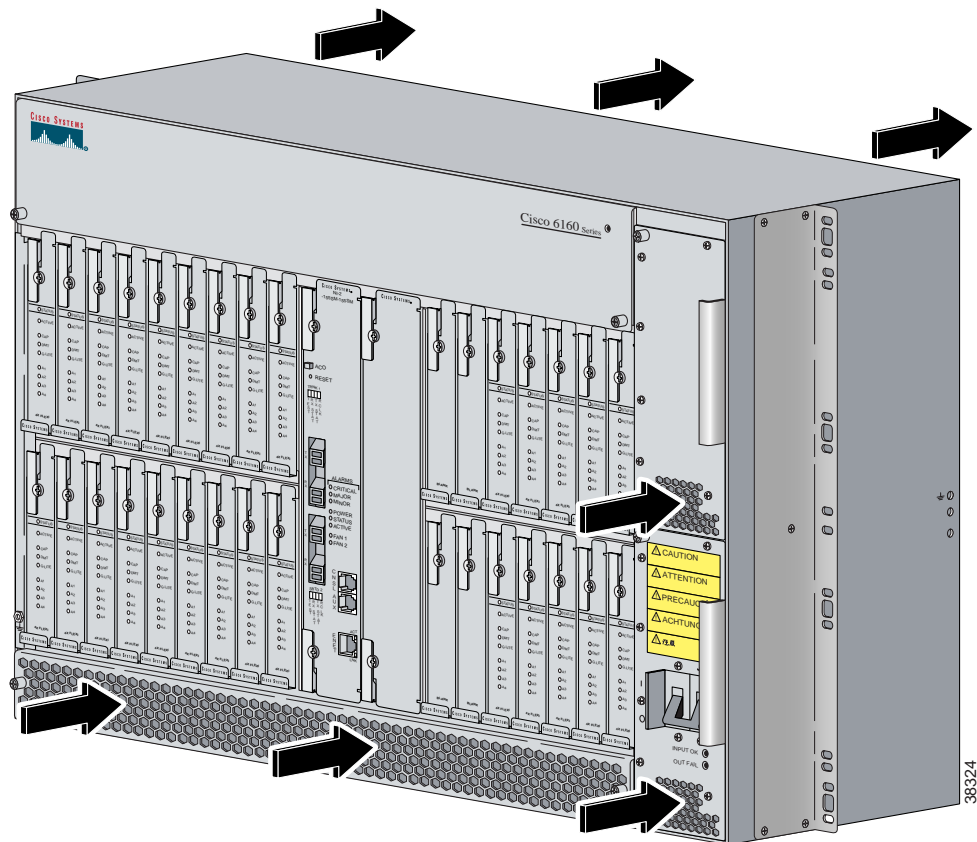
Specifications

Table 2 lists the specifications of the blower tray.

Table 2   Blower Tray Specifications

Specification	Description
Dimensions	Height: 3.375 in. (8.48 cm)
	Depth: 8.125 in. (20.64 cm)
	Width:18.50 in. (47.0 cm)
Weight	10.5 lb (4.76 kg)
Power consumption	37 to 120W
Minimum software and network management requirement	Cisco IOS—Release 12.0(5)DA
	CDM[1]—Release 3.2 (optional)

1. CDM = Cisco DSL Manager

Part and Tool Requirements

Table 3 lists the tools and equipment that you need to install and remove a blower tray.

Table 3   Tool and Equipment Requirements Checklist

Check	Tools and Equipment
	Blower tray.
	Equipment necessary for ESD protection—You need this equipment whenever you handle Cisco chassis, modules, and cards.
	3/8-inch Phillips-head screwdriver.
	Cisco IOS or CDM
	Note See Table 2 for minimum software and network management release requirements.

General Safety Precautions and Maintenance Guidelines

This section describes the following areas:

General Safety Precautions

Before working on the equipment, be aware of standard safety guidelines and the hazards involved in working with electrical circuitry to prevent accidents. Adhere to the following cautions and warnings for safe and hazard-free installation.

Note   To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information for the Cisco 6160 System* document that accompanied this product.

Caution   Before you start the installation procedures, read the entire document for important information and safety warnings.

Caution   Proper ESD protection is required whenever you handle Cisco equipment. Installation and maintenance personnel should be properly grounded by means of grounding straps to eliminate the risk of ESD damage to the equipment. Equipment is subject to ESD damage whenever it is removed from the chassis.

Caution   The blowers must run continuously. The system might suffer thermal damage if the blowers stop for more than five minutes.

Warning   **This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

Waarschuwing   **Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het document *Regulatory Compliance and Safety Information* (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.**

Varoitus   **Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasesta (määräysten noudattaminen ja tietoa turvallisuudesta).**

Attention   Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.

Warnung   Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.

Avvertenza   Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.

Advarsel   Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.

Aviso   Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento *Regulatory Compliance and Safety Information* (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.

¡Advertencia!   Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. Para ver una traducción de las advertencias que aparecen en esta publicación, consultar el documento titulado *Regulatory Compliance and Safety Information* (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.

Varning!   Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förkommer i denna publikation i dokumentet *Regulatory Compliance and Safety Information* (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.

⚠️
Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

⚠️
Warning **Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.**

⚠️
Warning **To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.**

⚠️
Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.**

⚠️
Warning **Do not use this product near water; for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.**

⚠️
Warning **Never install telephone wiring during an electrical storm.**

⚠️
Warning **Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.**

⚠️
Warning **Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.**

⚠️
Warning **Use caution when installing or modifying telephone lines.**

⚠️
Warning **Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.**

⚠️
Warning **Do not use a telephone to report a gas leak in the vicinity of the leak.**

⚠️
Warning **Do not reach into a vacant slot or chassis while you install or remove a card, a tray, or a fan. Exposed circuitry could constitute an energy hazard.**

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.

Warning The power supply circuitry for the equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.

Warning Ultimate disposal of this product should be handled according to all national laws and regulations.

Warning Connect the unit only to a DC power source that complies with the Safety Extra-Low Voltage (SELV) requirements in IEC 60950 based safety standards.

Warning This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.

Warning This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

General Maintenance Guidelines

This section covers the following topics:

- Installation and Replacement Suggestions, page 9
- Hot Swapping, page 9

Installation and Replacement Suggestions

The following examples list recommended installation and replacement practices for the blower tray.

- Ensure that the blower tray is straight and not at an angle when you install it in the slot. Installing the blower tray at an angle can damage the blower tray.
- Firmly press on the front of the blower tray to ensure that the connectors mate with the chassis correctly.
- Tighten two captive screws on faceplate.

Hot Swapping

The blower tray supports hot swapping. Hot swapping allows you to remove the blower tray without disconnecting the system power. You do not need to power down the Cisco 6160 to replace the blower tray. However, if you must remove the blower tray from an operating Cisco 6160, replace it within five minutes. If that is not possible, power down the system to avoid thermal damage.

⚠
Caution   Only a trained technician should install and remove the blower tray.

Preventing Electrostatic Discharge Damage

Proper ESD protection is required whenever you handle Cisco equipment. ESD damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. Use an antistatic strap when you handle any card or component.

Follow these guidelines to prevent ESD damage:

- Always use an ESD ankle or wrist strap and ensure that the wrist strap makes good skin contact.
- Connect the equipment end of the strap to the ESD jack on the front of the chassis.
- When you install a component, use available ejector levers or captive installation screws to properly seat the bus connectors in the backplane or midplane. These devices prevent accidental removal, provide proper grounding for the system, and help ensure that bus connectors are properly seated.
- When you remove a component, use available ejector levers or captive installation screws to release the bus connectors from the backplane or midplane.
- Place a removed component board-side-up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Avoid contact between the printed circuit boards and clothing. The wrist strap protects components from ESD voltages on the body only; ESD voltages on clothing can still cause damage.

⚠
Caution   Periodically check the resistance value of the antistatic strap. Ensure that the measurement is between 1 and 10 megohms.

Removing and Installing the Cisco 6160 Blower Tray

The following sections describe how to remove or install the Cisco 6160 blower tray.

⚠️

Caution Proper ESD protection is required whenever you handle Cisco equipment. Installation and maintenance personnel should be properly grounded by means of grounding straps to eliminate the risk of ESD damage to the equipment. Equipment is subject to ESD damage whenever it is removed from the chassis.

Removing the Blower Tray

Complete the following steps to remove the blower tray from the chassis:

⚠️

Warning **Before you remove the blower tray from its slot, make sure you grasp it firmly to prevent it from slipping to the floor. This unit is heavier than it appears.**

Step 1 Connect a grounding strap to the ESD grounding jack on the chassis.

Step 2 Use a Phillips-head screwdriver to loosen the two captive screws on the blower tray faceplate.

Step 3 Grasp the two captive screws, and slowly slide the blower tray out until it catches. (Do not pull the unit completely out. It is supported only by the captive screws.)

Step 4 Locate and press the safety catch (see Figure 4) on the right side of the blower tray.

Step 5 While pressing the safety catch, firmly grasp the sides of the blower tray and slowly remove the blower tray from its slot.

See the "Installing the Blower Tray" section on page 11 for blower tray installation procedures.

Installing the Blower Tray

Complete the following steps to install the blower tray in the chassis:

Step 1 Connect a grounding strap to the ESD grounding jack on the chassis.

Step 2 Slide the blower tray into the blower tray slot of the Cisco 6160.

Figure 4 shows the installation of the blower tray in the Cisco 6160 chassis.

Figure 4   Installation of the Blower Tray in the Cisco 6160 Chassis
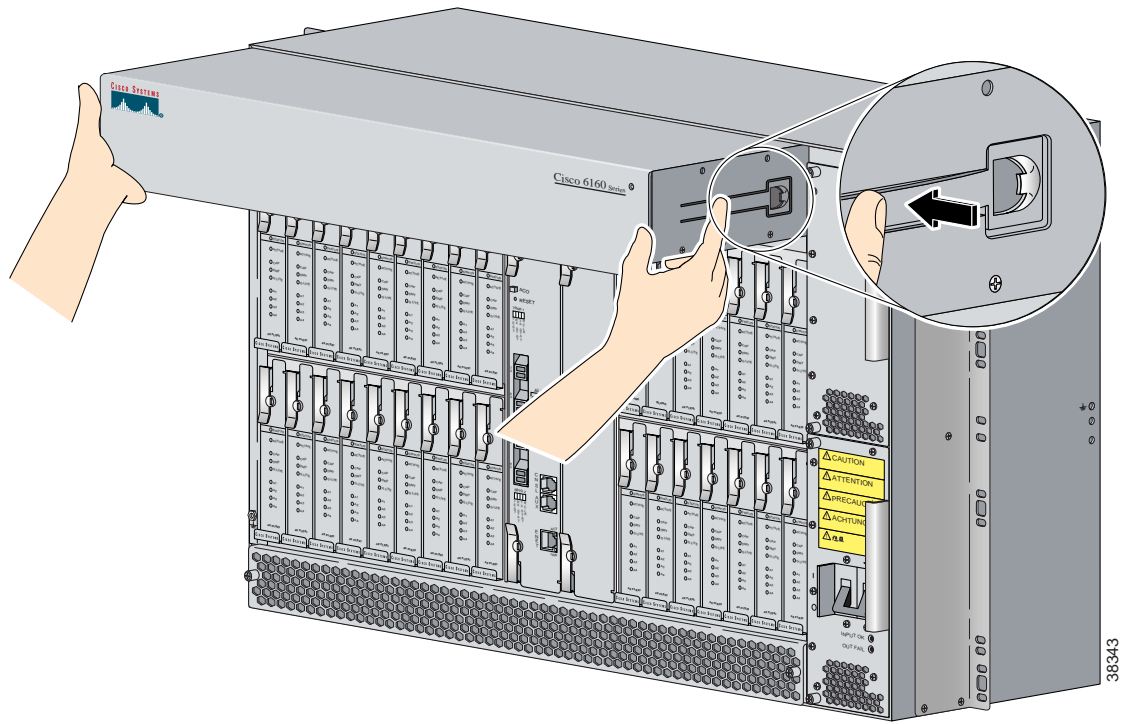
Step 3   Press the blower tray into its slot. Ensure that the blower tray connector mates with the connector on the backplane.

Step 4   Use a Phillips-head screwdriver to tighten the two captive screws on the blower tray faceplate.

Step 5   Verify that the INPUT OK LED is green. At startup, the LED may flash red momentarily before it changes to green. This is normal at startup.

> **Note**   If the INPUT OK LED is not green or if other issues arise, refer to the *Cisco 6160 Hardware Installation Guide* for troubleshooting procedures.

Step 6 Confirm that the Cisco IOS software recognizes the new blower tray.

    a. Type the following command:

```
DSLAM# show hardware chassis
```

    b. Scroll through the data and locate the blower tray information.

The information displayed on the screen will be similar to the following output:

```
Blower Module EEPROM:
    Hardware Revision : 1.0
    Part Number : 74-1529-01
    Deviation Number : 0-0
    PCB Serial Number : 00000000151
    RMA Test History : 00
    RMA Number : 0-0-0-0
    RMA History : 00
    CLEI Code : ABCDEFGHIJ
    Asset Identifier :
    EEPROM format version 4
    EEPROM contents (hex):
    0x00: 04 FF 41 01 00 82 4A 05 F9 01 80 00 00 00 00 C1
    0x10: 8B 30 30 30 30 30 30 30 30 31 35 31 03 00 81 00
    0x20: 00 00 00 04 00 C6 8A 41 42 43 44 45 46 47 48 49
    0x30: 4A CC 20 00 00 00 00 00 00 00 00 00 00 00 00 00
    0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
    0x50: 00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xA0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xB0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xC0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xD0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xE0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0xF0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

Note If the information displays as "Unreadable" or "Unknown", the blower tray was not installed properly or a problem exists with the blower tray. Install the blower tray again by following the procedures in this section. If the blower tray is still not recognized by the system, refer to the *Cisco 6160 Hardware Installation Guide* for troubleshooting procedures.

Step 7 View blower tray operating information.

    a. Type the following command:

```
DSLAM# show environment all
```

    b. Scroll through the data and locate the blower tray information.

    If the blower tray is operating properly, the information displayed on the screen will be similar to the following output:

```
Fans:
    Present: Yes
    Speed: Normal
    Fan Number 0: OK
    Fan Number 1: OK
    Fan Number 2: OK
    Fan Number 3: OK
    Temperature: 21C/69 F
```

Note If a problem exists with the blower tray operating information, refer to the *Cisco 6160 Hardware Installation Guide* for troubleshooting procedures.

Standards and Certifications

The Cisco 6160 blower tray has the same standards and certifications as the Cisco 6160 chassis, as listed in Table 4.

Table 4　Cisco 6160 Regulatory Compliance

Discipline	Compliance Standard
Product Safety	UL 1950, 3rd Edition
	EN 60950 2nd Edition, Amendments 1, 2, 3, 4, 11
	IEC 2nd Edition, Amendments 1, 2, 3, 4
	AS/NZS 3260
Emissions	FCC Part 15
	CISPR 22
	ICCS-003
NEBS	GR-63-CORE
	GR-1089-CORE
	SR-3580 Level 3
Telecom	FCC Part 68
	ICCS-003

FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Note   If you modify the equipment without Cisco authorization, this may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

Related Documentation

A complete list of all DSL product related documentation is available on the World Wide Web at http://www.cisco.com/univercd/cc/td/doc/product/dsl_prod/index.htm

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

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

http://www.cisco.com

Translated documentation is available at the following URL:

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

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription. Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

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

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

To submit your comments by mail, write to the following address:

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

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

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- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

http://www.cisco.com

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.

- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.

- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

http://www.cisco.com/register/

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

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

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

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

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

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