Doc. No. 78-5013-01

Catalyst 5000 Series FDDI and CDDI Switching Modules Configuration Note

Product Numbers: WS-X5101(=), WS-X5103(=), WS-X5104(=)

This configuration note contains instructions on how to install and configure the Catalyst 5000 series Fiber Distributed Data Interface (FDDI) and Copper Distributed Data Interface (CDDI) switching modules.

For a complete description of commands used to configure and maintain Catalyst 5000 series switches, refer to the *Catalyst 5000 Series Software Configuration Guide* and the *Catalyst 5000 Series Command Reference* publication. For complete switch hardware configuration and maintenance procedures, refer to the *Catalyst 5000 Series Installation Guide*. For information on Catalyst 5000 series switching modules, refer to the *Catalyst 5000 Series Module Installation Guide*. These documents are available on the Cisco Connection Documentation, Enterprise Series CD, or in print.

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 up to date 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.

If you are reading Cisco product documentation on the World Wide Web, you can submit comments electronically. Click **Feedback** in the toolbar, select **Documentation**, and click **Enter the feedback form**. After you complete the form, click **Submit** to send it to Cisco. We appreciate your comments.

Document Contents

This document is divided into the following sections:

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

Catalyst 5000 Series Switches

Catalyst 5000 series switches include the Catalyst 5002, the Catalyst 5000, the Catalyst 5505, and the Catalyst 5500. Throughout this configuration note, and all Catalyst 5000 series documents, *Catalyst 5000 series switches* refers to all of the Catalyst 5000 series switches, unless otherwise noted.

Table 1 lists and describes the Catalyst 5000 series switches. The Ethernet and Fast Ethernet, CDDI, FDDI, and Asynchronous Transfer Mode (ATM) modules are described in the *Catalyst 5000 Series Module Installation Guide*.

Note The Route Switch Module (RSM), a router module that runs standard Cisco IOS software, provides multiprotocol routing for Ethernet interfaces in Catalyst 5000 series switches. For more information on the RSM, see the *Catalyst 5000 Series Switch Route Switch Module Installation and Configuration Note*.

Table 1 Catalyst 5000 Series Switches

Switch	Description	Features
Catalyst 5002	2-slot switch	• Supports 1 supervisor engine module and 1 additional switching module (Ethernet, Fast Ethernet, FDDI/CDDI, or ATM) • Supports standard redundant AC-input power supplies
Catalyst 5000	5-slot switch	• Supports 1 supervisor engine module, up to 4 additional switching modules (Ethernet, Fast Ethernet, FDDI/CDDI, and ATM), and the RSM • Supports optional redundant AC- or DC-input power supply
Catalyst 5505	5-slot switch	• Supports Supervisor Engines I, II, and III, and up to 4 additional modules (Ethernet, Fast Ethernet, FDDI/CDDI, ATM, and RSM) • Supports redundant supervisor engines (Supervisor Engines II and III), with like supervisors engines only • Supports optional redundant AC- or DC-input power supplies
Catalyst 5500	13-slot switch	• Supports 1 supervisor engine module, up to 11 additional modules (Ethernet, Fast Ethernet, FDDI/CDDI, ATM, and LightStream 1010), and the RSM • Supports redundant supervisor engines (Supervisor Engines II and III), with like supervisor engines only • Supports optional redundant AC- or DC-input power supply

Note Supervisor Engine II requires Catalyst 5000 series software release 2.2(1) or greater. Supervisor Engine III requires software release 3.1(1) or greater.

FDDI and CDDI Switching Modules

Table 2 lists and describes the FDDI and CDDI modules.

Table 2 FDDI and CDDI Switching Modules

Model Number	Module Name	Description
WS-X5101	FDDI Module Multimode Fiber	Single-attachment-station (SAS) or dual-attachment-station (DAS) connection, two multimode, media interface connector (MIC) fiber-optic connectors
WS-X5103	CDDI Module	SAS or DAS connection, two Category 5 unshielded twisted-pair (UTP), 100-Mbps CDDI interfaces, two RJ-45 connectors.
WS-X5104	FDDI Module Single-Mode Fiber	SAS or DAS connection to the 100-Mbps FDDI backbone, two single-mode, straight-tip (ST) fiber-optic connectors (for SAS) or four single-mode, ST fiber-optic connectors (for DAS)

FDDI and CDDI Switching Module LEDs

Table 3 lists and describes the FDDI and CDDI module LEDs.

Table 3 FDDI and CDDI Module LEDs

LED	Description
STATUS	The switch performs a series of self-tests and diagnostic tests. If all the tests pass, the LED is green. If a test other than an individual port test fails, the LED is red. During system boot or if the module is disabled, the LED is orange. During self-test diagnostics, the LED is orange. If the module is disabled, the LED is orange.
RING OP	Indicates whether or not the ring is operational. If the ring is operational, the LED is green. If the ring is not operational, the LED is off.
THRU	If ports A and B of the CDDI/FDDI module are connected to the primary and secondary rings, the LED is green; otherwise, it is off.
WRAP A	If port A is connected to the ring and port B is isolated, the LED is green; otherwise, it is off.
WRAP B	If port B is connected to the ring and port A is isolated, the LED is green; otherwise, it is off.
Port A status	If port A is connected to the ring, the LED is green. If port A receives a signal but fails to connect, or a dual homing condition exists, the LED is orange. The LED is turned off if no receive signal is detected.

Table 3 FDDI and CDDI Module LEDs

LED	Description
Port B status	If port B is connected to the ring, the LED is green. If port B receives a signal but fails to connect, or a dual homing condition exists, the LED is orange. The LED is turned off if no receive signal is detected.
IN[1]	The optical bypass switch LED indicates the status of the device connected to the line module. When the LED is on, the bypass switch is activated and is in Thru mode (the line module is attached to the dual ring).

1. FDDI modules only

FDDI and CDDI Switching Module Specifications

This section lists the specifications for the Catalyst 5000 series FDDI and CDDI switching modules.

Standards Compliance

Catalyst 5000 series FDDI and CDDI modules, when installed in a system, comply with the standards listed in Table 4.

Table 4 Standards Compliance

Specification	Description
Compliance:	CE Marking
Safety	UL[1] 1950, CSA[2]-C22.2 No. 950, EN[3] 60950, IEC[4] 950, TS[5] 001, AS/NZS[6] 3260
EMI[7]	FCC[8] Class A (47 CFR, Part 15), ICES[9]-003 Class A, EN 55022 Class A , CISPR22 Class A, AS/NZS 3548 Class A, and VCCI[10] Class A with UTP[11] cables
	EN 55022 Class B; CISPR22 Class B, AS/NZS 3590 Class B, and VCCI Class B with STP[12] cables

1. UL = Underwriters Laboratories
2. CSA = Canadian Standards Association
3. EN = Europäische Norm
4. IEC = International Electrotechnical Commission
5. TS = Technical Standard
6. AS/NZS = Australian/New Zealand Standard
7. EMI = electromagnetic interference
8. FCC = Federal Communications Commission
9. ICES = Interference-Causing Equipment Standard
10. VCCI = Voluntary Control Council for Information Technology Equipment
11. UTP = unshielded twisted-pair
12. STP = shielded twisted-pair

Specifications for FDDI and CDDI Switching Modules

Table 5 lists the specifications for the FDDI and CDDI modules.

Table 5 FDDI and CDDI Modules Specifications

Specification	Description
Dimensions (H x W x D)	1.25 x 15.5 x 16.5 in. (3.1 x 49.1 x 52.3 cm)
Weight	Minimum: 3 lb (1.36 kg) Maximum: 5 lb (2.27 kg)
Environmental Conditions:	
Operating temperature	32 to 104 F (0 to 40 C)
Nonoperating temperature	–40 to 167 F (–40 to 75 C)
Humidity	10 to 90%, noncondensing
Connectors	Multimode fiber-optic: MIC[1] Single-mode fiber-optic: ST[2] Category 5 UTP: RJ-45
RAM buffer memory	192 KB per interface
Maximum station-to-station cabling distance	Category 5 UTP: 328 ft (100 m) Multimode fiber, 62.5/125-micron: 1.2 miles (2 km) Single-mode fiber: 18 miles (30 km)
Frame Processing	Fragmentation (RFC 791), Translation (802.1h, 802.li), APaRT[3]
Network Management	Cisco Discovery Protocol, SNMP[4] MIB II (RFC 1213), FDDI MIB (RFC 1512), Interface Extensions MIB (RFC 1573), 802.1D Spanning-Tree MIB, Bridging MIB (RFC 1493), FDDI SMT 7.3, Cisco Workgroup MIB, CiscoView application

1. MIC = media interface connector
2. ST = straight-tip
3. APaRT = automated packet recognition/translation
4. SNMP = Simple Network Management Protocol

Safety Guidelines

Safety warnings appear throughout this configuration note in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement.

Example Warning

This section describes the warning symbol used in this note.

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 appendix “Translated Safety Warnings” in the *Catalyst 5000 Series Module Installation Guide.*

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 aanhangsel “Translated Safety Warnings” (Vertalingen van veiligheidsvoorschriften) in de installatiegids die bij dit toestel is ingesloten, raadplegen.

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 tämän laitteen mukana olevan asennusoppaan liitteestä "Translated Safety Warnings" (käännetyt turvallisuutta koskevat varoitukset).)

Attention Ce symbole d’avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures. Avant d’accéder à cet équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures courantes de prévention des accidents. Pour obtenir les traductions des mises en garde figurant dans cette publication, veuillez consulter l’annexe intitulée « Translated Safety Warnings » (Traduction des avis de sécurité) dans le guide d’installation 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 Anhang mit dem Titel “Translated Safety Warnings” (Übersetzung der Warnhinweise) in der diesem Gerät beiliegenden Installationsanleitung.)

Avvertenza Questo simbolo di avvertenza indica un pericolo. Si è in una situazione che può causare infortuni. 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 nell’appendice, “Translated Safety Warnings” (Traduzione delle avvertenze di sicurezza), del manuale d’installazione 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 være 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 vedlegget "Translated Safety Warnings" [Oversatte sikkerhetsadvarsler] i installasjonsveiledningen som ble levert med denne enheten.)

Aviso Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos fisicos. 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 apêndice “Translated Safety Warnings” - “Traduções dos Avisos de Segurança”, no guia de instalação 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 traducciones de las advertencias que aparecen en esta publicación, consultar el apéndice titulado “Translated Safety Warnings,” en la guía de instalación 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 förekommer i denna publikation i appendix "Translated Safety Warnings" [Översatta säkerhetsvarningar] i den installationshandbok som medföljer denna anordning.)

Ensuring Safety

Use the following guidelines to ensure your safety and protect the equipment. This list does not include all potentially hazardous situations during installation, so *be alert*.

Note Power supplies in the Catalyst 5002 switch do not have on/off switches.

Warning Only trained and qualified personnel should install or replace this equipment.

- Always turn all power supplies off (the position marker zero), and unplug all power cords before installing or removing a chassis.
- Keep the chassis area clear and free of dust during and after installation.
- Keep tools and chassis components off the floor and away from foot traffic.
- Avoid wearing jewelry and securely fasten any loose clothing that could get caught in the chassis.

Warning Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

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

Following Basic Electrical Safety Guidelines

When working with electrical equipment, exercise these basic safety guidelines:

- Never install equipment that appears to be damaged.
- Locate the emergency power-off switch for the room in which you are working before beginning any procedures that require access to the chassis interior.
- Disconnect all power and external cables before installing or removing a chassis.
- Do not work alone when potentially hazardous conditions exist.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Examine your work area carefully for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

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

Following Telephone Wiring and Network Cabling Safety Rules

Use the following safety rules when working with any equipment that is disconnected from a power source but still connected to telephone wiring or other network cabling:

- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage occurs when electronic boards or components are improperly handled. ESD can result in complete or intermittent failures of electronic components. Guidelines for preventing ESD damage are as follows:

- Always use an antistatic wrist or ankle strap and ensure that it makes good skin contact. For the Catalyst 5002 switch, use the type shown in Figure 1. For the Catalyst 5000 switch, use one of the two types of antistatic wrist straps shown in Figure 2. For the Catalyst 5500 switch, use the type shown in Figure 3.
- If you use the wrist strap with an alligator clip, connect the alligator clip to one of the captive installation screws on the chassis, an installed module, or a power supply. If you use the wrist strap with a banana-plug connector, insert the banana-plug connector into the grounding receptacle on the rear of the chassis. See Figure 1, Figure 2, and Figure 3.

Figure 1 Placement of ESD Wrist Strap on the Catalyst 5002 Switch

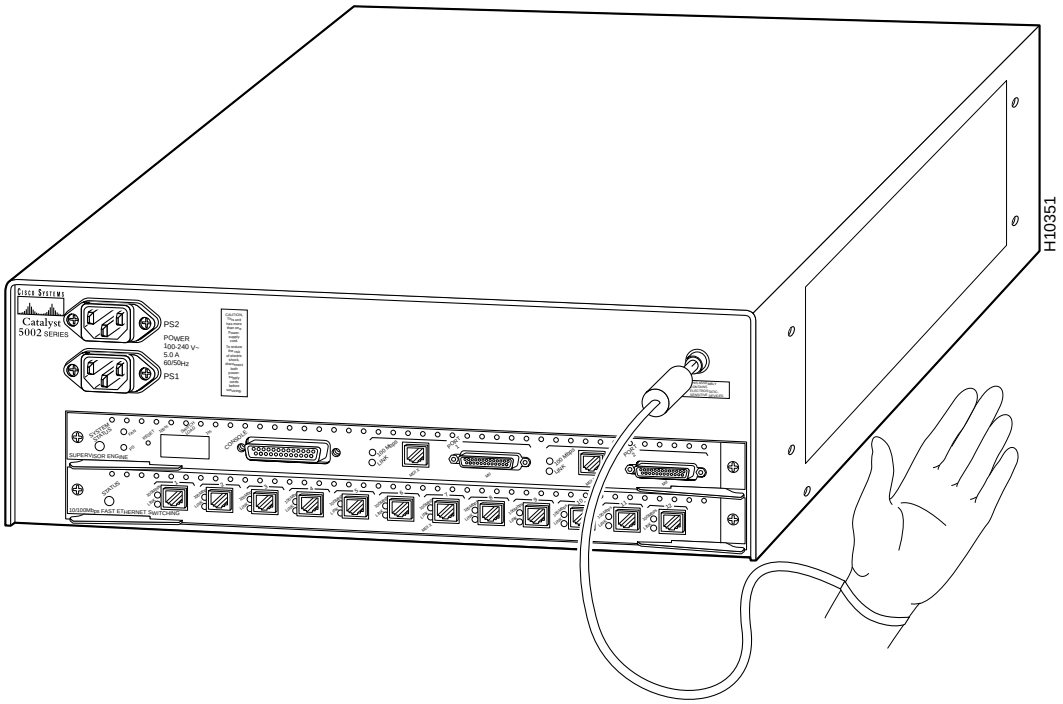


Figure 2 Types and Placement of ESD Wrist Straps on the Catalyst 5000 Switch

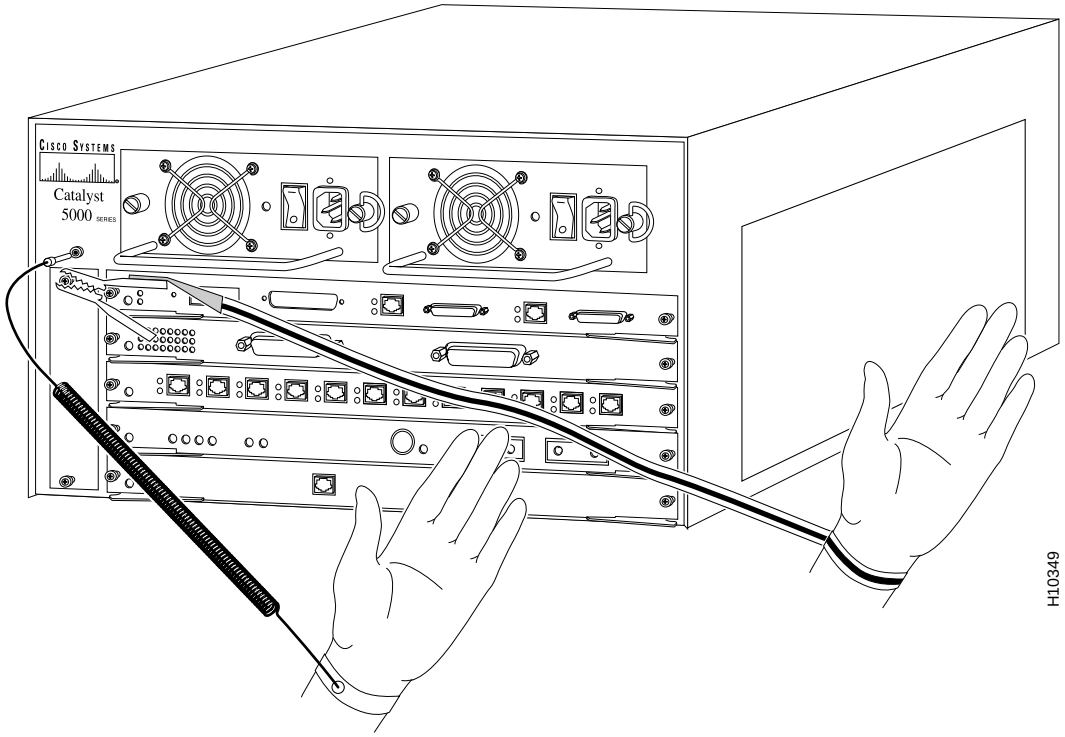
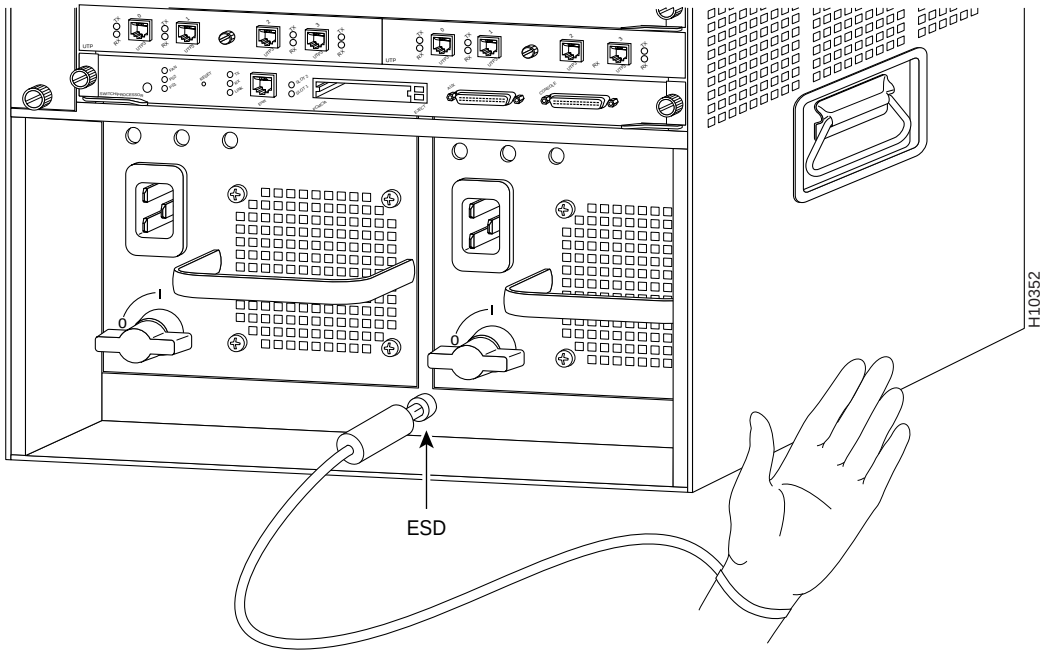


Figure 3 Placement of ESD Wrist Strap on the Catalyst 5500 Switch



- Handle supervisor engine modules and switching modules by the metal carrier edges and handles only; the metal carriers have electromagnetic interference (EMI) shielding. Never touch the printed circuit boards or connector pins.
- After removing a module, place it component-side up on an antistatic surface or in a static-shielding bag. If you plan to return the module to the factory, immediately place it in a static-shielding bag.
- Avoid contact between the modules and clothing; the wrist strap protects the module from ESD voltages on the body, but ESD voltages on clothing can still cause damage.
- Handle modules without metal carriers by the edges only.

Caution For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms (Mohms).

Switching Modules Installation and Configuration

All Catalyst 5000 series switches support hot swapping, which lets you install, remove, replace, and rearrange switching modules without turning off the system power. When the system detects that a switching module has been installed or removed, it automatically runs diagnostic and discovery routines, acknowledges the presence or absence of the module, and resumes system operation with no operator intervention.

Warning Only trained and qualified personnel should install or replace this equipment.

Warning Invisible laser radiation may be emitted from the aperture ports of the single-mode FDDI card when no cable is connected. *Avoid exposure and do not stare into open apertures*. This product meets the Class 1 Emissions Requirement.

Tools Required

You need a flat-blade screwdriver to remove any filler (blank) switching modules and to tighten the captive installation screws that secure the modules in their slots. Whenever you handle switching modules, you should use a wrist strap or other grounding device to prevent ESD damage. See the section “Preventing Electrostatic Discharge Damage.”

Removing Switching Modules

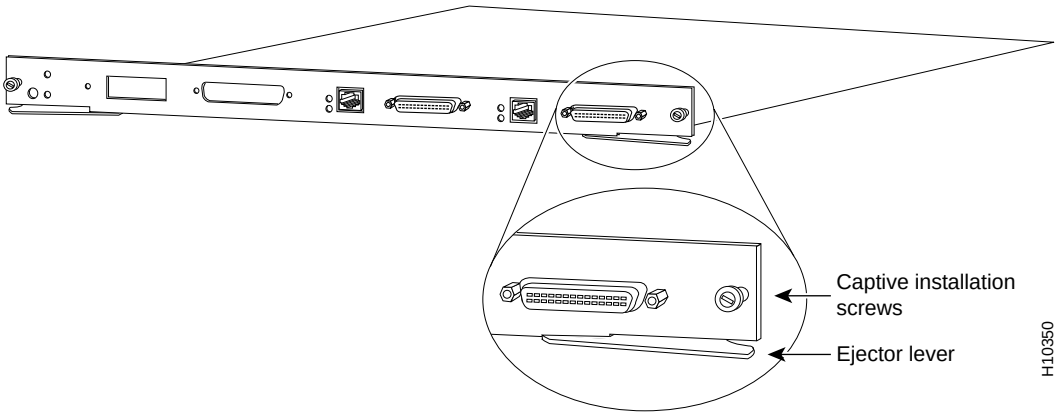
To remove a switching module from a Catalyst 5000 series switch, perform the following steps:

Caution To prevent ESD damage, handle switching modules by the carrier edges only.

Step 1 If you do not plan to reinstall the switching module immediately after removing it, disconnect any network interface cables attached to the switching module ports.

Step 2 Use a flat-blade screwdriver to loosen the captive installation screws, shown in Figure 4.

Figure 4 Ejector Levers and Captive Installation Screws



Step 3 Place your thumbs on the left and right ejector levers and simultaneously push the levers outward to release the module from the backplane connector. Figure 4 shows a close-up of the right ejector lever.

Step 4 Grasp the switching-module handle with one hand and place your other hand under the carrier to support and guide it out of the slot. Avoid touching the module.

Step 5 Carefully pull the switching module straight out of the slot, keeping your other hand under the carrier to guide it. Keep the switching module oriented horizontally.

Step 6 Place the switching module on an antistatic mat or antistatic foam or immediately install it in another slot.

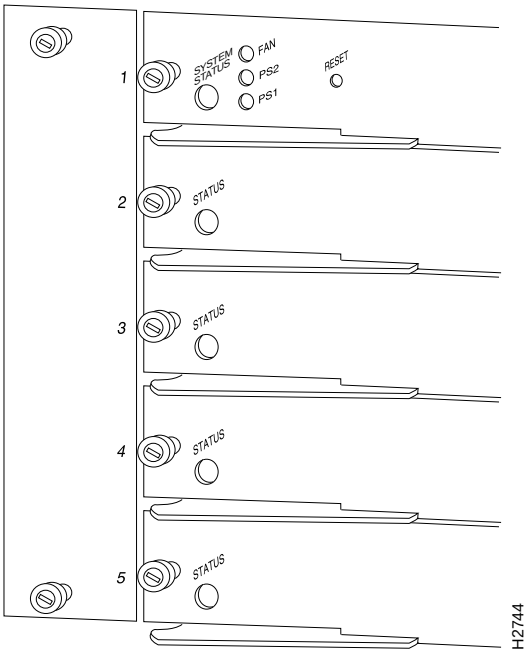
Step 7 If the slot is to remain empty, install a switching-module filler plate (part number 800-00292-01) to keep dust out of the chassis and to maintain proper airflow through the switching-module compartment.

Caution Always install the switching-module filler plate in empty switching module slots to maintain the proper flow of cooling air across the modules.

Installing Switching Modules

All Catalyst 5000 series switching modules are installed in horizontal slots that are numbered from top to bottom. Figure 5 shows an example of how slots are numbered on the chassis; in this case using the Catalyst 5000 switch. The slot numbering for the Catalyst 5002 switch and the Catalyst 5500 switch is similar to that shown in Figure 5.

Figure 5 Module Slot Numbers



To install a switching module in a Catalyst 5000 series switch, perform the following steps:

Caution To prevent ESD damage, handle switching modules by the carrier edges only.

Step 1 Make sure you have taken the necessary precautions to prevent ESD damage, as described in the section “Preventing Electrostatic Discharge Damage.”

Step 2 Choose a slot for the new switching module. Ensure that there is enough clearance to accommodate any interface equipment that you will connect directly to the switching module ports. If possible, place switching modules between empty slots that contain only switching module filler plates.

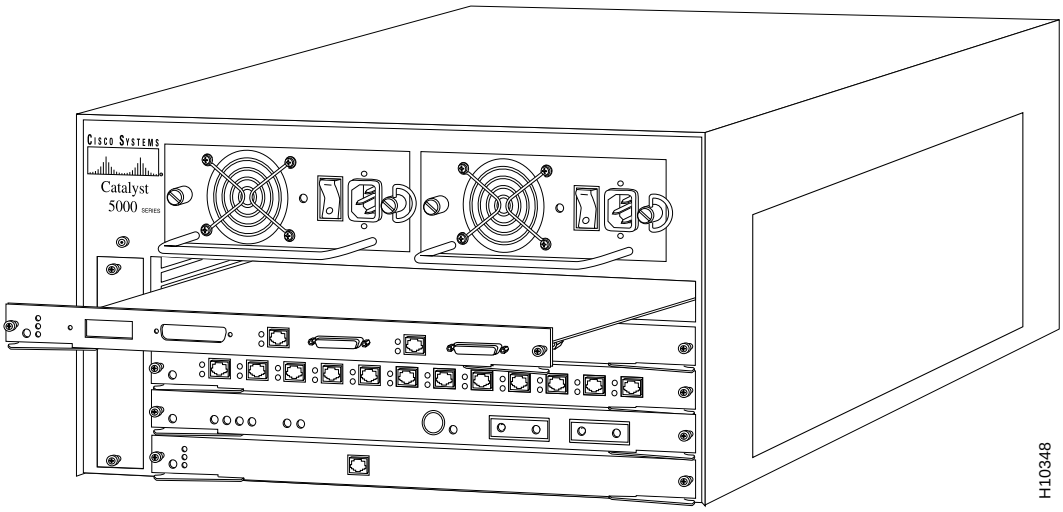
Step 3 Use a flat-blade screwdriver to loosen the captive installation screws securing the switching-module filler plate (or the existing switching module) from the desired slot.

Step 4 Remove the switching-module filler plate (or the existing switching module).

Step 5 Hold the switching-module handle with one hand and place your other hand under the carrier to support the switching module and guide it into the slot. Avoid touching the printed circuit boards or connector pins.

Step 6 Place the switching module in the slot. Align the notch on the sides of the switching-module carrier with the groove in the slot, as shown in Figure 6 for the Catalyst 5000 switch. Use the same procedure for the Catalyst 5002 and Catalyst 5500 switches.

Figure 6 Module Installation



Step 7 Maintain the switching module at a 90-degree orientation to the backplane and carefully slide the switching module into the slot until the switching-module faceplate contacts the ejector levers.

Step 8 Use the thumb and forefinger of each hand and simultaneously push in the left and the right levers to seat the switching module in the backplane connector.

Caution Always use the ejector levers when installing or removing switching modules. A module that is partially seated in the backplane will cause the system to halt and subsequently crash.

Step 9 Use a flat-blade screwdriver to tighten the captive installation screws on the left and right ends of the switching module.

Step 10 Attach network interface cables or other devices to the interface ports.

Step 11 Check the status of the interfaces as follows:

- If this installation is a replacement switching module, use the **show module** or **show port** [*mod_num/port_num*] command to verify that the system has acknowledged the new interfaces and brought them up.
- If the interfaces are new, use the **set module** command and the **set module name** command to configure the new interface(s). This does not have to be done immediately, but the interfaces will not be available until you configure them. See the *Catalyst 5000 Series Software Configuration Guide* for information on how to configure new interfaces.

The following example shows the output of the **show module** command, with the FDDI Module Multimode Fiber (WS-X5101) in slot 3:

```
Console> show module
Mod Module-Name         Ports Module-Type           Model    Serial-Num Status
--- ------------------- ----- --------------------- --------- --------- -------
1                       2     100BaseTX Supervisor  WS-X5009  002678475 ok
3                       2     MM MIC FDDI           WS-X5101  003489788 ok
4                       12    100BaseTX Ethernet    WS-X5113  003152544 ok

Mod MAC-Address(es)                           Hw     Fw      Sw
--- ----------------------------------------  ------ ------- ----------------
1   00-60-2f-57-6d-00 thru 00-60-2f-57-70-ff  1.8    1.5     3.1(1)
3   00-60-3e-cd-3d-19                         1.0    1.1     2.1(7)
4   00-60-3e-d1-ab-38 thru 00-60-3e-d1-ab-43  1.6    1.2     3.1(1)

Mod SMT User-Data              T-Notify CF-St    ECM-St    Bypass
--- -------------------------- -------- -------- --------- -------
3   WorkGroup Stack            30       isolated in        absent
Console>
```

The following example shows the output of the **show port** command, with the FDDI Module Multimode Fiber (WS-X5101) in slot 3:

```
Console> show port
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
 1/1                     notconnect 1          normal   half   100 100BaseTX
 1/2                     connected  1          normal   half   100 100BaseTX
 3/1  Server 1           notconnect 550        high     half   100 FDDI
 3/2                     notconnect 550        high     half   100 FDDI
 4/1  Backbone           connected  1          high     full   100 100BaseTX
 4/2  Engineering1       notconnect 100        normal   full   100 100BaseTX
 4/3  Engineering2       notconnect 150        normal   full   100 100BaseTX
 4/4  Marketing1         notconnect 200        normal   full   100 100BaseTX
 4/5                     notconnect 1          normal   half   100 100BaseTX
 4/6                     notconnect 1          normal   half   100 100BaseTX
 4/7                     notconnect 1          normal   half   100 100BaseTX
 4/8                     notconnect 1          normal   half   100 100BaseTX
 4/9                     notconnect 1          normal   half   100 100BaseTX
 4/10                    inactive   dyn-       normal   half   100 100BaseTX
 4/11                    inactive   dyn-       normal   half   100 100BaseTX
 4/12                    inactive   dyn-       normal   half   100 100BaseTX

Port   Security  Secure-Src-Addr    Last-Src-Addr      Shutdown  Trap
-----  --------  -----------------  -----------------  --------  --------
 1/1   disabled                                       No        enabled
 1/2   disabled                                       No        enabled
 4/1   disabled                                       No        enabled
 4/2   disabled                                       No        enabled
 4/3   disabled                                       No        enabled
 4/4   disabled                                       No        enabled
 4/5   disabled                                       No        enabled
 4/6   disabled                                       No        enabled
 4/7   disabled                                       No        enabled
 4/8   disabled                                       No        enabled
 4/9   disabled                                       No        enabled
 4/10  disabled                                       No        enabled
 4/11  disabled                                       No        enabled
 4/12  disabled                                       No        enabled

Port   Trap
-----  --------
 3/1   enabled
 3/2   enabled

Port     Broadcast-Limit Broadcast-Drop
-------- --------------- --------------
 1/1                   -              -
 1/2                   -              -
 4/1                   -              0
 4/2                   -              0
 4/3                   -              0
 4/4             500 p/s              0
 4/5             500 p/s              0
 4/6             500 p/s              0
 4/7             500 p/s              0
 4/8             500 p/s              0
 4/9                   -              0
 4/10                  -              0
 4/11                  -              0
 4/12                  -              0
```

```
Port  Align-Err  FCS-Err    Xmit-Err   Rcv-Err    UnderSize
----- ---------- ---------- ---------- ---------- ---------
 1/1           0          0          0          0         0
 1/2           0          0          0          0         0
 4/1           0          0          0          0         0
 4/2           0          0          0          0         0
 4/3           0          0          0          0         0
 4/4           0          0          0          0         0
 4/5           0          0          0          0         0
 4/6           0          0          0          0         0
 4/7           0          0          0          0         0
 4/8           0          0          0          0         0
 4/9           0          0          0          0         0
 4/10          0          0          0          0         0
 4/11          0          0          0          0         0
 4/12          0          0          0          0         0

Port  Single-Col Multi-Coll Late-Coll  Excess-Col Carri-Sen Runts     Giants
----- ---------- ---------- ---------- ---------- --------- --------- ---------
 1/1           0          0          0          0         0         0         0
 1/2           0          0          0          0         0         0         0
 4/1           0          0          0          0         0         0         0
 4/2           0          0          0          0         0         0         0
 4/3           0          0          0          0         0         0         0
 4/4           0          0          0          0         0         0         0
 4/5           0          0          0          0         0         0         0
 4/6           0          0          0          0         0         0         0
 4/7           0          0          0          0         0         0         0
 4/8           0          0          0          0         0         0         0
 4/9           0          0          0          0         0         0         0
 4/10          0          0          0          0         0         0         0
 4/11          0          0          0          0         0         0         0
 4/12          0          0          0          0         0         0         0


Port  CE-State Conn-State Type Neig Con Est Alm Cut Lem-Ct     Lem-Rej-Ct Tl-Min
----- -------- ---------- ---- ---- --------------- ---------- ---------- ------
 3/1  isolated connecting A    U    no    9   8   7          0          0 40
 3/2  isolated connecting B    U    no    9   8   7          0          0 40

Last-Time-Cleared
--------------------------
Tue Nov 18 1997, 23:06:08
Console> (enable)
```

Configuring FDDI and CDDI Modules

This section lists the default configurations of the FDDI and CDDI switching modules and provides a basic summary of the commands used to customize the configuration of each module.

Default Configuration

The features you can customize have default values that will most likely suit your environment and need not be changed. The default values of these features are listed in Table 6.

Table 6 Feature Default Configuration Values

Feature	Default Setting
Port enable state	All FDDI and CDDI ports are enabled
IPX[1] protocol translation	• FDDI SNAP[2] to Ethernet 802.3 RAW • Ethernet 802.3 RAW to FDDI SNAP • FDDI 802.2 to Ethernet 802.3
Module parameters	• TL_MIN parameter is set to 40 microseconds • TNotify parameter is set to 30 seconds • TRequest parameter is set to 165,000 microseconds
User-data string[3]	*Catalyst 5000*
IP fragmentation	Enabled
ICMP[4] unreachable messages	Enabled
LER[5] settings	• LER-Alarm is set to 8 (10^{-8}) • LER-Cutoff is set to 7 (10^{-7})

1. IPX=Internetwork Packet Exchange
2. SNAP=Subnetwork Access Protocol
3. The user-data string is used to identify the FDDI module
4. ICMP=Internet Control Message Protocol
5. LER=link error rate

Customizing the Configuration

Table 7 lists the major features available on the FDDI and CDDI modules and the commands needed to configure them.

Table 7 FDDI/CDDI Quick Configuration

Task		Commands
Setting the Default IPX Protocol Translations		
To set the FDDI SNAP[1] to Ethernet translation:		
Step 1	Configure the appropriate translation protocol.	**set bridge ipx snaptoether** {**8023** | **SNAP** | **EII** | **8023RAW**}
Step 2	Verify that the correct translation protocol was configured.	**show bridge**
To set the FDDI 802.2 to Ethernet translation:		
Step 1	Configure the appropriate protocol translation.	**set bridge ipx 8022toether** {**8023** | **SNAP** | **EII** | **8023RAW**}
Step 2	Verify that the correct protocol translation was configured.	**show bridge**
To set the FDDI 803.2 raw to FDDI protocol:		
Step 1	Configure the appropriate protocol translation.	**set bridge ipx 8023rawtofddi** {**8022** | **SNAP** | **FDDIRAW**}
Step 2	Verify that the correct translation protocol was configured.	**show bridge**
Setting the Minimum Time to Transfer the FDDI PHY Line State		
Set TL_MIN to a value between 40 and 1,340,006 microseconds.		**set fddi tlmin** *mod_num/port_num time*
Setting the Interval between Neighbor Notification Frames		
Set TNotify to a value between 2 and 30 seconds.		**set fddi tnotify** *mod_num time*
Setting the Timer for Negotiating Token Ring Timer		
Set TRequest to a value between 2502 and 165,000 microseconds.		**set fddi treq** *mod_num time*
Specifying the User-Data String		
Enter a module number and a unique description or name to identify the FDDI module.		**set fddi userdata** *mod_num userdata_string*
Disabling IP Fragmentation		
Disable IP fragmentation.		**set ip fragmentation disable**
Disabling ICMP Unreachable Messages		
Disable ICMP unreachable messages.		**set ip unreachable disable**
Setting the Link Error Rate Alarm		
Change the LER-alarm setting.		**set fddi alarm** *mod_num/port_num value*
Setting the Link Error Rate Cutoff		
Change the LER-cutoff setting.		**set fddi cutoff** *mod_num/port_num value*

Table 7 FDDI/CDDI Quick Configuration (Continued)

Task		Commands
Setting the Port Name		
Configure a name for a port.		**set port name** *mod_num/port_num* [*name_string*]
Setting the Port Priority Level		
Configure the priority level for each CDDI or FDDI port.		**set port level** *mod_num/port_num* {**normal** | **high**}
Setting Up a Native VLAN on FDDI		
Assign a VLAN to map to native traffic on an FDDI port.		**set vlan** *vlan_num mod/ports*
Setting Up an FDDI 802.10 Configuration		
Step 1	Provide a VLAN number and activate a VLAN in the management domain.	**set vlan** *vlan_num*
Step 2	Create a VLAN with the type FDDI.	**set vlan** *vlan_num* **type fddi**
Step 3	Map the Ethernet VLAN translation to an FDDI VLAN.	**set vlan** *ether_vlan_num* **translation** *fddi_vlan_num* or **set vlan** *fddi_vlan_num* **translation** *ether_vlan_num*
Step 4	Turn the trunking on for the FDDI port.	**set trunk** *mod_num/port_num* **on**
Checking Connectivity		
Step 1	Send an echo request from the Catalyst 5000 series switch to the host.	**ping** *host*
Step 2	If the host is unresponsive, check the configuration for the IP address of the Catalyst 5000 series switch and default IP route, if appropriate.	**show interface** **show ip route**

1. SNAP=Subnetwork Access Protocol

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 users will be required to correct the interference at their own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems could void the FCC approval and negate your authority to operate the product.

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.

This document is to be used in conjunction with the *Catalyst 5000 Series Module Installation Guide*.

9711R