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Cisco 6130 Configuration Notes

This document tells you how to (1) migrate from a Cisco 6100 chassis to a Cisco 6130 chassis and (2) install a Cisco 6100 Series system, using the Cisco 6130 chassis.

The Cisco 6130 Advanced Digital Subscriber Line Access Multiplexer (DSLAM) is a carrier class multiplexer. It functions in either of two configurations:

- Uses Digital Off-Hook (DOH) technology to support up to 400 asymmetric digital subscriber line (ADSL) users through 64 ADSL modems.
- Uses a Direct Connect configuration and ADSL or symmetrical digital subscriber line (SDSL) technology to support 64 to 128 subscribers through directly connected modems.

The Cisco 6130 sends and receives subscriber data (often Internet service) over existing copper telephone lines, concentrating all traffic onto a single high-speed trunk for transport to the Internet or corporate intranet. ADSL and SDSL customer premises equipment (CPE) devices, which are connected to PCs or routers at the subscriber site, modulate data so that the data can travel over telephone lines to the Cisco 6130 Advanced DSLAM at the central office (CO).

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

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2. Cisco 6130 Overview

The Cisco 6130 multiplexer chassis (MC) has 38 module slots. These include

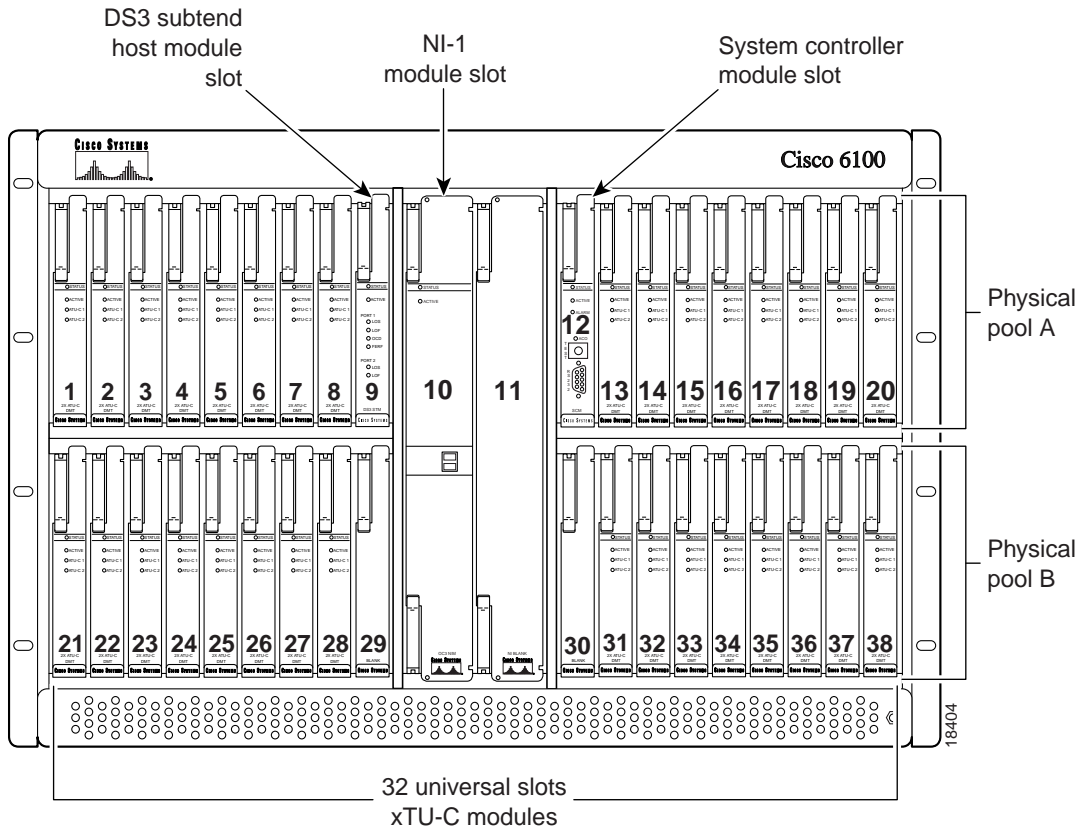
- System controller (SC) module slots
- Network interface (NI) module slots
- Subtend host module (STM) slots
- 32 universal slots for up to 32 dual-port ATU-C (CAP or DMT-2) or quad-port STU-C (2B1Q) modules, depending on the configuration style (Direct Connect or DOH)



Caution Do not mix CAP ATU-C, DMT-2 ATU-C, and STU-C modules in the same Cisco 6130 chassis. Mixing modules can cause unpredictable system behavior.

Figure 1 identifies the MC module slots.

Figure 1 Module Slots in the Multiplexer Chassis



In a Direct Connect configuration where DMT-2 ATU-C modules are used, you must install a fan tray directly beneath the MC and leave one rack unit space below the fan tray. For more information on the fan tray, refer to the *Cisco 6100 Series Fan Tray Configuration Notes*.

Note To achieve Network Equipment Building Systems (NEBS) compliance, the fan tray must be bolted into the rack and connected to the MC.

3. Tool and Equipment Requirements

The following tools and equipment are required for chassis installation or removal:

- A 3/16-inch flat-blade screwdriver
- Phillips-head screwdriver
- Equipment for electrostatic discharge (ESD) protection

Two people are needed for lifting the chassis and installing it.

4. General Safety Precautions and Maintenance Guidelines



Caution Proper ESD protection is required whenever you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded using ground straps to eliminate the risk of ESD damage to the equipment. Modules are subject to ESD damage whenever they are removed from the chassis.



Caution Do not mix CAP ATU-C, DMT-2 ATU-C, and STU-C modules in the same Cisco 6130 chassis. Mixing modules can cause unpredictable system behavior.



Caution Be careful when removing the standoff screws and reinserting the screws into the screw holes on the backplane so that the backplane circuitry does not become damaged.



Caution If you do not pull the modules away from the backplane connection before applying power, you could damage the modules and the chassis.



Caution Reseating the modules in the chassis with the power leads reversed may damage the modules.



Caution Use caution when installing or modifying telephone lines.



Warning Systems using a Cisco 6100 backplane *must* connect to the network through a POTS splitter chassis (PSC) to provide the secondary lightning protection required by NEBS.



Warning Installation and maintenance should be performed only by trained service personnel who are aware of the potential hazards involved (for example, fire and electric shock).



Warning To prevent a Cisco 6100 Series system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104°F (40°C) in a CO location.



Warning Two people are required to lift the chassis. Grasp the chassis underneath the lower edge and lift with both hands. To prevent injury, keep your back straight and lift with your legs, not your back.



Warning To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.



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



Warning Do not use this product near water. For example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

5. Cisco 6130 Compatibility Matrices

There are two different backplanes available with the Cisco 6100 Series system: the Cisco 6130 and the Cisco 6100. The Cisco 6130 backplane is supported in Release 2.4.0 or higher. Table 1 shows the configurations in which each of these backplanes can be used.

Table 1 Cisco 6100 Series System Backplane and Configuration Compatibility

	Direct Connect with PSC Configuration		Direct Connect without PSC Configuration	DOH Configuration ⁵	
	With a Cisco PSC	With a Siecor POTS Splitter ¹		With an LCC ²	With a Cisco PSC
Cisco 6130 backplane ³	Yes	Yes ⁴	Yes	Yes	Yes
Cisco 6100 backplane	Yes ⁵	No	No ⁶	Yes	Yes

1 The Siecor ADSL POTS Splitter Rack-Mount Shelf is compatible with the Cisco 6130 backplane. Systems using a Cisco 6100 backplane cannot connect to the network through a Siecor POTS splitter. The Siecor POTS splitter provides secondary lightning protection from tip to ring. However, secondary lightning protection is not provided from tip to ground or ring to ground.

2 LCC = line concentration chassis

3 Feature support in Release 2.4.0 or higher.

4 Only compatible when using DMT-2 ATU-C modules in the MC.

5 Only compatible when using CAP ATU-C modules in the MC.

6 The Cisco 6100 backplane cannot connect to the network without a Cisco PSC. The Cisco 6100 backplane, without a Cisco PSC installed, does not provide the secondary lightning protection required by NEBS.

Table 2 shows backplane compatibility with various Cisco 6100 Series system releases.

Table 2 Cisco 6100 Series System Backplane and Release Compatibility

	Cisco 6100 Series System Releases				
	Release 2.4.0	Release 2.3.1	Release 2.3.0	Release 2.2.1/2.2.5	Release 2.2.0
Cisco 6130 backplane	Yes	Yes	Yes	Yes	Yes
Cisco 6100 backplane ¹	Yes	Yes	Yes	Yes	Yes

¹ Systems using a Cisco 6100 backplane must connect to the network through a Cisco PSC to provide the secondary lightning protection required by NEBS. Therefore, a Cisco 6100 backplane cannot support a Direct Connect without PSC configuration.

Table 3 shows the configurations where the two Cisco 6100 Series backplanes can operate.

Table 3 Cisco 6100 Series Module and Configuration Compatibility

Module	Direct Connect with a PSC Configuration		Direct Connect without a PSC Configuration		DOH Configuration		Siecor POTS Splitter ¹
	Cisco 6130 Backplane	Cisco 6100 Backplane	Cisco 6130 Backplane	Cisco 6100 Backplane	Cisco 6130 Backplane	Cisco 6100 Backplane	
Dual-port CAP ATU-C	Yes ²	Yes	No	Not supported	Yes ²	Yes	No
Dual-port DMT-2 ATU-C	Yes ³	Not tested	Yes ³	Not supported	No	Not tested	Yes
Quad-port STU-C	No	No	Yes ⁴	Not supported	No	No	No

¹ The Siecor ADSL POTS splitter is compatible with the Cisco 6100 Series system. If you use this POTS splitter, special cables are required.

² If you are using all CAP ATU-C modules in the MC, you must use CAP POTS modules in the PSC.

³ If you are using all DMT-2 ATU-C modules in the MC, you must use DMT POTS modules in the PSC.

⁴ SDSL does not support POTS.

6. Cisco 6130 Backplane Connectors

Figure 2 shows the Cisco 6130 backplane of the MC. This backplane ships with Release 2.4.0 and replaces the Cisco 6100 backplane. The Cisco 6130 supports

- A Direct Connect configuration
 - A Direct Connect with a PSC configuration (with CAP ATU-C or DMT-2 ATU-C modules)
 - A Direct Connect without a PSC configuration (with DMT-2 ATU-C or STU-C modules)
- A DOH configuration (with CAP ATU-C modules)

To determine if you have the Cisco 6130, look for the J49 connector on the backplane. (See Figure 2.) The Cisco 6100 backplane does not have this connector.

Figure 2 MC Backplane—Cisco 6130

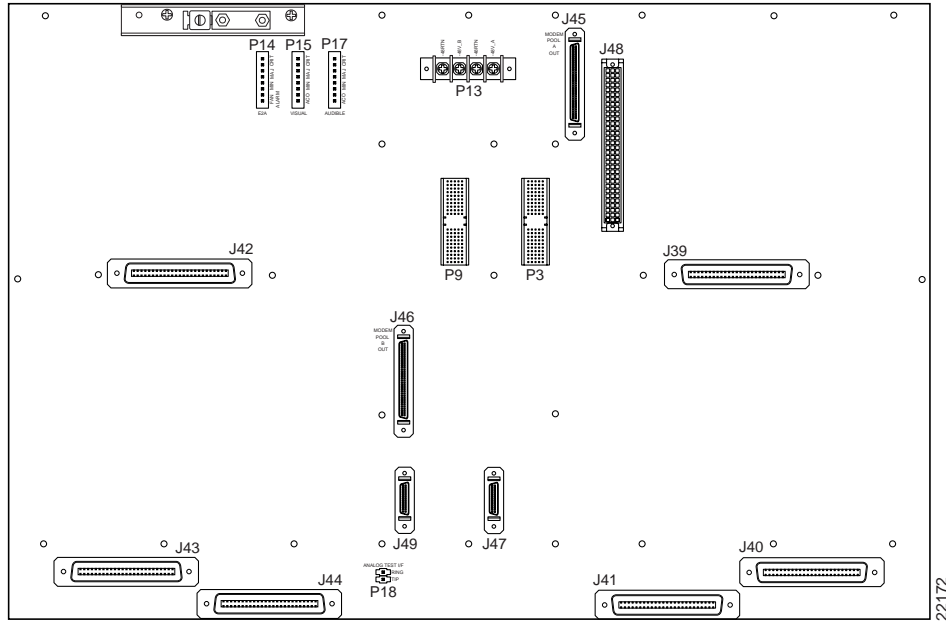


Table 4 lists the connectors on the backplane of the Cisco 6130.

Table 4 MC Backplane Connectors and Switches—Cisco 6130

Identifier	Name	Description
J45	Modem pool A out	A 68-pin SCSI2 connector used to connect to the LCC for ATU-C pool A. Note Use for DOH configurations only.
J46	Modem pool B out	A 68-pin SCSI2 connector used to connect to the LCC for ATU-C pool B. Note Use for DOH configurations only.
J47	LCC controller out	A 26-pin SCSI connector used to connect to the LCC controller in connectors on the LCC. Note Use for DOH configurations only.
J48	DS3 subtending module	A 96-pin DIN connector.
J49	—	Note For future use.
J39, J40, J41, J42, J43, J44	Data	Six 50-pin Champ connectors used to transfer data between the MC and the PSC in a Direct Connect with a PSC configuration. In a Direct Connect without a PSC configuration, the connectors are used to transfer data between the MC and the CPE equipment. Note These connectors are not used in a DOH configuration.
P9, P3	System I/O card	Two 2-mm HM hard metric modular connectors (male on the MC and female on the system I/O card) used to connect the system I/O card.

Table 4 MC Backplane Connectors and Switches—Cisco 6130 (continued)

Identifier	Name	Description
P13	Power	A terminal block connector with four dual power input connections (48 V A, 48 V A Return, 48 V B, and 48 V B Return).
P14, P15, P17	Alarm	Three 8-position headers providing connections for E2A, visual, and audible alarm contacts. Note If you are using DMT-2 ATU-C modules, the fan tray alarm contacts (P14, pins 7 and 8) must be connected so that fan tray alarms can be transmitted to ViewRunner.
P18	Analog test input	A 2-position header for connecting external ADSL test equipment.

7. Cisco 6130 Cabling Diagrams

This section provides cabling diagrams for the three Cisco 6130 configurations:

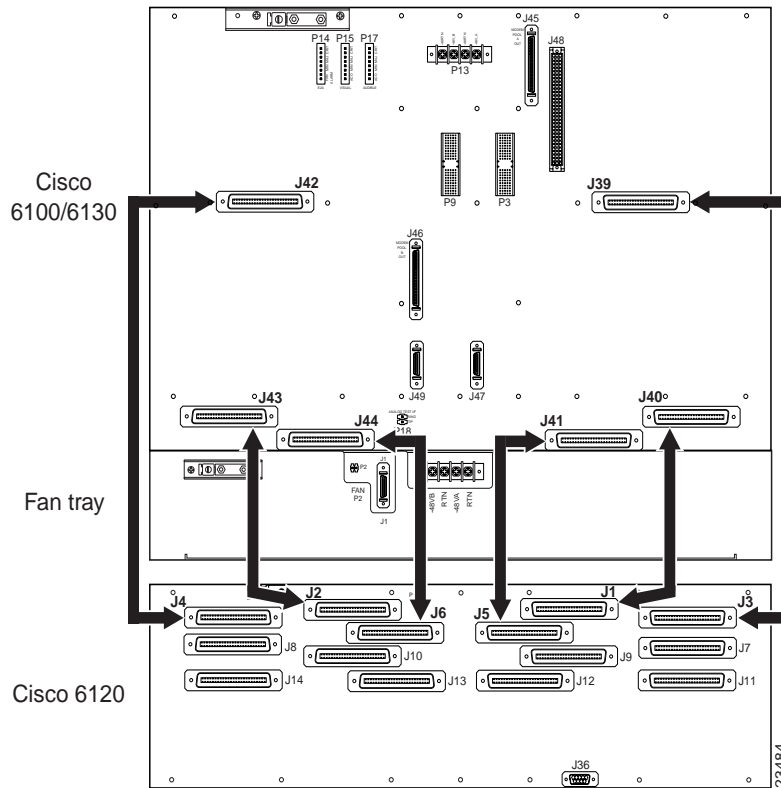
- Direct Connect with a PSC configuration
- Direct Connect without a PSC configuration
- DOH configuration

Note For information on NEBS compliance cabling guidelines and Siecor POTS splitter cabling, refer to the *Cisco 6100 Series User Guide* or the configuration-specific installation guide (*Cisco 6100 Series Direct Connect Installation Guide* or *Cisco 6100 Series Digital Off-Hook Installation Guide*).

7.1 Direct Connect with PSC Cabling Diagram

Figure 3 shows the basic cabling of the Cisco 6130 Direct Connect with a PSC configuration.

Figure 3 Basic Cabling for Direct Connect with a PSC Configuration

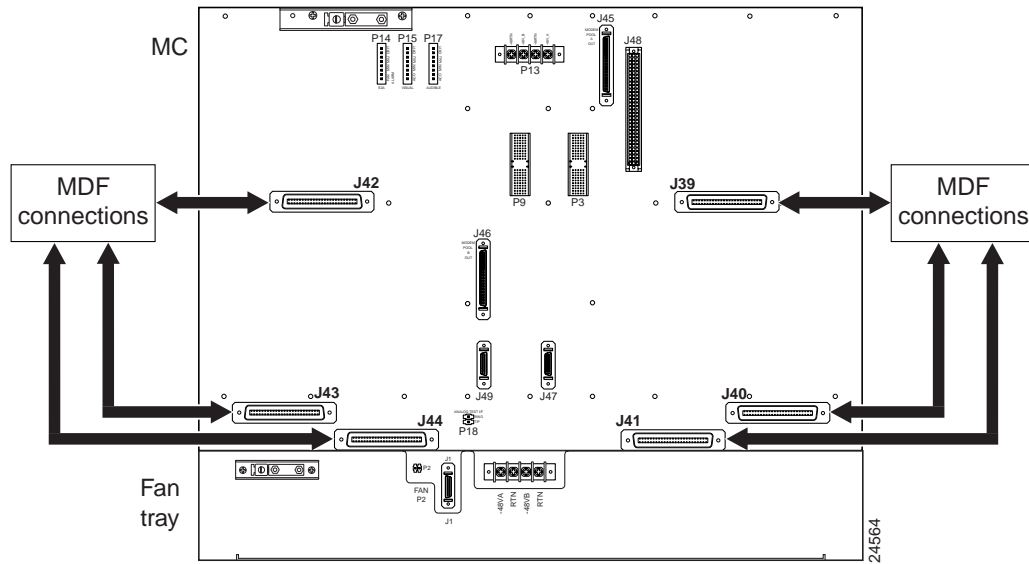


Note For more information on cabling, required cables, and cable part numbers, refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

7.2 Direct Connect without PSC Cabling Diagram

Figure 4 shows the basic cabling of the Cisco 6130 Direct Connect without a PSC configuration.

Figure 4 Basic Cabling for Direct Connect without a PSC Configuration

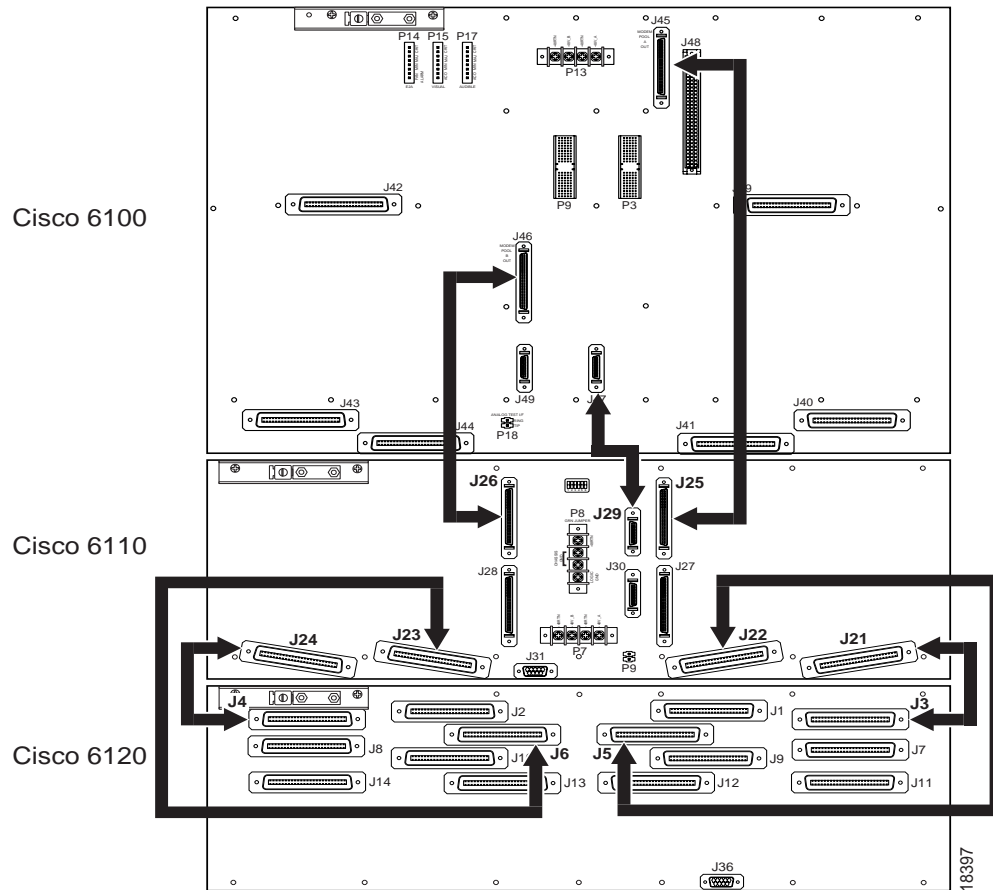


Note For more information on cabling, required cables, and cable part numbers, refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

7.3 DOH Configuration Cabling Diagram

Figure 5 shows the basic cabling of the Cisco 6130 DOH configuration.

Figure 5 Basic Cabling for a DOH Configuration



Note For more information on cabling, required cables, and cable part numbers, refer to the *Cisco 6100 Series Digital Off-Hook Installation Guide*.

8. Migrating from the Cisco 6100 to the Cisco 6130

Use the procedures in this section to remove a chassis with a Cisco 6100 backplane and replace it with a chassis with a Cisco 6130 backplane.

Note If you are not migrating from a chassis with a Cisco 6100 backplane and are installing a Cisco 6130 chassis for the first time, refer to the “Installing the Cisco 6130” section on page 21 for installation procedures.



Caution Proper ESD protection is required whenever you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded using ground straps to eliminate the risk of ESD damage to the equipment. Modules are subject to ESD damage whenever they are removed from the chassis.

8.1 Removing an MC with a Cisco 6100 Backplane

To replace your current Cisco 6100 chassis with the new Cisco 6130 chassis, you will need to remove the Cisco 6100 MC and replace it with the Cisco 6130 MC. Use the following steps to remove a Cisco 6100 MC:

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

- Step 1** If your system has an optional rear door, remove it.
- Step 2** Disconnect the ViewRunner PC from the MC by removing the Ethernet cable.
- Step 3** Open the MC front door.
- Step 4** Power down the system.
- Step 5** If you have an OC-3c NI module installed, you will need to disconnect the OC-3c NI module from the network.
- (a) Disconnect the optical fiber to the transmit and receive connectors in the inset on the front panel of the OC-3c NI modules and pull the fiber through.
 - (b) To remove the OC-3c NI module from slot 10 on the MC, lift up on the ejector tab and carefully slide the module out of the chassis.

Note To prevent damage to the modules that are removed from the MC, place the modules upright in a tray.

- Step 6** If you have a DS3 NI module installed, you will need to disconnect the DS3 NI module from the network.
- (a) Disconnect the cable from the ATM switch to the BNC connectors on the system I/O card, which is located on the MC backplane. The bottom BNC connector (J4, the closest to the Ethernet connector) is for receive, and the top connector (J3) is for transmit.

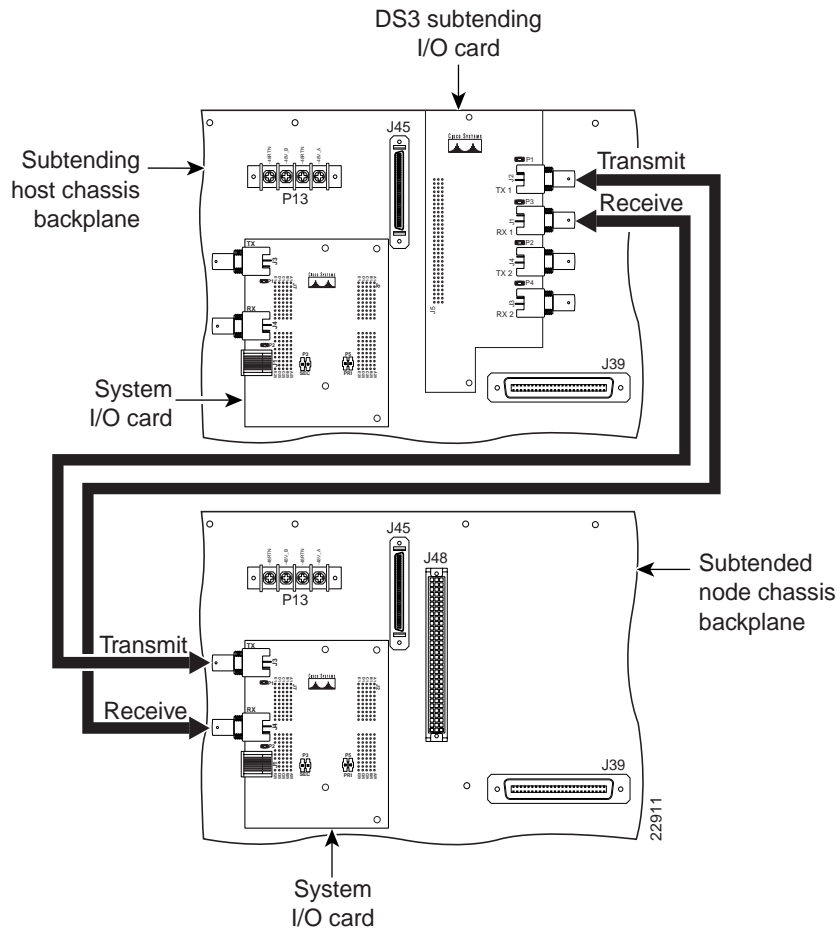
- (b) To remove the DS3 NI module from slot 10 on the MC, lift up on the ejector tabs and carefully slide the module out of the chassis.

Step 7 If you are running a subtended network

- (a) On the subtending host backplane, disconnect the transmit and receive connectors from DS3 subtending card subtending. (See Figure 6 for cable locations.)
- (b) On the subtended node backplane, disconnect the transmit and receive connectors from the system I/O card. (See Figure 6 for cable locations.)

Note If you are replacing the subtended host MC and the subtended node MC with a Cisco 6130 chassis, remove all of the connections in Steps 7a and 7b (see Figure 6). If you are replacing only one of the Cisco 6100 chassis in a subtended configuration, disconnect the cables only from the chassis you are replacing.

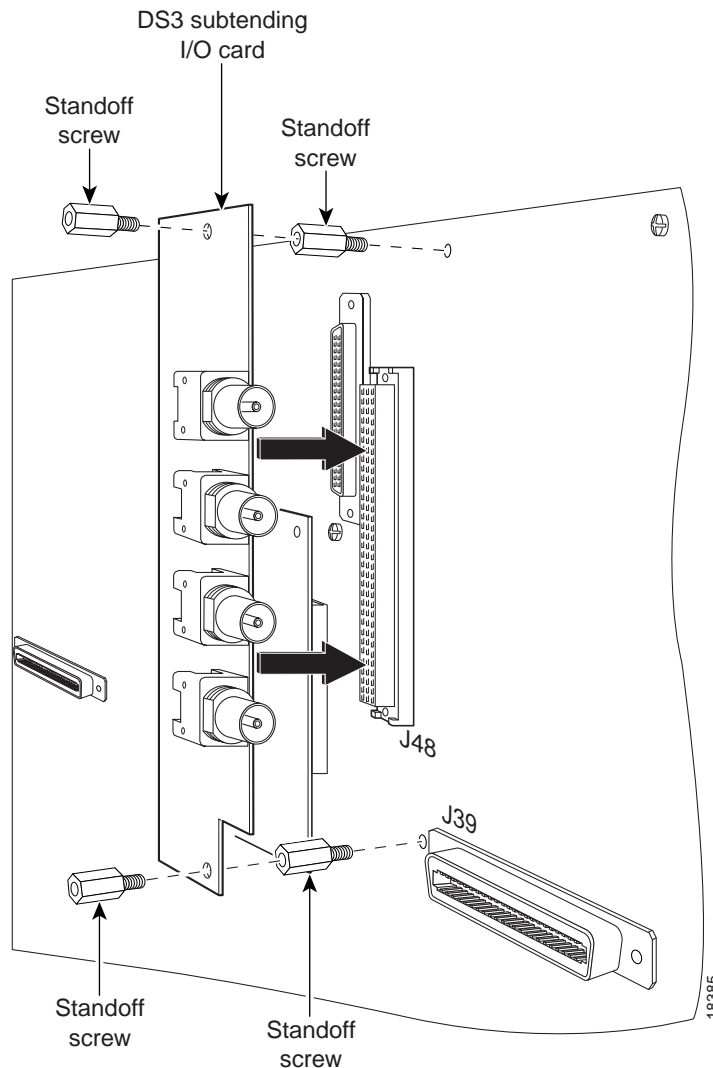
Figure 6 Disconnecting Subtended Network Cabling



- (c) To remove the DS3 NI module from slot 10 of the subtended node MC, lift up on the ejector tab and carefully slide the module out of the chassis.
- (d) To remove the DS3 STM from slot 9 of the subtending host MC, lift up on the ejector tab and carefully slide the module out of the chassis.

- (e) To remove the DS3 subtending card from the MC backplane (see Figure 7)
- Remove the two screws that hold the DS3 subtending card to the MC backplane.
 - Disconnect the DS3 subtending card from connector J48, a 96-pin DIN connector on the subtending host MC backplane.
 - Remove the standoff screws. Keep these standoff screws for use when you install a Cisco 6130 backplane in a chassis.
 - Reinsert the two screws (not standoff screws) into the Cisco 6100 backplane.

Figure 7 DS3 Subtending Card—Removal



Step 8 Remove the filler faceplates from the open slots in the Cisco 6100.

Step 9 Remove all modules from the Cisco 6100 by lifting up on the each ejector tab and carefully sliding the module out of the chassis.

Note To prevent damage to the modules that are removed from the MC, place the modules upright in a tray.

- Step 10** To pull all modules away from the backplane connection in the LCC (if you are using a DOH configuration) and PSC, lift up on the ejector tab and carefully slide each module forward without removing it from the chassis.
- Step 11** Remove the system I/O card from the Cisco 6100 backplane.
- Step 12** Disconnect the alarm contacts.
- Step 13** Disconnect the MC power connections from the fuse and alarm panel.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions regarding power.

- Step 14** Disconnect the grounding lugs on the MC.
- Step 15** Disconnect the DOH switching bus cables (applicable in a DOH configuration).
- Step 16** In a Direct Connect with a PSC configuration, disconnect the MC from the PSC. In a DOH configuration, disconnect the MC from the LCC.
- Step 17** Remove the MC from the rack.

Now that you have disconnected and removed the chassis with the Cisco 6100 backplane, you are ready to install the chassis with the Cisco 6130 backplane. The following section “Installing an MC with a Cisco 6130 Backplane” documents the installation of the Cisco 6130 chassis.

8.2 Installing an MC with a Cisco 6130 Backplane

If you have just removed a Cisco 6100 backplane with chassis, the following sections provide installation procedures for each of the two configurations:

- For a Direct Connect with a PSC configuration, refer to the “Direct Connect with a PSC Configuration Installation Procedures” section on page 15.
- For a DOH configuration, refer to the “Digital Off-Hook Configuration Installation Procedures” section on page 18.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

If you are not migrating from a chassis with a Cisco 6100 backplane and are installing a Cisco 6130 chassis for the first time, refer to the “Installing the Cisco 6130” section on page 21 for installation procedures.

Note If you are installing a Direct Connect with a PSC configuration using the Siecor ADSL POTS Splitter Rack-Mount Shelf, install the Cisco components (excluding the PSC). Refer to the *ADSL POTS Splitter Rack-Mount Shelf Central Office Version* document for installation procedures for the Siecor POTS splitter.

8.2.1 Direct Connect with a PSC Configuration Installation Procedures

When installing a Direct Connect with a PSC configuration, be sure that you follow the installation procedures in proper sequence. For more detailed installation procedures, cabling information, and rack requirements refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

Use these installation steps when you are installing a chassis with a Cisco 6130 backplane in a Direct Connect with a PSC configuration:

Step 1 Measure the rack space if you are adding a fan tray, which is required for configurations using DMT-2 ATU-C modules. A fan tray occupies two rack unit spaces and will be flush with the bottom of the MC. Leave a one rack unit space between the fan tray and the PSC. This space allows for the intake plenum and for cabling back to front for the OC-3c NI module.

Note You may have to move the PSC down in the rack to accommodate the fan tray.

For more information on the fan tray, refer to the *Cisco 6100 Series Fan Tray Configuration Notes*.

Step 2 If you are using DMT-2 ATU-C modules, install the fan tray in the rack.

Step 3 Install the new MC with the Cisco 6130 backplane in the rack.

Step 4 Connect the MC to the PSC.

Step 5 Ground the MC.

Step 6 If you are using DMT-2 modules, ground the fan tray.

Step 7 Attach the MC power connections to the fuse and alarm panel.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions regarding power.

Step 8 If you have installed a fan tray, attach the fan tray power connections to the fuse and alarm panel.

Step 9 Connect the alarm contacts. The fan tray alarm contacts (P14, pin 7 and 8) must be connected so that the fan tray alarms can be transmitted to ViewRunner.

Step 10 Install the system I/O card and the DS3 subtending card (applicable in a subtending network) on the backplane of the MC. For detailed installation information, refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

Step 11 Verify that all modules in the PSC are pulled away from the backplane connection.

Step 12 Apply power to the system.

Step 13 Install or reseal the modules in the following order:

- CAP or DMT-2 ATU-C modules
- NI module
- POTS modules
- DS3 STM (applicable in a subtending network)
- SC module

Note All modules must be fully seated in the chassis. A push on the faceplate of each module is required for the module to be fully seated.

(a) To install the ATU-C modules in the MC, do the following:

- Align the module edge with the module guides at the top and bottom of slot 1 of the MC.
- Lift up on the ejector tab and push the module into the slot.
- A push on the faceplate of each module is required for the module to be fully seated.
- Once the module is fully seated in slot 1, press down on the ejector tab to secure the module.
- After the brief self-test, verify that the STATUS LED is solid green.
- Using the same procedure, install the remaining ATU-C modules. Repeat as necessary.

(b) To install the NI module in the MC, do the following:

- Align the module edge with the module guides at the top and bottom of slot 10 of the MC.
- Lift up on the ejector tabs and push the module into the slot.
- A push on the faceplate of each module is required for the module to be fully seated.
- Once the module is fully seated in slot 10, press down on the ejector tabs to secure the module.
- The NI module self-test takes approximately two minutes. After that time, verify that the ACTIVE LED is solid green.
- When installing a DS3 NI module, attach a short coax cable between the DS3 transmit and receive connectors to loop back the interface and prevent alarms when installing the SC module.

When installing a OC-3c NI module, use a short multi-mode or single-mode fiber to loop back the interface.

Note If you are migrating from a chassis with a Cisco 6100 backplane to a chassis with Cisco 6130 backplane on subtended node MC, you will also need to install the DS3 NI module in slot 10 of the subtended node MC.

- (c) To reseal the POTS splitter modules in the PSC, do the following:
- Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. The POTS modules are installed in slots 1 through 10 and 13 through 22 of the PSC.
- (d) To install the STM in the MC, do the following:
- Align the module edge with the module guides at the top and bottom of slot 9 of the MC.
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module.
- (e) To install the SC module in the MC, do the following:
- Align the module edge with the module guides at the top and bottom of slot 12 of the MC.
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. This causes each module in the MC to reset.
 - After two minutes, the STATUS and ACTIVE LEDs on all modules should be solid green (where applicable). There should be *no* alarms on the SC module (ALARM LED off).
 - If the status lights on the ATU-C modules or the NI module are flashing, a code update needs to be performed from ViewRunner.

- Step 14** Install the filler faceplates in open slots.
- Step 15** Install a subtended network (optional).
- Step 16** Connect the NI module to the network.
- Step 17** Verify that the MC front door is closed.
- Step 18** Connect the ViewRunner PC to the MC (Ethernet).
- Step 19** Install the rear door (optional).
- Step 20** Run the connection test procedures.

8.2.2 Digital Off-Hook Configuration Installation Procedures

When installing a DOH configuration, be sure that you follow the installation procedures in proper sequence. For more detailed installation procedures, cabling information, and rack requirements refer to the *Cisco 6100 Series Digital Off-Hook Installation Guide*.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

Use these installation steps when you are installing a chassis with a Cisco 6130 backplane in a DOH configuration:

- Step 1** Measure the rack space. You will need to install an air and heat deflector above the MC. The air and heat deflector ensures proper ventilation for the MC and uses one rack unit space. It will be flush with the top of the MC. To achieve NEBS compliance, the air and heat deflector must be bolted into the rack.
- Step 2** Install the new MC with the Cisco 6130 backplane in the rack.
- Step 3** Install the air and heat deflector above the MC.
- Step 4** Connect the LCC controller out 26-pin SCSCI connector (J47) on the MC to the LCC controller in 26-pin SCSI connector (J49) on the LCC.
- Step 5** Connect the DOH data-switching bus cables. Connect J45 on the MC to J25 on the LCC. Connect J46 on MC to J26 on LCC.
- Step 6** Ground the MC.
- Step 7** Attach the MC power connections to the fuse and alarm panel.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions regarding power.

- Step 8** Connect the alarm contacts. The fan tray alarm contacts (P14, pins 7 and 8) must be connected so that the fan tray alarms can be communicated to ViewRunner.
- Step 9** Install the system I/O card and the DS3 subtending card (applicable in a subtending network) on the backplane of the MC. For detailed installation information, refer to the *Cisco 6100 Series Digital Off-Hook Installation Guide*.
- Step 10** Verify that all modules in the LCC and PSC are pulled away from the backplane connection.
- Step 11** Apply power to the system.

Step 12 Install or reseal the modules in the following order:

- CAP ATU-C modules
- NI module
- POTS modules
- DS3 STM (applicable in a subtending network)
- Line interface module (LIM) controller module
- LIMs
- SC module

Note All modules must be fully seated in the chassis. A push on the faceplate of each module is required for the module to be fully seated.

(a) To install the ATU-C modules in the MC, do the following:

- Align the module edge with the module guides at the top and bottom of slot 1 of the MC.
- Lift up on the ejector tab and push the module into the slot.
- A push on the faceplate of each module is required for the module to be fully seated.
- Once the module is fully seated in slot 1, press down on the ejector tab to secure the module.
- After the brief self-test, verify that the STATUS LED is solid green.
- Using the same procedure, install the remaining ATU-C modules. Repeat as necessary.

(b) To install the NI module in the MC, do the following:

- Align the module edge with the module guides at the top and bottom of slot 10 of the MC.
- Lift up on the ejector tabs and push the module into the slot.
- A push on the faceplate of each module is required for the module to be fully seated.
- Once the module is fully seated in slot 10, press down on the ejector tabs to secure the module.
- The NI module self-test takes approximately two minutes. After that time, verify that the ACTIVE LED is solid green.
- When installing a DS3 NI module, attach a short coax cable between the DS3 transmit and receive connectors to loop back the interface and prevent alarms when installing the SC module.

When installing a OC-3c NI module, use a short multi-mode or single-mode fiber to loop back the interface.

Note If you are migrating from a chassis with a Cisco 6100 backplane to a chassis with Cisco 6130 backplane on subtended node MC, you will also need to install the DS3 NI module in slot 10 of the subtended node MC.

- (c) To reseal the POTS splitter modules in the PSC, do the following:
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. The POTS modules are installed in slots 1 through 10 and 13 through 22 of the PSC.
- (d) To install the STM in the MC, do the following:
 - Align the module edge with the module guides at the top and bottom of slot 9 of the MC.
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module.
- (e) To reseal the LIM controller module in the LCC, do the following:
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. The LIM controller module is installed in slot 11 of the MC.
- (f) To reseal the LIMs in the LCC, do the following:
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. The LIMs are installed in slots 1 through 10 and 13 through 22 of the LCC.
- (g) To install the SC module in the MC, do the following:
 - Align the module edge with the module guides at the top and bottom of slot 12 of the MC.
 - Lift up on the ejector tab and push the module into the slot.
 - A push on the faceplate of each module is required for the module to be fully seated.
 - Once the module is fully seated, press down on the ejector tab to secure the module. This causes each module in the MC to reset.
 - After two minutes, the STATUS and ACTIVE LEDs on all modules should be solid green (where applicable). There should be *no* alarms on the SC module (ALARM LED off).
 - If the status lights on the ATU-C modules or the NI module are flashing, a code update needs to be performed from ViewRunner.

Step 13 Install the filler faceplates in open slots.

Step 14 Install a subtended network (optional).

Step 15 Connect the NI module to the network.

Step 16 Verify that the MC front door is closed.

Step 17 Connect the ViewRunner PC to the MC (Ethernet).

Step 18 Install the rear door (optional).

Step 19 Run the connection test procedures.

9. Installing the Cisco 6130

If you are not migrating from a chassis with a Cisco 6100 backplane to a chassis with a Cisco 6130 backplane, use the following sections, which provide installation procedures for each of the three configurations:

- For a Direct Connect with a PSC configuration, refer to the “Direct Connect with a PSC Configuration Installation Procedures” section on page 21.
- For a Direct Connect without a PSC configuration, refer to the “Direct Connect without a PSC Configuration Installation Procedures” section on page 22.
- For a DOH configuration, refer to the “Digital Off-Hook Configuration Installation Procedures” section on page 23.

Note If you are installing a Direct Connect with a PSC configuration using the Siecor ADSL POTS Splitter Rack-Mount Shelf, install the Cisco components (excluding the PSC). Refer to the *ADSL POTS Splitter Rack-Mount Shelf Central Office Version* document for installation procedures for the Siecor POTS splitter.

For information on rack requirements, refer to the *Cisco 6100 Series Direct Connect Installation Guide* or the *Cisco 6100 Series Digital Off-Hook Installation Guide*, depending on your configuration.



Caution Proper ESD protection is required whenever you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded using ground straps to eliminate the risk of ESD damage to the equipment. Modules are subject to ESD damage whenever they are removed from the chassis.

9.1 Direct Connect with a PSC Configuration Installation Procedures

When installing a Direct Connect with a PSC configuration, be sure that you follow the installation procedures in proper sequence.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

Table 5 is an overview of the installation steps used when installing a Direct Connect with a PSC configuration. For more detailed installation procedures, cabling information, and rack requirements refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

Table 5 Direct Connect with a PSC Configuration Installation Checklist

Check	Installation Step
	1 Stabilize and measure rack space.
	2 Install the PSC in the rack.
	3 Install the fan tray in the rack.
	4 Install the MC in the rack.
	5 Connect the MC to the PSC.

Table 5 Direct Connect with a PSC Configuration Installation Checklist (continued)

Check	Installation Step
	6 Ground the MC, fan tray, and PSC.
	7 Attach the MC power connections to the fuse and alarm panel.
	8 Attach the fan tray power connections to the fuse and alarm panel.
	9 Connect the alarm contacts.
	10 Locate (or install) the system I/O card and the DS3 subtending card (applicable in a subtending network) on the backplane of the MC.
	11 Connect the PSC to the MDF ¹ .
	12 Verify the CAP ATU-C module jumpering for Direct Connect.
	13 Apply power to the system.
	14 Install the modules in the MC and PSC, ATU-C modules first.
	15 Install the filler faceplates in open slots.
	16 Install a subtended network (optional).
	17 Connect the NI module to the network.
	18 Verify that the MC front door is closed.
	19 Connect the ViewRunner PC to the MC (Ethernet).
	20 Install the rear door (optional).
	21 Run the connection test procedures.

¹ MDF = main distribution frame

9.2 Direct Connect without a PSC Configuration Installation Procedures

When installing a Direct Connect without a PSC configuration, be sure that you follow the installation procedures in proper sequence.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

Table 6 is an overview of the installation steps used when installing a Direct Connect without a PSC configuration. For more detailed installation procedures, cabling information, and rack requirements refer to the *Cisco 6100 Series Direct Connect Installation Guide*.

Table 6 Direct Connect without a PSC Configuration Installation Checklist

Check	Installation Step
	1 Stabilize and measure rack space.
	2 Install the fan tray in the rack.
	3 Install the MC in the rack.
	4 Connect the MC to the MDF.
	5 Ground the MC and fan tray.
	6 Attach the MC power connections to the fuse and alarm panel.
	7 Attach the fan tray power connections to the fuse and alarm panel.

Table 6 Direct Connect without a PSC Configuration Installation Checklist

Check	Installation Step
	8 Connect the alarm contacts.
	9 Locate (or install) the system I/O card and the DS3 subtending card (applicable in a subtending network) on the backplane of the MC.
	10 Apply power to the system.
	11 Install the modules in the MC, ATU-C modules first.
	12 Install the filler faceplates in open slots.
	13 Install a subtended network (optional).
	14 Connect the NI module to the network.
	15 Verify that the MC front door is closed.
	16 Connect the ViewRunner PC to the MC (Ethernet).
	17 Install the rear door (optional).
	18 Run the connection test procedures.

9.3 Digital Off-Hook Configuration Installation Procedures

When installing a DOH configuration, be sure that you follow the installation procedures in proper sequence.

Note Refer to the “General Safety Precautions and Maintenance Guidelines” section on page 3 for warnings and cautions.

Table 7 is an overview of the installation steps used when installing a DOH configuration. For more detailed installation procedures and cabling information, refer to the *Cisco 6100 Series Digital Off-Hook Installation Guide*.

Table 7 DOH Configuration Installation Checklist

Check	Installation Step
	1 Stabilize and measure rack space.
	2 Install the PSC, LCC, and MC in the rack.
	3 Install the air and heat deflector in the rack.
	4 Connect the LCC to the PSC.
	5 Connect the LCC controller to the MC.
	6 Connect the DOH data-switching bus.
	7 Ground the MC, LCCs, and PSC.
	8 Attach the MC and LCC power connections to the fuse and alarm panel.
	9 Connect the alarm contacts.
	10 Locate (or install) the system I/O card and the DS3 subtending card (applicable in a subtending network) on the backplane of the MC.
	11 Use the DIP switches to set the LCC ID for each LCC.
	12 Connect the PSC to the MDF.

Table 7 DOH Configuration Installation Checklist (continued)

Check	Installation Step
	13 Verify the CAP ATU-C module jumpering for DOH.
	14 Apply power to the system.
	15 Install the modules in the MC, LCC, and PSC, CAP ATU-C modules first.
	16 Install the filler faceplates in open slots.
	17 Install a subtended network (optional).
	18 Connect the NI module to the network.
	19 Verify that the MC front door is closed.
	20 Connect the ViewRunner PC to the MC (Ethernet).
	21 Install the rear door (optional).
	22 Run the connection test procedures.

10. Related Documentation

Use the following related documentation with the Cisco 6130:

- *Cisco 6100 Series User Guide*. Describes the system components, system requirements, system specifications, and configuration specifications for Direct Connect and DOH configurations.
- *Cisco 6100 Series Direct Connect Installation Guide*. Describes how to set up and install the Cisco 6100 Series system using a Direct Connect configuration.
- *Cisco 6100 Series Digital Off-Hook Installation Guide*. Describes how to set up and install the Cisco 6100 Series system using a DOH configuration.
- *Cisco 6100 Series Alarm Summary Guide*. Explains how to diagnose and clear alarm events generated by the Cisco 6100 Series system.
- *Cisco 6100 Series Maintenance and Troubleshooting Guide*. Describes how to maintain the Cisco 6100 Series system and troubleshoot problems you may encounter when you are installing or operating the system.
- *Regulatory Compliance and Safety Information for the Cisco 6100 Series System*
- Current release notes for the Cisco 6100 Series system
- *Cisco 6130 Configuration Notes*
- *Cisco 6100 Series Fan Tray Configuration Notes*
- *Cisco 6100 Series Rear Door Configuration Notes*
- *Cisco 6100 Series DMT-2 ATU-C Module Configuration Notes*
- *Cisco 6100 Series STU-C Module Configuration Notes*
- *Cisco 6100 Series 8KHz POTS Module Configuration Notes*

The following ViewRunner management software is used to provision and manage the Cisco 6100 Series system:

- ViewRunner for Windows
- ViewRunner for HP OpenView

The ViewRunner documentation is located on Cisco Connection Online (CCO). You can access the ViewRunner documentation in the following ways:

- ViewRunner for Windows:
http://www.cisco.com/univercd/cc/td/doc/product/dsl_prod/vr4w/index.htm
- ViewRunner for HP OpenView:
http://www.cisco.com/univercd/cc/td/doc/product/dsl_prod/vr4ov/index.htm

11. 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.

12. Documentation CD-ROM

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

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