Installing the Base Station Indoor Equipment

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This chapter describes installation of the base station indoor hardware and the system software.

Unpacking and Inventory

- Unpack the base station chassis and its components on a flat, clean surface at the installation site.

⚠ **WARNING**

Keep all interface cards in their antistatic bags in the shipping box until you are ready to install them.

- Check the quantity of items received against the packing list and a copy of the purchase order to ensure that you have received your complete order.
- Inspect all components to determine that they are not damaged. If a component appears to be damaged or is missing, contact your shipper and Ensemble Customer Service immediately.
- Save all packing materials.

System Components

- Fiberless 16-slot base station chassis (CH16000)
- Fan tray assembly
- 1 or 2 Control Interface Cards (CIC1000)
- 1 or 2 Network Interface Cards (NIC1440)
- 1 or more Modem Interface Cards (MIC1025)
- Blank card panels to fill empty slots
- 19-inch (48-cm) and 23-inch (58-cm) rack mount brackets

Note *Interface cards are shipped in separate boxes and must be installed on site.*

Note *Ensemble does not provide power supplies. See page 10 for recommended power source information.*

Chassis Installation

- Mount the bottom of the first base station chassis assembly approximately 5.25 inches (13.3 cm) above the bottom of the rack or cabinet.

- Install additional base station chassis, one above the other, separated by a single RU (1.75 inch/4.4 cm) blank panel between them.

- Secure the base station chassis and blank panels with the machine screws provided by the rack or cabinet manufacturer.

Power and Grounding System

The base station chassis is normally shipped with the A bus ground stud internally connected to chassis ground and the B bus ground stud internally connected to digital ground. A removable metal jumper bridges chassis and digital ground is on the backplane.

> ⚠ **Caution**
>
> *If you have already seated the interface cards, unseat all of them before making power connections.*

> ⚠ **Caution**
>
> *Make sure all circuit breakers are off prior to making any connections.*

The following describes the connection procedure. Figure 5-1 shows the power connectors in the power terminal block.

Figure 5-1. Base Station Power Connections (Chassis Rear View)

Power Connection Procedure

Note *For power runs up to 50 feet, use #8 gauge (AWG) wire. For longer runs, select the proper wire size to avoid excessive voltage drop. Make connections to the base station using crimp type lugs.*

Use the provided #10 screw to route the -48 VDC power and return conductors to the Power Distribution Frame (PDF) on the power and ground barrier strip for each conductor.

1. Remove the plastic protective covering from the power terminal blocks.

2. Connect the -48 VDC conductors for each of the buses (A and B) to separate dedicated 50-amp circuit breakers.

3. Connect the return conductors to the appropriate return buses on the PDF.

4. After all power connections have been made and *with all interface cards unseated in the chassis*, turn on the circuit breakers.

5. Using a digital voltmeter (DVM), verify that proper polarity and voltage are present on both buses at the base station power block.

6. Install fan tray and verify that fans are on.

7. After all connections have been verified, return the circuit breakers to the off position.

8. Install the provided plastic protective cover over the power and ground terminal block.

Interface Card Installation

⚡ **WARNING**

Wear a grounded wrist strap when handling the interface cards. Failure to exercise ESD precautions can damage the interface cards.

⚠ **Caution**

Before initially inserting interface cards, ensure the circuit breakers supplying both the A and B power buses are turned off.

⚠ **Caution**

Populate any empty slots with the supplied blank cards so air-flow is properly directed among the cards.

Install cards in slots as listed in Table 5-1. Slots and cards are keyed to prevent installing them in the wrong slot.

1. Position and slide the interface card into the slot until it is seated (See Figure 5-2).
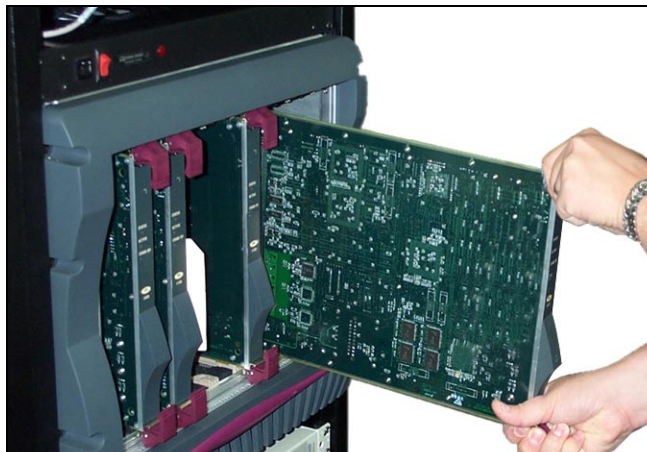

Figure 5-2. Base Station Card Positioning

2. Press down on the card lever until it snaps shut.

3. Then tighten the screws at the top and bottom of the card

4. Repeat this process for each interface card to be installed.

Note   *When seated, a mechanical latch locks the interface cards lock into place.*

5. Turn on chassis A and B bus circuit breakers.

6. Verify that the fan tray LED is green and that fans are on.

7. Verify that Status LED on each card illuminates and begins flashing yellow.

Table 5-1: Interface Card Slots

Slot	Interface Card
1 and 2	CIC 1000 (Control Interface Card)
8 and 9	NIC1340 (DS-3 Network Interface Card)
3-7 and 10-14	MIC1025 (single Modem Interface Card)

Figure 5-3 shows the cards in their appropriate slots.
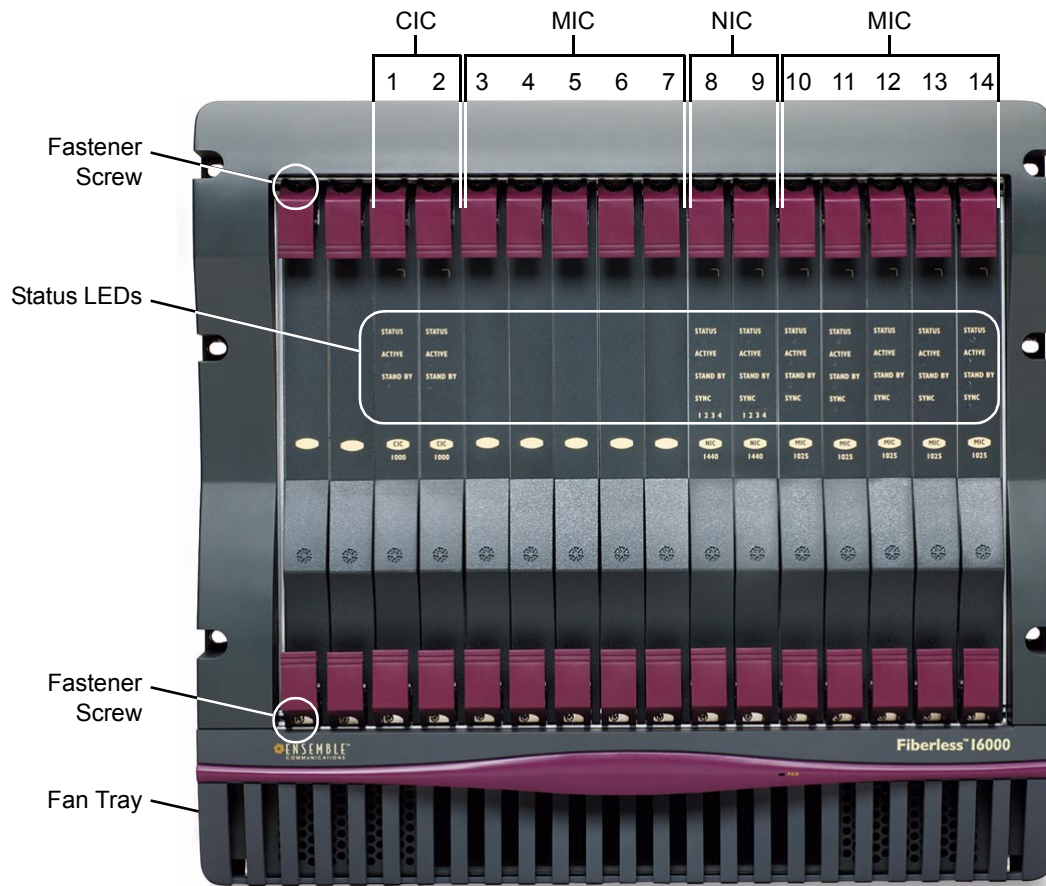

Figure 5-3. Base Station Front Showing Interface Card Positions

IF Cable Connectors

Following the system design plan, connect the cables from each ODU to a specific base station chassis ODU connector.

- Connect IF cables to MIC IF ports.
- Connect IF cables for redundant ODUs to IF RIC ports.

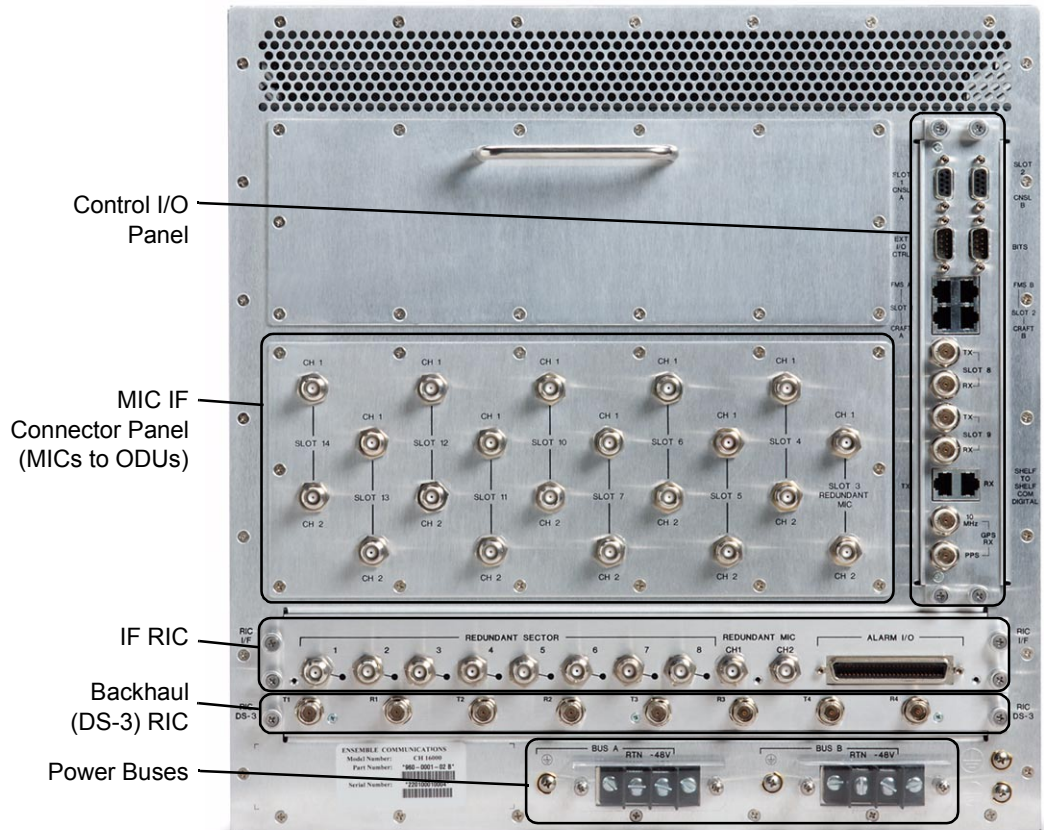Figure 5-4 shows the connectors on the back of the base station.

Figure 5-4. Base Station Rear with Connectors

Control I/O Card

The control I/O card provides local management connectivity for network management, building integrated timing supply (BITS), global positioning system (GPS), and intershelf interfaces. It is installed in a vertical slot along the right edge of the rear of the chassis. The control I/O panel components are listed in Table 5-2, and the I/O ports are listed in Table 5-3.

Table 5-2: Control I/O Panel Components

Name	Identifier	Function
	SLOT1 CNSL A SLOT2 CNSL B	External management and control
External I/O control	Ext I/O CTRL	External diagnostic equipment
BITS clock reference port	BITS	Clock input from the Building Integrated Timing Supply (BITS)
Primary FMS port Secondary FMS port	FMS A - SLOT 1 FMS B - SLOT 2	Interface with FMS and central office
Craft port A Craft port B	CRAFT A - SLOT 1 CRAFT B - SLOT 2	Interface of out-of-band network management and for development, maintenance, testing, and configuration
DS-3 NIC A Tx/Rx ports DS-3 NIC B Tx/Rx ports	SLOT 8 Tx/Rx SLOT 9 Tx/Rx	Interface with central office, network, and FMS
Chassis bus extender OUT Chassis bus extender IN	SHELF-TO-SHELF COMM DIGITAL — TX/RX	Interconnection for extension chassis
GPS input port	GPS RX — 10 MHz GPS RX PPS	GPS transceiver 10 MHz input GPS transceiver PPS input

Table 5-3: Control I/O Ports

Number of Ports	Type	Function
2	DB9 female RS-232	Console access to the CICs
2	RJ-45 jack 10BaseT	FEMS access
2	RJ-45 jack 10BaseT	Local craft access
1	DB9 male BITS	Building Integrated Timing Source (BITS) input
1	DB9 male serial	External I/O control
4	BNC timing	Intershelf synchronization
2	RJ11 jack serial	Intershelf data communication
2	BNC GPS	GPS timing input (PPS and 10 MHz)

Backhaul Connection

- Connect a 75 Ohm BNC RG-59 cable from the appropriate transmit port (Tx) to the router's DS-3 receive port.

- Connect another RG-59 cable from the appropriate base station receiver port (Rx) to the router's DS-3 transmit port.