Making Signal Connections

The sections that follow describe how to make connections for T1, E1, ATM-T3/E3, data, frame relay, voice, alarms, and external clocks.

Making T1 Connections

Three distinct card sets are available for terminating T1 connections. Circuit line T1 connections use the CDP front card, the BC-T1 back card, and the LB bus. T1 trunk connections use the NTC front card, the BC-T1 back card, and the LB bus. The third card set uses an FRP Model E front card and an FRI-T1 back card for Frame Relay T1 applications. Figure 2-19 shows an FRI-T1 backcard.

Note Making Japanese "Y" trunk connections is the same as making the T1 connections described in this section. Also, note that the BC-Y1 does not contain configurable line equalizers as described in this section.
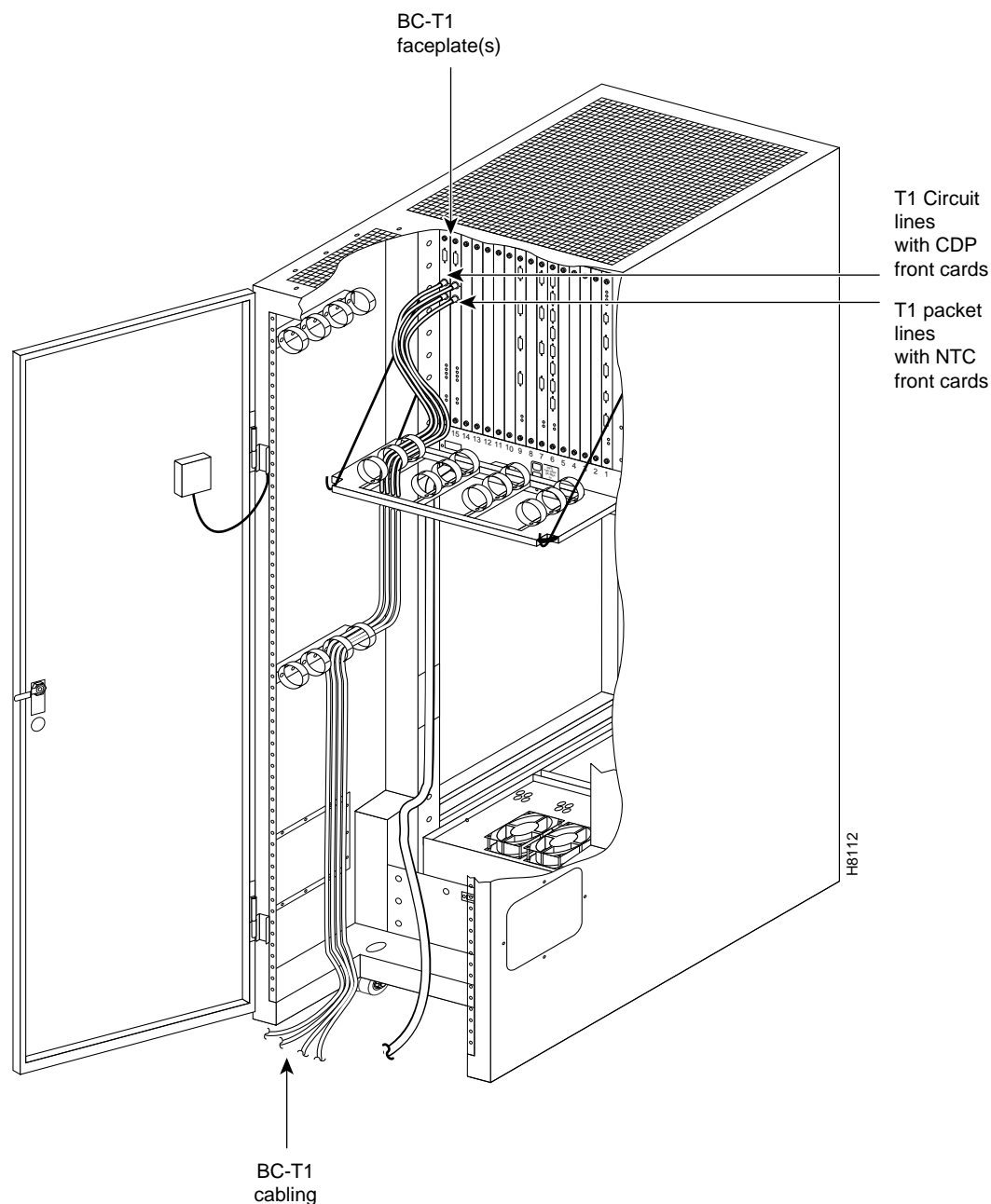

Figure 2-19   FRI-T1 Faceplate Detail
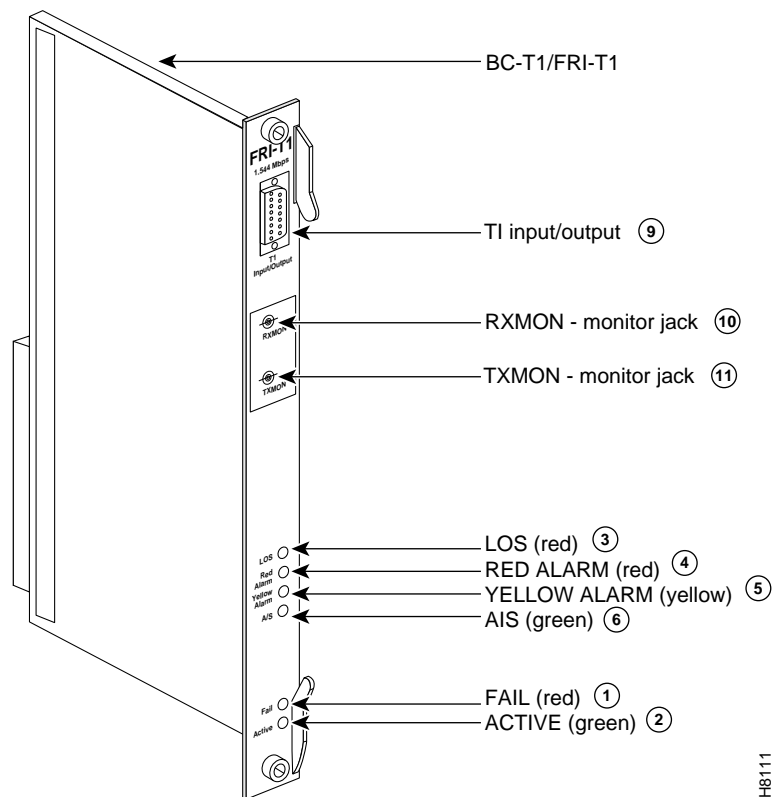
Make the T1 connections as follows:

Step 1   Bring each T1 cable through the opening at the bottom of the cabinet then up the side of the card cage (Figure 2-20).

**Figure 2-20   Running T1 Cables to BC-T1s**

BC-T1
faceplate(s)

T1 Circuit
lines
with CDP
front cards

T1 packet
lines
with NTC
front cards

H8112

BC-T1
cabling

Step 2   Inside the cabinet (Figure 2-21), separate as needed the hook and loop straps that hold the cabling in place.

Step 3   Place the routed cable in position, and wrap the strap around the cable.

Step 4   Close the loops by pressing the two end pieces together.

Step 5 T1 lines are attached to DB-15, Sub miniature, 15-pin connectors on the BC-T1 cards.

Figure 2-21　　**Running T1 Cables through an IPX 32 Cable Tray**
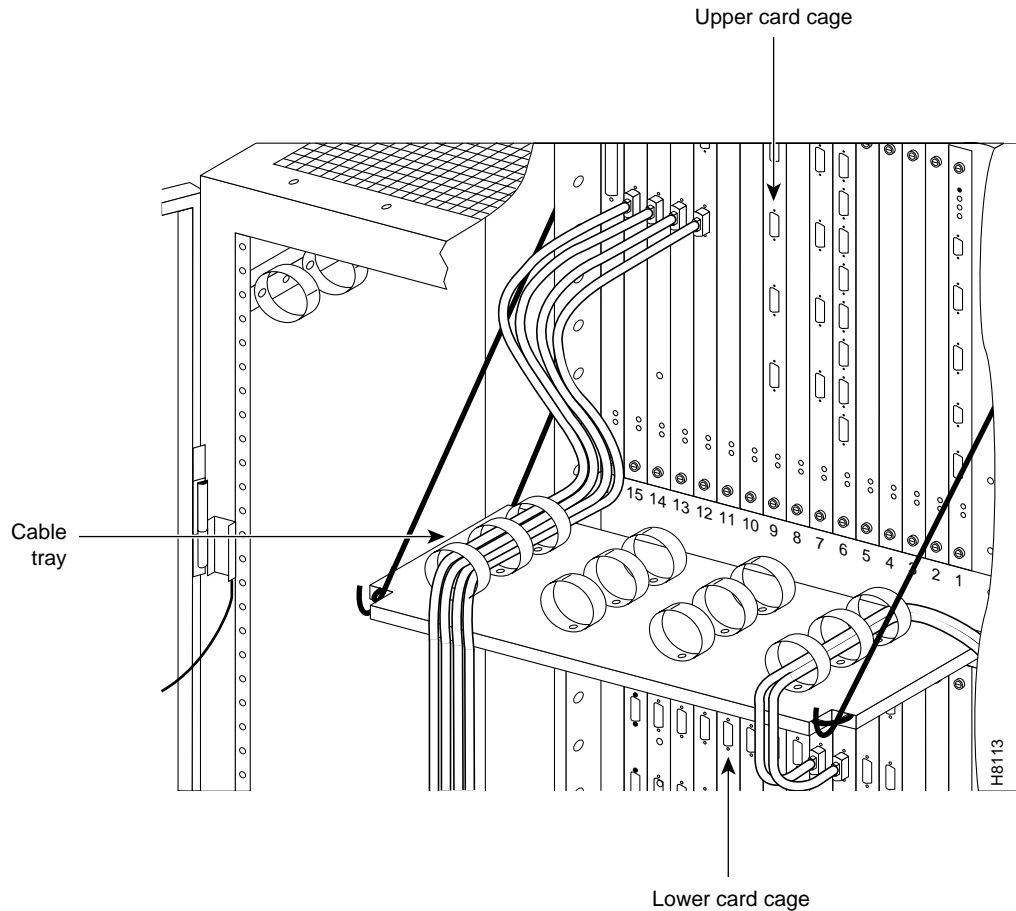
Step 6 Connect the circuit lines to the connectors on the BC-T1 back cards that are part of CDP/BC-T1 card sets (Figure 2-21).

Step 7 Connect the trunks to the connectors on the BC-T1 back cards, e.g., NTC/BC-T1 and card sets (Figure 2-21).

Note One BC-T1 can support either one T1 circuit line or one T1 trunk. The front card determines what the BC-T1 supports.

Back slot line numbers correspond to the back slot numbers in which the BC-T1 cards reside. Record the back slot number for each line for network configuration.

Note If an odd number of circuit lines and trunks are present, connect as many as possible in pairs, then connect the remaining lines in ascending numerical order.

IPX 8 Signal Connections

The instructions for making signal connections and the initial start-up of the IPX 8 are the same as the corresponding instructions in this chapter for the IPX 16/32.

Three Velcro strips are located at the rear of the IPX 8 cabinet for routing and gathering the various signal cables attached to the back cards. Route the cables down and out the cutout provided at the bottom, rear of the cabinet (Figure 2-22). Always secure the cable connectors to the back card receptacles with the provided screws.

Figure 2-22   Routing Signal Cables (IPX 8)

Customer
lines
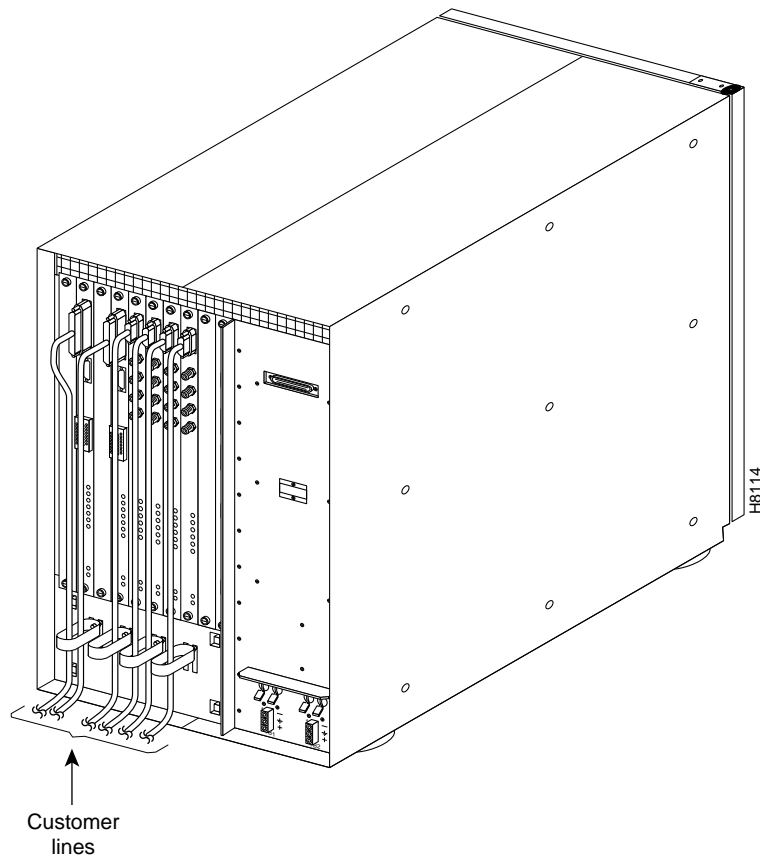
Making E1 Connections

Three distinct card sets are available for E1 connections. A subset of these is available for Subrate E1. Circuit line E1 connections use the CDP or CIP front card, the BC-E1 back card, and the LB bus. E1 trunk connections use the NTC front card, the BC-E1 back card, and the LB bus. Subrate E1 connections use the NTC front card, the BC-SR back card, and the LB bus. Frame Relay E1 applications use an FRP Model E front card with an FRI-E1 back card.

The FRI-E1 back card has the same connectors as the BC-E1 card. The E1 Trunk Interface Cards BC-E1/FRI-E1 (Figure 2-23) contain the E1 trunk connector (G.703 Input/Output), which is located at the top of the back card. There are four 75 Ohm BNCs on the BC-E1/FRI-E1 faceplate.

Note   Making Japanese TTC-JJ-20 connections is the same as making E1 connections described in this section.

Note   The BC-E1/FRI-E1 faceplate provides two connector arrangements for attaching E1 lines. Depending on the cable and connector, you can use either the two BNC (RX and TX) connectors or the 15-pin DB connector. The RXMON and TXMON jacks are used to connect a line monitor.

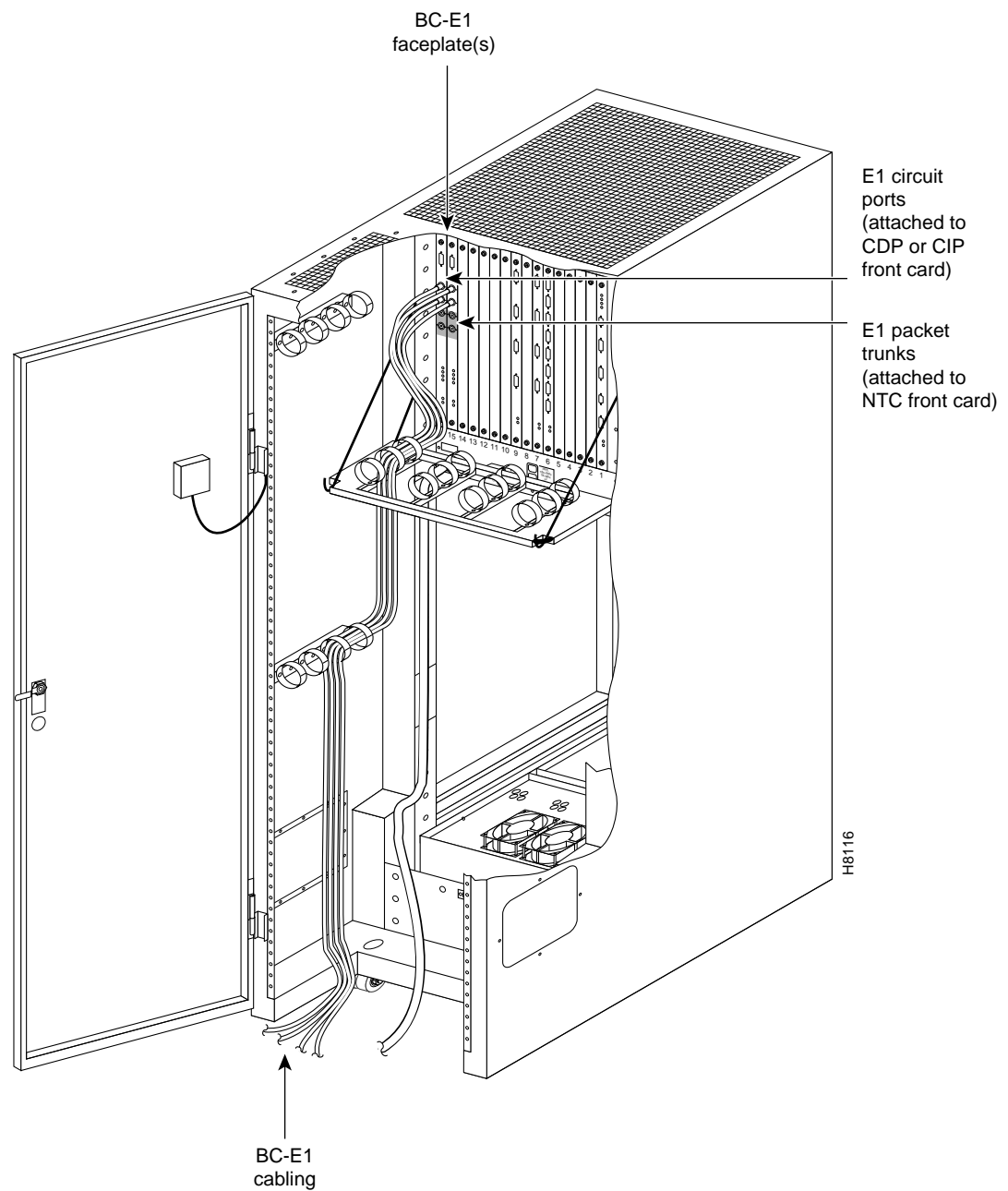**Figure 2-23   BC-E1 /FRI-E1 Faceplate Detail (Typical)**
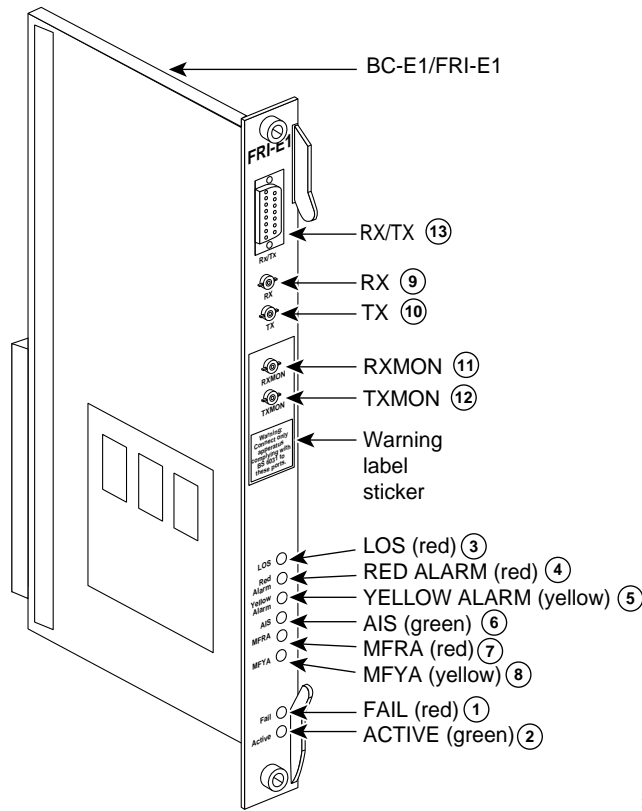
> ⚠ **Caution**   Connect equipment that complies with BS6301 to ports and monitor jacks.

Make the E1 connections as follows:

Step 1   Bring each E1 BNC patch cable (or 15-pin cable) through the opening at the bottom of the cabinet then up the side of the card cage (Figure 2-24).


Note   Newer versions of the BC-E1 use an all-metal BNC connector. When terminating 75 or 120 ohm balanced E1 lines to the metal BNC connectors on these back cards, remove the BNC mounting nuts. This removes the ground that normally appears on one side of the connector shell.   This step is not required for DB15 connectors or for back cards that use the plastic BNC connectors

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Figure 2-24   Running E1 Cables to BC-E1s

BC-E1
faceplate(s)

E1 circuit
ports
(attached to
CDP or CIP
front card)

E1 packet
trunks
(attached to
NTC front card)

H8116

BC-E1
cabling

Step 2   Connect the circuit lines to connectors on the BC-E1 back card that are part of a
CDP/BC-E1 card set (Figure 2-25).

Step 3   Connect the trunks to connectors on the BC-E1 back card, e.g., NTC/BC-E1 card set
(Figure 2-25).

Figure 2-25   Running E1 Cables through the Cable Tray

Upper card cage

Cable tray

Lower card cage
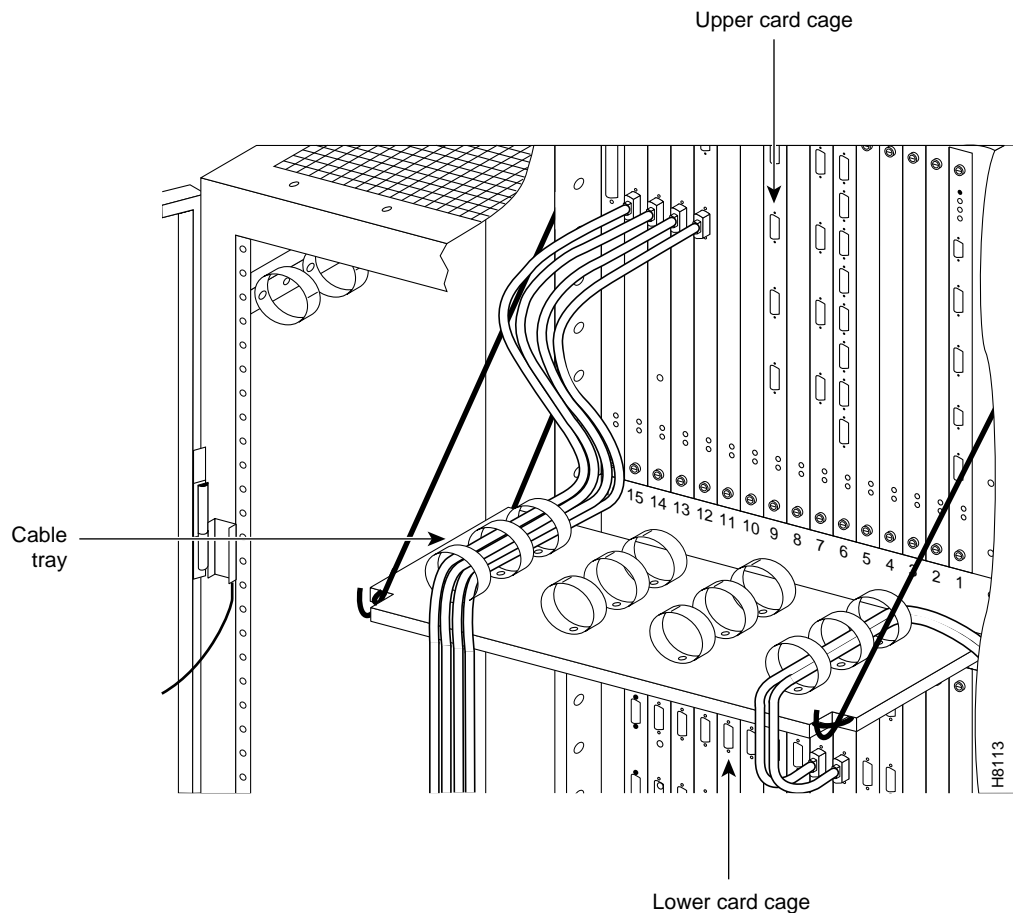
Note   Check the card lineup. The BC-E1 back card that is in line with a CDP or CIP front card (upgraded systems) has the E1 circuit line attached, and the BC-E1 back card in line with the NTC front card has the E1 trunk attached.

The back slot line number corresponds to the back slot number in which the BC-E1 card resides. Record the back slot number associated with each line. These numbers are necessary for configuring the network.

The IPX has Velcro loops inside the cabinet to hold cabling in place. Pull the Velcro hooks apart as needed and place the routed cable in position. Wrap the Velcro around the cable and remake the loops by pressing the two Velcro pieces together.

Making T3/E3 Connections

ATM Trunk cables connect the ATM back card to either a DSX-3 cross connect point, another ATM back card in a co-located node, or a BPX node at the LM-3T3 back card.

The ATM back card has female BNC connectors for transmit and receive trunk connections. Use 75-ohm coax cable RG-59 B/U for short runs and AT&T 734A for longer runs. Each T3/E3 trunk has an XMT cable and an RCV cable.

Making Data Connections

The LDP and SDP front cards operate in conjunction with a variety of data interface back cards to provide data connections.

The LDP front card is used with the 4-port and 8-port versions of the LDI back card for RS-232C/D (V.24) connections and with the LDI4/DDS back card for DDS (Digital Data Service) connections. The four-port LDI has four data connection ports whose labels are PORT 1 through PORT 4 (Figure 2-26). The eight-port LDI has eight data connection ports labeled PORT 1 through PORT 8 (Figure 2-26). The four-port LDI4/DDS has four data connection ports labeled PORT 1 through PORT 4 (Figure 2-26).

Four types of SDI back cards work with the SDP front card. An SDI back card supports V.35, RS-449/422, RS-232D, or RS-232C (V.24). (X.21 requires RS-449 plus an adapter cable.)   Each SDI has four connection ports labeled PORT 1 through PORT 4 (Figure 2-26).

Three types of LDI back cards exist. These are: a four-port RS-232C/D LDI (for V.24), an eight-port RS-232C/D LDI (for V.24) and a four port DDS LDI.   Attach the data lines to the SDI, LDI, and DDS port by connecting as short a cable as necessary to reach the ports. The four-port and eight-port LDI cards use one of two special cable types. The cable is either a StrataCom DTE or StrataCom DCE cable. Refer to Configuring the SDI Cards for instructions on configuring the cards for operation as a DTE or DCE.

Figure 2-26   SDI, LDI and DDS Connectors
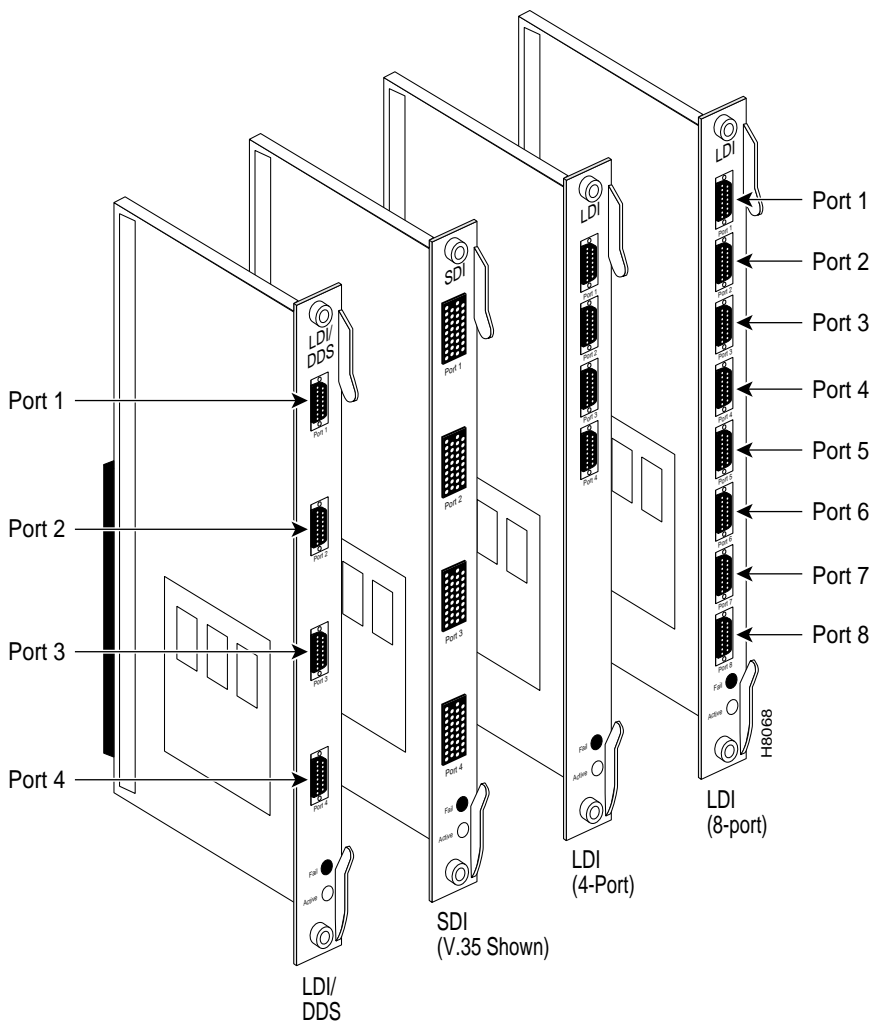
Configuring the SDI Cards

If the system includes SDP cards with attached SDI cards, the SDI ports are factory-configured as DCE interfaces. To change the interface configuration, reposition the jumper board for the SDI ports as follows:

![Caution] **Caution**   To prevent damage to the SDI cards, ground yourself before handling IPX cards by clipping on a wrist strap and clipping the wrist strap lead to the enclosure.

1   From the back of the enclosure, remove the SDI card (Figure 2-27), as follows:

— Loosen the captive mounting screws on both ends of the faceplate.

— Lift the latches, and slide the card out.

2   For each port that is being changed to DTE, plug the jumper board into the connector receptacle pin rows furthest away from the SDI faceplate (Figure 2-28). If a port has been changed to DTE and needs to be changed back to DCE, plug the jumper board into the connector receptacle pin rows closest to the SDI faceplate (Figure 2-28).
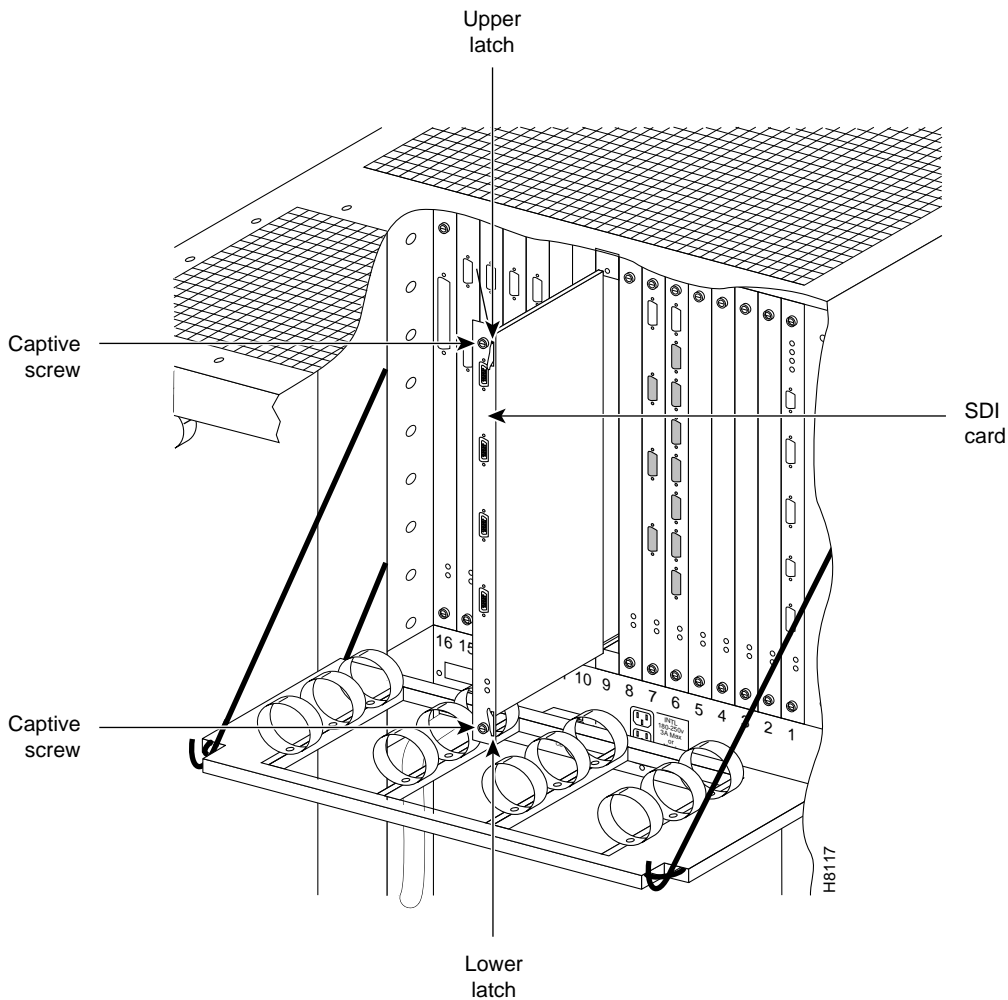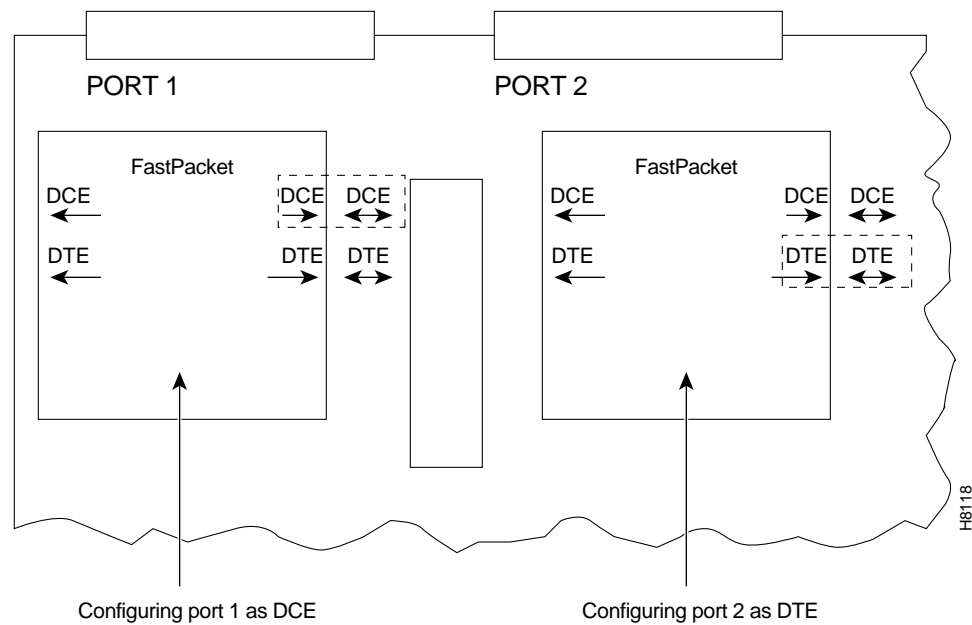
Figure 2-27   Removing an SDI Card

Upper
latch

Captive
screw

SDI
card

Captive
screw

16 15

10 9 8 7 6 5 4 2 1

INTL
180-250v
5A Max
or

H8117

Lower
latch

Figure 2-28   Positioning a DTE/DCE Block on an SDI

Configuring port 1 as DCE   Configuring port 2 as DTE

Configuring the LDI Cards

If the system includes Low-Speed Data Pad (LDP) card sets, each port on the LDI card requires either a special StrataCom DCE or DTE adapter cable for proper port configuration (Figure 2-29). Removing the card from its slot to attach these special cables is unnecessary. Logic circuits on the card check the identifying pins on the special cables and configure the ports as DTE or DCE, as applicable.

Figure 2-29   Connecting a DTE or DCE Adapter Cable to an LDI

LDI 8-port   *DCE   RS232 cable

H8119

15 pin   25 pin   25 pin
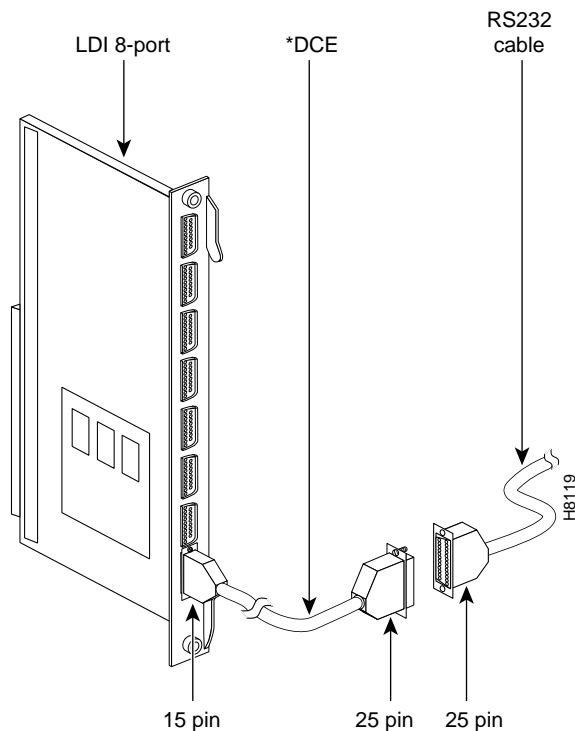
*Use DTE cable for DTE devices.

Frame Relay Connections

The four different types of frame relay interfaces are:

- T1

- E1

- FRI V.35

- The X.21

The T1 line terminates on the FRI-T1 card to a DB15 sub miniature connector. The FRI card has a female connector. A BNC-type connector is used for the unbalanced connection.

The FRI-E1 card provides for a 75-ohm unbalanced coax line termination or a balanced 100-120-ohm twisted pair termination. A DB15 connector is used for the balanced connection. The FRI card has a female connector.

The V.35 connection uses a standard 34-pin female MRAC-type connector with a standard V.35 cable.

The FRI-X.21 has female DB15 sub miniature connectors.

For detailed cabling requirements, see the IPX Reference Manual.

Voice Connections

All voice connections are made using the CDP front card with either a T1 back card or an E1 back card.

For detailed cabling requirements, see the IPX Reference Manual.

ATM Connections

The AIT back card uses BNC coax connectors and cabling for either T3 or E3 operation.

For detailed cabling requirements, see the IPX Reference Manual.