Installing and Operating UBIC-V EIAs in the Cisco ONS 15454

Product Numbers: 15454-EIA-UBICV-A, 15454-EIA-UBICV-B

This document describes how to install and remove Universal Backplane Interface Connector - Vertical (UBIC-V) Electrical Interface Assemblies (EIAs) for the Cisco ONS 15454. UBIC-V EIAs are typically pre-installed on the ONS 15454 high-density shelf (15454-SA-HD) when ordered with the system. Use this document in conjunction with the *Cisco ONS 15454 Procedure Guide* and *Cisco ONS 15454 Reference Manual* when working with UBIC-V EIAs or any other system components.

This document contains the following sections:

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UBIC-V EIA Description

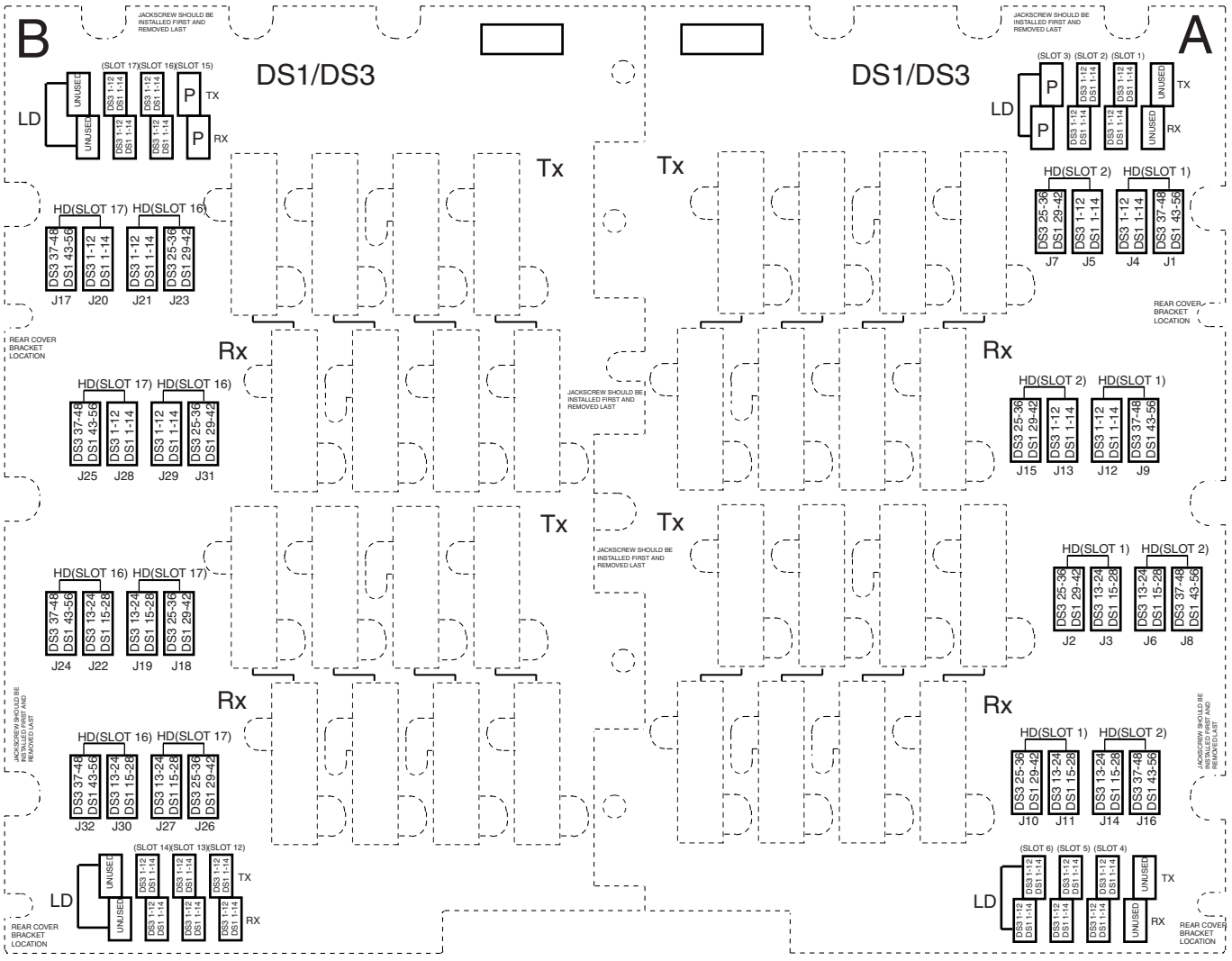
UBIC-V EIAs are attached to the shelf assembly backplane to provide up to 112 transmit and receive DS-1 connections through 16 SCSI connectors per side (A and B) or 96 transmit and receive DS-3 connections. The UBIC-V EIAs are designed to support DS-1, DS-3, and EC-1 signals. The appropriate cable assembly is required depending on the type of signal.

You can install UBIC-Vs on one or both sides of the ONS 15454. As you face the rear of the ONS 15454 shelf assembly, the right side is the A side (15454-EIA-UBICV-A) and the left side is the B side (15454-EIA-UBICV-B). The diagrams adjacent to each row of SCSI connectors indicate the slots and ports that correspond with each SCSI connector in that row, depending on whether you are using a high density (HD) or low density (LD) configuration.

Note UBIC-V EIAs will support use with the high-density (48-port DS-3, 56-port DS-1, and 12-port DS3XM) electrical cards. These cards are not available until a future release.

Figure 1 shows the A- and B-side slot assignments.

Figure 1 UBIC-V Slot Designations



UBIC-V EIA Installation

If you are installing UBIC-V EIAs after the shelf assembly is installed, plug the UBIC-V EIA into the backplane. The UBIC-V backplane must replace the standard sheet metal cover to provide access to the cable connectors. The UBIC-V sheet metal covers use the same screw holes as the standard sheet metal covers, but they have 12 additional holes for panhead screws and three holes for jack screws so you can screw down the cover and the board using standoffs on the UBIC-V board.

When installed with the standard door and cabling on the backplane, the ONS 15454 shelf measures approximately 15.7 inches deep when partially populated with backplane cables, 16.1 inches deep when fully populated, and 16.75 inches deep with the rear cover installed. When installed with the deep door and cabling on the backplane, the ONS 15454 shelf measures approximately 17.5 inches deep when partially populated with backplane cables, 17.9 inches deep when fully populated, and 18.55 inches deep with the rear cover installed.

See the "Remove the Backplane Covers" section on page 7 for detailed installation procedures.

UBIC-V EIA Configurations

The UBIC-V EIA supports the following cards:

- 14-port DS-1
- 12-port DS-3
- 12-port EC-1
- 6-port DS-3 Transmux
- 48-port DS-3
- 56-port DS-1
- 12-port DS-3 Transmux

The A and B sides each host 16 high-density, 50-pin SCSI connectors. The A-side maps to Slots 1 through 6 and the B-side maps to Slots 12 through 17.

UBIC-V Protection Groups

In Software Releases 4.1.x and 4.6, UBIC-Vs support unprotected, 1:1, and1:N (where N ≤ 5) protection groups. In Software R5.0 and greater, UBIC-Vs additionally support available high-density cards in unprotected and 1:N protection (where N ≤ 2) protection groups.

Table 1 shows protection groups and their applicable slot assignments.

Table 1 UBIC-V Protection Types and Slots

Table 2

Protection Type	Working Slots	Protection Slots
Unprotected	1–6, 12–17	—
1:1	2, 4, 6, 12, 14, 16	1, 3, 5, 13, 15, 17
1:2	1, 2, 16, 17	3, 15
1:5	1, 2, 4, 5, 6, 12, 13, 14, 16, 17	3, 15

UBIC-V Cables

When using the DS-1 cables on a UBIC-V, the maximum distance is 655 feet. When using the RG-59 (734A) DS-3/EC-1 cables on a UBIC-V, the maximum distance is 450 feet. The maximum distance when using the RG179 DS-3/EC-1 cable (79 feet) is due to a higher attenuation rate for the thinner cable. Attenuation rates are calculated using a DS-3 signal:

- For RG-179, the attenuation rate is 59 dB/kft at 22 MHz.
- For RG-59 (734A) the attenuation rate is 11.6 dB/kft at 22 MHz.

The following cables are available for use with the UBIC-V EIA:

- DS-1 cable, 150 feet: 15454-CADS1-SD
- DS-1 cable, 250 feet: 15454-CADS1-ID
- DS-1 cable, 655 feet: 15454-CADS1-LD

- DS-3/EC-1 cable, 75 feet: 15454-CADS3-SD
- DS-3/EC-1 cable, 225 feet: 15454-CADS3-ID
- DS-3/EC-1 cable, 450 feet: 15454-CADS3-LD

Figure 2 shows the pin locations on the DS-1 and DS-3/EC-1 SCSI connectors.

Figure 2 Cable Connector Pins

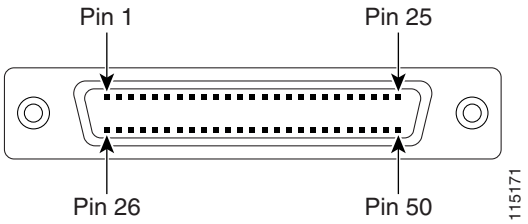


Table 3 shows the UBIC-V SCSI connector pin assignments for the DS-1 and DS-3/EC-1 cables.

Table 3 UBIC-V DS-1 and DS-3/EC-1 Pin Assignments

Table 4

Pin	Cable Port	Pin	Cable Port
1	1	26	7
2	FGnd	27	FGnd
3	FGnd	28	FGnd
4	FGnd	29	FGnd
5	2	30	8
6	FGnd	31	FGnd
7	FGnd	32	FGnd
8	FGnd	33	FGnd
9	3	34	9
10	FGnd	35	FGnd
11	FGnd	36	FGnd
12	FGnd	37	FGnd
13	4	38	10
14	FGnd	39	FGnd
15	FGnd	40	FGnd
16	FGnd	41	FGnd
17	5	42	11
18	FGnd	43	FGnd
19	FGnd	44	FGnd
20	FGnd	45	FGnd
21	6	46	12
22	FGnd	47	FGnd

Table 4

Pin	Cable Port	Pin	Cable Port
23	FGnd	48	FGnd
24	FGnd	49	FGnd
25	13	50	14

Table 5 shows the UBIC-V EIA DS-1 cable wiring.

Table 5 UBIC-V EIA DS-1 Wiring

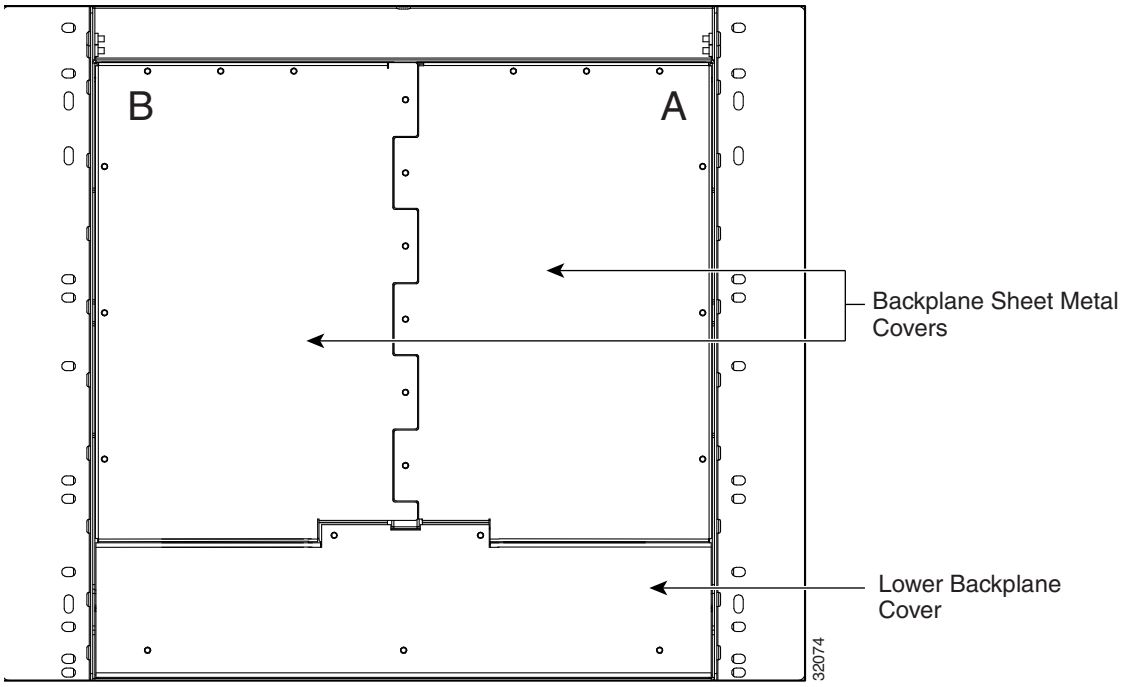
Table 6

Signal	Wire Color	Signal	Wire Color
Tip Port 1	White/blue	Ring Port 1	Blue/white
Tip Port 2	White/orange	Ring Port 2	Orange/white
Tip Port 3	White/green	Ring Port 3	Green/white
Tip Port 4	White/brown	Ring Port 4	Brown/white
Tip Port 5	White/slate	Ring Port 5	Slate/white
Tip Port 6	Red/blue	Ring Port 6	Blue/red
Tip Port 7	Red/orange	Ring Port 7	Orange/red
Tip Port 8	Red/green	Ring Port 8	Green/red
Tip Port 9	Red/brown	Ring Port 9	Brown/red
Tip Port 10	Red/slate	Ring Port 10	Slate/red
Tip Port 11	Black/blue	Ring Port 11	Blue/black
Tip Port 12	Black/orange	Ring Port 12	Orange/black
Tip Port 13	Black/green	Ring Port 13	Green/black
Tip Port 14	Black/brown	Ring Port 14	Brown/black

ONS 15454 Backplane Description

Before installing UBIC-V EIAs, familiarize yourself with the rear of the ONS 15454. Figure 3 shows the location of the lower backplane cover and the backplane sheet metal covers.

Figure 3 ONS 15454 Rear View (with Sheet Metal Covers Attached)



Remove the Backplane Covers

Before installing the UBIC-V EIA(s), you must prepare the backplane for installation. If a UBIC-V EIA has not been installed, you need to remove the backplane sheet metal covers to expose the UBIC-V EIA backplane-mating connectors. You will need a Phillips screwdriver for this procedure.

Step 1 To remove the lower backplane cover, using a Phillips screwdriver loosen and remove the five screws that secure it to the ONS 15454 and pull it away from the shelf assembly.

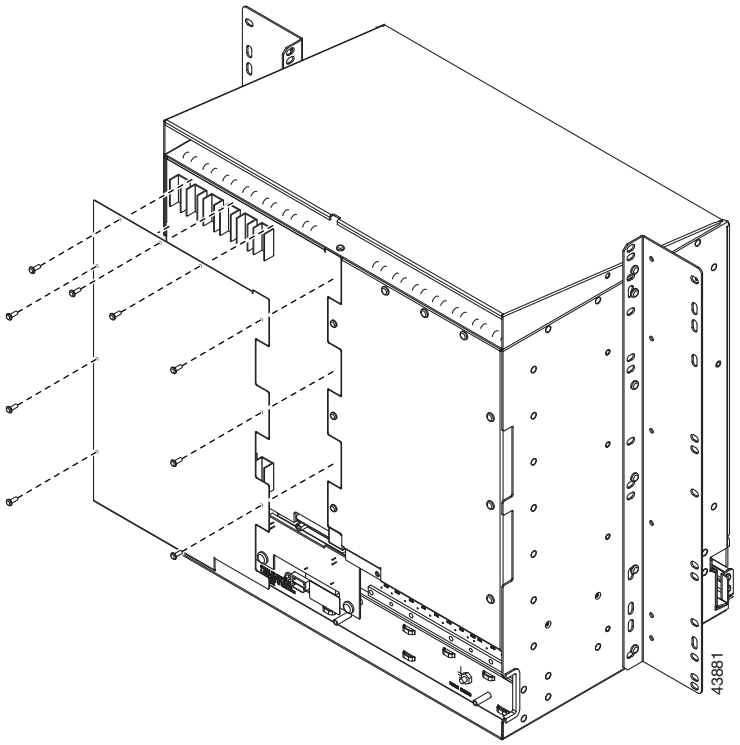
Step 2 Loosen and remove the nine perimeter screws that hold the backplane sheet metal cover(s) in place.

Step 3 Lift the panel by the bottom to remove it from the shelf assembly.

Step 4 Store the panel for later use.

Attach the backplane sheet metal cover(s) whenever EIA(s) are not installed. Figure 4 shows how to remove a sheet metal cover.

Figure 4 Removing a Sheet Metal Cover



Step 5 Loosen and remove the screw that secures the alarm and timing panel cover to the shelf. Store the alarm and timing panel cover for replacement after you install the UBIC-V EIAs.

Install the Alignment Standoffs on the ONS 15454 Shelf

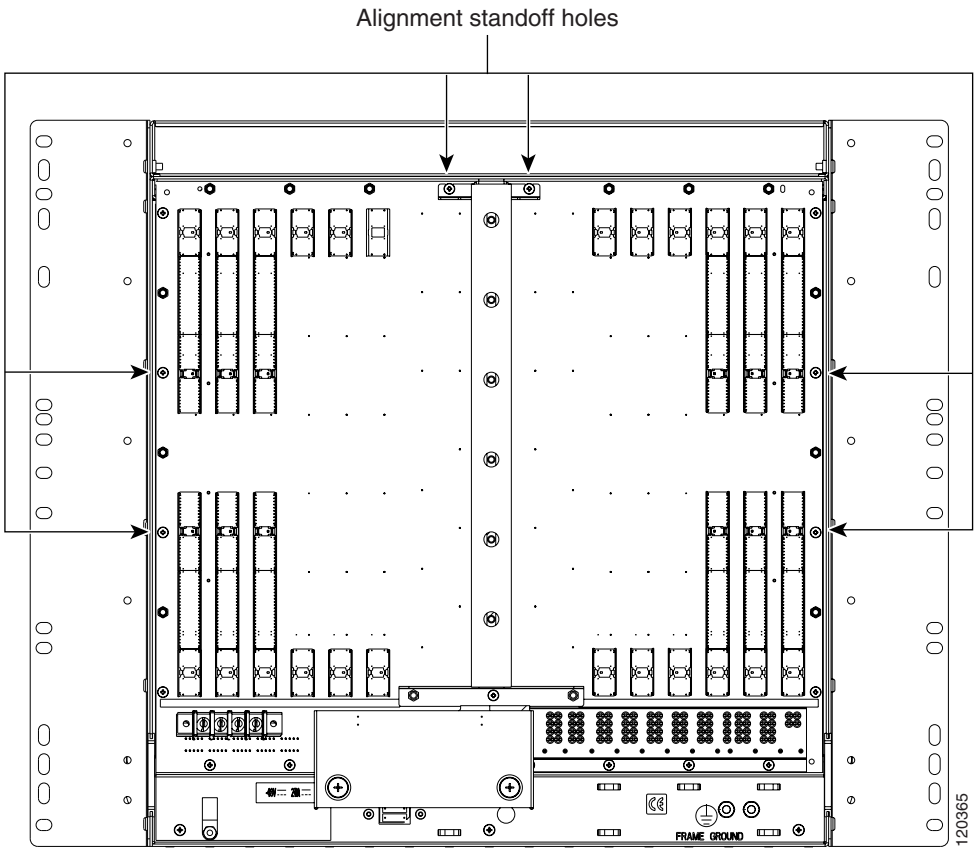
Before you can install the UBIC-V EIAs, you must determine if alignment standoffs are already installed. If not, you must install the standoffs.

You will need the following equipment to install the alignment standoffs:

- #2 Phillips screwdriver
- Small flathead screwdriver
- Alignment standoffs (6) (700-19485-XX)

Step 1 Locate the alignment standoff holes on the shelf assembly where you want to install the UBIC-V EIA(s) (Figure 5). If alignment standoffs are not installed, go to Step 2. If alignment standoffs are already installed, continue with the "Install UBIC-V EIAs" section on page 10.

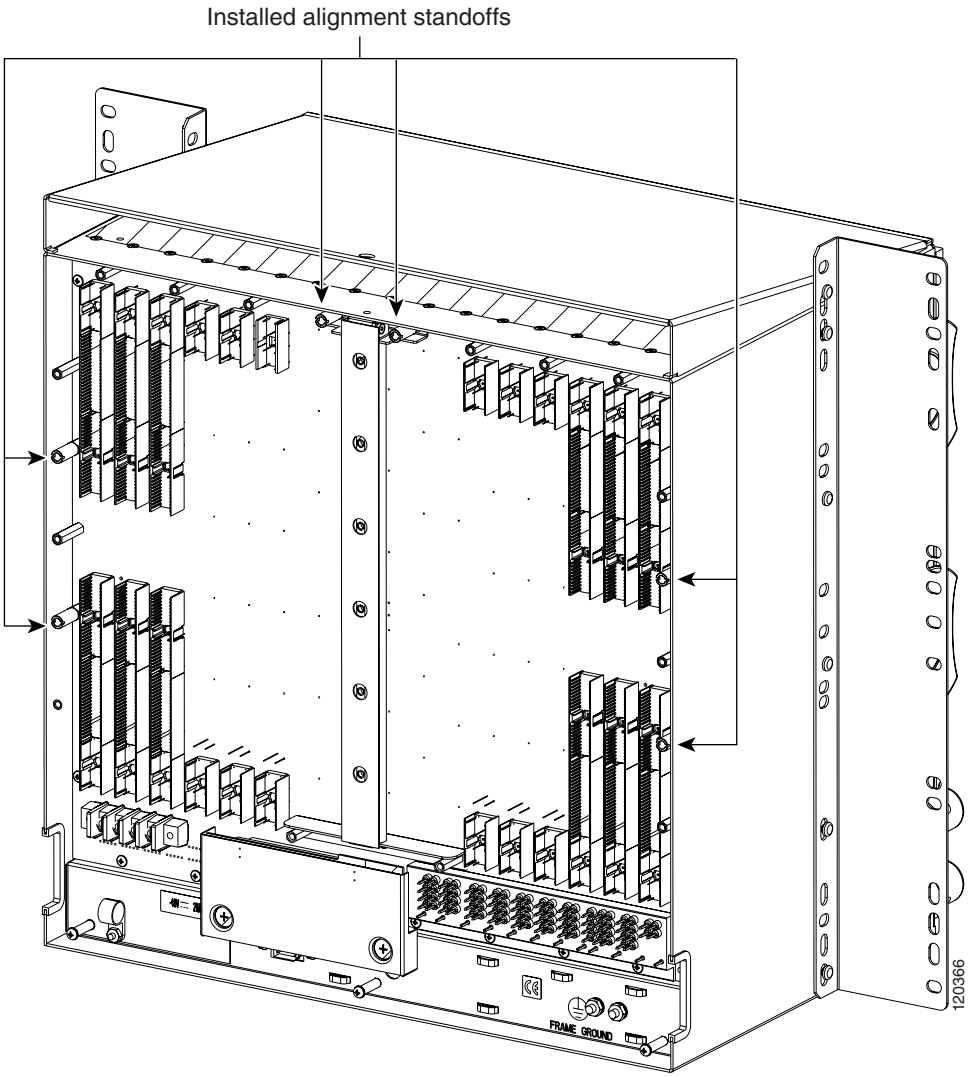
Figure 5 Alignment Standoff Holes



Step 2 If screws are present in the alignment standoff holes, use a Phillips screwdriver to remove them.

Step 3 Use a flathead screwdriver or 5/16-inch deep socket wrench to tighten the standoffs at 8 to 10 lbf-inch (9.2 to 11.5kgf-cm). Figure 6 shows the alignment standoffs installed on the shelf.

Figure 6 Installed Alignment Standoffs



Install UBIC-V EIAs

Caution Always use an electrostatic discharge (ESD) wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

You will need the following equipment to install the UBIC-V EIA:

- #2 Phillips screwdriver
- Small slot-head screwdriver
- 6 perimeter screws, 6-32 x 0.375-inch Phillips head (P/N 48-0422-01)

- UBIC-V, A side (15454-EIA-UBICV-A) EIA panel and/ or UBIC-V, B side (15454-EIA-UBICV-B) EIA panel

Note UBIC-V EIAs can only be installed on shelf assembly 15454-SA-HD. 15454-SA-HD shelf assemblies are differentiated from other shelf assemblies by the blue hexagon symbol, which indicates the available high-density slots, found under Slots 1 through 3 and 15 through 17.

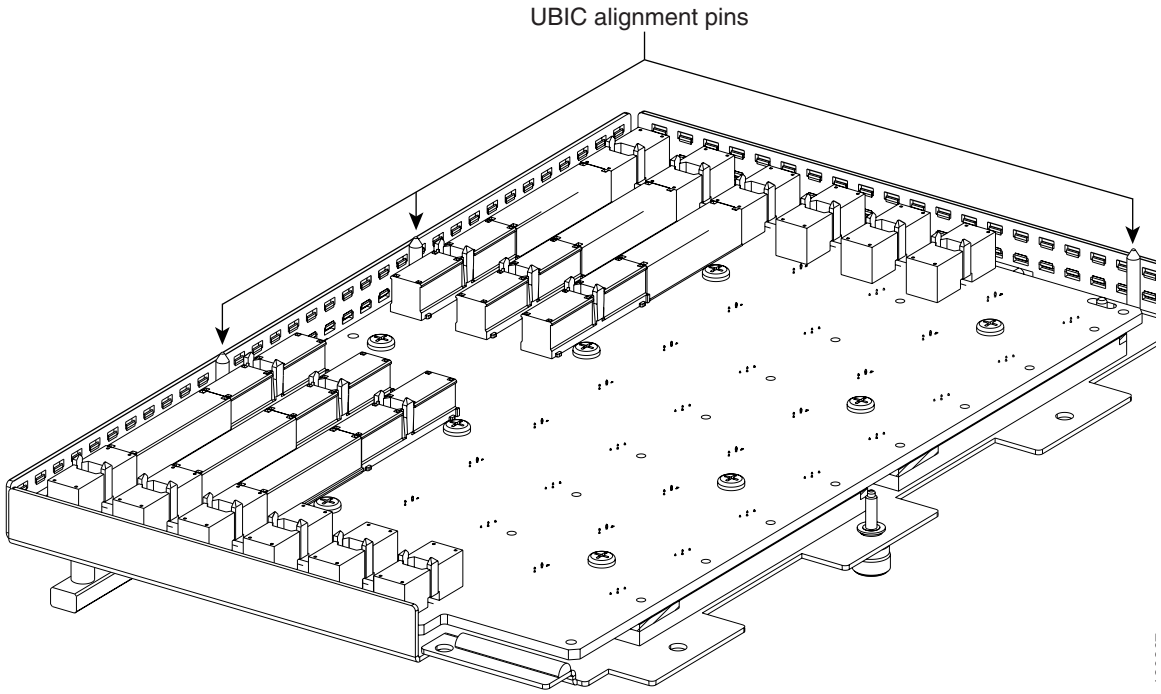
Step 1 Locate the correct UBIC-V EIA for the side you want to install and remove the UBIC-V EIA from the packaging.

Step 2 Verify that none of the pins on the UBIC-V EIA are bent.

Step 3 If present, remove the yellow connector protectors.

Step 4 Line up the alignment pins on the UBIC EIA with the alignment standoffs on the shelf and push the UBIC EIA with consistent pressure until the pins and standoffs fit together firmly (Figure 7).

Figure 7 UBIC-V Alignment Pins

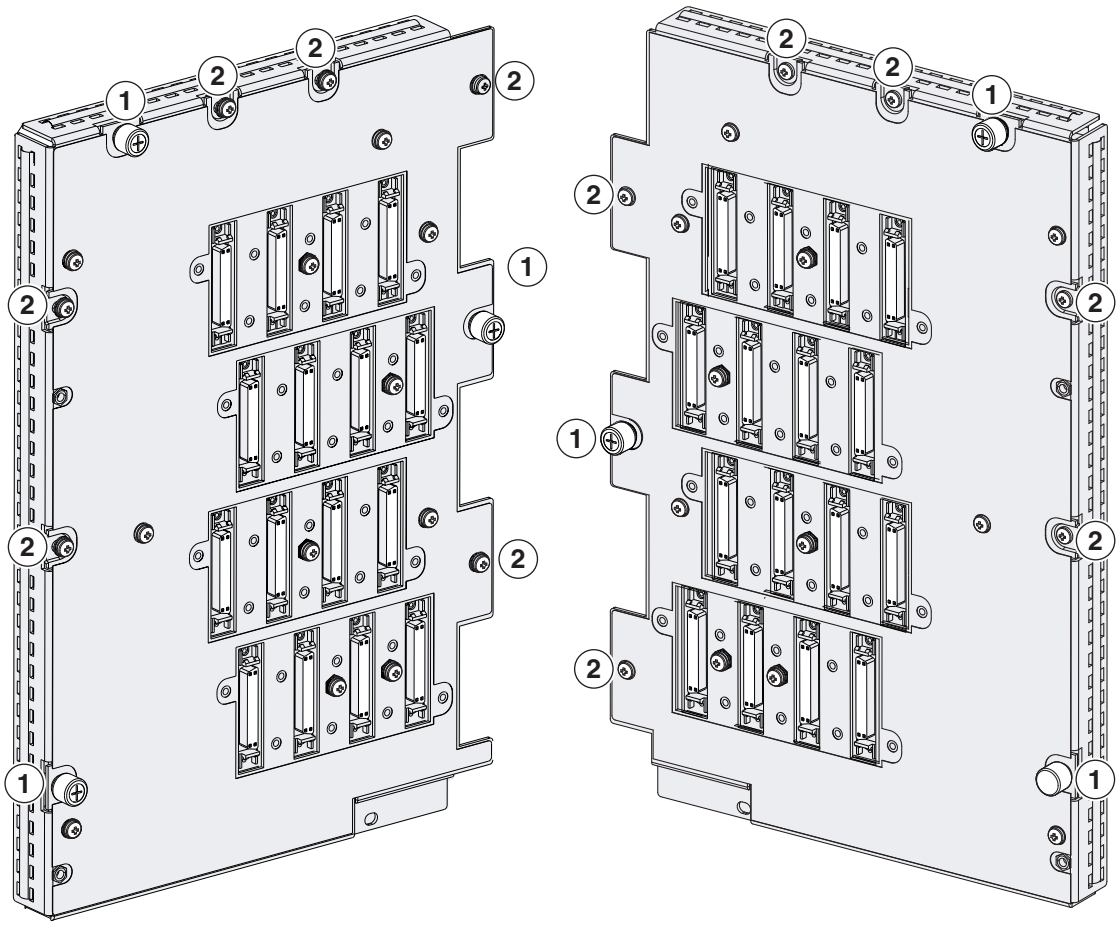


Caution Do not force the UBIC-V EIA onto the shelf if you feel strong resistance.

Step 5 Locate the three jack screws on the UBIC-V (Figure 8). Starting with any jack screw, tighten the thumb screw a few turns and move to the next one, turning each thumb screw a few turns at a time until all three screws are hand tight (Figure 9).

Caution Tightening the jack screws unevenly could cause damage to the UBIC-V connectors.

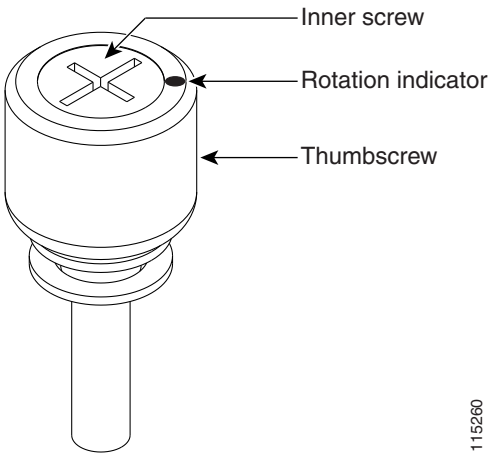
Figure 8 UBIC-V EIA Screw Locations



1 Jack screws (3)

2 Perimeter screws, 6-32 x 0.375-inch Phillips head (6)

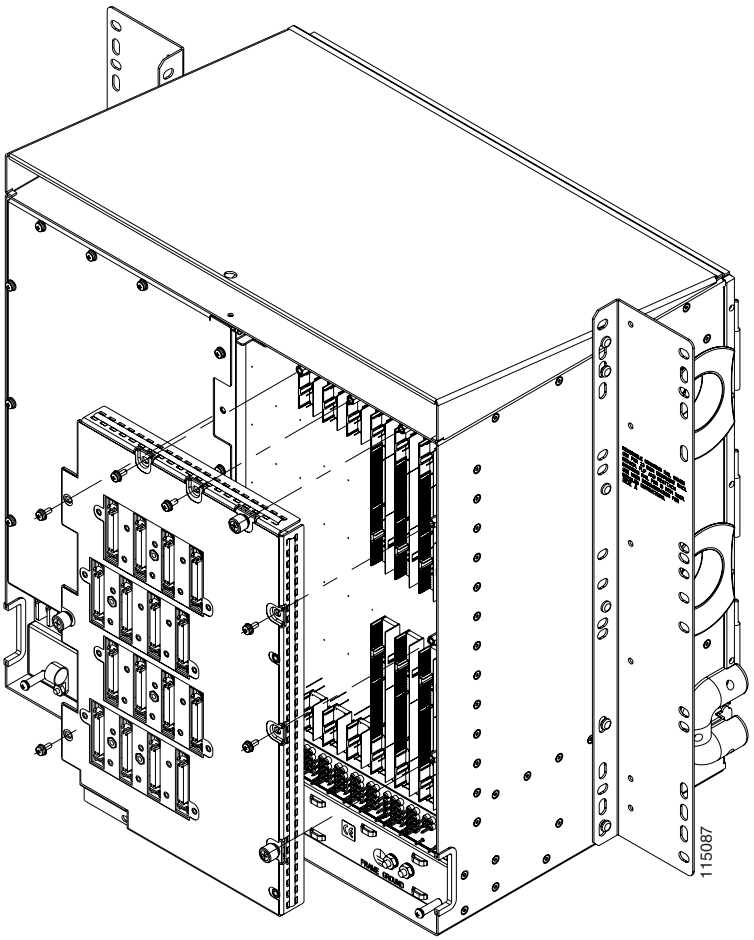
Figure 9 UBIC-V EIA Jack Screw



Step 6 Use a Phillips screwdriver to install the six perimeter screws and bracket screws (P/N 48-0422-01) at 8 to 10 lbf-inch (9.2 to 11.5kgf-cm) to secure the cover panel to the backplane (Figure 8 on page 12). Install the alarm and timing panel cover and insert and tighten the last perimeter screw.

Figure 10 shows a UBIC-V EIA installation.

Figure 10 Installing the UBIC-V EIA



Install the Tie-Down Bar (Optional)

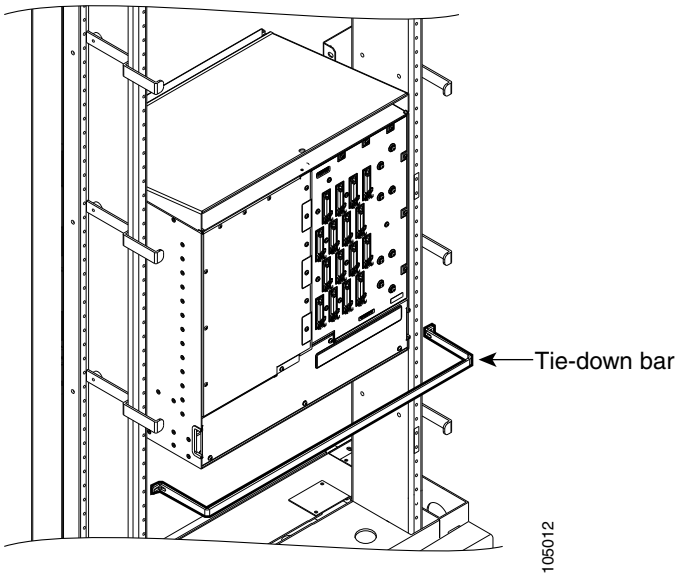
This task installs the tie-down bar used to secure cabling on the rear of the ONS 15454. The tie-down bar can be used to provide a diverse path for redundant power feeds and cables. You will need the optional 5-inch tie-down bar, two accompanying screws, and a #2 Phillips screwdriver.

Note As applicable according to local site practice, install the tie-down bar where the alarm and timing pins can still be accessed.

Step 1 Align the ends of the tie-down bar with two screw holes in the appropriate location on the equipment rack.

Figure 11 shows the tie-down bar, the ONS 15454, and the equipment rack.

Figure 11 Tie-Down Bar



Step 2 Install the two screws into the rack.

Install UBIC-V EIA Cables

You will need the following equipment to install the DS-1 and DS-3/EC-1 cables on the UBIC-V EIA:

- 3/16-inch flathead screwdriver
- DS-1 and DS-3/EC-1 cables, as needed:
  - DS-1 cable, 150 feet: 15454-CADS1-SD
  - DS-1 cable, 250 feet: 15454-CADS1-ID
  - DS-1 cable, 655 feet: 15454-CADS1-LD
  - DS-3/EC-1 cable, 75 feet: 15454-CADS3-SD
  - DS-3/EC-1 cable, 225 feet: 15454-CADS3-ID
  - DS-3/EC-1 cable, 450 feet: 15454-CADS3-LD

Note Cisco recommends that you plan for future slot utilization and fully cable all SCSI connectors you will use later.

Step 1 Starting at the lowest row where you want to install cables, place a cable connector over the desired connection point on the backplane.

Step 2 Carefully push the connector into the backplane until the notch backplane connector slides into the slot on the cable connector.

Step 3 Use the flathead screwdriver to tighten the screw at the top left of the cable connector two to three turns at 8 to 10 lbf-inch (9.2 to 11.5kgf-cm). Repeat this for the screw at the bottom right of the connector. Alternate between the two screws until both are tight.

Step 4 Repeat Steps 1 through 3 for each cable you want to install, moving from the bottom row to the top row. If you are installing a cable near cables that are already installed you may need to gently hold back the surrounding cables.

Figure 12 shows a UBIC-V with cables installed in all connectors.

Figure 12 Fully Cabled UBIC-V

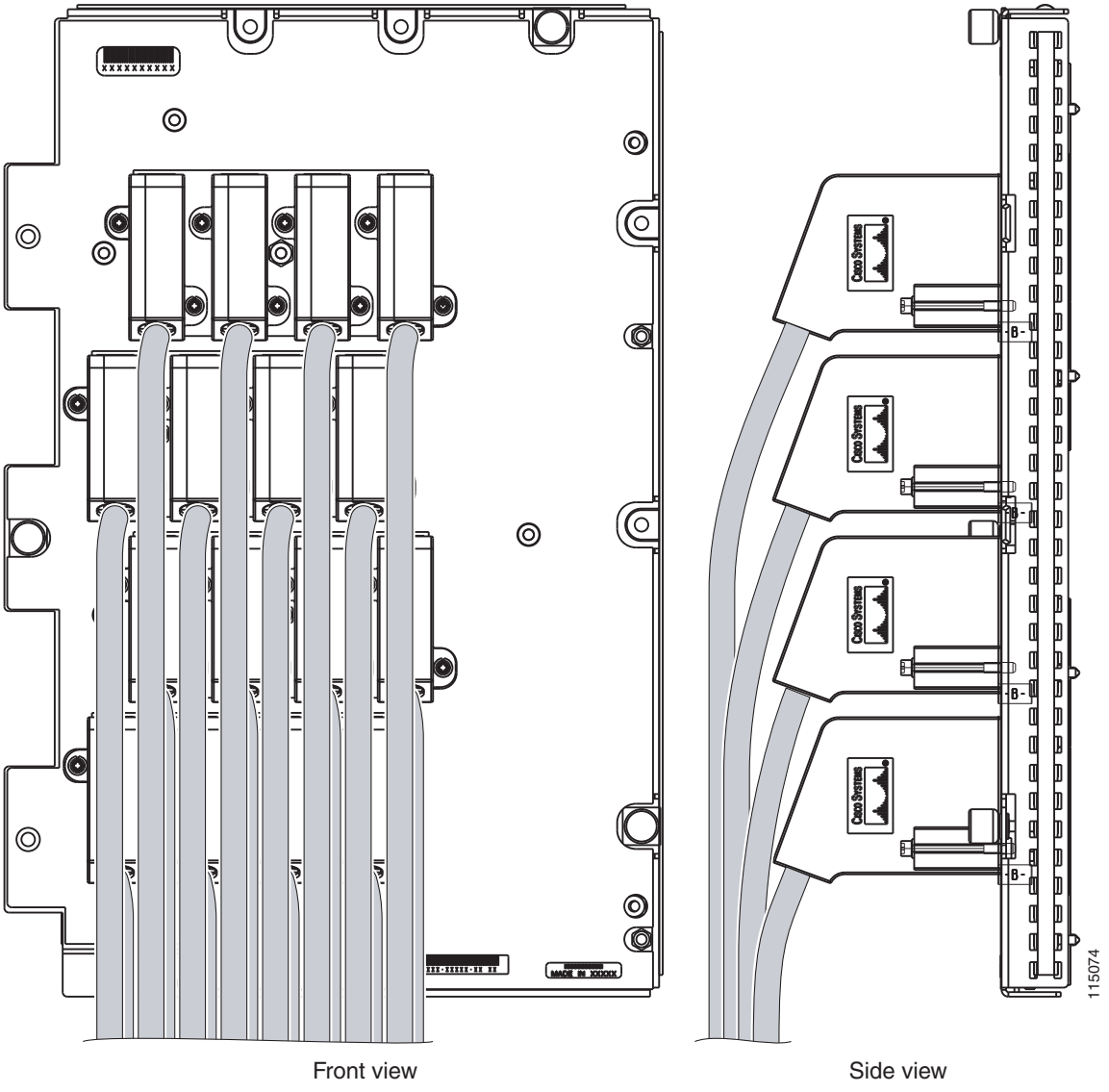
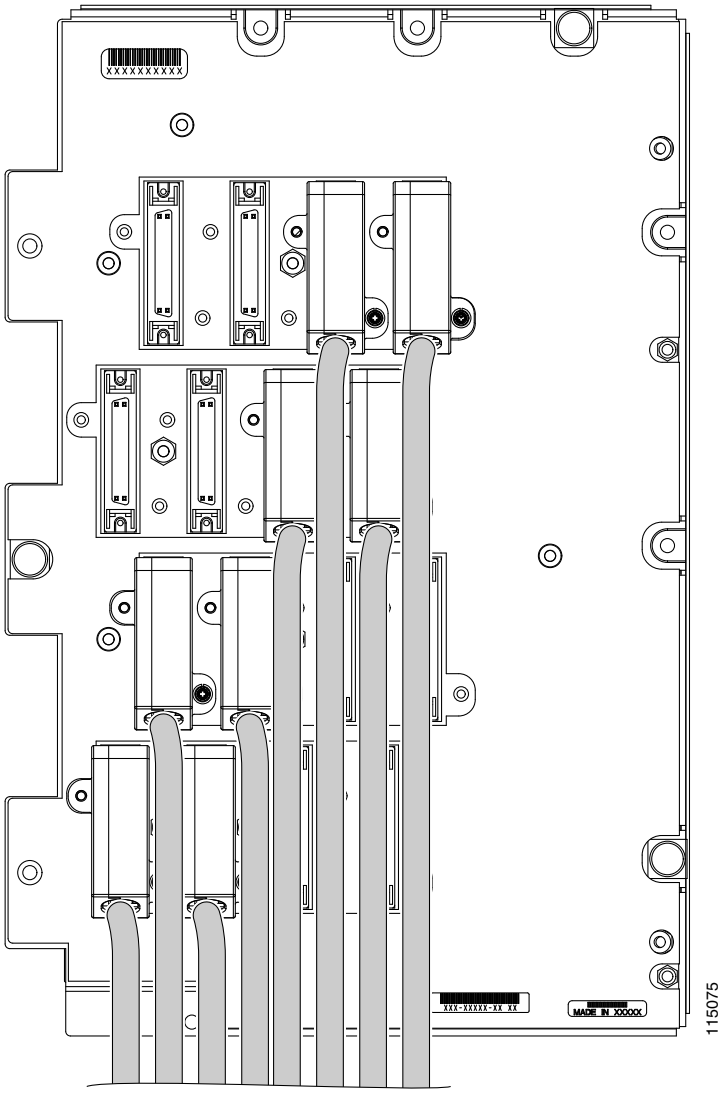


Figure 13 shows a partially populated UBIC-V.

Figure 13 Partially Cabled UBIC-V



Step 5 If available, tie wrap or lace the cables to the tie bar according to Telcordia standards (GR-1275-CORE) or local site practice.

Note When routing the electrical cables be sure to leave enough room in front of the alarm and timing panel so that it is accessible for maintenance activity.

Install the Standoffs and Rear Cover

For instructions about installing the standoffs and rear cover, refer to the *Installing Rear Standoffs and Mounting Bars from the Cisco ONS 15454 Shelf Accessory Kit* (78-16607-XX) document.

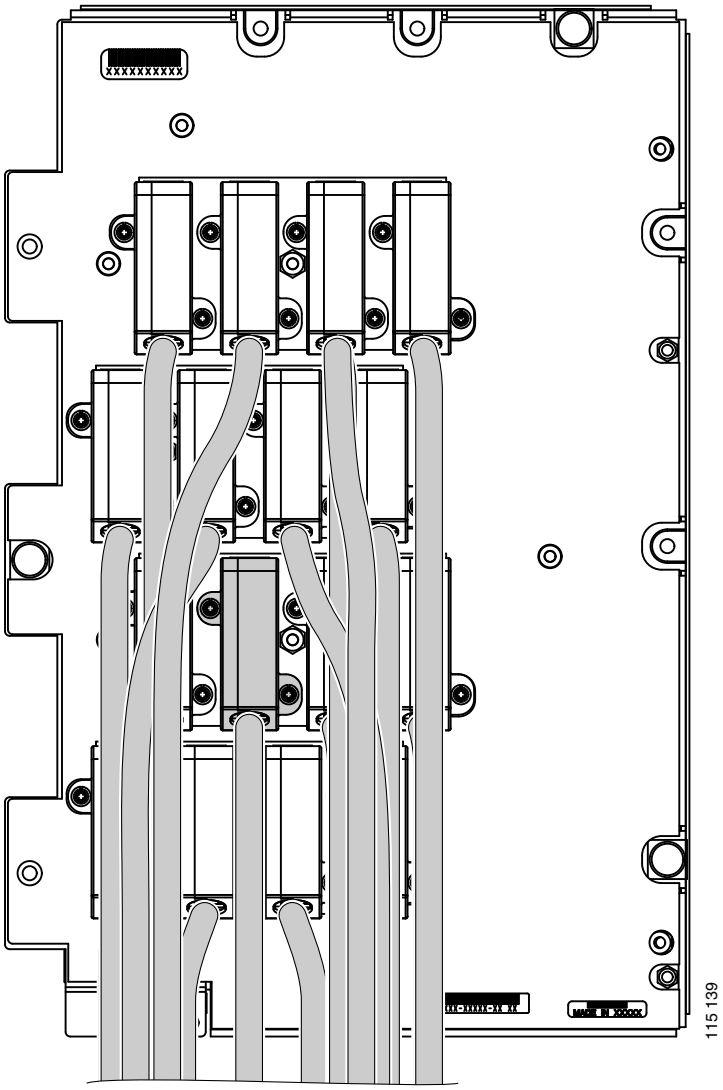
Remove and Replace UBIC-V Cables

If you are removing a connector pair, remove the transmit (Tx) cable and then the receive (Rx) cable. You will need a 3/16-inch flathead screwdriver for this procedure.

Note If necessary and approved by local site practice, you can cut and remove cable bundling material such as tie wraps or lacing to make it easier to remove UBIC-V cables.

Step 1 To remove a UBIC-V cable, gently hold back cables from any adjacent connectors (Figure 14).

Figure 14 Removing a UBIC-V EIA Cable



Step 2 Use the flathead screwdriver to loosen and remove the screws attached to the top left and bottom right of the SCSI connector.

Step 3 Pull the connector away from the UBIC-V at a downward angle, being careful to avoid other installed cables.

Step 4 To replace a UBIC-V cable with a new one, gently hold back any cables from adjacent connectors.

Step 5 Carefully maneuver the new cable connector between installed cables and put the cable connector of the new cable over the desired connection point on the backplane.

Step 6 Gently push the connector into the backplane until the notch backplane connector slides into the slot on the cable connector.

Step 7 Use the flathead screwdriver to tighten the screw at the top left of the cable connector two to three turns. Repeat this for the screw at the bottom right of the connector. Alternate between the two screws until both are tight.

Step 8 According to local site practice, replace any cable bundling ties or lacing you removed.

Remove UBIC-V EIAs

Step 1 To remove the lower backplane cover, loosen and remove the five screws that secure it to the ONS 15454 and pull it away from the shelf assembly (Figure 3 on page 7).

Step 2 Loosen and remove the six perimeter screws that hold the sheet metal cover and UBIC-V in place (Figure 8 on page 12).

Step 3 Use a Phillips screwdriver to loosen each jack screw a maximum of two turns. Rotate each jack screw two turns at a time (per the rotation indicator) until all jack screws are fully disengaged (Figure 9 on page 13).

Caution Loosening the jack screws unevenly could cause damage to the UBIC-V connectors.

Step 4 Grip two of the jack screws and use them to carefully pull the UBIC-V away from the shelf.

Note Attach backplane sheet metal covers whenever EIAs are not installed.

Related Documentation

- *Cisco ONS 15454 Procedure Guide*
- *Cisco ONS 15454 Reference Manual*
- *Cisco ONS 15454 Troubleshooting Guide*

Obtaining Documentation and Submitting a Service Request

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