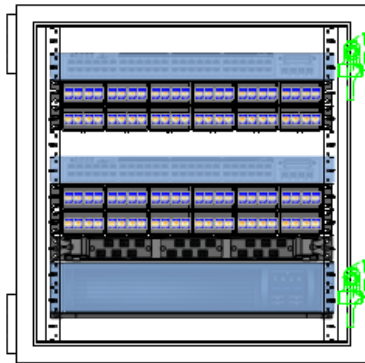


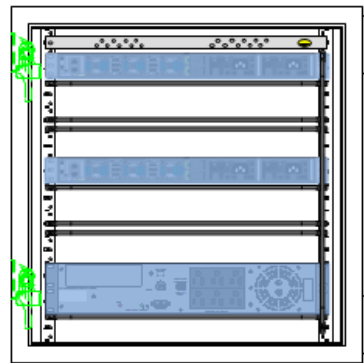


Panduit PreConfigured Industrial Distribution Frame (IDF) Installation Instructions

Part Numbers ZDF242430 and ZDF242430-6



Front View



Rear View

RU 12	PANDUIT RGRB19CN GROUND BAR
RU 11	CUSTOMER SWITCH – “B”
RU 9-10	PANDUIT CPPL48WBLY 48 PORT PATCH PANEL
RU 8	open
RU 7	CUSTOMER SWITCH – “A”
RU 5-6	PANDUIT CPPL48WBLY 48 PORT PATCH PANEL
RU 4	PANDUIT FRME1U FIBER RACK MOUNT ENCLOSURE
RU 2-3	CUSTOMER UPS or PDU
RU 1	open

Figure 1: Industrial Distribution Frame (IDF) Equipment Elevation

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References:

- FS002C: Installation Instructions - Opticom Rack Mount Fiber Enclosures
- PN448: Cable Preparation Best Practices for Fiber Optic Indoor/Outdoor Stranded Loose Tube Cable
- PN403L: Installation Instructions - TX6 PLUS and TX5e UTP Jack Modules
- PN207C: Installation Instructions - Mini-Com Modular Faceplate Patch Panels



12RU IDF Specifications

The IDF is constructed of 3 separate hinged sections; 1) the wall section, 2) the center section, and 3) the front door. **Figure 2** and **Figure 3** show the isometric views of the steel and stainless steel enclosures. **Figure 5** and **Figure 6** show photos of the 12RU IDF as shipped.

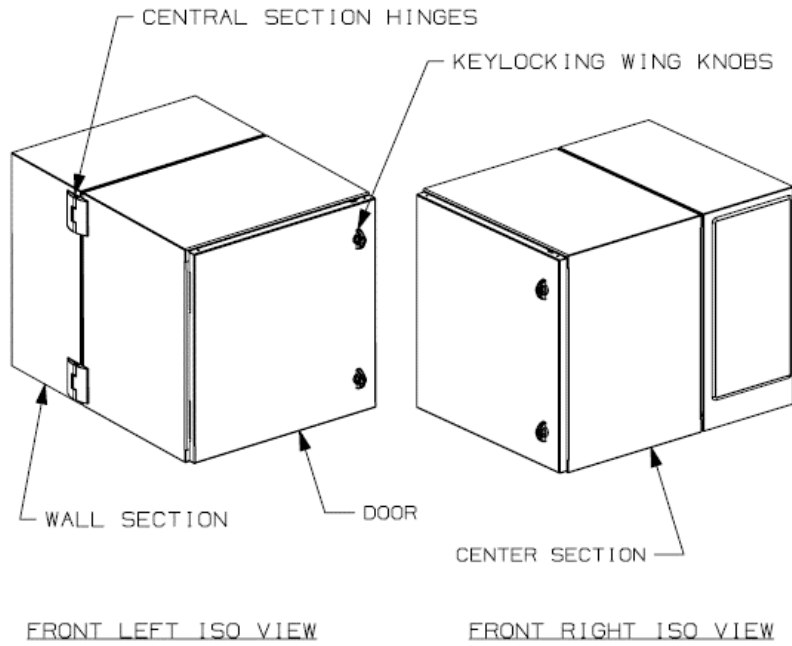


Figure 2: Isometric View Showing the Steel IDF Enclosure Construction

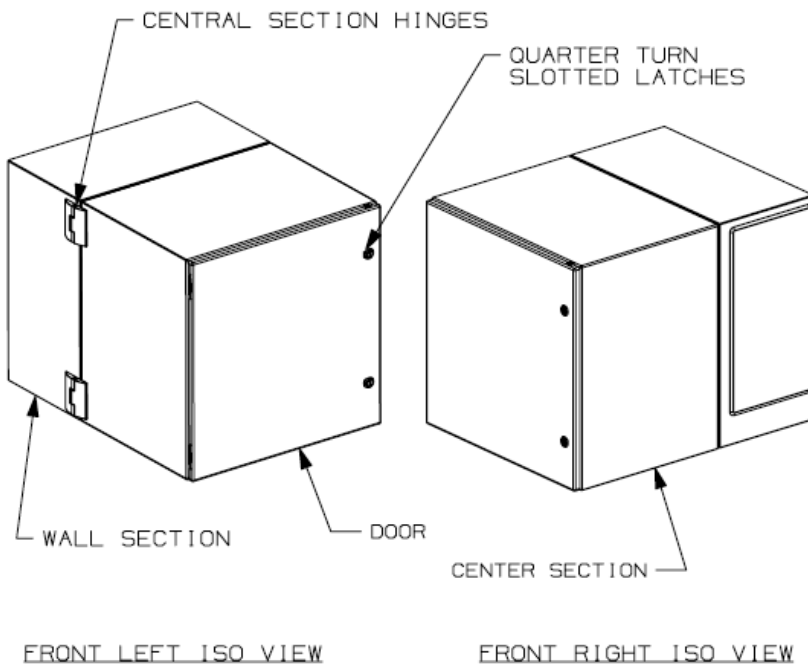


Figure 3: Isometric View Showing the Stainless Steel IDF Enclosure Construction



The following Specification list the 12RU IDF's physical shipping characteristics:

- Shipping Length: 44" (1117.6 mm)
- Shipping Width: 44" (1117.6 mm)
- Shipping Height: 35" (889 mm)
- Shipping Weight: 184 lbs. (83.5 kg.)

The following Specifications are for the Enclosure Dimensions and Weight:

Note: See Figure 4 for the dimensions when the enclosure is open.

- Enclosure Width: 23.62" (600.0mm)
- Enclosure Height: 24.10" (612.0mm)
- Closed Depth: 31.06" (788.9mm)
- Enclosure Weight: 141 lbs. (64 kg)
- Center Hinged Section: 250 lbs. (113.4 kg)
Maximum Load Rating

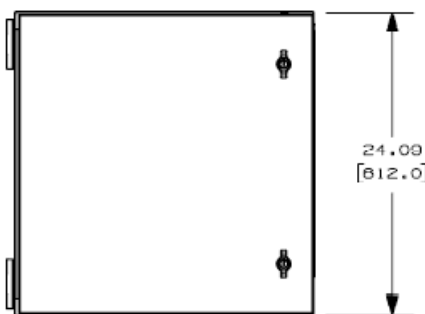
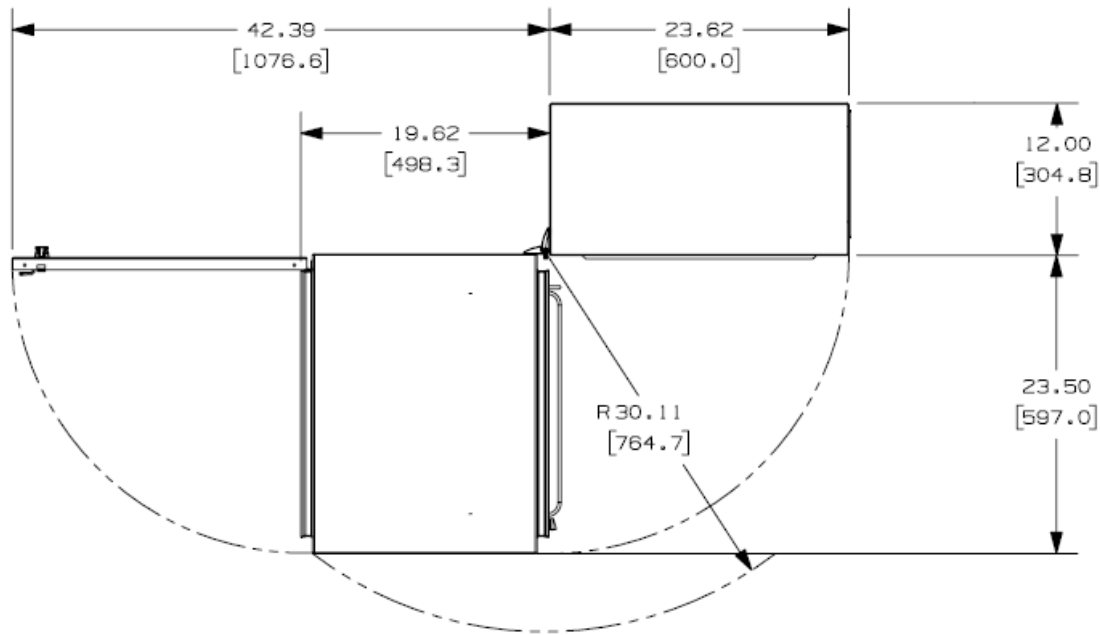


Figure 4: Plan view showing the Enclosure dimensions when it is totally open,



Figure 5: Front View of the 12RU IDF



Figure 6: Side View of the 12RU With the Center Section Open



IDF Unpacking

1. Unpack the IDF enclosure and remove the miscellaneous carton on top of the IDF enclosure.



Figure 7: Unwrapped enclosure and carton.

2. Remove the enclosure mounting hardware and Hoffman Protek installation guide from the miscellaneous carton.

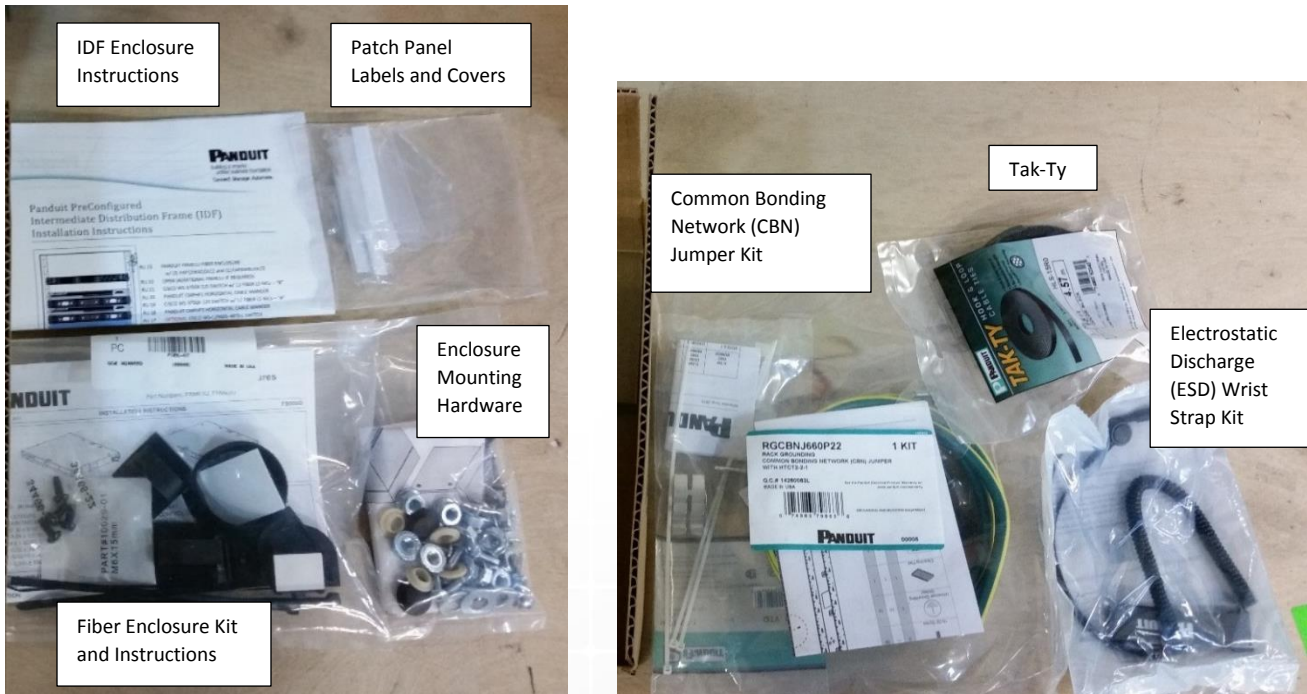


Figure 8: Contents of the miscellaneous carton.



IDF Switch Deployment Guide

Prior to routing power cable and horizontal communication cables, the switch placement inside the enclosure must be considered for a successful deployment. This document is intended to provide system integrators and field installers with Panduit's recommendations regarding switch deployment within Panduit's Industrial Distribution Frame (IDF). The IDF is currently PreConfigured to support the system layout as shown in [Figure 1](#), page 1. The allowable size of a switch in an IDF is dependent on the following factors:

1. RU location in the IDF. [Table 1](#) on page 6, provides the physical useable depth of the enclosure per RU space.
2. Switch chassis depth: Does the switch chassis fit in the physical space behind the mounting rails? [Figure 9](#) on page 6, illustrates the dimensions:
 - a. Dimension A: 25.94" [659mm] is the dimension to the back panels.
 - b. Dimension B: 22.69" [576mm] is the dimension from the front rail to the horizontal copper cable D-Rings.
 - c. Dimensions A and B are used for a maximum switch chassis depth.
3. Horizontal trunk cables routed inside the enclosure: The horizontal cabling D-Rings in the rear of the enclosure protrudes from the rear wall. This is illustrated in [Figure 9](#).
4. Switch power supplies used: Some power supplies extend further past the switch chassis. An example of this is the Cisco WS-C3850, 1100-watt power supply extends 3" past the chassis.
 - a. Switch power plug locations: Are they in front of the copper cable entry?
5. Switch stack cable locations: Is there clearance to the back panels? The dimension to the back panel as 25.94" [659mm].
6. The Center Section release handles swing into the areas where devices mount. This can result where patch cords may be interfered with by the handles if the devices are mounted here.

The user can use some recommendations to determine if their switch will sufficiently fit inside the enclosure. The recommended allowances for different switch characteristics are as follows:

- 4" - 5" [101.6 – 127mm] – add to chassis depth for stack cable
- 3½" [88.9mm] – add to depth for power cable support and cable loop past 3750 and 3850 power supplies
- 2 ½" – 3" [63.5 – 76.2mm] – add to chassis depth for power cables without strain relief brackets

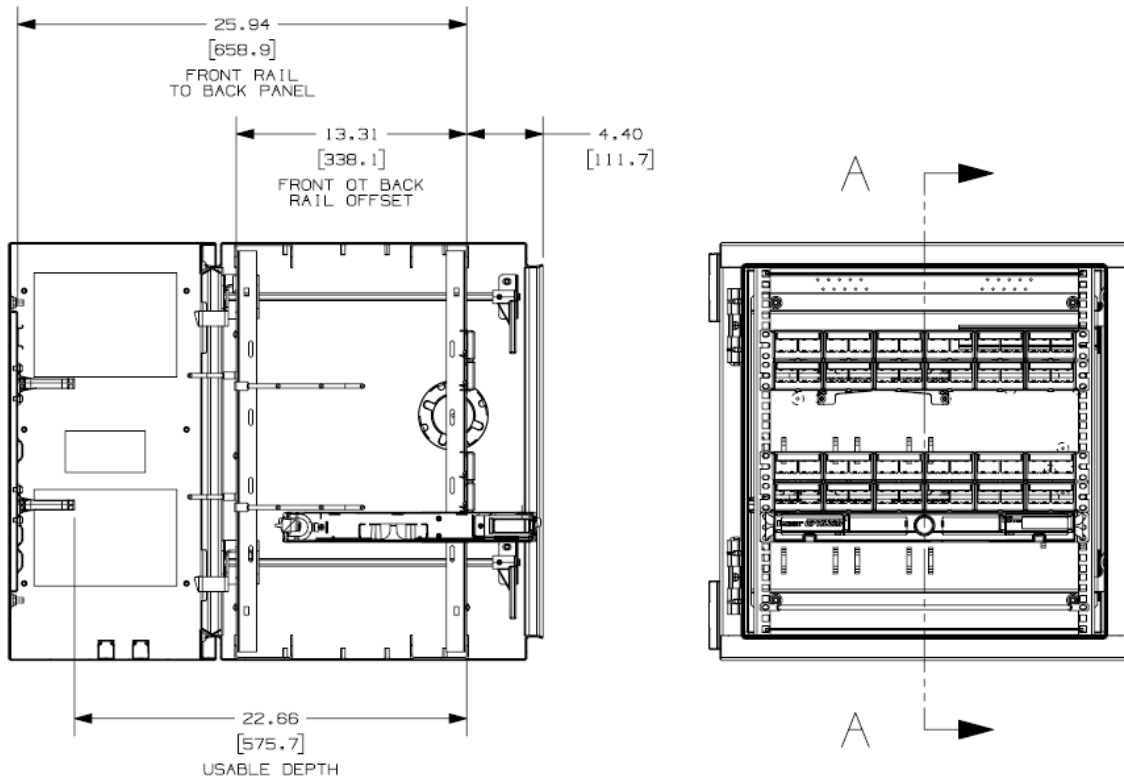
Examples of planning switch deployment:

- A) A standard Cisco WS-C3850 and WS-C3850 are 17.7" to 19.2" deep. 3½" need to be added for power cable support and cable loop resulting in 21.2" to 22.5" on the left side of the switch. If stack cables are used, add 4" – 5" to the chassis depth resulting in 22.7" to 24.2" on the right side of the switch. These switches are useable in all RUs of the enclosure.
- B) Some switches such as the Cisco WS-C3850-48X** have a power supply option (1100W) which extends 3" from the switch chassis. The switch chassis may be 19.2" to 20.1" deep. The physical switch depth is not a problem until power and stack cables are taken into consideration. Adding 3" for the extended supply + 3½" for the power cable support and loop puts the switch at 25.5" to 26.5" deep on the left side of the switch.
 - a. 25.5" will fit in RUs 5 – 10 of the IDF. This is dependent on the number of horizontal trunk cables.
 - b. 26.5" will not fit unless the Back Plate is removed and is dependent on the number of horizontal trunk cables.
- C) A switch is 20.5" deep. The main power plug is on the left side facing the front, does not have a strain relief, and there are no stack cables. 20.5" + 3" is a maximum of 23.5" on the left side. This is dependent on the number of horizontal trunk cables and the position of the trunk cables versus the power plug.



RU	Useable Depth (in)	Useable Depth (mm)	Comments
1	13.31	338	Limited by Center Section and Wall Section flange
2	22.66	576	Handle may interfere with patch field
3	22.66	576	Handle may interfere with patch field
4	22.66	576	FRME1U
5	22.66	576	25.9" if there is no 3rd trunk cable. Figure 20 , page 11, shows 2 trunk cables. The 3rd trunk loop would rise above the 2 shown.
6	22.66	576	25.9" if there is no 3rd trunk cable. Handle may interfere with patch field.
7	22.66	576	25.9" if there is no 3rd trunk cable. Handle may interfere with patch field.
8	22.66	576	25.9" if there is no 3rd trunk cable.
9	22.66	576	25.9" if there is no 3rd trunk cable.
10	22.66	576	25.9" if there is no 3rd trunk cable.
11	22.66	576	Handle may interfere with patch field
12	13.31	338	RGRB19CN Ground Bar on the Rear Rail. Handle may interfere with patch field. Limited by Center Section and Wall Section flange.

Table 1: Useable depth of the enclosure per RU



SECTION A - A

Figure 9: IDF Section showing the useable depth of the enclosure.



IDF Preparation and Mounting

3. Open the front door and center section. Open so that there is access to the rear panel of the enclosure.
4. Remove the Recommended Conduit Locations Template from the Back Plate (rolled up in the Tak-Ty).



Figure 10: Location of template in step 4

5. Tape the template to the bottom of the IDF enclosure. The bottom outside rear edge of the bend is indicated on the template in [Figure 11](#).

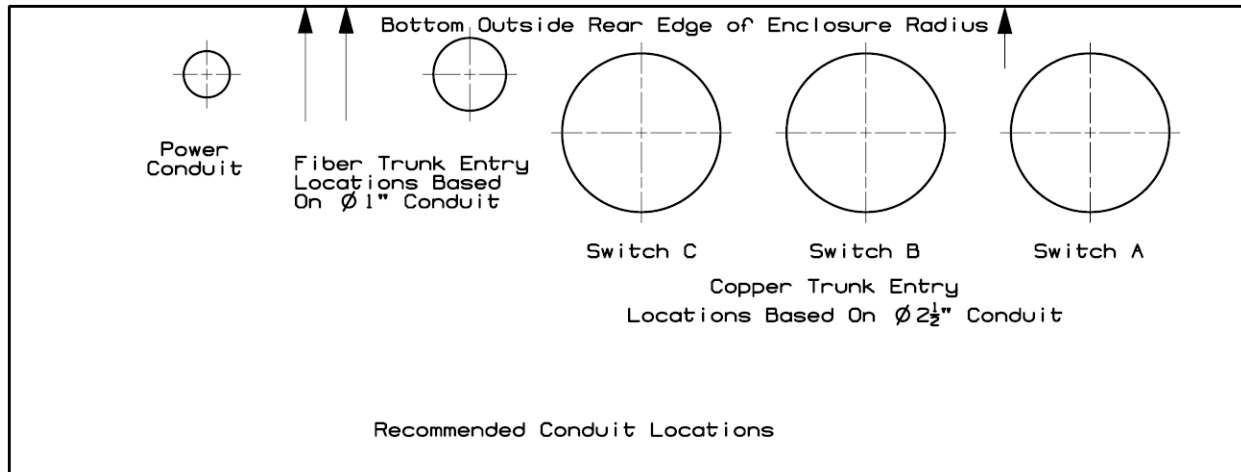


Figure 11: Recommended Conduit Location Template

6. Using the template from step 4, mark the desired locations for the external conduit entry on the bottom of the enclosure.
7. Drill and punch all conduit entry positions that will be used in this installation.



- Following the Hoffman Installation Guide, mount the enclosure in the desired location using the 6 holes on the wall section of the enclosure, refer to **Figure 12**. Reference **Figure 4** for the area required to fully open the enclosure.

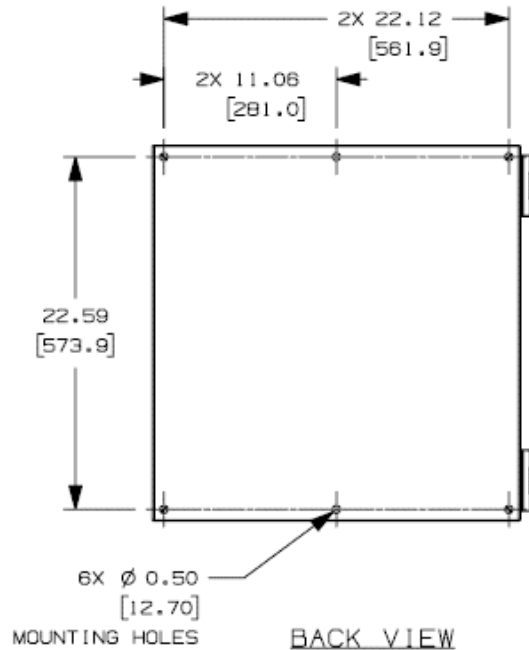


Figure 12: IDF Wall Section Mounting Holes

- Install all conduit connections in the appropriate locations.

Power Installation

- Install an outlet box and power outlets with that are compliant with local IEC standards. Four #10-32 holes are provided on the right side of the lower base plate.
- Punch out the center knockout of the outlet box.
- Pull the plant power through the conduit into the outlet box and terminate the power and ground per the local IEC code.
- Install an outlet box cover onto the box.



Figure 13: Outlet box and power cable secured to the back panel.

- OPTIONAL: Remove the side gland plate and install the air conditioner per instructions supplied with the AC unit.



Fiber Trunk Cable Installation

1. Remove the shipping Tak-Ty from the front of the FRME1U Fiber Enclosure shown in [Figure 14](#).

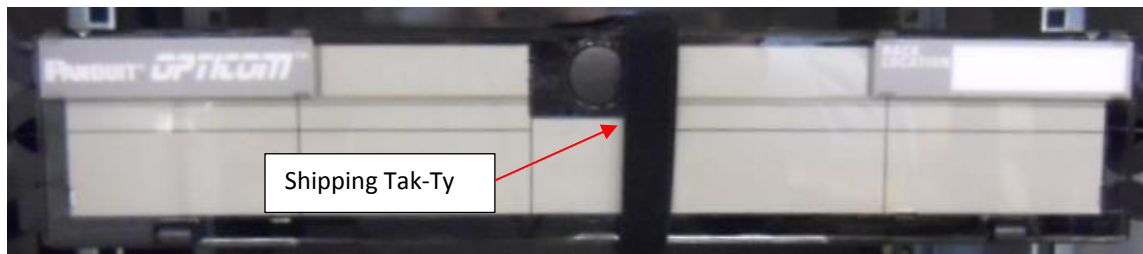


Figure 14: Shipping tape to be removed from FRME1U.

2. Pull the fiber trunk cables through the conduit(s) into the enclosure.
3. If using armored cable:
 - a. Cut the armored cable for 110" (3m) inside the enclosure. Leaving a stub of bare armor above the conduit.
 - b. Optional: Utilize Panduit's Armored Cable Grounding Jumper Kit (ACG24K, ACG24K-500, ACG24KX-500) to ground the armor of the cable.
4. Route the jacketed fiber cable through the Panduit Duct shown in [Figure 15](#).

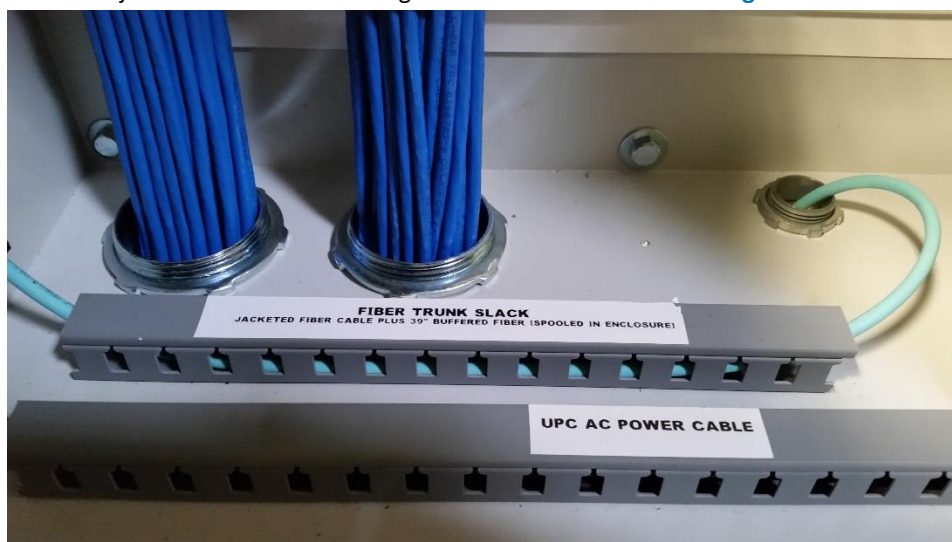


Figure 15: Fiber Trunk routing on Back Plate

5. Route the jacketed cable through the loom tubing supplied in the miscellaneous kit. The tubing protects the fiber from getting pinched in the hinge.



Figure 16: Fiber cable routing through the loom tubing.



Figure 17: Loom tubing routed around hinge point and rail.

6. Install the cable into the FRME1U Fiber Enclosure (RU 4) per FS002C, Opticom Rack Mount Fiber Enclosure Installation Instructions.
 - c. Install fiber adapter panels in the FRME1U. Panduit recommends (3) FAP12WAQDLCZ multi-mode FAPs for switch connections (ordered separately). (1) FAP is recommended for management ports in the right FAP position in the enclosure
 - d. Remove the pre-installed Fiber Bend Radius Control Clips from the front of the enclosure. This allows the inner drawer to be pulled back towards the rear of the enclosure.
 - e. Remove the cable entry grommet from the rear of the fiber enclosure.
 - f. Route the jacketed fiber through cable entry grommet.
 - g. Remove approximately 39" of the fiber jacket exposing the buffered fiber inside.
 - h. Field-terminate the required fiber adapters onto the fiber.
 - i. Re-insert the grommet back into the Fiber Enclosure.
 - j. Route the Fiber Cable as shown in [Figure 18](#). The fiber entry for this application is on the right side of the enclosure. Use Tak-Ty to secure fiber cords at the cable entry location and other points as shown.
 - k. Route the buffered fiber around the spools as shown.
 - l. Insert the fiber connectors into the desired pre-installed fiber adapter panel (FAP) locations in the enclosure. Note that the FAPs can be easily removed via push pull latches on the faceplates.

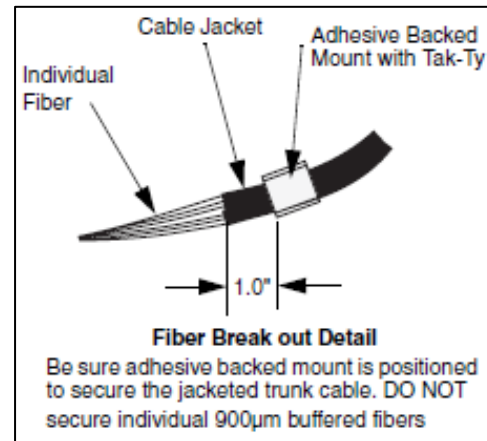
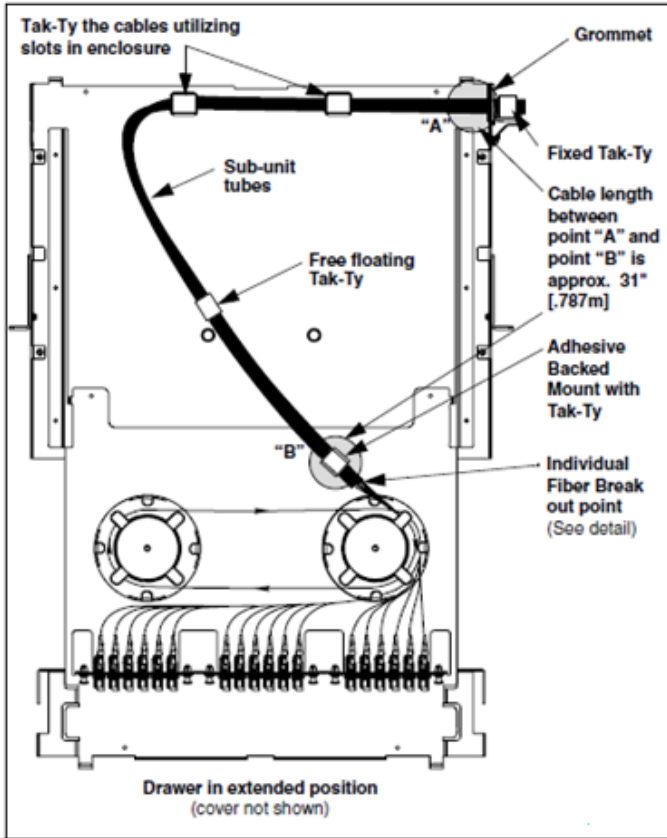


Figure 18: FRME1U Fiber Enclosure Cable Routing

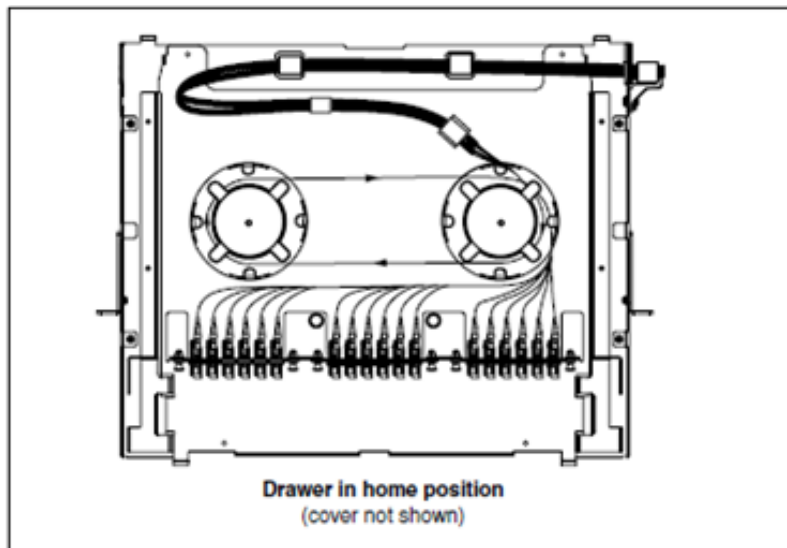


Figure 19: Fiber Enclosure Drawer showing the fiber cable when the drawer is closed.

7. If a second Fiber Enclosure is required:
 - a. Install the enclosure in RU8 indicated in [Figure 1](#) per FS002C, Opticom Rack Mount Fiber Enclosure Installation Instructions.
 - b. Repeat steps 3 through 6.



Copper Trunk Cable Installation

- Pull the Switch-A trunk cable through the conduit into the enclosure.
- Route the Switch-A trunk cable up the left side of the rear Backplane, refer to [Figure 20](#). Use the Tak-Ty and D-ring provided to secure the cable to the Backplane. 57" of slack (measured from enclosure bottom) is required in the enclosure. This leaves 2" of cable to terminate onto the copper jacks.



Figure 20: Copper Cable Routing showing Switch-A on the left and Switch-B cables on the right.

- Bundle the cable in sets of (4) to be installed into the patch panel.
- Remove the (12) snap-in faceplates from the installed lower patch panel.
- Feed the bundles of cables through the openings in the panel.
- Terminate the cables onto CJ688TGxx copper jacks (ordered separately) per PN403L, TX6 PLUS and TX5e UTP Jack Module Installation Instructions.
- Snap the jacks into the removable snap-in faceplates from step 11 per PN207C, Mini-Com Modular Faceplate Patch Panel Installation Instructions.
- Reinstall the faceplates onto the patch panel in the desired locations.
- Attach the cables to the installed Strain Relief Bar using Tak-Ty in the miscellaneous carton. This is shown in [Figure 21](#).
- Route the cables along the rear strain relief bar as shown in [Figure 22](#).



Figure 21: Copper Cables Tak-Ty to the Strain Relief Bars



Figure 22: Switch-A (lower) and Switch-B (upper) copper cable bundles attached to the rear strain relief bars.

18. Pull the Switch-B trunk cable through the conduit into the enclosure.
19. Route the Switch-B trunk cable up the center of the rear Base Plate, refer to [Figure 20](#). Use the Tak-Ty and D-ring provided to secure the cable to the Backplane. 64" of slack (measured from enclosure bottom) is required in the enclosure. This leaves enough cable to terminate onto the copper jacks.
20. Route the cables along the strain relief bars as shown in [Figure 21](#) and [Figure 22](#).
21. Optional: Print and apply the supplied labels and covers ([Figure 8](#)) to the front of the patch panel. Use a Panduit LS9 printer to create TIA-606 compliant labeling.
22. *Repeat steps 8 through 21 for the Switch-B copper trunk cable and upper patch panel.*



UPS Installation

23. Install the UPS in RUs 2 and 3 indicated in the equipment elevation (**Figure 1**). Note that the horizontal bar on the rear rail will support the UPS, eliminating excessive sag.
24. Connect the ground cable to the UPS. It is Tak-Ty to the rear bottom support.
25. Route the UPS power cord. Use the template on the bottom of the enclosure. Refer to **Figure 23**.
 - a. Along the hinge
 - b. Through the cord grip on the side of the enclosure
 - c. Through the front Panduct®.
 - d. Plug into the outlet box on the Back Plate.
 - e. Use the Tak-Ty provided on the Backplane to retain the AC power Cord.

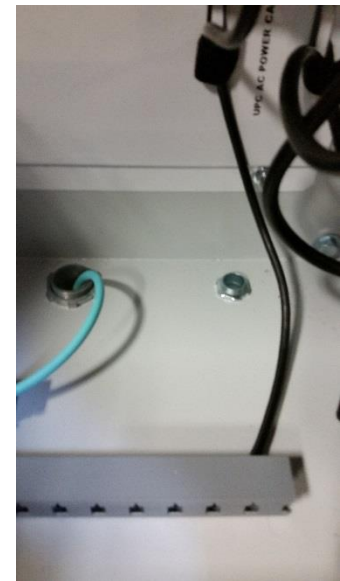


Figure 23: UPS cable routing



Copper Switch A&B Installation

26. Reference the Cisco Installation Instructions provided with the switches.
27. Install a Switch-A switch in RU7 indicated in the equipment elevation (**Figure 1**). Use the mounting angles provided with the switch. The horizontal bar on the rear rail (shown in **Figure 24**) will support the switch eliminating excessive sag.

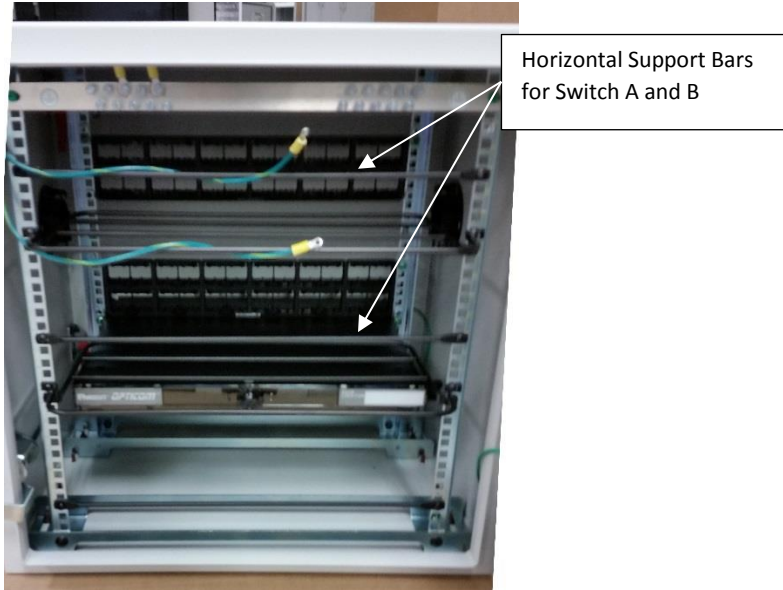


Figure 24: Location of horizontal support bars on rear of IDF.

28. Connect the switch to the patch panel in RUs 5 and 6. Panduit recommends using part number UTP28SP8INBU-48, Cat6 UTP 28AWG CM/LSZH Cable Assembly, Blue, 8 Inch, Bulk Package of 48 (ordered separately). The 8-inch length allows for connection from switch port to patch panel without extra length that would require cable management.

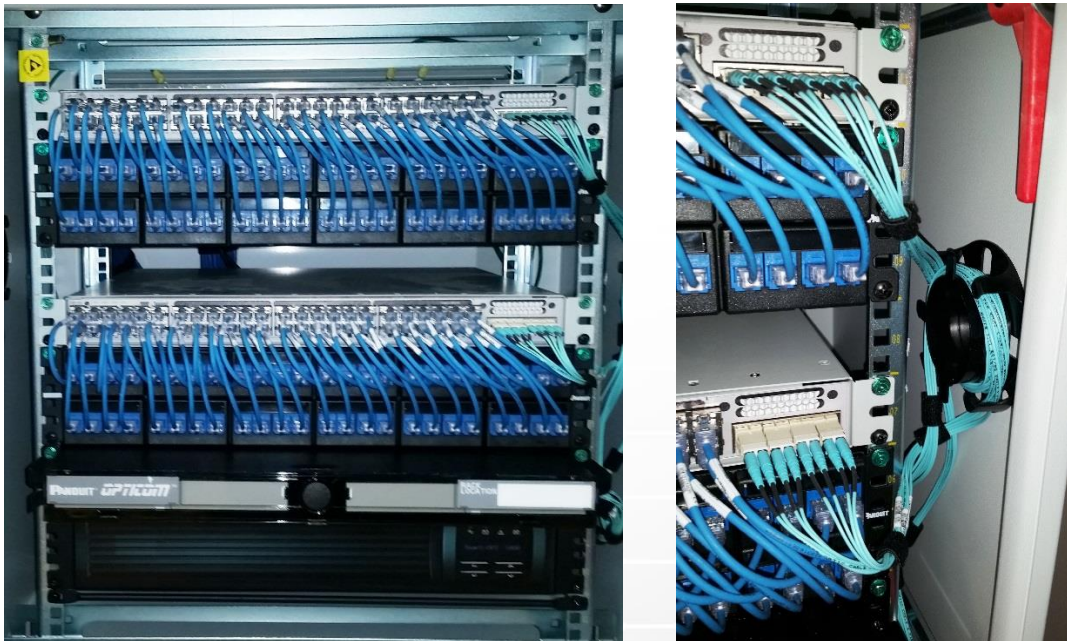


Figure 25: Switch-A (lower) and Switch-B (upper) switches showing fully populated patch cords.



29. Connect fiber patch cables to the management ports on the right side of the enclosure as shown by the aqua cables in [Figure 25](#). Panduit recommends using part number FX2ERLNLNSNM001, 2-fiber OM3 1.6mm Jacket Patch Cord LSZH LC Duplex to LC Duplex Std IL – 1M. Connect the other end of the patch cord to the front side of the FAPs mounted in the FRME1U (step 6a).
30. Attach a power cord in the rear of the enclosure. A 3ft. long cord is the maximum length recommended. Panduit's power cord options are listed on www.panduit.com.
31. Attach the Switch A and B power cable to the UPS. [Figure 26](#) shows the location of the AC cords.



Figure 26: Switch Power Cord routing and Tak-Ty.

32. Complete the installation and setup per the switch installation instructions.
33. Repeat steps 27 through 32 for Copper Switch-B in RU 11.



Appendix A: Installation Option For (2) Fiber Distribution Switches

34. **Figure 27** Illustrates the layout for (2) Fiber Distribution Switches.

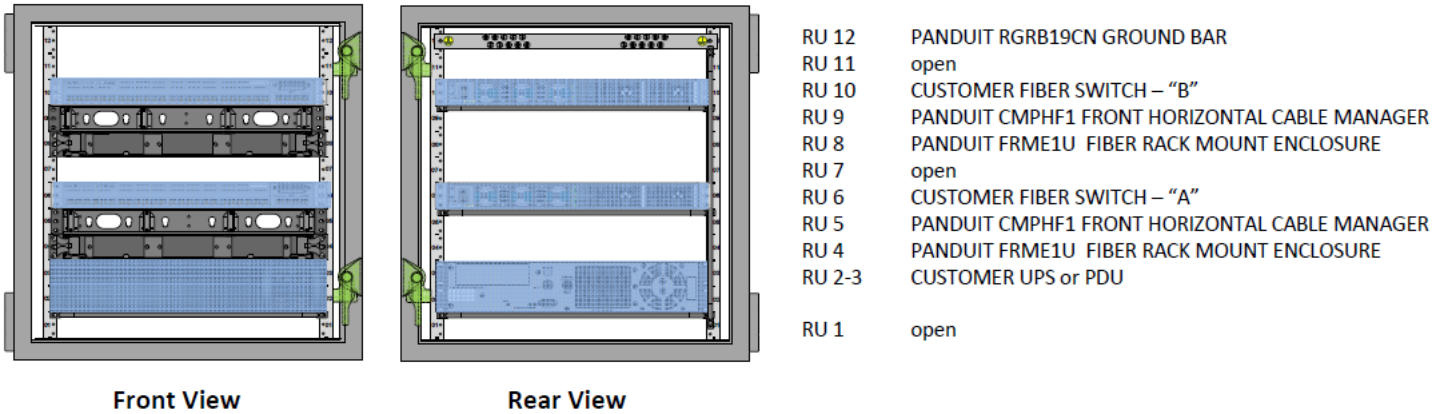


Figure 27: Elevation showing the installation of (2) Fiber Distribution Switches.

35. The customer should purchase the following additional accessories:

- a. (2) CMPHF1 Front Horizontal Cable Manager
- b. (1) FRME1U Fiber Rack Mount Enclosure

36. Remove the copper patch panels from the front rail.

37. Remove the strain relief bars from the rear rail. Leave the strain relief bar located in the top of RU 1.

38. Relocate the cage nuts so that the straight strain relief bars can be located in the following positions:

- a. Top of RU 5
- b. Top of RU 9

39. Reinstall the vertical strain relief bar.

40. Relocate the front rail cage nuts so that they line up with the switch mounting locations in **Figure 27**.

41. Install the second fiber enclosure per **Step 6**.

42. Install the CMPHF1 managers in RU 5 and RU 9.

43. Route the fiber horizontal cable like the copper routing in **Figure 17** and **Figure 22**. Use corrugated tubing to protect the fiber cable going around the hinge area.

44. Reference the Cisco Installation Instructions provided with the switches.

45. Install Fiber Switch-A switch in RU 6 indicated in the equipment elevation (**Figure 27**). Use the mounting angles provided with the switch. The horizontal bar on the rear rail will support the switch, eliminating excessive sag.

46. Connect the switch to the desired FAPs and ports installed in the FRME1U (step 6a). Panduit recommends using part number FX2ERLNLNSNM001, 2-fiber OM3 1.6mm Jacket Patch Cord LSZH LC Duplex to LC Duplex Std IL – 1M. The cable should be routed through the Panduit CMPHF1 Horizontal Cable Manger in RU 5. Refer to **Figure 28** and **Figure 29**.



Figure 28: Fiber Switch A and B mounted to front rail showing fiber cable routing.



Figure 29: Fiber connections to FAPs inside of FRME1U. Yellow is for management ports. Aqua is for the Fiber Switches.

47. Connect fiber patch cables to the management ports of the Fiber Switch (if applicable) and connect to ports right side of the FRME1U enclosure as shown by the yellow cable in [Figure 29](#). Panduit recommends using part number FX2ERLNLNSNM001, 2-fiber OM3 1.6mm Jacket Patch Cord LSZH LC Duplex to LC Duplex Std IL – 1M. Spool patch cable slack onto FS1 spools located on the sides of the enclosure. Refer to [Figure 30](#).



Figure 30: Fiber Patch Cord Slack Management

48. Connect a pre-installed ground cable to the rear of the switch. Refer to [Figure 31](#).



Figure 31: Ground cable connection to the Fiber switch.

49. Attach the power cord in the rear of the enclosure shown.
50. Attach the Fiber Switch-A AC cable to the UPS. The plug is Tak-Ty just above the UPS.
51. Complete the installation and setup per the switch installation instructions.
52. Repeat steps 45 through 51 for Fiber Switch-B in RU 10.



Appendix B: Installation Option For (1) Copper Access Switch & (1) Fiber Distribution Switch

53. **Figure 32** illustrates the layout for (1) Copper Access Switch & (1) Fiber Distribution Switch

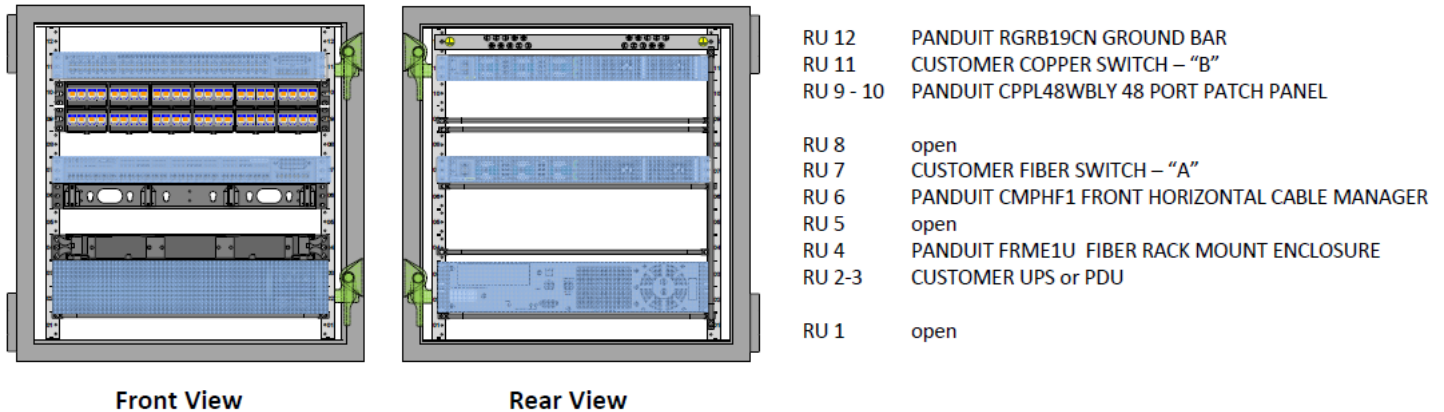


Figure 32: Elevation Showing (1) Copper Access Switch & (1) Fiber Distribution Switch

54. The customer should purchase the following additional accessories:

- a. (1) CMPHF1 Front Horizontal Cable Manager
- b. (1) SRBS19BL-XY Strain Relief Bar, Straight

55. Remove the bottom copper patch panels from the front rail.

56. Remove the following strain relief bars from the rear rail (*note that the vertical strain relief bar may need to be removed*):

- a. SRB19BLY Strain Relief Bar, Extended 2" RU 5 middle
- b. SRB19MDBL Strain Relief Bar, 7" Multi-Depth RU 5 bottom

57. Install the new SRBS19BL-XY on RU 4, bottom.

58. Reinstall the vertical strain relief bar.

59. Relocate the front rail cage nuts so that they line up with the CMPHF1 mounting locations in **Figure 32**.

60. Install the CMPHF1 manager in RU 6

61. Route the fiber horizontal cable like the copper routing in **Figure 17** and **Figure 22**. Use corrugated tubing to protect the fiber cable going around the hinge area.

62. Reference the Cisco Installation Instructions provided with the switches.

63. Install the fiber switch per **Steps 45 thru 50**.

64. Install the copper horizontal cable per **Steps 19 thru 22** and **Step 33**.