

PRP NETWORK STANDARDS & SPECIFICATIONS

May 2022

OVERVIEW

This document outlines the network standards and specifications for PRP and non-PRP remote sites.

1. Cabling Infrastructure Specifications/Requirements

- Panduit cabling infrastructure/solution for all net-new and retro-fit of cabling in PRP facilities.
- All the data runs must be home runs to a telecom riser.
- Overhead cable trays to be used in telecom riser(s) for the cable management.
- J-Hooks to be used in plenum spaces
- 10 EA 10' Panduit patch cords per 100 data runs
- 10 EA 7' Panduit patch cords per 100 data runs
- 12 strand 50/125 µm "laser optimized" OM4 multimode fiber to be installed between telecom risers, for backbone.
- 12 strand OS2 single mode fiber, if service provider is either in a different riser or being moved to a new telecom riser.
- 24 EA Category 6A data runs to be installed between telecom risers, where possible for backbone (less than 100m). Use 48 ports patch panel.
- 2 EA Category 6A data runs to be installed for the Wireless Access Points
- Vendor to provide warranty services for all installed network connections (fiber and copper) including support systems.
- Vendor to provide services for the cutover day, which may be evening or weekend.
- Vendor is responsible for removal of legacy cabling no longer in use (if applicable).



Vendor to provide warranty and as-built documentation including Panduit certification for the installation. See information relating to Panduit Certificate and the URL below:

[Panduit | Certification Plus System Warranty](#)

Sites with the data jack built into system furniture/desk

- 2 x data jacks per location
- 3 x 7' Panduit patch cords, per data run (riser, jack to phone & phone to PC)

Sites with the data jack on the wall

- 2 x data jacks per location
- 2 x 7' and 1x 10' Panduit patch cords, per data run (riser, jack to phone & phone to PC)

Cabling for Wi-Fi

Two Cat 6A drops per Wireless Access Point

Part Number	Description
PUP6AHD04BU-G	The TX6A™ Cat 6A U/UTP copper cable is constructed of 23 AWG copper conductors with FEP insulation.

Patch Cables (Panduit)

Cat 6A Thin Patch Cables 28 AWG

Part Number	Description
UTP28X7BU	7ft Blue
UTP28X10BU	10ft Blue
UTP28X15BU	15ft Blue
UTP28X25BU	25ft Blue

Multimode OM4 Fiber Patch Cables

Part Number	Description LC/LC duplex
FZ2ERLNLNSNM001	1m Aqua
FZ2ERLNLNSNM002	2m Aqua
FZ2ERLNLNSNM003	3m Aqua

Singlemode OS2 Fiber Patch Cables

Part Number	Description LC/LC duplex
F92ERLNLNSNM001	1m Yellow
F92ERLNLNSNM002	2m Yellow
F92ERLNLNSNM003	3m Yellow

Cat 6A 28 AWG Thin Patch Cables (Security cameras)

Part Number	Description
UTP28X7YL	7ft Yellow
UTP28X10YL	10ft Yellow

Cat 6A 28 AWG Thin Patch Cables (10Gig connections – Uplinks or AP's)

Part Number	Description
UTP28X7BU	7ft Blue
UTP28X10BU	10ft Blue

i Blue for primary use (Workstation, Printer and IP Phone), Yellow for Cameras.

Infrastructure Cabling (Panduit)

Panduit Part	Part Number	Description	Notes
Panduit Jacks	CJ6X88TGBU	Mini-Com Cat 6A Jack Module Blue	Terminated T568A
Panduit Jacks	CJS6X88TGY	Mini-Com Cat 6A Jack Module shielded	Terminated T568A
Wall Face Plates	CFP2WH	2 Position Standard Vertical Faceplate	e.g., CFP2WH for 2 Mini Com Jacks
Furniture Face Plates	CFFP4BL	Faceplate Snaps into Standard Knockout	e.g., CFFP4BL for 4 Mini Com Jacks
Patch Panel	CPPL48WBLY	Mini-Com Modular Faceplate Patch Panel	48 Ports
Patch Panel	CP24BLY	Mini-Com Modular Faceplate Patch Panel shielded	24 Ports
Panduit Cable	PUP6C04BU-F	TX6™ Copper cable, enhanced category 6 UTP, plenum, 4-pair, conductors are 23 AWG construction with FEP insulation, twisted in pairs, separated by an integrated pair divider, and protected by a low smoke, flame-retardant PVC jacket, blue.	Were applicable.
Panduit Cable	PUP6AHD04BU-G	The TX6A™ Cat 6A U/UTP copper cable is constructed of 23 AWG copper conductors with FEP insulation.	New installation
Fiber Enclosure	FRME1U	1RU Fiber Enclosure (Accepts up to (3) FAPS	
Fiber Adapter Panel	FAP12WAQDLCZ	The LC fiber adapter panel is OM3/OM4 and is loaded with twelve LC duplex fiber optic adapters. The fiber optic adapters are aqua with zirconia split sleeves.	
Fiber Adapter Panel	FAP12WBUDLCZ	The LC fiber adapter panel is OS2 and is loaded with twelve LC duplex fiber optic adapters. The fiber optic adapters are aqua with zirconia split sleeves.	

Data Center Infrastructure Cabling (Panduit)

Panduit Part	Part Number	Description	Notes
Fiber Trunk Assemblies (Pre-terminated)	FYZTP77Y005F0**	OM4 12-Fiber Indoor Small Diameter Trunk, Plenum, PanMPO Female with 1 m breakout to PanMPO Female with 1 m breakout, Polarity B, Optimized IL, Pulling Eye End A,	** denotes length
Fiber Trunk Assemblies (Pre-terminated)	FYZUP77Y005F0**	OM4 24-Fiber Indoor Small Diameter Trunk, Plenum, PanMPO Female with 1 m breakout to PanMPO Female with 1 m breakout, Polarity B, Optimized IL, Pulling Eye End A,	** denotes length
Fiber Trunk Assemblies (Pre-terminated)	FYZWP77Y005F0**	OM4 48-Fiber Indoor Small Diameter Trunk, Plenum, PanMPO Female with 1 m breakout to PanMPO Female with 1 m breakout, Polarity B, Optimized IL, Pulling Eye End A	** denotes length
Fiber Trunk Assemblies (Pre-terminated)	FYZYP77Y005F0**	OM4 96-Fiber Indoor Small Diameter Trunk, Plenum, PanMPO Female with 1 m breakout to PanMPO Female with 1 m breakout, Polarity B, Optimized IL, Pulling Eye End A	** denotes length

Fiber Trunk Assemblies (Pre-terminated)	FY9TP77Y005F0**	OS2 12 Singlemode 12-Fiber Indoor Small Diameter Trunk, Plenum, MPO Female with 1 m breakout to MPO Female with 1 m breakout, Polarity B, Standard IL, Pulling Eye End A	** denotes length
Singlemode LC duplex adapter cassette	FHC9N-24-10U	Singlemode HD Flex Cassette; 2 MPO to 12 duplex LC; OS2 Fiber and Standard Loss; Universal	
Multimode LC duplex adapter cassette	FHCZO-24-10U	HD Flex Cassette; 2 MPO to 12 duplex LC; OM4 Fiber and Optimized Loss; Universal	
Flat fiber patch panel and cable manager	FLEX1U06	HD Flex 1 RU 6-Port Enclosure	

2. Cabinet Equipment

Cabinet Solution where vertical ducting is required (Panduit)

Panduit Network Cabinet & Software Part Numbers	
HARDWARE	
Network Cabinet Part No.	Description
XG84522BS00R7	FlexFusion™ Cabinet, Network Configuration, 800mm x 45RU x 1200mm, Black, Hardware Mount Rail, Top Cap w/ Brush Seal, Single Hinge Perforated Front Door, Split Perforated Rear Door, Standard Locks, Left and Right-Side Panels, One Set Long Cable Mgmt Fingers, Left and Right PDU Brackets, Right Vert Cable Mgmt Panel, Casters
XG84522BS001H	FlexFusion™ Cabinet, 800mm x 45RU x 1200mm, Black, Hardware Mount Rail, Top Cap w/ Brush Seal, Single Hinge Perforated Front Door, Split Perforated Rear Door, Standard Locks, Left and Right-Side Panels, One Set Long Cable Mgmt Fingers, Left and Right PDU Brackets, Right Vert Cable Mgmt Panel, Casters
Accessories	
NMF2	Panduit® NetManager High-Capacity Horizontal Cable Manager
CNWSM6-C	Panduit M6 Screw with Cage Nuts (100pc)
P24G03M	MSPO PDU, 30AMP, (18)C13, (6)C19, NEMA L21-30P-3M, BLACK (Qty. 2).
P24G01M	MSPO PDU, 30AMP, (20)C13, (4)C19, NEMA L6-30P-3M, BLACK *Where 3 phase power is not available.
P24G01M	MI PDU, 30AMP, (18)C13, (6)C19, (6)5-20R, NEMA L21-30P-3M, BLACK *Where 120V and 208V are required.

Rack Solution (Small Riser) (Panduit)

Qty.	Part Number	Description
1	R2P	Panduit 2-POST RACK FLOOR MOUNT 84.0in H X 20.3in W X 3in D CHANNEL BLACK Aluminum ROHS
1	RFAKIT	Rack Anchor Kit for concrete floor
2	PR2VF06	6" wide front only cable manager with door
1	PR2VWF	Rack top trough with waterfall (Cable pathway)
2	NMF2	2 RU horizontal cable pathway
1	S1224-C	Mounting Screws

Wall Mount for Sites with no riser

Option 1

Panduit TrueEdge Wall-Mount Enclosure

- WME6BL (42"H x 28.5"W x 14.7"D)
- Other options based on need can be evaluated

Option 2

Tripp Lite SmartRack 12U Server-Depth Wall-Mount Rack Enclosure Cabinet

- SRW12US33 (Hinged Back) 25"H x 23.5"W x 33.5"D
- SRW12UHD (Side Mounted) 26.5"H x 36.2"W x 24.8"D
- Other options based on need can be evaluated

Option 3

Black Box Low-Profile Vertical Wallmount Cabinet

- RMT352A-R2 (4RU) 8.6"H x 25.3"W x 28.5"D
- RMT353A-R2 (6RU) 12.1"H x 25.3"W x 28.5"D
- Other options based on need can be evaluated

Lock for Non-PRP Sites

Option 1

Mier Box Indoor, NEMA 1, Fan-Ventilated DVR, NVR & CPU Lockboxes

- BW-235 (3RU) 5.1"H x 17.73"W x 24"D
- BW-230 (5RU) 8.1"H x 17.73"W x 24"D

3. Network Equipment

PRP will be responsible for the purchase of the router and switches based on the size of site/riser. Facilities will be responsible for the budget for these items.

i Note: PRP equipment to be updated during 2022 Lifecycle

Cisco router and switches by site type

Type 1 Sites (+48 nodes)

- Router C9500-24Y4C
- Switch C9410R and/or C9407R and/or C9404R and/or C9300-48 and/or C9300L-48P

Type 2 Sites (13-48 Nodes)

- Switch C9300-48 and/or C9300L-48P

Type 3 Sites (1-12 Nodes)

- ASA FPR1000
- Switch C9300-24 and/or C9300L-24P

Wi-Fi Specs

- Access points will require 2x Panduit Cat 6A cable runs per AP (Internal/External)
- **Internal** Access Point

Part #	Description
CISCO C9120AXI-A	Cisco Catalyst 9120AX Series

- **External** Access Point

Part #	Description
CISCO C9120AXE-A	Cisco Catalyst 9120AX Series

4. Riser Size/Access

i All the risers must have card access installed/setup.

The telecom room should conform to TIA standards and it should be built solely for PRP network or VCOM use (**Network, Voice, Radio and AV**). The space should be able to accommodate **eight** PRP Standard Network cabinets with 36" clearance on all sides. The height between the finished floor and the lowest point of the ceiling should be a minimum of 3m (10 ft.) to accommodate taller frames and overhead pathways.

5. Power Requirements

208V - 30A (L21-30R) Circuits (minimum 2 per cabinet/rack)

Cabinets - Mounted on the **cable tray** above the cabinet(s).

Racks - Mounting location to be determined on a site-by-site basis

(Alternately where 3 phase is not available L6-30R may be used)

i If possible, we need 208V - 30A (L21-30R) circuits to be from separate feeds/generators

110V - 20A Circuits

Cabinets - mounted on the cable tray above the cabinet(s) (**where required i.e., non-PRP sites, etc.**)

Racks - Mounting location to be determined on a site-by-site basis (**where required i.e., non-PRP sites, etc.**)

UPS

Type 1 - Building UPS or network grade UPS based on power requirements (link below) and generator (where required)

Type 2 - Network grade UPS based on power requirements (link below)

Type 3 - To be defined if there is a requirement by the site



Cisco Power Calculator (<https://cpc.cloudapps.cisco.com/cpc/launch.jsp>) - Allow for 30-minute runtime (based on site)

6. AC Requirements



BTU will be provided to you based on the size of the site/riser

7. Grounding



Grounding (as per Motorola R56); PRP Radio infrastructure to provide specifications for telecom rooms

Cabinets (Panduit)

- CGR630UB retrofit grounding kit for installation on cabinets with cage nut rail fasteners and rail depth up to 30" (.75m); includes one RGRB19U grounding busbar kit and one CGJ630UB front to back rail jumper kit.
- RGS134B-1 grounding strip; 78.70" (2m) length; .67" (17mm) width; .03" (.76mm) thickness; provided with .16 oz. (5cc) of antioxidant, one grounding sticker, three cage nut bonding studs, eight #12-24 bonding nuts and three strip clips.
- Grounding lugs and screws, cage nut screws needed for grounding a Panduit cabinet (Cage nut).

Racks (Panduit)

- CGR630U retrofit grounding kit for installation on cabinets with threaded #12-24 or M6 rail fasteners and rail depth up to 30" (.75m); includes one RGRB19U grounding busbar kit and one CGJ630U front to back rail jumper kit.
- RGS134-1Y grounding strip; 78.65" (2m) length; .67" (17mm) width; .05" (1.27mm) thickness; provided with .16 oz. (5cc) of antioxidant, one grounding sticker and three each #12-24 x 1/2" and M6 x 12mm thread-forming screws.
- Grounding lugs and screws, cage nut screws needed for grounding a Panduit rack (#12-24).

8. Labelling Nomenclature

PRP site vs. Non-PRP (MAG, CRC, etc.)

Data jack convention: (Follow EIA/TIA 606)

xx-yy-zz where xx is a floor identifier, yy is a riser identifier and zz is the port number. Note that the description is always for the destination.

- Level B1: B1-yy-01, B1-yy-02, etc.
- Level B2: B2-yy-01, B2-yy-02, etc.
- Level 1: F1-yy-01, F1-yy-02, etc.
- Level 2: F2-yy-01, F2-yy-02, etc.

9. Miscellaneous

Fire rated plywood mounted within the riser (location TBD)

Riser to riser conduit provisioning