



Shippensburg University
Communications Specifications
December 2020

COMMUNICATIONS ROOMS

Main Distribution Frame (MDF)

Each building or building complex must have a **central** communications room. MDFs have the following characteristics.

- Contain Level 0 or Level 1 network devices and Level 2 devices.
- MDF's are connected by a minimum of two 4" conduits
- Exterior conduits must be secured with a layer of protective concrete.
- An MDF requires individual HVAC control.
- Temperatures limits are 65o F to 85 o F
- Humidity limits are 20 - 60% relative humidity
- MDF SIZE
- Minimum area should be 100 square feet.
- The shortest wall must be at least 7' in length.
- Ceiling height must be a minimum of 9'
- The door to MDF must be secure.
- The MDF must be dry and not susceptible to flooding.
- The MDF is not shared with any other service or facility.
- No Gas, Water piping to run through MDF.
- No Branch or Main Electrical to be routed through MDF
- The room must be lighted with its own light switch.
- Electrical requirements
- Isolated circuits "orange power".
- Requires at least one 20 amp circuit.
- A minimum of 4 quad receptacles.
- UPS backup.
- Generator backup

Intermediate Distribution Frame (IDF)

Current cabling standards limit cable length to 90 meters, or approximately 295 feet. When the 90 meter distance is exceeded, an **Intermediate Distribution Frame (IDF) is required.**

IDF characteristics:

- Contains Level 2 Network devices.
- IDF's are connected to the MDF by a minimum of three 4" conduits
- Exterior conduits must be secured with a layer of protective concrete.
- An IDF requires individual HVAC control.
- Temperatures limits are 65o F to 85 o F
- Humidity limits are 20 - 60% relative humidity
- IDF SIZE
- Minimum area should be 36 square feet.
- The shortest wall must be at least 6' in length.
- Ceiling height must be a minimum of 9'
- The door to IDF must be secure.
- The IDF must be dry and not susceptible to flooding.
- The IDF is not shared with any other service or facility.
- The room must be lighted with its own light switch.
- No Gas, Water piping to run through MDF.
- No Branch or Main Electrical to be routed through MDF
- Electrical requirements
- Isolated circuits "orange power".
- A minimum of 2 quad receptacles.
- UPS backup.
- Generator backup

CABLING

MDF-MDF Cabling

MDFs are connected by a minimum of 12-strand OS2 Single Mode Fiber.

MDF-IDF Cabling

MDF are connected to IDFs by a minimum of 12-strand OM4 50/125 micron multimode fiber, and (6) Cat.6a Cables

Horizontal Cabling

Category 6a cabling and connectivity is the current standard for Shippensburg University. See the **Parts List** at the end of this document for cable standards.

- Data cables are Blue w/ Blue Cat.6a Jacks
- Data Cables will be terminated T568B
- Data cables are limited to 90m/295 feet in length
- 6-Port Faceplates are used for all locations w/ blanks for unused ports
- MDF/IDF data terminations use QuickPort Jack Insert Panels
- Supply (1) Patch Cord per port, verify lengths and colors before ordering.
- The panels are installed on floor mounted 19" equipment racks
- **Double-Sided** Vertical wire management 4"-6" is required on all racks
- **Single-Sided** Horizontal wire management is required above and below every patch panel and network switch.
- (1) PDU must be provided per every Rack
- A ten foot service loop is required on all voice and data cables *in the MDF/IDF*.
- House cables enter the MDF/IDF in conduit or 18" Ladder Rack
- Cables must be protected at all times via conduit, wiremold and/or cabletray.
- **Conduit must be metal** and bonded to the cable tray.
- "Free air" cables are permitted in accessible ceiling areas only and must be properly supported
- Basket Tray, J-Hooks and Conduit in acceptable areas
- Voice and Data Cables must have their own pathways; must not share pathways with other low-voltage cabling.
- Cable sequencing.
 - Cables must be sequentially numbered on the patch panel
 - Cables must be sequentially numbered on each face plate.
 - Cables within a room must be numbered sequentially.
 - Cable Labeling will be Room #, Data
- All cables Data Cables shall be tested with a Fluke DTX-1800 or approved tester. Test must be submitted in .FLW file prior to submitting to manufacturer for warranty

Fiber Cabling

- Fiber Cabling shall be terminated with SC Fusion Splice Pigtailed
- 4u Fiber Panels shall be used in MDF Locations
- 1u Fiber Panels shall be used in MDF Locations
- Fiber panels shall be installed with appropriate amount of SC Fiber adapter panels
- All fiber strands shall be tested with a Fluke DTX-1800 or approved tester. Test must be submitted in .FLW file prior to submitting to manufacturer for warranty.

Typical Configurations

Office: A *typical* office will have the following characteristics.

- Consideration must be given to potential furniture arrangements.
 - Clear filing cabinets and drawer openings
 - Avoid book cases, whiteboards and trip hazards.
- Comm. boxes should be near a “dedicated” electrical outlet.
 - Avoid coffee pots, space heater, copy machines on the same circuit as the end-user device.
- An office comm. box will contain (2) data cables. Data cables will be terminated to (2) RJ-45 Blue jacks.
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Secretary Desk: A typical Secretary Desk will have the following characteristics.

- Consideration must be given to potential furniture arrangements.
 - Clear filing cabinets and drawer openings
 - Avoid book cases, whiteboards and trip hazards.
- A Secretary Desk will have (2) locations each comm. box will contain (2) data cables. Data cables will be terminated to (2) RJ-45 Blue jacks. Comm. Boxes should be near a “dedicated” electrical outlet.

Classroom/Lab. A typical Classroom/Lab will have the following characteristics.

- At Instructors comm. box at the front of the classroom will contain (3) data. Data cables will be terminated to (3) RJ-45 Blue jacks.
- Other comm. boxes will support a maximum of 6 data cables.
- Configuration is dependent on room function.
- Labs are TBD based on design.

Wireless Locations. A typical Wireless Location will have the following characteristics.

- At Wireless Location, (2) data cables. Data cable will be terminated to (2) RJ-45 Yellow Jack.
- Provide properly supported outlet box.

Camera Locations. A typical Camera Location will have the following characteristics.

- At Camera Location, (1) data cable. Data cable will be terminated to (1) RJ-45 Blue Jack.
- Provide properly supported outlet box.

Dorm Room. A typical Dorm room will have the following

- A single gang box will be installed.
- Consideration must be given to potential furniture arrangements and doorways.
 - Avoid trip hazards.
- A dorm comm. box will contain (2) data. Data cable will be terminated to (2) RJ-45 Blue jack.

Exterior cables

- Exterior cables are to be pulled through conduit. Direct burial is not acceptable.
- Conduits should be protected with concrete where economically feasible.
- Critical path conduits must be protected with concrete
- Manholes are required every 300 feet.
- No Aerial cables are to be installed.

PARTS LIST

Leviton/Berk-Tek or approved equal

Item	Manufacturer	Part Number
19" rack	CPI	66353-703
Horizontal wire management	Leviton	4925C-BCM
Vertical wire management	CPI	30095-703
Ladder Rack	CPI	10250-718

CAT 6a

Item	Manufacturer	Part Number
Data Cable (Blue) Cat.6a	Berk-Tek	11140627
Data Jack (Blue)	Leviton	6AUJK-RL6
Cat.6a Riser Jack (White)	Leviton	6AUJK-RW6
WAP Jack (Yellow)	Leviton	6AUJK-RY6
6- Port Face Plate	Leviton	42080-6WS
48 Port Q/P Patch Panel	Leviton	49255-L48
24 Port Q/P Patch Panel	Leviton	49255-L24
Q/P In Ceiling Bracket for WAP	Leviton	49233-CBC
SS Wall Phone Plate	Leviton	4108W-1SP
Cat.6a Patch Cords (Closet End)	Leviton	H6A10-XX* (XX=L, *= Color)
Cat.6 Patch Cords (Station End)	Leviton	6AS10-XX* (XX=L, *= Color)

Fiber

Item	Manufacturer	Part Number
4u Fiber Panel	Leviton	5R1UH-S03
1u Fiber Panel	Leviton	5R4UH-S12
12-Fiber OM4 LC (aqua)	Leviton	SPLCH-12A
12 x OM4 Indoor Plenum Premises Distribution Cable	Leviton	PDPK012FB3010/F5-I/O-C4C5(AQU)
2M MM/OM4 Duplex LC to SC Patch Cord	Leviton	54DLC-M02

Exterior Cable

Item	Manufacturer	Description
Fiber Cable		MM-OM4/SM-OS2
Copper Feed		Category 3

Appendix 5
16715 Data Distribution

Miscellaneous

Item	Manufacturer	Description
Horizontal PDU	Leviton	5500-20N