

Scope of Work

Total Project Summary

Labor and materials will be provided to install the following:

- (47) blue plenum Cat 6 cables for data applications.
- (41) white plenum Cat 6 cables for voice applications.
- (2) racks, (2) ladder runway sections, and related equipment for (3) Telecommunications Rooms.

Telecommunications Rooms will be connected with the following backbone cables:

Server Room to 3rd Floor IDF

- 50 pairs of plenum Cat 3 cable.
- (1) 6 strand 50/125 OM2 plenum cable in 1" innerduct.

Server Room to Basement Demarc

- 25 pairs of plenum Cat 3 cable.
- (2) gray plenum Cat 5e 4 pair cables.

Installation Practices

Cable Pathways and Support

Wherever practical, all cables will be installed running square with building structure. Cable bundles will run down hallways or other accessible routes.

Cables will be supported at a maximum of 5 foot intervals using J-hooks, cable straps, conduit, trapeze, or cable tray depending upon the cable quantities and pathway conditions. *See materials list for proposal details.*

Cable support will be attached to the building structure using hanger wire or all thread dedicated for the purpose.

Labeling

Each cable will be labeled within 6" of each end with a self-adhesive, machine printed label. This label will correspond to the port labeling scheme at the workstation outlet.

Each workstation jack will be identified with a distinct identifier using a machine printed label. The preferred labeling scheme will identify where the cable terminates at the Telecommunications Room end. {ie. Room. ID - Rack ID - Patch Panel ID - Port Number} *Labeling method will be verified with the customer prior to installation.*

Floor plan locations will be marked with the corresponding jack numbers.

Cable Testing

All **Cat 3 multipair cables** will be tested for continuity and polarity. A soft copy of test results will be provided upon completion of the project.

All **Cat 5e four pair backbone cables** will be tested for Cat 5e compliance. A soft copy of test results will be provided upon completion of the project.

All **Cat 6 workstation cables** will be tested for Cat 6 compliance. A soft copy of test results will be provided upon completion of the project.

All **multimode fibers** will be measured for attenuation using an Optical Power Meter. Tests will be done at both 850nm and 1300nm wavelengths. A soft copy of test results will be provided upon completion of the project.

As Built Drawings

A hard and soft copy of floorplans with workstation locations and numbers labeled electronically will be provided upon completion of the project.

Scope Details

Horizontal Cabling

Workstation Cabling for data

Workstation ports for data will be supported by blue plenum Cat 6 cables.

Cables for data workstations will terminate on:

- - data - blue Cat 6 RJ-45 jacks
- - spare data - yellow Cat 6 RJ-45 jacks

and on flat 110 style patch panels in the telecommunications rooms.

Workstation Cabling for voice

Workstation ports for voice will be supported by white plenum Cat 6 cables.

Cables for voice workstations will terminate on:

- - voice - white Cat 6 RJ-45 jacks

and on flat 110 style patch panels in the telecommunications rooms.




Service Loops for Horizontal Cabling at Telecommunications Rooms


At the Telecommunications Rooms, 10 foot service loops will be coiled in the ceiling.

Service Loops for Horizontal Cabling at the Workstation

At workstations, 10 foot service loops will be coiled in the ceiling.

Workstation Outlet Count by Telecommunication Room

Description	white 4 port faceplate - (1) blue Cat 6 RJ-45 jack for data - (1) yellow Cat 6 RJ-45 jack for spare data - (1) white Cat 6 RJ-45 jack for voice - (1) white blank insert	white 2 port faceplate - (1) blue Cat 6 RJ-45 jack for data - (1) white Cat 6 RJ-45 jack for voice	wallphone faceplate - (1) white Cat 6 RJ-45 jack for voice
Location	Wall Outlet 	Wall Outlet 	Wall Outlet 
Server Room	3	5	0
3rd Floor IDF	3	5	1

Description	black 2 port surface mount box - (1) blue Cat 6 RJ-45 jack for data - (1) white Cat 6 RJ-45 jack for voice	not used	not used
Location0	Modular Furniture Outlet 		
Server Room	15	0	0
3rd Floor IDF	10	0	0

Backbone Cabling

Server Room to 3rd Floor IDF

Multipair Copper Backbone - (50) pairs of Cat 3 plenum cable will be installed between the Server Room and the 3rd Floor IDF.

The multipair cable will terminate with a wall mounted 110 block in the Server Room and with 1 pair per port on a patch panel mounted on a floor rack in the 3rd Floor IDF.

Fiber Backbone - A 6 strand 50/125 OM2 plenum fiber cable cable in 1 inch innerduct will be installed between the Server Room and the 3rd Floor IDF.

The fiber cable will terminate with SC simplex OM2 MM connectors in a fiber enclosure on a floor rack at both ends.

Server Room to Basement Demarc

Multipair Copper Backbone - (25) pairs of Cat 3 plenum cable will be installed between the Server Room and the Basement Demarc.

The multipair cable will terminate with wall mounted 110 blocks at both ends.

Four pair Copper Backbone - (2) gray plenum Cat 5e cables will be installed between the Server Room and the Basement Demarc.

The four pair cables will terminate with a red Cat 5e RJ-45 jacks in a patch panel in the Server Room and on a red Cat 5e RJ-45 jacks in a surface mount box in the Basement Demarc.

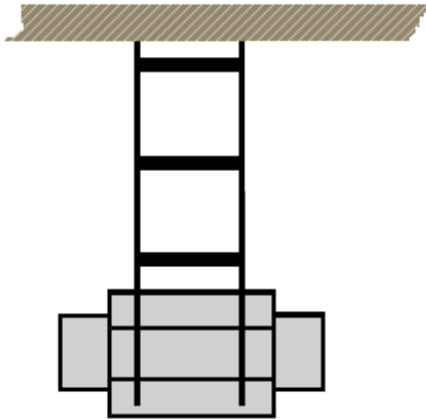
Configuration of the Server Room

The following support hardware will be installed in the Server Room:

- (1) black 19" x 7' equipment rack.
- (2) vertical cable managers installed on the ends of rack.
- (1) section of black 12" wide ladder runway.

The ladder runway will be installed on top of the floor standing rack.

The rack will be arranged as shown below.



The following wall mounted support hardware will be installed:

- (1) wall mount Cat 5e 100 pair 110 block with C-5s for multipair backbone to the
3rd Floor IDF.
Basement Demarc.
- (1) grounding bus bar.

The location of wall mounted support hardware will be determined based upon site conditions and discussion with the customer's representative.

All racks and ladder runway will be grounded to the grounding bus bar with #6 CU ground wire.

Termination Panels on Floor Rack

The following termination panels will be installed on a 19" x 7' equipment rack in the Server Room:

Rack 1 will have the following panels installed starting at the top.

- (1) 1RU horizontal cable manager
- (1) 24 port patch panel blank for 4 pair backbone to the

Basement Demarc with cables terminating on **(2)** red Cat 5e RJ-45 jacks

- **(1)** 3 panel 1RU rack mount fiber enclosure for fiber backbone to the 3rd Floor IDF. The enclosure will be loaded with **(1)** 6 strand SC OM2 MM fiber adapter panel and **(2)** blank panels
- **(1)** 1RU horizontal cable manager
- **(1)** 48 port Cat 6 patch panel for data cables
- **(1)** 2RU horizontal cable manager
- **(1)** 48 port Cat 6 patch panel for voice cables
- **(1)** 2RU horizontal cable manager

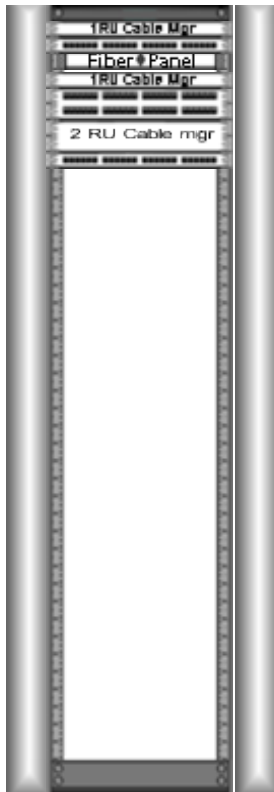
Open ports for termination of additional cables

There are **(22)** open ports for additional data cables.

There are **(25)** open ports for additional voice cables.

There are **(22)** open ports for additional 4 pair backbone cables to the Basement Demarc.

RACK ELEVATION - Server Room



RACK 1

Cable managers provided may look different than those shown. Refer to the bill of materials for managers that will be provided.

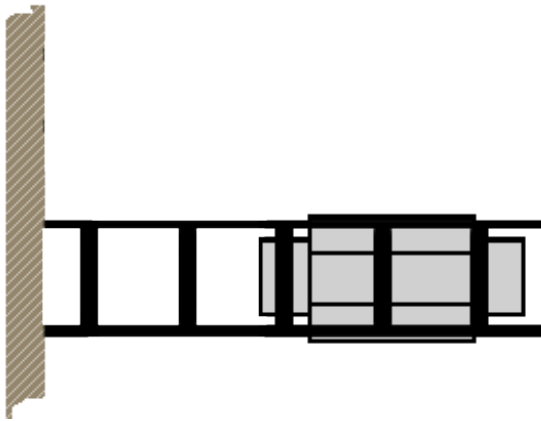
Configuration of the 3rd Floor IDF

The following support hardware will be installed in the 3rd Floor IDF:

- (1) black 19" x 7' equipment rack.
- (2) vertical cable managers installed on the ends of rack.
- (1) section of black 12" wide ladder runway.

The ladder runway will be installed on top of the floor standing rack.

The rack will be arranged as shown below.



The following wall mounted support hardware will be installed:

- (1) grounding bus bar.

The location of wall mounted support hardware will be determined based upon site conditions and discussion with the customer's representative.

All racks and ladder runway will be grounded to the grounding bus bar with #6 CU ground wire.

Termination Panels on Floor Rack

The following termination panels will be installed on a 19" x 7' equipment rack in the 3rd Floor IDF:

Rack 1 will have the following panels installed starting at the top.

- (1) 3 panel 1RU rack mount fiber enclosure for fiber backbone to the Server Room The enclosure will be loaded with (1) 6 strand SC OM2 MM fiber adapter panel and (2) blank panels
- (1) 1RU horizontal cable manager
- (1) 24 port Cat 6 patch panel for data cables

Starting at the middle of **Rack 1** the following panels will be installed.

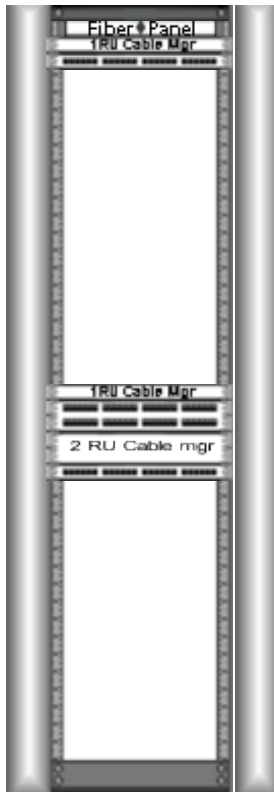
- **(1)** 1RU horizontal cable manager
- **(1)** 48 port Cat 5e patch panel for multipair backbone to the Server Room
- **(1)** 2RU horizontal cable manager
- **(1)** 24 port Cat 6 patch panel for voice cables

Open ports for termination of additional cables

There are **(3)** open ports for additional data cables.

There are **(6)** open ports for additional voice cables.

RACK ELEVATION - 3rd Floor IDF



RACK 1

Cable managers provided may look different than those shown. Refer to the bill of materials for managers that will be provided.

Hardware and Termination Equipment for the Basement Demarc

Exact room layout is not included in this scope.

The following wall mounted support hardware will be installed in the Basement Demarc:

- **(1)** ivory 2 port surface mount box for 4 pair backbone to the Server Room with cables terminating on **(2)** red Cat 5e RJ-45 jacks.

- **(1)** wall mount Cat 5e 100 pair 110 block with C-5s for multipair backbone to the Server Room.

The location of wall mounted support hardware will be determined based upon site conditions and discussion with the customer's representative.

Open ports for termination of additional cables

There are **(0)** open ports for additional 4 pair backbone cables to the Server Room.

Patch Cords and Fiber Jumpers

The following copper patch cords will be provided.

- **(41)** 7 ft gray Cat 6 patch cords
- **(24)** 3 ft blue Cat 6 patch cords
- **(17)** 5 ft blue Cat 6 patch cords
- **(24)** 3 ft white Cat 6 patch cords
- **(17)** 5 ft white Cat 6 patch cords

The following fiber jumpers will be provided.

- **(1)** 1 meter duplex SC-SC 50/125 OM2 fiber jumper
- **(1)** 2 meter duplex SC-SC 50/125 OM2 fiber jumper

Assumptions

Plywood backboards will be provided by others.

Poke throughs, core holes, and sleeves through brick or masonry will be provided by others. Sleeves required through gypsum board walls will be considered part of the cabling scope of work.

Firestopping of holes or sleeves used for communications cabling on this project will be considered part of the cabling scope of work.

Grounding and bonding not described in the scope of work will be done by others. It is recommended that connection of the grounding system to the building ground be done by an electrician.

Purpose	Description	Manufacturer	Part Number	Server Room QTY	3rd Floor IDF QTY	Basement Demarc QTY	Project Total
data station cables	blue plenum Cat 6 cable	CommScope/Uniprise	8773614/10	4833	3903	0	9000
voice station cables	white plenum Cat 6 cable	CommScope/Uniprise	8773714/10	4275	3346	0	8000
data jack	blue Cat 6 RJ-45 jack	CommScope/Uniprise	CC0020917/1	23	18	0	41
spare data jack	yellow Cat 6 RJ-45 jack	CommScope/Uniprise	CC0020842/1	3	3	0	6
voice jack	white Cat 6 RJ-45 jack	CommScope/Uniprise	CC0020883/1	23	18	0	41
wallphone faceplate	wall phone faceplate	CommScope/Uniprise	M10LW	0	1	0	1
2 port wall outlets	white 2 port faceplate	CommScope/Uniprise	108168469	5	5	0	10
4 port wall outlets	white 4 port faceplate	CommScope/Uniprise	760181727	3	3	0	6
blank inserts for wall outlets	white blank insert	CommScope/Uniprise	106837230	3	3	0	6
2 port modular furniture outlets	black 2 port surface mount box	CommScope/Uniprise	107984031	15	10	0	25
medium (up to 50 cables) supports for horizontal cable	medium support assemblies (up to 50 cables)	TBD	TBD	23	19	0	42
small (up to 16 cables) supports for horizontal cable	small support assemblies (up to 16 cables)	TBD	TBD	27	23	0	50
RJ-45 to RJ-45 copper TOTAL ONLY	7 ft gray Cat 6 patch cords	CommScope/Uniprise	UNC6-GY-7F	0	0	0	41
RJ-45 to RJ-45 copper TOTAL ONLY	3 ft blue Cat 6 patch cords	CommScope/Uniprise	UNC6-BL-3F	0	0	0	24
RJ-45 to RJ-45 copper TOTAL ONLY	5 ft blue Cat 6 patch cords	CommScope/Uniprise	UNC6-BL-5F	0	0	0	17

RJ-45 to RJ-45 copper TOTAL ONLY	3 ft white Cat 6 patch cords	CommScope/Uniprise	UNC6-WH-3F	0	0	0	24
RJ-45 to RJ-45 copper TOTAL ONLY	5 ft white Cat 6 patch cords	CommScope/Uniprise	UNC6-WH-5F	0	0	0	17

Purpose	Description	Manufacturer	Part Number	Server Room QTY	3rd Floor IDF QTY	Basement Demarc QTY	Project Total
1st Fiber Backbone	6 strand 50/125 OM2 plenum fiber cable	Corning	006T88-31131-29	0	77	0	77
1st Fiber Innerduct	1 inch plenum innerduct	Carlton	PLM100T	0	62	0	62
Connectors for fiber 1	SC simplex OM2 MM connector	CommScope/Uniprise	760117945	6	6	0	12
4 pair backbone cable	gray plenum Cat 5e cable	CommScope/Uniprise	4759214/10	0	0	384	384
25 pair backbone cable	25 pair plenum Cat 3 cable	General Cable	2131505.99	0	110	192	302
medium (up to 50 cables) supports for backbone cable	medium support assemblies (up to 50 cables)	TBD	TBD	0	15	25	40
fiber jumper TOTAL ONLY	1 meter duplex SC-SC 50/125 OM2 fiber jumper	Corning	575702B5120001M	0	0	0	1
fiber jumper TOTAL ONLY	2 meter duplex SC-SC 50/125 OM2 fiber jumper	Corning	575702B5120002M	0	0	0	1

Purpose	Description	Manufacturer	Part Number	Server Room QTY	3rd Floor IDF QTY	Basement Demarc QTY	Project Total
data termination panels	48 port Cat 6 patch panel	CommScope/Uniprise	760180059	1	0	0	1
data termination panels	24 port Cat 6 patch panel	CommScope/Uniprise	760180042	0	1	0	1
voice termination panels	48 port Cat 6 patch panel	CommScope/Uniprise	760180059	1	0	0	1
voice termination panels	24 port Cat 6 patch panel	CommScope/Uniprise	760180042	0	1	0	1
Termination enclosures for fiber 1 backbone	3 panel 1RU rack mount fiber enclosure	CommScope/Uniprise	760147439	1	1	0	2
Adapter panels for fiber 1	6 strand SC OM2 MM fiber adapter panel	CommScope/Uniprise	760147975	1	1	0	2
Blank panels for fiber 1	blank fiber adapter panel	CommScope/Uniprise	760147736	2	2	0	4
Termination panels for multipair backbone	wall mount Cat 5e 100 pair 110 block with C-5s	Systemax	110AA-100ft	1	0	1	2
Termination panels for multipair backbone	48 port Cat 5e patch panel	CommScope/Uniprise	CC0057547/1	0	1	0	1
4 pair backbone termination panels	24 port patch panel blank	CommScope/Uniprise	760101220	1	0	0	1
4 pair backbone termination panels	ivory 2 port surface mount box	CommScope/Uniprise	107984049	0	0	1	1
Modular jacks for 4 pair backbone	red Cat 5e RJ-45 jack	CommScope/Uniprise	CC0020594/1	2	0	2	4
2 post racks	19 inch x 7 foot black relay rack	Hoffman	EDR19FM45U	1	1	0	2
vertical cable managers at end of racks	vertical cable manager	Panduit	WMPVF45E	2	2	0	4
1RU horizontal cable managers on floor rack	1RU horizontal cable manager	Panduit	NCMHF1	2	3	0	5
2RU horizontal cable managers on floor rack	2RU horizontal cable manager	Panduit	NCMHF2	2	1	0	3
ladder runway	12 inch black ladder runway	Hoffman	LSS12BLK	1	1	0	2
wall angle bracket	12 inch black wall angle support bracket	Hoffman	LWASK12BLK	1	1	0	2

rack to runway connecting plate	12 inch black runway to rack mounting plate	Hoffman	LRRMPBLK	1	1	0	2
runway end cap	protective runway end caps	Hoffman	LEC	1	1	0	2
vertical runway wall bracket	vertical wall bracket	Hoffman	LVWB	2	2	0	4
telecommunications grounding bus bar	telecommunications grounding busbar	Cooper B-Line	SB-477	1	1	0	2
2 hole #6 ground lug	No.6 insulated ground lug	TBD	TBD	6	6	0	12
#6 insulated ground wire	No.6 insulated ground wire	TBD	TBD	18	18	0	36