

Oneida Network Standards

(Updated 6/27/2017)

Inside Structured Voice/Data Cabling

1.1 HORIZONTAL COPPER CABLING

General

Any solution submitted shall meet 75 Series Category 6. Approved solutions are, but not limited to, CommScope.

The Horizontal Cable System shall include the installation of four (4) pair, unshielded twisted pair (UTP) voice and data copper cables.

The maximum horizontal cable length shall not exceed 295 feet (90 meters). Any cable runs that may exceed this length shall be reported to the Oneida Nation MIS Department prior to the installation. It is anticipated that the cable lengths will not exceed the maximum length.

All cables will be installed splice free.

Do not exceed manufacturer or EIA/TIA pulling or bend radius specifications. Adhere to the most stringent specification.

Appropriate sized "J" Hooks shall be used to support cable every 3-5 feet.

Copper Station Cabling

Voice and Data Horizontal cables shall be constructed of individually twisted pairs with 24-AWG insulated solid copper conductors.

All cables shall be **Plenum** rated as necessary per building structure.

Cables shall be UL Listed and comply with Article 800 of the NEC.

Horizontal Voice Station Cable (Copper)

All Horizontal Voice Station cables shall terminate on 110 type wall mount termination blocks in their respective IDF and MDF.

All Horizontal Voice Station cable shall meet the most current draft of proposed Category 6 performance.

The jacket color for "Voice" cables will be pink

Horizontal Data Station Cable (Copper)

All Horizontal Data Station cables shall terminate on Modular Patch Panels within their respective IDF and MDF.

All Horizontal Data Station cables shall meet the most current draft of proposed 75 Series Category 6 cable performance

The jacket color for “Data” cables will follow the different networks color scheme:

Networks

- Oneida House Network
- Phone
- Micros (POS system)
- Slot Network (Redundant network)
 - Slot 1
 - Slot 2
- Coolsigns
- TV Switching System(Bar Area's)
- Wireless
- Progressive Slots
- Surveillance Video Network

Retail/Gas Stations Networks

- Tank Monitor
- Hughes (Credit Card)
- Distribution Box
- Retail POS
- Retail POS Office

Cabling Types and Colors

Oneida House Network

- Cat 6 Plenum
 - Cable color: Green
 - Jack color: Green

Phone Network

- Cat 6 Plenum
 - Cable color: Pink
 - Jack color: Red

Micros/Retail POS Network

- Cat 6 Plenum
 - Cabling color: Orange
 - Jack color: Orange

Slot Network

- Main Casino

- Slot 1 Cat 6 Plenum
 - Cable color: Blue
- Slot 2 Cat 6 Plenum
 - Cable color: Yellow

Progressive Slots Network

- Cat 6 Plenum
 - Cable color: White
 - Jack color: White

Surveillance Video Network

- Cat 6 Plenum
 - Cable color: Slate
 - Jack color: None

Coolsigns Monitors Network

- Low Skew
 - Cable color: Black
 - Jack color: Black

TV Switching System

- Cat6 Plenum
 - Cable color: White
 - Jack color: White

Yesco Slot System

- Cat6 Plenum
 - Cable color: Violet
 - Jack color: None

Wireless Network

- Cat6 Plenum
 - Cable color: Yellow
 - Jack color: None

Hughes Network

- Cat6 Plenum
 - Cable color: Black
 - Jack color: Black

Tank Monitor Network

- Cat6 Plenum
 - Cable color: Yellow
 - Jack color: Yellow

Distribution Network

- Cat6 Plenum
 - Cable color: Grey
 - Jack color: Grey

Retail POS Office Network

- Cat6 Plenum
 - Cable Color: Violet
 - Jack Color: Violet

Retail POS Network

- Cat6 Plenum
 - Cable Color: Blue
 - Jack Color: White

1.2 FIBER OPTIC BACKBONE (INDOOR)

The cable shall be suitable for installation in building riser systems, conduit, cable tray and innerduct.

Cable materials shall be all dielectric (no conductive material).

Cable shall carry an Optical Fiber Non-Conductive Plenum (OFNP) rating.

Outer Sheath:

Plenum

Fiber Type:

Single Mode

850-nm and nm-1300 transmission windows

Attenuation (Operating Temp: -60 to 85 degrees Celsius)

@850-nm 3.0 db/km

@1300-nm 1.0 db/km

No single-mode optical fiber shall show a point discontinuity greater than 0.2 db at the specified wavelength. Such results shall be cause for rejection of that fiber.

All fiber shall be installed splice free

Acceptable Manufacturers: Corning

1.3 FIBER OPTIC BACKBONE (OUTDOOR)

The cable and conduit to be buried 1(one) foot below frost line

Fiber shall be sleeved in a two-inch conduit for safety purposes

Contractor discretion can be used in decided to trench or bore

Man hole/street accessible fiber box to be located at first section closest to street where fiber is coming in from. Require minimum 6 foot service loop inside of box.

All damaged caused during installation shall be repaired at the contractor's expense. All repairs must match existing colors, styles, sizes, etc. of the site.

1.4 FLEXIBLE NON-METALLIC INNERDUCT

Flexible Non-Metallic Innerduct shall be used in the following circumstances:

- segment conduit(s)
- protect fiber optic backbone between IDF and MDF
- protect fiber optic cables within IDF and MDF

Pull Boxes with pull lines shall be installed on any run that may exceed 150'

Innerduct shall be corrugated

Any innerduct installed shall have an inside diameter no smaller than one inch

Innerduct shall be rated Flame-Retardant and Plenum

1.5 COPPER BACKBONE CABLING

Voice Backbone Cable shall be used to link the MDF with the IDF's. All cables shall be terminated on 110 style wall mounted blocks on either end.

Voice Backbone Cable shall incorporate 24 AWG solid copper conductors

If a cable with pair counts larger than 25 are specified, the cable conductors shall be segmented into 25 pair sub-units.

1.6 DATA PATCH PANELS

Horizontal Data Cabling shall be terminated in the IDF's and MDF onto specified patch panels. All patch panels will be mounted onto the specified rack system.

The Patch Panel shall meet the most current draft of proposed Category 6 specifications. The patch panel ports shall be non-keyed with a pin configuration of **568B**.

All networks should be patch to an individual patch panel to keep networks properly segregated. Patch panels should incorporate enough capacity to fulfill near future needs.

Manufacturer: CommScope (Uniprise)

1.7 FIBER OPTIC PATCH PANELS

All terminated fibers shall be mated to duplex LC couplings mounted in enclosed patch panels.

Rack mount fiber enclosures shall be constructed of steel. Front and rear covers shall be removable or hinged. Mount to specified rack system.

Rack mount enclosures shall have a "pull-out" drawer to allow for front access.

Fiber enclosures shall be sized to accommodate all terminated fibers and non- terminated fibers.

1.8 WIRE MANAGEMENT SYSTEMS

Rack System

Horizontal Wire Management

One Horizontal Wire Manager shall be installed above and below each 48 ports of copper patch panel space. The Horizontal Wire Managers shall be used to manage cables on the front and rear of the relay racks.

The wire managers shall meet the following requirements:

- Help maintain UTP and Fiber Optic bend radii
- Be equipped with removable covers
- Front cover must be hinged
- Be made of a single piece of plastic
- Front side of management must extend to meet with vertical management panels

Manufacturer: CommScope (Uniprise)

1.9 INFORMATION OUTLET LOCATIONS

Station cables shall be terminated to their respective connector. Individual connectors shall be installed into a flush faceplate as specified in the drawings.

Orientation of jacks and connectors shall be uniform throughout the project.

Face plates shall incorporate a recessed designation strip on the top and bottom. All designation strips shall be fitted with a clear plastic cover.

Face plates shall be manufactured of high impact plastic and ivory in color (unless otherwise specified). Any unused ports in a faceplate will be fitted with a blank insert.

Manufacturer: CommScope (Uniprise)

1.10 VOICE JACKS

Voice jacks shall be non-keyed 8-pin modular, pinned 568B

Voice jacks shall meet or exceed Category 6 requirements

Voice jacks shall be Red in color

Manufacturer: CommScope (Uniprise)

1.11 DATA JACKS

Data jacks shall be non-keyed 8-pin modular, pinned 568B

Data jacks shall be colored according to Cabling Type and Colors show in the above section.

Manufacturer: CommScope (Uniprise)

1.12 FIBER OPTIC CONNECTOR

The Optical Fiber connector shall be LC type.

Fiber connectors must utilize an "adhesive/epoxy" style termination

The connector ferrule shall be ceramic. The optical fiber within the connector ferrule shall be secured with an adhesive.

All terminated fibers shall be fitted with a dust cap.

The attenuation per mated pair shall not exceed 0.50db.

Manufacturer: Corning or equal

1.13 110 PUNCHDOWN BLOCKS

At the IDF's and/or MDF, each "backbone" cable and/or 4 pair UTP voice station cable shall be terminated to a 110 Punch down Block.

Punch down Blocks shall meet current TIA/EIA Enhanced Category 6e performance specifications

Punch down Blocks shall be equipped with label strips and labeled according to TIA/EIA 606 standards.

Punch down Blocks shall be provided with the necessary 4-pair or 5-pair connector blocks. Upon completion of cable termination, any remaining connector blocks shall remain with the Punch down Blocks for future use.

Horizontal Jumper Troughs shall be placed at the top and between each column for the Punch down Blocks.

1.14 Quality Assurance

A. Manufacturer Qualifications: At least 3 years of experience manufacturing products of the type specified.

B. Installer Qualifications: A company having at least 3 years of experience in the installation and testing of the type of system specified, and:

1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
2. Supervisors and installers factory certified by manufacturers of products to be installed.
3. Employing BICSI Registered Cabling Installation Technicians (RCIT).

1.15 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Storage and handling requirements and recommendations.
2. Installation methods.

B. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).

EXECUTION

1.1 EXAMINATION

- A. Examine all pre -installed raceway for proper bushings, sharp edges, proper bends, and swabbed interior.
- B. Examine communication closets for backboard installation and painted with fire retardant paint
- C. Any unacceptable site conditions shall be brought to the attention of the Oneida Nation MIS Department immediately. Resolutions to these conditions will be provided in writing.
- D. Verify with owner the type of phone system and network equipment.

- E. Contractor shall verify all drawing dimensions by examining site conditions. The contractor will be responsible for accuracy.

1.2 PREPARATION

- A. Identify lengths of backbone and horizontal cabling prior to pull. Pull all cable and/or fiber through conduit in one bundle.
- B. Discuss routing and final termination with owner prior to pulls.

1.3 INSTALLATION

The contractor shall be responsible to survey the site and include any and all costs affiliated with the installation as specified on drawings and specifications.

Once the contractor has started the installation in means existing conditions have been accepted.

Site damage to floors, walls, tiles, etc. shall be reported prior to work commencing in the given area to the Oneida Nation MIS Department. All damaged caused during installation shall be repaired at the contractor's expense. All repairs must match existing colors, styles, sizes, etc. of the site.

- A. Assemble racking along with all associated components and bolt to floor.
- B. Racks shall be grounded to the Ground Bar (GB) using #6AWG insulated stranded copper conductor per EIA/TIA 607.
- C. Mount Data and Fiber Optic Patch Panels on rack systems.
- D. Mount Voice 110 blocks onto backboards in IDF's and MDF
- E. Install cables per Category 6e standards as referenced in EIA/TIA and as required by the Manufacturer.
Note; Installation of cabling must meet Anixter XP Levels 7 Standards
- F. A Level 3 Tester to be used with the correct module based on the proposed solution and results turned over to the owner
- G. To eliminate/reduce EMI, maintain the following separation distances from power sources:
 - a. Twelve (12) inches from power lines <5kva.
 - b. Eighteen (18) inches from high voltage lighting (includes fluorescent)
 - c. Thirty-nine (39) inches from power lines >5kva
 - d. Forty-eight (48) inches from transformers, motors, generators, frequency converters, x-ray equipment, and uninterruptible power systems
 - e. Six (6) inches from flues, hot water pipes, and steam pipes
 - f. Twelve (12) inches from power conduits and cables and panel boards
- H. Install cable management hardware per EIA/TIA standards to manage bundles and individual runs
- I. All UTP cable runs shall not have a bend radius less than 4 times the cable diameter
- J. Pulling tension on Horizontal cable shall not exceed 25 lbs.
- K. Horizontal cable runs shall not exceed 295 feet (90 meters)
- L. All cable runs in walls shall be in conduit (provided by electrical contractor)
- M. All cables or cable bundles passing through fire walls shall be sleeved and fire stopped to meet the rating of the wall.
- N. Conduits will be installed with no more than 2 (two) 90-degree bends in a single horizontal cable run
- O. Leave pull cables where cables are not initially installed
- P. Conceal conduit under floor slabs and within finished walls, ceilings, and floors except where specifically indicated to be exposed.
 - a. Conduit may remain exposed to view in mechanical rooms, electrical rooms, and telecommunications rooms.
 - b. Treat conduit in crawl spaces and under floor slabs as if exposed to view.

- c. Where exposed to view, install parallel with or at right angles to ceilings, walls, and structural members.
- d. Under floor slabs, locate conduit at 12 inches (300 mm), minimum, below vapor retarder; seal penetrations of vapor retarder around conduit.
- Q. All fiber optic cable runs shall have a 3-meter loop at the IDF's
- R. All fiber optic cable runs shall have a 3-meter loop at the MDF
- S. All fiber optic cable runs shall have a 1-meter loop in each fiber tray
- T. All Horizontal cable runs shall have a 1-meter loop at the last support in the ceiling
- U. All terminations shall be done to EIA/TIA standards
- V. All terminations shall be accomplished using the proper tools
- W. Cables shall not be spliced
- X. Pairs shall not be split
- Y. No cables shall be placed on ceiling tiles
- Z. Wall outlets shall be installed with the appropriate voice and data jacks, and face plates
- AA. All cable runs shall be appropriately bundled with hook/loop Velcro style cable ties
- BB. Coordinate all work with the electrical contractor and other necessary contractors

1.4 LABELING

- A. All cables shall be labeled six inches from the station and IDF ends
- B. All cables, jacks, patch panels and 110 blocks shall be identified with a unique number. The number shall coincide with the numbers on the project plan derived by the Oneida Nation MIS Department
- C. All fiber coupling panels shall be labeled
- D. All innerduct shall be identified as in open areas at 35' intervals. Label shall identify the closet the fiber originates and the closet it feeds.
- E. All face plates/jacks shall be labeled.
- F. Contractor shall work with the Oneida Nation MIS Department to determine final labeling scheme to be used. Labeling samples provided prior to installation.
- G. Labels shall be produced from a software package or label maker (i.e. Panduit Pan-Mark)

1.5 TESTING

- A. All cables shall be tested, with the results being furnished to the Oneida Nation MIS Department immediately upon completion and prior to the final payment to the Contractor.
- B. All horizontal copper cables shall be tested with Level 2e/3 tester with correct module for the solution installed, including but not limited to NEXT, mapping and length.
- C. All voice backbone cables shall be toned end-to-end for continuity and mapping
- D. All fiber optic cables shall be tested using an Optical Time Domain Reflectometer (OTDR). Mode fibers shall be tested at 850-nm. OTDR traces revealing a point discontinuity greater than 0.2db shall be a basis for rejection of that fiber.

1.6 DOCUMENTATION

Upon completion of the installation, the contractor shall provide two sets of documentation to the Oneida Nation MIS Department.

Documentation shall be submitted within 10 working days after the completion of the cabling project.

The documentation package shall include test results of all cables and fiber installed. As-builds, which include outlet location and ID, all backbone routes, wiring closets, and any other pertinent information.

The Oneida Nation MIS Department may request that a random field re-test be conducted up to 10% of the cabling system at no charge. If re-test findings are significantly different than the test results provided in the original test documentation, a re-test of the entire system may be required at no additional cost.

Documentation can be provided in hard copy or disk format. Verify with owner on acceptable software format prior to submittal of documentation.

1.7 WARRANTY

In addition to the Manufacturer's Warranty, the contractor shall guarantee all materials, equipment, and labor for a time period of two years from the date of "substantial completion." The guarantee shall include, but is not limited to travel, lodging, and material expense.

1.8 Oneida Casino Facilities On Site Procedures:

1. Vendor must fill out Vendor Employee Data Form 10 days prior to completing services at Gaming facilities.
2. Vendor must provide advanced notification ie: daily, weekly, monthly, semi-annual or annual service schedule.
3. Vendor must check and sign in with Security booth (Receptionist at Employee Services and Warehouse) each day before completing any services at each facility.
4. Vendor must utilize Security escort in designated Sensitive areas.
5. Vendor must utilize Security to confront customers. Clearly explain to Security what is needed.
6. Vendor must wear uniforms that clearly identify them as employees of the supplier.
7. Vendor must wear identification badge at all time and in clear view.
8. Vendor must check and sign out with Security booth (Receptionist at Employee Services and Warehouse) when daily services are complete at each facility.
9. Vendor must park in designated employee parking area or designated construction parking area.
10. Vendor must not smoke in public areas while "on the clock" including breaks.
11. Vendor must not Gamble while "on the clock" including breaks.
12. Vendor must not Gamble after hours with uniform or badge on.
13. Please notify Tim Skenandore at 920 819 1823 with any questions or concerns.

Labeling of Network devices

(patch panels, network jacks, etc.)

Network types	Aberration
Oneida	O
Coolsigns	TV
Bally 1	B1
Bally 2	B2
Phone	PH
POS	PS
Surveillance Video	SV

Closets

Main

DCU
Food(Food Court)
Cage
SBar(Sports Bar)

Mason

MezM (Mezzanine Main)
MainE (Main Entrance)
DVR (Surveillance)

Imac

DCU
Annex
Bulb
DVR (Surveillance)

Packerland

Main
DVR (Surveillance)

Highway 54

Main
DVR (Surveillance)

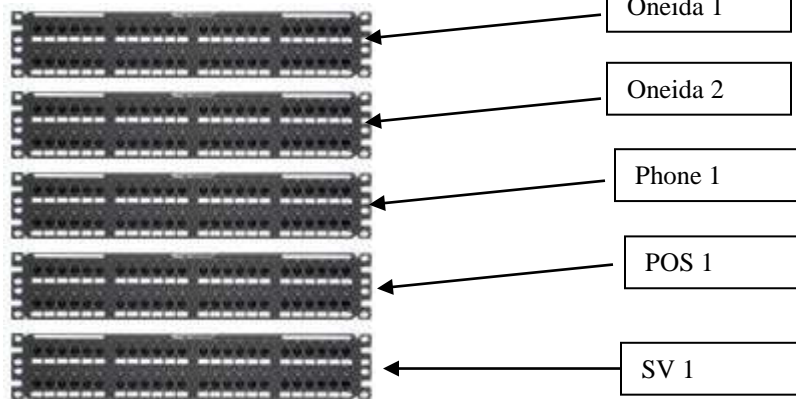
OTC

Main
Bally
DVR (Surveillance)

1. Labeling of Patch panels should adhere as follows:

Network Name Patch Panel #

Ex



2. Labeling of network jacks and cabling should adhere as follows:

Location of Closet: Network type: Patch Panel # - Patch Number ex. DCUO1-1

