During the engineering phase of a new court facility, the NYS-UCS-DoT<sup>3</sup> must be contacted for approval for the accepted standards used for:

- a. All communication cabling (fiber optics, copper, analog, audio/video, and coaxial).
- b. All infrastructure used for communication cabling (network cabinets and racks, copper/fiber patch panels, horizontal/vertical wire managers, ladder racks, wire trays, etc) that will reside inside network cabinet, racks, or enclosures
- c. Any other communications equipment planned for the MDF<sup>1</sup> and IDF<sup>2</sup> rooms.

The manufacturer, product types, and specifications of equipment to be installed shall be submitted to and approved by the NYS-UCS-DoT<sup>3</sup>. This approval must be obtained in email before any equipment is purchased and installed.

<sup>4</sup> Category 6A

<sup>&</sup>lt;sup>1</sup> Main Distribution Frame

<sup>&</sup>lt;sup>2</sup> Intermediate Distribution Frame

<sup>&</sup>lt;sup>3</sup> New York State Unified Court System, Division of Technology

#### 1. Data Cabling Specifications:

Regardless of the type of existing data cabling, all new add-on network drop(s) must be CERTIFIED for Category 6A, as per TIA/EIA-568-C.2 specifications for data cabling. Angled CAT6A<sup>4</sup> patch panels will be added to existing IDF/MDF rooms as needed. Please contact NYS-UCS-DoT<sup>3</sup> to review the updated proposed data cabling and manufacturer to be used prior to installation.

- a. Data wiring must comply with the Cat6A<sup>4</sup> specification (TIA/EIA-568-C.2) end-to-end, support up to 10 Gigabit Ethernet, and certified to operate at 500Mhz. The components of data wiring include UTP cables, connectors, faceplate/wall mount box, and copper patch panels. The wiring standard for all Cat6A<sup>4</sup> terminations is the industry accepted specifications for T568B.
- b. Data cabling will originate from a patch panel in the IDF room to a Cat6A<sup>4</sup> outlet office, cubicle, or designated location on each floor. Each work area outlet will have a dual (2) Cat6A<sup>4</sup> RJ45 data outlets unless otherwise specified.
- c. Data cable used for installation will be white and must be plenum rated. The cable run from the patch panel to each Cat6A<sup>4</sup> data outlet should not exceed 295 feet.
- d. Every Cat6A<sup>4</sup> data cable must be tested and certified with an industry standard cable certification tester such as the Fluke DSX Versiv (or equivalent) using the latest TIA/EIA specifications & standards. Cable certification results will be provided by the installer to NYS-UCS-DoT<sup>3</sup> personnel via electronic format after the completion of the cabling installation. CAT6A certification results will be reviewed and approved by NYS-UCS-DoT<sup>3</sup> personnel BEFORE any invoices will be accepted for payment.
- e. NYS-UCS-DoT has standardized on Legrand's CAT6A HDJ modular lacing termination solution for all new infrastructure cable installation. More information about the product can be found in the links below. NYS-UCS-DoT can supply a list of the commonly used HDJ part numbers upon request.

https://www.legrand.us/ortronics/high-density-copper

f. NYS-UCS-DoT has also standardized on the following Legrand approved cable manufacturers and part numbers for all new structured wiring installations.

Superior Essex - 10Gain Cat6A cable in white (part #6B-246-4B)

General Cable - GenSpeed 10 Gen5 UTP Cat6A (part # 7151819)

g. Any part number other than what's listed in sections e & f MUST be approved by NYS-UCS-DoT in writing prior to installation.

#### 2. Standard Analog Cabling Specifications:

All voice wiring will use CAT6A<sup>4</sup> 4-pair UTP (unshielded twisted-pair), the same used for data cabling. All RJ11 outlets (wall plate or floor jacks), patch panels, and 110 block products must use current EIA/TIA sequence for termination, and associated face plates, etc. to meet CAT6A<sup>4</sup> specification.

- Only designated fax / emergency backup phone locations will have one (1) RJ11 voice outlet. The voice outlet runs will consist of one (1) sheath of 4-pair, Category 6A, UTP copper cables as specified above
- b. All RJ11 voice outlets to be cabled with individual 4-pair cable with unbroken return to punch down on CAT6A<sup>4</sup>- 110 blocks in the telecommunication closet or cabinet. Open cable (cross connect wire) will only be allowed on an MDF or IDF.
- c. All wiring and cabling shall be installed in a neat and professional manner and shall be compliant with the National Electrical Code, State and all Local electrical, building, and fire codes. The routing of cables and labeled DMARK's shall be identified to the purchaser by providing two copies of a complete system wiring diagram, and cable records.
- d. All cable installations must include line and station connector blocks, jacks, gas tube protectors where necessary, and demarcation plugs. All cabling should be mounted on fire rated plywood backboards. In a single floor, single building installation, station cable will be run from the backboard to the modular wall or floor jack which serves the station. When pricing station cable, all termination blocks, modular wall or floor jacks, housing and face plates are all considered part of the station cable.

#### 3. General Power Requirements

**IDF room** - 3 dedicated 120-volt, 20-amp circuits (dual NEMA 5-20R receptacles) should be installed per equipment rack. The three dedicated circuits shall be installed directly behind the rack, approximately 18" off the floor.



## x 3 (per equipment rack)

**MDF room** – The following outelts should be installed per equipment rack:

- 1) 2 dedicated L5-30 30-amp circuit (NEMA L5-30R receptacle)
- 2) 3 dedicated 120-volt, 20-amp circuits (dual NEMA 5-20R receptacles)

The dedicated circuits above should be installed directly behind each rack in the MDF room, approximately 18" off the floor.



- a. Power shall be supplied from an emergency power panel connected to a backup generator to provide electricity to network center (where available).
  "Uninterruptible power supplies" (UPS) will be installed and maintained in the IDF and MDF rooms by NYS-UCS-DoT<sup>3</sup> personnel.
- b. The MDF UPS system must maintain battery backup runtime of all MDF equipment for two continuous hours at any location that does not have an emergency generator.
- c. All IDF UPS units must provide battery backup runtime of IDF equipment for a minimum of 30 minutes.

### b. General Fiber Optic Specifications

- a. Unless instructed otherwise in writing, LC-APC connectors shall be used in all fiber optic panels.
- b. At least 48-strand single mode fiber is required for connection between courthouses in a campus environment. SM Fiber must be Corning SMF-28E Fiber. The OSP (outside plant) cables can be pulled into the building within 50 feet distance unless indoor/outdoor fiber cables are used.
- c. All ISP<sup>4</sup> fiber optic cabling must be fire, smoke, and halogen free rated.
- d. All OSP<sup>5</sup> cables must be weather resistant and must support speeds of up to 100 Gigabit Ethernet standards.
- e. All Single Mode fiber optic connections shall be performed via fusion splicing or by factory made end to end cable. Mechanical connectors (such as Corning UniCam or similar connectors) shall be installed as per manufacturer's specifications and be tested. Connectors exceeding the manufacturer's installation specifications shall be re-terminated until within manufacturer's specifications. Any connector not within the connector manufacturer's specifications shall not be accepted.
- f. Every fiber optics cable must be tested and certified with an industry standard cable certification tester using the latest TIA/EIA specifications & standards. Cable certification results and OTDR traces will be provided by the installer to NYS-UCS-DoT<sup>3</sup> personnel via electronic format after the completion of the cabling installation. Fiber optics certification results will be reviewed and approved by NYS-UCS-DoT<sup>3</sup> personnel BEFORE any invoices will be accepted for payment.
- g. Please contact NYS-UCS-DoT<sup>3</sup> for a detailed updated fiber optics specification prior to installation.

<sup>&</sup>lt;sup>4</sup> Inside Plant

<sup>&</sup>lt;sup>5</sup> Outside Plant

#### c. General Specifications for MDF and IDF Rooms

- a. When a modular networking frame is used the installer will secure it to the floor as per manufacturer's specifications. All racks and cabinets shall be properly secured and grounded according to equipment manufacturer's specifications, all local fire codes, all local electrical codes and current TIA/EIA industry standards. The main grounding cable attached to the main grounding buss bar should run directly to the ground bus of the servicing power panel.
- b. All wiring and cabling shall be installed in a neat professional manner and comply the National Electrical Code, State and local electrical building and fire codes. If cable trays are not used, supports should be anchored every 4-6 feet via threaded rods or beam clamps. Penetration through fire walls must include the appropriate site sleeve and be fire stopped. Low voltage cables shall not be tie-wrapped or secured to other electrical mediums or conduit pipes. When wraps are needed, Velcro will be permitted.
- c. MDF/IDF rooms shall not be located underneath any water supply or sewage lines. Fire suppression inside the MDF/IDF room shall be a type of non-liquid fire suppression such as halogen. Water sprinklers shall be avoided whenever possible in the MDF room.

#### d. MDF room Specifications

- a. All courthouses are to be supplied with two diverse telecommunications points of entry and consist of a minimum of four (4) 4"-inch conduits providing access from the interior of the building to the curb-line, thus providing outside plant access to the building. These points of entry will be connected to the main data center (MDF) via four (4) 4"-inch EMT conduits to each point of entry dedicated for telecommunications cabling use.
- b. MDF rooms shall be air conditioned and have humidity control as per standards set by ASHRAE. AC units shall be properly mounted and secured; it should NOT be mounted in the ceiling of the MDF room.
- c. MDF rooms shall have at least three (3) dedicated 4-post racks/cabinets for exclusive NYS-UCS-DoT<sup>3</sup> use. Depending on building size and needs of the court this can increase and the number of racks should be verified with DoT.
- d. MDF rooms shall have wire trays installed above racks to manage cables entering and leaving the room. Velcro wraps shall be the only acceptable means to secure cabling. Fiber optic cable shall be separate from the copper cabling within the wire tray.

#### e. IDF room Specifications

- a. Fiber riser configuration will be a collapsed backbone home run from the MDF to the IDF. The riser shall be composite or separate cable with 12 strand Single Mode Fiber (SM Fiber must be Corning SMF-28E Fiber) and 24 strand OM4 Multimode Fiber (MM Fiber must be 50/125 um Corning Infinicor eSX+ Fiber). ISP fiber shall be armored. The number of strands (12 for Single mode and 24 for Multimode) shall be for the exclusive use of the Unified Court System. Any additional fibers required by other entities will be added to these counts. The construction cost will include all parts and labor to make the fiber operational. UCS reserves the right to select the type and manufacturer of the fiber optic cable to be installed. The type of fiber/cable should be submitted to the Division of Technology for review and authorization prior to installation.
- b. IDF rooms shall be air conditioned and have humidity control as per standards set by ASHRAE. AC units shall be properly mounted and secured; it should NOT be mounted in the ceiling of the IDF room. If AC units are not available, louver doors shall be installed for adequate passive cooling & ventilation.
- c. IDF rooms shall have a minimum of (2) dedicated 4-post racks for exclusive UCS use. Each rack should have 3 dedicated 120-volt, 20-amp circuits (NEMA 5-20R receptacles), with two outlets per dedicated circuit.
- d. IDF rooms shall have wire trays installed above racks to manage cables entering and leaving the room. Velcro wraps shall be the only acceptable means to fasten communication cables. Fiber optic cable should be separated from copper cabling within the wire trays.

#### f. General IP Camera Specifications:

# All surveillance cameras to be specified by Department of Public Safety and the Division of Technology.

- a. All locations for IP camera deployment shall be determined by the Department of Public Safety.
- b. Contractors shall focus and point any IP cameras that have these requirements as per the Department of Public Safety and the local court representative.
- c. Locations that have power over Ethernet (POE) switches shall use the CAT6A cable as the power source as well as the data conduit.
- d. All IP cameras shall have a dual network drop run to them. Two (2) CAT6A cables.
- e. All IP cameras shall be installed with appropriate fasteners and anchors to secure and hold a minimum of 125% of the camera and enclosure weight.

#### g. General Wireless Access Point Specifications:

- a. Wi-Fi access should be given consideration in public areas, Jury rooms, court rooms, conference rooms and chambers.
- b. All access Point cabling should be run using CAT6A.
- c. When celling mounted OCA will require 25ft of slack so the Access Point can be relocated if need.
- d. The location of the Wi-Fi Access Point shall be clearly labeled on the patch panel side with the location of the drop where access point is installed.

#### h. Standard cabling requirements for Court Room Technology

The following locations shall have RJ45 jacks installed in each new or renovated court room:

- 1. Judges Bench dual data drop
- 2. Court Clerks Desk dual data drop
- 3. Wi-Fi access point single data drop

These cables will be wired back to the network closet, typically on the same floor, which serves that courtroom.

The preceding list is the minimum requirement and any additional cabling needs shall be determined by the audio-visual system design of each courtroom. Courtrooms will be configured with one or more of the following technologies:

- Sound reinforcement
- Assistive Listening
- Videoconferencing
- **Evidence Presentation**

Typical cable types used for courtroom technology installations are:

- 1. Category 6A with male and/or female terminations
- 2. RG 58 Coaxial with BNC male terminations
- 3. RG 59 mini coaxial cable with BNC male terminations
- 4. 1 PR 22AWG Shielded cable without termination

#### Notes:

1. When installation has been completed, a report of test results for all terminated cables must be provided to NYS-UCS-DoT.

2. Open and Continuity Circuit tests must be performed on all 1 pair shielded cable, since these cables will be delivered to OCA's DoT without terminations.

3. Since courtroom technology can vary based on the court type, OCA's DoT will furnish the installer with additional information detailing cabling requirements for each installation.

4. Wi-Fi access point will be provided by OCA's DoT

5. Audio-visual system installation <u>may</u> require the installation of, preferred, Connectrac on-floor or incarpet wireways. Therefore, installer <u>must</u> have prior experience installing this type of wireway.

6. Audio-visual system installation <u>may</u> require the installation of wall, cart or pole mounted display panels, ranging in sizes from 22 to 90 inches.

7. Audio-visual system installation <u>may</u> require the installation of wall mounted cameras and other components.

#### **Network Construction Requirements > Quality of Assurance:**

All work and equipment shall conform to the appropriate portions of the following specifications, codes and regulations:

A. Building Industry Consulting Services International (BICSI) - Telecommunications Distribution Methods Manual (TDMM)

- B. All Current IEEE Standards
- C. All Current ANSI/TIA/EIA Standards <sup>i</sup>
  - a. ANSI/TIA/EIA 568-D.0-- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements.
  - b. ANSI/TIA/EIA -568-D.1 -- Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
  - c. ANSI/TIA/EIA 568-B.3 -- Optical Fiber Cabling Components Standard
  - d. ANSI/TIA/EIA 569A -- Commercial Building Standard for Telecommunications Pathways and Spaces
  - e. ANSI/TIA/EIA 606 (A) -- The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
  - f. ANSI/TIA/EIA 607 (C) -- Commercial Building Grounding and Bonding Requirements for Telecommunications
  - g. ANSI/TIA/EIA 526-7 -- Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant.
  - h. ANSI/TIA/EIA 526-14A -- Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant.
  - i. ANSI/TIA/EIA 758(A) -- Customer-Owned Outside Plant Telecommunications Cabling Standard.
- D. National Electric Safety Code (NESC)
- E. National Fire Protection Agency (NFPA)
- F. National Electrical Code (NEC)
- G. Any Applicable State and Local Codes

If conflict exists between applicable documents, then the more stringent requirement shall apply. All conflict resolution must be approved by the NYS - UCS prior to installation.

It is the vendor's responsibility to verify what the current IEEE, ANSI/TIA/EIA version is. The Vendor must submit all relevant industry standard version numbers to the Unified Court System, Division of Technology.

#### Acceptance Testing

Contracted entity (Private, City, State, or County) will be responsible to hire an independent third party to test all cabling (CAT6A, fiber optics, analog, audio/video, etc...) and relevant equipment installed. The independent third-party contractor shall be responsible to work with the existing contractor to remedy any problems or failures noted in the third-party testing. NYS-UCS-DoT<sup>6</sup> will be briefed on a regular basis during the acceptance phase.

<sup>&</sup>lt;sup>i</sup> Current industry standards are defined as the industry standard version at the time of bid. It is the vendor's responsibility to verify what the current IEEE, ANSI/TIA/EIA are. The Vendor must submit the industry standard version numbers to the New York State Unified Court System Division of Technology. 212-428-2900