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Ivy Tech State College New Academic Building

Matrix Integration recently furnished and installed Network Infrastructure Products & Telecommunications Cabling at the Ivy Tech State College New Academic Building, located in Bloomington, IN.

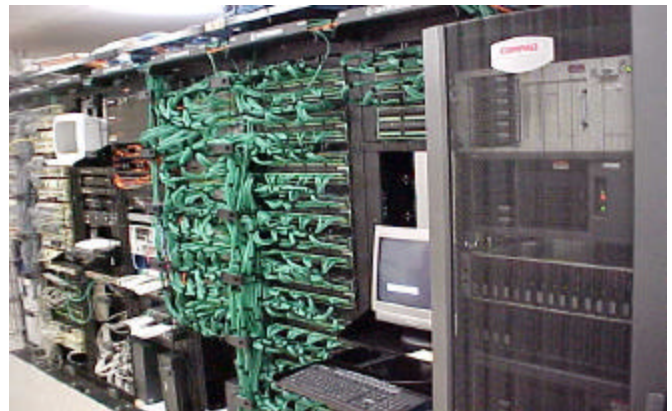


Ivy Tech State College contacted Matrix Integration in late 1999 to discuss the college's upcoming New Academic Building project. After several months of discussion and planning, Matrix Integration was contracted to provide Consulting and Design Services for the technology portion of the construction project. Matrix Integration provided information on current and emerging technologies as they related to Voice, Video, and Data communications in the Local Area Network (LAN). As a result of this partnership, ITSC and its Architect (The Odle, McGuire & Shook Corporation, Indianapolis, IN) and Construction Manager (The Skillman Corporation, Indianapolis, IN) were able to develop a bid specification based upon emerging standards, such as Category 6 Gigabit Ethernet and VoIP infrastructure. This planning was critical, as the design process which began in 1999 was only realized this fall, almost three years later, with the occupation of the New Academic Building.

The products and execution requirements for furnishing and installing the Network Infrastructure/Telecommunications Cabling at the College's New Academic Building are below. Backbone and Horizontal cabling comprised of Copper, Coaxial, and Optical Fiber Cabling and support systems were an integral part of the installed solution including, but not limited to:

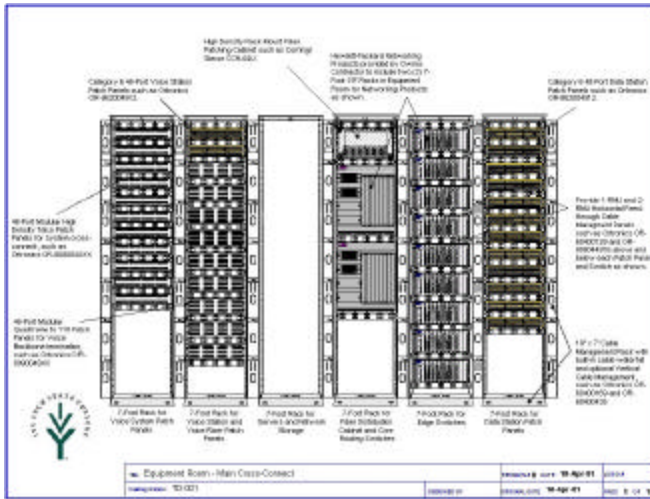
The products and execution requirements for furnishing and installing the Network Infrastructure/Telecommunications Cabling at the College's New Academic Building are below. Backbone and Horizontal cabling comprised of Copper, Coaxial, and Optical Fiber Cabling and support systems were an integral part of the installed solution including, but not limited to:

- Copper UTP Voice and Data Station Cabling
- RG-6 Coaxial Station Cabling
- Multimode Optical Fiber Data Backbone
- Multi-pair Copper UTP Voice Backbone
- Multimedia Outlet Cabling for Ceiling Mounted Projectors



Ivy Tech State College New Academic Building

- Work Area Outlet Components, including Single and Double Gang Faceplates; Power Pole and Floor Box Receptacles; Modular Inserts for Voice, Video, and Data; Labels and Identification Icons
- Cross Connect Hardware, including Racks; Patch Panels; Wire Management Devices; Rack-Mount Power Strips/ Surge Suppressors
- Patch Cables, Equipment Cables, and Cross Connect Cables of type and quantities indicated.

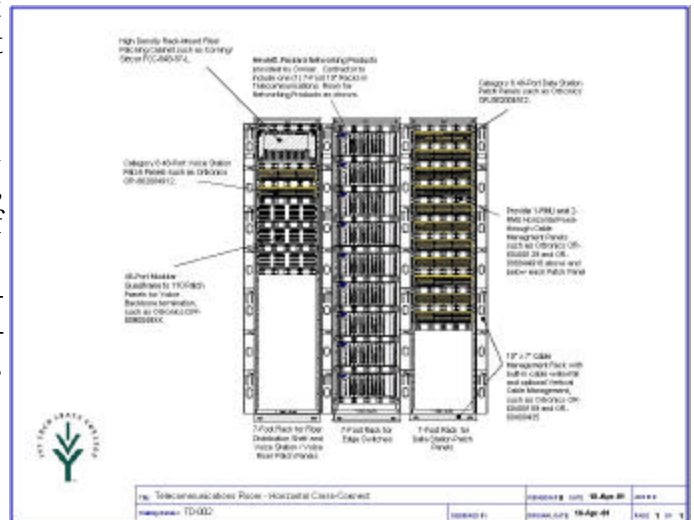


The Network Cabling Infrastructure bid requirements deviated from traditional installations in a number of very significant ways. The voice and data cabling infrastructure was specified in the bid documentation as needing to meet EIA/TIA Category 6 standards, and both the voice and data cabling was to be terminated on rack-mount modular patch panels, as opposed to wall-mount 110-Type blocks, as is typical of voice cabling.

At the time of the bid, The EIA/TIA Category 6 Cabling Standard was still in draft form. These factors would be cause for concern among some technology consultants and potential bidders.—but not Matrix. Configuring the voice infrastructure identical to the data infrastructure (Category

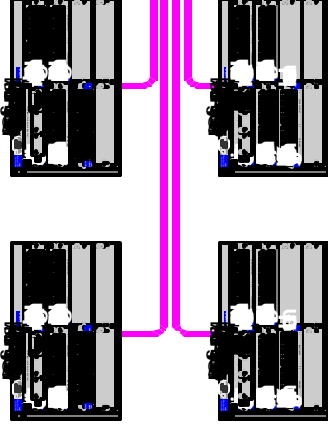
6 cabling terminated on rack-mount patch panels) provides a couple key benefits to the ITSC technology staff. First, phone extension Moves, Adds, and Changes (MACs) can be accomplished simply by moving a patch cord from one port to another. Second, any voice outlet can serve as a data outlet, and vice versa, by moving a patch cord. And finally, the eventual migration to a VoIP system will require no additional cabling infrastructure. As for the EIA/TIA Category 6 Cabling Standard being in draft form at the time of bid? It was fully ratified by EIA/TIA prior to completion of the ITSC cabling project installation, giving the owner a fully standards-compliant state-of-the-art network infrastructure.

The Network Components provided by Matrix Integration were exclusively Hewlett-Packard ProCurve: The fastest, highest port-density switches on the market today. Each of the three Telecommunications Rooms are connected to the Equipment Room via multiple Gigabit Ethernet connections over Multimode Optical Fiber Cable, providing bandwidth to spare. Finally, all Gigabit Ethernet Fiber traffic is managed by an HP ProCurve 9300 Series Routing Switch (see diagram).



MDF/IDF 2 B

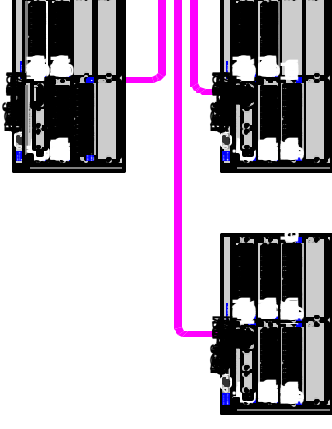
- 1 J4139A hp procure routing switch 9304m
- 2 J4857A hp procure 9300 Mini-GBIC RMM
- 13 J4858A hp procure Gigabit-SX-LC Mini-GBIC
- 1 J4147A hp procure 9300 RPS
- 4 J4861A hp procure switch 4108gl bundle
- 12 J4862A hp procure switch gl 10/100 module
- 4 J4131A hp procure switch Gigabit-SX transceiver



(576 10/100 Nodes)

IDF 1 B

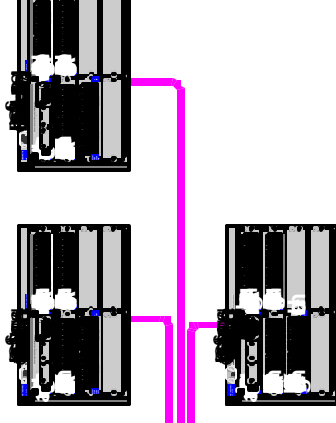
- 3 J4861A hp procure switch 4108gl bundle
- 8 J4862A hp procure switch gl 10/100 module
- 3 J4131A hp procure switch Gigabit-SX transceiver



(408 10/100 Nodes)

IDF 2 C

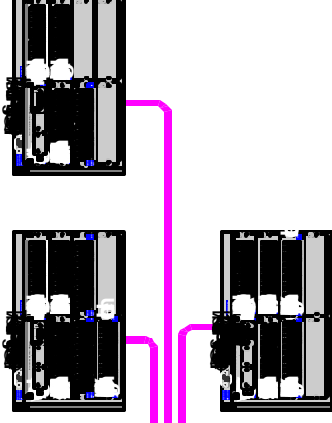
- 3 J4861A hp procure switch 4108gl bundle
- 12 J4862A hp procure switch gl 10/100 module
- 3 J4131A hp procure switch Gigabit-SX transceiver



(504 10/100 Nodes)

IDF 1 C

- 3 J4861A hp procure switch 4108gl bundle
- 9 J4862A hp procure switch gl 10/100 module
- 3 J4131A hp procure switch Gigabit-SX transceiver



(434 10/100 Nodes)