Case Analysis: Maury High School Networking System

by

Elsie Gonzalez

IT 315 Intro Network & Security
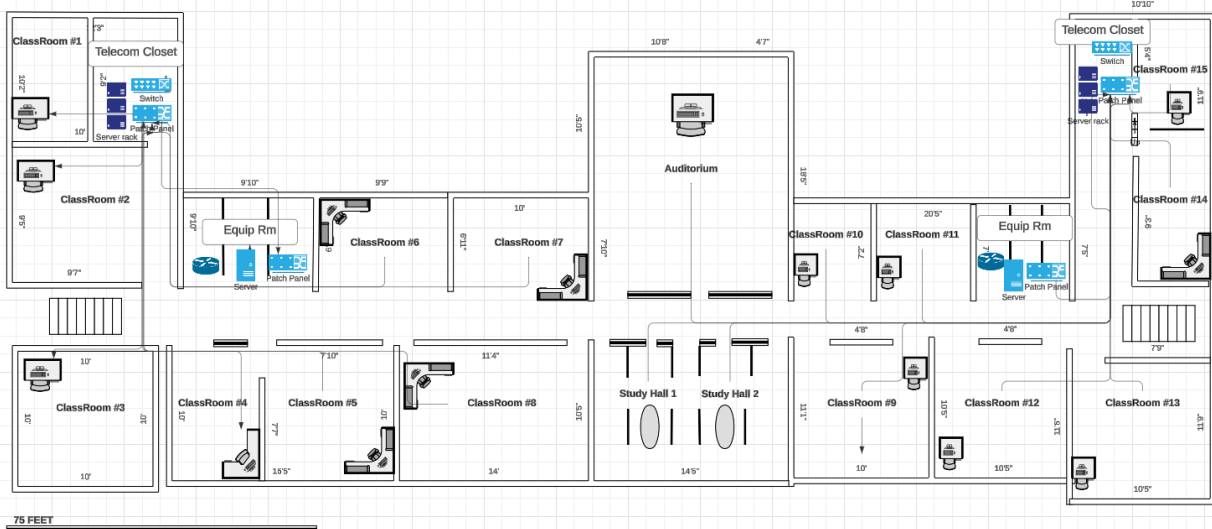
Prepared for

Dr. Kenneth Vick

Part I. Plan and Budget – Wiring

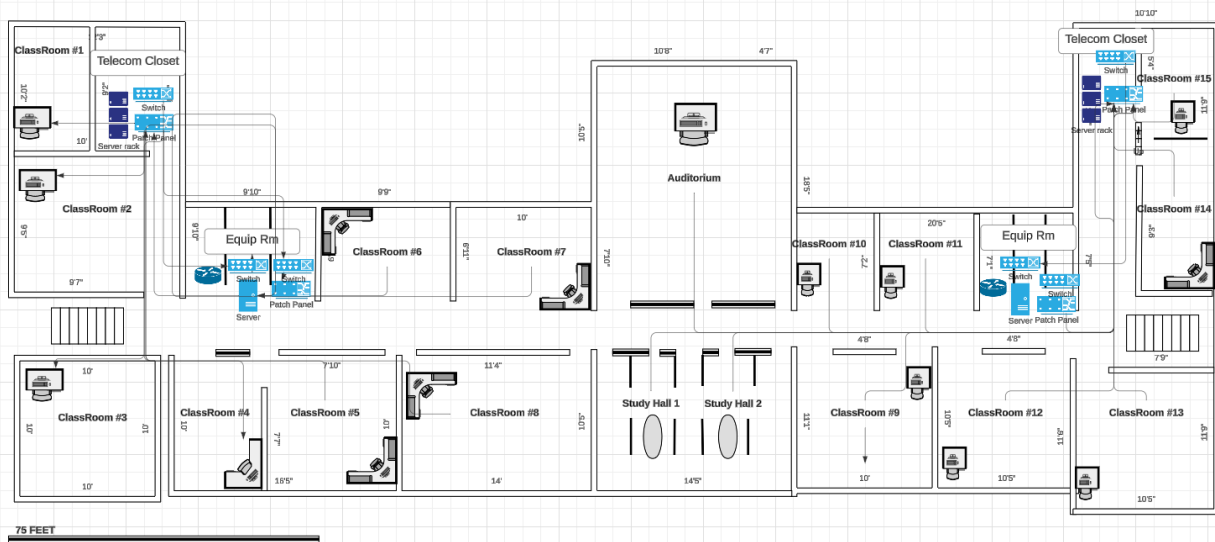| Item	Cost per unit	Quantity	Total Cost
Cable Run (Bulk 1000 ft)	236.99	12	2843.88
Face Plates (10 per pack)	9.99	9	89.91
Keystone Punch-Down Outlets	2.58	560	1444.8
Patch Panel (24 port)	29.99	16	479.84
Miscellaneous	300	1	300
			5158.43

Muary HS First Floor Wire Diagram

For our budget and plan for the wiring of Maury High School, the cable run that will be used is Cat 6 sold at 1000 ft (bulk) for $236.99. Due to the amount of rooms, Maury HS will need 12,000 feet of cable run for all floor plans. Maury HS has 4 levels to include the basement, 1st, 2nd, and third floor with very similar floor plans. The 1st floor plan will be used for this analysis. The equipment and telecom rooms will be in the same location for each floor plan. With this layout, there will be two equipment rooms and two telecom rooms per floor plan. The cabling for each room to the telecom rooms and to the equipment room will span about 75 feet. There are 22 locations connecting to the telecom and equipment room: 15 classrooms, 2 equipment room, 2 telecom rooms, 2 study halls and 1 auditorium. Each room will have a faceplate with two outlets, as per the requirements of being able to connect to two live networks for redundancy, and each outlet will have their dedicated keystone punch down. With 22 classrooms per floor plan, you will need 176 ports. By purchasing 9 (10 pack) face plates, you will be able to have cover this requirement. With 2 telecom rooms per floor, two 24 port patch panels will be used. One side of the floor will be serviced by one patch panel and the other will be serviced by the second patch

panel as shown in the diagram. Each equipment room will also have their patch panel connecting to the telecom patch panel. With all the floor plans, you will need 16 patch panels. With the faceplate ports (176) and patch panels ports (384) you will need 560 keystone punch down outlets to meet the demand. You should also account for miscellaneous items for any unplanned issues.

Part II. Plan and Budget – Ethernet Network

Item	Cost per unit	Quantity	Total Cost
Managed Switches (28 ports)	875	16	14000
Patch Cables - Managed Switch 75 ft (224)	23.08	224	5169.92
Patch Cables - Core Switch 10 ft (192)	6.41	192	1230.72
Core Switch (24 Port)	4645	8	37160
Miscellaneous	300	1	300
			57860.64

Muary HS First Floor Wire Diagram

For this part, I will go over the equipment needed to support an Ethernet network at Maury High School. There will be a main switch and a managed switch in each of the equipment rooms, and one managed switch in each telecom room. With each floor plan requirement, there will be a total of 16 managed switches and 8 main switches. Since there are 384 patched panel ports, and mentioned in Part 1, with an additional 10%, you will need 423 ports in the managed switches in

the telecom room. With this requirement, a sensible purchase would be the 28 port managed switch with one in each equipment and telecom rooms. With the switches connecting from the telecom to the equipment room, you will need 416 patch cables with 75 ft ones that connect to the telecom room to the equipment room and 10 feet in the equipment room. You will need 8 core switches for each equipment room.

References

Cat6 Riser Ethernet Cable | Shielded. (n.d.). TrueCable.
https://www.truecable.com/products/cat6-riser-shielded-cable?variant=39898399932483

Iwillink 2-Port Keystone Wall Plate 10-Pack. (n.d.). Amazon. https://bit.ly/3OUNOzl

Shielded Patch Panel, 24 Port, 1U, Blank Modular. (n.d.). TrueCabe. https://bit.ly/4fphD5T

Shielded Cat 6 Keystone, RJ45 Female to 110 Punch Down. (n.d.). CableWholesale.
https://bit.ly/3VB8sIL

Signature Products Cable Runway. (n.d.). Discount Low Voltage. https://www.discount-low-voltage.com/SLR1210-FBK-cable-runway?srsltid=AfmBOor1UMtWl9nBb0
ZaqDO9DjzbaixrjEmhTVD9JmZuVy03rBCpR8tQEys

Cisco SG350-28P 28 Port Gigabit PoE Managed Switch. (n.d.). Walmart.
https://www.walmart.com/ip/Cisco-SG350-28P-28-Port-Gigabit-POE-Managed-Switch/53979248?wmlspartner=wlpa&selectedSellerId=14204&gQT=1

Cisco Catalyst 3750X 24 Port PoE IP Services. (n.d.). Server Tech Supply.
https://www.servertechsupply.com/ws-c3750x-24p-e/?noamp=available&srsltid=AfmBOorhbxvuGSny_yDhC2f98lYibsySVIA8fmQUB7Us
hmVl413rOdu904g&gQT=2

Cat6 Blue Copper Ethernet Patch Cable, Snagless/Moded Boot, PoE Compliant, 75 foot. (n.d.).
CableWholesale. https://www.cablewholesale.com/products/network-phone/cat-6-cable/product-10x8-06175.php

Cat6 Blue Copper Ethernet Patch Cable, Snagless/Moded Boot, PoE Compliant, 10 foot. (n.d.).
CableWholesale.https://www.cablewholesale.com/products/network-phone/cat-6-cable/product-10x8-56110.php