Network Design Proposal and Design for Anthony's Potato Chip Company

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INT301: Computer Networking

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Requirement Analysis

[Include the requirements for each element]

Data Types:

LAN, WAP, Wi-Fi. Packets are used to receive and send information from computer to computer within the network.

Data Sources:

Internet Service Provider, databases, servers

Numbers of Users and Priority Levels:

42 Users

Transmission Speed Requirements:

10/100/1000 Mbps to computers and a 1Gbps backbone

Load Variation Estimates:

100Kbps-500kbps

Storage Requirements:

SAN: 125 terabytes We are assuming that we can fit the company's data within 125 terabytes and can upgrade to more storage if needed.

Reliability Requirements. The standards reliability requires the network to operate at following percentage rates:

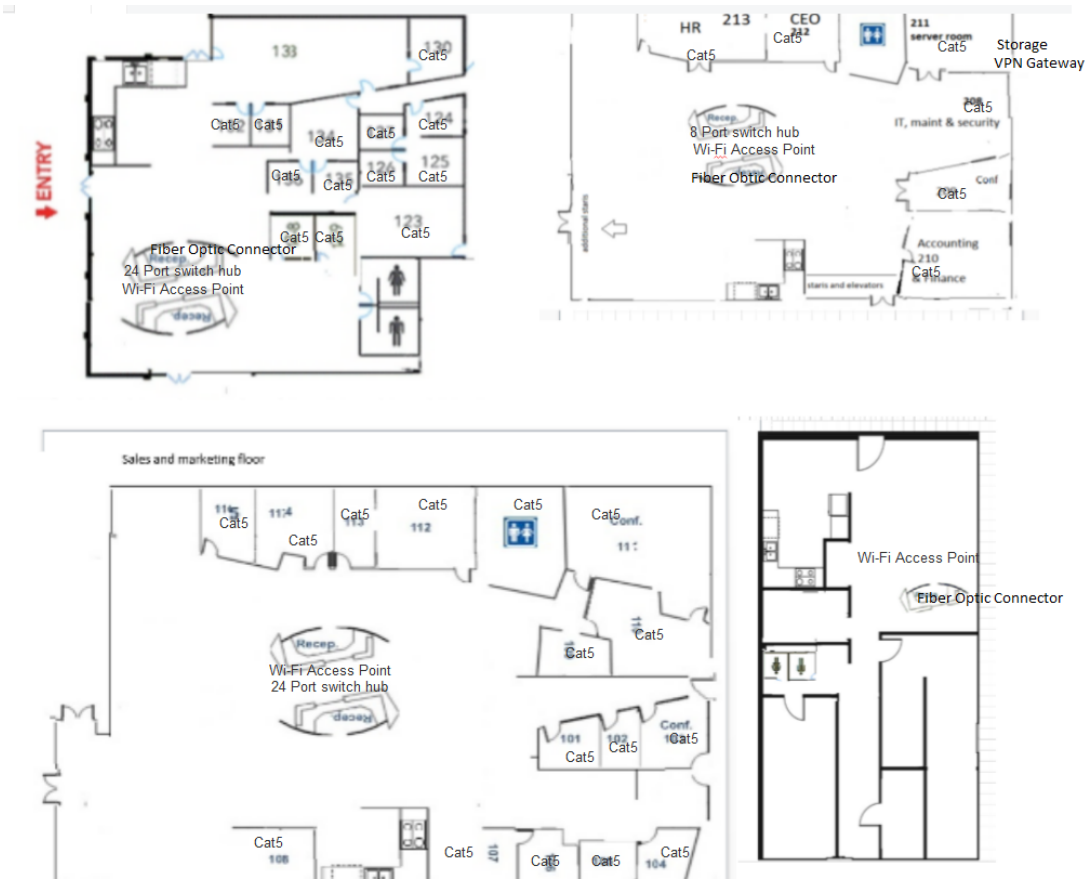
Standard Operations Uptime:9am to 4pm PST Downtime:3% Error rate: 0.001%

Existing Network:

The existing network was composed of a single router at every building that supplied limited network connectivity.

High-Level Diagram

Detailed Design



Equipment Analysis

Determine the equipment needed based on your planned network and complete the Equipment and Analysis table. Specify the products you are considering for your design and include their costs and the total cost of the network. Use the site www.cdw.com to find equipment. Ensure the devices are all Cisco to ensure compatibility and reliability.

Equipment Cost - LAN							
Tangible Costs							
Product	Model	Price	Quantity	Warranty	Maintenance	Total $$	
		$60	3		0	$180	

HP File/Print Server				3yrs			
Wi-Fi controller with PUE 48-ports		$324	3	3yrs	0	$972	
Cat5 cables		$50	46	5yrs	0	$2,300	
100base-T Ethernet 24port hub/switch		$700	2	3yrs	0	$1,400	
Dell Storage	ME4024	$9,868.99	1	10yrs	0	$9,868.99	
100base-T Ethernet 8port hub/switch	GSD-1008HP	$124	3	3	0	$124	
VPN Gateway-Barracuda SSL VPN 380 – VPN Gateway	BVS380A	$1,929.99	1	5yr	0	$1,929.99	
Router	Netgear AC1750 Smart Wi-Fi Router _R6400)	$129.99	3	3	0	$389.97	
Fiber Optic Connector	FLCSMCXAQY – Panduit Opticam 10Gig Pre-Polished Fiber Optic Connector – network connector	#23.99	3	3		71.79	

						$17,236.74	

Provide a rationale for your choices based on your sources.

I chose Cat5 cables to connect all the routers and switches besides the backbone. I wanted to include a fiber optic back bone for the network to not be stressed in any case where there is a spike in network activity. For the sales and headquarters, I decided to set up a Wi-Fi network since there were so many people at each building, if each router has enough bandwidth everyone will be able to have a stable connection. Every building is equipped with a printer and a switch hub as well. I also added ethernet cables to every computer in the case that someone needed it.

Recommend additional software that Anthony's may need for ease of communication. For example: Skype, WebEx, Adobe, audio files, email, chat, and video. Provide a rationale for your recommendations using scholarly sources. (Similar to Figure 9-19 in your text).

Skype, email, Zoom, and Microsoft Office

Reflection

[This section is to be completed in Week 5 as part of the Final Assignment once you have incorporated feedback provided by your peers and/or instructor].

For my final I decided to add a fiber optic backbone in the case that my network bottlenecks. I understand that having a wired connection is always better, but with how fast technology is evolving, I believe that wireless connectivity is the future. I do not believe that the time difference between refreshing through ethernet versus Wi-Fi will be a big problem for Anthony's potato chip company. I ended up giving every computer a Cat5 ethernet cable because that is the fastest way to transport data, I kept the Wi-Fi for accessibility. I could have made the cheaper network but that would have meant that I compromised somewhere.

References:

FitzGerald, J., Dennis, A., & Durcikova, A. (2017). Business data communications and networking (13th ed.). Retrieved from https://vitalsource.com