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IT-640 Telecommunications and Networking

Milestone One

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SNHU Energy Project Analysis Plan

This project analysis plan will identify the network applications of the current network and provide a description of how the network is designed. We will do this by providing an explanation of how the different layers of the Open Systems Interconnection (OSI) models are relatable to each other within or around the network. Using the information we are given from the network diagrams from the Organizational, Dallas, and Memphis office we can start by identifying the network applications. Then we will identify and label the different layers of the OSI models.

**Network Applications**

Considering SNHUEnergy, operates across two locations like Dallas and Memphis. Each office supports key parts of the business. The Dallas office handles critical functions like email, payroll, accounting, and HR, while the Memphis office is focused on billing and operations. Both locations also use VoIP phone systems and video conferencing to stay connected internally and externally.

**OSI Model**

The current network setup aligns with the OSI model in the following ways:

* **Layer 1 – Physical**: Includes all the cables and wireless access points that keep the devices connected.
* **Layer 2 – Data Link**: The switches at each location direct internal network traffic within the office.
* **Layer 3 – Network**: The routers help move data between offices and to the internet.
* **Layer 4 – Transport**: This layer ensures services like VoIP and video calls run smoothly.
* **Layer 5 – Session**: Manages the sessions for those calls and conferencing systems.
* **Layer 6 – Presentation**: Takes care of data formatting and encryption especially important for secure communication.
* **Layer 7 – Application**: Where end user tools like email, billing systems, and HR platforms live.

**Key Network Components**

* **Routers** connect the offices to each other and to the internet.
* **Switches** are responsible for linking up devices like workstations, IP phones, and printers within each office.
* **Firewalls** help keep the network secure by filtering out unwanted traffic and threats from outside the organization. Currently, only the Dallas office has one.

**Network Strengths and Weaknesses**

Overall, the network works, but there are some weak spots. Especially when looking ahead to future growth.

* If the connection between the Dallas and Memphis routers goes down, Memphis users could lose access to email, HR systems, and other shared resources located in Dallas. Communication tools like video calls and VoIP may also stop working between offices.
* The Memphis office only has one switch and one router, which is risky. If either device fails, the entire office could go offline.
* While the Dallas office has a firewall for protection, Memphis does not, making it more vulnerable to cyber threats or unauthorized access.

**Summary:**

Even though SNHUEnergy’s network supports day-to-day tasks, it still needs improvement to handle growth and ensure reliable, secure operations across both offices. The Memphis office, in particular, needs better security with its own firewall, and hardware redundancy to avoid total outages. I would recommend adding backup systems, stronger security measures, and possibly moving some services to the cloud could help the company stay connected and protected as it expands.

**Resources:**

<https://www.ucertify.com/app/?func=ebook&chapter_no=2#top>

<https://www.ucertify.com/app/?func=ebook&chapter_no=3#top>

<https://www.ucertify.com/app/?func=ebook&chapter_no=3#076jw>

<https://learn.snhu.edu/content/enforced/1894272-IT-640-10526.202518-1/Course%20Documents/IT%20640%20Memphis%20Office%20Network%20Diagram%20Current.pdf?isCourseFile=true&ou=1894272>

<https://learn.snhu.edu/content/enforced/1894272-IT-640-10526.202518-1/Course%20Documents/IT%20640%20Dallas%20Office%20Network%20Diagram%20Current.pdf?isCourseFile=true&ou=1894272>

<https://learn.snhu.edu/content/enforced/1894272-IT-640-10526.202518-1/Course%20Documents/IT%20640%20Memphis%20Office%20Network%20Diagram%20Current.pdf?isCourseFile=true&ou=1894272>