

Network Solution for Extension Site

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NETW206: Introduction to Switching

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Professor: Hopkins

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Assignment 4

Implementation Policy

The manager has requested a network for the nursing school extension site. He has requested that I visit the site and detail the network requirements in a report based off of a few predefined network requirements:

Their infrastructure includes an existing network that this network needs to connect to. The equipment is not installed yet. At the beginning, typical requirements for a network must be identified.

Functionality: The enterprise network must support the applications and data flows required.

1. One router with three interfaces. I have recommended a Cisco router with 4 interfaces because it supports the Cisco IOS DHCP server. This router is the Cisco 3845 Integrated Services Router.
2. One fixed port switch. For this switch, I have chosen the Cisco Catalyst 2960-S series switch. More specifically, the Cisco Catalyst 2960S-48LPS-L. This switch has 48 ports (for scalability), is manageable, supports IEEE 802.1Q and POE (ie. POE powered headsets or IP cameras).
3. Four subnets/vlans.
4. Voice, video, and data support.
5. 24 hosts.
6. Local file/DHCP server.

Performance: Performance includes: responsiveness, throughput and utilization. The Cisco line of switches and routers that I have recommended can more than handle the bandwidth accumulated by 24 terminals. Even with headsets and cameras implemented within the network, the Cisco Catalyst 2960-s series switch and the Cisco 3845 Integrated Services Router should more than match any data requirements by 24 terminals in the Nursing School.

Scalability: The network must provide scalability for future growth including new users and devices and the extra data incurred.

Availability: With 48 access ports for 24 hosts and gigabit throughput, 100 percent availability is expected for the data network (standard of availability approaching 99.999).

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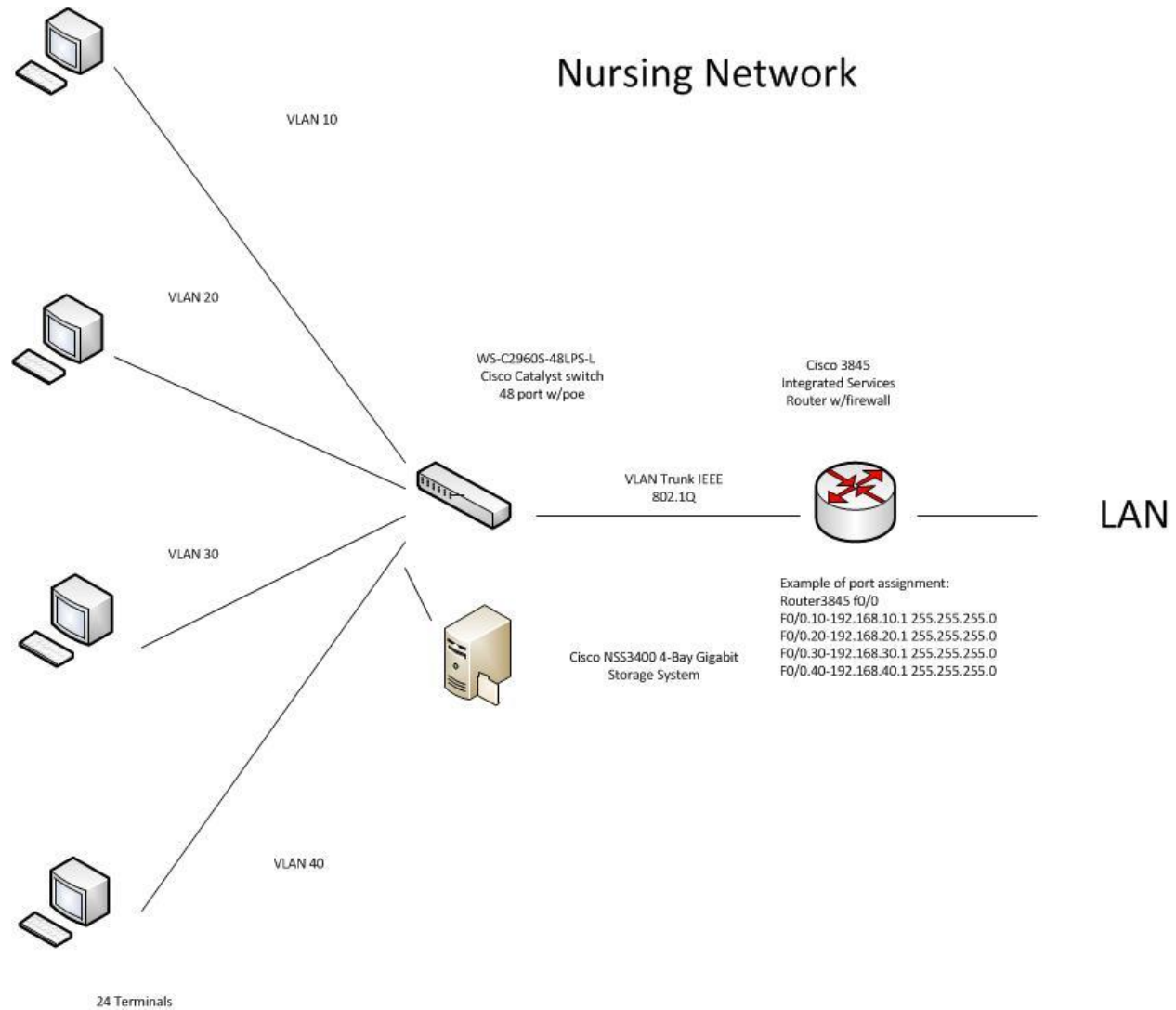
Manageability: A network must be manageable across the entire infrastructure. With Cisco IOS hierarchal operating system functioning in both router and switch, management configuration, maintenance and security can be attained through secure shell access and shtml access remotely.

Cost-effectiveness: Cost-effectiveness is a key concern. The Cisco network router and switch, combined with a Cisco NSS3400 4-Bay Gigabit Storage System with 4x 1Tb HDD can be purchased new for under \$10,000.

Application and Data Requirements: Network requirements include creating 4 VLANs for 24 hosts. This can be achieved by utilizing VTP and encapsulating the data with IEEE 802.1Q. A data trunk should be created for inter-VLAN communication. All ports and switchports must be configured correctly. Security for the Terabit file storage unit and the rest of the network would be handled by the firewall, IPSec and Secure Sockets Layer (SSL) VPN, intrusion prevention system (IPS) and anti-virus included in the Cisco 3800 Series Integrated Services Router. This router is ready to handle video, voice (Voip) with voice call processing with advanced wired and wireless services. The Cisco Catalyst 2960-S series switch has 48 10/100/1000 POE+ ports. And, 4 one gigabit Ethernet uplink ports. This should more than handle dataflow, multiple 64k voip headsets and possibly an IP camera or two. Bandwidth requirements at this point are unknown. The POE+ is over 15w/port. Finally, the Cisco NSS3400 4-Bay Gigabit Storage System Chassis with four 1-Terabyte HDDs can be utilized to:

- Automatically back up important information from every PC and server in your business.
- Provide centralized storage and sharing of important files.
- Employ Continuous Data Protection (CDP) to automatically back up every version of every file saved by employees, allowing you to easily restore data.
- Store and archive digital video from video files.

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