Network design project

Profession

Situation in which the Project Exists: This project is for a residential datacommunicationnetwork. The proposed network is designed to connect 2 workstations and 1 printer. It will provide internet access as well as multiple email addresses. The client has approved an initial investment of $5, 000 to implement the networking project. The two workstations will be two HP Pavilion Laptops with AMD Turion II Dual Core Mobile processor, each for $529. 99. The printer will be a PIXMA Wireless multifunction printer/copier/scanner for $99.

The client desires to have a mobile network with the ability to work virtually anywhere in the house. The laptops both come with internal wireless adapters, 500gbytes of hard drive space, and they feature 2 processing cores with 2. 2GHz processor speed per core. For multitasking power the laptops come with 4GB DDR2 DIMM memory, expandable to 8GB. The wireless printer prints up to 26ppm in black, and up to 17 ppm in color. It also prints, copies and scans for convenience. The printer also has built-in memory card slots that support various card capacities and sizes.

The network will be designed to accommodate the client’s mobility needs and business/operational objectives. We have decided to implement a wireless LAN Architecture to provide the customer with maximum mobility. We have decided to use the Verizon FiOs Network which comes with a wireless router, and downloads up to 50 Mbps and uploads up to 20 Mbps for $139. 95 per month. All Verizon High Speed Internet packages include one account with eight additional sub-accounts, totaling nine accounts.

A wireless router is a wireless access point with several other useful functions added. The router converts the signals coming across the Internet connection into a wireless broadcast, and steers data in an intelligent way, eliminating a lot of the sluggishness found in typical peer-to-peer networks. (Networks that don’t have servers are peer-to-peer networks because each computer has equal ranking) Like wired broadband routers, wireless routers also support Internet connection sharing and include firewalltechnologyfor improved network security.

A key benefit of both wireless routers is scalability. Their strong built-in transceivers are designed to spread a wireless signal throughout the home. A general rule of thumb in home networking says that 802. 11b and 802. 11g WAPs and routers support a range of up to 300 feet, but obstructions in a home such as brick walls and metal frames can reduce the range of a Wi-Fi LAN by 25% or more. The router will be placed in an optimal location away from microwave ovens, 2. 4 GHz cordless phones and garage door openers which can all cause signal interference.

In densely populated areas, wireless signals from neighboring homes can sometimes cause signal interference. This happens when both households set conflicting communication channels. When configuring an 802. 11b or 802. 11g router, you can change the channel number used. The default administrator password and username for the router will be immediately changed. All Wi-Fi equipment supports some form of encryption, and we will be using the128-bit WEP Encryption by assigning a WEP passkey. The passkey should be unique and long.

For extra security we will be changing the default SSID or network name, which identifies the network. This should also be unique. Most wireless network routers contain the ability to filter devices based on their MAC address. By enabling MAC Address Filtering, this will allow the router to keep track of the MAC addresses of all devices that connect to it, and only allow connections from those devices. The MAC address is a unique identifier for networking hardware such as wireless network adapters.

The SSID broadcast feature will be disabled as well. Many wireless routers routinely transmit the WiFi network name (SSID) into open air. This roaming feature is unnecessary as it increases the likelihood someone will try to log in to the network. The two laptops and the wireless printer will all be assigned a static IP address. DHCP will be turned off from the router to prevent network attackers from easily obtaining a valid IP address from the network. The Verizon network router comes with a built-in firewall capacity.

Firewall programs can be very effective at keeping intruders out of the network and out of your computer. We will ensure that the router’s firewall is turned on, and for extra protection we will install and run personal firewall software on each computer connected to the router. Next the printer software will be installed on each computer and connectivity will be ensured. Implementation is complete once all nodes are connected to the router and functioning correctly.

References

http://compnetworking. about. com/od/wirelesssecurity/tp/wifisecurity. htm

http://compnetworking. about. com/cs/wirelessproducts/a/howtobuildwlan. htm

https://www. lifewire. com/home-network-diagrams-4064053