Intro To Network Technology

LAN Requirements

IT2250 - Unit 1 Assignment 1

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**LAN Requirements**

The hospital will use ring topography for its local area network. In a ring topology, nodes are arranged in the transmission path such that data goes through each successive station before it goes back to its point of origin. In this topography, the nodes form a closed circle. A small packet (token) can be passed across the network. When this is done in sequence, all the nurses will put some information into the network. A particular station takes the token and replaces it with a frame of data. In a ring topology, only the addressee can claim the message. A central node will be used as the central coordinating and processing point for the network. In case the health practitioners want to send the information to different receivers in the network, they can use the central node (hub).

**Network devices**

* Shared hardware resources

The local area network needs to be designed in such a way that it offers the highest productivity. A router is a networking device that is used for routing dissimilar and similar networks. A router is more potent than a bridge since it checks the network addresses and protocols. Other devices such as switches will also be needed to facilitate communication.

* Network workstations

The LAN aims to enable the caregivers to work collaboratively to improve the quality of service offered to patients. For the LAN to be helpful, all the users need to have a medium that they can use to access the network (Mansfield and Antonakos, 2009). The organization can set up computers and provision other members with laptops and smartphones to access the network. The users can be grouped into several subnets to access the services as fast as they need to.

* Network Interface card and drivers

The workstations need to have a medium to communicate with everything else on the LAN. The Network Interface Card (NIC) will enable a computer to send and access information from the network. Drivers are the software that can allow the NIC to run. Drivers interpret instructions from the operating system and translate them into instructions that a NIC can understand.

* Communications medium

The local area network needs to have a medium that will enable them to communicate to accomplish the tasks they intend to use the system for. The system may require an Ethernet cable for communication between the devices (Mansfield and Antonakos, 2009). Apart from the physical cables, the devices can use radio waves to communicate.

**Network protocols needed for the network**

**Transmission Communication Protocol (TCP)**

TCP is used to facilitate communication across a network. TCP is responsible for dividing any message into a series of packets sent to a specified destination from a source. Once the message reaches the destination, it gets reassembled.

**Internet Protocol (IP)**

Internet Protocol is an addressing protocol. It addresses in-package hosts and helps them to be transmitted to their destinations.

**File Transfer Protocol**

File transfer protocol allows data to be transmitted from one physical machine to another within a network.

**Gopher**

Gopher is a set of rules used within the system to search and display data from isolated sites.

**OSI Model**

The OSI model describes the function of a networking system. It classifies the different computing functions used in systems into requirements and rules to support communication between other products (Briscoe, 2000). In this model, all the communications that exist are split into the following seven layers: physical, data link, network, transport, session, presentation, and application. All the layers play different functions within the organization. The network layer is responsible for routing data from one device to another. The networking devices use the IP and IPX protocols to assign local addresses. The transport layer is responsible for ensuring that communication happens effectively from one network to another. The IPX protocol is paired with SPX when used in the transport layer. FTP is used to manipulate or transfer files over the internet.

Reference

Briscoe N. (2000). Understanding the OSI 7-Layer Model, PC Network Advisor Mansfield K., Antonakos J. (2009). Computer Networks for LANs to WANs: Hardware, Software, and Security, Cengage Learning