

Patton-fuller community hospital it department

Science, Computer Science



Patton-Fuller Community Hospital IT Department Patton-Fuller Community Hospital IT Department In order for an organization to be able to have an efficient and successful organization the proper InformationTechnologysystem (IT) must be in place, this document will demonstrate what system is in place to make sure system is running successfully. Patton-Fuller Community Hospital is a prominent hospital that is known for specializing in pharmacy, radiology, surgery, and physical therapy. This community hospital has numerous departments and each has a different IT need, so understanding which programs will work and be compatible is their major objective. The patients of Patton-Fuller Hospital are accustomed to the quality service that the hospital provides with a focus on the different programs and services to help maintain a high degree of concern for its patients. Patton-Fuller Community Hospital has an great quantity of technology and can be divided into many different areas providing an in-depth review of the advancements and shortfalls of organization.

Understanding the OSI model is important to getting the proper IT system job done, so knowing how to fit these elements together to form working system is what will be explained. The networking department has the challenge of breaking down the current infrastructure to ensure a comprehensive analysis is done to provide a solution that will last for the three to five years. A major goal of the hospital is to protect the personal information of the patients who fall under the guidelines of theHealthInsurance Portability andAccountabilityAct (HIPAA).

HIPAA requires the protection and confidential handling of protected health information (" Health Insurance Portability And Accountability Act", 2012). To make sure that standards are met, Patton-Fuller uses an encrypted storage system known as Advanced Encryption Standard (AES) (Apollo Group, 2011). According to " Encryption Algorithms" (2012), Encryption is the process of converting a plaintext message into cipher text which can be decoded back into the original message. An encryption algorithm along with a key is used in the encryption and decryption of data.

There are several types of data encryptions which form the basis of network security. Encryption schemes are based on block or stream ciphers. The hospital transmits information off a network called 1000Base-T. The information is broken down to other departments such as Radiology, which uses a section of this network called 1000BaseF. " 1000BASE-T is Gigabit Ethernet (1 gigabit is 1000 megabits per second) on copper cables, using four pairs of Category 5 unshielded twisted pair to achieve the gigabit data rate. 1000BASE-T can be used in data centers for server switching, for uplinks from desktop computer switches, or directly to the desktop for broadband applications (Apollo Group, 2011). The nodes of the administrative function network utilize CAT 6 cabling. The connection point of the administrative functions network are connected to an Ethernet backbone. A single mode fiber cable, transmitting 1000 Base F, physically connects nodes attached to the clinical segment. The nodes attached to the clinical function segment is physically linked by single mode fiber cable and transmitting 1000 Base F.

Both segments connect via a network bridge (Apollo Group, 2011). A DHCP server provides all workstations on the administrative function sectors with

IP addresses. This is a good security practice to apply for the network black/white and color laser printers that utilize a static IP, so the MAC address is registered with the DHCP server to prevent malicious activity that would harm the networks and the DHCP service is run on the Exchange Server housed in the IT data center (Apollo Group, 2011).

The Radiology department has special needs to be able to manage pictures and archive them. Digital Imaging and Communication in Medicine (DICOM) is one of the standards used by the Radiology department along with the Picture Archiving and Communication System (PACS) to run the flow of work. The Patton-Fuller Community Hospital runs this type of phototechnology to be able to determine what the situation is with patients that are requiring images to determine the problem that the patient is facing (Apollo Group, 2011).

Patton-Fuller Community Hospital uses layers 1, 3, 4, 5, 6, and 7 of the OSI model. The OSI model is broken into seven layers that play a major important role in how the model functions on a functioning level. Patton-Fuller Hospital uses certain layers of the model, below is the function of each layer: Layer 1: Physical - This is the level of the actual hardware. It defines the physical characteristics of the network such as connections, voltage levels and timing.

Layer 3: Network - The way that the data will be sent to the recipient device is determined in this layer. Logical protocols, routing and addressing are handled here. Layer 4: Transport - This layer maintains flow control of data and provides for error checking and recovery of data between the devices.

Layer 5: Session - Layer 5 establishes, maintains and ends communication

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with the receiving device. Layer 6: Presentation - Layer 6 takes the data provided by the Application layer and converts it into a standard format that the other layers can understand.

Layer 7: Application - This is the layer that actually interacts with the operating system or application whenever the user chooses to transfer files, read messages or performs other network-related activities (Bhagchandani, 2011). The hospital's IT data center uses a Cisco router model, at the transport layer it is responsible for breaking large strings of data into manageable smaller packets. Error checking and elimination of duplicate packets is done at this layer as well.

Patton-Fuller Community Hospital utilizes a network gateway device to interface both their clinical and administrative networks, along with the Internet (Bhagchandani, 2011). Patton-Fuller Community Hospital also has a backbone infrastructure providing enough bandwidth to support video and other high quality of service services, these services are provided by most major hospitals across the nation so Patton must make sure that services provided can be achieved with a good system.

However it does not have the necessary requirements for future needs. With the sale and deployment of networked equipment within the medical industry it is becoming more apparent that Patton-Fuller Community Hospital invest their future to be able to keep up with hospitals that provide these same services at a faster speed. Patton-Fuller Community Hospital has the backbone infrastructure that provides sufficient bandwidth to support video and other high quality of service services. However it does not have the necessary requirements for future needs.

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With the sale and deployment of networked tools within the medical industry it is becoming more obvious that Patton-Fuller Community Hospital should think about investing in means of more bandwidth for further years. The whole system that the hospital uses takes the layers of the model and uses them as needed, information is passed through the cables that in turn break the information down so that it can be divided into different operating systems for translation to doctors, nurses, insurance companies, lawyers, and more.

The information is formatting so that it can be passed internally and externally. The layers in use by the hospital make it possible for the photo imagery to be sent via the chains in and out of the hospital to individuals who have a need to know. While using all the layers that they use the first priority of the day is to make sure each layer is safe to use for the reason that HIPPA information being shipped to different areas in and outside the hospital should always be secure.

Any organization today must understand the OSI model and what goes into making a system work so that they are able to set their IT department in the most useful approach to flow great with the work being provided. Patton-Fuller Hospital understands that they have needs of privacy and being able to pass this delicate information to sources outside the hospital so they have chosen the systems that fit their needs. There are many different types of protocols that Patton-Fuller Community Hospital can benefit from to improve the services they provide to their patients and make it an easier job for its employees.

Staying up-to-date with the technology that is present today will be able to help Patton-Fuller do that. References Bhagchandani, R. (2011). Networking Cheat Sheet . Retrieved from http://www.climbupon.com/stuffs/techmenu/45-networking-cheat-sheet? & lang= en_us& output= json& session-id= 6030d5bf6d0f58e0de3ea68fb6a8c6e8 Encryption algorithms. (2012). Retrieved from <http://www.networksorcery.com/enp/data/encryption.htm> Health Insurance Portability and Accountability Act. (2012). Retrieved from <http://www.dhcs.ca.gov/formsandpubs/laws/hipaa/Pages/1.00%20WhatisHIPAA.aspx>