Networking

Technology, Information Technology

NETWORKING Networking Affiliation Describe the features of telecommunications networks, including key networking technologies. Cover the Open Systems Interconnection (OSI) model, including each logical layer. Telecommunication networks provide the mechanism to support the electronic transmission of data over geographically dispersed locations. Additionally, these networks can be used to transfer any kind of data such as voice telephone calls, text, videos or images. A telecommunication network consists of a variety of components and features that collectively work to support this communication process. Some of the major features of a telecommunication network can be devices (used for accessing the network), computers (users can process data through computers and these computers are interconnected by the network), telecommunications links (medium that will be used to transfer or receive data), telecommunications equipment (is used to facilitate this communication process), and software (it is used to controls message transmission over the network) (Joshi, 2010). In this scenario, Open System Interconnection (OSI) is a networking model that can be followed as a framework for the development of a network for the reason that it is the standard representation for networking protocols and distributed applications. This model was developed by International Standard Organization (ISO) and it is divided into seven network communication layers, which are outline below: (Petri, 2009) Figure 1OSI Model Description, Image Source: http://www. tech-faq. com/osi-model. html Application Layer: Layer 1 The first and outer layer of OSI model is recognized as application layer. As its name indicates this layer allows the system users to interact with the software applications. In fact, it is the network layer that is

responsible for dealing with collaborations and communication programs on the communication network, comprising file transfer protocol (FTP) and emails (Holmes, 2011; RingofSaturn, 2011). Presentation Layer: Layer2 The presentation layer offers a range of encoding and encryption processes that are applied to the data received from application layer. The purpose of these processes is to make sure that information received from the application layer of one system will be understandable to the application layer of another system (Microsoft, 2011; RingofSaturn, 2011; Nash, 2000) Session Layer: Layer 3 Session layer is responsible for systematizing and structuring communication among application procedures, facilitating two-way concurrent or two-way exchange process, organizing major and minor synchronization points and structuring data interactions (Fairhurst, 2001) Transport Layer: Layer 4 The transport layer makes sure that messages are transmitted error-free, in series, and with no duplications or losses. In this scenario, the complexity and size of a network transport protocol completely depends upon the kind of service which is presented to it by the network layer (Fairhurst, 2001; Microsoft, 2011). Network Layer: Layer5 The network layer is mainly responsible for controlling the processes of the subnet, and making a decision that which physical path the data should be based upon, main concerns of service, and other aspects (Fairhurst, 2001; Microsoft, 2011). Data Link Layer: Layer 6 The data link layer is the place where logical data and information (for example network IP addresses) are actually interpreted into the electrical pulses that move over the physical layer (RingofSaturn, 2011; Microsoft, 2011; Nash, 2000). Physical Layer: Layer7 The physical layer outlines the mechanical, electrical, functional and

procedural conditions for turning-on, maintaining and deactivating the physical link among communicating network systems (RingofSaturn, 2011; Microsoft, 2011; Nash, 2000). Discuss whether telephone networks and computer networks will remain distinct in the future. In the future, it is expected that telephone networks will be associated with the computer networks. In fact, the majority of organizations now establish their networks using the mobile networking, which previously was used by mobile phones. With the passage of time computing technologies have shifted to mobile technology and mobiles have started offering all the computing capabilities (Cisco Systems, Inc., 2003). Describe various network media and how they are changing. There are many types of media that can be used to develop telecommunication networks and support its communication process. Some of the well-known media that have been used to establish these networks include cables such as coaxial cables, twisted pair cables, and fiber optics. In the past these media have been widely used for the development of telecommunication networks. However, with the passage of time there have emerged more technologies such as wireless networking which allows organizations to build these networks without using wires. In this way, organizations can develop networks in those locations where they are unable to use wires. With the passage of time new technologies are emerging and taking the place of wired media (Cisco Systems, Inc., 2003). Explain the differences among LANS, WANS, CANS, and MANS. The basic difference in these networks lies in their purpose and uses. All these networks are implemented to serve different purposes and no one can be used as an alternative of the other. Given below is the description of each network

which differentiates them from one another (Dodd, 1999; Nash, 2000): LAN

LAN (local area network) is used to connect devices like that computers, scanners and printers to communicate with each other inside a small physical region for instance a building, department or floor. In other words, these networks are deployed for covering a small area. MAN (Metropolitan Area Network) As its name indicates, a metropolitan area network is used to connect data devices, like that local area networks that can connect and communicate with each other within a city or a huge campus location spreading over a number of city blocks. WAN (Wide Area Network) A wide area network is established to connect a large number of local area networks to let them communicate with each other in a number of cities. CAN (Campus Area Network) Campus Area Networks (CANs) are established to serve specific purpose or an organization such as a university or possibly a cluster of government departments (Dodd, 1999). Describe three (3) ways in which businesses use Internet services and protocols. (For example, what is VoIP and how is it used?) The business organizations can use internet services and protocols in different ways for instance; VoIP (voice over internet protocol) is a protocol that makes use of the Internet technologies in place of the traditional telephone networks, for the transmission of voice signals. In addition, VoIP can be referred as a phone service over the Internet. It can be used by the business organizations in many ways for instance, this technology allows them to use phone system from their desktop computer, this technology can be used to send telephone messages and faxes to their e-mail inbox and it can be used for having a number of phone numbers (OEI, 2013). References Cisco Systems, Inc. (2003, March

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