Assignment

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**ROLE AND FUNCTION OF NETWORK CONNECTIVITY**

Network connectivity describes the extensive process of connecting various parts of a network to one another. Network helps us share data and resources. This increases efficiency and cost-effectiveness network must be reliable, redundant, scalable, secure and fast.

Network connectivity has become major role in current computing requirement. The organization offers SaaS (Software as a Service), Paas (Platform as a service), and IAAS (Infrastructure as a Service) requires strong network connectivity at their end to handle the large data exchange from customers end. Clients machine continuous requests the data from servers which should available all the time at network via internet or intranet network connectivity (techopedia, 2013)

Network connectivity devices: Nodes, hubs, switches, and routers are all connective devices That allow the transmission of communications traffic over networks. The traffic moves between nodes on the network. Modems are devices that allow remote nodes to access a network.

**PRINCIPLES OF COMMUNICATION IN NETWORKS**

* Communication: The sending and receiving of data and information over a communications network.
* Multiuse system: A communication system in which more than one user share hardware, programs, information, people, and procedures.

Basic principle of networking:

* Networking is providing the facility of delivering a message from a source to a destination.
* To providing and giving meaning to these message received is called communication.
* Divides into two types of devices i.e is known as end systems and other is nodes
* Every node is connected to at one node
* Network node is a network component that is capable of receiving, sending or forwarding electronic information over the designated communication link (accessengineeringlibrary, 2016).

Communication channels:

Channel: Communication channel is a medium on which resource can be access over network and establish connectivity between sender and receiver. Channel capacity known as bandwidth.

There are two types of channel:

1) Physical channel like, network cable, fiber optic, electrical wire etc

2) Logical or virtual channel like, wireless, radio frequency, Bluetooth, wi-fi etc.



* A pathway over which information can be transferred.
* Simplex channel- Simplex system can only send data in one direction.
* Half duplex channel: Half-duplex systems allow data flow in both directions. But only in one direction at any one time.
* Full duplex channel: is a channel that allows simultaneous exchange in both directions. Full duplex allows data flow in both directions concurrently.

**ROLE AND FUNCTIONALITY OF HARDWARE AND SOFTWARE**

**Network Interface Card** provides connection to the network. This is also building component of all network attached devices. All Network Interface Card have a unique 48bit AC address.

**Network Switch** consists of many Network Interface cards to provide the connection with one or more network.

**Routers** move a network packet forward 1 step towards its destination between your computer and a distance web or other server. When a packet arrives, the router determines the destination and source of the frame and sends the packet on its way (Paul Mullins, 2016).

All networked applications, including those described above must adhere to a strict set of rules (called protocols) for network communication to succeed.

**Hypertext Transfer Protocol :** For Web applications the application layer transfer protocol is called HTTP.

**File Transfer Protocol :** File transfers the FTP client and server applications must comply with the application layer File Transfer Protocol

**NTP (Network Time Protocol) :** Used to keep clock syncronized within you nodes. Time critic opertaiopns that needed to be syncronized.

**POP (Post Office Protocol):** POP is used bt the client to retrive mail from an internet sever.

**SMB(Server Message Block) :** Is the protocol that support the network integrated tools of the wndows user interface, such as explorer and the map network drive feature (Paul Mullins, 2016).

**SSH (Secure Shell):** For encryption communication between Browse and Server.

**PROTOCOLS AND INTERACTIONS**

* Routers use routing protocols (RIP, OSPF, BGP) to maintain their routing tables.
* User Datagram Protocol (UDP) provides basic transport services for network applications
* HTTP is a stateless protocol. Once a sever has delivered the requested data to a client.
* TCP is a connection oriented protocol and set of protocols that enable communication between computers.

**FUNDAMENTAL ASPECTS OF CLOUD COMPUTING**

Cloud computing is considered as a software model that mainly enables the user to have access to the shared computer networks along with the servers and the different storage applications. The cloud platform is basically used for sharing the resources that can achieve the economic stability. In addition to that, the cloud platform provides the business organizations to manage their different computing related resources online.

The concept of cloud computing has evolved in current years and it can be used in order to describe the use of a third party for the storage and the different needs for computing the business organizations. The term ‘cloud’ refers to the internet platform and the different operations in the cloud platform mainly describes the different ways through which the organizations can store and access their data set over the internet connection. Along with that, the cloud computing technology allows the business organizations to access their important set of information virtually by generating a flexible and global way through which the organizations can easily access the data at any place or any time.

Many types of cloud services that the organizations can enjoy after implementing the cloud computing technology. One of them is the cloud storage. It mainly stores the different files and makes a backup of those files for sharing those resources to the other systems. In addition to that, cloud backup is another type that is quite similar to the cloud storage. It mainly creates a proper backup of the data set of an organization that may be hampered from the different cyber attacks. In addition to that, the organization may also use another type of cloud service that is the Software as a Service. The business organizations can use those applications in order to enhance their overall business performance.

**ANALYSE THE NETWORKING NEEDS FOR BUSINESS**

# Importance of networking architecture knowledge for business organizations

In Light of the growing complexities in the global business community, the need for technological advancement on networking architecture has increased significantly. The buzz for cloud computing as the latest technological advancement has been a much-discussed topic in the business community. The cloud computing system acts as a utility model used by small as well as large organizations in order to host their data processes, applications and processes through internet and good networking architecture knowledge. Notably, the cloud computing system ensures convenience and on-demand internet access to organizations through a shared network of computing resources that are configurable . With the advent of the cloud computing system, organizations are now able to log in to system and access via internet from anywhere and at any point of time (Oliveira, 2014). The importance of the network architecture knowledge for cloud computing system to a business organization is listed as below:

* **Flexibility in work practices:** Good network architecture knowledge for the computing system tends to provide the employees of organization flexibility in their day-to-day work. For example, it allows the employees to get access to the system from anywhere, i.e., either from home or from.
* **Scalability:** It is noted that the business operations may scale up and down according to situations and the storage system needed to store every data as quickly as possible. The network facilities this option to the organizations and helps them in their business operations.
* **Lower cost implications of the IT:** Notably, the maintenance cost of the IT tends to be very high and increases the total cost implications of the organization. The installation of the cloud computing system tends to reduce the overall cost implications of the IT and thereby of the organizations.
* **Workforce efficiency:** It is evident that, the cloud computing systems facilitates the business organization with better communication facilities as compared to the conventional methods. The system enables easy sharing of files and other bracers with the server. This enhances the level of efficiency within the organization.
* **Access to auto-updates:** One of the significant features of the cloud computing system is that it tends to provide up gradation of the system automatically unlike the conventional IT systems. In the conventional methods, the users had to install manually the available updates (Oliveira, 2014).