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A SURVEY FOR PRINCIPAL OF COMMUNICATION NETWORK & PROTOCOLS THAT IMPLEMENT IN CLOUD ENVIRONMENT

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ABSTRACT

In this Paper, hence, the emphasis is on the computer networking that explicitly center in the usefulness of network availability in the present processing world, communication in networks, and the equipment and programming usefulness in the networking part. Additionally, the investigation will concentrate on the protocols that must be pursued to upgrade network communication and connection between different sources. Our work primarily based on key features of network communication implementation in real time system, apart from that it also focuses on its implementation in cloud environments. The fundamental aspects of cloud computing are based on the building blocks of the cloud that include the SaaS, PaaS, and IaaS that are arranged in form of layers. The other critical perspective that characterizes the present computing world incorporates cloud computing which has turned into a noteworthy characterizing factor in the present networking circle. At long last, the review study will investigate how their insight into network engineering help actualizes network needs in empowering business achievement. Considering the current trend in the evolution of technology, it is important for the organizations to upgrade their network architected with new ones such as the cloud architecture to enhance doing businesses in the competitive business world.

INTRODUCTION

It is not possible to talk about information technology, the internet, and today's computing world without talking about networking. Networking is a key component in the running of businesses and almost every organization has a well-laid down strategy on the implementation of networking to facilitate information sharing, communication and data processing at different levels and departments. Therefore, networking is an important infrastructure to enhance future developments of organizations.

In this assessment, therefore, the focus is on the computer networking, that specifically focus in the functionality of network connectivity in the current computing world, communication in networks, and the hardware and software functionality in the networking sector. Also, the study will focus on the protocols that must be followed to enhance network communication and interaction between various sources (Kasera, Narang, & Narang, 2005).

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The other important aspect that defines today's computing world includes cloud computing which has become a major defining factor in today's networking sphere. Finally, the study will look into how their knowledge of network architecture help implements network needs in enabling business success.

THE FUNCTIONS OF NETWORK CONNECTIVITY IN THE CURRENT COMPUTING

Network connectivity involves the process of interconnecting various parts of computers using devices such as switches, routers, gateways, and servers. In computing, network connectivity is a major component as it helps in functions such as exchanging of files and at the same time enabling communication between devices and users. Computers cannot be linked together without network connectivity, where in order to enhance this communication; they can be connected through telephone lines, cables, satellites, and radio waves.

Computers can be connected using either of the two networks including the local area network (LAN) and the Wide Area Network (WAN). Local area network connects computers from a small area that is limited to a geographical area such as a building, or an institution in a given area. The computers connected through LAN are categorized into servers and hosts or workstations. Servers act as supercomputers, not to be used by humans directly but for providing services to other computers over a network (Kasera, Narang, & Narang, 2005). Some of the most common services provided by these servers include sharing storage of files, data retrieval and storage, and also provision of access control on information resources. On the LAN, computers can either be connected to the servers by wireless or by cables. The servers are connected to each other through wireless connectivity only

On the other hand, wide Area Network works the same as the LAN but covers wider geographical area than LAN, where it can cover a whole region of a continent or a country. Basically, WAN is regarded as a global network where connections can be done under the ocean cabling or even satellite connectivity. WANs need huge complex workstations as they connect computers from all over the world. It contains interconnecting devices such as multiplexers, bridges, and routers that can connect to many LANs and Metropolitan networks and the global communications networks that include the internet (Rouse, 2016).

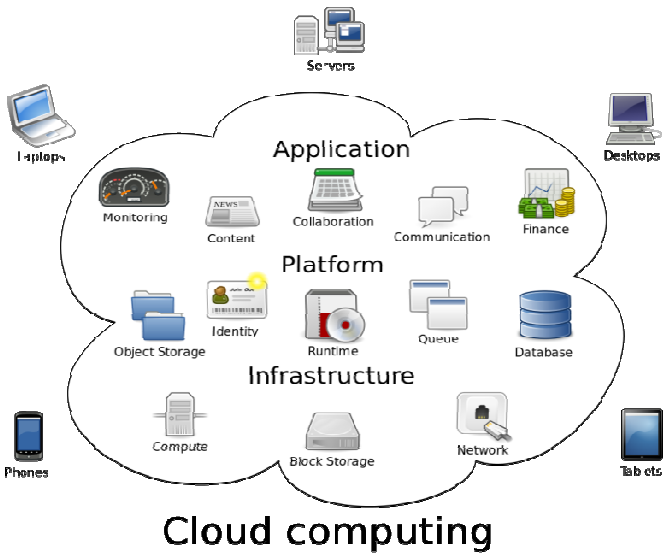

Figure 1.functions of network connectivity in the current computing

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PRINCIPLES OF COMMUNICATION IN NETWORKS

Communication is one of the key functionality in computer networks that include the transmission of data from point to another via the electronic devices. Communication principles of network involve creating a network design that enhances delivery of digital services between the users in a more transparent and resilient manner, and the same time ensuring quality communication security speed and control of costs (Pahlavan, & Krishnamurthy, 2011). The main communication principles in networking include an understanding of the users' needs, protection of users' data and ensuring flexibility in network design.

In the understanding of users' needs, the first issue to consider is understanding the network requirements depending on the services carried out, and ensure the network takes care of availability, bandwidth, and resilience quality of service and price issues. This information guides in designing o the network infrastructure and services to serve all the users in different departments.

In the data protection principle, it helps in understanding the threats that may affect the network. This provides guidance in the management of network in terms of who should access the data, who to share data with and also assessing the necessary the protection mechanisms put on the data in transit.

The principle of design and flexibility ensures that the network uses the open standards that are commonly used to transfer data through the network layers. To enhance this, the network should be designed in a way that is easy to change in meeting the changing needs of users. Also, networks should be separated from each other depending on the providers and in a way that meets commercial terms and conditions. However, network infrastructure should be shared to minimize the WAN estate (Pahlavan, & Krishnamurthy, 2011).

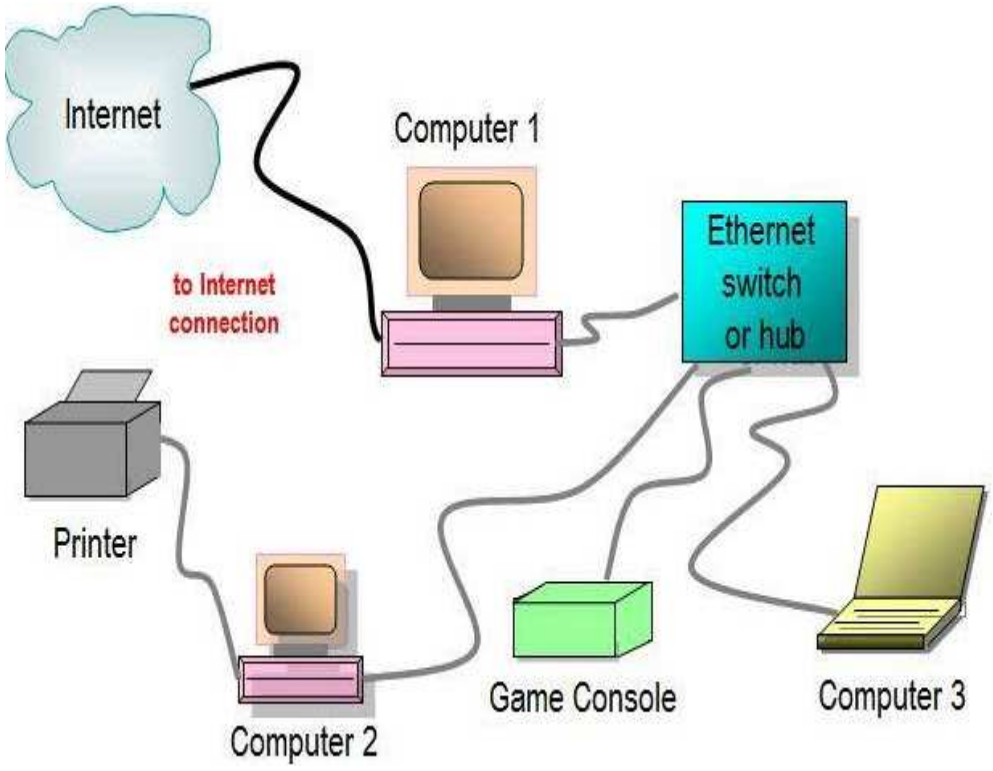

Figure 2.Principles of communication in networks

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ROLE OF HARDWARE AND SOFTWARE IN ENHANCING NETWORK COMMUNICATIONS

There are different hardware peripherals that make network communication possible that some of the hardware used in networking include the following.

Servers, that involve computer that runs specialized software to enhance network activities including sharing of files printers and network. There is also storage area networks hardware that enhances backups and that use high-speed networks and have different disk subsystems (Rouse, 2016). Backing up of information is not simple and it needs strong hardware that can run for 24 hours a day without stopping (Wood et al, 2015).

Other important network devices include routers, bridges, and gateway that enable subdivision of network in logical and physical ways that include an extension of cabling in connecting different networks. Bridges operate in the data link layer that isolates network segments of different networks and connecting different levels of technology (Wood, et al, 2015). Routers operate in network layers and connect network segments with a different lower layer of the network protocol. Gateways are used in the transport layer and above and they help in accessing mainframe or minicomputers from the personal computer, and they help in converting data to be used in different networks.

There is also the connectivity media that lay an important role in network hardware in connecting network components that include cables. They come in differing types with different transfer speeds. They include coaxial and fiber optics, Ethernet cables and wireless systems.

The network software on the other hand help performance of network functions that are installed in a computer on the network operating system that is run on servers. The main network servers include the Microsoft's Windows NT and the Novell's NetWare (Sarkar, Basavaraju, & Puttamadappa, 2016). This software help in file transfer, messaging and automating network functions and providing resources to the connected nodes.

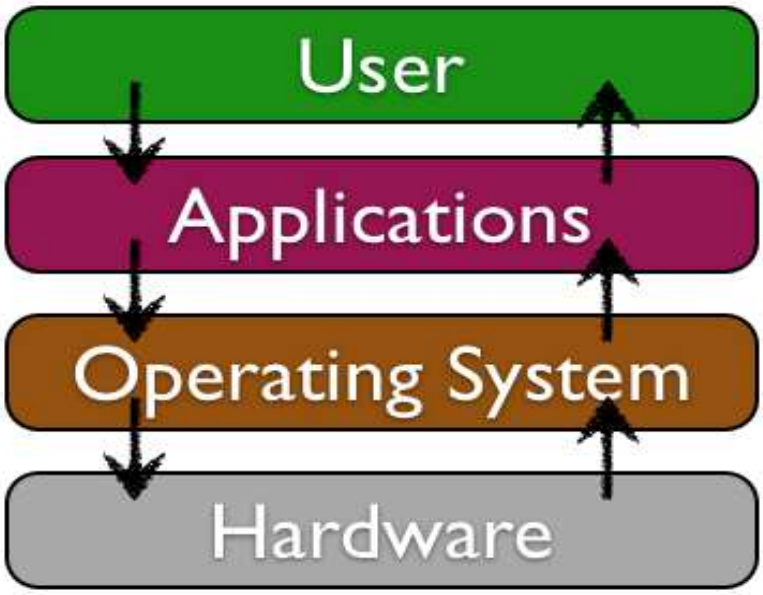

Figure 3.Role of hardware and software in enhancing network communications

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PROTOCOLS THAT IMPLEMENT NETWORK COMMUNICATION

Combination protocols involve rules and regulations that direct the digital message formats running between communication systems including dictating the format for transmission and receiving the data over computer network devices such as servers, routers, PCs, etc.

The main internet communication protocols include the simple management network protocol, security and Secure Shell (SSH). These protocols have thousands of other protocols under them that enhance error detection, correction, automation, authentication, routing, file transfer and retrieval and synchronization (Rouse, 2016). However, the above protocols are cooperated by a protocol suite known as the TCP/IP that contains protocols that span around data, network transport, and application layers. These protocols enhance internet coactivity and hence communication. The TCP/IP is broken down into the following;

The transmission Control protocol (TCP), which is the main protocol that set rules of message exchange with other points of internet carrying the message packets. The Internet Protocol (IP) ensures that the rules set by TCP are followed during sending and receiving messages on the internet level address. Another important protocol is the Hypertext Transfer Protocol HTTP that enables file transfer over the internet (Medhi & Ramasamy, 2017).

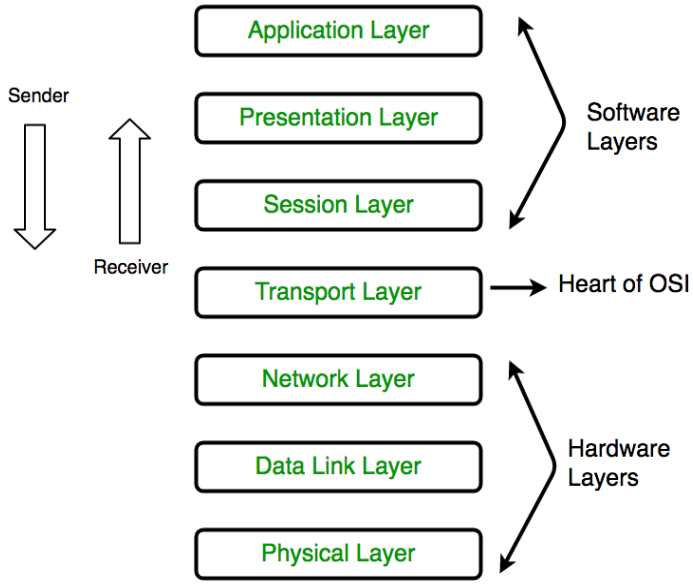

Figure 4.Protocols that implement network communication

FUNDAMENTAL ASPECTS OF CLOUD COMPUTING

Cloud computing involves the technology that delivers IT solutions as services through sharing of resources. The individual computers are configured in such a way that their individual applications run as if they are running on a single system. The computers connected to the cloud can thus be allocated resources on demand without the need of assigning specific hardware to perform a task (Walker, 2012).

The fundamental aspects of cloud computing are based on the building blocks of the cloud that include the SaaS, PaaS, and IaaS that are arranged in form of layers. The infrastructure as a service layer is made up of physical assets, whereby users do not have control of the underlying control of the infrastructure but they

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can use resources such as printers but in a limited way (cloudtweaks.com, 2012).

The Platform as a Service layer(PaaS) provides the main operating system that other computers can access, use and deploy the application, but with limited control. The software as a Service layer helps in visualization of the cloud where users can run their customized software and access others from different users and accessed across different devices through synchronization.

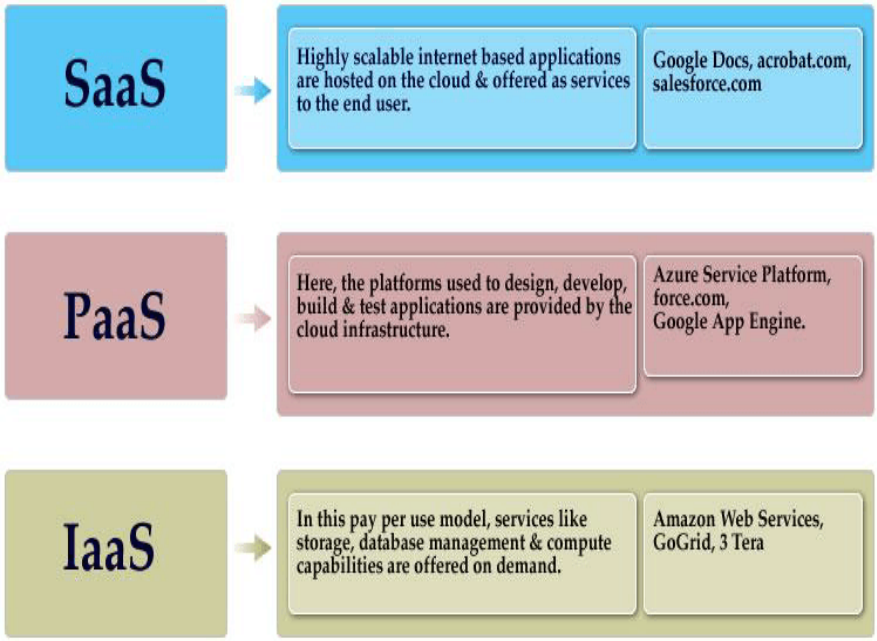

Figure 5.Fundamental aspects of cloud computing

APPLING NETWORKING ARCHITECTURE KNOWLEDGE TO ANALYZE THE NETWORKING NEEDS FOR BUSINESS

Network architecture involves the full framework of the computer network in an organization, that includes the all communication hardware components network layout and topologies and the physical connections (thinkaxiom.com, 2016). Most businesses rely on networking in performing their activities including communicating to their customers or even business to build strong relationships through communication and sharing of ideas. Good network architecture enables businesses to study the prevailing market trends including customer behavior, network analytics and ensuring secure access tools (Horwitz, 2017). Considering the current trend in the evolution of technology, it is important for the organizations to upgrade their network architected with new ones such as the cloud architecture to enhance doing businesses in the competitive business world.

CONCLUSION

In this work, subsequently, the accentuation is on the computer networking that expressly focuses in the helpfulness of network accessibility in the present preparing world, communication in networks, and the network devices and programming applications in the networking part. Also, the examination will focus on the protocols that must be sought after to update network communication and association between various sources.

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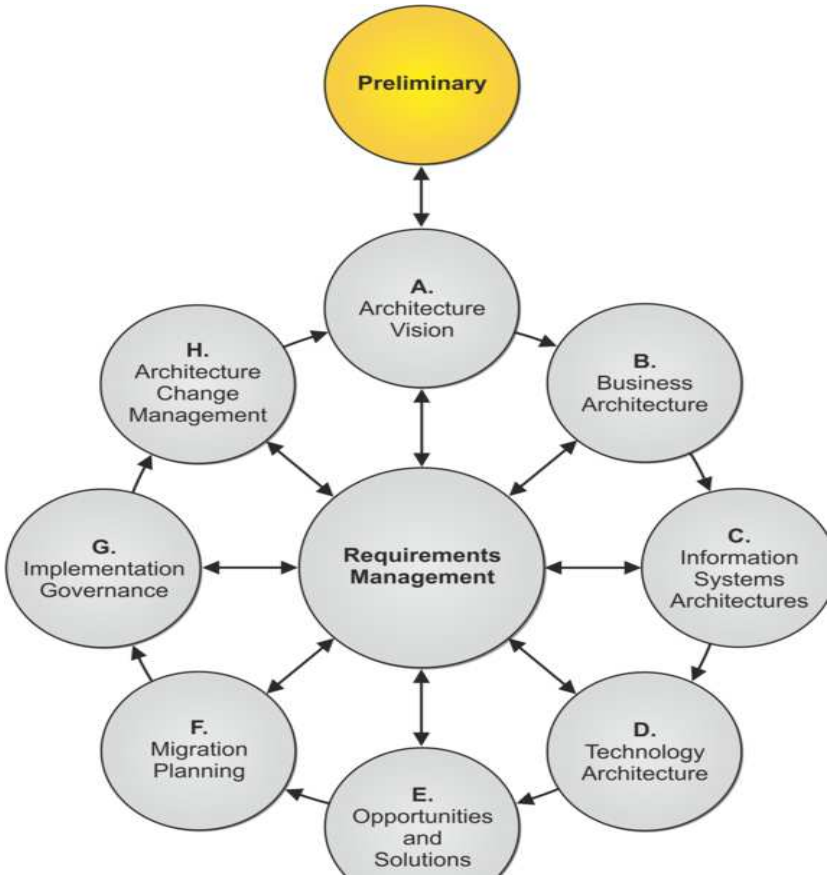

Figure 6.Networking architecture knowledge

Our work fundamentally dependent on key highlights of network communication execution progressively framework, aside from that it likewise centers on its usage in cloud environments. The essential parts of cloud registering depend on the building squares of the cloud that incorporate the SaaS, PaaS, and IaaS that are processed in type of layers. The other basic point of view that describes the present processing world fuses cloud figuring which has transformed into a significant portraying factor in the present networking circle. Finally, the audit study will research how their understanding into network designing help completes network needs in enabling business accomplishment. Thinking about the present pattern in the development of innovation, it is vital for the associations to redesign their network engineering with new ones, for example, the cloud computing environment to improve doing business activity in the focused business world.

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