

Free essay on understanding the computer system

[Technology](#), [Internet](#)



Types of Architectures

Computer architecture is a field in computer science used to describe the functions, organization and the process of implementing computer system. Any computer-based data system consists of different elements namely: data element, hardware element, and software element. The data element is the ultimate representation of factual and observatory elements of a computer. Information is processed by the system and produces the data that is deemed useful to the user. Information may assume different forms: image, text, sounds, and numbers. The hardware element processes information and executes instructions provided to the system. It stores data by moving it maneuvering it between the different inputs and outputs that make up the system. The software element defines and executes the instructions provided by the hardware. It controls the operating system and determines the work that is performed. The combination of the above three elements make up the architecture of the computer system (Englander, 2014).

The architecture of a computer is always the same regardless of the use of the computer. For instance, the architecture of a PlayStation, a laptop, and a cell phone is always the same. The operation of a computer system is highly depended on the hardware architecture. It establishes instructions to the CPU and sets the type of operation permitted. Additionally, it outlines the passage of information between different parts of the computer. The purpose of creating a computer architect is to maximize performance while minimizing power consumption and costs of running the system. For that to happen, several aspects are put into consideration. They include: Functional

Organization, Instruction Set Design, Logic Design, and Implementation. The process of implementation includes integrated circuit design, power, cooling, and packaging. The paper will discuss the three major architectural systems: peer-to-peer architecture, client/server architecture, and web-based computing.

The peer-to-peer architecture, also P2P is one of the best technologies that have reconstructed the architecture of distributed computing. This is because it has been able to bind several resources with a lower cost and at the control of the internet. Since 2000, this type of architecture has been able to attract a significant number of interests in the industrial and academic fields. P2P is basically a decentralized communication archetypal in which different parties have the same abilities and at the same time either of the parties can initiate a communication session. Unlike the client/ server architecture, where a client has to make a service request and awaits approval by the server, in P2P architecture, each node is allowed to function as both server and client. The P2P is commonly used to provide routing of network traffic, distributed storage, and massive parallel computing atmospheres (Englander, 2014). Because of its association with media sharing, it is therefore commonly used for software piracy and patent violation.

A web-based computing refers to the process of accessing a program or a file over network connection, mainly HTTP. Unlike other methods of architecture, the web-based computing technique does not employ the use of device's memory. Normally, the web-based applications used in computing often run inside web browsers, such as Mozilla and chrome

browsers. However, the web-based computing technique may also be client-based. This happens when a part of the program is downloaded into the user's computer, though processing is executed on the internet by an external server. Web-based computing uses applications to perform its operations (Englander, 2014). The web-based applications comprise all applications that use HTTP to communicate with the user. These include applications such as flash games, calendars, and calculators among others. Originally, the network type that was used by P2P architecture was Gnutella. However, with new developments and growth in technology, another type of network was adopted, Ares. Upon six months of operation, Ares switched to a unique network which comprised of leaves and super nodes. If the network protocol is difficult to identify, then Ares becomes the only P2P client that can be used in areas that are restricted, for instance, learning institutions.

Peer-to-Peer Architecture

I would propose the peer-to-peer architecture to be adopted and used. First, the P2P architecture allows users to control and use many parameters of operation. It gives the server the ability to choose the amount of clients it should be connected to. It also gives the server the chance to decide the kind of services to offers, the amount of systems to develop. Some servers simply connect to subsets of active nodes in the network with minimal control of the user. With the new applications such as Napsters and Gnutella, and the most recent, BitTorrent, the music and the video industry have been cut into profits and changed how people acquire and consume the media. However, despite its suitability, some administrators have discouraged the use of P2P architecture. They have cited its ability to tie up a bandwidth, and

its possibility of exposing the administrator. Additionally, they have cited the easiness by which firewalls and malware can be bypassed and distributed. The P2P is designed to follow the concept of peer nodes functioning as “client” and “server” simultaneously. Data is exchanged through the TCP/IP network, although the application layers peers are set to interconnect between each other in a direct manner, using overlay links. The overlay links are commonly used for indexing and peer discovery. Since every node plays a significant role in routing of traffic on the network, therefore malevolent users may take the advantage to perform variety of routing assaults. The main protocols used are P2PTV and PDTP protocols. To create a P2P network, one would require enough cabling, routers, gateways and switches.

References

- Englander, I. (2014). The architecture of computer hardware, systems software, & networking: An information technology approach (5th Ed.). Retrieved from <https://online.vitalsource.com/#/books/9781118803127>
- Govett, I. R. (1998). U. S. Patent No. 5, 761, 507. Washington, DC: U. S. Patent and Trademark Office.