What is Client-Server System: Architecture, Issues and Challenge of Client - Server System (Review)

Article · February 2020

DOI: 10.5281/zenodo.3673071

4 authors, including:

Sawsan Ali
Tikrit University
11 PUBLICATIONS **23** CITATIONS
SEE PROFILE

Rana Alauldeen
الجامعة التقنية الوسطى
7 PUBLICATIONS **18** CITATIONS
SEE PROFILE

Ruaa Ali Khamees
Middle Technical University
11 PUBLICATIONS **20** CITATIONS
SEE PROFILE

HBRP PUBLICATION

Recent Trends in Cloud Computing and Web Engineering
Volume 2 Issue 1
DOI: http://doi.org/10.5281/zenodo.3673071

What is Client-Server System: Architecture, Issues and Challenge of Client -Server System (Review)

Sawsan Ali Hamid[1*], Rana Alaudeen Abdulrahman[2], Dr.Ruaa Ali Khamees[3]
[1]College of Computer Science, Tikrit University, Tikrit, Iraq.
[2,3]Institute of Technology, Middle Technical University, Baghdad, Iraq.
****Corresponding Author***
E-mail Id:-*sawsan.ali@tu.edu.iq*

ABSTRACT

Client–server system is type of client server computing. Clients and servers can work between different computers that are networked together. Usually Client is Personal computer that requests and uses a service while Server is a Computer may be is pc or mini mainframe that provides a service. So the major architecture of client–server system is client, server and n-tier that is a model which has two types in its system which is called two tier systems. This is between client and the server who shares. There is also three tier system which has three types of sharing and interfering materials among the servers and now used multiple tier. The future generation is going to have modern technology so this paper focus on two new technology which used client s-server system for example point of sale (POS) and Massively Multiplayer Online Game (MMOG).And this example can be regard it advantage of client – server system on the hand, this system has some issues for instance security, interoperability, reusability and finally performance.

Keywords:-*client-server; architecture; new technology; security issues*

INTRODUCTION

Client/server is a distributed computing model in which *client* applications request services from *server* processes .It means when client or server request for implication of services, this is called a computing model. These run various interlinked computer networking process. It means that client application is a system when messages are sent through networking. These request for messages serve a specific job as there is a record of data base are when a part of a file can be sent back on a computer hardware. The person arranges the keyboard, local hardware and other equipment which have been kept in exhibition. After receiving such requests, the inquiries regarding database can be managed. This process can be done on PC and other disks. As in banking system, a clerk easily manage account checking and balance with the help of computer. This can be done through PC with the help of a graphical user interface GUI. In this process, number of amount has been put withdrawn and deposited amount. After that, the transmission can be verified and the result has been sent back [1].This system is becoming common in the world with distribution of networking stations increasing facilities. This is called the remote procedure call (RPC)[2].

WHAT IS A CLIENT-SERVER SYSTEM

A client-server system is described in which a server that is to host a virtual machine is selected based on the location of the client device. It means the location of client device virtually is shown as a machine selected by a client-server system. When the client device is requested then there occurs configuration under system.

DOI: http://doi.org/10.5281/zenodo.3673071

So this covers a wide area with immediate effect of being requested. This invention is a set of system which has many methods and tools to perform various functions. This networking server has specific systems which perform many functions. As there are virtualization systems which run this machine on the instructions of a client manufactures. This machine controls the device for functioning as this is linked with system which is being given to the user. Due to increasing the usage of cells and mobile phones, most of the people use many other associated devices for their convenience. These devices are easily accessible to the individuals. These also are having easily controlled system to handle them. These are as helpful and beneficial to laptops and other systems which can be used as wireless or with wired for many purpose [3].

THE ARCHITECTURE OF CLIENT-SERVER SYSTEM

Client/server system is a kind of computer model which enables to divide the load between and among many categories in accordance with the client server. Desktop computer running is a system which runs front end software of many types. In such process, a message is sent and then information can be obtained by client. The operation can be performed by sending and receiving which also takes time between two places of the client and server[4].

The basic architecture of client server system is:

Client

A client is an individual Station which gives services for presenting and better computer facilities to establish connection and provide database to many business and trade purposes. There are other clients who use new graphics for GUI which easily in access to the use as on his disposal and this can be used for many purposes and these are kept for working. A desktop metaphor is a best example which can have facility for keeping files and this can be printed without any interference. The client easily provides facilities to many other clients.

Server

Server is Multi-dimensional sharing memory for computer that are connected and provided services to the respective trade. Traditionally, these servers wait from the clients and then the system covers theoretical organizations which can be changed by the action of sever.

Through the file sharing system, the services are kept and protected in a secret system from client. The ways on PC for messages are kept in its original format. But it should be considered that these servers are also working for other servers.

N-tier

There is a model which has to types in its system which is called two tier systems. This is between client and the server who shares. There is also three tier system which has three types of sharing and interfering materials among the servers. In this process, all applications keep away from the interference and data. This three tier model is much better than the traditionally two tier model because it gives a new idea by a new level of processing. This new modern type is based upon the distributing data. Standard Web application is more advanced and better rather than three tier. This can be said that multiple data is better because of integrating many applications four possible tiers which gathers many data and it can be unify the data with front end [5].

Figure 1 illustrates the architecture of client-server system:

Recent Trends in Cloud Computing and Web Engineering
Volume 2 Issue 1
DOI: http://doi.org/10.5281/zenodo.3673071

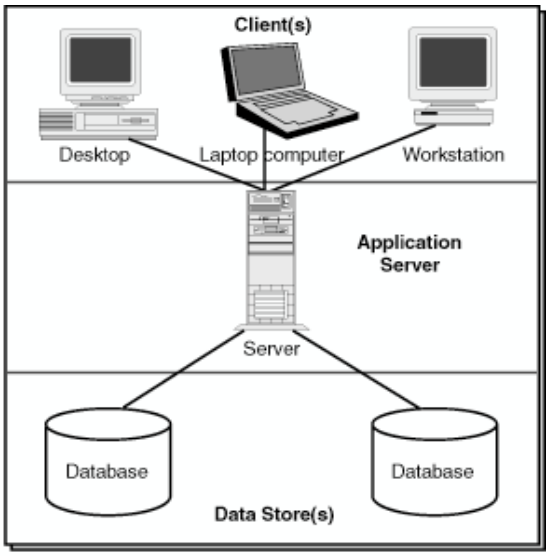

Fig.1:-*Client server architecture*

RECENT DEVELOPMENT IN CLIENT–SERVER SYSTEM

The future generation is going to have modern technology. In next coming years, the organization of old will be no more and due to blessing of internet. Everybody will be connected with each other everywhere. The system will not remain limited to a single box, but this will be divided among multidimensional servers. There is possibility of working on NT, and some will work Alphas, and many of them will depend upon the old traditional type of technology. There are many studies which show 22% of the clients is using multi-dimensional devices [6]. The client-server system has a new experience of popularity. This is a system which provides much information through combination of services as the desktop through on-line transaction processing, and systems give permit to share the varies information among the server [7]. The recent technologies in client- server are:

Point-of-Sale (POS) System:

During traditional POS system the cash registers used to be one of the main business tools for small retailers but, with the rapid development of computers technologies, mechanical registers in retail's store are being replaced by point-of-sale (POS) systems. These are register which are being used by small traders who are running their stores by replacing POS systems. These systems have many advantages because moving of these systems is making sustained and good advantages for them. Traditionally, these systems have been used on large and big store but now they have diverted their interest rather to the low levels of business. These are expanding their functions. These have extended their services to the small group of industry. This low level invented new technology has improved itself the services for the small business to exploit POS system in the daily life of trades as in the restaurants, for dry cleaners and cosmetic providers for their transaction and keeping record of many new items of demand and supply etc. This special POS system has a new system of computer of multidimensional type linked with impersonal connections like electric data exchange and it is attached with one or more than one in the locality around. Currently, these are in processing stage but the servers are still providing services online POS facility but the clients give only services with users' interferences system[8].

Recent Trends in Cloud Computing and Web Engineering
Volume 2 Issue 1
DOI: http://doi.org/10.5281/zenodo.3673071

Figure 2 below illustrates the POS system:

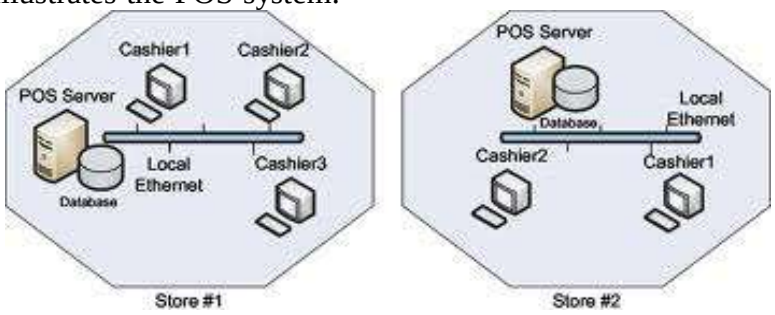

Fig.2:-*POS system*

Massively Multiplayer Online Game (MMOG)

The MCGs, online gaming technology, has shown popularity in response to the increasing demand in providing services to the players very quickly simultaneously. This MCG refers a sharp responsive when physically a key is pushed or a joystick is forced functioning, and then play starts. But with regard to client-server technology, an action can be processed for verification for functioning. As it can be seen in a game where a player strikes hit with mouse, for carrying an object before the opponent party. But in peer to peer model, equally, the messages are processed in all networks because these are free and simple in handling the games. These all need to be connected to the server through networking. They need no other clients as only server takes responsibility for communication between each other. In this way, a server establishes the system and keeps on working game [9]. Figure 3 below illustrate the increasing in using online games:

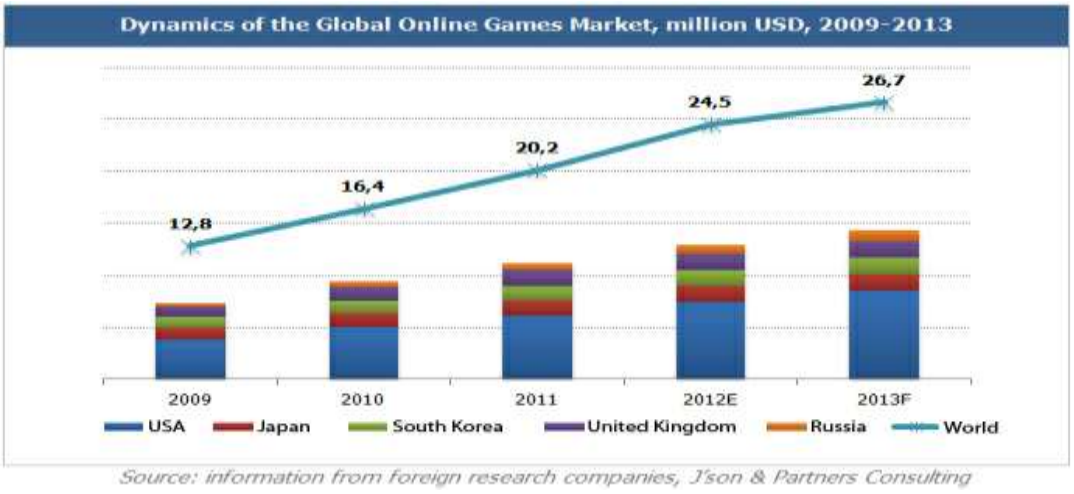

Fig.3:-*Increase in using online games*

ISSUES AND CHALLENGES IN CLIENT-SERVER SYSTEM

Client/server clearly has advantages as well as disadvantages. However, the client/server environment has some of the key issues are:

Security

In client server, it saves the distribution from any virus attack and saves from such attacks, frauds mischievous acts and maladjustment in computer system. The cost alone selects multi purposes for the security objectives. This security system controls the host system of PCs, LANs, play stations, and all other WANs users. This client machine connects all data where these are around. The problem is that it is easy to have access for usage.

DOI: http://doi.org/10.5281/zenodo.3673071

These are kept openly and it is difficult to run it when it is locked. The materials are easily available in locking them or putting them in a place. There is another danger for client workstation, which is available to the end server which makes possible illegal interferences by getting valid ID password. This risk is more dangerous when passwords are too short as the names of spouse or when these are shared with other users[10].

Figure 4 below illustrates the security in client-server

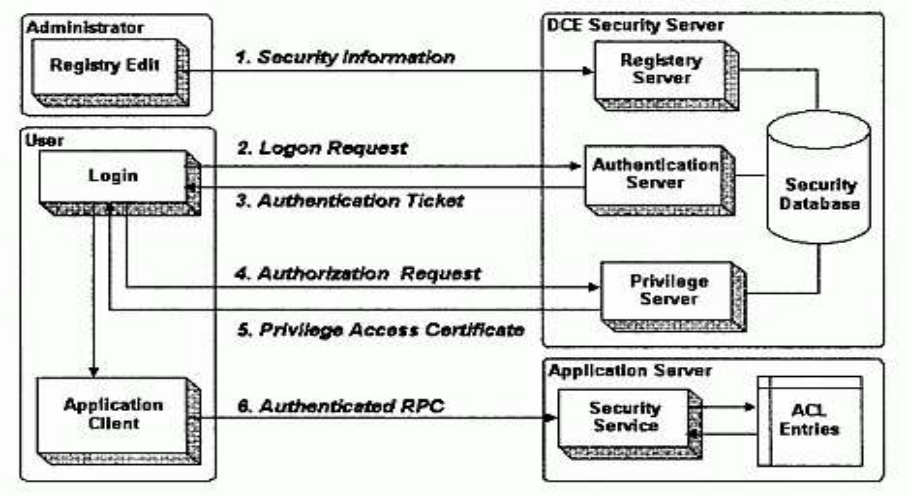

Fig.4:-*Security in client-server*

Interoperability

As these are not compatible, so cooperation between two same groups is difficult. So there is need to establish the interoperability between two of them.

There are two aspects of client-server for interoperability one is of a unit of interoperation, and other is interoperation mechanisms. But the basic unit of interoperation consists of a specific process. Nevertheless, larger-granularity units of interoperation can be needed by providing software components. Also there are two main mechanisms for interoperation are as following.

Interface standardization: The aim of this process is to fill the gap between the client and server interfaces for a mutual representation. The merit of this technology is (i) it keeps away communication models of clients from those of servers, and (ii) it provides portability.

Interface bridging: The aim of this mechanism is to provide a two-way gapping between a client and a server. The advantages of this mechanism are: (i) openness (ii) flexibility.

Reusability

Reusability of servers is a vital issue for both users and software maker due to the bigger price of writing software. This issue could be easily handled in homogeneous environment because accessing technologies of clients may be made compatible with software interferences, with simple compatibility given by kinds and dynamic compatibility by norms [11].

Performance

High performance is vital for both for the best exploitation for system resources and for the satisfaction of the users. For the actual systems, timeliness of the response has become a part of the system procedures. Important performance models

DOI: http://doi.org/10.5281/zenodo.3673071

are thus needed for knowing and realizing the behavior and predicting the performance of client-server systems [7].

CONCLUSION

This paper has attempted to describe client-server system which has client, server and network for establishing links between client and server. A client server technology can be given to servers providing a connection within different locations, each technology is responsible for its usage as client devices; a client device can perform function for the use of a technology for the selected server. Presently, there are a lot of new types of technology which are being used for client-server system and this study also shows two new technologies as one is point of sale (POS) system and second one is Massively Multiplayer Online Game (MMOG) both play crucial role in the life of human beings. These have many advantages but these are not without problems as maintaining the security risks and proper functioning.

REFERENCES

1. S. Maffeis. *Client/server term definition.* Encyclopedia of Computer Science, 4th edition. International Thomson Computer Publishing, 2000.
2. G. Franks. *Traffic dependencies in client-server systems and their effect on performance prediction.* Computer Performance and Dependability Symposium, 1995. Proceedings, International, 1995:24-33p.
3. F. Fok Ah Chuen and B. Lecroart. *Client-Server System.* ed: WO Patent 2,011,089,775, 2011.
4. P. C. Pendharkar and J. A. Rodger. *Data mining using client/server systems.* Journal of Systems and Information Technology.2000.4:72-82p.
5. S. M. Lewandowski. *Frameworks for component-based client/server computing. ACM Computing Surveys (CSUR).*2006.30:3-27p.
6. D. Brown. (2007) *Client/Server Systems Development.* Government technology.2007
7. S. Majumdar and A. Hubbard. *Computation of bounds and performance guarantees for client-server systems using a queueing network model.*System Sciences, 1998, Proceedings of the Thirty-First Hawaii International Conference on, 1998:415-425p.
8. Y.-G. Kim and J. Lim. *A POS system based on the remote client-server model in the small business environment.* Management Research Review.2011.34:1334-1350p.
9. S. McLoone, *et al. A Consistency Regulation Algorithm for Client-Server-based Multiplayer Computer Games.* Irish Signals and Systems Conference. 2012.
10. X. L. a. n. c. Ian Wilson. (2009) *Client/server security issues.* The magazine of the melbourne pc user group. 2009.
11. W. Jia and W. Zhou. Distributed network systems: from concepts to implementations.Springer, 2005.15.
12. I. A. B. Sawsan Ali Hamid, Rana Alauldeen Abdalrahman, Inam Abdullah Lafta. *Web Services Architecture Model to Support Distributed Systems.* J. Southwest jiaotong Univ. 2019.54:52–57p.

Cite this article as: Sawsan Ali Hamid, Rana Alaudeen Abdulrahman, & Dr.Ruaa Ali Khamees. (2020). What is Client-Server System: Architecture, Issues and Challenge of Client -Server System (Review). Recent Trends in Cloud Computing and Web Engineering, 2(1), 1–6. http://doi.org/10.5281/zenodo.3673071