

An Anatomy of the Email Service, Simplified

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ABSTRACT

A mail server is seen as a den of mails where people are shown their communications, messages sent and messages received. This paper has a systematic approach on the background idea of what the server looks like and the mode of operation and the approach. It is a primitive representation of the concept of a mail server for a better understanding. This paper is purely an academic paper meant for classroom demonstration.

Keywords: POP3, MTA, SQL, IMAP

INTRODUCTION

[1]"A mail server (also known as a mail transfer agent or MTA, a mail transport agent, a mail router or an Internet mailer) is an application that receives incoming e-mail from local users (people within the same domain) and remote senders and forwards outgoing e-mail for delivery". In another definition, we can see a mail server as [2]"A remote or central computer that holds electronic mail (e-mail) messages for clients on a network is called a mail server. A mail server is similar to the post office, where mail is stored and sorted before being sent to its final destination. When the user requests his or her e-mail, contact is established with the mail server, which then delivers all stored mails to the client's computer".

It is simply a computerized or automated version of the post master that carries mails to people when mails are posted. It enables people all over the world send, receive and read text mails, image mails, music mails, video mails and the rest of them. The advent of mails servers changed the world from the era of hard paper mails to the era where people can stay anywhere and send and receive messages of all kinds. We have several mail servers in the world and this is remarkably good for the world as we can have choice of what server to use so as reduce the crowd and traffic. Some examples of mail servers we have are Yahoo mail server, Google mail server, and Hotmail server to mention but few.

GENERAL CONCEPT OF THE MAIL SERVER

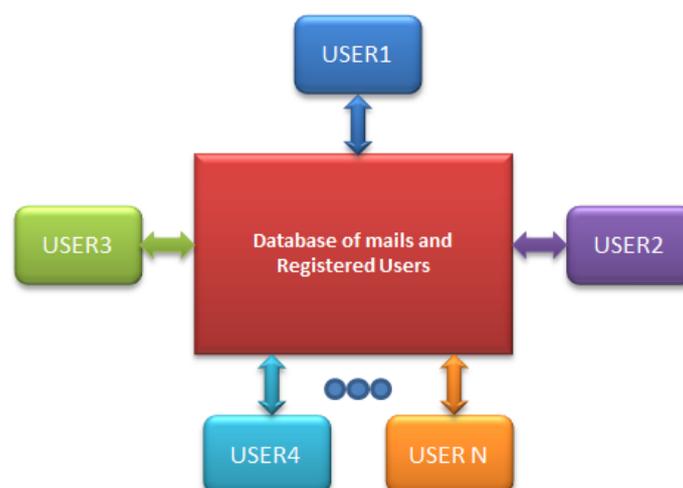


Fig1.0. A typical primitive concept of a mail server

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SENDING AND RECEIVING OF MAILS

There is no magic in the sending and receiving of mails, as the definition goes, an automated version of the mailman in the neighborhood. From the diagram above, a careful observation shows that, there is a collection of several databases communicating among themselves that is, they have communication link and this link is created and linked to a central database where everyone is a member. For a message to be received by a user, the user must be a member of the family of users thereby having a link to the centre and to other users. It is the link that brings all members to a loop so as to have a unique representation in the family. What this means that, as soon as someone joins the family, the person is given a tag that is recognized by every member with which that person can send and receive messages from other members in the family.

For USER1 to send a message to USER2, the process is as shown below.



Fig2.0. A simple communication between two users

The diagram above shows a user-to-user messaging where user1 sends a message to user2 or user2 sends a message to user1. Whichever direction, the message can be sent and the most important consideration is that provided they each exist in the family, the message will be sent and be received. The gymnastic existing in the concept is that, User1 only sent User2 a message to the table such that, the both afterwards retains the message as seen as either sent or received message.

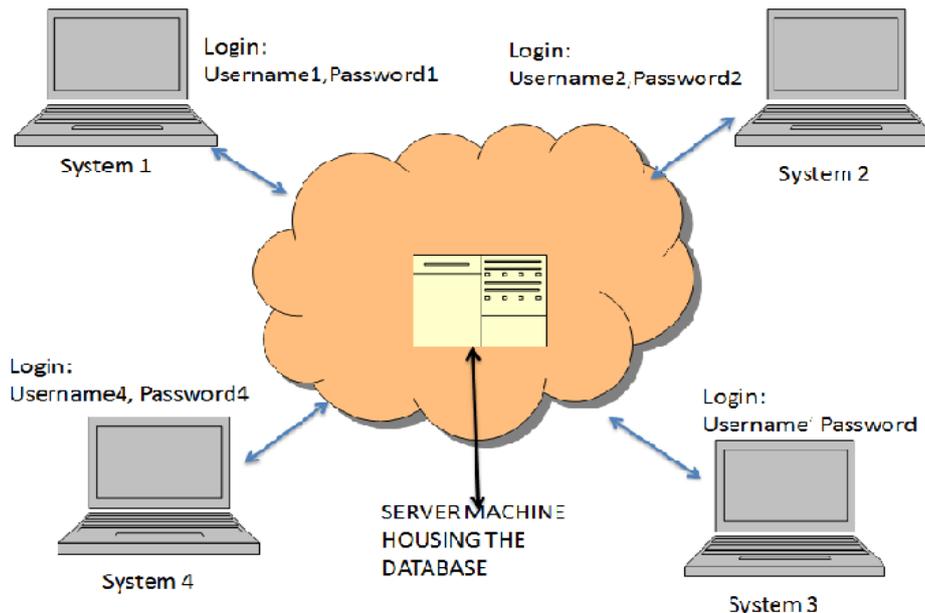
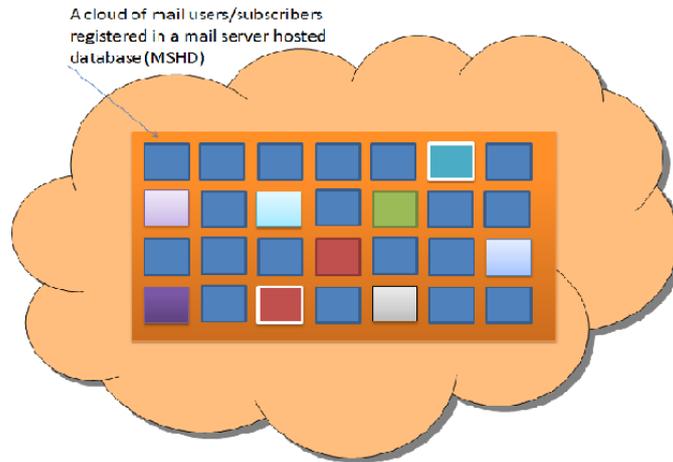


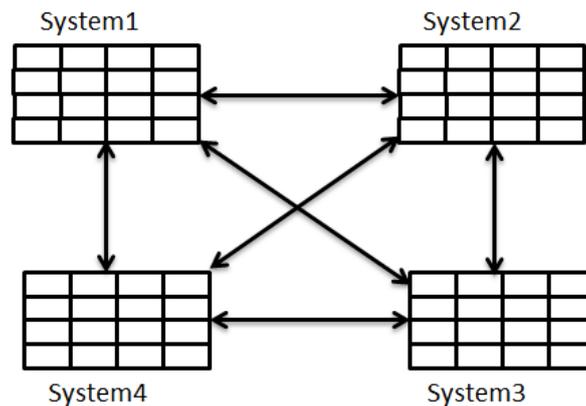
Fig3.0. The physical view of a server

For every mail that is sent or received, there is always a duplicate copy because, when a sender sent a message, the message is sent through the database of the sender which is first retained or buffered before moving it to the recipient's database to be kept for the period of time it is allowed to stay. The engine behind the retrieval of mail is a simple query that opens the table where all the mails are saved, either the bulk of sent mails or messages or the bulk of received mails or messages. This is somewhat interesting and it is simply the concept of the mail server. The medium is the webpage that enables these tables to be seen using various scripting languages and other suitable programming languages.

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PROTOCOLS AND QUERIES



Queries(select, insert, delete, update)

Protocol is used as a rule or order to organize and manage the connectivity between the server and the users. The main engine of the mailing system is the fact that tables can understand a common language used by all the tables. The language is none other than the queries commonly called SQL. For any system to send a message there are keys and components involved; there is a sender ID, sender table and fields, receiver ID, receiver table and fields. Each message that is sent has a dual form; the sent copy and the retained copy for the sender

A message (M) =f(sent, saved)

Sent message (S) =(received, not received)

Therefore M=f((received, not received),saved)

Or

M=f(S,saved)

There are several queries and operations linked to either the saved message or the sent messages as stated: Delete an existing read message, update an existing message, send(insert the message to the designated table, select and read existing sent or received messages.

CLIENT-SERVER

“[3]A client/server network is a system where one or more computers called clients connect to a central computer named a server to share or use resources. Each client computer must use an operating system that allows it to be identified to participate in the network”.

For the mail service to take proper effect there is always a messenger and a message, a sender and a receiver. There are two levels of machines in operation in this setup, the client also known as the end-user machine and the server also the dedicated distributor and the carrier of the shared resources in the network domain. In client-server, the strength of the system lies in the ability and capability and

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flexibility of the server. Client-Server as discussed by Peter(2005), Client-server model is a concept for describing communications between computing processes that are classified as service consumers (clients) and service providers (servers). Figure 4.0 above is a sample design of a client-server concept where the database is housed in the server machine to be accessed by every client that will need services from the server machine. Using this concept, it is pretty clear what the both machine share and how they share resources. The main idea behind this concept is that, provided the client is connected to the server or registered in the server machine, it is capable of sharing such resources as emails, files other resources using the right protocols such as FTP, POP3, IMAP and the right SQL queries such as SELECT, UPDATE, DELETE, APPEND.

DATABASE

A database is collection of records as related as they are to each other. The database of the email is therefore a collection of all mails sent and received, all draft mails, details of users such as: name, username, password and others. The

CONCLUSION

The design of a mail service system is not as if mails are sent to the client machines, but that they are directed to a database dump, stored using the right protocols and the relevant SQL queries where the client(user) is able to access the location of the database or portion of the database using the right protocol and the SQL queries to access and the right access details with exclusive rights granted by the database administrator at the server end.

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AUTHOR'S BIOGRAPHY



My name is **Gogo, Tamunoomie Samuel**; I was born in 1978 at Okrika in Okrika Local Government of Rivers State of Nigeria. I am the last of six(6) in my family. I attended and sat for my SSCE in 1993 at the Okrika Grammar School. I obtained a Diploma (ND) in Civil Engineering in 2000 at Federal Polytechnic Nekede and later obtained my first degree (B.Tech) in Computer Engineering in Rivers State University of Science and Technology, Port Harcourt in 2006. I as a result of my pursuit for greater heights and excellence, I went ahead to obtain a Master's degree (MSc) in Software Technology in RGU Aberdeen, UK. Currently I am a lecturer II in the department of Computer Science in the School of Applied Science of Ken Saro-Wiwa Polytechnic, Bori. I have developed some applications to aid the computation of results by lecturers and students copy of web designing software called GosPad. My other side is the ability to compose native songs for choirs for ten (10) years now and a Church organist and a choirmaster.