

# AN ANALYTICAL RESEARCH ON HTTP, WEB SERVERS, WEB-SERVICES

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## ABSTRACT-

*This electronic document is intended to give an overview on hyper text transfer protocol System, web-services, web-protocols and their interactions with DNS servers for efficient query processing. Efficiency is achieved by sending queries directly to the top level domain name servers. These top-level domain name server databases and the cache memory that contains the hosting systems address, along with the web-hosting address, officially respond to the user's query. Thus queries sent by the user are efficiently processed in time by the top level domain name servers. The number of top level domain name servers has to be increased accordingly to handle requests made by users.*

**Key Words-** HTTPS, Web-services and Web-servers.

## INTRODUCTION-

Web services provide a standard, reliable and efficient means of differentiating between different software applications, running on a range of different platforms and frameworks. The purpose of this document is to provide a basic definition of a web service, and to define its place within a larger web services framework to guide the technical community. Hyper text transfer protocol, the relationship between web servers and web services is a complex set of functionalities where the exchange of information is very fast and there is zero scope for redundancy and information loss. Each of these sections is explained and documented very clearly that they can be understood even by beginners. Each component has many important roles and thousands of functions that users can access and use on the Internet. Hyper text transfer protocol allows users to interact with web servers and access information via the Internet. The web server is the source of serving data and files for users who request them. Web services allow cross-system, cross-language, and cross-language communication between different types of machines and thus enable a wider range of inter-business transactions. Each technology operates on its own set of principles, has its own set of requirements, and also performs many useful functions according to the user's requirement; it is the combination of these technologies that has created the dynamic functionality of the web that is available today. This research paper will explain in depth the interrelationship between hyper text transfer protocol, web server and web service technologies that have facilitated the functionality and convenience of the web.

## **HYPER TEXT TRANSFER PROTOCOL-**

Hyper text transfer protocol is a standard protocol currently used to access the Internet. According to the World Wide Web Consortium, 'Hyper text transfer protocol system is an application-level protocol for distributed, collaborative, information systems or machines.' It is a very simple protocol that allows raw data to be transferred to the Internet in the form of packets. With this simple data transfer protocol, users of the Internet can easily function and deliver commands to the web server through a GUI. As web page that is viewed through a browser and allows users to process details and commands. No need to worry about To be transferred or interpreted by the computers involved within the network. Hyper text transfer protocol is enhanced with a facility of exchanging the information between the user's computer and the Web Server rapidly and efficiently.

As hyper text transfer protocol allowed the World Wide Web and the Internet to become such a global need, the World Wide Web and the Internet also helped hyper text transfer protocol to become the global standard of data transfer protocol over the web platform. The World Wide Web global adopted hyper text transfer protocol as the basic data transfer protocol from the year 1990, allowing hyper text transfer protocol to develop into a global standard of data transfer. However, just because hyper text transfer protocol is the current global standard it does not mean that it is flawless or do not have any short comes. An example of Hyper Text Transfer Protocol's drawbacks would be that hyper text transfer protocol is a stateless protocol, which means hyper text transfer protocol treats each command independently. In another words, hyper text transfer protocol does not have any storage or cache memory. Hyper text transfer protocol does not remember past commands and will forget the current command as soon as it is executed. As such, it is very hard to make hyper text transfer protocol to be more interactive and dynamic without additional technologies such as JavaScript, cookies, PHP and other programming scripts. To put it simply, with pure hyper text transfer protocol user will not be able to customize their online shopping cart. Many efforts have been made to improve hyper text transfer protocol. From the first hyper text transfer protocol 0.9, through Hyper Text Transfer Protocol 1.0, to the latest version hyper text transfer protocol 1.1, numerous and many countable improvements have been made. Some of them are-

- Faster response.
- Greater bandwidth savings, by adding cache support.
- Faster response for dynamically-generated web pages, which supports chunked encoding, and allows a response to be sent before its total length is known.
- Efficient use of IP addresses available.

## **WEB SERVERS-**

A server is a system or a machine or a device on a network that manages network resources accordingly. There are many different kinds of servers which are categorized based on the

requirements, dataset, and usage. They are the dial-up servers that serves as a gateway for the user to access the Internet; a printer server, and a Web Servers or information storing servers that stores web pages and other data and information that are provided to users upon request or when the query is passed to the server to serve the information. A Web Server is the central system of Web Site i.e. a web server is a place where the pages related to the website are hosted. These web pages are served to the user when the user requests the data through the browser. It is the Web Server that hosts both the components of a Web page such as the actual Web page hyper text markup language files, JSP files, JQUERY files, CSS files and templates and all other essential technologies that make a Web site function in a way that it has to be. All the Web servers may function similarly, the way of setting up and the way a server can be varied accordingly.

There are two mostly used ways in setting up Web Server: One is Peer-to-Peer type of set up, and other is Client-Server type of setup. Peer-to-Peer follows a direct connection of individual computers to one another where each computer can specify what data it is willing to share with the other computer on a network. This kind of web server set up is very easy and cheap. Further, the speed of file transfer in a Peer-to-Peer type network is not constrained by the capability of any single server. Here each computer in the network is capable of becoming a server, such that it is able to share and transfer a file from multiple servers at the same time, this in turn increases the file transfer rate between the two nodes. However, since each computer in the network is a server, each computer on a particular network needs to be set up manually to achieve the intended functionality. The responsibility of managing the server or system lies with the owner of a computer that is connected to the network. But, the management of a Peer-to-Peer network is very much difficult. Due to the decentralized management of the network, servers with a Peer-to-Peer connection are prone to virus and worm attacks, which if affected may collapse the entire network over any topology.

In a Client-Server network, on the other hand, it is a highly centralized network system with one main central computer as the server unlike Peer-to-Peer type. This type of set up is easy to manage and is very secure when compared to others. Yet, maintaining a centralized network requires much amount of resources ranging from huge manpower to high hardware. This results in increase in the cost of a client-server network. Another drawback of a client-server set up is that the speed of file transfer between the client and the server slows down when the number of clients accessing the server at a time increases. Exception is that, it is very easy to manage and is very much secure, client-server network is still the dominant set up of Web Servers. Apache, which is a free server technology, is currently one of the most popular server technologies because of its ease of usage and flexibility till date.

## **WEB SERVICES-**

Web Service is a very powerful tool that has enhanced the efficiency in communication among fields and domains. According to the World Wide Web Consortium, a Web Service is an intelligent

software system meant to support inter-operable machine-to-machine interaction over and within a network. Web Services is a software system that allows systems & machines (including servers) to communicate with each other regardless of each individual machine's operating systems and programming languages. According to Simon's extensible markup language page there is a formula that neatly defines the major components of Web Services: 'Web services = Extensible Markup Language + Simple Object Access Protocol + Web Services Description Language + Universal Description Discovery and Integration'. Extensible Markup Language is the universal markup language that all machines are capable of understanding. The process of inter-machine communication via Web services, extensible markup language is used to tag the data involved in the communication between two communicating nodes. Web Services Description Language, is being used for describing the services available. The universal description-discovery and integration list out the services available from a particular machine. Simple Object Access Protocol is used to transfer data for each exchange of information between machines and servers, which typically involve hyper text transfer protocol in conjunction with Extensible Markup Language serialization other Web-related standards. Web Services are completely independent of operating system, programming language. As a result, through the Web Services, there is a facility of Java based programs will be able to communicate to servers that are running C++ based programs and a Windows machine will be able to communicate with a LINUX machine or server. Which means web services and completely platform independent?

Though web and a web service serve a similar function, Services do have some most significant differences. One of the most prominent differences between Web services and the Web is that instead of a user interface, Web Services functions through/via application interfaces. In other words, it can be stated as the machines communicate with each other from application to application between two active nodes. Here communication takes place between the applications of one machine to the other machine. Such exchanges limit possible user errors and thus increase the efficiency of the exchange.

## **HOW HYPER TEXT TRANSFER PROTOCOL, WEB SERVERS AND WEB SERVICES INTERACT TOGETHER-**

The interaction between hyper text transfer protocol, Web Servers and Web Services is very simple and can be documented in a lucid way as follows: hyper text transfer protocol is a simple protocol through which browsers use to communicate with Web Servers. Web Servers, on the other hand are responsible for fulfilling the user's request's and store the information users provide. Web Services allow different Web Servers to communicate and interact with another in order to process the request and/or commands given by user through browser or any Graphical User Interface.

The interconnectivity among the three technologies works can be explained by using an example where a user is trying to buy a plane ticket online. The user will be accessing a travel agency web site to query for the availability of seats on the required date and time. Here hyper text transfer

protocol acts as the language through which the users will be able to communicate with the Web server that actually can access the information of flight date, time, seats, price from the airlines database. According to the values given by the user to the Web page and transmitted to the Web server through hyper text transfer protocol, the Web server performs the command of search by sending out the commands of this query to each individual airline's schedule databases using an application to application interface (Web services). Web services translate the markup language the Web server uses into the universally understood extensible markup language that is given as input to the databases of all the available active airlines. When the extensible markup language is received by the airline databases, Web services translates the extensible markup language into the programming language that each one of airline database is using so that the database would be able to understand the command the Web server sent out. After the execution of the query, the result would be transmitted back to the Web server through Web services. Then the Web server would be able relay these search results to the user through hyper text transfer protocol which would present the information to the user through a hyper text markup language file that could be interpreted by any of the browsers. In total, the functions of querying requires all three technologies, hyper text transfer protocol, Web server and Web services, have to work together for a success full outcome. Without any one of these technologies, the query would fail or may have very limited scope.

## **THE ROLE OF HUMANS-**

Although the main purposes of Web services is to automate processes that might otherwise be performed manually, humans still plays an important role in their architecture designing, maintaining and use, notably in two ways:

- Humans have to agree on the semantics and the service description. Since a human is the legal owner of any Web service, people must agree on the semantics, usage agreement and the service description that will govern the interaction with the web-server through web services. Often this agreement is accomplished by the provider entity and offering both the semantics and the service description as accept it or reject it contracts that the requester entity must accept as mentioned by the legal entity, unmodified as conditions of use. In order to use the services provided by the owner the user must agree to the terms and conditions of the service provider. However, nothing in this architecture prevents them from reaching agreement by other sort of means.
- User creates the request and provider agents either directly or indirectly. Humans, the users must ensure that these agents implement the terms of the agreed-upon service description agreements and semantics. Regardless of the approach or form used, from information point of view both the semantics and the service description must be somehow be input and both the service providing agent and the provider agent before the two agents can interact.

**CONCLUSION-**

The functionalities that hyper text transfer protocol, web servers and web services provide now in the current scenario dramatically changed the way individuals, companies, and the people conduct business online. While it will be suitable to state that each technology was created for one specific purpose, the combination of these technologies that has greatly enhanced the transfer of information online. The example of users purchasing tickets online shows how critically important is a role of each technology, all these plays a very prominent role in one of the most common tasks users can accomplish on the Internet today. Without any one of these technologies, e-commerce industry all over the world would not have boomed as much as it is now and the convenience users may not have increased to this extent without these technologies.

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