

Importance of Application Layer in OSI Model

Hawkar H. Khalil

Department of Computer Science
 University of Bridgeport
 Email: hkhalil@my.bridgeport.edu

Prof. Tarik Eltaeib

Department of Computer Science
 University of Bridgeport
 Email: teltaeib@my.bridgeport.edu

Abstract—In the model of OSI (Open System Interconnection) layer seven is known as application layer. This layer is named appropriate when consider all the other layers in the model. It is most important to know what exactly the application layer, it is not the normal application we think. The reason for knowing this is because not all the user applications use the application in the same way. Application layer is an interface between two hosts.

Keywords—Application Layer, OSI, HTTP, FTP

Introduction:

The communication networks are quite complex. To understand this network OSI model came into existence. The OSI model standardizes and characterizes the internal function of the communication system. The ITU-T as the X. 200-series provides standard documentation of this use model. This concept of a seven-layer model was provided by the great research worker Charles Bachman at Honey well Information Services. Many different kinds of OSI design are evolved by experiencing ARPANET, NPLNET, EIN, CYCLADES network. This model group exchange of messages between hosts into seven layers, each layer has its own protocol to communicate between the layers. Network is the one which is in between top and bottom layers, when the messages are passed each layer perform its function on the transported information in order to maintain integrity and authentication.

What is the Application Layer?

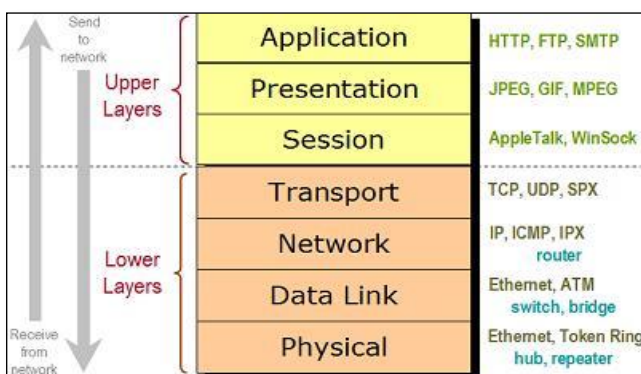


Fig.1

The TOP most layer of the OSI model is the application layer. The capacity of this layer is to Handles issues like data transparency, allocating resources, allotment issues. As per the client's perspective application layer is considered as arranging electronic mail messages. There is comparability between presentation layer and the application layer. This layer demonstrations like an interface for corresponding with the application process.

Function of Application layer:

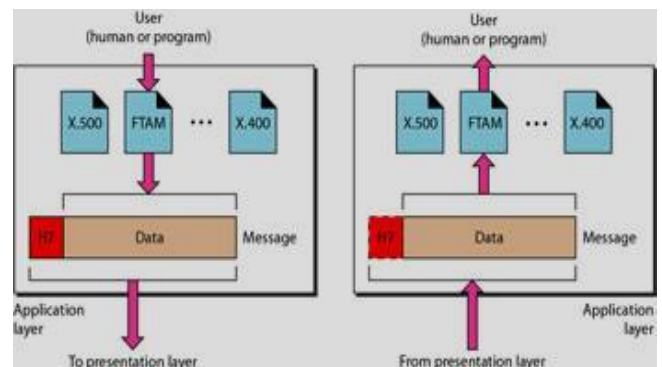


Fig.2

The application layer [1] serves as the window for clients and application methodologies to get to system administrations. This layer contains a mixed bag of ordinarily required capacities:

- Resource imparting and gadget redirection
- Remote record access
- Remote printer access
- Inter-process correspondence
- Network administration

Working OF Application Layer:

This one excessively is named properly. The application layer is the particular case that is utilized by system applications. These projects are what really execute the capacities performed by clients to finish different undertakings over the system. It's critical to comprehend that what the OSI model calls an "application" is not precisely the same as what we regularly consider an "application". In the OSI model,

the application layer gives administrations to client applications to utilize.

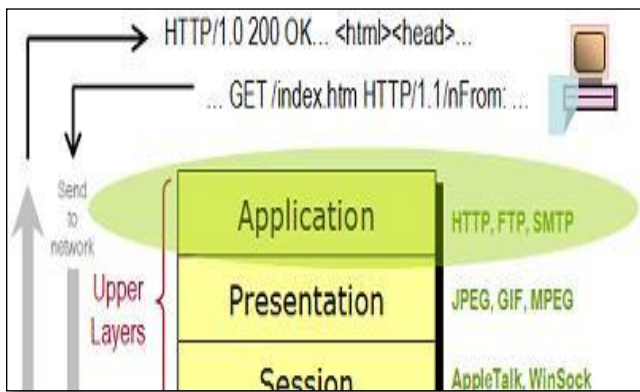


Fig.3

For instance, when you utilize your Web program, that genuine programming is an application running on your PC. It doesn't generally "dwell" at the application layer. Rather, it makes utilization of the administrations offered by a convention that works at the application layer, which is known as the Hypertext Transfer Protocol (HTTP). The qualification between the program and HTTP is unobtrusive, however vital. The explanation behind bringing up out is on the grounds that not all client applications utilize the application layer of the system in the same way. Granted, your Web program does, thus does your email customer and your Usenet news reader. In any case on the off chance that you utilize a content manager to open a document on an alternate machine on your system, that proofreader is not utilizing the application layer. Truth be told, it has no idea that the record you are utilizing is on the system: it simply sees a document tended to with a name that has been mapped to a system someplace else. The working framework deals with diverting what the manager does, over the system. Thus, not all employments of the application layer are by applications. The working framework itself can (and does) utilization benefits specifically at the application layer.

Working of Application Layers Protocol

HTTP[4]

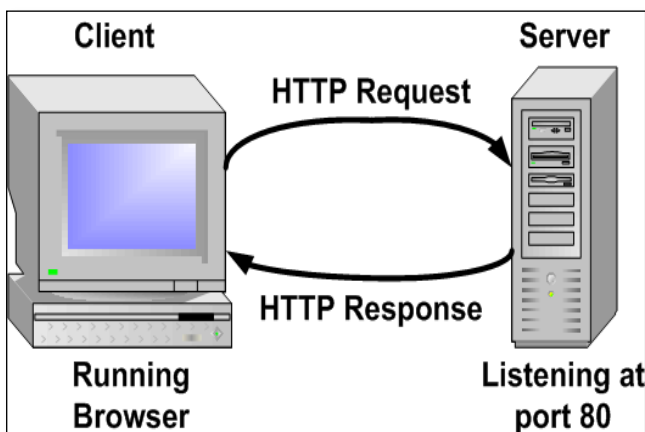


Fig.4

The above figure shows the working of the application layer's HTTP protocol [2]. HTTP is the stateless protocol. It accepts the request from the client and passes the request to the server and it disconnects from the client. Whenever there is a response from the server, the HTTP establishes the connection and forwards the response to the client.

FTP[4]

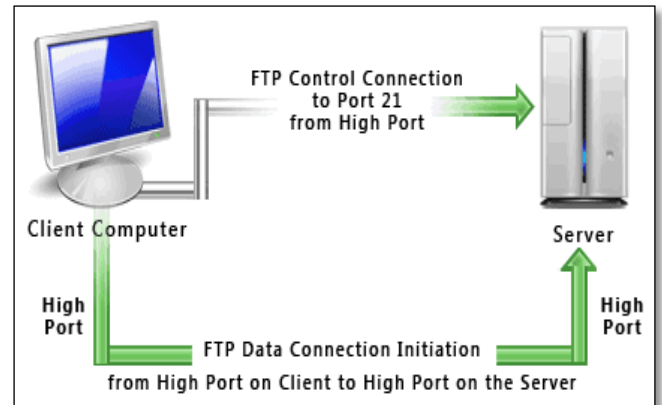


Fig.5

FTP depends on a pair of TCP ports for the transfer of file from server to the client.

FTP Control Channel, TCP Port 21: All commands you send and the ftp server's responses to those commands will go over the control connection, but any data sent back (such as "ls" directory lists or actual file data in either direction) will go over the data connection.

FTP Data Channel, TCP Port 20: This port is used for all subsequent data transfers between the client and server. In addition to these channels, there are several varieties of FTP.

Conclusion

Think regarding HTTP (Hyper Text exchange convention), FTP (record exchange convention), DNS (area name administrations) and DHCP (element host design convention). The application layer is the most elevated amount, layer 7 of the OSI an ISO (International Standards Organization) (Open Systems Interconnect) model. ISO falls under the ANSI (American National benchmarks Organization). This is an old standard and I accept the layers have been reclassified here and there through the years. For the most part you can think about the application layer as what is on the screen before you. On the off chance that you download a site page, open an email or get an IM (text) from somebody you are taking a gander at the application layer. Keep in mind that the presentation layer 6 equitable beneath application may have done some information organizing, unscrambling or change or something to that affect before the information is really noticeable at the application layer.

Finally to conclude that with the increasing demand for security and data integrity there can be more

advance research in the field of application layer security.

References

- [1] Requirements for Routing in the Application Layer- Pamela Zave.
- [2] Application Layer Security-John Rouda.

- [3] Peer-to-Peer Infrastructure: A Survey of Research on the Application-Layer Traffic Optimization Problem and the Need for Layer Cooperation- Vijay K. Gurbani, Volker Hilt, Ivica Rimac, and Marco Tomsu
- [4] FTP Vs HTTP- Micah Cowan, Joe Touch, Austin Appel, Dennis German, Josh Hillman