



Survey of Network Protocols

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Abstract:

IPv4 is the network protocols of the present Internet, which is characterized by the Internet Engineering Task Force (IETF). Network protocols characterize guidelines, polices and traditions for communication between system devices. Every advanced protocol for computer organization utilize a packet switching system to send and get the message. The protocols are intended to conquer the activities of any enemy that can lose the sent message, discretionarily change the fields of the sent message, and replay old messages. In the web, the colossal measure of information and the immense number of various protocols makes it perfect as a high-bandwidth speed vehicle for undercover communication. This article is an overview of the current methods for making the covert channels. We additionally gave a diagram of wide kinds of network protocol.

1. Introduction

Network protocols are formal norms, polices, principles, methods, and arrangements that characterize communication between at least two devices over a network. Network protocols administer the end-to-end procedures of convenient, secure and oversee information or network communication. Network protocols incorporate instruments for devices to distinguish and make the association between one another and arrange rules that explain how information is bundled into a message sent and Received. A few protocols likewise support message affirmation and data compression intended for dependable and high-performance network communication. Network protocol fuse every one of the procedures, necessities, and requirements of achieving communication between PCs, servers, routers and other network empower devices.

Every single current protocol for PC networking is utilizing packet switching methods to send and get the message as packet messages are subdivided into pieces that are gathered and re-amassed at their goal. Several network protocols have been created each

intended for a particular reason or condition. There are broad verity of networking protocol: Network communication protocols: Some fundamental data communication protocol, similar to TCP/IP and HTTP[1,2]. Network security protocols: Implementation of security on network communications including HTTPS, SSL, and SFTP[3]. Network administration protocol: give upkeep and networks administration including SNMP and ICMP[4].TCP/IP is a group of networks protocol that is utilized for the web.

A network protocol is a standard that is composed on a paper (all the more correctly, with a content tool in the PC). The standard that is utilized for the web is called Request For Comment (RFC) [5]. Request For Comment (RFC) is numbered from 1 to onwards. Today there are in excess of 4,500 RFCs and huge numbers of RFCs have turned out to be outdated, so nowadays just the initial a great many bunch RFCs are as yet utilized [6].

The International Standardization Office (ISO) institutionalized the arrangement of networks protocol ISO and OSI. The association that issues communication principles is the International Telecommunication Union (ITU)

situated in Geneva. The ITU was once known as the CCITT, and being established in 1865, and it is one of the oldest overall association (for comparison, the Red Cross was established in 1863). A few principles are additionally issued by the Institute of Electrical and Electronics Engineers (IEEE)[7]. RFC, principles are discharged by RIPE (Reseaux IP Europeens), and PKCS (Public Key Cryptography Standard) openly accessible on the web and simple to get. Different associations like ISO, ITU et cetera, they don't give their norms on the web for free of charge, and you need to pay for the principles[8].

2. Related Work

The network-based protocols and frameworks were primarily conceived in the 1970s and 1980s. Numerous protocol was created at first as a way to interface the mainframe PC system for just timesharing purposes. The system presented for the trivial reason has used to become a worldwide multimedia information and communication system interfacing PCs, telephones and many millions instead of a couple of devices foreseen by unique designers[9].

TCP/IP invented in the 1970s and adjusted in the late 1980s. In the mid-1990's TCP/IP hit its first enormous issue when it became apparent that the numbering system was going out of numbers soon[9]. TCP/IP Version 6 was released to settle the issue following a couple of years in 1995's. Transmission Control Protocols-Internet Protocols deal with any kind of PC and operating system for the transmission of information over the web between different systems[10].

File Transport Protocol (FTP) is presented in pre-1972. FTP is basically the method for downloading or uploading a file from internet PC.

The parts of the system are presently over 20 years of age, and the internet is important to play out various essential functions and they are included in the first structure[11]. There are different ways have been connected to base protocols and system, not in every case equitably.

2.1. Who makes protocols?

Institutionalization Committees, Designers of a distributed application[12]. The determination of protocols characterizes the conduct of a protocols entity as visible at the

upper and lower service interfaces. Dynamic behavior of protocol entity, tenets of concerning connections at the upper and lower interfaces; Note (a): Certain protocols are created by the IETF, don't allude to any administration detail. For this situation, just the requesting of associations at the lower interface are characterized. Note (b): In the least complex case (if the protocols do not utilize any connection, or if it can be assumed that appropriate relation is already established) the interaction at the lower interface just incorporate the sending and getting of protocol message (PDUs)[13].

2.2. Why Protocols are required?

The development of the Internet and systems administration encouraged the enhancement of communication inside and between the organizations, and people as well. Network tools vendors are various, in their contributions they are giving shifted levels of versatility and security a given business is probably going to utilize gear from in excess of one vendor[14].

2.3. Features:

Network protocols are "layered". This implies the information sent into the frame for packets and data packets are divided into a few unique parts. Protocols originator make the guidelines for each layer, so the system card creators can utilize the protocol in various approaches to make the transmission of information more proficient[15]. It likewise enables the network architects to adapt the protocols for a particular reason like web communication or small network workgroups with just a couple of customer.

2.4. Types:

There are numerous kinds of system of protocols exist, however, TCP/IP is one the most famous development of its time. Essentially TCP/IP is the language of the internet, Individuals and distinctive organizations consolidate it into the network topology. Other network protocols like IPX, is additionally a dialect of the web created by Novell. Much the same as Apple has AppleTalk that permits Medium Access Control (Mac) work area interface. Token-ring network protocols are the oldest innovation utilized with coaxial cabling and it associated the small networks together[16].

2.5. *Incorporation:*

Network protocols are coordinated into the type of topology that utilizes drivers made by equipment fashioners and operating system vendors. The operating system arranges card and installs TCP/IP in the event that one discovered when a client installs Microsoft windows[17]. System card tells the operating system that TCP/IP is the method for communication over the system, and it enables the windows to "comprehend" the approaching data packets.

2.6. *Contemplations:*

At least one protocol is utilized by the network on a similar topology, this is known as a "heterogeneous" situation. The network utilizes TCP/IP for the communication between windows customer and the web. The network installed IPX to impart the Novell servers. The client who peruses the web and access the Novell server, two protocols work all the while.

2.7. *Security:*

Protocols decide just the vital guidelines and way for the communication of PCs. Security is executed except if the protocols transmit encoded information. The reason for actualizing the firewalls is to block the pernicious assaults for picking up the entrance to the network assets. Clients ought to install the antivirus software to ensure the spyware and malware assaults that take the personal data[18].

2.8. *A Survey of Covert Channels and Countermeasures in Computer Network Protocols*

In 1973, Lampson presented cover channels with regards to the monolithic system as an instrument by which a procedure at a high-security level leaks data to a procedure at a low-security level that would some way or another not approach to it. Covert channels are utilized for the transmission of mystery data[19]. Just encryption protect the data communication from being decoded by an unapproved individual. The goal of covert channels is to shroud the plain presence of the communication data. Covert channels have distinguished the dangers of a monolithic system (centralized computers).

In-network protocol, the covert channels is a strategy for concealing data in audio, visual or printed content (steganography). In the web, the tremendous measure of information and the immense number of various protocols makes it

perfect as a high-bandwidth transmission vehicle for covert communication. In the PC arranges the limit of covert channels has expanded significantly in view of the new rapid network technology. Indeed, even just a single piece for every packet can be transmitted, a vast web website could lose 26GB of information yearly. Figure 1 shows the de-facto model for covert channel communication.



Figure 1: de-facto model for covert channel communication.

3. **Communication Protocol Developments**

Communication protocols are an arrangement of principles in which a distinctive kind of message is traded. The protocols ought to be explored before being executed. The communication protocol is required for trade message between the computing system and is required in media transmission. Communication protocols are utilized for validation, errors identification, amendment, and signaling. These days communication protocols are generally utilized in the various zone, for example, Space and Aircraft industry, Vehicle system, Mobile industry (USB, UniPro), and Computing (TCP/IP) and so on[20].

There are some famous protocols include: File Transport Protocol (FTP), Transmission Control Protocol-Internet Protocol (TCP/IP), User Datagram Protocol (UDP), Hypertext Transport Protocol (HTTP), Post Office Protocol (POP3), Internet Message Access Protocol (IMAP), and Simple Mail Transport Protocol (SMTP)[21-22].

4. What do we cover by our Methodology?

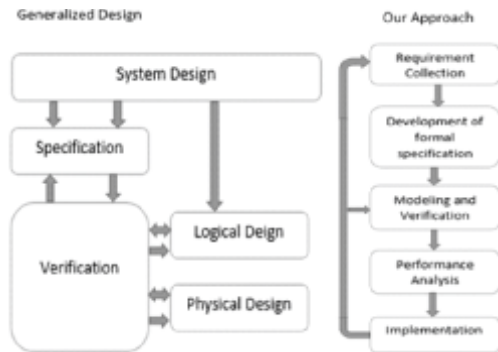


Figure 2: Methodology of the proposed system

Figure 2 shows the methodology of system in the form of flow chart. The flow chart is divided into two parts. First part shows the generalized diagram and 2nd part shows the authors approach.

5. Future Work

We are living in a world that is changing quicker than our creative energies. Remote communication and networking have been persistently advancing to enhance and be a piece of our way of life. The explanation for continuous advancement is a ton of undertakings and practices to enhance the nature of service and applications supported by networking technologies. In the PC network inquires about, the Plethora research was configuration to permit to share the contemplations and realities by utilizing printed information through tending to devices. It implies the client assumes the job of the two makers and buyers in the meantime. The analysts upgrade the networking architectures models and protocols with a spotlight on substance as opposed to the host. The update of architectures brought forth to Information-Centric Networks (ICN) with the few augmentations, for example, Content-Centric Network (CCN), Named Data Networks (NDN) and Data-Oriented Network Architectures and so on. These days some developing network technologies are: Software-Defined Networking (SDN), SDN convey speed and qualification when you send new applications and services. Internet of Things (IoT), Cisco Technology Radar, Cloud Computing and Adaptive security and so on.

6. Conclusion

We have given an overview of network protocols. We have briefly described the network protocols is the formal rules that characterize the communication between at least two devices and distinctive kinds of network protocols, for example, TCP/IP, FTP, HTTP and so forth. We have then clarified in the history area when the protocols are developing, actualizing and the issues confronting. In methodology area, we have proposed a few models of communication protocols development.

7. References

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