



Sign in to GeeksforGeeks with Google



maheswaran goivindaraju
gmaheswaranmca@gmail.com

Continue as maheswaran

To create your account, Google will share your name, email address, and profile picture with GeeksforGeeks. See GeeksforGeeks's [privacy policy](#) and terms of service.

TCP/IP Model

Difficulty Level : Easy • Last Updated : 30

Prerequisite – [Layers of OSI Model](#)

The **OSI Model** we just looked at is just a reference/logical model. It was designed to describe the functions of the communication system by dividing the communication procedure into smaller and simpler components. But when we talk about the TCP/IP model, it was designed and developed by Department of Defense (DoD) in 1960s and is based on standard protocols. It stands for Transmission Control Protocol/Internet Protocol. The **TCP/IP model** is a concise version of the OSI model. It contains four

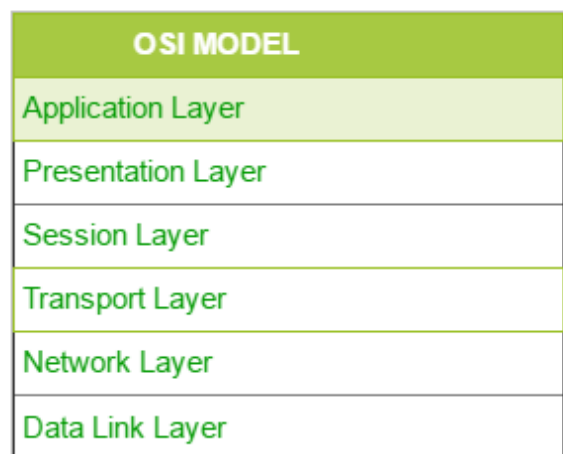
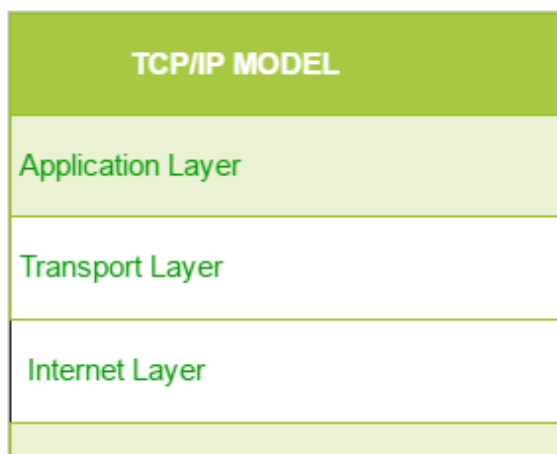


[Data Structures](#) [Algorithms](#) [Interview Preparation](#) [Topic-wise Practice](#) [C++](#) [Java](#) [Pythc](#)

3. Internet Layer

4. Network Access/Link Layer

The diagrammatic comparison of the TCP/IP and OSI model is as follows :



We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !

Start Your Coding Journey

For refers to transmission

Control Protocol.

TCP/IP has 4 layers.

TCP/IP is more reliable

TCP/IP does not have very strict boundaries.

TCP/IP follow a horizontal approach.

TCP/IP uses both session and presentation layer in the application layer itself.

TCP/IP developed protocols then model.

Transport layer in TCP/IP does not provide assurance delivery of packets.

TCP/IP model network layer only provides connection less services.

Protocols cannot be replaced easily in TCP/IP model.



Sign in to GeeksforGeeks with Google



maheswaran goivindaraju
gmaheswaranmca@gmail.com

Continue as maheswaran

To create your account, Google will share your name, email address, and profile picture with GeeksforGeeks. See GeeksforGeeks's [privacy policy](#) and terms of service.

OSI follows a vertical approach.

OSI uses different session and presentation layers.

OSI developed model then protocol.

In OSI model, transport layer provides assurance delivery of packets.

Connection less and connection oriented both services are provided by network layer in OSI model.

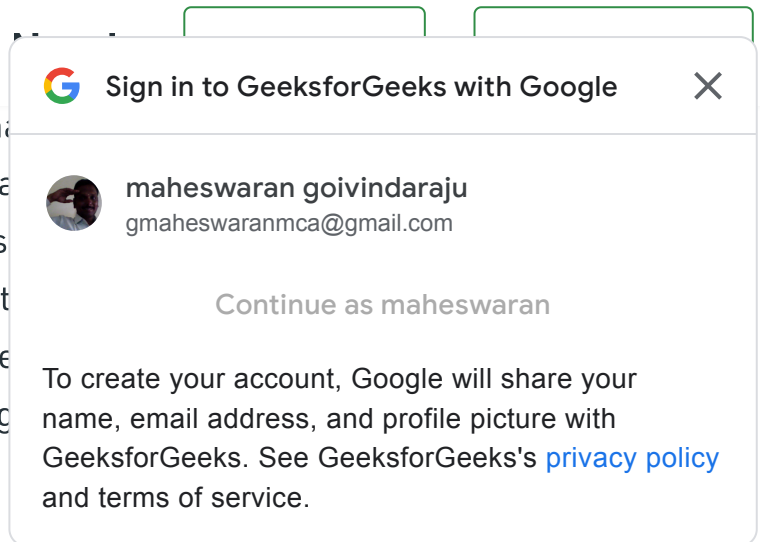
While in OSI model, Protocols are better covered and is easy to replace with the change in technology.

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !

Start Your Coding Journey

This layer corresponds to the combining of the physical and data link layers of the OSI model. It looks out for hardware addresses. The network layer allows for the physical transmission of data. We just talked about ARP being a protocol of the network layer. We just talked about declaring it as a protocol of Internet. It is described as residing in layer 3, being



2. Internet Layer –

This layer parallels the functions of OSI's Network layer. It defines the protocols which are responsible for logical transmission of data over the entire network. The main protocols residing at this layer are :

1. **IP** – stands for Internet Protocol and it is responsible for delivering packets from the source host to the destination host by looking at the IP addresses in the packet headers. IP has 2 versions: IPv4 and IPv6. IPv4 is the one that most of the websites are using currently. But IPv6 is growing as the number of IPv4 addresses are limited in number when compared to the number of users.
2. **ICMP** – stands for Internet Control Message Protocol. It is encapsulated within IP datagrams and is responsible for providing hosts with information about network problems.
3. **ARP** – stands for Address Resolution Protocol. Its job is to find the hardware address of a host from a known IP address. ARP has several types: Reverse ARP, Proxy ARP, Gratuitous ARP and Inverse ARP.

3. Host-to-Host Layer –

This layer is analogous to the transport layer of the OSI model. It is responsible for end-to-end communication and error-free delivery of data. It shields the upper-layer applications from the complexities of data. The two main protocols present in this layer are :

1. **Transmission Control Protocol (TCP)** – It is known to provide reliable and error-

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !

Start Your Coding Journey

2. User Datagram Protocol (UDP) –

features. It is the go-to protocol if you need to transport data as it is very cost-effective. Unlike the TCP protocol, UDP is connectionless.

4. Application Layer –

This layer performs the functions of the

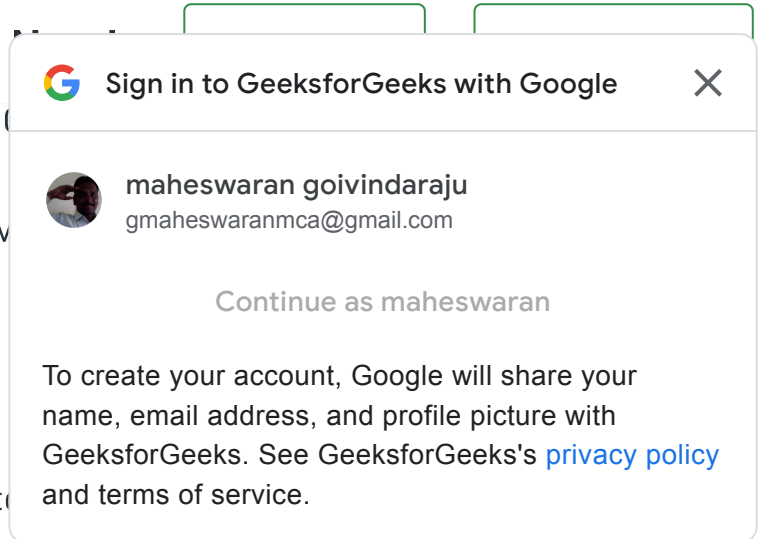
Presentation and Session Layer. It is responsible for node-to-node communication and controls user-interface specifications. Some of the protocols present in this layer are: HTTP, HTTPS, FTP, TFTP, Telnet, SSH, SMTP, SNMP, NTP, DNS, DHCP, NFS, X Window, LPD. Have a look at [Protocols in Application Layer](#) for some information about these protocols. Protocols other than those present in the linked article are :

1. **HTTP and HTTPS** – HTTP stands for Hypertext transfer protocol. It is used by the World Wide Web to manage communications between web browsers and servers. HTTPS stands for HTTP-Secure. It is a combination of HTTP with SSL (Secure Socket Layer). It is efficient in cases where the browser needs to fill out forms, sign in, authenticate and carry out bank transactions.
2. **SSH** – SSH stands for Secure Shell. It is a terminal emulations software similar to Telnet. The reason SSH is more preferred is because of its ability to maintain the encrypted connection. It sets up a secure session over a TCP/IP connection.
3. **NTP** – NTP stands for Network Time Protocol. It is used to synchronize the clocks on our computer to one standard time source. It is very useful in situations like bank transactions. Assume the following situation without the presence of NTP. Suppose you carry out a transaction, where your computer reads the time at 2:30 PM while the server records it at 2:28 PM. The server can crash very badly if it's out of sync.

This article is contributed by **Achiv Chauhan** and **Palak Jain**. If you like GeeksforGeeks and would like to contribute, you can also write an article using [contribute.geeksforgeeks.org](https://www.geeksforgeeks.org/contribute) or mail your article to contribute@geeksforgeeks.org.

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !



Start Your Coding Journey



Sign in to GeeksforGeeks with Google



maheswaran goivindaraju
gmaheswaranmca@gmail.com

Continue as maheswaran

To create your account, Google will share your name, email address, and profile picture with GeeksforGeeks. See GeeksforGeeks's [privacy policy](#) and terms of service.

Like 296

[Previous](#)[Next](#)

RECOMMENDED ARTICLES

Page : 1 2 3

01 Difference between E-R Model and Relational Model in DBMS
16, Apr 20

05 Generalization, Specialization and Aggregation in ER Model
11, Oct 17

02 Similarities between TCP/IP model and OSI model
01, May 21

06 Enhanced ER Model
24, Oct 17

03 This is exactly why we still use the OSI model when we have TCP/IP Model
01, Jun 21

07 Mathematics | Hypergeometric Distribution model
08, Oct 18

04 Introduction of ER Model
13, Oct 15

08 Attributes to Relationships in ER Model
28, Jan 19

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !

Start Your Coding Journey



GeeksforGeeks

Vote for difficulty

Current difficulty : [Easy](#)

Easy

Normal

Medium

Hard



Sign in to GeeksforGeeks with Google



maheswaran goivindaraju

gmaheswaranmca@gmail.com

Continue as maheswaran

To create your account, Google will share your name, email address, and profile picture with GeeksforGeeks. See GeeksforGeeks's [privacy policy](#) and terms of service.

Improved By : [Palak Jain 5](#), [ashushrma378](#), [rahulhindochoa05](#), [mohitmm](#), [satyajitdebnath87](#)

Article Tags : [Computer Networks](#), [GATE CS](#)

Practice Tags : [Computer Networks](#)

Improve Article

Report Issue

Writing code in comment? Please use ide.geeksforgeeks.org, generate link and share the link here.

Load Comments



GeeksforGeeks

A-143, 9th Floor, Sovereign Corporate Tower,
Sector-136, Noida, Uttar Pradesh - 201305

feedback@geeksforgeeks.org

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !

Start Your Coding Journey

ABOUT US

Careers
In Media
Contact Us
Privacy Policy
Copyright Policy

News

Top News
Technology
Work & Career
Business
Finance
Lifestyle
Knowledge

Web Development

Web Tutorials
Django Tutorial
HTML
JavaScript
Bootstrap
ReactJS
NodeJS

Languages

Python
Java
CPP
Golang
C#
SQL
Kotlin

Contribute

Write an Article
Improve an Article
Pick Topics to Write
Write Interview Experience
Internships
Video Internship



Sign in to GeeksforGeeks with Google



maheswaran goivindaraju
gmaheswaranmca@gmail.com

Continue as maheswaran

To create your account, Google will share your name, email address, and profile picture with GeeksforGeeks. See GeeksforGeeks's [privacy policy](#) and terms of service.

@geeksforgeeks , Some rights reserved

We use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our [Cookie Policy](#) & [Privacy Policy](#).

Got It !