

Describe the TCP/IP reference model.

The TCP/IP Reference Model is a framework for how computers communicate over the internet. It consists of four layers and is the foundation of modern internet communication. It is a compressed version of the OSI model with only 4 layers. The name of this model is based on 2 standard protocols used i.e., TCP and IP.

1. The Network Interface Layer

- This layer is also called a network access layer. It helps you to defines details of how data should be sent using the network.
- It also includes how bits should optically be signaled by hardware devices which directly interfaces with a network medium, like coaxial, optical, coaxial, fiber, or twisted-pair cables.

2. Internet Layer

- The internet layer is responsible for routing data packets between different networks and ensuring they reach their intended destinations.
- It uses IP addresses to identify devices and decides the best route for data to travel.

3. Transport Layer

- This layer manages reliable communication between devices. It breaks down messages into smaller packets and ensures they are delivered correctly.
- TCP provides reliable, error-checked communication, while UDP offers faster but less reliable data transfer.

4 Application Layer:

- The top layer connects with user applications and services. It includes protocols for activities like sending emails (SMTP), browsing websites (HTTP), and transferring files (FTP).
- This layer enables communication between different software programs.