

Common Ports & Protocols

What are Ports ?

Ports - A port in computer networking is a logical access channel for communication between two devices. The total number of ports are 65535. The top 1023 are well known ports, from 1024 to 49151 are registered ports and from 49152 to 65535 are dynamic or private ports.

Let's understand this with an analogy.

Imagine your computer is a big office building with many different departments and services. Each department has its own entrance door which we can call port that people use to access that specific service.

For example:

- The main entrance or port 80 leads to the website department that handles HTTP web traffic.
- The secure entrance or port 443 goes to the e-commerce section that handles HTTPS secure web transactions.
- The mail room door or port 25 is where email (SMTP) is received and sent out.
- The file transfer lobby or ports 20 and 21 allows people to upload and download files using FTP.

Just like these different entrances allow people to access the various services offered in the office building, service ports on a computer allow network data to access the corresponding software applications and services running on that machine.

Now we will understand what a protocol is

Protocol - Protocol is defined as a standard way for computers to exchange information.

Imagine protocols as the rules and customs that allow people from different countries and cultures to communicate and interact with each other effectively. Just like we need a common language or set of gestures to convey meaning, computers need agreed-upon protocols to transmit data successfully.

Network protocols are kind of like the languages that computers speak to exchange information over a network. They define the vocabulary, grammar, and etiquette that computers follow to "talk" to each other in an understandable way.

Some common protocols used in computer networks and the internet are TCP, UDP and IP (Internet Protocol)

Here are the list of some common ports and protocols

- First we have is port 20 and 21 for FTP. Port 20 is used for transferring files in active mode FTP sessions, while port 21 is used to send FTP commands between the client and server.
- Next, we have Port 22 for SSH and Port 23 for Telnet. Both of the ports are used to access remote machines however SSH stands for secure shell thus encrypting the communication while Telnet transmits all the data like passwords in clear text which makes it insecure.
- After that, we have SMTP at port 25 and POP at port 110. Both of these are email related ports and protocols. Where SMTP Is used to send emails from client to server, POP is used for retrieving emails from a server to a client.
- Next, we have Port 80 and 443. Port 80 is the default port for HTTP, enabling unencrypted data transmission. Port 443 is the default port for HTTPS, providing encrypted communication over TLS/SSL. While port 80 is widely used, port 443 is preferred for sensitive data like e-commerce transactions due to its enhanced security features
- At last on the TCP end, we have 139 and 445 that belongs to SMB. Both of them are used file sharing and printer access.

Now coming to the UDP related ports. First we have:

- Port 53 which is for DNS - We have already discussed about it in detail in the previous sections. So, i am not going at it again.
- Next we have Port 67 and 68. Both are used by the Dynamic Host Configuration Protocol (DHCP) for communication between clients and servers. Port 67 is used by the DHCP server to listen for client requests, while port 68 is used by the client to receive responses from the server.
- Moving on we have, Port 69 which is used by the Trivial File Transfer Protocol (TFTP) for simple file transfers, often for booting network devices from a local server. TFTP has limited functionality compared to FTP, but its simplicity makes it suitable for tasks like firmware upgrades on network appliances.
- Now we have Port 123 which is used by the Network Time Protocol (NTP) for time synchronization between computers and devices on the internet. NTP ensures accurate timekeeping by synchronizing clocks to a common time source.
- At last, we have Port 161 which is used by the Simple Network Management Protocol (SNMP) for network management and monitoring. It allows devices to communicate with network management systems, enabling the exchange of management information between network devices and management stations.