12.1.8 IP Port Facts

Network ports are logical connections provided by the TCP or UDP protocols. The IP protocol stack uses port numbers to determine the protocol that incoming traffic should be directed to.

This lesson covers the following topics:

- Port characteristics
- ICANN ports
- Well-known internet services ports

Port Characteristics

Port characteristics include:

- Ports allow a single host with a single IP address to run network services. Each port number is associated with a particular service.
- Each host can have over 65,000 ports per IP address.
- Port use is regulated by the Internet Corporation for Assigning Names and Numbers (ICANN).
- On Linux systems, **/etc/services** lists all network services on the system, including the port assigned to the service. Most applications reference **/etc/services** to determine which service is using a specific TCP/UDP port.

To protect a server, ensure that only the necessary ports are opened. For example, if the server is being used only for email, then shut down ports that correspond to FTP, DNS, and HTTP (among others).

ICANN Ports

ICANN specifies three categories for ports:

- Well-known ports range from 0 to 1023 and are assigned to common protocols and services.
- Registered ports range from 1024 to 49151 and are assigned by ICANN to a specific service.
- Dynamic (also called private or high) ports range from 49,152 to 65,535 and can be used by any service on an ad hoc basis. Ports are assigned when a session is established, and released when the session ends.

Well-known Internet Services Ports

The following table lists the well-known ports that correspond to common internet services:

Port(s)	Service
20 TCP 21 TCP	File Transfer Protocol (FTP)
22 TCP and UDP	Secure Shell (SSH)
23 TCP	Telnet
25 TCP	Simple Mail Transfer Protocol (SMTP)
53 TCP and UDP	Domain Name Server (DNS)
67 UDP 68 UDP	Dynamic Host Configuration Protocol (DHCP)
69 UDP	Trivial File Transfer Protocol (TFTP)
80 TCP	Hypertext Transfer Protocol (HTTP)
110 TCP	Post Office Protocol (POP3)
119 TCP	Network News Transport Protocol (NNTP)
123 UDP	Network Time Protocol (NTP)
137 UDP 138 UDP 139 TCP	NetBIOS

143 TCP and UDP	Internet Message Access Protocol (IMAP4)
161 TCP and UDP 162 TCP and UDP	Simple Network Management Protocol (SNMP)
389 TCP and UDP	Lightweight Directory Access Protocol
443 TCP and UDP	HTTP with Secure Sockets Layer (SSL)
465 TCP	Simple Mail Transfer Protocol over TLS/SSL (SMTPS)
514 UDP	Syslog (used for remote system logging)
636 TCP and UDP	Lightweight Directory Access Protocol over TLS/SSL (LDAPS)
993 TCP	Internet Message Access Protocol over TLS/SSL (IMAPS)
995 TCP	Post Office Protocol 3 over TLS/SSL (POP3S)

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