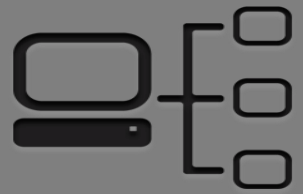
Why We Need Ports



- Computers require ports because of network application multitasking.
- Ports allow you to associate packets with TCP/IP protocols.
- Network Services are assigned a Port Number
  - DNS, HTTP, SMTP, FTP, POP3, TELNET, etc.

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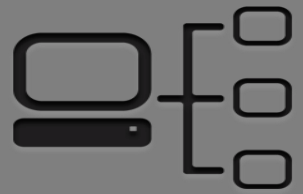
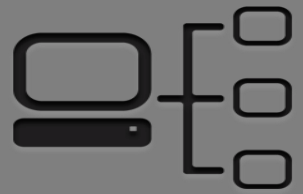


- Because a computer has 1 IP and MAC address, it needs ports to differentiate network protocols and services
  - Web-Browsing: HTTP TCP Port 80
  - E-mail: SMTP TCP Port 25 & POP3 TCP Port 110
- Firewalls filter network traffic by port numbers
- TCP/IP has 65,536 ports available

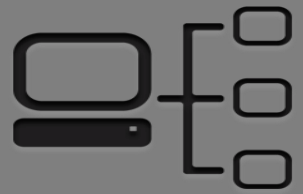
Types of Ports



Approximately 65,536 Ports Available

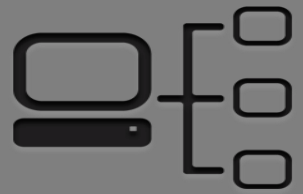
Port Type	Port Numbers	Description
Well Known Ports	0 - 1023	Assigned to well known protocols.
Registered Ports	1024 – 49,151	Registered to specific protocols.
Dynamic Ports	49,152 – 65,535	Not registered and used for any purpose.

Well Known Port Numbers



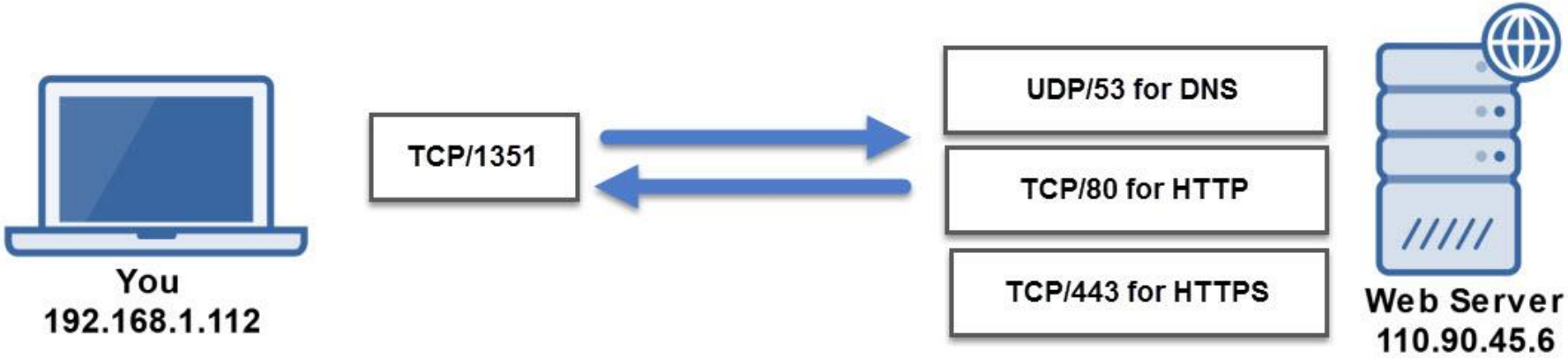
Service, Protocol, or Application	Port Number(s)	TCP or UDP
FTP (File Transfer Protocol)	20, 21	TCP
SSH (Secure Shell Protocol)	22	TCP
Telnet	23	TCP
SMTP (Simple Mail Transfer Protocol)	25	TCP
DNS (Domain Name System)	53	UDP
DHCP (Dynamic Host Configuration Protocol)	67, 68	UDP
TFTP (Trivial File Transfer Protocol)	69	UDP
HTTP (Hypertext Transfer Protocol)	80	TCP
Kerberos	88	UDP
POP3 (Post Office Protocol version 3)	110	TCP

Well Known Port Numbers



Service, Protocol, or Application	Port Number(s)	TCP or UDP
NTP (Network Time Protocol)	123	UDP
IMAP4 (Internet Message Access Protocol version 4)	143	TCP
SNMP (Simple Network Management Protocol)	161	UDP
LDAP (lightweight Directory Access Protocol)	389	TCP
SSL (Secure Socket Layer)	443	TCP
HTTPS (Hypertext Transfer Protocol Secure)	443	TCP
IPSec (Internet Protocol Security)	500	UDP
L2TP (Layer 2 Tunneling Protocol)	1701	UDP
PPTP (Point to Point Tunneling Protocol)	1723	TCP
RDP (Remote Desktop Protocol)	3389	TCP

Ports in Action



Communication originates from your computer utilizing a **high random port** to communicate across a LAN / WAN / Internet to communicate with a remote server, in this case a web server. The Web server will be listening in on specific ports for its associated TCP/IP protocols.