

Course 4 week 2

Basis of IP Addressing.

IP Addressing: The Basis of Binary.

Binary Systems.

- Human Beings think in terms of 10 based (decimal) numbering.
- Computers only know if the power is on (1) or off (0)
- Computers they don't know any other state..

IP address structure & network classes

IP Protocol

IPv4 is a 32-bit address in four octets.

From 0.0.0.0 to 255.255.255.255

IPv4 has 4,294,967,296 possible addresses in its address space.

Decimal	Binary	Network Portion
10.195.121.10	<div style="border: 1px solid black; padding: 5px; display: inline-block;"><div style="border-bottom: 1px solid black; display: inline-block; width: 100%;">00001010.11000011.01111001.00001010</div><div style="border-bottom: 1px solid black; display: inline-block; width: 100%;">.00001010.</div></div>	
	↓	
		Host Portion

Network Mask

→ The subnet Mask is an assignment of bits used by a host or router to determine how the network and subnetwork information is partitioned from the host information in a corresponding IP

address.

IPv6 - 128 bit length.

↳ uses 8 hexadecimal values.
separated by colon.

Addressing Schemas.

Unicast → Sends info to one system
sending data to intended
address.

Broadcast → Sends information to
all systems on network.

Multicast → Sends information to a
selected group of systems

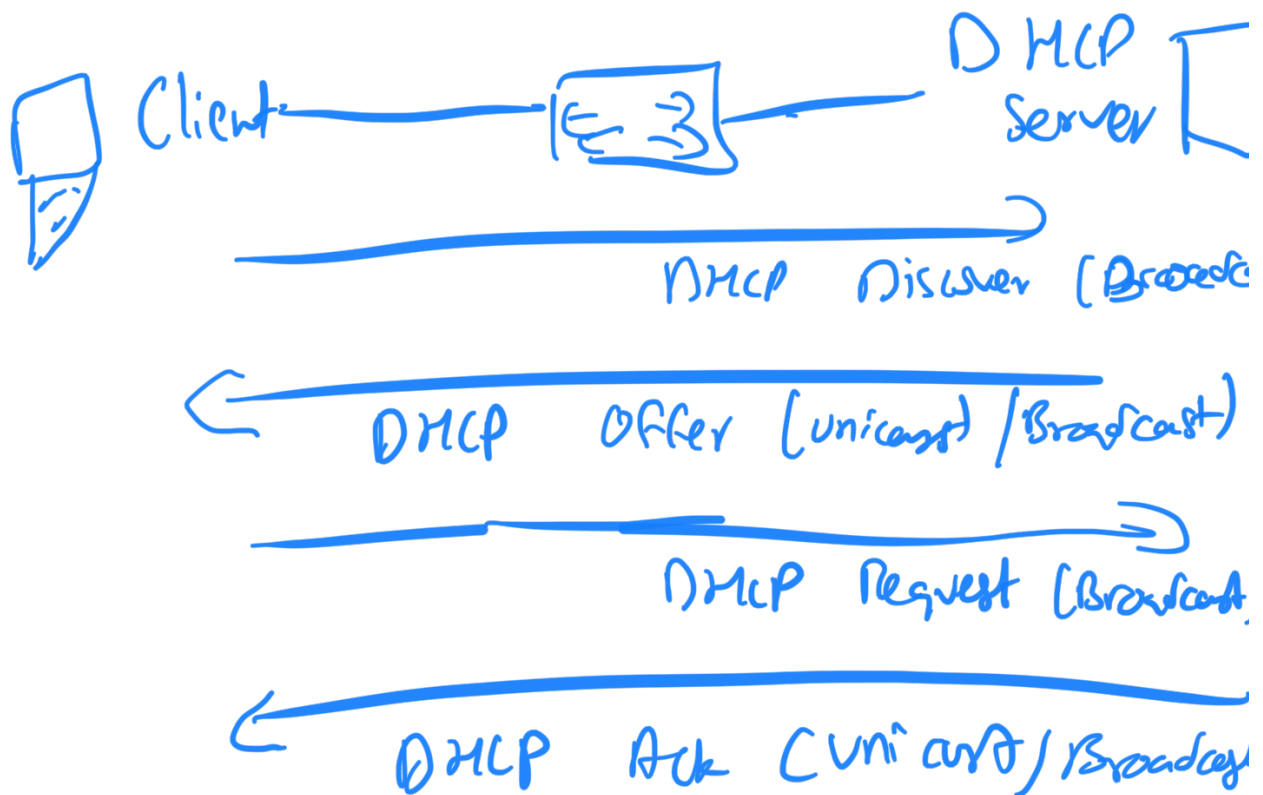
TCP/UDP → Transport Layer Protocol.

TCP/IP Layer 5. Application

Layer Overview

DNS & DHCP

Dynamic Host Configuration Protocol



Syslog → Standard message logging.
Allows for separation of the software
that generates messages.

Used for:

- User management
- Security Auditing
- Analysis, and debugging Messages

Used to convey event notification messages.

Firewall, IDS, IPS...

A next-generation Firewall is part of the third generation of Firewall technology.

→ Deep packet inspection

→ IPS

→ TLS/SSL encrypted traffic inspection, Website filtering.

