

DHCP

Dynamic Host Configuration Protocol

is used to assign various configurations to the host of a network.

Common Configurations:

- Scope is the range of addresses the server can assign
- Exclusion Range is the range of addresses the server cannot assign
- Reservations allows you to bind a mac Address to a specific IP address
- Lease Time
 - ↳ how long an IP is "owned" by a host before it can be assigned to another host.

DNS Records

Record Type	Description
A	to an IP address IPv4
AAAA	to an IPv6 address
TXT (SPF)	SPF (Sender Policy Framework) list of hostnames/IP and IPv6 addresses that mail can be sent from
TXT (DKIM)	(Domain Keys Identified Mail) provides authentication of mail being sent and received to prevent SPAM
TXT (DMARC)	(Domain-based Message Authentication - tim, Reporting and Conformance) controls what happens if authentication fails to prevent spam.
CNAME	Canonical Name records resolves an alias to a domain ex. bn.com => barns.ansible.com
MX	Resolves a name to a mail exchanger (email server)

MAN (Metropolitan Area Networks)

↳ spread across a single city.

WAN (Wide Area Network)

↳ The internet is the public WAN

↳ Site to Site

CAN (Campus Area Networks)

↳ across limited geographical distance
↳ privately owned and managed

PAN (Personal Area Network)

↳ usually made up for two devices

SAN (Storage Area Networks)

↳ store data
↳ high speed fiber links and large storage servers

DNS

Domain Name Server/Service

Translate

Ping Google.com (4) → Version 4

Record based

DNS provides

- ↳ name to IP address resolution for host
- ↳ DNS servers can be in your LAN or out on the internet
- ↳ A host is normally assigned a DNS server via DHCP, but it can also be assigned manually

Internet Connection Types:

DSL (Digital Service Line)

- ↳ broadband service
- ↳ operates over the (Public Switched Telephone Network)

PSTN

Cable

- ↳ use the (Data Over Cable Service Interface Specification) DOCSIS standard to deliver internet over Coax

FTTN (Fiber to the Node)

Fiber

- ↳ Internet over fiber optic cable
- ↳ FTTT (Fiber to the Premise)
 - ↳ Fastest but expensive

Network Types

LAN

Local Area Network

- ↳ SOHO Network
- ↳ Enterprise/Corporate Network

WLAN (Wireless Local Area Network)

↳ can exist within a LAN or on their own

Network Tools

1. Crimper ✓
2. Cable Stripper ✓
3. Wifi Analyzer
 - ↳ it's an application
4. Toner Probe
5. Punch Down Tool

Cable Tester

Cost
↳ 30 bucks
amazon

Loopback Plugs

Network Tap

↳ monitor network traffic

DNS Name Types

- Host names identify a specific device in a network
Host name = workstation01
- Domain names identify a specific network
Domain name = companyx.lan
- (FQDN) Fully Qualified Domain Name identify a specific in a specific network.
FQDN = workstation01.companyx.lan

VLAN

VPN

↳ Virtual Private Network
↳ creates a secure tunnel to a private network over the internet

↳ Required to access resources in a LAN or over the internet
↳ Various protocols can be used.

↳ Virtual Local Area Network
↳ any network that is partitioned and isolated in a computer network at the data link layer or by switches
↳ carries a separate network address
↳ separate network traffic

Wireless Internet Connection Types

- Satellite
 - ↳ high latency → unusable
VoIP, video, online gaming
- Cellular
 - ↳ 4G/LTE, 5G
- WISP (Wireless Internet Service Provider)
 - ↳ must be within the limited coverage area.
 - ↳ deployed at customer sites.