

William Prado
04/21/2025

Monday 21 April

Lesson 5.1 Routing Technologies

Tuesday 22 April

5.2 Dynamic Routing Tech

Thursday 24 April

5.3 Network Address Translation

Friday 25 April

5.4 Firewalls.

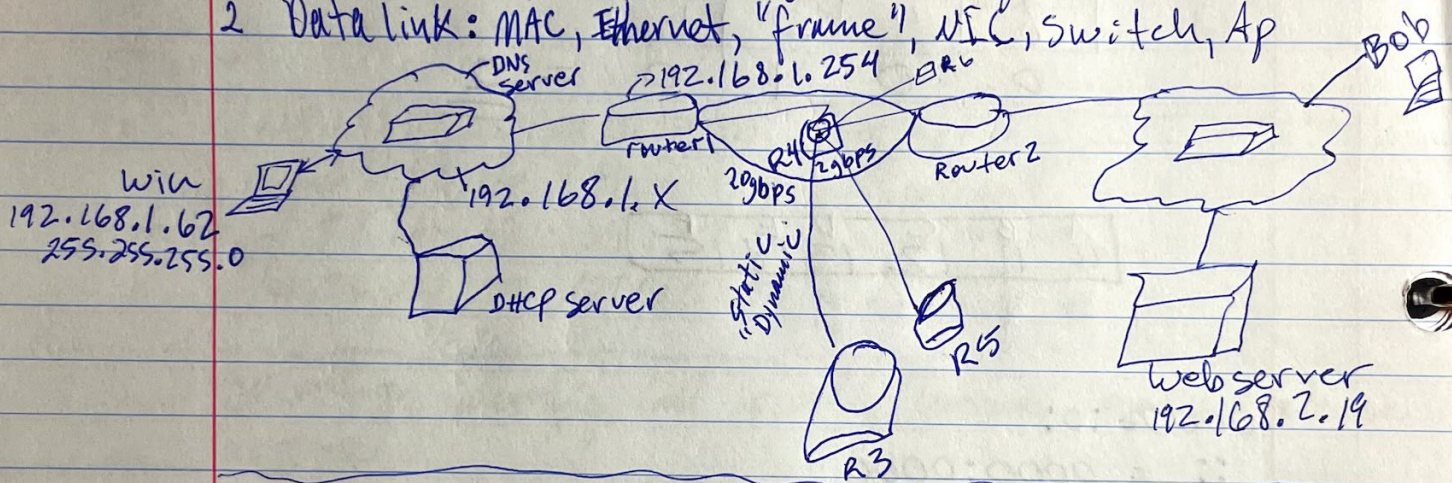
5.5 Enterprises Networking Tech

5.6 Virtual Labs

5.7 Routing & VLAN

3 Network: IPv4 + 6, Routing, "Route", packets

2 Data Link: MAC, Ethernet, "frame", NIC, Switch, Ap



Static = road trip, manual

Static Dynamic:

Best route

Metrics { Hop
Speed
Distance

Youtube
Sunny classroom

Why do we need both IP & MAC Address?

MAC address tells who you are & never changes.
IP

Youtube
Professor Messer

Routing Technologies

Routers are digital direction signs

Every IP device has a routing table

Routing Table w/ RIPv2

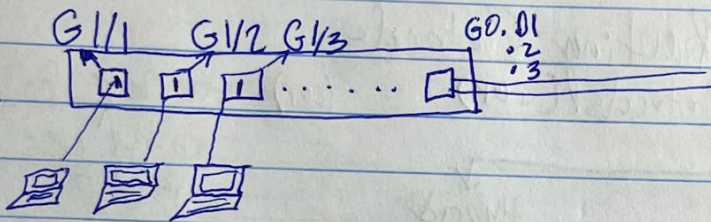
Administrative distances

First Hop Redundancy Protocol (FHRP).

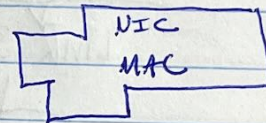
your Computer is configured w/ a single default gateway.

Subinterfaces.

- a device has a physical interface
- some interface are not physical



H/D
magnetic
SSD
Hybrid



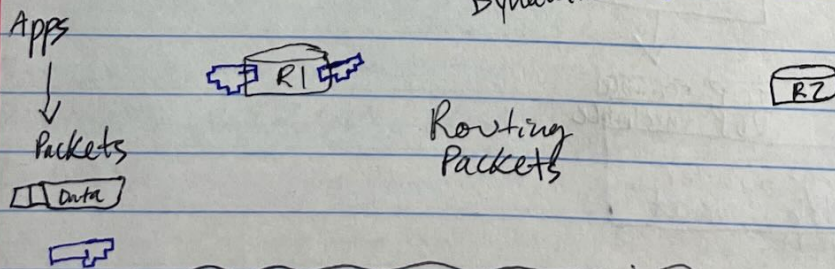
Interface: PATA, SCII, SATA, Nvme / m.2, USB
F-connector: ST, SC, LC

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Static vs Dynamic routing & routing metrics.

Static
Dynamic Algorithm/Rule

- Static Routing
- Dynamic Routing
- Routing metrics.



Static Routing benefits: simplicity, easy to set up & maintain, security, Predictability, reliability, Performance

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Dynamic Routing: allow routers to automatically adapt to change in the network.

more flexible

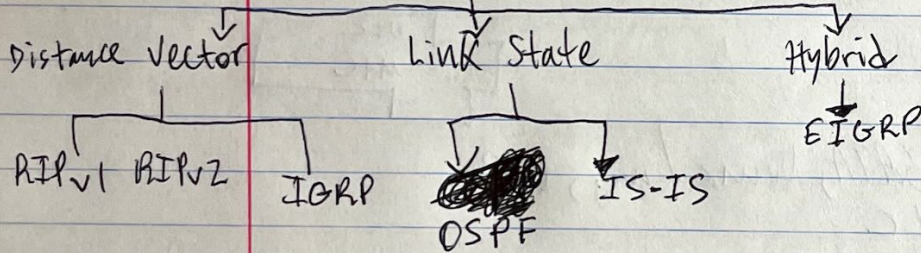
Routing Metrics: are values used by routers to determine the best route/path to a destination.
• Hopcount.

Classification of Routing Protocols.

Interior Gateway Protocols (IGP)

(EGP) Exterior Gateway Protocols

Path vector
BGP

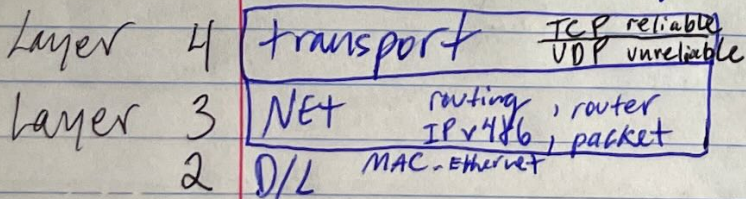
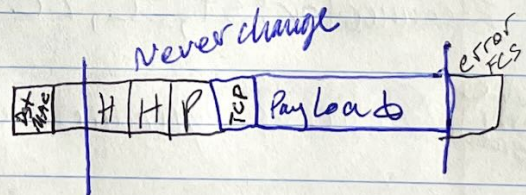


OSI

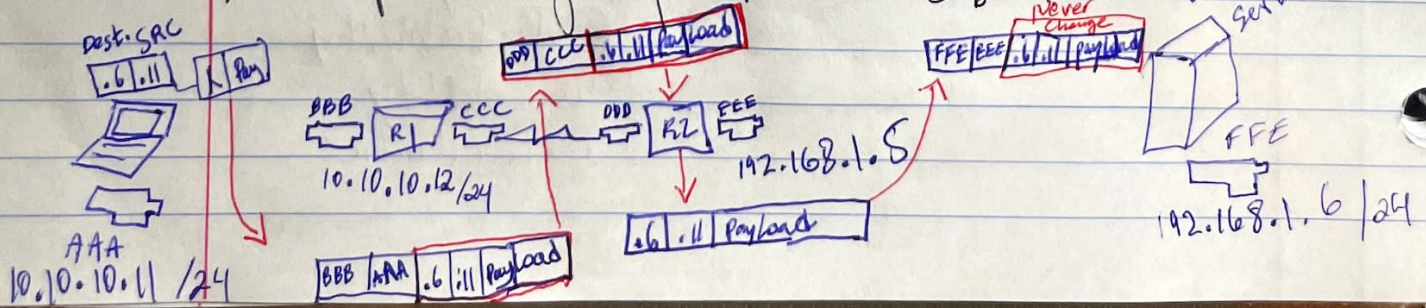
A
P
S

TCP/IP

A = payload



How a packet get from A to B?



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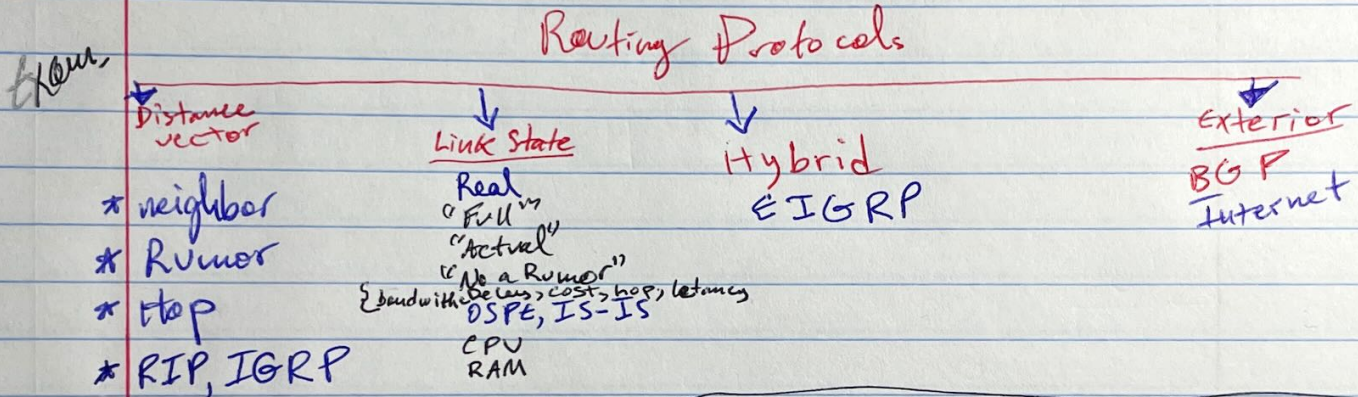
Packet Forwarding

Received Packet \rightarrow Examine packet \rightarrow Consult Routing Table \rightarrow make forwarding decision

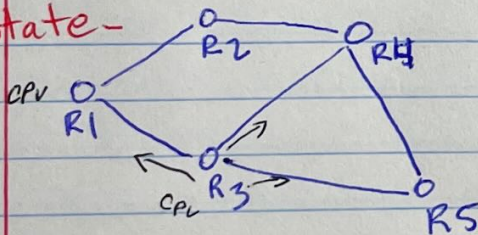
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Distance-vector vs link state + a hybrid EIGRP.

Hybrid Routing Protocol - EIGRP \rightarrow Cisco proprietary protocol, EIGRP is hybrid protocol.



Link State -



Distance vector vs. Link State.

Ask neighbor router

Ask every router

Hybrid - asks every routing table, and its neighbor. Uses both Distance vector + Link State.

To Do: Dion Exam 2 by Sunday.
Do: Labs.