- within network therecore configure subnet

Home -> Virtual networks

To create virtual machine

Home -> Virtual machin

Go resource -> view vm

01-02-2025

VLAN Trunking Protocol:-

- VTP is a cisco Proprietary Protocol.
- It we have

[VTP Domain]

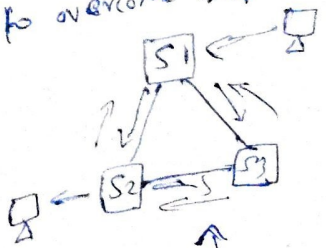
- if you created vlan it will exist in all other switch automatically

Prereq
- But trunking should enable btw these switches
  - > Switchport mode Trunk.
- VTP domain - all switch under VTP domain

Used - to auto vlan creation in all the switches when there is 10, 20, 30 switch.

STP - spanning Trunk Protocol:

STP used to overcome ~~loop~~ not create loop.



Loop-Broadcast storm

STP remove this link / other link

- Switches send "probe" into the network to find any loop.

Routers

Router

⊗ - Router symbol.

- It helps in communication b/w 2 or more network

1. Branch router - used for small org., Series: 800, 1800, 2800, 2900
2. Internet-edge router
3. service Provide router.

components

basics

- Interface - point where cable connect
- CPU
- IOS - 15.9 version.
- RXBoot image.
- RAM
- NVRAM - router config
- Rom
- Flash memory.
- configuration Register.

Routing.

- it is a process of selecting path / route along with which the data can be transfered from source to destination.

Types

1) Static Routing.
   - Non-Adaptive Routing.
   - manually configuration needed.
   - going to router and telling this is my neighbor router and this is.....
   - routing table

Advantage

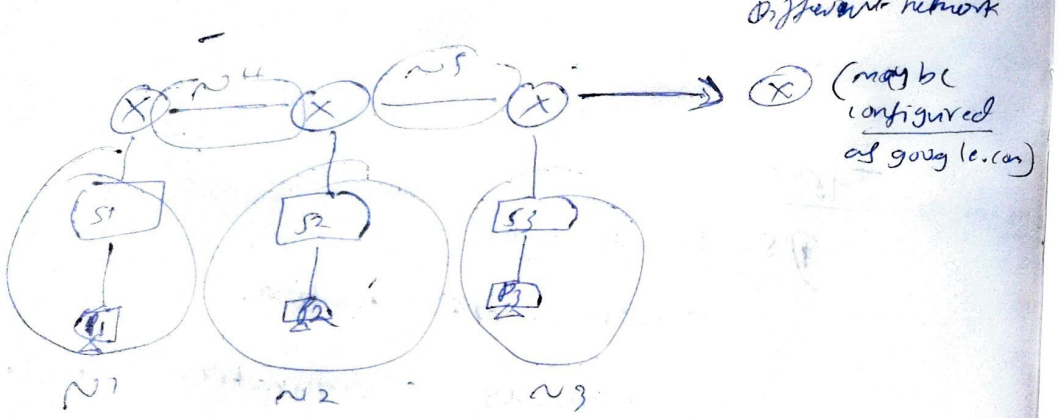
- no overhead - no CPU usage, cheap.
- no Bandwidth - already feeded so user data transfer usage b/w routers

Disadvantage

- Difficult for large network
- Admin must have in-depth knowledge

hops -> jumping from one to another router.

2) Default Routing :

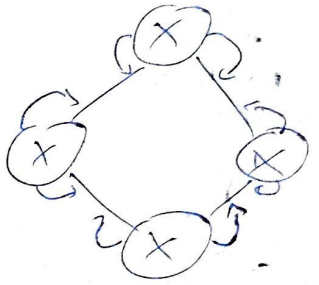


If P1 try to Ping P4 (not existed) we send it to different network.

- It's a technique in which a router is configured to send all the packets to the same hop device.
- It doesn't matter whether it belongs to a particular network or not.

Dynamic Routing - Adaptive routing (ARC)

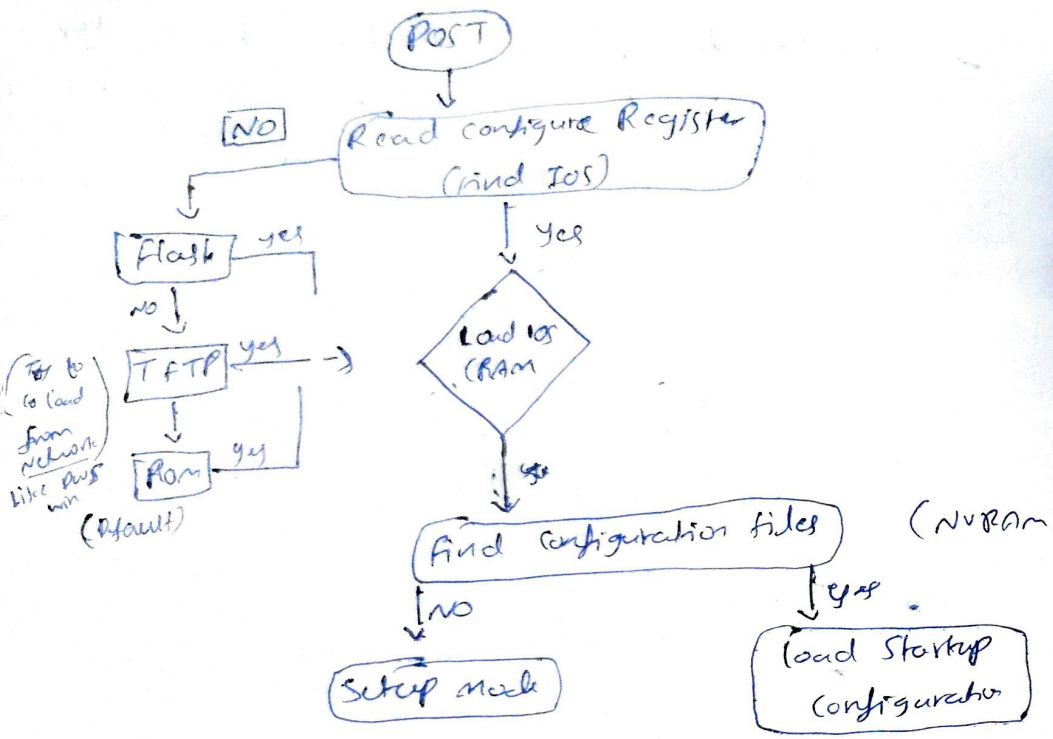
- only have to configure direct neighbor routers and indirectly connected to Router Router neighbor in Dynamic Routing



- Advantage
  - easier to configure.
- Dis advantage.
  - more expensive. Less secure than default & Static routing

- Here, router adds a new router response to the changes in the condition or topology of network
- Dynamic Protocols are used to discover the new routers to reach the destination
  - Protocol like RIP & OSPF

The Router Boot Sequence:



Types of Interfaces

- Ethernet - 10MBps
- Fast Ethernet - 100MPs
- Gigabit ethernet - operates at 1000 mbps
- Serial - used for WAN connections from ISP (Deprecated)

In routing, things to configure within a port/laptop,

1. IP address
2. Subnet mask
3. Gateway IP address.
   - Gate way is the Door of the first router to get out or come in.
   - mention in Device.

Fast Ethernet interface - 100MBPS -> 2811

Gigabit Ethernet int - 1000 Mbps -> 2911

[We can give Real IP address to Router's Interface (So we can manage many network) There are many interface]

Router IP configure

Dark

→ Router# show ip rout.

→ Router(config)# hostname R1 ← naming the host.

→ R1(config)# interface gigabitEthernet 0/0

R1(config-if)# ~~ip address 10.0.0.1 255.0.0.0~~

ip address 192.168.10.1 255.255.255.0

no shutdown

exit

Davis ← folder, file
full cmd router cfg.pdf

R1(config)# interface gigabitEthernet 0/1

-if)# ip address 10.0.0.1 255.0.0.0

no shutdown

exit

R1(config)#

Do same for R2

IMP

Steps to configure 2 router/more

1. configer Lan (give port) — Lan port
2. configure another router network port — Next port
3. Do static

} IP only configured to 2 port

} Routing will done here.

Routing configure

Static

Router1 → R1(config)# ip route 172.16.0.0 255.255.0.0 10.0.0.2

opposite router ports (...)

Router2 → R2(config)# ip route 192.168.10.0 255.255.255.0 10.0.0.1

R2 ~~(config)~~# show ip route.

Dynamic routing:

Two configurations

1) Interior Gateway Protocol (IGP)

2) Exterior Gateway Protocol. (EGP)
↓
Path vector
↓
BGP (eBGP, iBGP)

IGP

- IGP is used within a single "autonomous system"
- An autonomous system is a network or a group of networks under a common administration and with common routing policies

(view in pdf)

Ex of IGPs:

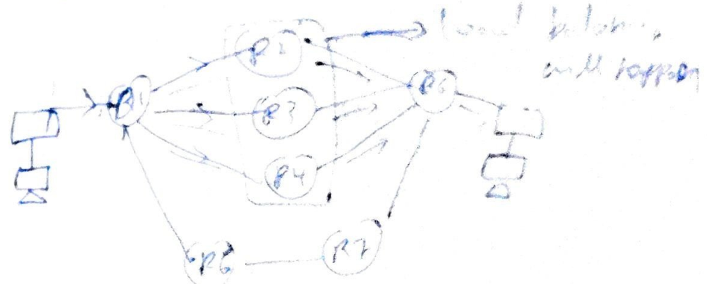
- RIP v1 (Routing info protocol)
- RIP v2 (Routing info protocol)
- OSPF (Open Shortest Path First)
- EIGRP (Enhanced Interior Gateway routing protocol
- IS-IS Intermediate System to Intermediate System

(practical available
RIPv2, OSPF, EIGRP, BGP (maybe
[illegible] will [illegible])

RIP

Routing Information Protocol V1 (RIP v1 [illegible])

- Load balancing
  when ~~router~~ all router are have same no. of hops it will decide the ~~[illegible]~~ load.



Broadcast → 255.255.255.255
when new router is added, new routers neighbors will ~~understand~~ broadcast that " I have new neighbor. here so on....

- open standard protocol - supported in every networking device (like: cisco, Juniper...)
- classful routing protocol - subnetting not supported.
- updates are broadcasted (even to non-RIP configured router

- Metric based on: Hop count
- Maximum hops allowed : 15
- maximum routers allowed : 16 (1+15)
- Entire routing table is exchanged after 30 seconds.
- Both router should configure with same version of RIP.

RIP - V2 :

- use multicast -> 224.0.0.9
  will send to particular groups.
- Similar to RIPv1.
- supports classes routing protocol.
- supports VLSM
- Auto summary can be done on every router
- supports authentication.
- Trigger updates

2) Dynamic routing

RIP V2

-> (config)# router rip

- router)# version 2

)# network 192.168.10.0

network 10.0.0.0

exit

exit

[view in word (onedrive)

[2 Task - Monday