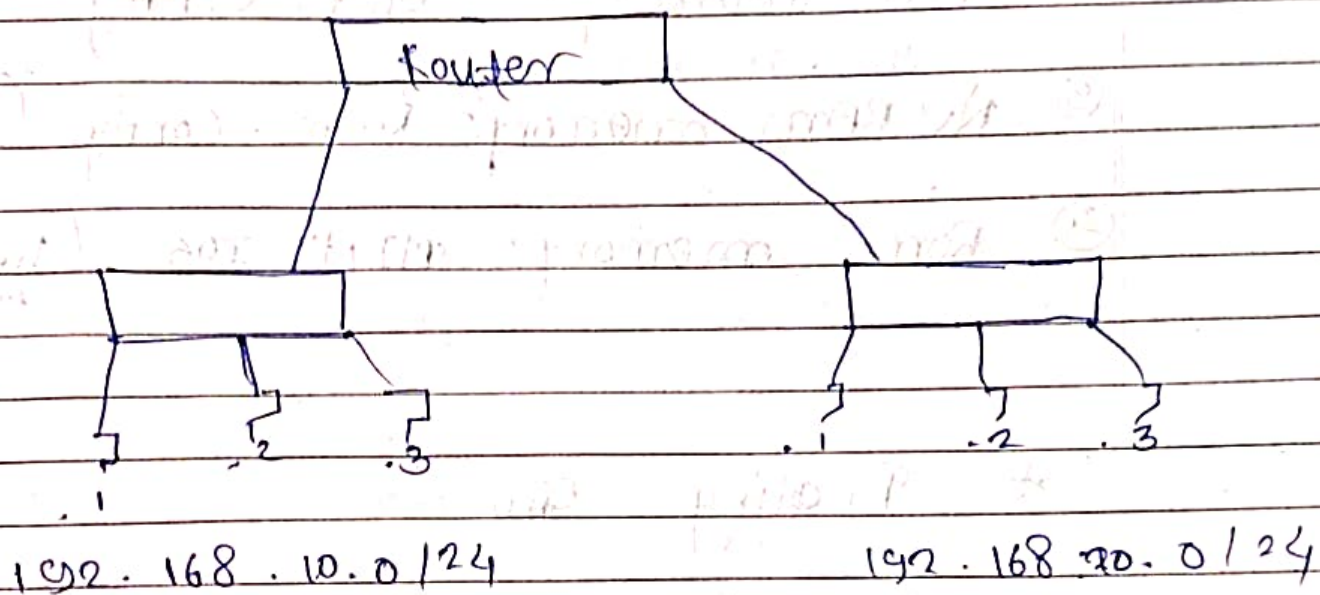


* Router.

Layer 3 device (Network)
different Network Common.



② Packet Filtering & Forwarding.

4 those who come before
4.10 - for word

4.20 - those who come after
Reject

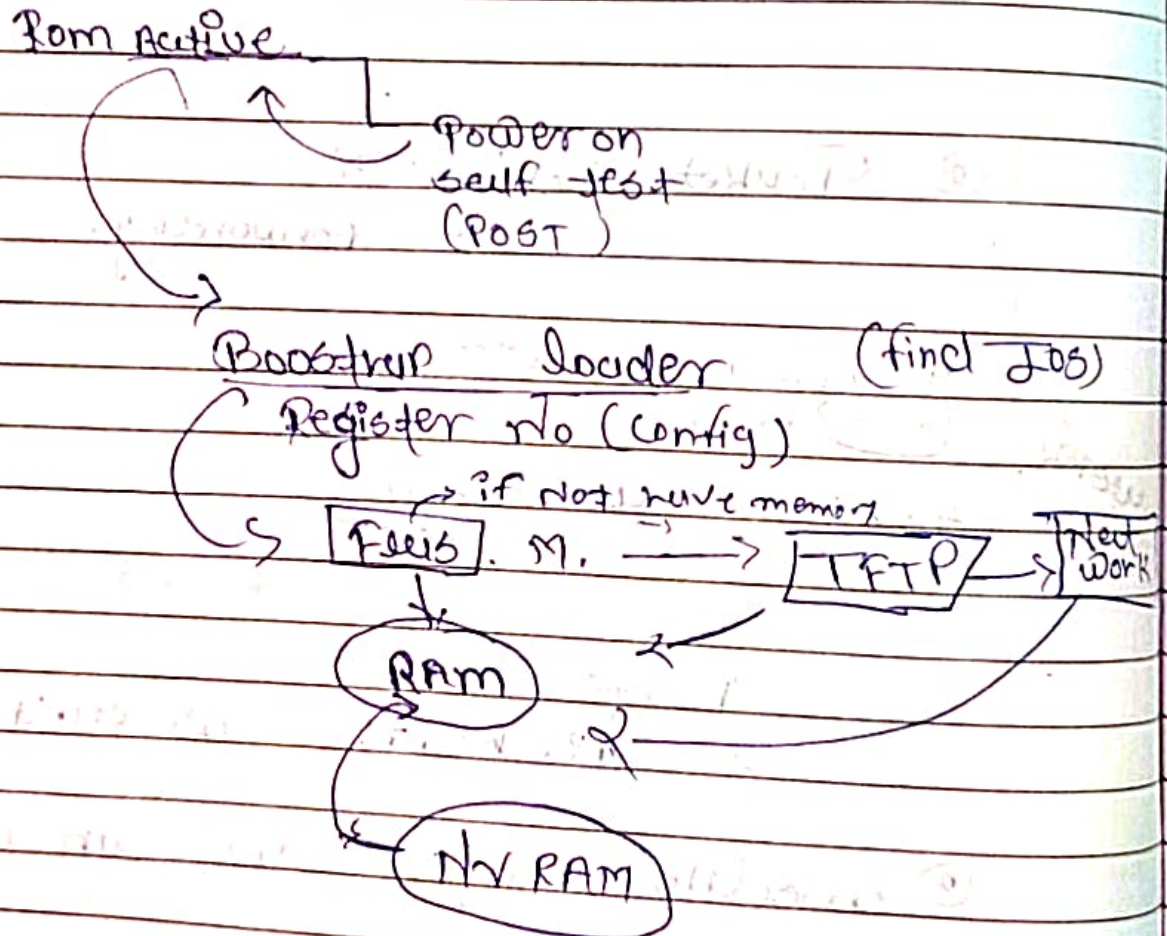
Router in

① - Fix Router: We can't Change Port

② modular Router: We can Change Port

- ① Flash memory: IOS Image.
- ② RAM memory: Temp. Config.. (Running Config..)
- ③ NV RAM memory: Perm. Config.. (Startup Config..)
- ④ Rom memory: MINI IOS (help Boot process)

* Booting Process



Router Host Name $\xrightarrow{\text{Command}}$ Show Running - Config
 mode argument

$\>$ \rightarrow User execution mode.

$\#$ \rightarrow Privilege mode.

(config) # \rightarrow global Config mode.

Router $\>$ Show Running - Config
 we can use shortcuts.

Router $\>$ enable
 Command to go next mode

Router # Configure terminal

Router (config) #

(if there are more Command using same Short-cut then that Short-cut not gone down)
 Ex: @Config @Connect

* Command's For Hostname Change

① Router (config) # hostname R1.

R1 (config) # HostName R2.

② Password Com.

Router (config) # enable Password 123 (clear text)

Router (config) # enable Secret 1234 (Encryption)

③ Line Console Com.

Router (config) # line Console 0 (clear text)

(config-line) # Password 1234

(config-line) # login

(config-line) # Exit.

- Command for make Password encrypt
→ (method)

Router (config) # Service Password -encryption

(method)
method

Router # Show flash : bin

OR

Router # dir flash :

Router # Show version : (for see version of IOS.)

Router # Show IP interface brief.

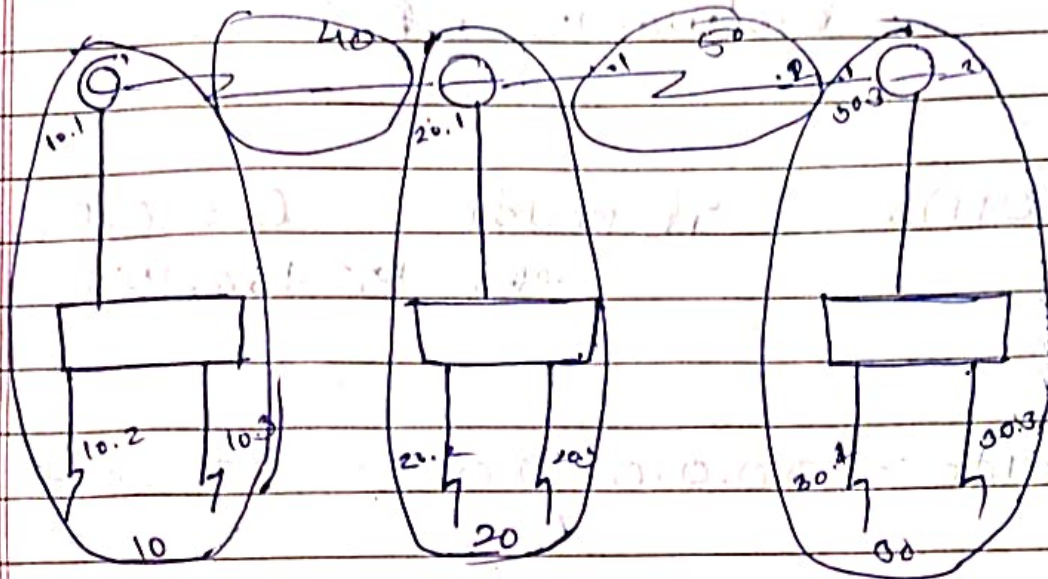
(name, IP :- yes or No)

Router # Show interface

Router # Show interface full (for see interface for Particular.)

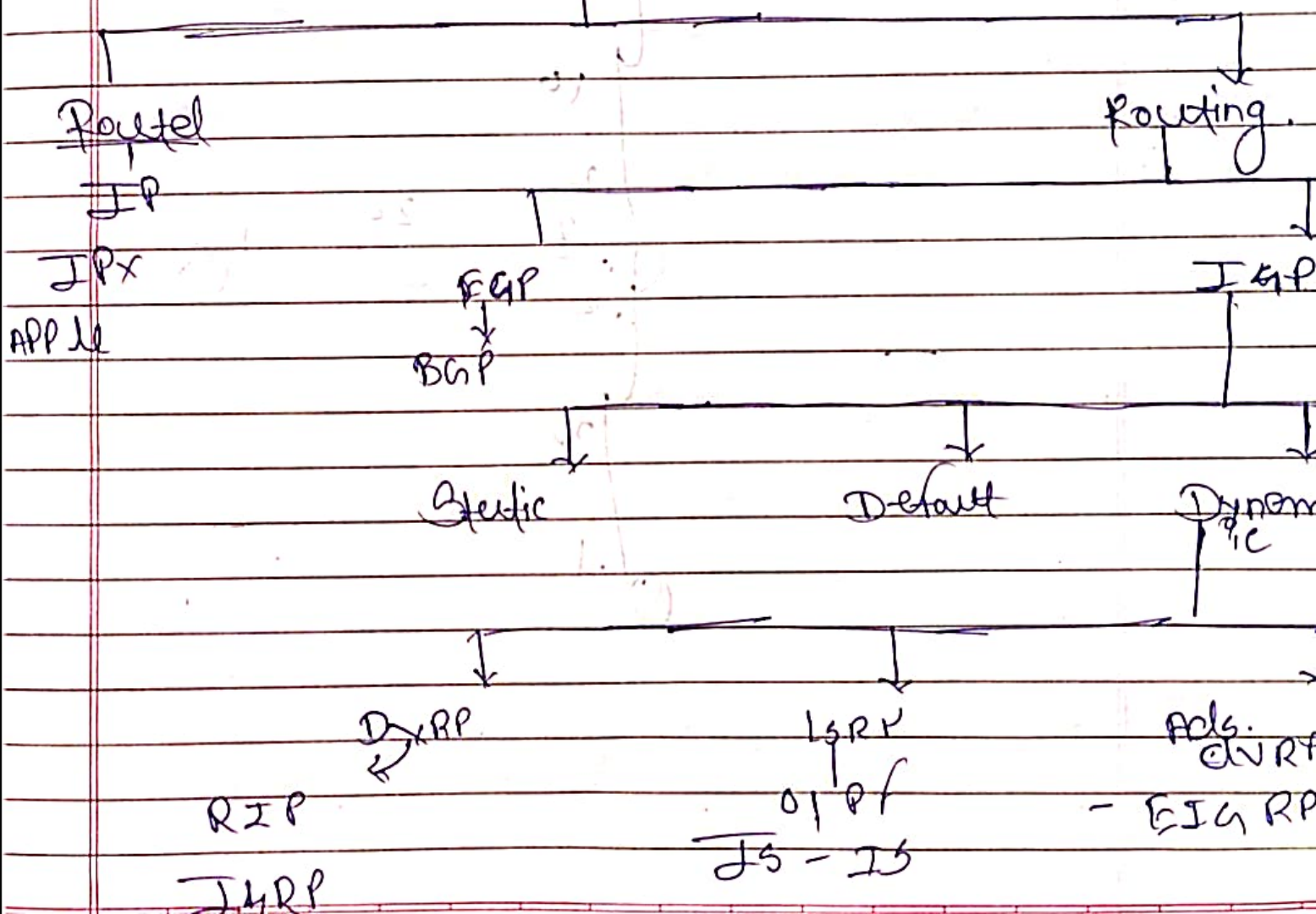
Router # Show running-config (to see RAM memory)

Router # Show startup-config (Running Config.)



31/10/2025

Protocol.



③ Dynamic :

i) ~~Dyn~~ RJP : Routing Information Protocol

(~~RJP~~) Distance Vector Routing Protocol

Ad-Value : \rightarrow RJP ($\sqrt{-120}$) ^{changeable}
(Administrative)
distance : use for Protocol Preference.

② Metric : use for Shortest Path Route Protocol
 \rightarrow How much Router
unit (hop Count)
Max :- 15

* Timer :

update / ① Hello time : 30 sec

② Hold-time Timer : 180
down

③ Invalid Timer : 180

④ Flush Timer : 240.

IP Routing.

1. @RIPV1
2. classfull
3. No VISM
4. Broadcast
5. 255.255.255.255.

@RIPV2
classless
vism
multicast
224.0.0.9

(Config)# Router RIP

~~(Config route)# Network~~ 192.168.10.10

(Config route)# exit.

14-11-25

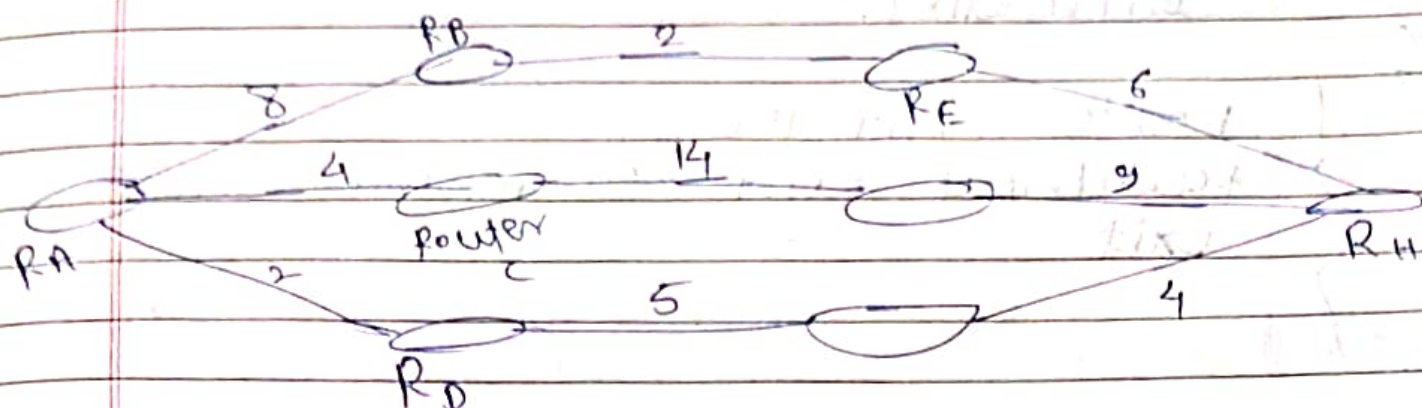
* v2

(Config)# route RIP
(- 11 -)# version 2
(- 11 -)# Network 192.168.10.0
(- 11 -)# exit.

* Enhanced Interior Gateway Routing Protocol.

- EIGRP is a Cisco-Proprietary Hybrid Routing Protocol, incorporating features of both Distance-Vector and Link State Routing Protocol.

- EIGRP uses Diffusing Update Algorithm (DUAL) to determine the best path among all feasible path (DUAL) also help ensure a loop-free routing environment.
- EIGRP will form neighbor relation ship with adjacent router in the same Autonomous System (AS)
- EIGRP traffic is either sent as Unicast or as multicast on address 224.0.0.10 depending on the EIGRP Packet type.
- Reliable Transport Protocol (RTP) is used ensure delivery of most EIGRP packet.
- EIGRP router do not send periodic full time table routing.



- Remember, however, that Router A's Feasible Distance must be the router within the lowest metric; if we add the Advertised Distance. With the low metric between each router, we would see that.

R.B has a distance of 16 to the destination.
 R.C has a distance of 27 to destination.
 R.D has a distance of 11 to the destination.

Thus, the route through Router D (metric 11) would become the Feasible Distance. For router A, and is added to the routing table as the best route. This route is identified as the Successor.

To allow convergence to occur, quickly if a link fails. EIGRP includes Backup routers in the topology called Feasible Successors (FS). A router will only become a Successor if its Advertised Distance is less than the Current Feasible Distance. This known as Feasible Successor.

Command:-

for
100

```
Router Eigrp 100
redistribut Eigrp 200 metric 1111
exit
```

for
200

```
Router Eigrp 200
redistribut Eigrp 100 metric 1111
exit
```

Open Shortest Path first :-

OSPF is a standardized link-state routing protocol designed to scale efficiently to support larger networks.

- OSPF employs a hierarchical network design using Areas.

- OSPF forms neighbor relationships with adjacent routers in the same areas.

- Instead of calculating the distance to connected networks, OSPF obtains these (LSA).

- OSPF sends updates whenever there is a change to one of its links and will only send the changes in the updates. LSA are periodically refreshed every 30 min.

- OSPF traffic is multiplexed either to address 224.0.0.5 or 224.0.0.6.

- OSPF uses the Dijkstra Shortest Path First algorithm to determine the shortest path.

- OSPF is class protocol and thus support VLMs.

- The router ID can be manually specified.
- If not manually specified, the highest IP address configured on any loopback interface on the router will become the router ID.
- If no loopback interface exists, the highest IP address configured on any physical interface will become the router ID.

Hello packets are sent out OSPF interface every 10 sec for broadcast and point-to-point interfaces and 30 sec for non-broadcast and point-to-multipoint interfaces.

OSPF router will only become neighbor if following parameters within packet are identified on each router.

- Area ID
- Area type (stub, NSSA, etc)
- Prefix
- Hello Interval
- Dead Interval
- Network type
- Authentication.