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**Welcome  
To  
Network for you  
Policy Based Routing**



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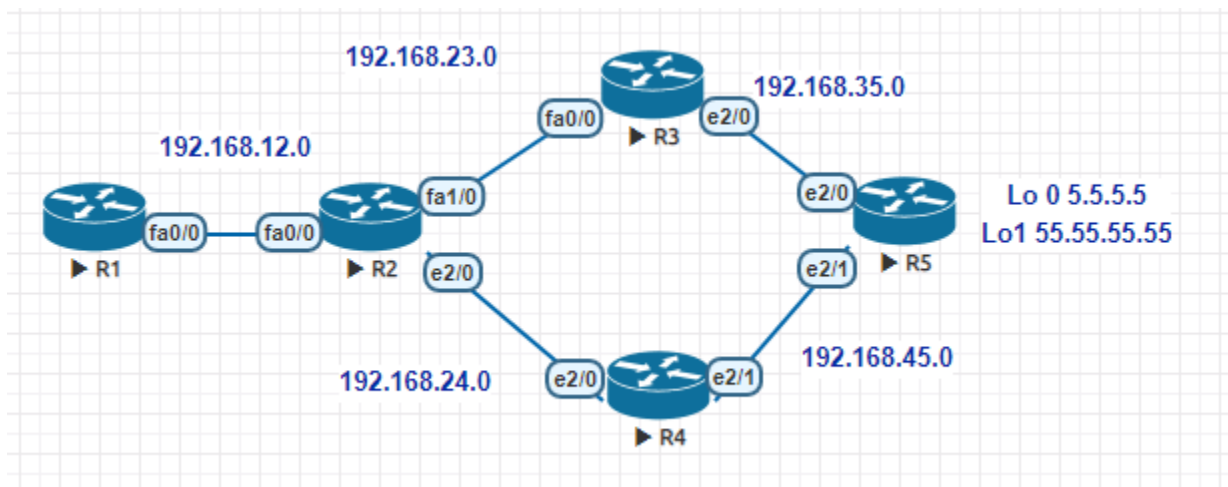
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## Policy Based Routing:

- Policy-based routing can be used to change the next hop IP address for traffic matching certain criteria. This can be useful to overrule your routing table for certain traffic types.
- PBR is network routing term, which is a stand for Policy Based Routing.
- Traditional routing systems route traffic based on destination of the traffic.
- Normal Routing is only concerned about destination-based forwarding.
- PBR altering a packet's path based on criteria other than the destination.
- PBR is a feature to manipulate packet routing and forwarding to follow policy set.
- PBR is a technique that forwards & routes data packets based on policies or filters.
- Policy Based Routing is a feature that has been supported on Cisco Routers.
- PBR provides flexible, granular traffic-handling capabilities for forwarding packets.
- PBR enables network administrators to achieve optimal bandwidth utilization.
- Policy Based Routing is very useful because it can manipulate traffic flow based on source
- Prioritize apps by selecting high-bandwidth, low-latency links for important apps.
- PBR allows routing to be performed based on criteria other than destination IP.
- Policy Based Routing allows to change a packet's path based on different criteria.
- Policy-based routing can be used to change next hop IP address for certain criteria.
- Popular scenario is to route some traffic to ISP1 and some other traffic to ISP2.
- **PBR use Access Control Lists and route maps to selectively route an IP packet.**
- ACLs classify traffic & route maps match on ACLs set routing attributes for the traffic.
- To configure Policy Based Routing (PBR), define policies using ACLs and route maps.
- To apply Policy Based Routing (PBR), then enable it on individual interfaces of device.

## Lab time: (PBR Lab):



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| R1 Configuration                                                                                                                     | R2 Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| en<br>config t<br>hostname R1<br><br>int f0/0<br>ip add 192.168.12.1 255.255.255.0<br>no sh<br><br>router eigrp 1<br>network 0.0.0.0 | en<br>config t<br>hostname R2<br><br>int f0/0<br>ip add 192.168.12.2 255.255.255.0<br>no sh<br><br>int f1/0<br>ip add 192.168.23.2 255.255.255.0<br>no sh<br><br>int e2/0<br>ip add 192.168.24.2 255.255.255.0<br>no sh<br><br>router eigrp 1<br>network 0.0.0.0<br><br>!PBR let do for 5.5.5.5 network to go 192.168.24.0<br><br>ip access-list extended ABC<br>permit ip host 192.168.12.1 host 5.5.5.5<br>exit<br><br>route-map PBR permit 10<br>match ip address ABC<br>set ip next-hop 192.168.24.4<br>exit<br><br>int f0/0<br>ip policy route-map PBR |
| R3 Configuration                                                                                                                     | R4 Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| en<br>config t<br>hostname R3<br><br>int f0/0<br>ip add 192.168.23.3 255.255.255.0<br>no sh                                          | en<br>config t<br>hostname R4<br><br>int e2/0<br>ip add 192.168.24.4 255.255.255.0<br>no sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|                                                                                                                                                                                                                                                                                                |                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| int e2/0<br>ip add 192.168.35.3 255.255.255.0<br>no sh<br><br>router eigrp 1<br>network 0.0.0.0                                                                                                                                                                                                | int e2/1<br>ip add 192.168.45.4 255.255.255.0<br>no sh<br><br>router eigrp 1<br>network 0.0.0.0 |
| <b>R5 configuration</b>                                                                                                                                                                                                                                                                        | <b>Output</b>                                                                                   |
| en<br>config t<br>hostname R5<br><br>int e2/0<br>ip add 192.168.35.5 255.255.255.0<br>no sh<br><br>int e2/1<br>ip add 192.168.45.5 255.255.255.0<br>no sh<br><br>int lo 0<br>ip add 5.5.5.5 255.0.0.0<br><br>int lo 1<br>ip add 55.55.55.55 255.0.0.0<br><br>router eigrp 1<br>network 0.0.0.0 | Look in R1<br><br>traceroute 5.5.5.5 numeric<br>traceroute 55.55.55.55 numeric                  |



## Before PBR:

```
R1#traceroute 55.55.55.55 numeric
Type escape sequence to abort.
Tracing the route to 55.55.55.55
VRF info: (vrf in name/id, vrf out name/id)
 1 192.168.12.2 40 msec 52 msec 32 msec
 2 192.168.23.3 28 msec 20 msec 44 msec
 3 192.168.35.5 52 msec * 72 msec
R1#traceroute 5.5.5.5 numeric
Type escape sequence to abort.
Tracing the route to 5.5.5.5
VRF info: (vrf in name/id, vrf out name/id)
 1 192.168.12.2 28 msec 52 msec 28 msec
 2 192.168.23.3 52 msec 52 msec 56 msec
 3 192.168.35.5 36 msec * 92 msec
```

## After PBR:

```
R1#traceroute 5.5.5.5 numeric
Type escape sequence to abort.
Tracing the route to 5.5.5.5
VRF info: (vrf in name/id, vrf out name/id)
 1 192.168.12.2 56 msec 28 msec 56 msec
 2 192.168.24.4 56 msec 48 msec 52 msec
 3 192.168.45.5 52 msec * 96 msec
R1#traceroute 55.55.55.55 numeric
Type escape sequence to abort.
Tracing the route to 55.55.55.55
VRF info: (vrf in name/id, vrf out name/id)
 1 192.168.12.2 28 msec 56 msec 32 msec
 2 192.168.23.3 52 msec 52 msec 48 msec
 3 192.168.35.5 32 msec * 48 msec
```