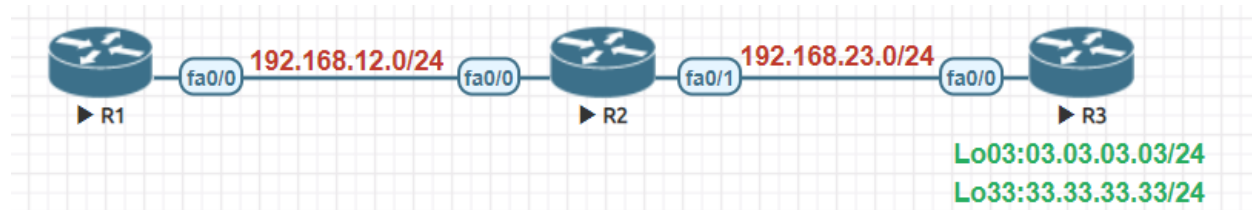


## Process, Fast Switching & CEF Lab:



### R1 Configuration

```
R1(config)#interface fastEthernet 0/0
R1(config-if)#ip address 192.168.12.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#ip route 0.0.0.0 0.0.0.0 192.168.12.2
```

### R2 Configuration

```
R2(config)#interface fastEthernet 0/0
R2(config-if)#ip address 192.168.12.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface fastEthernet 1/0
R2(config-if)#ip address 192.168.23.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#ip route 3.3.3.0 255.255.255.0 192.168.23.3
R2(config)#ip route 33.33.33.0 255.255.255.0 192.168.23.3
```

### R3 Configuration

```
R3(config)#interface fastEthernet 1/0
R3(config-if)#ip address 192.168.23.3 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#interface loopback3
R3(config-if)#ip address 3.3.3.3 255.255.255.0
R3(config-if)#exit
R3(config)#interface loopback33
R3(config-if)#ip address 33.33.33.33 255.255.255.0
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 192.168.23.2
```

CEF Verification	
Commands	Description
R2#debug ip packet	Enable packet debug on Router 2
R1#ping 192.168.23.3	Ping from R1 to R3 interface

Let's check there is no debug output every packet is going through FIB table hardware.

```
R2#
R2#
R2#

R2#
R2#
R2#
```

Fast Switching Verification	
Commands	Description
R2(config)#no ip cef	Disable CEF on Router 2
R1#ping 192.168.23.3	Ping from R1 to R3 interface

Only first packet hit RIB (Routing Information Base) CPU, rest of all packets cache.

```
R2#
*Mar 1 01:06:39.911: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=192.168.23.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:06:39.911: IP: s=192.168.12.1 (FastEthernet0/0), d=192.168.23.3 (FastEthernet1/0), g=192.168.23.3, len 100,
forward
*Mar 1 01:06:39.975: IP: tableid=0, s=192.168.23.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:06:39.979: IP: s=192.168.23.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100,
forward
```

Lets verify Fast Switching Cache table.

```
R2#show ip cache
IP routing cache 2 entries, 392 bytes
  8 adds, 6 invalidates, 0 refcounts
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
  quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 01:09:20 ago

Prefix/Length      Age      Interface      Next Hop
3.3.3.0/24         00:01:32 FastEthernet1/0 192.168.23.3
192.168.12.1/32    00:01:32 FastEthernet0/0 192.168.12.1
```

Fast Processing Verification	
Commands	Description
R2(config)#interface f0/0	Enter interface mode
R2(config-if)#no ip route-cache	Disable Fast Switching on interface
R2(config-if)#exit	Exit from interface mode
R2(config)#interface f1/0	Enter interface mode

R2(config-if)#no ip route-cache	Disable Fast Switching on interface
R1#ping 192.168.23.3	Ping from R1 to R3 interface

Let's verify, every single packet is hitting RIB (Routing Information Base) means control Plan.

```
R2#
*Mar 1 01:36:21.703: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:36:21.703: IP: s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), g=192.168.23.3, len 100, forwa
rd
*Mar 1 01:36:21.767: IP: tableid=0, s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:36:21.767: IP: s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100, forwa
rd
*Mar 1 01:36:21.831: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:36:21.831: IP: s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), g=192.168.23.3, len 100, forwa
rd
*Mar 1 01:36:21.895: IP: tableid=0, s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:36:21.899: IP: s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100, forwa
rd
*Mar 1 01:36:21.959: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:36:21.963: IP: s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), g=192.168.23.3, len 100, forwa
rd
*Mar 1 01:36:22.027: IP: tableid=0, s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:36:22.027: IP: s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100, forwa
rd
*Mar 1 01:36:22.095: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:36:22.095: IP: s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), g=192.168.23.3, len 100, forwa
rd
*Mar 1 01:36:22.159: IP: tableid=0, s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:36:22.163: IP: s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100, forwa
rd
*Mar 1 01:36:22.223: IP: tableid=0, s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), routed via RIB
*Mar 1 01:36:22.227: IP: s=192.168.12.1 (FastEthernet0/0), d=3.3.3.3 (FastEthernet1/0), g=192.168.23.3, len 100, forwa
rd
*Mar 1 01:36:22.291: IP: tableid=0, s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), routed via RIB
*Mar 1 01:36:22.291: IP: s=3.3.3.3 (FastEthernet1/0), d=192.168.12.1 (FastEthernet0/0), g=192.168.12.1, len 100, forwa
```

Fast Switching is disable there is no entry in table.

```
R2#show ip cache
IP routing cache 0 entries, 0 bytes
 8 adds, 8 invalidates, 0 refcounts
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 01:40:08 ago
```

Prefix/Length	Age	Interface	Next Hop
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```
R2#show ip int f0/0 | sec swi
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP CEF switching is disabled
IP Fast switching turbo vector
```

```
R2#show ip int f1/0 | sec swi
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP CEF switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
```