

Router Switching Processes

Packet (Layer-3) flow through routers - "switching algorithms"

```
>show ip interface
(Displays the switching type and status by interface)
  IP fast switching is enabled
  IP fast switching on the same interface is disabled
  IP Flow switching is disabled
>show ip interfaces switching
(Shows how the traffic is switched)
```

Process Switching - Processor has to determine the exiting interface for every packet. The packet is copied to the router's process buffer, and the router performs a lookup on the Layer-3 address. This method is the most **processor-intensive** method. The route processor computes the cyclical redundancy check (CRC).

Fast Switching - Enhancement from process switching. Uses fast switching cache that resides on the route processor board. Default for **lower-end routers, 4000 / 2500**. Needs to be **turned off** to view packets while troubleshooting a network issue because packets don't move across the route processor. The interface processor computes the CRC. In some cases, fast switching is **inappropriate**, such as when slow-speed serial links (64K and below) are being fed from higher-speed media such as T1 or Ethernet. In such a case, disabling fast switching can reduce the packet drop rate to some extent.

```
>ip route-cache
```

(Enable fast switching - use of a high-speed route cache for IP routing)

```
>no ip route-cache
```

(Disable fast switching and enable load balancing on a per-packet basis)

Note - Turning off fast switching increases system overhead.

Autonomous Switching - Compares packets against the autonomous switching cache. Available only on AGS+ and **Cisco 7000** series routers that have high-speed interface cards.

```
>ip route-cache [cbus]
```

(The "cbus" option enables both autonomous switching and fast switching)

Silicon Switching - Available only on the Cisco **7000** with the Silicon Switching Processor (SSP). The SSP is a dedicated switch processor that offloads the process from the route processor.

Optimum Switching - Uses the optimum switching algorithm to forward packets to the chosen exit interface. Processing is done in hardware. Replaces fast switching on the high-end routers. Available on the Cisco 7000 Ethernet, FDDI, serial interfaces on the high-end routers and on the adapter interfaces. Needs to be **turned off** to view packets while troubleshooting a network issue because packets are not copied to the process buffer.

```
>no ip route-cache optimum
```

Distributed Switching - Occurs on the **VIP** (Versatile Interface Processor) routers which have a switching processor onboard. In addition to the route processor, each VIP has a copy of the router's routing cache.

Netflow Switching - More of an **administrative** enhancement tool. It collects detailed data on application-utilization information. Cisco provides its implementation. Incorporated into the switching process.

```
>ip route-cache flow
```

(To enable NetFlow on the interface)

Cisco Express

System re

resource

during

Note: Begin
switching