

## - SPAN -

### Monitoring Traffic

Various technologies and packet sniffers exist to monitor traffic on a network. Catalyst switches support a feature called **Switched Port Analyzer (SPAN)** to simplify this process.

SPAN works by *copying* or *mirroring* the traffic from one or more **source** ports, to a **destination** port. Because the traffic is only copied, SPAN will never affect any of the traffic on the source port(s). A packet sniffer or similar device can be connected to this “destination” port, capturing traffic without interfering with the actual data.

A SPAN source can consist of:

- One or more access switchports (**Local SPAN**)
- One or more routed interface
- An EtherChannel
- A trunk port
- An entire VLAN (**VSPAN**)

SPAN can mirror data coming **inbound** or **outbound** on a source interface, or **both**.

A SPAN destination can consist of only **a single** switchport or routed interface. Once an interface is identified as a SPAN destination, it is dedicated to that purpose. No user traffic will be sent down that link. If you configure a SPAN destination as a trunk port, it will be able to capture all VLAN tagged data.

A SPAN destination **cannot** be an EtherChannel.

Under some circumstances, the traffic from the SPAN source can exceed the capacity of the destination interface. For example, if the SPAN source was an entire VLAN, this could very easily exceed the bandwidth capabilities of a single Fast Ethernet interface. In this instance, packets in the destination queue will be dropped to ease the congestion. Always remember, that the source port(s)/VLAN are **never affected**.

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## Configuring SPAN

The first step in configuring SPAN is to identify a source:

```
Switch(config)# monitor session 1 source interface fa0/10 rx
Switch(config)# monitor session 1 source interface fa0/11 tx
Switch(config)# monitor session 1 source vlan 100 both
```

The first command creates a *monitor session*, and assigns it a number of *1*. When we specify a destination interface, we must use the same session number. The rest of the command identifies a *source interface* of *fa0/10*, and monitors all received (*rx*) traffic.

The second command adds a second *interface* to our *monitor session 1*, this time specifying transmitted (*tx*) traffic.

The third command adds a *vlan* to our *monitor session 1*, and specifies *both* incoming and outgoing traffic.

If monitoring a source trunk port, we can specify which specific VLANs we wish to SPAN to mirror:

```
Switch(config)# monitor session 1 filter vlan 1-5
```

Next, we must identify our destination port:

```
Switch(config)# monitor session 1 destination interface fa0/15
```

The above command associates *destination interface fa0/15* to *monitor session 1*.

To stop this monitoring session:

```
Switch(config)# no monitor session 1
```

To view the status of SPAN sessions:

```
Switch(config)# show monitor
```

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**Remote SPAN (RSPAN)**

Consider the above example. The previous page described how to configure SPAN if both the source and destination ports were on the *same* switch. However, it is also possible to utilize SPAN if the source and destination are on *different* switches, using **Remote SPAN (RSPAN)**.

Each switch in the chain must support RSPAN, and the information is sent across a configured RSPAN VLAN.

Configuration on Switch 1 would be:

```
Switch(config)# vlan 123
Switch(config-vlan)# remote-span

Switch(config)# monitor session 1 source interface fa0/10
Switch(config)# monitor session 1 destination vlan 123
```

Configuration on Switch 2 would be:

```
Switch(config)# vlan 123
Switch(config-vlan)# remote-span
```

Configuration on Switch 3 would be:

```
Switch(config)# vlan 123
Switch(config-vlan)# remote-span

Switch(config)# monitor session 1 source vlan 123
Switch(config)# monitor session 1 destination interface fa0/12
```

On all three switches, we must create the RSPAN VLAN, and apply the *remote-span* parameter to it.

On Switch 1, we configure our SPAN *source* as normal, but point to the RSPAN VLAN as our *destination*. On Switch 3, we configure our SPAN *destination* as normal, but point to the RSPAN VLAN as our *source*.

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