CHAPTER 11

Monitoring Network Traffic Using SPAN

This chapter describes the Switched Port Analyzer (SPAN) features provided in switches in the Cisco MDS 9000 Family.

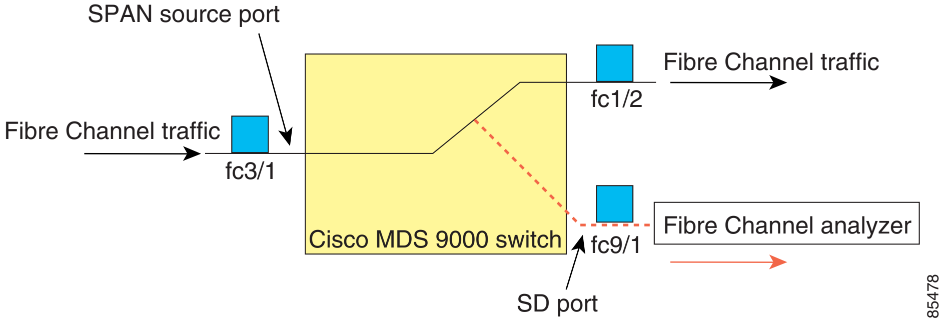
This chapter includes the following sections:

Information About SPAN

The SPAN feature is specific to switches in the Cisco MDS 9000 Family. It monitors network traffic through a Fibre Channel interface. Traffic through any Fibre Channel interface can be replicated to a special port called the SPAN destination port (SD port). Any Fibre Channel port in a switch can be configured as an SD port. Once an interface is in SD port mode, it cannot be used for normal data traffic. You can attach a Fibre Channel Analyzer to the SD port to monitor SPAN traffic.

SD ports do not receive frames, they only transmit a copy of the SPAN source traffic. The SPAN feature is nonintrusive and does not affect switching of network traffic for any SPAN source ports (see Figure 11-1).

Figure 11-1 SPAN Transmission



This section covers the following topics:

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- IPS Source Ports, page 11-3
- Allowed Source Interface Types, page 11-3
- VSAN as a Source, page 11-4
- SPAN Sessions, page 11-4
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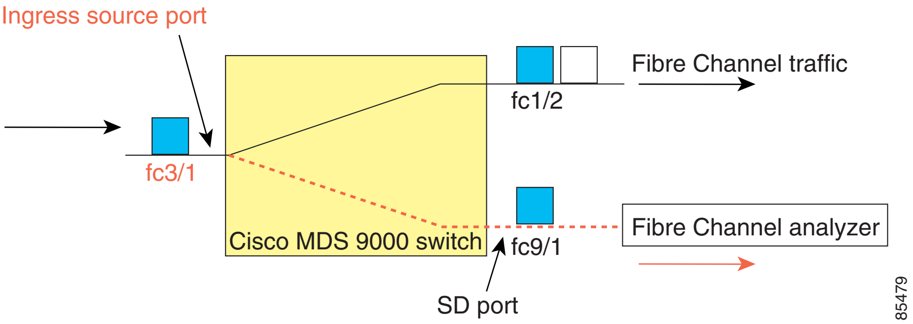
SPAN Sources

SPAN sources refer to the interfaces from which traffic can be monitored. You can also specify VSAN as a SPAN source, in which case, all supported interfaces in the specified VSAN are included as SPAN sources. When a VSAN as a source is specified, then all physical ports and PortChannels in that VSAN are included as SPAN sources. You can choose the SPAN traffic in the ingress direction, the egress direction, or both directions for any source interface:

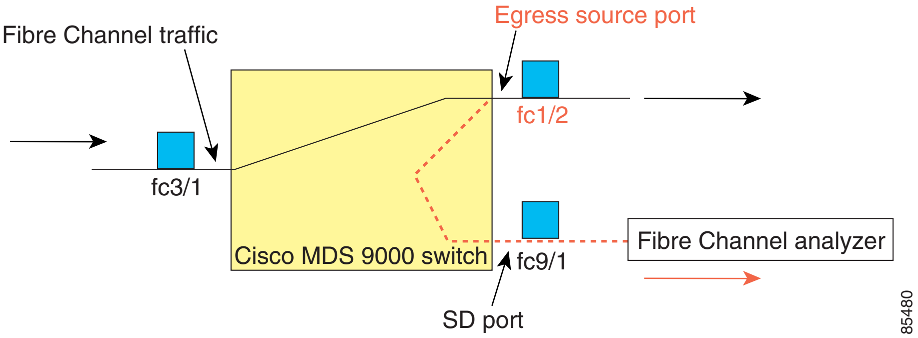
- Ingress source (Rx)—Traffic entering the switch fabric through this source interface is *spanned* or copied to the SD port (see Figure 11-2).

Figure 11-2 SPAN Traffic from the Ingress Direction



- Egress source (Tx)—Traffic exiting the switch fabric through this source interface is spanned or copied to the SD port (see Figure 11-3).

Figure 11-3 SPAN Traffic from Egress Direction



IPS Source Ports

SPAN capabilities are available on the IP Storage Services (IPS) module. The SPAN feature is only implemented on the FCIP and iSCSI virtual Fibre Channel port interfaces, not the physical Gigabit Ethernet ports. You can configure SPAN for ingress traffic, egress traffic, or traffic in both directions for all eight iSCSI and 24 FCIP interfaces that are available in the IPS module.

Note You can configure SPAN for Ethernet traffic using Cisco switches or routers connected to the Cisco MDS 9000 Family IPS modules.

Allowed Source Interface Types

The SPAN feature is available for the following interface types:

- Physical ports such as F ports, FL ports, TE ports, E ports, and TL ports.
- Interface sup-fc0 (traffic to and from the supervisor):

  - The Fibre Channel traffic from the supervisor module to the switch fabric through the sup-fc0 interface is called ingress traffic. It is spanned when sup-fc0 is chosen as an ingress source port.
  - The Fibre Channel traffic from the switch fabric to the supervisor module through the sup-fc0 interface is called egress traffic. It is spanned when sup-fc0 is chosen as an egress source port.
- PortChannels
  - All ports in the PortChannel are included and spanned as sources.
  - You cannot specify individual ports in a PortChannel as SPAN sources. Previously configured SPAN-specific interface information is discarded.
- IPS module specific Fibre Channel interfaces:
  - iSCSI interfaces
  - FCIP interfaces

VSAN as a Source

SPAN sources refer to the interfaces from which traffic can be monitored. When a VSAN as a source is specified, then all physical ports and PortChannels in that VSAN are included as SPAN sources. A TE port is included only when the port VSAN of the TE port matches the source VSAN. A TE port is excluded even if the configured allowed VSAN list may have the source VSAN, but the port VSAN is different.

You cannot configure source interfaces (physical interfaces, PortChannels, or sup-fc interfaces) and source VSANs in the same SPAN session.

SPAN Sessions

Each SPAN session represents an association of one destination with a set of source(s) along with various other parameters that you specify to monitor the network traffic. One destination can be used by one or more SPAN sessions. You can configure up to 16 SPAN sessions in a switch. Each session can have several source ports and one destination port.

To activate any SPAN session, at least one source and the SD port must be up and functioning. Otherwise, traffic is not directed to the SD port.

Tip A source can be shared by two sessions, however, each session must be in a different direction—one ingress and one egress.

You can temporarily deactivate (suspend) any SPAN session. The traffic monitoring is stopped during this time.

Specifying Filters

You can perform VSAN-based filtering to selectively monitor network traffic on specified VSANs. You can apply this VSAN filter to all sources in a session (see Figure 11-14). Only VSANs present in the filter are spanned.

You can specify session VSAN filters that are applied to all sources in the specified session. These filters are bidirectional and apply to all sources configured in the session. Each SPAN session represents an association of one destination with a set of source(s) along with various other parameters that you specify to monitor the network traffic.

SD Port Characteristics

An SD port has the following characteristics:

- Ignores BB_credits.
- Allows data traffic only in the egress (Tx) direction.
- Does not require a device or an analyzer to be physically connected.
- Supports only 1 Gbps or 2 Gbps speeds. The auto speed option is not allowed.
- Multiple sessions can share the same destination ports.
- If the SD port is shut down, all shared sessions stop generating SPAN traffic.
- The outgoing frames can be encapsulated in Extended Inter-Switch Link (EISL) format.
- The SD port does not have a port VSAN.
- SD ports cannot be configured using Storage Services Modules (SSMs).
- The port mode cannot be changed if it is being used for a SPAN session.

Note If you need to change an SD port mode to another port mode, first remove the SD port from all sessions and then change the port mode.

Monitoring Traffic Using Fibre Channel Analyzers

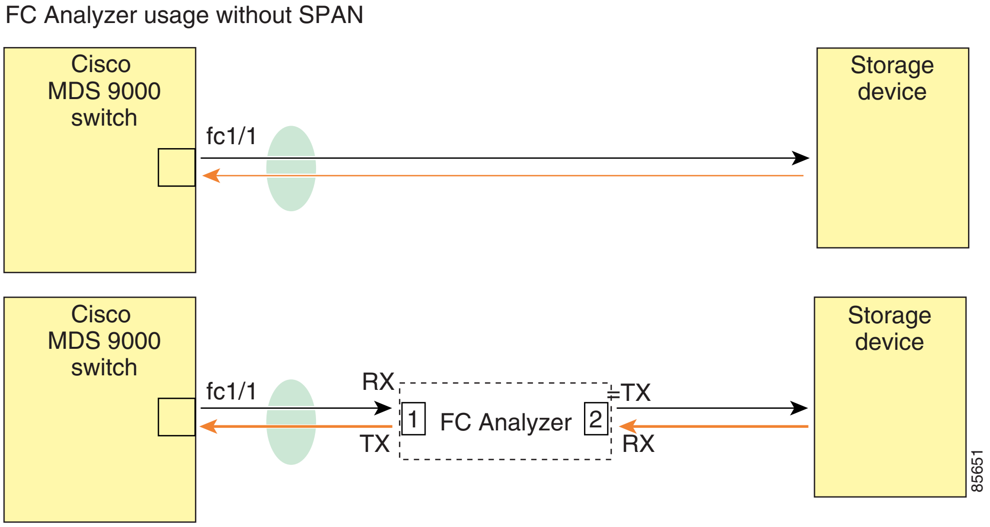
You can use SPAN to monitor traffic on an interface without any traffic disruption. This feature is especially useful in troubleshooting scenarios in which traffic disruption changes the problem environment and makes it difficult to reproduce the problem. You can monitor traffic in either of the following two ways:

- Without SPAN
- With SPAN

Monitoring Without SPAN

You can monitor traffic using interface fc1/1 in a Cisco MDS 9000 Family switch that is connected to another switch or host. You need to physically connect a Fibre Channel analyzer between the switch and the storage device to analyze the traffic through interface fc1/1 (see Figure 11-4).

Figure 11-4 Fibre Channel Analyzer Usage Without SPAN



This type of connection has the following limitations:

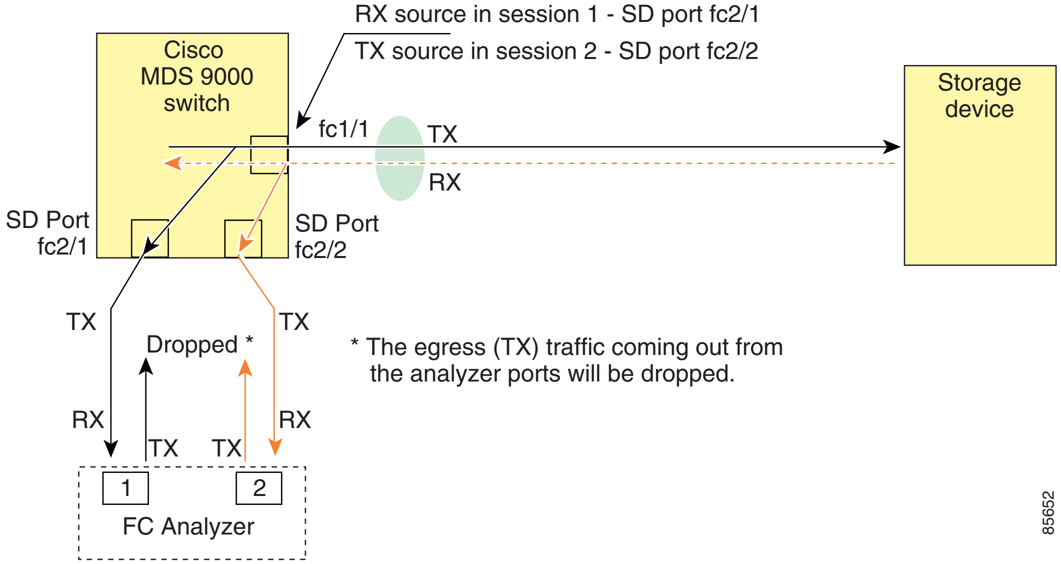
- It requires you to physically insert the FC analyzer between the two network devices.
- It disrupts traffic when the Fibre Channel analyzer is physically connected.
- The analyzer captures data only on the Rx links in both port 1 and port 2. Port 1 captures traffic exiting interface fc1/1 and port 2 captures ingress traffic into interface fc1/1.

Monitoring with SPAN

Using SPAN you can capture the same traffic scenario (see Figure 11-4) without any traffic disruption. The Fibre Channel analyzer uses the ingress (Rx) link at port 1 to capture all the frames going out of the interface fc1/1. It uses the ingress link at port 2 to capture all the ingress traffic on interface fc1/1.

Using SPAN you can monitor ingress traffic on fc1/1 at SD port fc2/2 and egress traffic on SD port fc2/1. This traffic is seamlessly captured by the FC analyzer (see Figure 11-5).

Figure 11-5 Fibre Channel Analyzer Using SPAN



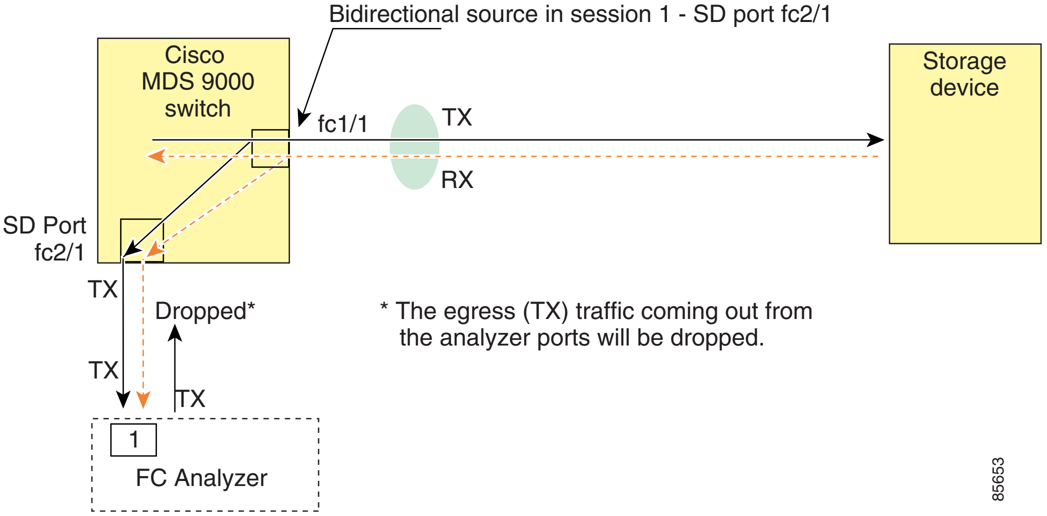
* The egress (TX) traffic coming out from the analyzer ports will be dropped.

Single SD Port to Monitor Traffic

You do not need to use two SD ports to monitor bidirectional traffic on any interface (see Figure 11-5). You can use one SD port and one FC analyzer port by monitoring traffic on the interface at the same SD port fc2/1.

Figure 11-6 shows a SPAN setup where one session with destination port fc2/1 and source interface fc1/1 is used to capture traffic in both ingress and egress directions. This setup is more advantageous and cost effective than the setup shown in Figure 11-5. It uses one SD port and one port on the analyzer, instead of using a full, two-port analyzer.

Figure 11-6 Fibre Channel Analyzer Using a Single SD Port



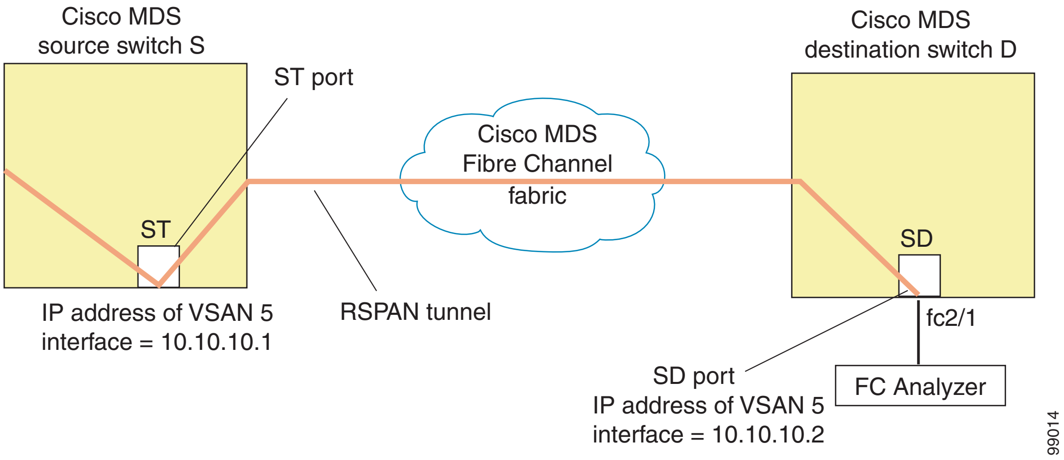
* The egress (TX) traffic coming out from the analyzer ports will be dropped.

To use this setup, the analyzer should have the capability of distinguishing ingress and egress traffic for all captured frames.

SD Port Configuration

The SD port in the destination switch enables the FC analyzer to receive the RSPAN traffic from the Fibre Channel tunnel. Figure 11-7 depicts an RSPAN tunnel configuration, now that tunnel destination is also configured.

Figure 11-7 RSPAN Tunnel Configuration

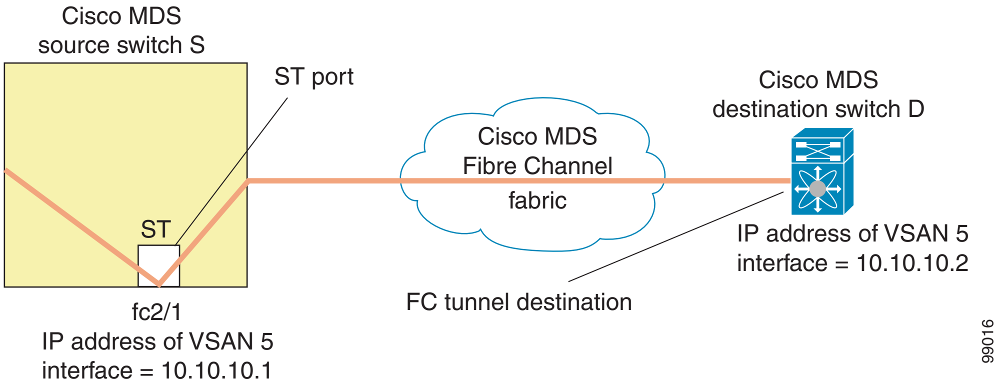


Note SD ports cannot be configured using Storage Services Modules (SSMs).

Mapping the FC Tunnel

The **tunnel-id-map** option specifies the egress interface of the tunnel at the destination switch (see Figure 11-8).

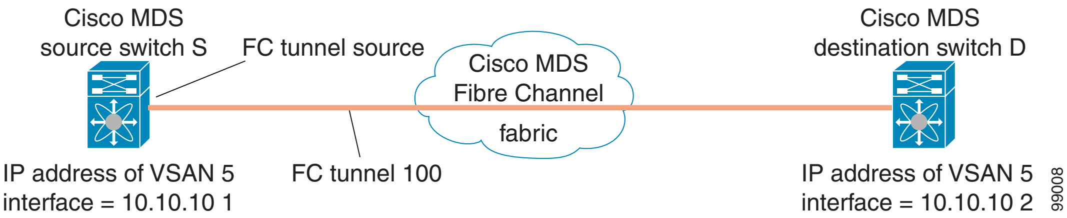
Figure 11-8 FC Tunnel Configuration



Creating VSAN Interfaces

Figure 11-9 depicts a basic FC tunnel configuration.

Figure 11-9 FC Tunnel Configuration



Note This example assumes that VSAN 5 is already configured in the VSAN database.

Remote SPAN

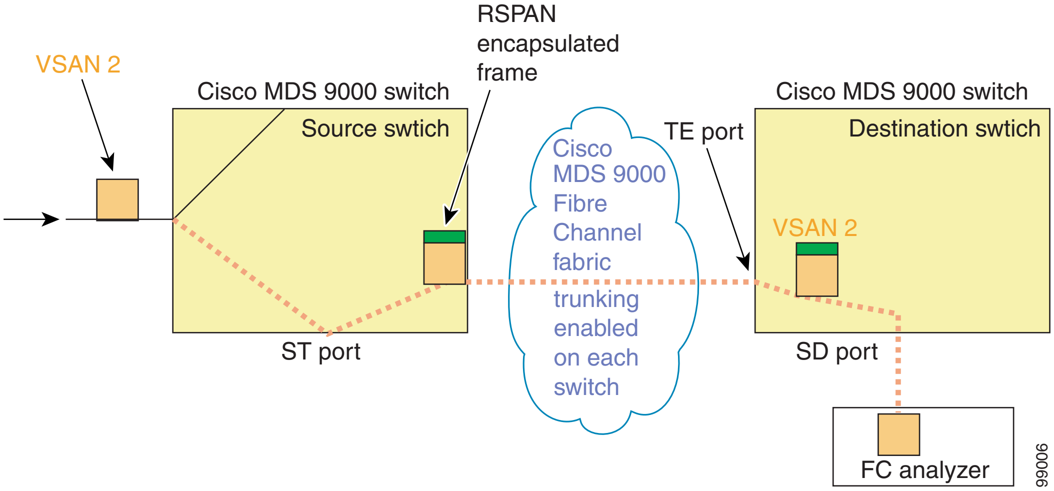
Note Remote SPAN is not supported on the Cisco Fabric Switch for HP c-Class BladeSystem and the Cisco Fabric Switch for IBM BladeSystem.

The Remote SPAN (RSPAN) feature enables you to remotely monitor traffic for one or more SPAN sources distributed in one or more source switches in a Fibre Channel fabric. The SPAN destination (SD) port is used for remote monitoring in a destination switch. A destination switch is usually different from the source switch(es) but is attached to the same Fibre Channel fabric. You can replicate and monitor traffic in any remote Cisco MDS 9000 Family switch or director, just as you would monitor traffic in a Cisco MDS source switch.

The RSPAN feature is nonintrusive and does not affect network traffic switching for those SPAN source ports. Traffic captured on the remote switch is tunneled across a Fibre Channel fabric which has trunking enabled on all switches in the path from the source switch to the destination switch. The Fibre Channel tunnel is structured using trunked ISL (TE) ports. In addition to TE ports, the RSPAN feature uses two other interface types (see Figure 11-10):

- SD ports—A passive port from which remote SPAN traffic can be obtained by the FC analyzer.
- ST ports—A SPAN tunnel (ST) port is an entry point port in the source switch for the RSPAN Fibre Channel tunnel. ST ports are special RSPAN ports and cannot be used for normal Fibre Channel traffic.

Figure 11-10 RSPAN Transmission



Advantages of Using RSPAN

The RSPAN features has the following advantages:

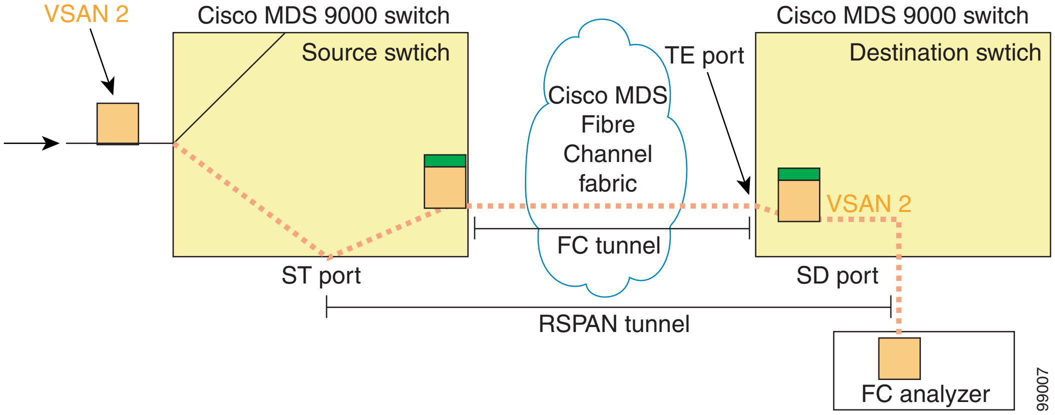
- Enables nondisruptive traffic monitoring at a remote location.
- Provides a cost effective solution by using one SD port to monitor remote traffic on multiple switches.
- Works with any Fibre Channel analyzer.
- Is compatible with the Cisco MDS 9000 Port Analyzer adapters.
- Does not affect traffic in the source switch, but shares the ISL bandwidth with other ports in the fabric.

FC and RSPAN Tunnels

An FC tunnel is a logical data path between a source switch and a destination switch. The FC tunnel originates from the source switch and terminates at the remotely located destination switch.

RSPAN uses a special Fibre Channel tunnel (FC tunnel) that originates at the ST port in the source switch and terminates at the SD port in the destination switch. You must bind the FC tunnel to an ST port in the source switch and map the same FC tunnel to an SD port in the destination switch. Once the mapping and binding is configured, the FC tunnel is referred to as an RSPAN tunnel (see Figure 11-11).

Figure 11-11 FC and RSPAN Tunnel

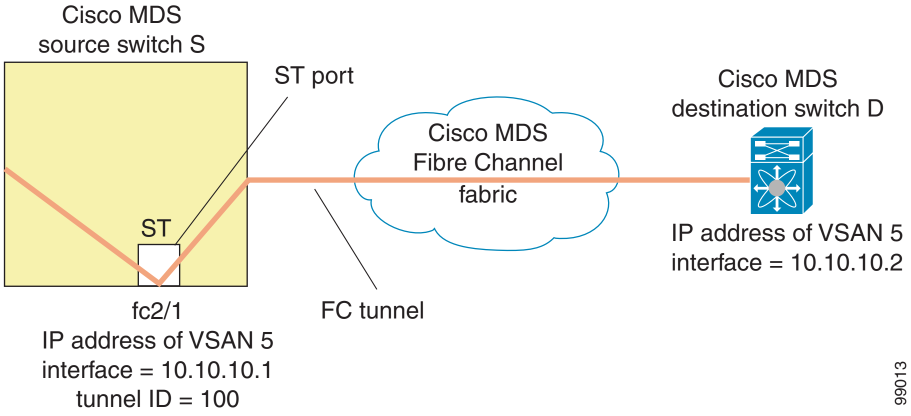


ST Port Configuration

Once the FC tunnel is created, be sure to configure the ST port to bind it to the FC tunnel at the source switch. The FC tunnel becomes an RSPAN tunnel once the binding and mapping is complete.

Figure 11-12 depicts a basic FC tunnel configuration.

Figure 11-12 Binding the FC Tunnel


Cisco MDS source switch S
ST port
Cisco MDS Fibre Channel fabric
Cisco MDS destination switch D
ST
IP address of VSAN 5 interface = 10.10.10.2
fc2/1
IP address of VSAN 5 interface = 10.10.10.1
tunnel ID = 100
FC tunnel
99013

ST Port Characteristics

ST ports have the following characteristics:

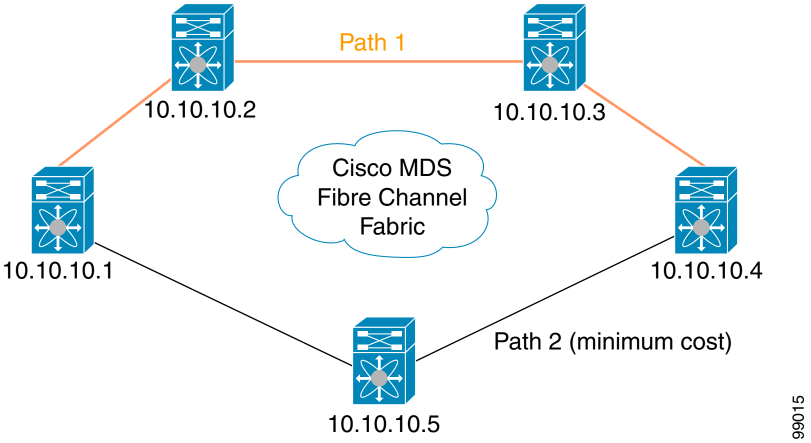
- ST ports perform the RSPAN encapsulation of the FC frame.
- ST ports do not use BB_credits.
- One ST port can only be bound to one FC tunnel.
- ST ports cannot be used for any purpose other than to carry RSPAN traffic.
- ST ports cannot be configured using Storage Services Modules (SSMs).

Creating Explicit Paths

You can specify an explicit path through the Cisco MDS Fibre Channel fabric (source-based routing), using the **explicit-path** option. For example, if you have multiple paths to a tunnel destination, you can use this option to specify the FC tunnel to always take one path to the destination switch. The software then uses this specified path even if other paths are available.

This option is especially useful if you prefer to direct the traffic through a certain path although other paths are available. In an RSPAN situation, you can specify the explicit path so the RSPAN traffic does not interfere with the existing user traffic. You can create any number of explicit paths in a switch (see Figure 11-13).

Figure 11-13 Explicit Path Configuration



Guidelines and Limitations

SPAN Configuration Guidelines

The following guidelines and limitations apply for SPAN configurations:

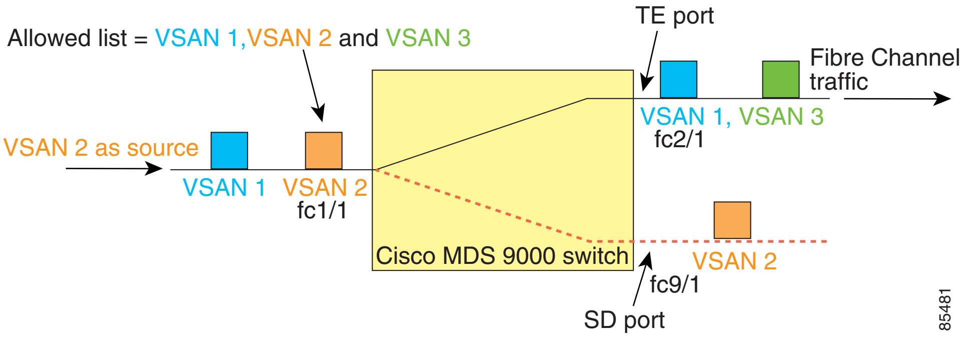
- You can configure up to 16 SPAN sessions with multiple ingress (Rx) sources.
- You can configure a maximum of three SPAN sessions with one egress (Tx) port.
- In a 32-port switching module, you must configure the same session in all four ports in one port group (unit). If you wish, you can also configure only two or three ports in this unit.
- SPAN frames are dropped if the sum of the bandwidth of the sources exceeds the speed of the destination port.
- Frames dropped by a source port are not spanned.
- SPAN does not capture pause frames in a Fibre Channel over Ethernet (FCoE) network because pause frames sent from the virtual expansion (VE) port are generated and terminated by the outermost MAC layer. For more information on FCoE, see the *Cisco NX-OS FCoE Configuration Guide for Cisco Nexus 7000 and Cisco MDS 9500.*

Guidelines to Configure VSANs as a Source

The following guidelines apply when configuring VSANs as a source:

- Traffic on all interfaces included in a source VSAN is spanned only in the ingress direction.
- If a VSAN is specified as a source, you cannot perform interface-level SPAN configuration on the interfaces that are included in the VSAN. Previously configured SPAN-specific interface information is discarded.
- If an interface in a VSAN is configured as a source, you cannot configure that VSAN as a source. You must first remove the existing SPAN configurations on such interfaces before configuring VSAN as a source.
- Interfaces are only included as sources when the port VSAN matches the source VSAN. Figure 11-14 displays a configuration using VSAN 2 as a source:
  - All ports in the switch are in VSAN 1 except fc1/1.
  - Interface fc1/1 is the TE port with port VSAN 2. VSANs 1, 2, and 3 are configured in the allowed list.
  - VSAN 1 and VSAN 2 are configured as SPAN sources.

Figure 11-14 VSAN as a Source



For this configuration, the following apply:

  - VSAN 2 as a source includes only the TE port fc1/1 that has port VSAN 2.

- VSAN 1 as a source does not include the TE port fc1/1 because the port VSAN does not match VSAN 1.

Guidelines to Specifying Filters

The following guidelines apply to SPAN filters:

- PortChannel configurations are applied to all ports in the PortChannel.
- If no filters are specified, the traffic from all active VSANs for that interface is spanned by default.
- While you can specify arbitrary VSAN filters in a session, traffic can only be monitored on the port VSAN or on allowed-active VSANs in that interface.

RSPAN Configuration Guidelines

The following guidelines apply for a SPAN configuration:

- All switches in the end-to-end path of the RSPAN tunnel must belong to the Cisco MDS 9000 Family.
- All VSANs with RSPAN traffic must be enabled. If a VSAN containing RSPAN traffic is not enabled, it is dropped.
- The following configurations must be performed on *each* switch in the end-to-end path of the Fibre Channel tunnel in which RSPAN is to be implemented:
  - Trunking must be enabled (enabled by default) and the trunk enabled link must be the lowest cost link in the path.
  - VSAN interface must be configured.
  - The Fibre Channel tunnel feature must be enabled (disabled by default).
  - IP routing must be enabled (disabled by default).

  Note If the IP address is in the same subnet as the VSAN, the VSAN interface does not have to be configured for all VSANs on which the traffic is spanned.

- A single Fibre Channel switch port must be dedicated for the ST port functionality.
- Do not configure the port to be monitored as the ST port.
- The FC tunnel's IP address must reside in the same subnet as the VSAN interface.

Default SPAN and RSPAN Settings

Table 11-1 lists the default settings for SPAN parameters.

Table 11-1 Default SPAN Configuration Parameters

Parameters	Default
SPAN session	Active.
If filters are not specified	SPAN traffic includes traffic through a specific interface from all active VSANs.
Encapsulation	Disabled.
SD port	Output frame format is Fibre Channel.

Table 11-2 lists the default settings for RSPAN parameters.

Table 11-2 Default RSPAN Configuration Parameters

Parameters	Default
FC tunnel	Disabled.
Explicit path	Not configured.
Minimum cost path	Used if explicit path is not configured.

Configuring SPAN

The SPAN feature is specific to switches in the Cisco MDS 9000 Family. It monitors network traffic through a Fibre Channel interface.

This section covers the following topics:

Configuring SD Ports for SPAN

Detailed Steps

To monitor network traffic using SD ports, follow these steps:

Step 1 Configure the SD port.

Step 2 Attach the SD port to a specific SPAN session.

Step 3 Monitor network traffic by adding source interfaces to the session.

To configure an SD port for SPAN monitoring using Device Manager, follow these steps:

Step 1 Right-click the port you want to configure and select **Configure**.

You see the general port configuration dialog.

Step 2 Under Mode, choose **SD**.

Step 3 Click **Apply** to accept the change.

Step 4 Close the dialog box.

Configuring SPAN max-queued-packets

When a SPAN destination port is oversubscribed or has more source traffic than the speed of the destination port, the source ports of the SPAN session will reduce in their throughput. The impact is proportional to the amount of source traffic flowing in. Lowering the max-queued-packets value from the default value of 15 to 1 prevents the impact on the source ports. It is necessary to reconsider the default value for this setting as it may impact the source interface throughput.

Restrictions

- The span max-queued-packets can be changed only if no SPAN sessions are currently active on the switch.
- If you are spanning the traffic going through an FCIP interface, SPAN copies may be dropped even if the SD interface has more bandwidth than the amount of traffic being replicated. To avoid SPAN drops, set the max-queued-packets to a higher value; for example, 100.

By default, SPAN frames are dropped if the sum of the bandwidth of the source interfaces exceed the bandwidth of the destination port. With a higher value, the SPAN traffic has a higher probability of reaching the SPAN destination port instead of being dropped at the expense of data traffic throughput.

Creating SPAN Sessions

Detailed Steps

To create SPAN sessions, follow these steps:

Step 1 Choose **Interface > SPAN**. You see the SPAN dialog box.

Step 2 Click the **Sessions** tab.

Step 3 Click **Create**.

You see the Create SPAN Sessions dialog box.

Step 4 Choose the session ID (from 1-16) using the up or down arrows and click **Create**.

Step 5 Repeat Step 4 for each session you want to create.

Step 6 Enter the destination interface in the Dest Interface field for the appropriate session.

Step 7 Enter the filter VSAN list in the Filter VSAN List field for the appropriate session.

Step 8 Choose **active** or in **active** admin status in the Admin drop-down list.

Step 9 Click **Apply** to save your changes.

Step 10 Close the two dialog boxes.

Configuring SPAN for Generation 2 Fabric Switches

Cisco Generation 2 fabric switches (such as MDS 9124) support SPAN sessions in both directions, Rx and Tx.

Note While using Generation 2 fabric switches, you cannot create an additional active SPAN session when you already have one.

Restrictions

- You can specify multiple SPAN source interfaces in Rx and Tx directions.

- You cannot mix ingress and egress interfaces in the same SPAN session. The SPAN will reject any configuration that mixes Rx ad Tx directions. However, you can specify multiple SPAN source interfaces in a single direction.

Generation 2 Fabric Switches support VSAN filters for one VSAN only in the egress direction; this restriction does not apply to the ingress direction. For example, if you have an interface that is a TE port, with an active VSAN of 1 to 5, and you specify a VSAN filter for VSAN 2, then only the traffic on VSAN 2 will be filtered.

Editing SPAN Sources

Detailed Steps

To edit a SPAN source, follow these steps:

Step 1 Choose **Interface > SPAN**.

You see the SPAN dialog box.

Step 2 Click the **Sources** tab.

Step 3 Enter the VSAN list name in the VSAN List field.

Step 4 Click **Edit Interface List**.

You see the Source Interfaces dialog box.

Step 5 Click **Create**.

You see the Source Interfaces Interface Sources dialog box.

Step 6 Click the browse button to display the list of available FC ports.

Step 7 Choose a port and click **OK**.

Step 8 Click the direction (**receive** or **transmit**) you want.

Step 9 Click **Create** to create the FC interface source.

Step 10 Click **Close** in each of the three open dialog boxes.

Deleting SPAN Sessions

Detailed Steps

To delete a SPAN session, follow these steps:

Step 1 Choose **Interface > SPAN**.

You see the SPAN dialog box.

Step 2 Click the **Sessions** tab.

Step 3 Click the SPAN session you want to delete.

Step 4 Click **Delete**.

The SPAN session is deleted.

Step 5 Close the dialog box.

Configuring Fibre Channel Analyzers Using SPAN

Detailed Steps

To configure Fibre Channel Analyzers using SPAN for the example in Figure 11-5, follow these steps:

Step 1 Configure SPAN on interface fc1/1 in the ingress (Rx) direction to send traffic on SD port fc2/1 using session 1.

Step 2 Configure SPAN on interface fc1/1in the egress (Tx) direction to send traffic on SD port fc2/2 using session 2.

Step 3 Physically connect fc2/1 to port 1 on the Fibre Channel analyzer.

Step 4 Physically connect fc2/2 to port 2 on the Fibre Channel analyzer.

Configuring RSPAN

The RSPAN tunnel begins in the source switch and terminates in the destination switch. This section assumes Switch S to be the source and Switch D to be the destination.

Prerequisites

- In addition to the source and destination switches, the VSAN must also be configured in each Cisco MDS switch in the Fibre Channel fabric, if they exist.

Detailed Steps

To monitor network traffic using the RSPAN feature, follow these steps:

Step 1 Create VSAN interfaces in destination switch (Switch D) and source switch (Switch S) to facilitate the Fibre Channel tunnel (FC tunnel) creation.

Step 2 Enable the FC tunnel in each switch in the end-to-end path of the tunnel.

Step 3 Initiate the FC tunnel (in Switch S) and map the tunnel to the VSAN interface's IP address (in Switch D) so all RSPAN traffic from the tunnel is directed to the SD port.

Step 4 Configure SD ports for SPAN monitoring in the destination switch (Switch D).

Step 5 Configure the ST port in the source switch (Switch S) and bind the ST port to the FC tunnel.

Step 6 Create an RSPAN session in the source switch (in Switch S) to monitor network traffic.

Configuring the Source Switch

This section identifies the tasks that must be performed in the source switch (Switch S):

- Creating VSAN Interfaces, page 11-9
- Configuring All Intermediate Switches, page 11-19

Configuring All Intermediate Switches

This section identifies the tasks that must be performed in all intermediate switches in the end-to-end path of the RSPAN tunnel:

- Configuring VSAN Interfaces, page 11-19
- Enabling IP Routing, page 11-19

Configuring VSAN Interfaces

Figure 11-7 on page 11-8 depicts an RSPAN tunnel configuration terminating in the destination switch (Switch D).

Note This example assumes that VSAN 5 is already configured in the VSAN database.

Enabling IP Routing

The IP routing feature is disabled by default. Be sure to enable IP routing in each switch (including the source and destination switches) in the end-to-end path in the fabric. This procedure is required to set up the FC tunnel.

Configuring the Destination Switch

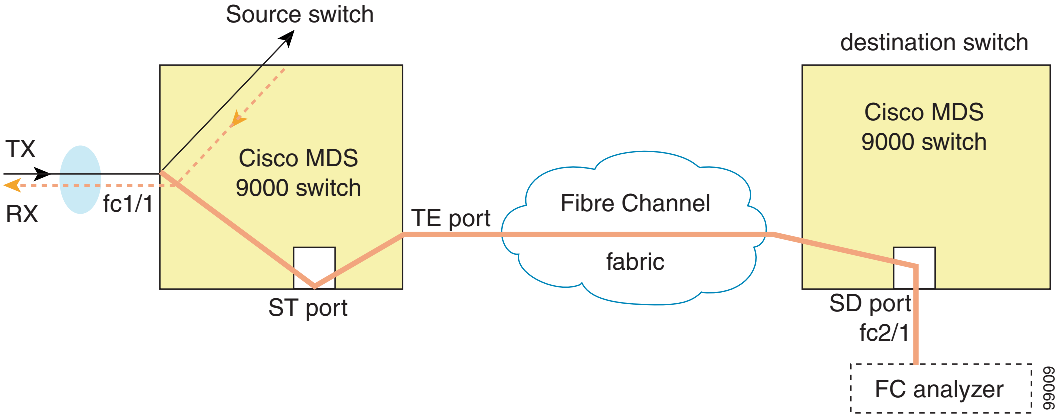
This section identifies the tasks that must be performed in the destination switch (Switch D):

- Monitoring RSPAN Traffic, page 11-19

Monitoring RSPAN Traffic

Once the session is configured, other SPAN sources for this session can also be configured as required. Figure 11-15 shows an RSPAN setup where one session with destination port fc2/1 and source interface fc1/1 is used to capture traffic in both ingress and egress directions.

Figure 11-15 Fibre Channel Analyzer Using a Single SD Port to Monitor RSPAN Traffic



To use this setup, the analyzer should have the capability of distinguishing ingress and egress traffic for all captured frames.

Configuration Examples for RSPAN

This section covers the following topics:

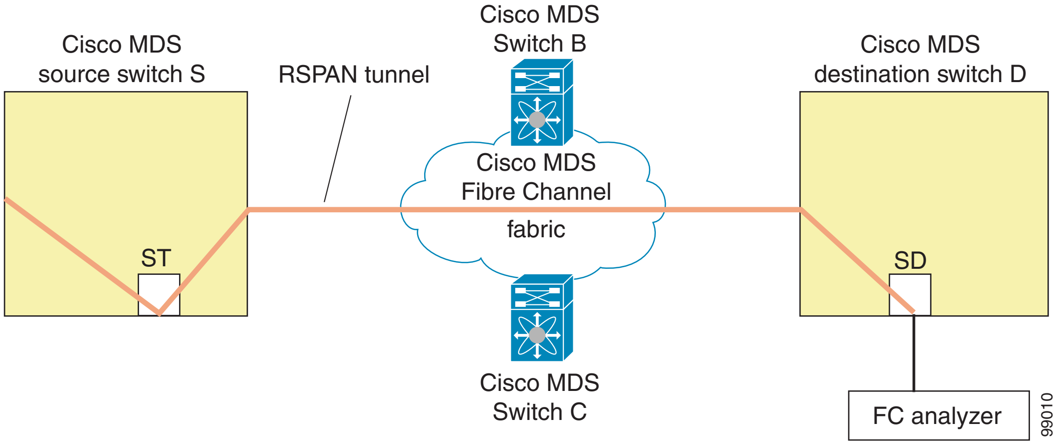
- Single Source with One RSPAN Tunnel, page 11-20
- Single Source with Multiple RSPAN Tunnels, page 11-21
- Multiple Sources with Multiple RSPAN Tunnels, page 11-21

Note RSPAN can be combined with the local SPAN feature so SD ports forward local SPAN traffic along with remote SPAN traffic. Various SPAN source and tunnel scenarios are described in this section.

Single Source with One RSPAN Tunnel

The source Switch S and the destination Switch D are interconnected through a Fibre Channel fabric. An RSPAN tunnel is configured as a destination interface for the SPAN session and the ST port forwards SPAN traffic through the RSPAN tunnel (see Figure 11-16).

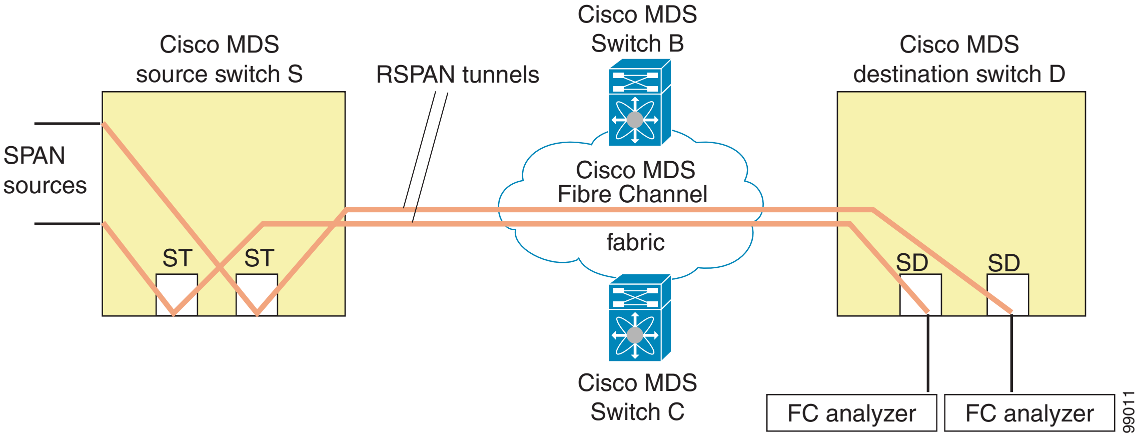
Figure 11-16 RSPAN Scenario with One Source Switch, One Destination Switch, and One Tunnel



Single Source with Multiple RSPAN Tunnels

Figure 11-17 displays two separate RSPAN tunnels configured between Switches S and N. Each tunnel has an associated ST port in the source switch and a separate SD port in the destination switch. This configuration is useful for troubleshooting purposes.

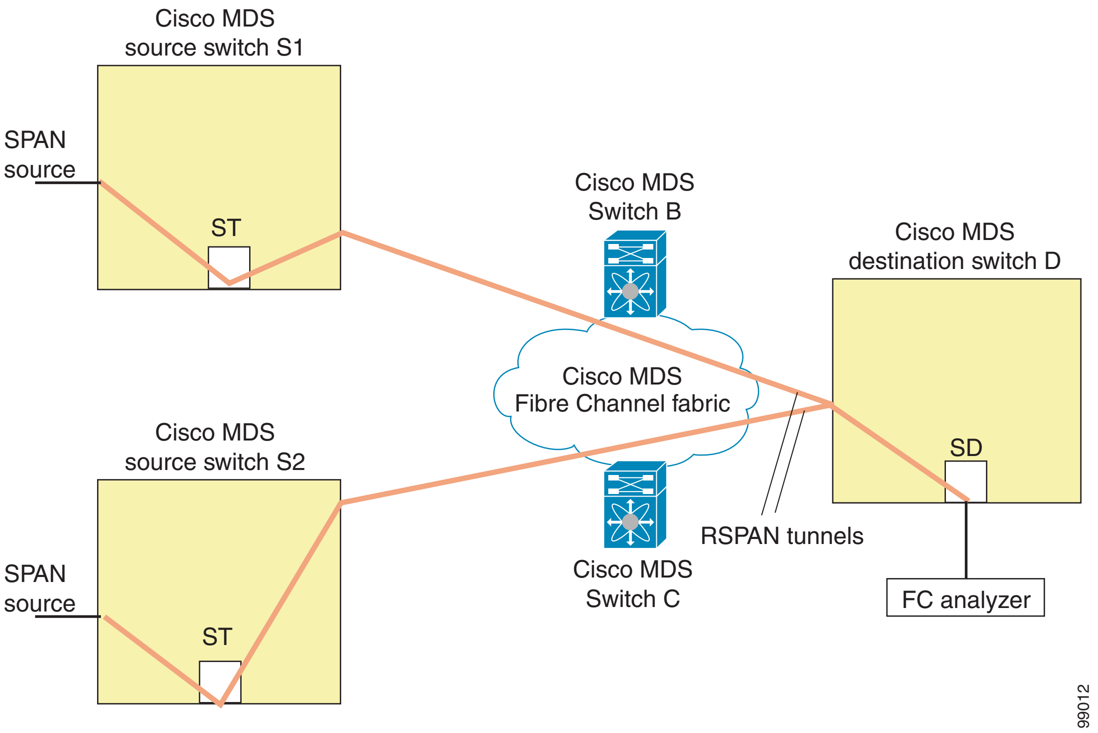
Figure 11-17 RSPAN Scenario with One Source Switch, One Destination Switch, and Multiple Tunnels



Multiple Sources with Multiple RSPAN Tunnels

Figure 11-18 displays two separate RSPAN tunnels configured between Switches S1 and S2. Both tunnels have an associated ST port in their respective source switch and terminate in the same SD port in the destination switch.

Figure 11-18 RSPAN Scenario with Two Source Switches, a Destination Switch, and Multiple Tunnels



This configuration is useful for remote monitoring purposes. For example, the administrator may be at the destination switch and can remotely monitor the two source switches.

Field Descriptions for SPAN

This section describes the field descriptions for SPAN.

SPAN Sessions

Field	Description
Dest Interface	The Span Destination port interface.
Filter VSAN List	The VSANs that are assigned to this session.
Status Admin	Suspend an active session or activate an inactive session.
Status Oper	The current state of the session.
Description	The description of the session status.
VSAN List	The VSANs that are assigned to this session.
Or Interface (Direction)	The destination port ID to be configured for the session.
Inactive Reason	Description of the reason why this session is not active.

Related Topics

SPAN Sessions

Creating SPAN Sessions

Deleting SPAN Sessions

Information About SPAN

Editing SPAN Sources

Span Global

Field	Description
MaxQueuedSpanPackets	This field specifies the drop threshold packets for all span sessions.The MaxQueuedSpanPackets field is only available when no session is active.

SPAN Source Interfaces

Field	Description
Interface, Direction	The destination port ID configured for the session, and the direction of traffic.