Overview

This chapter describes the features of the NX-OS Smart Channel.

Licensing Requirements

For a complete explanation of Cisco NX-OS licensing recommendations and how to obtain and apply licenses, see the *Cisco NX-OS Licensing Guide* and the *Cisco NX-OS Licensing Options Guide*.

Supported Platforms

Starting with Cisco NX-OS release 7.0(3)I7(1), use the Nexus Switch Platform Support Matrix to know from which Cisco NX-OS releases various Cisco Nexus 9000 and 3000 switches support a selected feature.

About Smart Channel

Smart channel is a hardware-based, multi-terabit solution for the Layer 2 traffic distribution, load balancing, and redirection on the Cisco Nexus switches. This feature is supported on the Cisco Nexus 9372PX, 93108TC-EX, and the Cisco Nexus 9516 switches.

Note Smart channel feature is not supported on Cisco 9500 EX / FX line cards.

Smart channel is an aggregation of multiple physical links that creates a single logical link. You can bundle up multiple physical links into a port group to provide an increased bandwidth (an aggregate of the multiple physical links) and redundancy.

If one port within a smart channel fails, the traffic switches to the remaining ports in the smart channel.

Smart channel allows you to create a cluster of transparent mode appliances.

Smart Channel Features

The smart channel features are as follows:

- Multi-terabit solution at line rate
- Simplified provisioning and ease of deployment
- Transparency to end device and stateless protocol benefits
- Removes the requirement for an expensive external load balancer

Benefits of Smart Channel

The benefits of smart channel are as follows:

- Simultaneous redirection and load balancing
- IP-stickiness and resiliency
- Health monitoring
- Removes the requirement for an expensive external load balancer
- Hashing does not depend on the wiring or the port numbering
- Every port on the switch is used for load balancing and traffic redirection
- Automatic failure handling of servers or appliances

Examples of the Deployment Use Cases

Examples of the deployment use cases for the smart channel feature are as follows:

- Load balances to a pool of firewalls.
- Scales the VDS-TC (video-caching) solution.
- Scales the transparent mode devices.

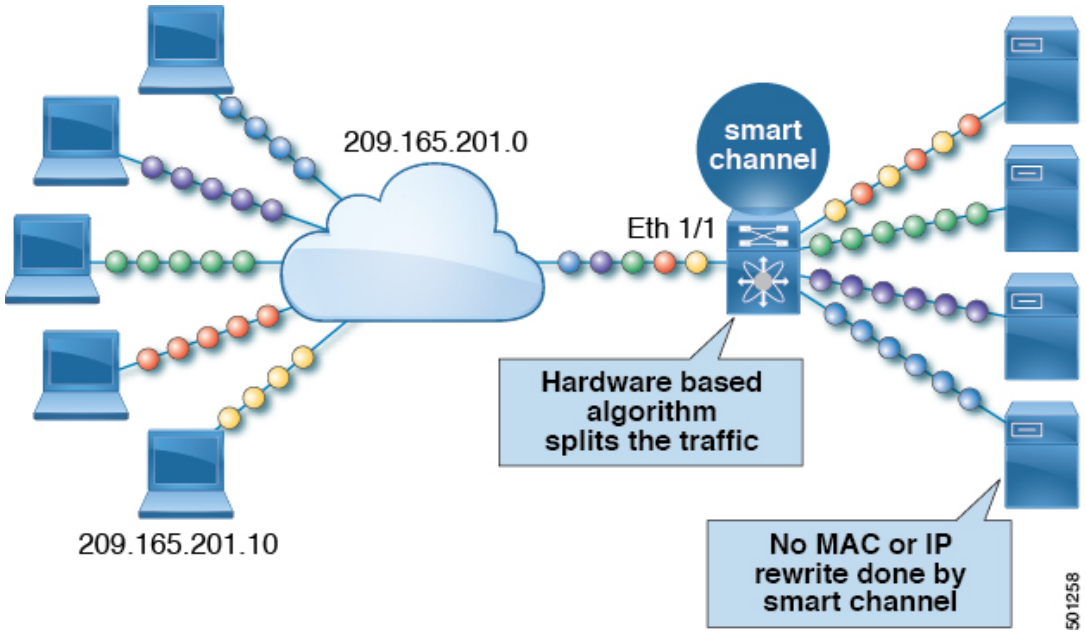
Topology Examples for Smart Channel

This section displays the following examples:

- Basic topology for smart channel
- Use case of a smart channel configuration
- Fail-action for resilient hashing

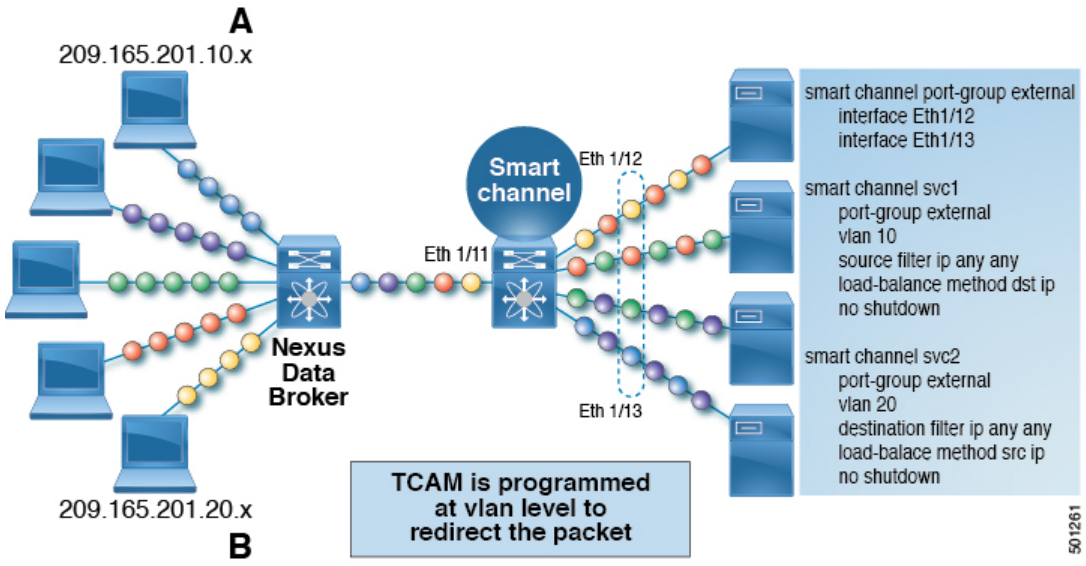
You can use the smart channel feature to load balance traffic to appliances used in a monitoring network. The following figure shows the basic topology, where the traffic is sent to the appliances where you need to load balance the traffic towards, such as the IPS or the IDS devices.

Figure 1: Standard Topology for Smart Channel



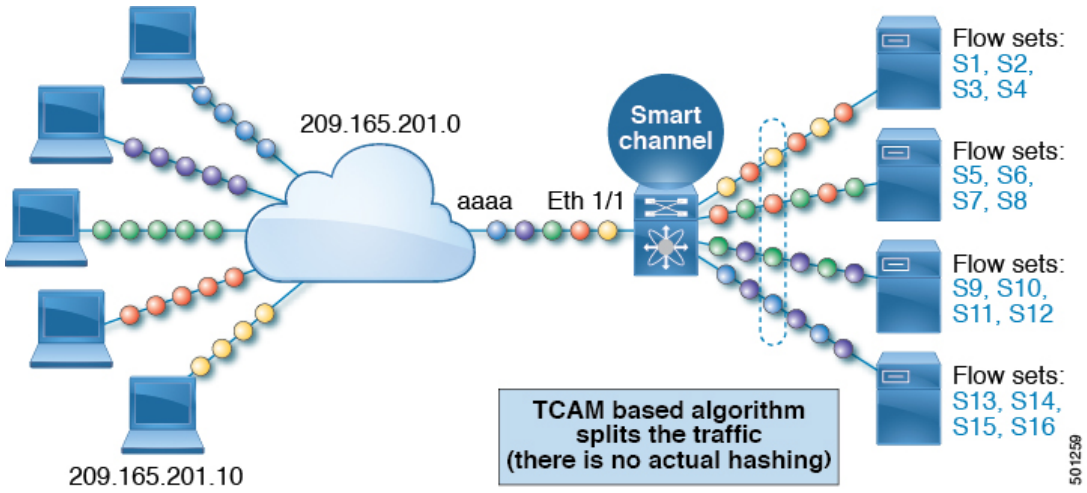
The following example shows a typical use case of smart channel in a network where the traffic is spanned from the production environment to the monitoring environment. In this example, we are using the Cisco Nexus Data Broker to send copy of the monitoring traffic and scale monitoring networks.

Figure 2: Use Case for a Smart Channel Configuration



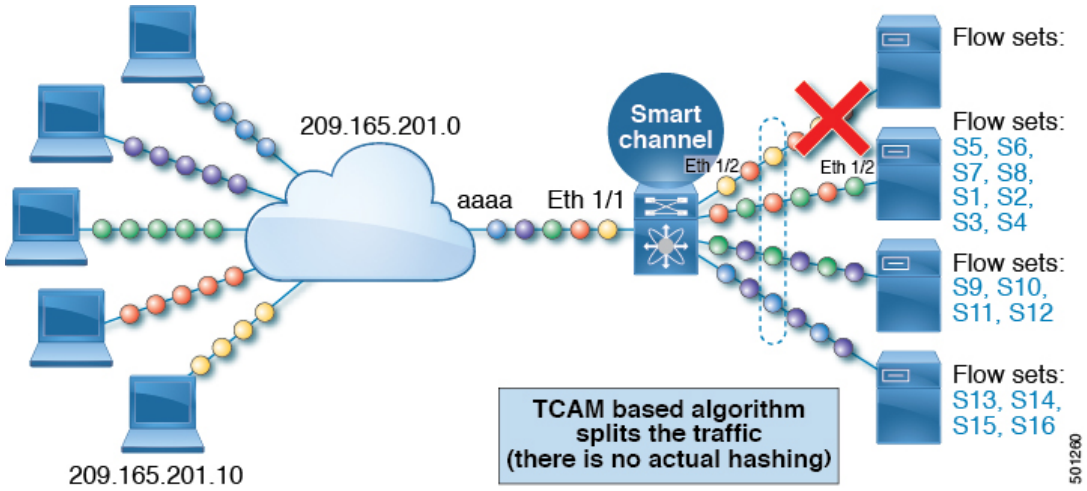
The following example shows the fail-action of a smart channel configuration:

Figure 3: Fail-Action of a Smart Channel Configuration



The following example shows the fail-action of a smart channel configuration:

Figure 4: Fail-Action of a Smart Channel Configuration



Prerequisites for Smart Channel

Smart channel has the following prerequisite:

- You must ensure that an enough TCAM size has been allocated to the VACL. To verify the TCAM size, use the **sh hardware access-list tcam region** command. If the appropriate TCAM size is not allocated, use the **hardware access-list tcam region** *VACL size additional of 256* command to allocate the appropriate TCAM size.

Guidelines and Limitations for Smart Channel

Smart channel has the following configuration guidelines and limitations:

- Cisco Nexus 9372PX, 93108TC-EX, and the Cisco Nexus 9516 switches support smart channel servicing.
- This feature is supported for the Cisco Nexus 9372PX, 93108TC-EX, and the Cisco Nexus 9516 switches.

Note Smart channel feature is not supported on Cisco 9500 EX / FX / R line cards.

- This feature is supported for the Cisco Nexus C93108TC-EX beginning Cisco NX-OS Release 9.2 (x).
- Smart channel does not support the vPC, port channel, and the L3 interfaces.
- Only the port group interfaces in a trunk or access mode are supported.
- You must not share the smart port-group to more than one service when the services have the access configuration.
- Ensure that the TCAM size is equal to the sum of the number of the configured VLANs on the service by the number of buckets.
- Ensure that the smart channel service does not have the same load balancing method (load-balance method src ip) and the configuration of the (source filter ip any any).
- Ensure that the port-group to be added to the smart channel service has been configured.

Default Settings for Smart Channel

The following table lists the default settings for the smart channel parameter.

Table 1: Default Smart Channel Parameter

Parameters	Default
Smart channel	Disabled