C H A P T E R **15**

Configuring Traffic Storm Control

This chapter describes how to configure traffic storm control on the NX-OS device.

This chapter includes the following sections:

Information About Traffic Storm Control

A traffic storm occurs when packets flood the LAN, creating excessive traffic and degrading network performance. You can use the traffic storm control feature to prevent disruptions on Layer 2 ports by a broadcast, multicast, or unicast traffic storm on physical interfaces.

Traffic storm control (also called traffic suppression) allows you to monitor the levels of the incoming broadcast, multicast, and unicast traffic over a 1-second interval. During this interval, the traffic level, which is a percentage of the total available bandwidth of the port, is compared with the traffic storm control level that you configured. When the ingress traffic reaches the traffic storm control level that is configured on the port, traffic storm control drops the traffic until the interval ends.

Figure 15-1 shows the broadcast traffic patterns on a Layer 2 interface over a given interval. In this example, traffic storm control occurs between times T1 and T2 and between T4 and T5. During those intervals, the amount of broadcast traffic exceeded the configured threshold.

Figure 15-1   Broadcast Suppression

The traffic storm control threshold numbers and the time interval allow the traffic storm control algorithm to work with different levels of granularity. A higher threshold allows more packets to pass through.

Traffic storm control on the Cisco NX-OS device is implemented in the hardware. The traffic storm control circuitry monitors packets that pass from a Layer 2 interface to the switching bus. Using the Individual/Group bit in the packet destination address, the circuitry determines if the packet is unicast or broadcast, tracks the current count of packets within the 1-second interval, and filters out subsequent packets when a threshold is reached.

Traffic storm control uses a bandwidth-based method to measure traffic. You set the percentage of total available bandwidth that the controlled traffic can use. Because packets do not arrive at uniform intervals, the 1-second interval can affect the behavior of traffic storm control.

The following are examples of traffic storm control behavior:

- If you enable broadcast traffic storm control, and broadcast traffic exceeds the level within the 1-second interval, traffic storm control drops all broadcast traffic until the end of the interval.

- If you enable broadcast and multicast traffic storm control, and the combined broadcast and multicast traffic exceeds the level within the 1-second interval, traffic storm control drops all broadcast and multicast traffic until the end of the interval.

- If you enable broadcast and multicast traffic storm control, and broadcast traffic exceeds the level within the 1-second interval, traffic storm control drops all broadcast and multicast traffic until the end of the interval.

- If you enable broadcast and multicast traffic storm control, and multicast traffic exceeds the level within the 1-second interval, traffic storm control drops all broadcast and multicast traffic until the end of the interval.

By default, the NX-OS software takes no corrective action when the traffic exceeds the configured level. However, you can configure an Embedded Event Management (EEM) action to error-disable an interface if the traffic does not subside (drop below threshold) within a certain time period. For information on configuring EEM, see the *Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 4.1*.

Virtualization Support For Traffic Storm Control

Traffic storm control configuration and operation are local to the virtual device context (VDC).

For more information on VDCs, see the *Cisco DCNM Virtual Device Context Configuration Guide, Release 4.1*.

Licensing Requirements for Traffic Storm Control

The following table shows the licensing requirements for this feature:

Product	License Requirement
DCNM	Traffic storm control requires a LAN Enterprise license. For a complete explanation of the DCNM licensing scheme and how to obtain and apply licenses, see the *Cisco DCNM Fundamentals Configuration Guide, Release 4.1*.
NX-OS	Traffic storm control requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the *Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1*.

Guidelines and Limitations

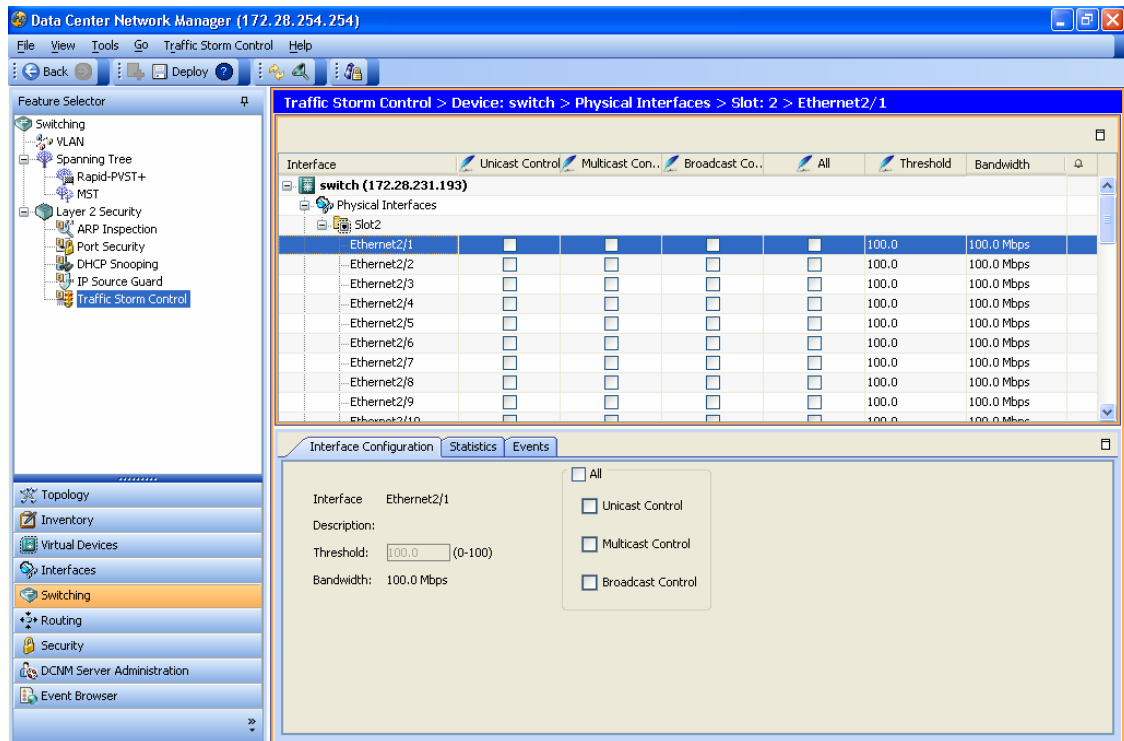When configuring the traffic storm control level, note the following guidelines and limitations:

- You can configure traffic storm control on a port-channel interface.
- Do not configure traffic storm control on interfaces that are members of a port-channel interface. Configuring traffic storm control on interfaces that are configured as members of a port channel puts the ports into a suspended state.
- Specify the level as a percentage of the total interface bandwidth:
  - The level can be from 0 to 100.
  - The optional fraction of a level can be from 0 to 99.
  - 100 percent means no traffic storm control.
  - 0.0 percent suppresses all traffic.

Because of hardware limitations and the method by which packets of different sizes are counted, the level percentage is an approximation. Depending on the sizes of the frames that make up the incoming traffic, the actual enforced level might differ from the configured level by several percentage points.

Figure 15-2 shows the Traffic Storm Control content pane.

Figure 15-2   Traffic Storm Control Content Pane

Configuring Traffic Storm Control

You can set the percentage of total available bandwidth that the controlled traffic can use.

Note   Traffic storm control uses a 1-second interval that can affect the behavior of traffic storm control.

DETAILED STEPS

To enable traffic storm control on an interface, follow these steps:

Step 1   From the Feature Selector pane, choose **Switching > Layer 2 Security > Traffic Storm Control**.

Step 2   Double-click on the device to display the list of interface types.

Step 3   Double-click the **Physical Interfaces** to display the physical slots or double-click the **Port-Channel** interfaces to display the port-channel interfaces.

Step 4   (Optional) Double-click the slot to display the physical interfaces.

Step 5   Click the interface.

Step 6   From the Details pane, click the **Interface Configuration** tab.

Step 7   Click the desired traffic type check boxes.

Tip   To apply traffic storm control for broadcast, multicast, and unicast traffic types, check the **All** check box.

Step 8   In the Threshold field, enter a traffic suppression level percentage.

Step 9   From the menu bar, click **File > Deploy** to apply your changes to the device.

Displaying Traffic Storm Control Statistics

You can display the statistics the NX-OS device maintains for traffic storm control activity.

DETAILED STEPS

To display traffic storm control statistics for an interface, follow these steps:

Step 1   From the Feature Selector pane, choose **Switching > Layer 2 Security > Traffic Storm Control**.

Step 2   Double-click on the device to display the list of interface types.

Step 3   Double-click the **Physical Interfaces** to display the physical slots or double-click the **Port-Channel** interfaces to display the port-channel interfaces.

Step 4   Double-click the slot to display the physical interfaces.

Step 5   Click the interface.

Step 6   From the Details pane, click the **Statistics** tab to display traffic storm control statistics for the interface.

Field Descriptions for Traffic Storm Control

This section includes the following topics:

Switching: Traffic Storm Control: Summary Pane

Table 15-1   Switching: Traffic Storm Control: Summary Pane

Element	Description
Interface	Interface ID.
Unicast Control	Check box to enable or disable unicast traffic control.
Multicast Control	Check box to enable or disable multicast traffic control.

Table 15-1   Switching: Traffic Storm Control: Summary Pane (continued)

Element	Description
Broadcast Control	Check box to enable or disable broadcast traffic control.
All	Check box to enable or disable unicast, multicast, and broadcast traffic control.
Bandwidth(bps)	Interface bandwidth in bits per second.
Threshold	Traffic-storm control threshold percentage for the selected traffic. The default is 100 percent.

Switching: Traffic Storm Control: device: interface type: interface: Interface Configuration Tab

Table 15-2   Switching: Traffic Storm Control: device: interface type: interface: Interface Configuration Tab

Element	Description
Interface	Interface ID.
Description	Interface description.
Threshold	Traffic-storm control threshold percentage for the selected traffic. The default is 100 percent.
Bandwidth(bps)	Interface bandwidth in bits per second.
All	Check box to enable or disable unicast, multicast, and broadcast traffic control.
Unicast Control	Check box to enable or disable unicast traffic control.
Multicast Control	Check box to enable or disable multicast traffic control.
Broadcast Control	Check box to enable or disable broadcast traffic control.

Additional References

For additional information related to implementing traffic storm control, see the following sections:

Related Documents

Related Topic	Document Title
NX-OS Licensing	*Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1*
DCNM Licensing	*Cisco DCNM Fundamentals Configuration Guide, Release 4.1*

Feature History for Traffic Storm Control

Table 15-3 lists the release history for this feature.

Table 15-3   Feature History for Traffic Storm Control

Feature Name	Releases	Feature Information
Traffic storm control	4.0(1)	This feature was introduced.