



Configuring Storm Control

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

Related Topics

[Feature History and Information for Troubleshooting Software Configuration](#)

Information About Storm Control

Storm Control

Storm control prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on one of the physical interfaces. A LAN storm occurs when packets flood the LAN, creating excessive traffic and degrading network performance. Errors in the protocol-stack implementation, mistakes in network configurations, or users issuing a denial-of-service attack can cause a storm.

Storm control (or traffic suppression) monitors packets passing from an interface to the switching bus and determines if the packet is unicast, multicast, or broadcast. The switch counts the number of packets of a

specified type received within the 1-second time interval and compares the measurement with a predefined suppression-level threshold.

How Traffic Activity is Measured

Storm control uses one of these methods to measure traffic activity:

- Bandwidth as a percentage of the total available bandwidth of the port that can be used by the broadcast, multicast, or unicast traffic
- Traffic rate in packets per second at which broadcast, multicast, or unicast packets are received
- Traffic rate in bits per second at which broadcast, multicast, or unicast packets are received
- Traffic rate in packets per second and for small frames. This feature is enabled globally. The threshold for small frames is configured for each interface.

With each method, the port blocks traffic when the rising threshold is reached. The port remains blocked until the traffic rate drops below the falling threshold (if one is specified) and then resumes normal forwarding. If the falling suppression level is not specified, the switch blocks all traffic until the traffic rate drops below the rising suppression level. In general, the higher the level, the less effective the protection against broadcast storms.



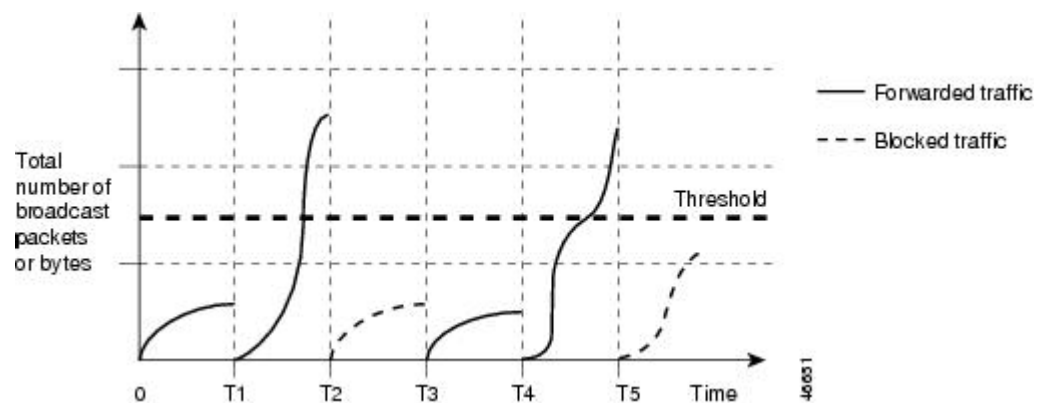
Note

When the storm control threshold for multicast traffic is reached, all multicast traffic except control traffic, such as bridge protocol data unit (BDPU) and Cisco Discovery Protocol (CDP) frames, are blocked. However, the switch does not differentiate between routing updates, such as OSPF, and regular multicast data traffic, so both types of traffic are blocked.

Traffic Patterns

This example shows broadcast traffic patterns on an interface over a given period of time.

Figure 1: Broadcast Storm Control Example



Broadcast traffic being forwarded exceeded the configured threshold between time intervals T1 and T2 and between T4 and T5. When the amount of specified traffic exceeds the threshold, all traffic of that kind is dropped for the next time period. Therefore, broadcast traffic is blocked during the intervals following T2 and T5. At the next time interval (for example, T3), if broadcast traffic does not exceed the threshold, it is again forwarded.

The combination of the storm-control suppression level and the 1-second time interval controls the way the storm control algorithm works. A higher threshold allows more packets to pass through. A threshold value of 100 percent means that no limit is placed on the traffic. A value of 0.0 means that all broadcast, multicast, or unicast traffic on that port is blocked.

**Note**

Because packets do not arrive at uniform intervals, the 1-second time interval during which traffic activity is measured can affect the behavior of storm control.

You use the **storm-control** interface configuration commands to set the threshold value for each traffic type.

How to Configure Storm Control

Configuring Storm Control and Threshold Levels

You configure storm control on a port and enter the threshold level that you want to be used for a particular type of traffic.

However, because of hardware limitations and the way in which packets of different sizes are counted, threshold percentages are approximations. Depending on the sizes of the packets making up the incoming traffic, the actual enforced threshold might differ from the configured level by several percentage points.

Before You Begin

Storm control is supported on physical interfaces. You can also configure storm control on an EtherChannel. When storm control is configured on an EtherChannel, the storm control settings propagate to the EtherChannel physical interfaces.

SUMMARY STEPS

1. **configure terminal**
2. **interface** *interface-id*
3. **storm-control** {**broadcast** | **multicast** | **unicast**} **level** {*level* [*level-low*] | **bps** *bps* [*bps-low*] | **pps** *pps* [*pps-low*]}
4. **storm-control action** {**shutdown** | **trap**}
5. **end**
6. **show storm-control** [*interface-id*] [**broadcast** | **multicast** | **unicast**]
7. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p>configure terminal</p> <p>Example:</p> <pre>Switch# configure terminal</pre>	Enters global configuration mode.
Step 2	<p>interface <i>interface-id</i></p> <p>Example:</p> <pre>Switch(config)# interface gigabitethernet1/0/1</pre>	Specifies the interface to be configured, and enter interface configuration mode.
Step 3	<p>storm-control {broadcast multicast unicast} level {<i>level</i> [<i>level-low</i>] bps <i>bps</i> [<i>bps-low</i>] pps <i>pps</i> [<i>pps-low</i>]}</p> <p>Example:</p> <pre>Switch(config-if)# storm-control unicast level 87 65</pre>	<p>Configures broadcast, multicast, or unicast storm control. By default, storm control is disabled.</p> <p>The keywords have these meanings:</p> <ul style="list-style-type: none"> • For <i>level</i>, specifies the rising threshold level for broadcast, multicast, or unicast traffic as a percentage (up to two decimal places) of the bandwidth. The port blocks traffic when the rising threshold is reached. The range is 0.00 to 100.00. • (Optional) For <i>level-low</i>, specifies the falling threshold level as a percentage (up to two decimal places) of the bandwidth. This value must be less than or equal to the rising suppression value. The port forwards traffic when traffic drops below this level. If you do not configure a falling suppression level, it is set to the rising suppression level. The range is 0.00 to 100.00. <p>If you set the threshold to the maximum value (100 percent), no limit is placed on the traffic. If you set the threshold to 0.0, all broadcast, multicast, and unicast traffic on that port is blocked.</p> <ul style="list-style-type: none"> • For bps <i>bps</i>, specifies the rising threshold level for broadcast, multicast, or unicast traffic in bits per second (up to one decimal place). The port blocks traffic when the rising threshold is reached. The range is 0.0 to 10000000000.0. • (Optional) For <i>bps-low</i>, specifies the falling threshold level in bits per second (up to one decimal place). It can be less than or equal to the rising threshold level. The port forwards traffic when traffic drops below this level. The range is 0.0 to 10000000000.0. • For pps <i>pps</i>, specifies the rising threshold level for broadcast, multicast, or unicast traffic in packets per second (up to one decimal place). The port blocks traffic when the rising threshold is reached. The range is 0.0 to 10000000000.0. • (Optional) For <i>pps-low</i>, specifies the falling threshold level in packets per second (up to one decimal place). It can be less than or equal to the rising threshold level. The port forwards traffic when traffic drops below this level. The range is 0.0 to 10000000000.0.

	Command or Action	Purpose
		For BPS and PPS settings, you can use metric suffixes such as k, m, and g for large number thresholds.
Step 4	storm-control action { shutdown trap } Example: <pre>Switch(config-if)# storm-control action trap</pre>	Specifies the action to be taken when a storm is detected. The default is to filter out the traffic and not to send traps. <ul style="list-style-type: none"> • Select the shutdown keyword to error-disable the port during a storm. • Select the trap keyword to generate an SNMP trap when a storm is detected.
Step 5	end Example: <pre>Switch(config-if)# end</pre>	Returns to privileged EXEC mode.
Step 6	show storm-control [<i>interface-id</i>] [broadcast multicast unicast] Example: <pre>Switch# show storm-control gigabitethernet1/0/1 unicast</pre>	Verifies the storm control suppression levels set on the interface for the specified traffic type. If you do not enter a traffic type, broadcast storm control settings are displayed.
Step 7	copy running-config startup-config Example: <pre>Switch# copy running-config startup-config</pre>	(Optional) Saves your entries in the configuration file.

Monitoring Storm Control

Table 1: Commands for Displaying Storm Control Status and Configuration

Command	Purpose
show interfaces [<i>interface-id</i>] switchport	Displays the administrative and operational status of all switching (nonrouting) ports or the specified port, including port blocking and port protection settings.
show storm-control [<i>interface-id</i>] [broadcast multicast unicast]	Displays storm control suppression levels set on all interfaces or the specified interface for the specified traffic type or for broadcast traffic if no traffic type is entered.

