



Security Configuration Guide: Configuring Storm Control, Cisco IOS XE Release 3S (ASR 920 Series)

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Configuring Storm Control

This document describes how to configure Storm Control on the Cisco ASR 920 Series router.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

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

Prerequisites for Storm Control

- Port-level storm control should be configured on EVC interfaces.
- Storm control threshold value should be configured as CIR (bps, kbps, %).
- Applicable to all types of Storms (unicast, broadcast, and multicast).

Restrictions for Storm control

- Storm control is only enabled for ports with EVC configurations.
- Storm control is specific to the Layer2 physical interfaces and port-channels; It is *not* supported on the Layer 3 interfaces or BDI.
- Storm control is supported only for unknown unicast, broadcast, and unknown multicast ingress traffic; It is *not* supported for egress traffic.
- Port-level storm control is supported on the router. EFP-level storm control is *not* supported.
- Storm control on local connect and cross-connect is *not* supported.

Information on Storm Control

A storm occurs when huge amount of broadcast, multicast, or unicast packets flood the LAN, creating excessive traffic and degrading network performance. Errors in the protocol-stack implementation or in the network configuration can also cause a storm. The mechanism to prevent and control such events is known as storm control.

Storm Control monitors incoming traffic levels over a 1-second traffic storm control interval and, during the interval compares the traffic level with the traffic storm control level configured. The traffic storm control threshold level is a percentage of the total available bandwidth of the port. Each port has different storm control levels for broadcast, multicast, and unicast type of traffic.

Storm control uses rising and falling thresholds to block and then restore the forwarding of broadcast, unicast, or multicast packets.

- The rising threshold is the traffic limit after which, that particular traffic is blocked.
- The falling threshold is the traffic limit below which, that particular starts forwarding again, if it was already blocked.



Note If a particular type of ingress traffic (unicast, broadcast and multicast) is more than the rising threshold configured on it, the interface goes to blocked state for that particular traffic.

Storm control prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port. Storm control is applicable for physical interfaces and is used to restrict the unicast, broadcast and multicast ingress traffic on the Layer2 interfaces. The feature is disabled by default on the Cisco ASR 920 Series router.

Configuring Storm Control

Before you begin

- Configure the ports with EVC configuration.



Note To disable Storm Control feature, use the **no storm-control** command.

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface interface-id Example: Router# interface gigabitethernet 0/0/0	Specifies an interface type and enters interface configuration mode.
Step 4	storm-control broadcast multicast unicast { level { rising_threshold falling_threshold bps rising_threshold falling_threshold pps rising_threshold falling_threshold } } Example: Router# storm-control broadcast level 1 .50	Specifies the global broadcast, multicast, or unicast storm control suppression level. <ul style="list-style-type: none"> • broadcast—Configure broadcast storm control. • multicast—Configure multicast storm control. • unicast—Configure unknown unicast storm control. • level—Specifies the threshold levels for broadcast, multicast, or unicast traffic.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • <i>rising_threshold</i>—Upper threshold level. • <i>falling_threshold</i>—Lower threshold level. • bps—Specifies the suppression level in bits per second. • pps—Specifies the suppression level in packets per second.
Step 5	storm-control action {shutdown trap} Example: Router# storm control action trap	Specifies the action to take when a storm occurs on a port <ul style="list-style-type: none"> • shutdown—Disables the port during a storm. The shutdown action sets the port to shut state during a storm. The port remains in shutdown state until recovered by giving a no shutdown command when the storm goes below the configured lower threshold . • trap—Sends an SNMP trap. The trap action generates an SNMP trap when a storm is detected . The default is to restrict the particular ingress traffic and not to send out traps.
Step 6	exit Example: Router# exit	Exits interface configuration mode and returns the router to global configuration mode.

Configuration Example

```

interface GigabitEthernet0/0/1
 no ip address
 negotiation auto
 storm-control broadcast level bps 50k 40k
 storm-control multicast level pps 100 90
 storm-control unicast level 1.00 0.50
 service instance 1 ethernet
 encapsulation dot1q 2
 rewrite ingress tag pop 1 symmetric
 bridge-domain 1
!
```

Verifying Storm Control

- Use the **show storm-control** command to verify the Storm Control feature configuration.

```
Router# show storm-control
```

Interface	Type	Filter State	Upper	Lower	Current
-----	-----	-----	-----	-----	-----
Gi0/0/0	Bcast	Forwarding	0 pps	0 pps	0 pps

Gi0/0/0	Ucast	Forwarding	80.00%	20.00%	39.99%
Gi0/0/1	Bcast	Blocking	50k bps	40k bps	362.25k bps
Gi0/0/1	Mcast	Blocking	100 pps	90 pps	265 pps
Gi0/0/1	Ucast	Blocking	1.00%	0.50%	1.28%



Note With each current traffic rate under display method, the storm control blocks traffic on the interface and the current traffic rate will always show 0%.

- Use the **show storm-control** command to display the storm control configurations for the configured storm type.

```
Router# show storm-control broadcast
```

Interface	Type	Filter State	Upper	Lower	Current
Gi0/0/2	Bcast	Blocking	280k pps	260k pps	284.64k pps
Te0/0/12	Bcast	Blocking	2.29g bps	2g bps	2.49g bps
Te0/0/13	Bcast	Blocking	4.6m pps	4.3m pps	4.69m pps
Po4	Bcast	Link Down	45k pps	43k pps	0 pps
Po5	Bcast	Blocking	240k pps	235k pps	241.85k pps

```
Router# show storm-control unicast
```

Interface	Type	Filter State	Upper	Lower	Current
Gi0/0/2	Ucast	Blocking	290k pps	280k pps	298.19k pps
Te0/0/12	Ucast	Blocking	4m pps	3.5m pps	4.74m pps
Te0/0/13	Ucast	Blocking	4.5m pps	4.3m pps	4.91m pps
Po4	Ucast	Link Down	45k pps	43k pps	0 pps
Po5	Ucast	Blocking	250k pps	240k pps	253.36k pps

```
Router# show storm-control multicast
```

Interface	Type	Filter State	Upper	Lower	Current
Gi0/0/2	Mcast	Blocking	240m bps	220m bps	260.5m bps
Te0/0/12	Mcast	Blocking	2.25g bps	2g bps	2.38g bps
Te0/0/13	Mcast	Blocking	3g bps	2.5g bps	3.3g bps
Po4	Mcast	Link Down	45k pps	43k pps	0 pps
Po5	Mcast	Blocking	200k pps	190k pps	206.28k pps

- Use the **show storm-control GigabitEthernet** command to verify the Storm Control feature configuration at the interface.

```
Router # show storm control GigabitEthernet 0/0/1
```

Interface	Type	Filter State	Upper	Lower	Current
Gi0/0/1	Bcast	Blocking	50k bps	40k bps	362.25k bps
Gi0/0/1	Mcast	Blocking	100 pps	90 pps	265 pps
Gi0/0/1	Ucast	Blocking	1.00%	0.50%	1.28%

- Use the **show run interface** command to verify the action trap configured on the port.

```
Router# show run interface GigabitEthernet 0/0/1
```

```
Building configuration...
Current configuration : 300 bytes
!
interface GigabitEthernet0/0/1
 no ip address
 negotiation auto
 storm-control broadcast level 9.00 7.00
 storm-control action trap
 service instance trunk 1 ethernet
```

```

encapsulation dot1q 1-200
rewrite ingress tag pop 1 symmetric
bridge-domain from-encapsulation
!
end

```

- The following example shows the **action trap** being sent when a storm is hit.

```

Router# show storm-control G 0/0/1
Interface   Type   Filter State   Upper       Lower       Current
-----
Gi0/4/2    Bcast  Blocking      9.00%       7.00%       11.00%
May 29 14:46:28.008 IST: %STORM_CONTROL-3-TRAP: A packet storm was detected on Gi0/4/2.
Sending SNMP trap

```

- The following example shows the **action shutdown** configured.

```

Router# show run interface Gi0/0/1

Building configuration...
Current configuration : 300 bytes
!
interface GigabitEthernet0/0/1
 no ip address
 negotiation auto
 storm-control broadcast level 9.00 7.00
 storm-control action shutdown
 service instance trunk 1 ethernet
 encapsulation dot1q 1-200
 rewrite ingress tag pop 1 symmetric
 bridge-domain from-encapsulation
!
end

```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/mcl/allreleasemcl/all-book.html

Standards and RFCs

Standard/RFC	Title
No specific Standards and RFCs are supported by the features in this document.	—

MIBs

MIB	MIBs Link
—	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Storm Control

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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

Table 1: Feature Information for Storm Control

Feature Name	Releases	Feature Information
Storm Control	Cisco IOS XE Release 3.13.0S	This feature was introduced on the Cisco ASR 920 Series Aggregation Services Router (ASR-920-12CZ-A, ASR-920-12CZ-D, ASR-920-4SZ-A, ASR-920-4SZ-D).
	Cisco IOS XE Release 3.14.0S	This feature was introduced on the Cisco ASR 920 Series Aggregation Services Router (ASR-920-12CZ-A, ASR-920-12CZ-D, ASR-920-4SZ-A, ASR-920-4SZ-D, ASR-920-10SZ-PD, ASR-920-24SZ-IM, ASR-920-24SZ-M, ASR-920-24TZ-M).



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