Configuring Storm Control

This document describes how to configure Storm Control on the 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 https://cfnng.cisco.com/. 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.

- Strom control on port-channel interface is *not* supported.

- 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.

- Strom 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 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.

To configure storm control:

- Enables privileged EXEC mode. Enter your password if prompted.

```
Router> enable
```

- Enters global configuration mode.

```
Router# configure terminal
```

- Specifies an interface type and enters interface configuration mode.

```
Router(config)# interface gigabitethernet 0/0/0
```

- Specifies the global broadcast, multicast, or unicast storm control suppression level.

  - **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.

  - *rising_threshold*—Upper threshold level.

  - *falling_threshold*—Lower threshold level.

  - **bps**—Specifies the suppression level in bits per second.

  - **pps**—Specifies the suppression level in packets per second.

```
Router(config)# storm-control broadcast level 1 .50
```

- Specifies the action to take when a storm occurs on a port :

  - **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.

```
Router(config)# storm-control action trap
```

- Exits interface configuration mode and returns the router to global configuration mode.

```
Router(config)# exit
```

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#
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#
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
Router#
```

- 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
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. 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. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html