

FHRP - HSRP Group Shutdown

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Information About FHRP - HSRP Group Shutdown

How Object Tracking Affects the Priority of an HSRP Device

The priority of a device can change dynamically if it has been configured for object tracking and the object that is being tracked goes down. The tracking process periodically polls the tracked objects and notes any change of value. The changes in the tracked object are communicated to HSRP, either immediately or after a specified delay. The object values are reported as either up or down. Examples of objects that can be tracked are the line protocol state of an interface or the reachability of an IP route. If the specified object goes down, the HSRP priority is reduced. The HSRP device with the higher priority can become the active device if it has the **standby preempt** command configured.

HSRP Object Tracking

Object tracking separates the tracking mechanism from HSRP and creates a separate standalone tracking process that can be used by any other process as well as HSRP. The priority of a device can change dynamically when it has been configured for object tracking and the object that is being tracked goes down. Examples of objects that can be tracked are the line protocol state of an interface or the reachability of an IP route. If the specified object goes down, the HSRP priority is reduced.

A client process such as HSRP, Virtual Router Redundancy Protocol (VRRP), or Gateway Load Balancing Protocol (GLBP) can register its interest in tracking objects and then be notified when the tracked object changes state.

For more information about object tracking, see the "Configuring Enhanced Object Tracking" document.

HSRP Group Shutdown

The FHRP—HSRP Group Shutdown feature enables you to configure an HSRP group to become disabled (its state changed to Init) instead of having its priority decremented when a tracked object goes down. Use the **standby track** command with the **shutdown** keyword to configure HSRP group shutdown.

If an object is already being tracked by an HSRP group, you cannot change the configuration to use the HSRP Group Shutdown feature. You must first remove the tracking configuration using the **no standby track** command and then reconfigure it using the **standby track** command with the **shutdown** keyword.

How to Configure FHRP - HSRP Group Shutdown

Configuring HSRP Object Tracking

Perform this task to configure HSRP to track an object and change the HSRP priority based on the state of the object.

Each tracked object is identified by a unique number that is specified on the tracking CLI. Client processes use this number to track a specific object.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **track** *object-number* **interface** *type number* {**line-protocol** | **ip routing**}
4. **exit**
5. **interface** *type number*
6. **standby** [*group-number*] **track** *object-number* [**decrement** *priority-decrement*] [**shutdown**]
7. **standby** [*group-number*] **ip** [*ip-address* [**secondary**]]
8. **end**
9. **show track** [*object-number* | **brief**] [**interface** [**brief**] | **ip route** [**brief**] | **resolution** | **timers**]

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**track** *object-number* **interface** *type number* {**line-protocol** | **ip routing**} **Example:** `Device(config)# track 100 interface GigabitEthernet 0/0/0 line-protocol`	Configures an interface to be tracked and enters tracking configuration mode.
Step 4	**exit** **Example:** `Device(config-track)# exit`	Returns to global configuration mode.
Step 5	**interface** *type number* **Example:** `Device(config)# interface GigabitEthernet 0/0/0`	Configures an interface type and enters interface configuration mode.
Step 6	**standby** [*group-number*] **track** *object-number* [**decrement** *priority-decrement*] [**shutdown**] **Example:** `Device(config-if)# standby 1 track 100 decrement 20`	Configures HSRP to track an object and change the Hot Standby priority on the basis of the state of the object. • By default, the priority of the device is decreased by 10 if a tracked object goes down. Use the **decrement** *priority-decrement* keyword and argument combination to change the default behavior. • When multiple tracked objects are down and *priority-decrement* values have been configured, these configured priority decrements are cumulative. If tracked objects are down, but none of them were configured with priority decrements, the default decrement is 10 and it is cumulative. • Use the **shutdown** keyword to disable the HRSP group on the device when the tracked object goes down. **Note** If an object is already being tracked by an HSRP group, you cannot change the configuration to use the HSRP Group Shutdown feature. You must first remove the tracking configuration using the **no standby track** command and then reconfigure it using the **standby track** command with the **shutdown** keyword.
Step 7	**standby** [*group-number*] **ip** [*ip-address* [**secondary**]] **Example:** `Device(config-if)# standby 1 ip 10.10.10.0`	Activates HSRP. • The default group number is 0. The group number range is from 0 to 255 for HSRP version 1 and from 0 to 4095 for HSRP version 2.

	Command or Action	Purpose
Step 8	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 9	**show track** [*object-number* | **brief**] [**interface** [**brief**] | **ip route** [**brief**] | **resolution** | **timers**] **Example:** `Device# show track 100 interface`	Displays tracking information.

Configuring HSRP MD5 Authentication Using a Key String

Note Text authentication cannot be combined with MD5 authentication for an HSRP group at any one time. When MD5 authentication is configured, the text authentication field in HSRP hello messages is set to all zeroes on transmit and ignored on receipt, provided the receiving device also has MD5 authentication enabled.

Note If you are changing a key string in a group of devices, change the active device last to prevent any HSRP state change. The active device should have its key string changed no later than one hold-time period, specified by the **standy timers** interface configuration command, after the nonactive devices. This procedure ensures that the nonactive devices do not time out the active device.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **terminal interface** *type number*
4. **ip address** *ip-address mask* [**secondary**]
5. **standby** [*group-number*] **priority** *priority*
6. **standby** [*group-number*] **preempt** [**delay** {**minimum** | **reload** | **sync**} *seconds*]
7. **standby** [*group-number*] **authentication md5 key-string** [**0** | **7**] *key* [**timeout** *seconds*]
8. **standby** [*group-number*] **ip** [*ip-address*] [**secondary**]]
9. Repeat Steps 1 through 8 on each device that will communicate.
10. **end**
11. **show standby**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**terminal interface** *type number* **Example:** `Device(config)# interface GigabitEthernet 0/0/0`	Configures an interface type and enters interface configuration mode.
Step 4	**ip address** *ip-address mask* [**secondary**] **Example:** `Device(config-if)# ip address 10.0.0.1 255.255.255.0`	Specifies a primary or secondary IP address for an interface.
Step 5	**standby** [*group-number*] **priority** *priority* **Example:** `Device(config-if)# standby 1 priority 110`	Configures HSRP priority.
Step 6	**standby** [*group-number*] **preempt** [**delay** {**minimum** | **reload** | **sync**} *seconds*] **Example:** `Device(config-if)# standby 1 preempt`	Configures HSRP preemption.
Step 7	**standby** [*group-number*] **authentication md5 key-string** [**0** | **7**] *key* [**timeout** *seconds*] **Example:** `Device(config-if)# standby 1 authentication md5 key-string 0 d00b4r987654321a timeout 30`	Configures an authentication string for HSRP MD5 authentication. • The *key* argument can be up to 64 characters in length. We recommended that at least 16 characters be used. • No prefix to the *key* argument or specifying **0** means the key will be unencrypted. • Specifying **7** means the key will be encrypted. The key-string authentication key will automatically be encrypted if the **service password-encryption** global configuration command is enabled.

	Command or Action	Purpose
		• The **timeout** value is the period of time that the old key string will be accepted to allow configuration of all routers in a group with a new key. **Note** When sending the key-string CLI from any programmable controller, such as vManage or Meraki, include an encryption value of either 0 (unencrypted) or 7 (encrypted) before specifying the key.
Step 8	**standby** [*group-number*] **ip** [*ip-address*] [**secondary**]] **Example:** `Device(config-if)# standby 1 ip 10.0.0.3`	Activates HSRP.
Step 9	Repeat Steps 1 through 8 on each device that will communicate.	—
Step 10	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 11	**show standby** **Example:** `Device# show standby`	(Optional) Displays HSRP information. • Use this command to verify your configuration. The key string or key chain will be displayed if configured.

Configuration Examples for FHRP - HSRP Group Shutdown

Example: Configuring HSRP Object Tracking

In the following example, the tracking process is configured to track the IP-routing capability of serial interface 1/0. HSRP on Gigabit Ethernet interface 0/0/0 then registers with the tracking process to be informed of any changes to the IP-routing state of serial interface 1/0. If the IP state on serial interface 1/0 goes down, the priority of the HSRP group is reduced by 10.

If both serial interfaces are operational, Device A will be the HSRP active device because it has the higher priority. However, if IP routing on serial interface 1/0 in Device A fails, the HSRP group priority will be reduced and Device B will take over as the active device, thus maintaining a default virtual gateway service to hosts on the 10.1.0.0 subnet.

Device A Configuration

```
Device(config)# track 100 interface serial 1/0/0 ip routing
!
Device(config)# interface GigabitEthernet 0/0/0
Device(config-if)# ip address 10.1.0.21 255.255.0.0
Device(config-if)# standby 1 preempt
Device(config-if)# standby 1 priority 110
Device(config-if)# standby 1 track 100 decrement 10
Device(config-if)# standby 1 ip 10.1.0.1
```

Device B Configuration

```
Device(config)# track 100 interface serial 1/0/0 ip routing
!
Device(config)# interface GigabitEthernet 0/0/0
Device(config-if)# ip address 10.1.0.22 255.255.0.0
Device(config-if)# standby 1 preempt
Device(config-if)# standby 1 priority 105
Device(config-if)# standby 1 track 100 decrement 10
Device(config-if)# standby 1 ip 10.1.0.1
```

Example: Configuring HSRP Group Shutdown

In the following example, the tracking process is configured to track the IP-routing capability of Gigabit Ethernet interface 0/0/0. HSRP on Gigabit Ethernet interface 0/0/1 then registers with the tracking process to be informed of any changes to the IP-routing state of Gigabit Ethernet interface 0/0/0. If the IP state on Gigabit Ethernet interface 0/0/0 goes down, the HSRP group is disabled.

If both Gigabit Ethernet interfaces are operational, Device A will be the HSRP active device because it has the higher priority. However, if IP routing on Gigabit Ethernet interface 0/0/0 in Device A fails, the HSRP group will be disabled and Device B will take over as the active device, thus maintaining a default virtual gateway service to hosts on the 10.1.0.0 subnet.

Device A Configuration

```
Device(config)# track 100 interface GigabitEthernet 0/0/0 ip routing
!
Device(config)# interface GigabitEthernet 0/0/1
Device(config-if)# ip address 10.1.0.21 255.255.0.0
Device(config-if)# standby 1 ip 10.1.0.1
Device(config-if)# standby 1 preempt
Device(config-if)# standby 1 priority 110
Device(config-if)# standby 1 track 100 shutdown
```

Device B Configuration

```
Device(config)# track 100 interface GigabitEthernet 0/0/0 ip routing
!
Device(config)# interface GigabitEthernet 0/0/1
Device(config-if)# ip address 10.1.0.22 255.255.0.0
Device(config-if)# standby 1 ip 10.1.0.1
Device(config-if)# standby 1 preempt
Device(config-if)# standby 1 priority 105
Device(config-if)# standby 1 track 100 shutdown
```

If an object is already being tracked by an HSRP group, you cannot change the configuration to use the HSRP Group Shutdown feature. You must first remove the tracking configuration using the **no standby track** command and then reconfigure it using the **standby track** command with the **shutdown** keyword.

The following example shows how to change the configuration of a tracked object to include the HSRP Group Shutdown feature:

```
Device(config)# no standby 1 track 100 decrement 10
Device(config)# standby 1 track 100 shutdown
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
HSRP commands: complete command syntax, command mode, command history, defaults, usage guidelines, and examples	*Cisco IOS First Hop redundancy Protocols Command Reference*
HSRP for IPv6	"HSRP for IPv6" module
Troubleshooting HSRP	Hot Standby Router Protocol: Frequently Asked Questions

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	--

MIBs

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

RFCs

RFCs	Title
RFC 792	*Internet Control Message Protocol*

RFCs	Title
RFC 1828	*IP Authentication Using Keyed MD5*
RFC 2281	*Cisco Hot Standby Router Protocol*

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for FHRP - HSRP Group Shutdown

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.