HSRP: Global IPv6 Address

Last Updated: October 19, 2012

IPv6 routing protocols ensure router-to-router resilience and failover. However, in situations in which the path between a host and the first-hop router fails, or the first-hop router itself fails, first hop redundancy protocols (FHRPs) ensure host-to-router resilience and failover.

The Hot Standby Router Protocol (HSRP) protects data traffic in case of a gateway failure.

- Finding Feature Information, page 1
- Information About HSRP Global IPv6 Address, page 1
- How to Enable HSRP Global IPv6 Address, page 3
- Configuration Example for HSRP Global IPv6 Address, page 5
- Additional References, page 5
- Feature Information for HSRP: Global IPv6 Address, page 6
- Glossary, page 7

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 at the end of this module.

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.

Information About HSRP Global IPv6 Address

- HSRP Global IPv6 Address, page 2

Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

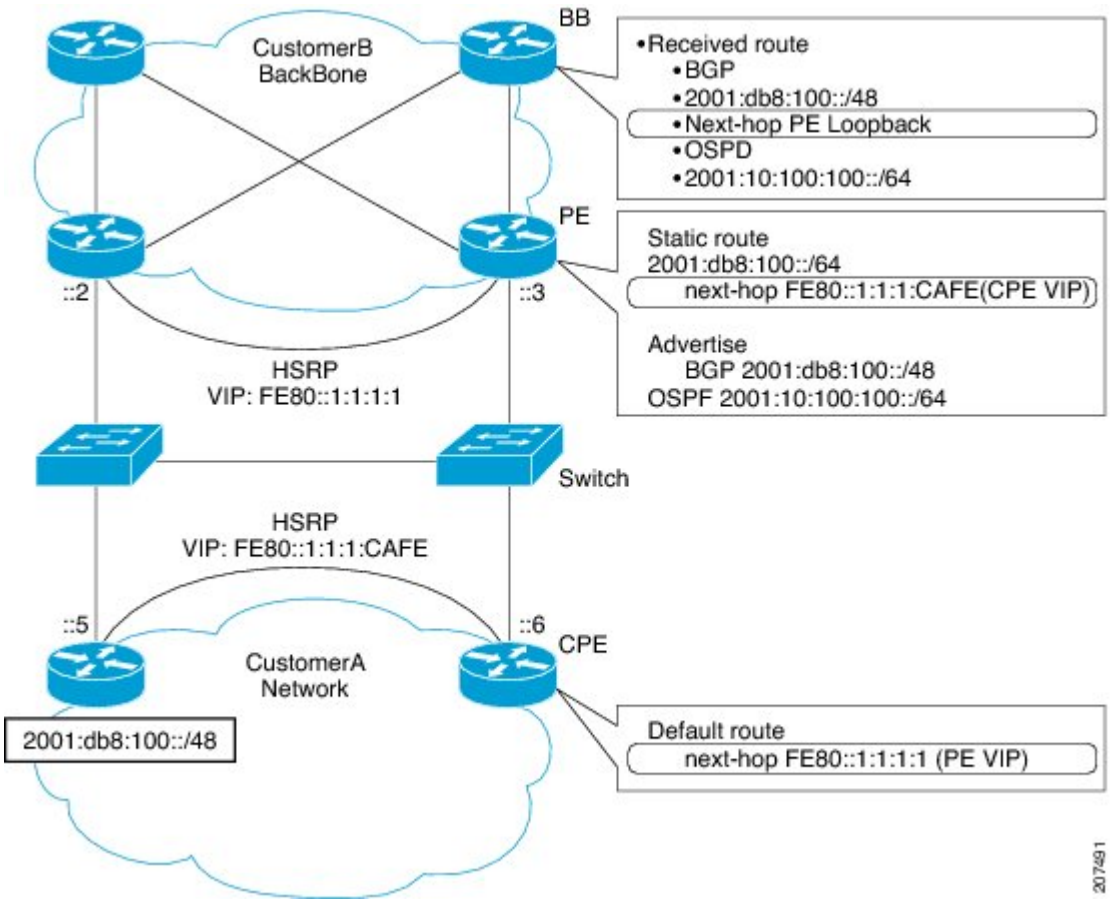
HSRP Global IPv6 Address

Note This feature is supported only in Cisco IOS Release 12.2(33)SXI4.

The HSRP global IPv6 address feature allows users to configure multiple nonlink local addresses as virtual addresses, and it allows for the storage and management of multiple global IPv6 virtual addresses in addition to the existing primary link-local address. If an IPv6 address is used, it must include an IPv6 prefix length. If a link-local address is used, it must not have a prefix.

The figure below depicts a deployment scenario that uses an HSRP IPv6 global virtual interface:

Figure 1 Scenario Using Gan HSRP IPv6 Global Virtual Interface



In the figure above, the provider equipment (PE) routers need to inject a route to reach the customer premises equipment (CPE) from the backbone routers. Because there are two CPEs, HSRP is convenient to use. The static route will be set with a link-local next hop (FE80::1:1:1:CAFE). If this address is injected in the backbone, this route is useless with a link-local next hop, as link-local addresses only have scope within the Layer 2 local LAN space. To address this issue, the next hop of the static route toward the virtual address must be set to a nonlink-local address, so backbone routers can route packets to the PE routers. At the next-hop address resolution, the active HSRP group member will reply to neighbor solicitation (NS) messages sent to the nonlink-local address.

How to Enable HSRP Global IPv6 Address

- Enabling and Verifying an HSRP Group for IPv6 Operation, page 3

Enabling and Verifying an HSRP Group for IPv6 Operation

In this task, when you enter the **standby ipv6** command, a modified EUI-64 format interface identifier is generated in which the EUI-64 interface identifier is created from the relevant HSRP virtual MAC address.

In IPv6, a router on the link advertises in RA messages any site-local and global prefixes, and its willingness to function as a default router for the link. RA messages are sent periodically and in response to router solicitation messages, which are sent by hosts at system startup.

A node on the link can automatically configure site-local and global IPv6 addresses by appending its interface identifier (64 bits) to the prefixes (64 bits) included in the RA messages. The resulting 128-bit IPv6 addresses configured by the node are then subjected to duplicate address detection to ensure their uniqueness on the link. If the prefixes advertised in the RA messages are globally unique, then the IPv6 addresses configured by the node are also guaranteed to be globally unique. Router solicitation messages, which have a value of 133 in the Type field of the ICMPv6 packet header, are sent by hosts at system startup so that the host can immediately autoconfigure without needing to wait for the next scheduled RA message.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipv6 unicast-routing**
4. **interface** *type number*
5. **standby** [*group-number*] **ipv6** {*ipv6-global-address* | *ipv6-address / prefix-length* | *ipv6-prefix / prefix-length* | *link-local-address* | **autoconfig**
6. **standby** [*group-number*] **preempt** [**delay minimum** *seconds* | **reload** *seconds* | **sync** *seconds*}]
7. **standby** [*group-number*] **priority** *priority*
8. **exit**
9. **show standby** [*type number* [*group*]] [**all** | **brief**
10. **show ipv6 interface** [**brief**] [*interface-type interface-number*] [**prefix**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**ipv6 unicast-routing** **Example:** `Router(config)# ipv6 unicast-routing`	Enables the forwarding of IPv6 unicast datagrams. • The **ipv6 unicast-routing** command must be enabled for HSRP for IPv6 to work.
Step 4	**interface** *type number* **Example:** `Router(config)# interface ethernet 0/0`	Specifies an interface type and number, and places the router in interface configuration mode.
Step 5	**standby** [*group-number*] **ipv6** {*ipv6-global-address* | *ipv6-address* / *prefix-length* | *ipv6-prefix* / *prefix-length* | *link-local-address* | **autoconfig** **Example:** `Router(config-if)# standby 1 ipv6 autoconfig`	Activates the HSRP in IPv6. If an IPv6 address is used, it must include an IPv6 prefix length. If a link-local address is used, it must not have a prefix.
Step 6	**standby** [*group-number*] **preempt** [**delay minimum** *seconds* | **reload** *seconds* | **sync** *seconds*}] **Example:** `Router(config-if)# standby 1 preempt`	Configures HSRP preemption and preemption delay.
Step 7	**standby** [*group-number*] **priority** *priority* **Example:** `Router(config-if)# standby 1 priority 110`	Configures HSRP priority.
Step 8	**exit** **Example:** `Router(config-if)# exit`	Returns the router to privileged EXEC mode.

	Command or Action	Purpose
Step 9	**show standby** [*type number* [*group*]] [**all** | **brief** **Example:** `Router# show standby`	Displays HSRP information.
Step 10	**show ipv6 interface** [**brief**] [*interface-type interface-number*] [**prefix** **Example:** `Router# show ipv6 interface ethernet 0/0`	Displays the usability status of interfaces configured for IPv6.

Configuration Example for HSRP Global IPv6 Address

- Example: Configuring HSRP Global IPv6 Addresses, page 5

Example: Configuring HSRP Global IPv6 Addresses

This example shows three HSRP global IPv6 addresses with an explicitly configured link-local address:

```
interface Ethernet0/0
 no ip address
 ipv6 address 2001::DB8:1/64
 standby version 2
 standby 1 ipv6 FE80::1:CAFÉ
 standby 1 ipv6 2001::DB8:2/64
 standby 1 ipv6 2001:DB8::3/64
 standby 1 ipv6 2001:DB8::4/64
end
```

Additional References

Related Documents

Related Topic	Document Title
IPv6 addressing and connectivity	*IPv6 Configuration Guide*
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
IPv6 commands	*Cisco IOS IPv6 Command Reference*

Related Topic	Document Title
Cisco IOS IPv6 features	Cisco IOS IPv6 Feature Mapping

Standards and RFCs

Standard/RFC	Title
RFCs for IPv6	*IPv6 RFCs*

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 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 HSRP: Global IPv6 Address

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 HSRP: Global IPv6 Address

Feature Name	Releases	Feature Information
HSRP: Global IPv6 Address	12.2(33)SXI4	The HSRP global IPv6 address feature allows users to configure multiple non-link local addresses as virtual addresses. The following command was introduced: **standby ipv6**.

Glossary

- **CPE** --Customer premises equipment
- **FHRP** --First hop redundancy protocol
- **GLBP** --Gateway load balancing protocol
- **HSRP** --Hot standby routing protocol
- **NA** --Neighbor advertisement
- **ND** --Neighbor Discovery
- **NS** --Neighbor solicitation
- **PE** --Provider equipment
- **RA** --Router advertisement
- **RS** --Router solicitation