

IPv6 Static Route Support for Object Tracking

The IPv6 Static Route Support for Object Tracking feature allows an IPv6 static route to be associated with a tracked-object. A static route is only inserted into the routing information base (RIB) when the tracked object is reachable.

This module provides an overview of the feature and explains how to configure it.

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Information About IPv6 Static Route Support for Object Tracking

IPv6 Static Route Support for Object Tracking Overview

Object tracking allows you to track specific objects on a device, such as the interface line protocol state, IP routing, and route reachability, and to take action when the tracked object's state changes. Tracking allows software clients to register interest in the behavior of an object, and receive notifications of changes. This object represents the state of the system functionality such as the status of an interface (up or down), the existence of an IP prefix in the Routing Information Base (RIB) and so on.

An IPv6 static route creates a tracked object-context for each tracked object. Tracked object contexts are stored in an AVL list that is maintained by the IPv6 static route and indexed by the object number. A tracked-object context is removed from the AVL list when the object is no longer associated with any IPv6 static routes. All IPv6 static routes associated with a tracked object is linked to the tracked object context by an indirect list. An IPv6 static route becomes a client of the tracked objects, and this allows the IPv6 static route to track the state of a tracked object. The **ipv6 route** command allows an IPv6 static route to be associated with a tracked object.

Routing Table Insertion

An IPv6 static route associated with a tracked-object is inserted into the IPv6 routing table if the state of the tracked-object is up and all other routing-table-insertion criteria are met.

The IPv6 Static Route Object Tracking feature uses the IPv6 static deferred state check mechanism to insert or delete a static route into or from the Routing Information Base (RIB). A change in the state of the tracked object is signaled from tracked objects and this causes IPv6 static to insert all IPv6 static routes associated with the tracked object into the state check queue (unless they are already in it). A separate process removes IPv6 static routes from the state check queue and determines whether these routes should be inserted into the RIB or removed from the RIB using the RIB insertion criteria.

Routing Table Insertion Criteria

The following insertion criteria must be met for an IPv6 static route to be inserted into the IPv6 routing table:

1. Interface is up.
2. Next-hop address is not the device's own address.
3. Next-hop address .
4. Next-hop address is resolved.
5. Bidirectional Forwarding Detection (BFD) session is up, if BFD tracking is configured.



Note An IPv6 static route can be associated with a tracked object and a BFD session. Both tracked object and BFD session state must be up before the IPv6 static route is inserted in the routing table.

6. Tracked object state is up.

An IPv6 static route in the routing table is removed if any of the insertion criteria becomes false.

How to Configure IPv6 Static Route Support for Object Tracking

Configuring the IPv6 Static Routing Support for Object Tracking

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ipv6 route vrf** *table-name-id ipv6-prefix* {*interface-type interface-number* [*next-hop-ipv6-address*] | *next-hop-ipv6-address*} [*admin-distance* [*multicast-vrf-distance*]] [**multicast**] [**nexthop-vrf** *table-name-id*] [**unicast**] [**tag** *tag-value*] [**track** *object-number*] **name***static-route*]}
4. **end**
5. **show track** *object-number*
6. **show ipv6 static vrf** *id*

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	**ipv6 route vrf** *table-name-id ipv6-prefix* {*interface-type interface-number* [*next-hop-ipv6-address*] | *next-hop-ipv6-address*} [*admin-distance* [*multicast-vrf-distance*]] [**multicast**] [**nexthop-vrf** *table-name-id*] [**unicast**] [**tag** *tag-value*] [**track** *object-number*] **name***static-route*]} **Example:** `Device(config)# ipv6 route vrf 3 2001:DB8:1:2::/64 GigabitEthernet0/0 2001:DB8:3:4::1 track 42`	Establishes static IPv6 routes for all VPN routing and forwarding (VRF) instance tables or a specific VRF table for IPv4 or IPv6 address. • Configure the IPv6 static route object tracking to the static route configuration by using the **track** *object-number* command.
Step 4	**end** **Example:** `Device(config)# end`	Exits global configuration mode and returns to privileged EXEC mode.
Step 5	**show track** *object-number* **Example:** `Device# show track 42`	Displays information about objects that are tracked by the tracking process.
Step 6	**show ipv6 static vrf** *id* **Example:** `Device(config)# show ipv6 static vrf 3`	Displays static routes that are added to the routing-table, and the reasons if a static route is not added.

Example

The following is sample output from the **show track** command:

```
Device# show track 42

Track 42
  IP route 10.21.12.0 255.255.255.0 reachability
```

```
Reachability is Down (no ip route), delayed Up (1 sec remaining) (connected)
  1 change, last change 00:00:24
Delay up 20 secs, down 10 secs
First-hop interface is unknown (was GigabitEthernet1/0)
Tracked by:
  HSRP GigabitEthernet0/0 3
```

Configuration Examples for IPv6 Static Route Support for Object Tracking

Example: IPv6 Static Route Object Tracking

The following example associates the static route 2001:DB8:1:2::/64 with the state of tracked-object number 42. The static route is inserted in the IPv6 routing table if the state of tracked-object number 42 is up.

```
Device> enable
Device# configure terminal
Device(config)# ipv6 route vrf 3 2001:DB8:1:2::/64 GigabitEthernet0/0 2001:DB8:3:4::1 track
 42
Device(config)# end
```

Additional References for IPv6 Static Route Support for Object Tracking

Related Documents

Related Topic	Document Title
Cisco IOS commands	*Cisco IOS Master Command List, All Releases*
IP Application Services commands	*Cisco IOS IP Application Services Command Reference*
Object tracking	*Configuring Enhanced Object Tracking*

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/support

Feature Information for IPv6 Static Route Support for Object Tracking

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 IPv6 Static Route Support for Object Tracking

Feature Name	Releases	Feature Information
IPv6 Static Route Support for Object Tracking		This feature expands Enhanced Object Tracking (EOT) functionality to allow the object tracking for IPv6 static routes.