

IPv6 Default Router Preference

The IPv6 default router preference feature provides a coarse preference metric (low, medium, or high) for default devices.

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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.

Information About IPv6 Default Router Preference

Default Router Preferences for Traffic Engineering

Hosts discover and select default devices by listening to Router Advertisements (RAs). Typical default device selection mechanisms are suboptimal in certain cases, such as when traffic engineering is needed. For example, two devices on a link may provide equivalent but not equal-cost routing, and policy may dictate that one of the devices is preferred. Some examples are as follows:

- Multiple devices that route to distinct sets of prefixes—Redirects (sent by nonoptimal devices for a destination) mean that hosts can choose any device and the system will work. However, traffic patterns may mean that choosing one of the devices would lead to considerably fewer redirects.
- Accidentally deploying a new device—Deploying a new device before it has been fully configured could
 lead to hosts adopting the new device as a default device and traffic disappearing. Network managers
 may want to indicate that some devices are more preferred than others.
- Multihomed situations—Multihomed situations may become more common, because of multiple physical links and because of the use of tunneling for IPv6 transport. Some of the devices may not provide full default routing because they route only to the 6-to-4 prefix or they route only to a corporate intranet. These situations cannot be resolved with redirects, which operate only over a single link.

The default router preference (DRP) feature provides a basic preference metric (low, medium, or high) for default devices. The DRP of a default device is signaled in unused bits in RA messages. This extension is backward compatible, both for devices (setting the DRP bits) and hosts (interpreting the DRP bits). These bits are ignored by hosts that do not implement the DRP extension. Similarly, the values sent by devices that do not implement the DRP extension will be interpreted by hosts that do implement it as indicating a "medium" preference. DRPs need to be configured manually.

How to Configure IPv6 Default Router Preference

Configuring the DRP Extension for Traffic Engineering

Perform this task to configure the DRP extension to RAs in order to signal the preference value of a default router.

SUMMARY STEPS

- 1. enable
- 2. configure terminal
- 3. interface type number
- 4. ipv6 nd router-preference {high | medium | low

DETAILED STEPS

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

	Command or Action	Purpose
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Router# configure terminal	
Step 3	interface type number	Specifies the interface type and number, and enters interface configuration mode.
	Example:	
	Router(config) # interface gigabitethernet 0/0/0	
Step 4	ipv6 nd router-preference {high medium low	Configures a DRP for a router on a specific interface
	Example:	
	Router(config-if)# ipv6 nd router-preference high	

Configuration Examples for IPv6 Default Router Preference

Example: IPv6 Default Router Preference

The following example displays the state of the DRP preference value as advertised by this device through an interface:

Device# show ipv6 interface gigabitethernet 0/1

```
GigabitEthernet0/1 is up, line protocol is up
  IPv6 is enabled, link-local address is FE80::130
  Description: Management network (dual stack)
  Global unicast address(es):
   FEC0:240:104:1000::130, subnet is FEC0:240:104:1000::/64
  Joined group address(es):
   FF02::1
   FF02::2
   FF02::1:FF00:130
 MTU is 1500 bytes
  ICMP error messages limited to one every 100 milliseconds
  ICMP redirects are enabled
 ND DAD is enabled, number of DAD attempts: 1
 ND reachable time is 30000 milliseconds
 ND advertised reachable time is 0 milliseconds
 ND advertised retransmit interval is 0 milliseconds
 ND router advertisements are sent every 200 seconds
 ND router advertisements live for 1800 seconds
 ND advertised default router preference is Low
 Hosts use stateless autoconfig for addresses.
```

The following example displays the state of the DRP preference value as advertised by other devices:

Device# show ipv6 routers

Router FE80::169 on GigabitEthernet0/1, last update 0 min
Hops 64, Lifetime 1800 sec, AddrFlag=0, OtherFlag=0, MTU=1500
Preference=Medium
Reachable time 0 msec, Retransmit time 0 msec
Prefix FEC0:240:104:1000::/64 onlink autoconfig
Valid lifetime 2592000, preferred lifetime 604800

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
Cisco IOS IPv6 features	Cisco IOS IPv6 Feature Mapping

Standards and RFCs

Standard/RFC	Title
RFCs for IPv6	IPv6 RFCs

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	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.	

Feature Information for IPv6 Default Router Preference

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 Default Router Preference

Feature Name	Releases	Feature Information
IPv6 Default Router Preference	12.2(33)SRA	This feature provides a basic
	12.2(33)SXH	preference metric (low, medium, or high) for default devices.
	12.2(46)SE	In Cisco IOS XE Release 3.9S,
	12.2(46)SG	support was added for the Cisco ISR 4400 Series Routers.
	12.4(2)T	
	13.011	In Cisco IOS XE Release 3.9S, support was added for the Cisco
	15.0(2)SG	CSR 1000V.
	3.2.0SG	The following commands were
	Cisco IOS XE Release 3.9S	introduced or modified: ipv6 nd router-preference, show ipv6 interface, show ipv6 router.
		, 1

Feature Information for IPv6 Default Router Preference