

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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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

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface** *type number* **Example:** `Router(config)# interface gigabitethernet 0/0/0`	Specifies the interface type and number, and enters interface configuration mode.
Step 4	**ipv6 nd router-preference** {**high**	**medium**	**low** **Example:** `Router(config-if)# ipv6 nd router-preference high`	Configures a DRP for a router on a specific interface

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

Related Topic	Document Title
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.	http://www.cisco.com/cisco/web/support/index.html

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	Cisco IOS XE 17.4.1	This feature was introduced for the Cisco Catalyst 8000 Series platforms. This feature provides a basic preference metric (low, medium, or high) for default devices.