



# IPv6 NSF and Graceful Restart for MP-BGP IPv6 Address Family

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## Information About IPv6 NSF and Graceful Restart for MP-BGP IPv6 Address Family

### Nonstop Forwarding and Graceful Restart for MP-BGP IPv6 Address Family

The graceful restart capability is supported for IPv6 BGP unicast, multicast, and VPNv6 address families, enabling Cisco nonstop forwarding (NSF) functionality for BGP IPv6. The BGP graceful restart capability allows the BGP routing table to be recovered from peers without keeping the TCP state.

NSF continues forwarding packets while routing protocols converge, therefore avoiding a route flap on switchover. Forwarding is maintained by synchronizing the FIB between the active and standby RP. On switchover, forwarding is maintained using the FIB. The RIB is not kept synchronized; therefore, the RIB is empty on switchover. The RIB is repopulated by the routing protocols and subsequently informs FIB about RIB convergence by using the NSF\_RIB\_CONVERGED registry call. The FIB tables are updated from the RIB, removing any stale entries. The RIB starts a failsafe timer during RP switchover, in case the routing protocols fail to notify the RIB of convergence.

The Cisco BGP address family identifier (AFI) model is designed to be modular and scalable, and to support multiple AFI and subsequent address family identifier (SAFI) configurations.

# How to Configure IPv6 NSF and Graceful Restart for MP-BGP IPv6 Address Family

## Configuring the IPv6 BGP Graceful Restart Capability

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `router bgp as-number`
4. `address-family ipv6 [ vrf vrf-name ] [unicast | multicast | vpnv6]`
5. `bgp graceful-restart [restart-time seconds | stalepath-time seconds] [all]`

### DETAILED STEPS

Procedure		
	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>router bgp <i>as-number</i></b> <b>Example:</b> Device(config)# router bgp 65000	Enters router configuration mode for the specified routing process.
Step 4	<b>address-family ipv6 [ <i>vrf vrf-name</i> ] [unicast   multicast   vpnv6]</b> <b>Example:</b> Device(config-router)# address-family ipv6	Specifies the IPv6 address family.
Step 5	<b>bgp graceful-restart [restart-time <i>seconds</i>   stalepath-time <i>seconds</i>] [all]</b> <b>Example:</b> Device(config-router-af)# bgp graceful-restart	Enables the BGP graceful restart capability.

# Configuration Examples for IPv6 NSF and Graceful Restart for MP-BGP IPv6 Address Family

## Example: Configuring the IPv6 BGP Graceful Restart Capability

In the following example, the BGP graceful restart capability is enabled:

```
Device# configure terminal
Device(config)# router bgp 65000
Device(config-router)# address-family ipv6
Device(config-router-af)# bgp graceful-restart
```

In the following example, the restart timer is set to 130 seconds:

```
Device# configure terminal
Device(config)# router bgp 65000
Device(config-router)# address-family ipv6
Device(config-router-af)# bgp graceful-restart restart-time 130
```

In the following example, the stalepath timer is set to 350 seconds:

```
Device# configure terminal
Device(config)# router bgp 65000
Device(config-router)# address-family ipv6
Device(config-router-af)# bgp graceful-restart stalepath-time 350
```

## Additional References

### Related Documents

Related Topic	Document Title
IPv6 addressing and connectivity	<i>IPv6 Configuration Guide</i>
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
IPv6 commands	<a href="#">Cisco IOS IPv6 Command Reference</a>
Cisco IOS IPv6 features	<a href="#">Cisco IOS IPv6 Feature Mapping</a>

### Standards and RFCs

Standard/RFC	Title
RFCs for IPv6	<a href="#">IPv6 RFCs</a>

**MIBs**

<b>MIB</b>	<b>MIBs Link</b>
—	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**Technical Assistance**

<b>Description</b>	<b>Link</b>
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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for IPv6 NSF and Graceful Restart for MP-BGP IPv6 Address Family

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for IPv6: NSF and Graceful Restart for MP-BGP IPv6 Address Family**

<b>Feature Name</b>	<b>Releases</b>	<b>Feature Information</b>
IPv6: NSF and Graceful Restart for MP-BGP IPv6 Address Family	Cisco IOS XE Release 3.1	The graceful restart capability is supported for IPv6 BGP unicast, multicast, and VPNv6 address families, enabling Cisco NSF functionality for BGP IPv6. The BGP graceful restart capability allows the BGP routing table to be recovered from peers without keeping the TCP state.