# BGP NSR Support for iBGP Peers

BGP NSR provides BGP nonstop routing (NSR) and nonstop forwarding (NSF) in the event of a switchover from an Active RP to the Standby RP. The BGP NSR Support for iBGP Peers feature provides NSR support for iBGP peers configured under the IPv4 unicast or IPv4 + label address family.



# Restrictions on BGP NSR Support for iBGP Peers

- This feature applies to iBGP peers configured under IPv4 unicast or IPv4 + label address families.
- When you configure BGP with graceful restart and remove the BGP configuration using **no router bgp** command, the graceful restart timer starts. As a result, the stale entry is present in the BGP routing table and it is only removed after the BGP graceful restart timer is over.
- With BGP PIC edge enabled with additional paths on the system, the **ha-mode sso prefer** CLI command is not supported for the BGP neighbor and the opposite way.

# Information About BGP NSR Support for iBGP Peers

## Benefit of BGP NSR Support for iBGP Peers

Nonstop routing is beneficial for iBGP peers because it reduces the likelihood of dropped packets during switchover from the Active RP to the Standby RP. Switchover occurs when the Active RP fails for some reason, and the Standby RP takes control of Active RP operations.

# How to Configure BGP NSR Support for iBGP Peers

## Making an iBGP Peer NSR-Capable for the IPv4 Address Family

**Procedure**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **router bgp** *autonomous-system-number*<br>**Example:**<br>`Device(config)# router bgp 4000` | Enters router configuration mode for the specified routing process. |
| **Step 4** | **address-family ipv4** [**unicast** \| **vrf** *vrf-name*]<br>**Example:**<br>`Device(config-router)# address-family ipv4 unicast` | Specifies the IPv4 address family and enters address family configuration mode.<br>• The **unicast** keyword specifies the IPv4 unicast address family.<br>• The **vrf** keyword and *vrf-name* argument specify the name of the virtual routing and forwarding (VRF) instance to associate with subsequent IPv4 address family configuration mode commands. |
| **Step 5** | **neighbor** *ip-address* **remote-as** *as-number*<br>**Example:**<br>`Device(config-router-af)# neighbor 192.168.1.1 remote-as 4000` | Specifies the autonomous system of the neighbor. |
| **Step 6** | **neighbor** *ip-address* **activate**<br>**Example:**<br>`Device(config-router-af)# neighbor 192.168.1.1 activate` | Activates the specified peer. |

| | Command or Action | Purpose |
|---|---|---|
| **Step 7** | **neighbor** *ip-address* **ha-mode sso**<br>**Example:**<br>`Device(config-router-af)# neighbor 192.168.1.1 ha-mode sso` | Configures a BGP neighbor to support BGP NSR with stateful switchover (SSO). |
| **Step 8** | **end**<br>**Example:**<br>`Device(config-router-af)# end` | Exits address family configuration mode and returns to privileged EXEC mode. |

# Making an iBGP Peer NSR-Capable for the VPNv4 Address Family

**Procedure**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **router bgp** *autonomous-system-number*<br>**Example:**<br>`Device(config)# router bgp 4000` | Enters router configuration mode for the specified routing process. |
| **Step 4** | **neighbor** *ip-address* **remote-as** *as-number*<br>**Example:**<br>`Device(config-router)# neighbor 192.168.1.1 remote-as 4000` | Specifies the autonomous system of the neighbor. |
| **Step 5** | **neighbor** *ip-address* **ha-mode sso**<br>**Example:**<br>`Device(config-router)# neighbor 192.168.1.1 ha-mode sso` | Configures a BGP neighbor to support BGP NSR with stateful switchover (SSO). |
| **Step 6** | **address-family vpnv4** [**unicast**]<br>**Example:** | Specifies the VPNv4 address family and enters address family configuration mode. |

| | Command or Action | Purpose |
|---|---|---|
| | `Device(config-router)# address-family VPNv4 unicast` | |
| **Step 7** | **neighbor** *ip-address* **activate**<br>**Example:**<br>`Device(config-router-af)# neighbor 192.168.1.1 activate` | Activates the specified peer. |
| **Step 8** | **end**<br>**Example:**<br>`Device(config-router-af)# end` | Exits address family configuration mode and returns to privileged EXEC mode. |

# Making an iBGP Peer NSR Capable at the Router Level

**Procedure**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **router bgp** *autonomous-system-number*<br>**Example:**<br>`Device(config)# router bgp 4000` | Enters router configuration mode for the specified routing process. |
| **Step 4** | **neighbor** *ip-address* **remote-as** *as-number*<br>**Example:**<br>`Device(config-router)# neighbor 192.168.1.1 remote-as 4000` | Specifies the autonomous system of the neighbor. |
| **Step 5** | **neighbor** *ip-address* **activate**<br>**Example:**<br>`Device(config-router)# neighbor 192.168.1.1 activate` | Activates the specified neighbor. |

| | Command or Action | Purpose |
|---|---|---|
| **Step 6** | **neighbor** *ip-address* **ha-mode sso**<br>**Example:**<br>`Device(config-router)# neighbor 192.168.1.1 ha-mode sso` | Configures the specified peer to be NSR capable in all of the NSR-supported address families under which that peer has been activated. |
| **Step 7** | **end**<br>**Example:**<br>`Device(config-router)# end` | Exits configuration mode and returns to privileged EXEC mode. |
| **Step 8** | **show ip bgp sso summary**<br>**Example:**<br>`Device# show ip bgp sso summary` | (Optional) Displays information about stateful switchover (sso) and whether a peer has NSR enabled or disabled. |

# Configuration Examples for BGP NSR Support for an iBGP Peer

## Example: Configuring an iBGP Peer To Be NSR Capable

### Configuring an iBGP Peer to Be NSR Capable at the Address Family Level

```
router bgp 4000
 address-family ipv4 unicast
 neighbor 192.168.1.1 remote-as 4000
 neighbor 192.168.1.1 activate
 neighbor 192.168.1.1 ha-mode sso
```

### Configuring an iBGP Peer to Be NSR Capable at the Router Level

```
router bgp 4000
 neighbor 192.168.1.1 remote-as 4000
 neighbor 192.168.1.1 activate
 neighbor 192.168.1.1 ha-mode sso
```

# Additional References

### Related Documents

| Related Topic | Document Title |
|---|---|
| Cisco IOS commands | Cisco IOS Master Command List, All Releases |

| Related Topic | Document Title |
|---|---|
| BGP commands | Cisco IOS IP Routing: BGP Command Reference |
| BFD commands | Cisco IOS IP Routing: Protocol Independent Command Reference |
| Configuring BFD support for another routing protocol | IP Routing: BFD Configuration Guide |

### 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 |