Introduction

This document provides troubleshooting information for common problems with Border Gateway Protocol (BGP). To see more information, or to go to the next flowchart, click the command boxes in red.

If you have the output of a `show ip bgp`, `show ip bgp neighbors`, `show ip bgp summary`, or `show tech-support` command from your Cisco device, you can use Cisco CLI Analyzer (registered customers only) to display potential issues and fixes. To use Cisco CLI Analyzer (registered customers only), you must be a registered customer, be logged in, and have JavaScript enabled.

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.
Prerequisites

There are no specific prerequisites for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

Main Troubleshooting Flowchart
Troubleshooting BGP Neighbor Establishment

Is the neighbor not coming up or is the neighbor flapping? Use the `show ip bgp neighbor` command to check status.

If there is an MTU problem? Check using extended ping and maximum size packet.

Fix MTU mismatch problem using the `ip mtu` command.

Issue the `show ip bgp neighbor` command to find the reason for the last reset.

From the logs, see if the message has hold time expired and verify the timers configured.

If you receive the error message "%BGP-4-MAXPF: No. of prefixes received from A, B, C, D reaches 1, max 1" please refer to Configuring the BGP Maximum-Prefix Feature.

Can you ping from peer-address to peer-address using extended ping? Refer to Using Extended ping and Extended traceroute Commands.

Is the AS number correct?

No

To fix the configuration issue, see Why Do BGP Neighbors Toggle Between Idle, Connect, and Active States?

Yes

Is the peer IP address correct?

Yes

Are keepalive and hold time a correct?

Yes

Is `multihop` configured (if the eBGP peer is not directly connected)?

Yes

Is `update-source loopback0` configured (if peering on the loopback address)?

Yes

To fix the routing issue, see Why Do BGP Neighbors Toggle Between Idle, Connect, and Active States?

No

Allow TCP port 179 in an access list.

Open a TAC case.

Is there an access list denying TCP port 179?

Yes

Is the correct route to both peers in the routing table? Use `show ip route` to check.

No

If the neighbor is not coming up or is the neighbor flapping? Use the `show ip bgp neighbor` command to check status.

Look for the log messages. "Sample log messages provided below the flow chart.

Use the `write terminal` or `show running` commands to find the `bgp neighbor` statement for the neighbor in question.
**Note:** *Sample log messages to be checked when neighbor is not coming up:

**Note:** **Example of ping with packet size and enable does not fragment bit in IP header:

```
Router# ping 10.10.10.2 size 1400 df-bit
Type escape sequence to abort.
Sending 5, 1400-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
Packet sent with the DF bit set
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/37/84 ms
```

**Note:** **Also, check the duplex settings of the interface.

**Note:** If the reset has occurred due to interface flapping, disable the eBGP's fast failover by issuing the no bgp fast-external-fallover command. By default, BGP resets the neighborship if the link used in order to reach the neighbor goes down. Disable this feature under BGP Configuration in order to keep BGP stable and prevent the interface from flapping.

If flapping occurs due to high CPU, refer to [Troubleshooting High CPU Utilization on Cisco Routers](#).

Troubleshooting Routes Missing from the Routing Table
**Note:** If the BGP routes are not in the routing table, verify if the network statement under the BGP configuration is correct.

**Note:** In the `debug ip bgp x.x.x.x updates` command, x.x.x.x is the neighbor to which the route should be advertised.

**Troubleshooting Multihoming Inbound**

![Diagram](image-url)
Troubleshooting Multihoming Outbound

If the BGP connection is terminated on a single router on both sides, load balancing can be achieved by peering with a loopback address. For more information, see Load Sharing Using the Loopback Address as a BGP Neighbor. Configuring BGP max-paths allows you to have multiple routes to a destination when all BGP attributes are the same. For more information, see Using BGP for Interdomain Routing.

Loadsharing also depends on the type of switching path used. When CEF switching is used, loadsharing can be achieved per destination or per source/destination pair. To troubleshoot loadsharing in CEF, refer to Troubleshooting Load Balancing Over Parallel Links: Using Cisco Express Forwarding (CEF).

You can configure loadsharing outbound using different attributes (weight, local preference). For more information, see Load Sharing when Multihomed to Two ISPs Through a Single Local Router.

When terminating on different routers, use local preference. For more information, see Load Sharing when Multihomed to Two ISPs via Multiple Local Routers.

Outbound loadsharing could also be achieved using HSRP. For more information, see How to Use HSRP to Provide Redundancy in a Multihomed BGP Network.

Related Information

- BGP Support Page
- Cisco IOS Master Command List, All Releases
- Technical Support & Documentation - Cisco Systems