

Routing Course

Assignment 4: BGP

In this assignment you will look into BGP, how to set up an eBGP and an iBGP session, and some few minor steps into the world of policy setting.

A major difference in setting up eBGP sessions compared with your previous exercises is that you normally have no access to the other party's peering router. You can only configure your own routers, not your peer partner's. You also must check your setup and configurations in your own routers only!

You manage a network with a working IGP of your choice. The Routing Lab Ethernet is in this exercise the DMZ between your AS and your upstream ISP. Your AS number is 64513. Your upstream's AS number is 64512.

Task 1: eBGP

Your first task is to setup an eBGP peering session with your upstream ISP's router rtrX. eBGP peers are always/normally directly connected to the common DMZ. rtrX has address 192.168.101.20 on the DMZ subnet. Start with a "promiscuous" approach, that is advertise all your prefixes to rtrX, and accept all prefixes rtrX sends to you. As said above, you have no control over rtrX. RtrX is already configured and is up and running, waiting for your BGP session(s).

Start with establishing the peering session. Use `debug ip tcp transactions` and `debug ip bgp` and describe what happens during setup and tear down. Hints:

- The session starts immediately you have applied the correct neighbor config command.
- You can temporarily close the session by applying the neighbour shutdown config command.
- Use an applicable version of the `clear ip bgp exec` command to restart the session. Which?

You check/troubleshoot bgp sessions with versions of the `show ip bgp` command. Try this command, as well as `show ip bgp sum` and `show ip bgp neighbor` commands. What information can you derive from these commands?

Check what prefixes you receive and advertise. Hint:

- To be able to list received prefixes you have to configure soft reconfiguration of inbound prefixes.

Also check the BGP routing table as well as the complete routing table. What commands do you use? Which routes do you see?

Now add some prefixes to announce to your peer. What prefix(es) do you have to announce to make the whole of your network reachable from the world? What bgp config command do you use? What condition must be fulfilled for a prefix to be announced (more than the bgp config command)? Check that you announce what you intended!

Task 2: iBGP

Your next task is to set up an iBGP session between your eBGP peer router and an internal router in your AS. For iBGP sessions you should setup a loopback interface on each peering router and use these as sources for the BGP session. Of course you could use any of a routers ip addresses, but using an ip address of a routers interface will have the consequence that if this interface goes down for any reason the BGP session will also close, even though there are other alternative paths to reach the peering router. There is a BGP config command to use when you want to specify the source of a BGP session. Which? Another thing to consider is that you need to have a working route between the two loopback interfaces in the two routers, otherwise the BGP session will not come up.

Add a virtual network (assign a network to a loopback interface in your iBGP only peer) and give it a network id that is not included in the prefixes you already announce, and make sure that it is announced by your eBGP peer to the world via the iBGP session.

Describe your methods and results of this configuration task in the report.

Task 3: Implementing policies

Finally you shall apply an input policy. One of the prefixes advertised by your ISP (select one of your choice) from the world is not acceptable for your organisation, so you have to remove that prefix before it is added to your local bgp routing table. That is done by applying a inbound route-map and a corresponding access-list or ip prefix-list. You can filter on ip network address or as number. Check the result of the applied route-map using the methods learned above.

Planning and preparations

Before doing the practical lab you shall present a preliminary report covering your preparations and planning. This preliminary report must be approved before you may perform the actual lab.

The report

Your report for this assignment should include your planning, findings and relevant parts of your configuration as well as relevant parts of command outputs. An approved full report concludes this assignment.

Good Luck!