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Sample Configuration for BGP with Two Different Service Providers (Multihoming)

Introduction

Before You Begin

- Conventions

- Prerequisites

- Components Used

- Extra Information

Configure

- Network Diagram

- Configuration to Receive Full Internet Routing Table

- Configuration to Receive Directly–Connected Routes

- Configuration to Receive Default Routes Only

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Related Information

Introduction

When running Border Gateway Protocol (BGP) with more than one service provider, you run the risk of having your autonomous system (AS) become a transit AS. This results in Internet traffic passing through your AS and potentially consuming all the bandwidth and resources on your router's CPU.

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 configuration is not restricted to specific software and hardware versions.

Extra Information

If you want to receive the full Internet routing table, use the Configuration to Receive Full Internet Routing Table on your local router (Router A in our example).

If you want to receive routes that are directly connected to your service providers, but use default routes to the rest of the Internet, try this Configuration to Receive Directly–Connected Routes.

If you want to receive only default routes from the directly connected service providers, use the Configuration to Receive Default Routes Only.

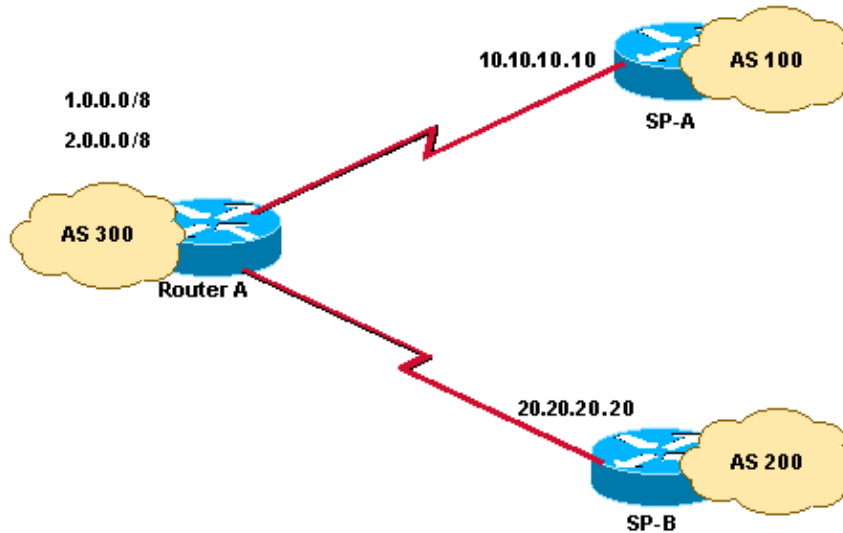
For more information about the regular expressions used in the configurations below, see [Using Regular Expressions in BGP](#).

Configure

In this section, you are presented with the information to configure the features described in this document.

Network Diagram

In the following network diagram, 1.0.0.0/8 and 2.0.0.0/8 are advertised by AS 300 to the outside.



Configuration to Receive Full Internet Routing Table

This configuration allows BGP to build neighbor relationships with the routers in the other autonomous systems, while filtering routes not permitted in "localonly" so they aren't advertised out.

Router A
Current configuration: <pre>router bgp 300 network 1.0.0.0 network 2.0.0.0 neighbor 10.10.10.10 remote-as 100 neighbor 10.10.10.10 route-map localonly out neighbor 20.20.20.20 remote-as 200 neighbor 20.20.20.20 route-map localonly out end</pre>

The following access list only permits locally originated BGP routes:

```
ip as-path access-list 10 permit ^$
```

Here's an example of a route map that uses the access list above to filter the routes advertised to the external neighbors in the service provider networks:

```
route-map localonly permit 10
match as-path 10
```

Configuration to Receive Directly-Connected Routes

Router A
Current configuration: router bgp 300 network 1.0.0.0 network 2.0.0.0 neighbor 10.10.10.10 remote-as 100 neighbor 10.10.10.10 route-map localonly out neighbor 10.10.10.10 route-map as100only in neighbor 20.20.20.20 remote-as 200 neighbor 20.20.20.20 route-map localonly out neighbor 20.20.20.20 route-map as200only in end

Since you only want to accept routes directly connected to the service providers, you need to filter the routes they send you as well as the routes you advertise. The following access list and route map permit only locally originated routes. Use it to filter outbound routing updates.

```
ip as-path access-list 10 permit ^$  
  
route-map localonly permit 10  
match as-path 10
```

The following access list and route map filter out anything not sourced within the first service provider's network. Use it to filter the routes learned from service provider A.

```
ip as-path access-list 20 permit ^100$  
  
route-map as100only permit 10  
match as-path 20
```

The following access list and route map filter out anything not sourced within the second service provider's network. You can use it to filter the routes learned from service provider B.

```
ip as-path access-list 30 permit ^200$  
  
route-map as200only permit 10  
match as-path 30
```

You also need two default routes that are distributed back into the rest of your network, one pointed to each of the service provider's entry points:

```
ip route 0.0.0.0 0.0.0.0 10.10.10.10  
ip route 0.0.0.0 0.0.0.0 20.20.20.20
```

Configuration to Receive Default Routes Only

Router A
Current configuration: <pre>router bgp 300 network 1.0.0.0 network 2.0.0.0 neighbor 10.10.10.10 remote-as 100 neighbor 10.10.10.10 route-map localonly out neighbor 10.10.10.10 prefix-list ABC in neighbor 20.20.20.20 remote-as 200 neighbor 20.20.20.20 route-map localonly out neighbor 20.20.20.20 prefix-list ABC in ip prefix-list ABC seq 5 permit 0.0.0.0/0 end</pre>

Since we want Router A to receive only default routes and no other networks from ISP-A and ISP-B, we need to permit only the default route and deny all other BGP updates. We use the following prefix list to allow only the default route update 0.0.0.0/0 and deny all other BGP updates on Router A.

```
ip prefix-list ABC seq 5 permit 0.0.0.0/0
```

We apply this prefix list on the inbound updates on individual BGP neighbors as follows:

```
neighbor 10.10.10.10 prefix-list ABC in
neighbor 20.20.20.20 prefix-list ABC in
```

For more information on configuring a prefix list, refer to the [Configuring BGP Filtering Using Prefix Lists](#) section.

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [BGP Support Page](#)
 - [Technical Support – Cisco Systems](#)
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