Use Regular Expressions in BGP

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Related Information

Introduction

This document describes how to use regular expressions with Border Gateway Protocol (BGP).

Prerequisites

Requirements

Cisco recommends that you have knowledge of this topic:

- Basic BGP configuration

Components Used

The information in this document is based on Cisco IOS® Software Release 12.0.

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

Conventions

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

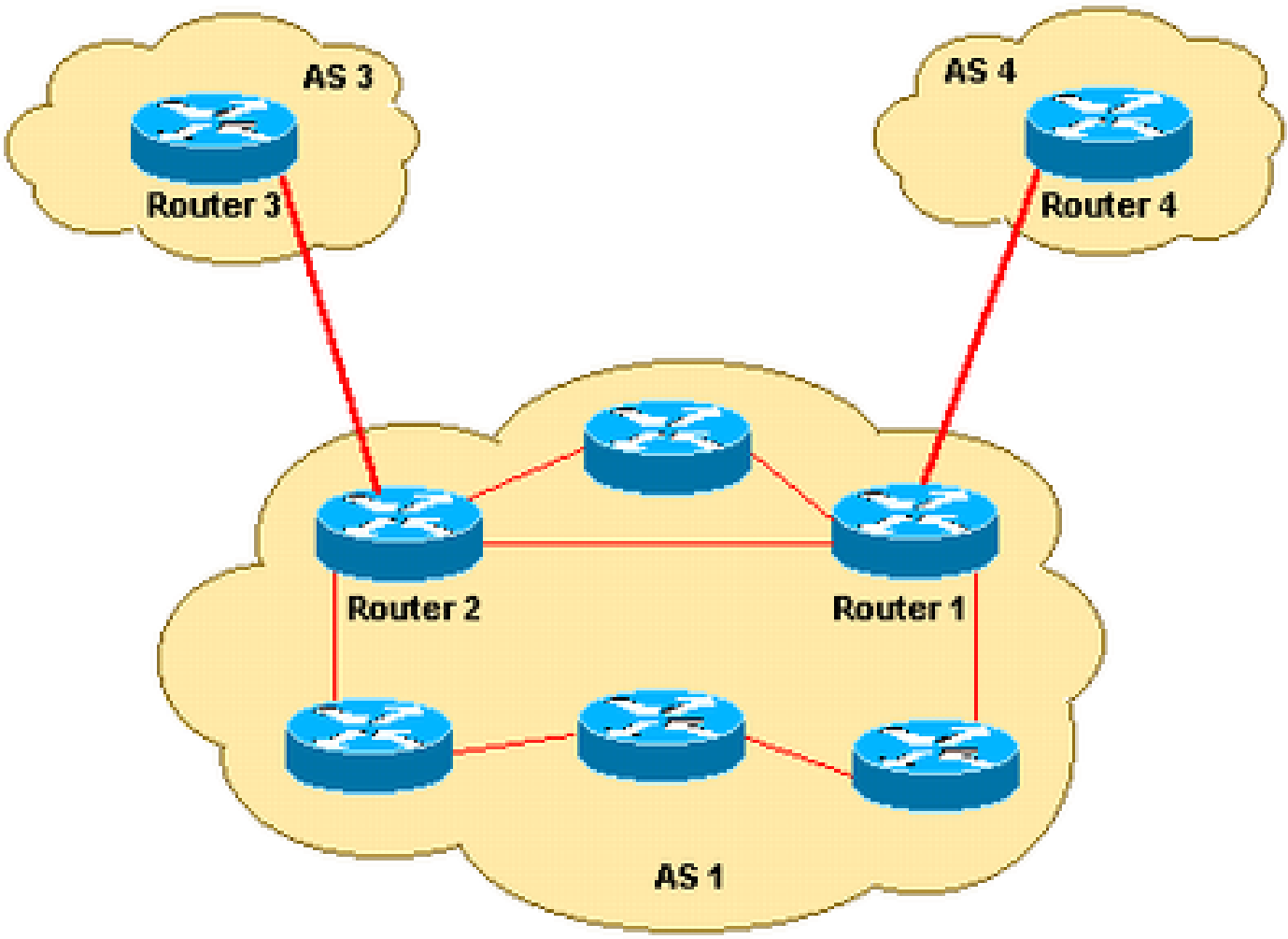
Background Information

You can use regular expressions in the ip as-path access-list command with Border Gateway Protocol (BGP). For more general information about regular expressions, see the Cisco Documentation on Regular Expressions . For more information on basic BGP configuration, see the BGP Case Studies and Configure a Basic BGP

Network.

Network Scenarios

This is the network diagram referred to in this document.



Only Allow Networks that Originate from AS 4 to Enter Router 1

If you would like for Router 1 to receive only the routes originated from AS 4 (and no Internet routes), you can apply an inbound access list on Router 1:

```
ip as-path access-list 1 permit ^4$

router bgp 1
 neighbor 10.4.4.4 remote-as 4
 neighbor 10.4.4.4 route-map foo in

route-map foo permit 10
 match as-path 1
```

This ensures only networks originated from AS 4 are allowed into Router 1.

Only Allow Networks That Have Passed Through AS 4 to Enter AS 3

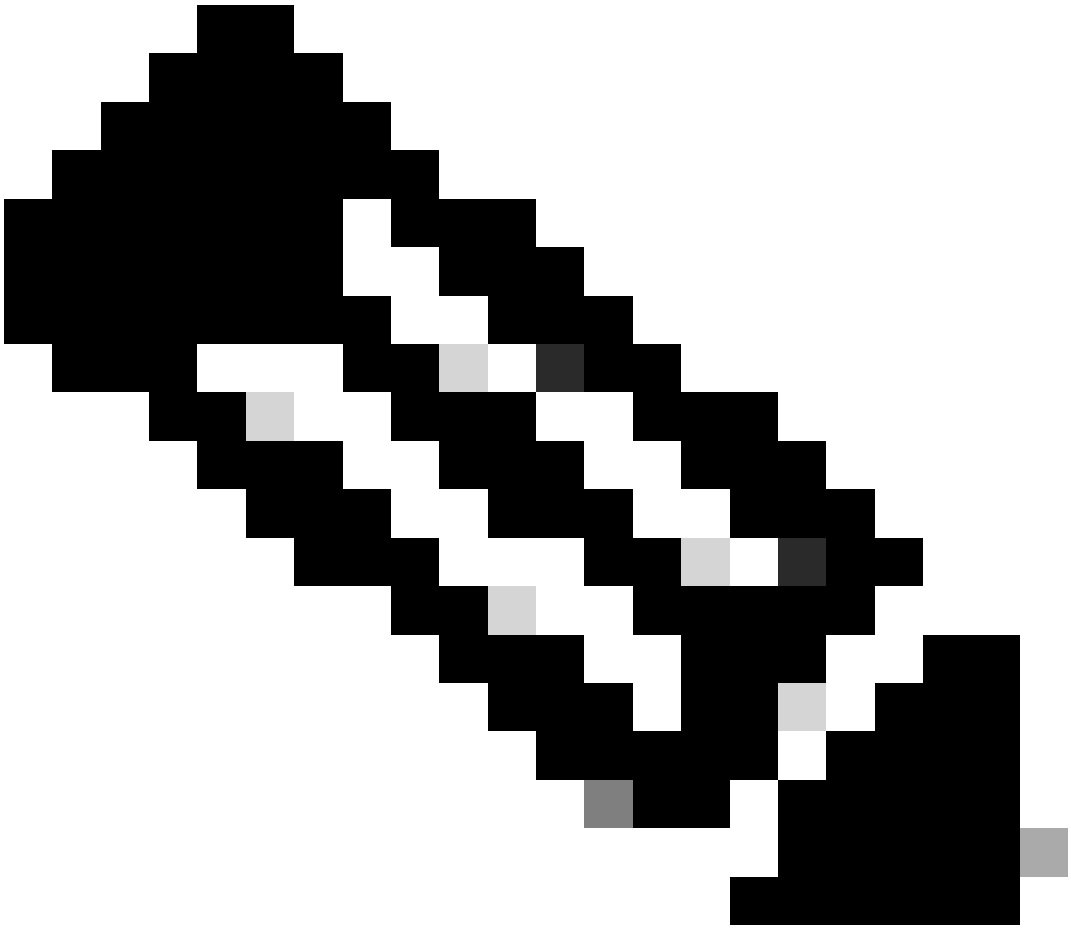
If you want only the networks that have passed through AS 4 to enter AS 3 from Router 3, you can apply an inbound filter on Router 3:

```
ip as-path access-list 1 permit _4_

router bgp 3
 neighbor 10.2.2.2 remote-as 1
 neighbor 10.2.2.2 route-map foo in

route-map foo permit 10
 match as-path 1
```

You can use an underscore (_) as the input string and output string in the **ip as-path access-list** command.



Note: In this example, anchoring (for instance, there is no ^) is not used, so it does not matter what autonomous systems come before and after AS 4.

Deny Networks Originated in AS 4 to Enter AS 3 and Permit All Other Networks

If you want to deny all the networks that have originated in AS 4, and permit all other routes to enter AS 3 from Router 3, you can apply an inbound filter at Router 3:

```
ip as-path access-list 1 deny _4$
ip as-path access-list 1 permit .*

router bgp 3
 neighbor 10.2.2.2 remote-as 1
 neighbor 10.2.2.2 route-map foo in

route-map foo permit 10
 match as-path 1
```

Only Allow Networks Originated from AS 4, and ASs Directly Attached to AS 4, to Enter Router 1

If you want AS 1 to get networks originated from AS 4, and all directly attached ASs of AS 4, apply the next inbound filter on Router 1.

```
ip as-path access-list 1 permit ^4_[0-9]*$

router bgp 1
 neighbor 10.4.4.4 remote-as 4
 neighbor 10.4.4.4 route-map foo in

route-map foo permit 10
 match as-path 1
```

In the ip as-path access-list command, the carat (^) starts the input string and designates AS" The underscore (_) means there is a a null string in the string that comes after AS 4" The [0-9]* specifies that any connected AS with a valid AS number can pass the filter. The advantage with the [0-9]* syntax is that it gives you the flexibility to add any number of ASs without a modification to this command string. For additional information, see AS-Regular Expression.

Related Information

- IP Routing Support Page
- Cisco Technical Support & Downloads