

# Using Regular Expressions in BGP

Document ID: 13754

---

## Introduction

### Prerequisites

- Requirements
- Components Used
- Conventions

### Network Scenarios

- Only Allow Networks Originating from AS 4 to Enter Router 1
- Only Allow Networks That Have Passed Through AS 4 to Enter AS 3
- Deny Networks Originated in AS 4 to Enter AS 3 and Permit all other Networks
- Only Allow Networks Originated from AS 4, and ASs Directly Attached to AS 4, to Enter Router 1

### Related Information

---

## Introduction

You can use regular expressions in the **ip as-path access-list** command with Border Gateway Protocol (BGP). This document describes scenarios for using regular expressions. For more general information about regular expressions, see the Cisco Documentation on Regular Expressions.

## Prerequisites

### Requirements

Readers of this document should be knowledgeable of the following:

- Basic BGP configuration. For more information, see the BGP Case Studies and Configuring BGP.

### Components Used

The information in this document is based on the software and hardware versions:

- Cisco IOS® Software Release 12.0

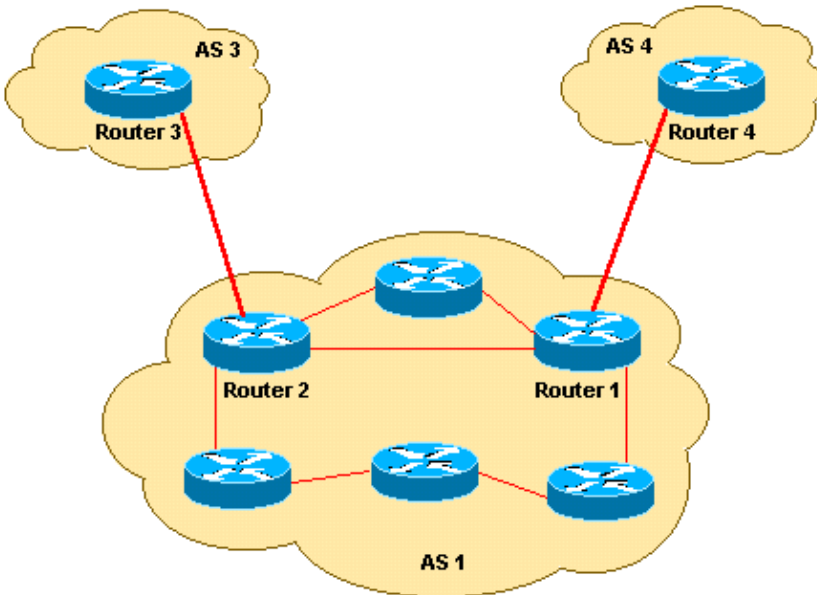
The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### Conventions

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

## Network Scenarios

The following network diagram is referred to in these three scenarios.



## Only Allow Networks Originating 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 as follows:

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

router bgp 1
 neighbor 4.4.4.4 remote-as 4
 neighbor 4.4.4.4 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 2.2.2.2 remote-as 1
 neighbor 2.2.2.2 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 that 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, as follows:

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

router bgp 3
 neighbor 2.2.2.2 remote-as 1
 neighbor 2.2.2.2 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 following inbound filter on Router 1.

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

router bgp 1
 neighbor 4.4.4.4 remote-as 4
 neighbor 4.4.4.4 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 null string in the string that follows "AS 4". The [0-9]\* specifies that any connected AS with a valid AS number can pass the filter. The advantage of using the [0-9]\* syntax is that it gives you the flexibility to add any number of ASs without modifying this command string. For additional information, see [AS-Regular Expression](#).

---

## Related Information

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

---

[Contacts & Feedback](#) | [Help](#) | [Site Map](#)

© 2008 – 2009 Cisco Systems, Inc. All rights reserved. [Terms & Conditions](#) | [Privacy Statement](#) | [Cookie Policy](#) | [Trademarks of Cisco Systems, Inc.](#)

---

Updated: May 10, 2006

Document ID: 13754

---