VYATTA, INC. | Vyatta System

Routing Policies

REFERENCE GUIDE

Routing Policies

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Contents

Quick List of Commands

Use this list to help you quickly locate commands.

List of Examples

Use this list to help you locate examples you'd like to look at or try.

Preface

This document describes the various deployment, installation, and upgrade options for Vyatta software.

This preface provides information about using this guide. The following topics are presented:

- Intended Audience
- Organization of This Guide
- Document Conventions
- Vyatta Publications

Intended Audience

This guide is intended for experienced system and network administrators. Depending on the functionality to be used, readers should have specific knowledge in the following areas:

- Networking and data communications
- TCP/IP protocols
- General router configuration
- Routing protocols
- Network administration
- Network security
- IP services

Organization of This Guide

This guide has the following aid to help you find the information you are looking for:

- Quick List of Commands

  Use this list to help you quickly locate commands.

- List of Examples

  Use this list to help you locate examples you'd like to try or look at.

This guide has the following chapters:

Document Conventions

This guide uses the following advisory paragraphs, as follows.

WARNING *Warnings alert you to situations that may pose a threat to personal safety.*

CAUTION *Cautions alert you to situations that might cause harm to your system or damage to equipment, or that may affect service.*

NOTE *Notes provide information you might need to avoid problems or configuration errors.*

This document uses the following typographic conventions.

`Monospace`	Examples, command-line output, and representations of configuration nodes.
`bold Monospace`	Your input: something you type at a command line.
bold	Commands, keywords, and file names, when mentioned inline. Objects in the user interface, such as tabs, buttons, screens, and panes.
italics	An argument or variable where you supply a value.
<key>	A key on your keyboard, such as <Enter>. Combinations of keys are joined by plus signs (“+”), as in <Ctrl>+c.
[key1 | key2]	Enumerated options for completing a syntax. An example is [enable | disable].
num1–numN	A inclusive range of numbers. An example is 1–65535, which means 1 through 65535, inclusive.
arg1..argN	A range of enumerated values. An example is eth0..eth3, which means eth0, eth1, eth2, or eth3.
arg[*arg*...] *arg*[,*arg*...]	A value that can optionally represent a list of elements (a space-separated list and a comma-separated list, respectively).

Vyatta Publications

Full product documentation is provided in the Vyatta technical library. To see what documentation is available for your release, see the *Guide to Vyatta Documentation*. This guide is posted with every release of Vyatta software and provides a great starting point for finding the information you need.

Additional information is available on www.vyatta.com and www.vyatta.org.

Chapter 1: Routing Policy Overview

This chapter provides a brief overview of routing policy features on the Vyatta system.

This chapter presents the following topics:

- Routing Policy

Routing Policy

A routing policy is a mechanism that allows a user to configure criteria to compare a routing update against, with one or more actions to be performed on the route if the defined criteria are met. For example, a policy can be created to filter (block) specific route prefixes that are being announced by a BGP neighbor. Policy statements are also used to export routes learned via one protocol, for instance OSPF, into another protocol, for instance BGP. This is commonly called *route redistribution*.

Routing policies are grouped together in the Vyatta configuration under the **policy** node. This **"policy"** node simply serves as a container for policy statements; it's the actual policy statements that define the rules that will be applied to routing updates.

Once a policy has been defined, in order for it to take affect, it needs to be applied to a specific routing protocol. A policy can be applied as either an *import* policy or an *export* policy to routing protocols like RIP, OSPF, and BGP. In the case of BGP, policies can be applied per peer. Only one import and one export policy can be applied to a protocol (or a BGP peer).

A policy that has been applied as an *import* policy to a routing protocol is used to evaluate routing updates *received* via the routing protocol to which the policy is applied. For example, if a user configures an import policy for the BGP protocol, all BGP announcements received by the Vyatta system will be compared against the import policy first, prior to being added to the BGP and routing tables.

A policy that has been applied as an *export* policy to a routing protocol is used to evaluate routing updates that are *transmitted* by the routing protocol to which the policy is applied. For example, if a user configures an export policy for BGP, all BGP updates originated by the Vyatta system will be compared against the export policy statement prior to the routing updates being sent to any BGP peers.

In addition to controlling routing updates transmitted by a routing protocol, export policies are also used to provide route redistribution. For example, if a user wants to redistribute routes learned via OSPF into BGP, the user would configure a policy statement identifying the OSPF routes of interest, and then the user would apply this policy statement as an export policy for OSPF.

Chapter 2: Routing Policy Configuration Examples

This chapter provides configuration examples for routing policies.

This chapter presents the following topics:

- Filtering Routes using Access Lists
- Filtering Inbound Routes using Prefix Lists
- Filtering Outbound Routes using AS Path Lists

Filtering Routes using Access Lists

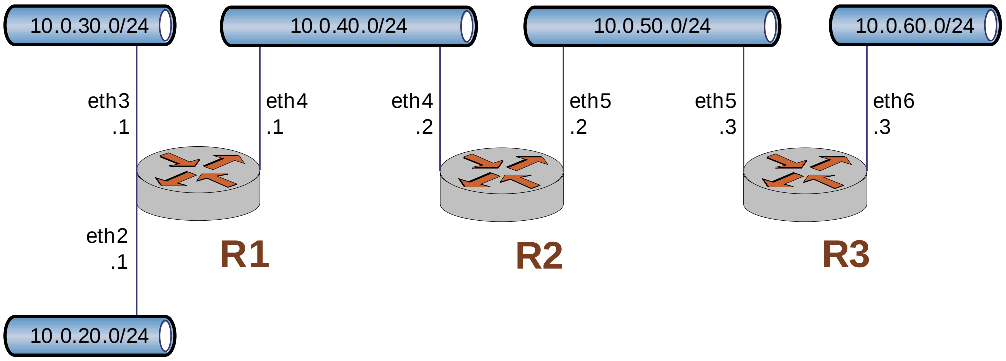
This section presents the following topics:

- Basic RIP Configuration
- Verifying the RIP Configuration
- Creating a Route Filtering Policy
- Applying a Route Filtering Policy
- Verifying the Route Filtering Policy Configuration

Access lists can be used to filter routes for distance-vector protocols such as RIP and at redistribution points into link-state routing domains (like OSPF) where they can control which routes enter or leave the domain.

This section presents a sample configuration for RIP and route filtering policy. In it we first show a RIP configuration that distributes all known routes among three routers. Then we configure a route filtering policy using access lists to filter out advertisement of one network. The configuration example is based on the reference diagram in Figure 2-1.

Figure 2-1 RIP configuration reference diagram



Basic RIP Configuration

This example assumes that the router interfaces are already configured; the RIP configuration on each of the routers is shown below.

Example 2-1 Basic RIP configuration

Router	Step	Command(s)

Example 2-1 Basic RIP configuration

R1 Display the configuration.

```
vyatta@R1# show protocols
 rip {
    network 10.0.40.0/24
    redistribute {
        connected {
        }
    }
 }
```

R2 Display the configuration.

```
vyatta@R2# show protocols
 rip {
    network 10.0.40.0/24
    network 10.0.50.0/24
    redistribute {
        connected {
        }
    }
 }
```

R3 Display the configuration.

```
vyatta@R3# show protocols
 rip {
    network 10.0.50.0/24
    redistribute {
        connected {
        }
    }
 }
```

Verifying the RIP Configuration

The following operational mode commands can be used to verify the RIP configuration.

R3: show ip route

Example 2-2 shows the output of the **show ip route** command for router R3.

Example 2-2 Verifying RIP on R3: ”show ip route”

```
vyatta@R3:~$ show ip route
```

```
Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF,
       I - ISIS, B - BGP, > - selected route, * - FIB route

R>* 10.0.20.0/24 [120/3] via 10.0.50.2, eth5, 00:20:16
R>* 10.0.30.0/24 [120/3] via 10.0.50.2, eth5, 00:34:04
R>* 10.0.40.0/24 [120/2] via 10.0.50.2, eth5, 02:15:26
C>* 10.0.50.0/24 is directly connected, eth5
C>* 10.0.60.0/24 is directly connected, eth6
C>* 127.0.0.0/8 is directly connected, lo
vyatta@R3:~$
```

The output shows that routes to 10.0.20.0/24, 10.0.30.0/24, and 10.0.40.0/24 have been learned via RIP and that packets to those networks will be forwarded out eth5 to 10.0.50.2. Networks 10.0.50.0/24 and 10.0.60.0/24 are directly connected.

R3: show ip rip

The **show ip rip** command for R3 displays similar information in a different format. This is shown in Example 2-3.

Example 2-3 Verifying RIP on R3: “show ip rip”

```
vyatta@R3:~$ show ip rip
Codes: R - RIP, C - connected, S - Static, O - OSPF, B - BGP
Sub-codes:
      (n) - normal, (s) - static, (d) - default, (r) - redistribute,
      (i) - interface

     Network            Next Hop         Metric From            Tag Time
R(n) 10.0.20.0/24       10.0.50.2             3 10.0.50.2         0 00:23
R(n) 10.0.30.0/24       10.0.50.2             3 10.0.50.2         0 00:23
R(n) 10.0.40.0/24       10.0.50.2             2 10.0.50.2         0 00:23
C(i) 10.0.50.0/24       0.0.0.0               1 self              0
C(r) 10.0.60.0/24       0.0.0.0               1 self (connected:1)  0
vyatta@R3:~$
```

Again, the output shows that networks 10.0.20.0/24, 10.0.30.0/24, and 10.0.40.0/24 have been learned via RIP and that packets to those networks will be forwarded to 10.0.50.2. Networks 10.0.50.0/24 and 10.0.60.0/24 are directly connected.

Creating a Route Filtering Policy

In this section, you configure a route filtering policy on R2 using access lists to deny incoming routes from 10.0.20.0/24.

Example 2-4 Route filtering configuration

Router	Step	Command(s)
R2	Create an access list and a rule to deny specified routes.	`vyatta@R2# set policy access-list 100 rule 10 action deny`
R2	Match any destination.	`vyatta@R2# set policy access-list 100 rule 10 destination any`
R2	Match source 10.0.20.0.	`vyatta@R2# set policy access-list 100 rule 10 source 10.0.20.0`
R2	Specify the inverse mask for the network.	`vyatta@R2# set policy access-list 100 rule 10 inverse-mask 0.0.0.255`
R2	Create a rule to permit all other routes.	`vyatta@R2# set policy access-list 100 rule 20 action permit`
R2	Match any destination.	`vyatta@R2# set policy access-list 100 rule 20 destination any`
R2	Match any source.	`vyatta@R2# set policy access-list 100 rule 20 source any`
R2	Commit the changes.	`vyatta@R2# commit`

Example 2-4 Route filtering configuration

<table>
<tr><td>R2</td><td>Display the configuration.</td><td><pre>
vyatta@R2# show policy
 access-list 100 {
    rule 10 {
        action deny
        destination {
            any
        }
        source {
            inverse-mask 0.0.0.255
            network 10.0.20.0
        }
    }
    rule 20 {
        action permit
        destination {
            any
        }
        source {
            any
        }
    }
 }
</pre></td></tr>
</table>

Applying a Route Filtering Policy

In this section, you apply the route filtering policy to incoming RIP advertisements on R2.

Example 2-5 Applying a route filtering policy

Router	Step	Command(s)
R2	Use the access list created in the previous example to filter incoming route advertisements.	`vyatta@R2#` **`set protocols rip distribute-list access-list in 100`**
R2	Commit the configuration.	`vyatta@R2#` **`commit`**

Example 2-5 Applying a route filtering policy

R2 Display the configuration.

```
vyatta@R2# show protocols
 rip {
    distribute-list {
        access-list {
            in 100
        }
    }
    network 10.0.40.0/24
    network 10.0.50.0/24
    redistribute {
        connected {
        }
    }
 }
```

Verifying the Route Filtering Policy Configuration

The following operational mode commands can be used to verify the route filtering policy configuration.

R3: show ip route

Example 2-6 shows the output of the **show ip route** command for router R3.

Example 2-6 Verifying routing policy changes on R3: ”show ip route”

```
vyatta@R3:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF,
       I - ISIS, B - BGP, > - selected route, * - FIB route

R>* 10.0.30.0/24 [120/3] via 10.0.50.2, eth5, 00:45:21
R>* 10.0.40.0/24 [120/2] via 10.0.50.2, eth5, 00:45:21
C>* 10.0.50.0/24 is directly connected, eth5
C>* 10.0.60.0/24 is directly connected, eth6
C>* 127.0.0.0/8 is directly connected, lo
vyatta@R3:~$
```

The output shows that routes to 10.0.30.0/24, and 10.0.40.0/24 have been learned via RIP and that packets to those networks will be forwarded out eth5 to 10.0.50.2. Networks 10.0.50.0/24 and 10.0.60.0/24 are directly connected. Notice that there is no route to 10.0.20.0/24 as it was filtered by the routing policy.

R3: show ip rip

The **show ip rip** command for R3 displays similar information in a different format. This is shown in Example 2-7.

Example 2-7 Verifying routing policy changes on R3: “show ip rip”

```
vyatta@R3:~$ show ip rip
Codes: R - RIP, C - connected, S - Static, O - OSPF, B - BGP
Sub-codes:
      (n) - normal, (s) - static, (d) - default, (r) - redistribute,
      (i) - interface

     Network            Next Hop         Metric From            Tag Time
R(n) 10.0.30.0/24       10.0.50.2             3 10.0.50.2         0 00:22
R(n) 10.0.40.0/24       10.0.50.2             2 10.0.50.2         0 00:22
C(i) 10.0.50.0/24       0.0.0.0               1 self              0
C(i) 10.0.60.0/24       0.0.0.0               1 self              0
vyatta@R3:~$
```

Again, the output shows that networks 10.0.30.0/24, and 10.0.40.0/24 have been learned via RIP and that packets to those networks will be forwarded to 10.0.50.2. Networks 10.0.50.0/24 and 10.0.60.0/24 are directly connected. Again, there is no route to 10.0.20.0/24.

Filtering Inbound Routes using Prefix Lists

This section presents the following topics:

- Prefix List Configuration
- Verifying the Inbound Filter

Prefix List Configuration

A common requirement for BGP configurations is to filter inbound routing announcements from a BGP peer. On the Vyatta system this is accomplished using routing policies that are then applied to the BGP process as “import” policies. In this instance we use prefix lists in conjunction with route maps to accomplish this.

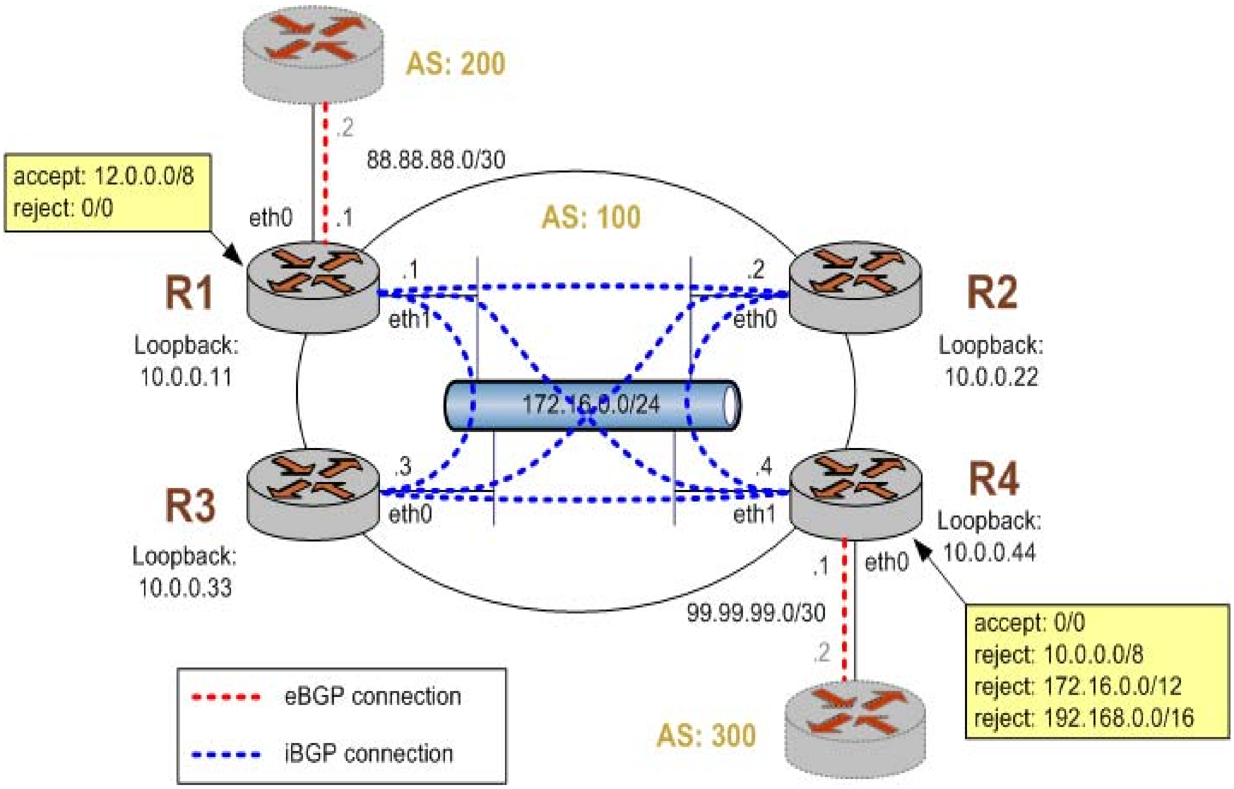
Example 2-8 creates the following inbound filtering policies:

- R1 should only accept network 12.0.0.0/8 from its eBGP peer, and reject everything else.
- R4 should allow all Internet routes, but reject all RFC 1918 networks from its eBGP peer.

This import policy is shown in Figure 2-2.

NOTE *We assume that the routers in AS100 have been configured for iBGP and eBGP as shown and that the routers in AS200 and AS300 are configured appropriately as eBGP peers.*

Figure 2-2 Filtering inbound routes



To create this inbound route filter, perform the following steps in configuration mode:

Example 2-8 Creating an import policy

Router	Step	Command(s)
R1	Create a list of prefixes to allow. In this case we just have one - 12.0.0.0/8.	vyatta@R1# **set policy prefix-list ALLOW-PREFIXES rule 1 action permit** vyatta@R1# **set policy prefix-list ALLOW-PREFIXES rule 1 prefix 12.0.0.0/8**
R1	Create a route map rule to permit all prefixes in our list.	vyatta@R1# **set policy route-map eBGP-IMPORT rule 10 action permit** vyatta@R1# **set policy route-map eBGP-IMPORT rule 10 match ip address prefix-list ALLOW-PREFIXES**

Example 2-8 Creating an import policy

R1	Create a route map rule to deny all other prefixes.	vyatta@R1# **set policy route-map eBGP-IMPORT rule 20 action deny**
R1	Assign the route map policy created as the import route map policy for AS 200.	vyatta@R1# **set protocols bgp 100 neighbor 88.88.88.2 route-map import eBGP-IMPORT**
R1	Commit the configuration.	vyatta@R1# **commit**
R1	Reset the BGP session to the peer so that the new policies are enabled.	vyatta@R1# **run reset ip bgp 88.88.88.2**

R1	Display the policy configuration.	vyatta@R1# **show policy**
		 prefix-list ALLOW-PREFIXES {
		     rule 1 {
		         action permit
		         prefix 12.0.0.0/8
		     }
		 }
		 route-map eBGP-IMPORT {
		     rule 10 {
		         action permit
		         match {
		             ip {
		                 address {
		                     prefix-list ALLOW-PREFIXES
		                 }
		             }
		         }
		     }
		     rule 20 {
		         action deny
		     }
		 }
		vyatta@R1#

Example 2-8 Creating an import policy

R1	Display the BGP configuration for eBGP neighbor 88.88.88.2.	vyatta@R1# **show protocols bgp 100 neighbor 88.88.88.2**
		 remote-as 200
		 route-map {
		     import eBGP-IMPORT
		 }
		vyatta@R1#

R4	Create a rule to match any prefix from 10.0.0.0/8 to 32.	vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 1 action permit** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 1 le 32** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 1 prefix 10.0.0.0/8**
R4	Create a rule to match any prefix from 172.16.0.0/12 to 32.	vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 2 action permit** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 2 le 32** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 2 prefix 172.16.0.0/12**
R4	Create a rule to match any prefix from 192.168.0.0/16 to 32.	vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 3 action permit** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 3 le 32** vyatta@R4# **set policy prefix-list RFC1918PREFIXES rule 3 prefix 192.168.0.0/16**
R4	Create a route map rule to deny all prefixes in our list.	vyatta@R4# **set policy route-map eBGP-IMPORT rule 10 action deny** vyatta@R4# **set policy route-map eBGP-IMPORT rule 10 match ip address prefix-list RFC1918PREFIXES**
R4	Create a route map rule to permit all other prefixes.	vyatta@R4# **set policy route-map eBGP-IMPORT rule 20 action permit**
R4	Assign the route map policy created as the import route map policy for AS 300.	vyatta@R4# **set protocols bgp 100 neighbor 99.99.99.2 route-map import eBGP-IMPORT**
R4	Commit the configuration.	vyatta@R4# **commit**

Example 2-8 Creating an import policy

<table>
<tr><td>R4</td><td>Reset the BGP session to the peer so that the new policies are enabled.</td><td><pre>vyatta@R1# run reset ip bgp 99.99.99.2</pre></td></tr>
<tr><td>R4</td><td>Display the policy configuration.</td><td><pre>vyatta@R4# show policy
 prefix-list RFC1918PREFIXES {
     rule 1 {
         action permit
         le 32
         prefix 10.0.0.0/8
     }
     rule 2 {
         action permit
         le 32
         prefix 172.16.0.0/12
     }
     rule 3 {
         action permit
         le 32
         prefix 192.168.0.0/16
     }
 }
 route-map eBGP-IMPORT {
     rule 10 {
         action deny
         match {
             ip {
                 address {
                     prefix-list RFC1918PREFIXES
                 }
             }
         }
     }
     rule 20 {
         action permit
     }
 }
vyatta@R4#</pre></td></tr>
</table>

Example 2-8 Creating an import policy

R4	Display the BGP configuration for eBGP neighbor 99.99.99.2.	vyatta@R4# **show protocols bgp 100 neighbor 99.99.99.2**
		 remote-as 300
		 route-map {
		     import eBGP-IMPORT
		 }
		vyatta@R4#

Verifying the Inbound Filter

The following commands can be used to verify the inbound filter configuration.

R1: show ip bgp

Example 2-9 shows R1’s BGP table *before* the import filter is applied.

Example 2-9 R1 inbound BGP routes before import filtering

```
vyatta@R1:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.0.11
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 2.0.0.0/24       88.88.88.2               0             0 200 i
*> 2.1.0.0/24       88.88.88.2               0             0 200 i
*> 2.2.0.0/24       88.88.88.2               0             0 200 i
*>i3.0.0.0/24       99.99.99.2               0    100      0 300 i
*>i3.1.0.0/24       99.99.99.2               0    100      0 300 i
*>i3.2.0.0/24       99.99.99.2               0    100      0 300 i
*> 12.0.0.0         88.88.88.2               0             0 200 i
*>i13.0.0.0/24      99.99.99.2               0    100      0 300 i
*> 88.88.88.0/30    88.88.88.2               0             0 200 i
*>i99.99.99.0/30    99.99.99.2               0    100      0 300 i
*> 172.16.0.0/24    0.0.0.0                  1         32768 i
* i                 10.0.0.44                1    100      0 i
*>i172.16.128.0/24  99.99.99.2               0    100      0 300 i
*>i192.168.2.0      99.99.99.2               0    100      0 300 i

Total number of prefixes 13
vyatta@R1:~$
```

R1: show ip bgp

Example 2-10 shows R1’s BGP table *after* the import filter is applied.

Example 2-10 R1 inbound BGP routes after import filtering

```
vyatta@R1:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.0.11
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*>i3.0.0.0/24       99.99.99.2               0    100      0 300 i
*>i3.1.0.0/24       99.99.99.2               0    100      0 300 i
*>i3.2.0.0/24       99.99.99.2               0    100      0 300 i
*> 12.0.0.0         88.88.88.2               0             0 200 i
*>i13.0.0.0/24      99.99.99.2               0    100      0 300 i
*>i99.99.99.0/30    99.99.99.2               0    100      0 300 i
*> 172.16.0.0/24    0.0.0.0                  1         32768 i
* i                 10.0.0.44                1    100      0 i
*>i172.16.128.0/24  99.99.99.2               0    100      0 300 i
*>i192.168.2.0      99.99.99.2               0    100      0 300 i

Total number of prefixes 9
vyatta@R1:~$
```

Note that only 12.0.0.0 from 88.88.88.2 is still in the table.

R4: show ip bgp

Example 2-11 shows R4’s BGP table *before* the import filter is applied.

Example 2-11 R4 inbound BGP routes before import filtering

```
vyatta@R4:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.0.44
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 3.0.0.0/24       99.99.99.2               0             0 300 i
*> 3.1.0.0/24       99.99.99.2               0             0 300 i
*> 3.2.0.0/24       99.99.99.2               0             0 300 i
*>i12.0.0.0         88.88.88.2               0    100      0 200 i
*> 13.0.0.0/24      99.99.99.2               0             0 300 i
*> 99.99.99.0/30    99.99.99.2               0             0 300 i
* i172.16.0.0/24    10.0.0.11                1    100      0 i
*>                  0.0.0.0                  1         32768 i
*> 172.16.128.0/24  99.99.99.2               0             0 300 i
*> 192.168.2.0      99.99.99.2               0             0 300 i

Total number of prefixes 9
vyatta@R4:~$
```

R4: show ip bgp

The output below shows R4’s BGP table *after* the import filter is applied.

Example 2-12 R4 inbound BGP routes after import filtering

```
vyatta@R4:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.0.44
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 3.0.0.0/24       99.99.99.2               0             0 300 i
*> 3.1.0.0/24       99.99.99.2               0             0 300 i
*> 3.2.0.0/24       99.99.99.2               0             0 300 i
*>i12.0.0.0         88.88.88.2               0    100      0 200 i
*> 13.0.0.0/24      99.99.99.2               0             0 300 i
*> 99.99.99.0/30    99.99.99.2               0             0 300 i
* i172.16.0.0/24    10.0.0.11                1    100      0 i
*>                  0.0.0.0                  1         32768 i

Total number of prefixes 7
vyatta@R4:~$
```

Filtering Outbound Routes using AS Path Lists

This section presents the following topics:

- AS-path-list Configuration
- Verifying the Outbound Filter

AS-path-list Configuration

Filtering outbound prefixes is another common BGP configuration requirement. On the Vyatta system this is accomplished using routing policies that are then applied to the BGP process as “export” policies.

The example in this section assumes that AS100 does not want to be a transit AS for AS 200 or AS 300. This means that:

- eBGP routes from R1’s eBGP peer (AS 200) should not be sent to R4’s eBGP peer.

- Routes from R4’s eBGP peer (AS 300) should not be sent to R1’s eBGP peer.

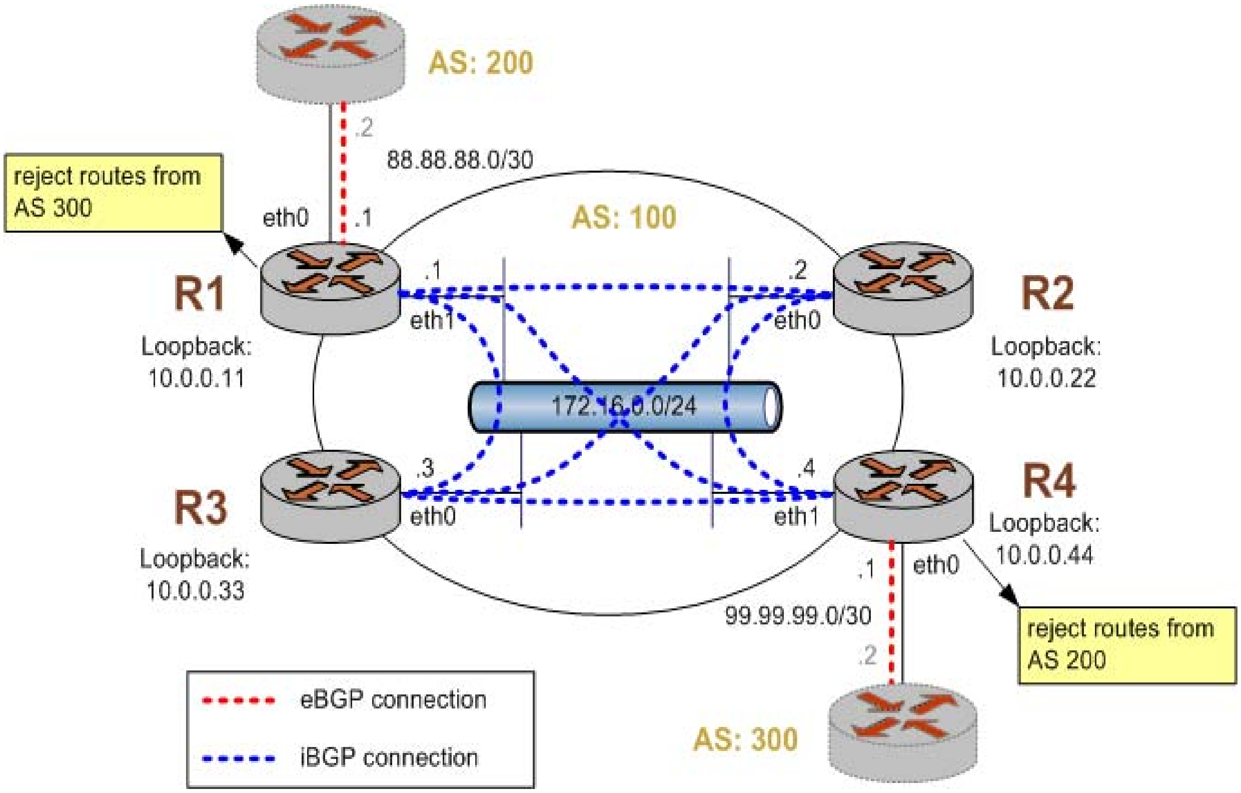
If we *did not* implement this filtering, AS 300 might send traffic destined for AS 200 to router R4, and this traffic would then be carried across the AS 100 network.

There are several ways that this routing policy could be implemented: two most common are basing the filter on the network prefix or basing it on the AS Path. In this example, we update the existing BGP export policy to add some additional restrictions that will prevent AS 100 from acting as a transit network for AS 200 and AS 300.

This export policy is shown in Figure 2-3.

NOTE *We assume that the routers in AS100 have been configured for iBGP and eBGP as shown and that the routers in AS200 and AS300 are configured appropriately as eBGP peers.*

Figure 2-3 Filtering outbound routes



To create this export policy, perform the following steps in configuration mode:

Example 2-13 Creating an export policy

Router	Step	Command(s)

Example 2-13 Creating an export policy

R1	Create a list of AS paths to deny. In this case we just have one - AS300.	vyatta@R1# **set policy as-path-list AS300 rule 1 action permit** vyatta@R1# **set policy as-path-list AS300 rule 1 regex 300**
R1	Create a route map rule to deny all AS paths in our list.	vyatta@R1# **set policy route-map eBGP-EXPORT rule 10 action deny** vyatta@R1# **set policy route-map eBGP-EXPORT rule 10 match as-path AS300**
R1	Create a route map rule to permit all other prefixes.	vyatta@R1# **set policy route-map eBGP-EXPORT rule 20 action permit**
R1	Assign the route map policy created as the export route map policy for AS 200.	vyatta@R1# **set protocols bgp 100 neighbor 88.88.88.2 route-map export eBGP-EXPORT**
R1	Commit the configuration.	vyatta@R1# **commit**
R1	Reset the BGP session to the peer so that the new policies are enabled.	vyatta@R1# **run reset ip bgp 88.88.88.2**

Example 2-13 Creating an export policy

R1	Display the policy configurations.	vyatta@R1# **show policy as-path-list AS300**
		 rule 1 {
		     action permit
		     regex 300
		 }
		vyatta@R1# **show policy route-map eBGP-EXPORT**
		 rule 10 {
		     action deny
		     match {
		         as-path AS300
		     }
		 }
		 rule 20 {
		     action permit
		 }
		vyatta@R1#

R1	Display the BGP configuration for eBGP neighbor 88.88.88.2.	vyatta@R1# **show protocols bgp 100 neighbor 88.88.88.2**
		 remote-as 200
		 route-map {
		     export eBGP-EXPORT
		     import eBGP-IMPORT
		 }
		vyatta@R1#

R4	Create a list of AS paths to deny. In this case we just have one - AS200.	vyatta@R4# **set policy as-path-list AS200 rule 1 action permit** vyatta@R4# **set policy as-path-list AS200 rule 1 regex 200**
R4	Create a route map rule to deny all AS paths in our list.	vyatta@R4# **set policy route-map eBGP-EXPORT rule 10 action deny** vyatta@R4# **set policy route-map eBGP-EXPORT rule 10 match as-path AS200**
R4	Create a route map rule to permit all other prefixes.	vyatta@R4# **set policy route-map eBGP-EXPORT rule 20 action permit**

Example 2-13 Creating an export policy

<table>
<tr><td>R4</td><td>Assign the route map policy created as the export route map policy for AS 300.</td><td><pre>
vyatta@R4# set protocols bgp 100 neighbor 99.99.99.2 route-map
export eBGP-EXPORT
</pre></td></tr>
<tr><td>R4</td><td>Commit the configuration.</td><td><pre>
vyatta@R4# commit
</pre></td></tr>
<tr><td>R4</td><td>Reset the BGP session to the peer so that the new policies are enabled.</td><td><pre>
vyatta@R4# run reset ip bgp 99.99.99.2
</pre></td></tr>
<tr><td>R4</td><td>Display the policy configurations.</td><td><pre>
vyatta@R4# show policy as-path-list AS200
 rule 1 {
     action permit
     regex 200
 }
vyatta@R4# show policy route-map eBGP-EXPORT
 rule 10 {
     action deny
     match {
         as-path AS200
     }
 }
 rule 20 {
     action permit
 }
vyatta@R4#
</pre></td></tr>
<tr><td>R4</td><td>Display the BGP configuration for eBGP neighbor 99.99.99.2.</td><td><pre>
vyatta@R4# show protocols bgp 100 neighbor 99.99.99.2
 remote-as 300
 route-map {
     export eBGP-EXPORT
     import eBGP-IMPORT
 }
vyatta@R4#
</pre></td></tr>
</table>

Verifying the Outbound Filter

The following commands can be used to verify the outbound filter configuration.

AS 200: show ip bgp

Example 2-14 shows AS 200’s BGP table *before* the export filter is applied.

Example 2-14 AS 200 outbound BGP routes before export filtering

```
vyatta@AS200:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.11.11
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 2.0.0.0/24       0.0.0.0                  0         32768 i
*> 2.1.0.0/24       0.0.0.0                  0         32768 i
*> 2.2.0.0/24       0.0.0.0                  0         32768 i
*> 3.0.0.0/24       88.88.88.1                             0 100 300 i
*> 3.1.0.0/24       88.88.88.1                             0 100 300 i
*> 3.2.0.0/24       88.88.88.1                             0 100 300 i
*> 12.0.0.0         0.0.0.0                  0         32768 i
*> 13.0.0.0/24      88.88.88.1                             0 100 300 i
*> 88.88.88.0/30    0.0.0.0                  0         32768 i
*> 99.99.99.0/30    88.88.88.1                             0 100 300 i
*> 172.16.0.0/24    88.88.88.1               1             0 100 i

Total number of prefixes 11
vyatta@AS200:~$
```

AS 200: show ip bgp

Example 2-15 shows AS 200’s BGP table *after* the export filter is applied.

Example 2-15 AS 200 outbound BGP routes after export filtering

```
vyatta@AS200:~$ show ip bgp
BGP table version is 0, local router ID is 10.0.11.11
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
   Network          Next Hop            Metric LocPrf Weight Path
*> 2.0.0.0/24       0.0.0.0                  0         32768 i
*> 2.1.0.0/24       0.0.0.0                  0         32768 i
*> 2.2.0.0/24       0.0.0.0                  0         32768 i
*> 12.0.0.0         0.0.0.0                  0         32768 i
*> 88.88.88.0/30    0.0.0.0                  0         32768 i
*> 172.16.0.0/24    88.88.88.1               1             0 100 i

Total number of prefixes 6
vyatta@AS200:~$
```

Chapter 3: Routing Policy Commands

This chapter describes Vyatta system routing policy commands.

This chapter contains the following commands.

Configuration Commands	
Access Lists	
policy access-list <list-num>	Defines an access list.
policy access-list <list-num> description <desc>	Allows you to specify a brief description for an access list.
policy access-list <list-num> rule <rule-num>	Creates a rule for an access list.
policy access-list <list-num> rule <rule-num> action	Specifies the action to be taken for packets matching an access list rule.
policy access-list <list-num> rule <rule-num> description <desc>	Allows you to specify a brief description for an access list rule.
policy access-list <list-num> rule <rule-num> destination	Defines match criteria for an access list rule based on destination.
policy access-list <list-num> rule <rule-num> source	Defines match criteria for an access list rule based on source.
IPv6 Access Lists	
policy access-list6 <list-name>	Defines an IPv6 access list.
policy access-list6 <list-name> description <desc>	Allows you to specify a brief description for an IPv6 access list.
policy access-list6 <list-name> rule <rule-num>	Creates a rule for an IPv6 access list.
policy access-list6 <list-name> rule <rule-num> action	Specifies the action to be taken for packets matching an IPv6 access list rule.
policy access-list6 <list-name> rule <rule-num> description <desc>	Allows you to specify a brief description for an IPv6 access list rule.
policy access-list6 <list-name> rule <rule-num> source	Defines match criteria for an IPv6 access list rule based on source.
AS Path Lists	
policy as-path-list <list-name>	Defines an autonomous system (AS) path list.
policy as-path-list <list-name> description <desc>	Allows you to specify a brief description for an AS path list.
policy as-path-list <list-name> rule <rule-num>	Creates a rule for an AS path list.
policy as-path-list <list-name> rule <rule-num> action	Specifies the action to be taken for packets matching an AS path list rule.

policy as-path-list <list-name> rule <rule-num> description <desc>	Allows you to specify a brief description for an AS path list rule.
policy as-path-list <list-name> rule <rule-num> regex <regex>	Defines match criteria for an AS path list rule based on a regular expression.
Community Lists	
policy community-list <list-num>	Defines a BGP community list.
policy community-list <list-num> description <desc>	Allows you to specify a brief description for a community list.
policy community-list <list-num> rule <rule-num>	Creates a rule for a community list.
policy community-list <list-num> rule <rule-num> action	Specifies the action to be taken for packets matching a community list rule.
policy community-list <list-num> rule <rule-num> description <desc>	Allows you to specify a brief description for a community list rule.
policy community-list <list-num> rule <rule-num> regex <regex>	Defines match criteria for a community list rule based on a regular expression.
Prefix Lists	
policy prefix-list <list-name>	Defines a prefix list.
policy prefix-list <list-name> description <desc>	Allows you to specify a brief description for a prefix list.
policy prefix-list <list-name> rule <rule-num>	Creates a rule for a prefix list.
policy prefix-list <list-name> rule <rule-num> action	Specifies the action to be taken for packets matching a prefix list rule.
policy prefix-list <list-name> rule <rule-num> description <desc>	Allows you to specify a brief description for a prefix list rule.
policy prefix-list <list-name> rule <rule-num> ge <value>	Defines match criteria for a prefix list rule based on a "greater-than-or-equal-to" numeric comparison.
policy prefix-list <list-name> rule <rule-num> le <value>	Defines a match criterion based on a "less-than-or-equal-to" numeric comparison for a prefix list rule.
policy prefix-list <list-name> rule <rule-num> prefix <ipv4net>	Defines match criteria for a prefix list rule based on an IPv4 network.
IPv6 Prefix Lists	
policy prefix-list6 <list-name>	Defines an IPv6 prefix list.

policy prefix-list6 <list-name> description <desc>	Allows you to specify a brief description for an IPv6 prefix list.
policy prefix-list6 <list-name> rule <rule-num>	Creates a rule for an IPv6 prefix list.
policy prefix-list6 <list-name> rule <rule-num> action	Specifies the action to be taken for packets matching an IPv6 prefix list rule.
policy prefix-list6 <list-name> rule <rule-num> description <desc>	Allows you to specify a brief description for an IPv6 prefix list rule.
policy prefix-list6 <list-name> rule <rule-num> ge <value>	Defines match criteria for an IPv6 prefix list rule based on a “greater-than-or-equal-to” numeric comparison.
policy prefix-list6 <list-name> rule <rule-num> le <value>	Defines a match criterion based on a “less-than-or-equal-to” numeric comparison for an IPv6 prefix list rule.
policy prefix-list6 <list-name> rule <rule-num> prefix <ipv6net>	Defines match criteria for a prefix list rule based on an IPv6 network.
Route Maps	
policy route-map <map-name>	Defines a route map for policy-based routing.
policy route-map <map-name> description <desc>	Allows you to specify a brief description for a route map.
policy route-map <map-name> rule <rule-num>	Creates a rule for a route map.
policy route-map <map-name> rule <rule-num> action	Specifies the action to be taken for packets matching a route map rule.
policy route-map <map-name> rule <rule-num> call <target>	Calls to another route map.
policy route-map <map-name> rule <rule-num> continue <target-num>	Calls to another rule within the current route map.
policy route-map <map-name> rule <rule-num> description <desc>	Allows you to specify a brief description for a route map rule.
policy route-map <map-name> rule <rule-num> match as-path <list-name>	Defines a match condition for a route map based on an AS path list
policy route-map <map-name> rule <rule-num> match community	Defines a match condition for a route map based on BGP communities.
policy route-map <map-name> rule <rule-num> match interface <ethx>	Defines a match condition for a route map based on the first-hop interface.
policy route-map <map-name> rule <rule-num> match ip address	Defines a match condition for a route map based on IP address.

policy route-map <map-name> rule <rule-num> match ip nexthop	Defines a match condition for a route map based on the next-hop address.
policy route-map <map-name> rule <rule-num> match ip route-source	Defines a match condition for a route map based on the address from where a route is advertised.
policy route-map <map-name> rule <rule-num> match ipv6 address	Defines a match condition for a route map based on IPv6 address.
policy route-map <map-name> rule <rule-num> match ipv6 nexthop	Defines a match condition for a route map based on the next-hop IPv6 address.
policy route-map <map-name> rule <rule-num> match metric <metric>	Defines a match condition for a route map based on the route’s metric.
policy route-map <map-name> rule <rule-num> match origin	Defines a match condition for a route map based on the route’s origin.
policy route-map <map-name> rule <rule-num> match peer <ipv4>	Defines a match condition for a route map based on peer IP address.
policy route-map <map-name> rule <rule-num> match tag <tag>	Defines a match condition for a route map based on OSPF tag.
policy route-map <map-name> rule <rule-num> on-match	Specifies an alternative exit policy for a route map.
policy route-map <map-name> rule <rule-num> set aggregator	Modifies the BGP aggregator attribute of a route.
policy route-map <map-name> rule <rule-num> set as-path-prepend <prepend>	Sets or prepends to the AS path of the route.
policy route-map <map-name> rule <rule-num> set atomic-aggregate	Sets the BGP atomic-aggregate attribute in a route.
policy route-map <map-name> rule <rule-num> set comm-list	Modifies the BGP community list in a route.
policy route-map <map-name> rule <rule-num> set community	Modifies the BGP communities attribute in a route.
policy route-map <map-name> rule <rule-num> set ip-next-hop <ipv4>	Modifies the next hop destination of a route.
policy route-map <map-name> rule <rule-num> set ipv6-next-hop <scope> <ipv6>	Modifies the IPv6 next hop destination of a route.
policy route-map <map-name> rule <rule-num> set local-preference <local-pref>	Modifies the BGP local-pref attribute in a route.
policy route-map <map-name> rule <rule-num> set metric <metric>	Modifies the metric of a route.

policy route-map <map-name> rule <rule-num> set metric-type <type>	Specifies the OSPF external metric-type for a route.
policy route-map <map-name> rule <rule-num> set origin	Modifies the BGP origin code of a route.
policy route-map <map-name> rule <rule-num> set originator-id <ipv4>	Modifies the BGP originator ID attribute of a route.
policy route-map <map-name> rule <rule-num> set tag <tag>	Modifies the OSPF tag value of a route.
policy route-map <map-name> rule <rule-num> set weight <weight>	Modifies the BGP weight of a route.
Operational Commands	
show ip access-list	Displays all IP access lists.
show ip as-path-access-list	Displays all as-path access lists.
show ip community-list	Displays all IP community lists.
show ip extcommunity-list	Displays all extended IP community lists.
show ip prefix-list	Displays IP prefix lists.
show ip protocol	Displays IP route maps per protocol.
show route-map	Displays route map information.

policy access-list <list-num>

Defines an access list.

Syntax

set policy access-list *list-num*

delete policy access-list *list-num*

show policy access-list *list-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list list-num {}
}
```

Parameters

list-num	Multi-node. A numeric identifier for the access list. Access list numbers can take the following values: 1 to 99: IP standard access list 100 to 199: IP extended access list 1300 to 1999: IP standard access list (expanded range) 2000 to 2699: IP extended access list (expanded range) You can create multiple access lists by creating multiple **policy access-list** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create an access list.

Use the **delete** form of this command to remove an access list.

Use the **show** form of this command to display access list configuration.

policy access-list <list-num> description <desc>

Allows you to specify a brief description for an access list.

Syntax

set policy access-list *list-num* **description** *desc*

delete policy access-list *list-num* **description**

show policy access-list *list-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list list-num {
      description desc
   }
}
```

Parameters

list-num	The number of a defined access list.
desc	A brief text description for the access list.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for an access list.

Use the **delete** form of this command to remove an access list description.

Use the **show** form of this command to display the description for an access list.

policy access-list <list-num> rule <rule-num>

Creates a rule for an access list.

Syntax

set policy access-list *list-num* **rule** *rule-num*

delete policy access-list *list-num* **rule** *rule-num*

show policy access-list *list-num* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list list-num {
      rule rule-num {}
   }
}
```

Parameters

list-num	The number of a defined access list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create an access list rule.

Use the **delete** form of this command to remove an access list rule.

Use the **show** form of this command to display configuration settings for an access list rule.

policy access-list <list-num> rule <rule-num> action

Specifies the action to be taken for packets matching an access list rule.

Syntax

set policy access-list *list-num* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy access-list *list-num* **rule** *rule-num* **action**

show policy access-list *list-num* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list list-num {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
}
```

Parameters

list-num	The number of a defined access list.
rule-num	The number of a defined access list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, packets meeting the match criteria of the rule are forwarded.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy access-list <list-num> rule <rule-num> description <desc>

Allows you to specify a brief description for an access list rule.

Syntax

set policy access-list *list-num* **rule** *rule-num* **description** *desc*

delete policy access-list *list-num* **rule** *rule-num* **description**

show policy access-list *list-num* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list list-num {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-num	The number of a defined access list.
rule-num	The number of a defined access list rule.
desc	A brief text description for the access list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for an access list rule.

Use the **delete** form of this command to remove an access list rule description.

Use the **show** form of this command to display an access list rule description.

policy access-list <list-num> rule <rule-num> destination

Defines match criteria for an access list rule based on destination.

Syntax

set policy access-list *list-num* **rule** *rule-num* **destination** {**any** | **host** *ipv4* | **inverse-mask** *ipv4* | **network** *ipv4net*}

delete policy access-list *list-num* **rule** *rule-num* **destination**

show policy access-list *list-num* **rule** *rule-num* **destination**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list list-num {
        rule rule-num {
            destination {
                any
                host ipv4
                inverse-mask ipv4
                network ipv4net
            }
        }
    }
}
```

Parameters

list-num	The number of a defined access list.
rule-num	The number of a defined access list.
any	Match packets destined for any destination. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.
host *ipv4*	Match packets destined for the specified IPv4 host. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.

inverse-mask *ipv4*	Match packets destined for the network specified by the mask. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.
network *ipv4net*	Match packets destined for the specified network. The format is *ip-address/prefix*. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify the destination match criteria for this access list rule.

Use the **delete** form of this command to remove configured destination match criteria for this rule. If no match criteria are specified, no packet filtering on destination will take place; that is, packets to all destinations are permitted.

Use the **show** form of this command to display configuration settings for access list rule destination packet filtering.

policy access-list <list-num> rule <rule-num> source

Defines match criteria for an access list rule based on source.

Syntax

set policy access-list *list-num* **rule** *rule-num* **source** {**any** | **host** *ipv4* | **inverse-mask** *ipv4* | **network** *ipv4net*}

delete policy access-list *list-num* **rule** *rule-num* **source**

show policy access-list *list-num* **rule** *rule-num* **source**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list list-num {
        rule rule-num {
            source {
                any
                host ipv4
                inverse-mask ipv4
                network ipv4net
            }
        }
    }
}
```

Parameters

list-num	The number of a defined access list.
rule-num	The number of a defined access list rule.
any	Match packets coming from any source. Exactly one of **any, host, inverse-mask**, and **network** is mandatory.
host *ipv4*	Match packets coming from the specified IPv4 host. Exactly one of **any, host, inverse-mask**, and **network** is mandatory.

inverse-mask *ipv4*	Match packets coming from the network specified by the mask. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.
network *ipv4net*	Match packets coming from the specified network. The format is *ip-address/prefix*. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify the source match criteria for this access list rule.

Use the **delete** form of this command to remove the configured source match criteria for this rule. If no match criteria are specified, no packet filtering on source will take place; that is, packets from all sources are permitted.

Use the **show** form of this command to display configuration settings for access list rule source packet filtering.

policy access-list6 <list-name>

Defines an IPv6 access list.

Syntax

set policy access-list6 *list-name*

delete policy access-list6 *list-name*

show policy access-list6 *list-name*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list6 list-name {}
}
```

Parameters

list-name	Multi-node. The name of an IPv6 access list. You can create multiple access lists by creating multiple **policy access-list** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create an access list.

Use the **delete** form of this command to remove an access list.

Use the **show** form of this command to display access list configuration.

policy access-list6 <list-name> description <desc>

Allows you to specify a brief description for an IPv6 access list.

Syntax

set policy access-list6 *list-name* **description** *desc*

delete policy access-list6 *list-name* **description**

show policy access-list6 *list-name* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list6 list-name {
      description desc
   }
}
```

Parameters

list-name	The name of an IPv6 access list.
desc	A brief text description for the access list.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for an access list.

Use the **delete** form of this command to remove an access list description.

Use the **show** form of this command to display the description for an access list.

policy access-list6 <list-name> rule <rule-num>

Creates a rule for an IPv6 access list.

Syntax

set policy access-list6 *list-name* **rule** *rule-num*

delete policy access-list6 *list-name* **rule** *rule-num*

show policy access-list6 *list-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   access-list6 list-name {
      rule rule-num {}
   }
}
```

Parameters

list-name	The name of an IPv6 access list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 65535. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create an access list rule.

Use the **delete** form of this command to remove an access list rule.

Use the **show** form of this command to display configuration settings for an access list rule.

policy access-list6 <list-name> rule <rule-num> action

Specifies the action to be taken for packets matching an IPv6 access list rule.

Syntax

set policy access-list6 *list-name* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy access-list6 *list-name* **rule** *rule-num* **action**

show policy access-list6 *list-name* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list6 list-name {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
}
```

Parameters

list-name	The name of an IPv6 access list.
rule-num	The number of a defined access list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, packets meeting the match criteria of the rule are forwarded.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy access-list6 <list-name> rule <rule-num> description <desc>

Allows you to specify a brief description for an IPv6 access list rule.

Syntax

set policy access-list6 *list-name* **rule** *rule-num* **description** *desc*

delete policy access-list6 *list-name* **rule** *rule-num* **description**

show policy access-list6 *list-name* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list6 list-name {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-name	The name of an IPv6 access list.
rule-num	The number of a defined access list rule.
desc	A brief text description for the access list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for an access list rule.

Use the **delete** form of this command to remove an access list rule description.

Use the **show** form of this command to display an access list rule description.

policy access-list6 <list-name> rule <rule-num> destination

Defines match criteria for an IPv6 access list rule based on destination.

Syntax

set policy access-list6 *list-name* **rule** *rule-num* **destination** {**any** | **host** *ipv6* | **inverse-mask** *ipv6* | **network** *ipv6net*}

delete policy access-list6 *list-name* **rule** *rule-num* **destination**

show policy access-list6 *list-name* **rule** *rule-num* **destination**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list6 list-name {
        rule rule-num {
            destination {
                any
                host ipv6
                inverse-mask ipv6
                network ipv6net
            }
        }
    }
}
```

Parameters

list-name	The name of an IPv6 access list.
rule-num	The number of a defined IPv6 access list.
any	Match packets destined for any destination. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.
host *ipv6*	Match packets destined for the specified IPv6 host. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.

inverse-mask *ipv6*	Match packets destined for the network specified by the mask. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.
network *ipv6net*	Match packets destined for the specified network. The format is *ipv6-address/prefix*. Exactly one of **any**, **host**, **inverse-mask**, and **network** is mandatory.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify the destination match criteria for this access list rule.

Use the **delete** form of this command to remove configured destination match criteria for this rule. If no match criteria are specified, no packet filtering on destination will take place; that is, packets to all destinations are permitted.

Use the **show** form of this command to display configuration settings for access list rule destination packet filtering.

policy access-list6 <list-name> rule <rule-num> source

Defines match criteria for an IPv6 access list rule based on source.

Syntax

set policy access-list6 *list-name* **rule** *rule-num* **source** {**any** | **exact-match** | **network** *ipv6net*}

delete policy access-list6 *list-name* **rule** *rule-num* **source**

show policy access-list6 *list-name* **rule** *rule-num* **source**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    access-list6 list-name {
        rule rule-num {
            source {
                any
                exact-match
                network ipv6net
            }
        }
    }
}
```

Parameters

list-name	The name of an IPv6 access list.
rule-num	The number of a defined IPv6 access list rule.
any	Match packets coming from any source. Exactly one of **any**, **exact-match**, and **network** is mandatory.
exact-match	Match packets coming from one of the network prefixes. Exactly one of **any**, **exact-match**, and **network** is mandatory.

network *ipv6net*	Match packets coming from the specified network. The format is *iv6p-address/prefix*. Exactly one of **any**, **exact-match**, and **network** is mandatory.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify the source match criteria for this access list rule.

Use the **delete** form of this command to remove the configured source match criteria for this rule. If no match criteria are specified, no packet filtering on source will take place; that is, packets from all sources are permitted.

Use the **show** form of this command to display configuration settings for access list rule source packet filtering.

policy as-path-list <list-name>

Defines an autonomous system (AS) path list.

Syntax

set policy as-path-list *list-name*

delete policy as-path-list *list-name*

show policy as-path-list *list-name*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   as-path-list list-name {}
}
```

Parameters

list-name	Multi-node.A text identifier for the AS path list. You can create multiple AS path lists by creating multiple **policy as-path-list** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to define an autonomous system (AS) path list for use in policy-based routing.

Use the **delete** form of this command to remove an AS path list.

Use the **show** form of this command to display AS path list configuration.

policy as-path-list <list-name> description <desc>

Allows you to specify a brief description for an AS path list.

Syntax

set policy as-path-list *list-name* **description** *desc*

delete policy as-path-list *list-name* **description**

show policy as-path-list *list-name* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   as-path-list list-name {
      description desc
   }
}
```

Parameters

list-name	The name of a defined AS path list.
desc	A brief text description for the AS path list.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify a description for an AS path list.

Use the **delete** form of this command to remove an AS path list description.

Use the **show** form of this command to display an AS path list description.

policy as-path-list <list-name> rule <rule-num>

Creates a rule for an AS path list.

Syntax

set policy as-path-list *list-name* **rule** *rule-num*

delete policy as-path-list *list-name* **rule** *rule-num*

show policy as-path-list *list-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   as-path-list list-name {
      rule rule-num {}
   }
}
```

Parameters

list-name	The name of a defined AS path list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create an AS path list rule.

Use the **delete** form of this command to remove an AS path list rule.

Use the **show** form of this command to display configuration settings for an AS path list rule.

policy as-path-list <list-name> rule <rule-num> action

Specifies the action to be taken for packets matching an AS path list rule.

Syntax

set policy as-path-list *list-name* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy as-path-list *list-name* **rule** *rule-num* **action**

show policy as-path-list *list-name* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    as-path-list list-name {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
}
```

Parameters

list-name	The name of a defined AS path list.
rule-num	The number of a defined AS path list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, destination-based routing is performed; that is, packets are sent using the normal forwarding channels.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy as-path-list <list-name> rule <rule-num> description <desc>

Allows you to specify a brief description for an AS path list rule.

Syntax

set policy as-path-list *list-name* **rule** *rule-num* **description** *desc*

delete policy as-path-list *list-name* **rule** *rule-num* **description**

show policy as-path-list *list-name* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    as-path-list list-name {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-name	The name of a defined AS path list.
rule-num	The number of a defined AS path list rule.
desc	A brief text description for the AS path list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to specify a description for an AS path list.

Use the **delete** form of this command to remove an AS path list description.

Use the **show** form of this command to display an AS path list description.

policy as-path-list <list-name> rule <rule-num> regex <regex>

Defines match criteria for an AS path list rule based on a regular expression.

Syntax

set policy as-path-list *list-name* **rule** *rule-num* **regex** *regex*

delete policy as-path-list *list-name* **rule** *rule-num* **regex**

show policy as-path-list *list-name* **rule** *rule-num* **regex**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    as-path-list list-name {
        rule rule-num {
            regex regex
        }
    }
}
```

Parameters

list-name	The name of a defined AS path list.
rule-num	The number of a defined AS path list rule.
regex	A POSIX-style regular expression representing an AS path list.

Default

If no regular expression is defined, all packets are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to define the match criteria to be used to determine forwarding policy based on AS paths.

Packets are matched based on whether the AS paths listed in the packet match the regular expression defined using this command. Depending on the action defined for the rule using policy as-path-list <list-name> rule <rule-num> action command, matched packets are either permitted or denied.

Use the **delete** form of this command to remove the regular expression entry. If no regular expression is defined, all packets are considered to match the rule.

Use the **show** form of this command to display the regular expression entry.

policy community-list <list-num>

Defines a BGP community list.

Syntax

set policy community-list *list-num*

delete policy community-list *list-num*

show policy community-list *list-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    community-list list-num {}
}
```

Parameters

list-num	Multi-node. A numeric identifier for the community list. You can create multiple community lists by creating multiple **policy community-list** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a BGP community list for use in policy-based routing.

Use the **delete** form of this command to remove a community list.

Use the **show** form of this command to display community list configuration.

policy community-list <list-num> description <desc>

Allows you to specify a brief description for a community list.

Syntax

set policy community-list *list-num* **description** *desc*

delete policy community-list *list-num* **description**

show policy community-list *list-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    community-list list-num {
        description desc
    }
}
```

Parameters

list-num	The number of a defined community list.
desc	A brief text description for the community list.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a community list.

Use the **delete** form of this command to remove a community list description.

Use the **show** form of this command to display the description for a community list.

policy community-list <list-num> rule <rule-num>

Creates a rule for a community list.

Syntax

set policy community-list *list-num* **rule** *rule-num*

delete policy community-list *list-num* **rule** *rule-num*

show policy community-list *list-num* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   community-list list-num {
      rule rule-num {}
   }
}
```

Parameters

list-num	The number of a defined community list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a community list rule.

Use the **delete** form of this command to remove a community list rule.

Use the **show** form of this command to display configuration settings for a community list rule.

policy community-list <list-num> rule <rule-num> action

Specifies the action to be taken for packets matching a community list rule.

Syntax

set policy community-list *list-num* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy community-list *list-num* **rule** *rule-num* **action**

show policy community-list *list-num* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    community-list list-num {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
}
```

Parameters

list-num	The number of a defined community list.
rule-num	The number of a defined community list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, destination-based routing is performed; that is, packets are sent using the normal forwarding channels.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy community-list <list-num> rule <rule-num> description <desc>

Allows you to specify a brief description for a community list rule.

Syntax

set policy community-list *list-num* **rule** *rule-num* **description** *desc*

delete policy community-list *list-num* **rule** *rule-num* **description**

show policy community-list *list-num* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    community-list list-num {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-num	The number of a defined community list.
rule-num	The number of a defined community list rule.
desc	A brief text description for the community list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a community list rule.

Use the **delete** form of this command to remove a community list rule description.

Use the **show** form of this command to display the description for a community list rule.

policy community-list <list-num> rule <rule-num> regex <regex>

Defines match criteria for a community list rule based on a regular expression.

Syntax

set policy community-list *list-num* **rule** *rule-num* **regex** *regex*

delete policy community-list *list-num* **rule** *rule-num* **regex**

show policy community-list *list-num* **rule** *rule-num* **regex**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    community-list list-num {
        rule rule-num {
            regex regex
        }
    }
}
```

Parameters

list-num	The number of a defined community list.
rule-num	The number of a defined community list rule.
regex	A POSIX-style regular expression representing a BGP community list.

Default

If no regular expression is defined, all packets are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to define the match criteria to be used to determine forwarding policy based on BGP community.

Packets are matched based on whether the communities listed in the packet match the regular expression defined using this command. Depending on the action defined for the rule using policy community-list <list-num> rule <rule-num> action command, matched packets are either permitted or denied.

Use the **delete** form of this command to remove the regular expression entry. If no regular expression is defined, all packets are considered to match the rule.

Use the **show** form of this command to display the regular expression entry.

policy prefix-list <list-name>

Defines a prefix list.

Syntax

set policy prefix-list *list-name*

delete policy prefix-list *list-name*

show policy prefix-list *list-name*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   prefix-list list-name {}
}
```

Parameters

list-name	Multi-node. A text identifier for the prefix list. You can create multiple prefix lists by creating multiple **policy prefix-list** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a prefix list for use in policy-based routing.

Use the **delete** form of this command to remove a prefix list.

Use the **show** form of this command to display prefix list configuration.

policy prefix-list <list-name> description <desc>

Allows you to specify a brief description for a prefix list.

Syntax

set policy prefix-list *list-name* **description** *desc*

delete policy prefix-list *list-name* **description**

show policy prefix-list *list-name* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        description desc
    }
}
```

Parameters

list-name	The name of a defined prefix list.
desc	A brief text description for the prefix list.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a prefix list.

Use the **delete** form of this command to remove a prefix list description.

Use the **show** form of this command to display the description for a prefix list.

policy prefix-list <list-name> rule <rule-num>

Creates a rule for a prefix list.

Syntax

set policy prefix-list *list-name* **rule** *rule-num*

delete policy prefix-list *list-name* **rule** *rule-num*

show policy prefix-list *list-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   prefix-list list-name {
      rule rule-num {}
   }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a prefix list rule.

Use the **delete** form of this command to remove a prefix list rule.

Use the **show** form of this command to display configuration settings for a prefix list rule.

policy prefix-list <list-name> rule <rule-num> action

Specifies the action to be taken for packets matching a prefix list rule.

Syntax

set policy prefix-list *list-name* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy prefix-list *list-name* **rule** *rule-num* **action**

show policy prefix-list *list-name* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, destination-based routing is performed; that is, packets are sent using the normal forwarding channels.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy prefix-list <list-name> rule <rule-num> description <desc>

Allows you to specify a brief description for a prefix list rule.

Syntax

set policy prefix-list *list-name* **rule** *rule-num* **description** *desc*

delete policy prefix-list *list-name* **rule** *rule-num* **description**

show policy prefix-list *list-name* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
desc	A brief text description for the prefix list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a prefix list rule.

Use the **delete** form of this command to remove a prefix list rule description.

Use the **show** form of this command to display the description for a prefix list rule.

policy prefix-list <list-name> rule <rule-num> ge <value>

Defines match criteria for a prefix list rule based on a “greater-than-or-equal-to” numeric comparison.

Syntax

set policy prefix-list *list-name* **rule** *rule-num* **ge** *value*

delete policy prefix-list *list-name* **rule** *rule-num* **ge**

show policy prefix-list *list-name* **rule** *rule-num* **ge**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        rule rule-num {
            ge value
        }
    }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
value	A number representing a network prefix. Network prefixes greater than or equal to this number will match this rule. The range of values is 0 to 32.

Default

If no prefix is specified, all network prefixes are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network prefix for determining routing. The network prefixes of incoming packets are compared with this value; if the prefix is greater than or equal to the specified prefix, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified “ge” prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as “ge” prefix.

policy prefix-list <list-name> rule <rule-num> le <value>

Defines a match criterion based on a “less-than-or-equal-to” numeric comparison for a prefix list rule.

Syntax

set policy prefix-list *list-name* **rule** *rule-num* **le** *value*

delete policy prefix-list *list-name* **rule** *rule-num* **le**

show policy prefix-list *list-name* **rule** *rule-num* **le**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        rule rule-num {
            le value
        }
    }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
value	A number representing a network prefix. Network prefixes less than or equal to this number will match this rule. The range of values is 0 to 32.

Default

If no prefix is specified, all network prefixes are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network prefix for determining routing policy. The network prefixes of incoming packets are compared with this value; if the prefix is less than or equal to the specified prefix, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified “le” prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as “le” prefix.

policy prefix-list <list-name> rule <rule-num> prefix <ipv4net>

Defines match criteria for a prefix list rule based on an IPv4 network.

Syntax

set policy prefix-list *list-name* **rule** *rule-number* **prefix** *ipv4net*

delete policy prefix-list *list-name* **rule** *rule-num* **prefix**

show policy prefix-list *list-name* **rule** *rule-num* **prefix**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list list-name {
        rule rule-number {
            prefix ipv4net
        }
    }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
ipv4net	An IPv4 network. Networks exactly matching this network will match this rule. The format is *ip-address/prefix*.

Default

If no network is specified, all networks are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network for determining routing policy. The network specified in incoming packets are compared with this value; if it exactly matches the network specified in this command, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified “ge” prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as “ge” prefix.

policy prefix-list6 <list-name>

Defines an IPv6 prefix list.

Syntax

set policy prefix-list6 *list-name*

delete policy prefix-list6 *list-name*

show policy prefix-list6 *list-name*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   prefix-list6 list-name {}
}
```

Parameters

list-name	Multi-node. A text identifier for the IPv6 prefix list. You can create multiple IPv6 prefix lists by creating multiple **policy prefix-list6** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a prefix list for use in policy-based routing.

Use the **delete** form of this command to remove a prefix list.

Use the **show** form of this command to display prefix list configuration.

policy prefix-list6 <list-name> description <desc>

Allows you to specify a brief description for an IPv6 prefix list.

Syntax

set policy prefix-list6 *list-name* **description** *desc*

delete policy prefix-list6 *list-name* **description**

show policy prefix-list6 *list-name* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   prefix-list6 list-name {
      description desc
   }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
desc	A brief text description for the prefix list.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a prefix list.

Use the **delete** form of this command to remove a prefix list description.

Use the **show** form of this command to display the description for a prefix list.

policy prefix-list6 <list-name> rule <rule-num>

Creates a rule for an IPv6 prefix list.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-num*

delete policy prefix-list6 *list-name* **rule** *rule-num*

show policy prefix-list6 *list-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   prefix-list6 list-name {
      rule rule-num {}
   }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a prefix list rule.

Use the **delete** form of this command to remove a prefix list rule.

Use the **show** form of this command to display configuration settings for a prefix list rule.

policy prefix-list6 <list-name> rule <rule-num> action

Specifies the action to be taken for packets matching an IPv6 prefix list rule.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy prefix-list6 *list-name* **rule** *rule-num* **action**

show policy prefix-list6 *list-name* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list6 list-name {
        rule rule-num {
            action {
                deny
                permit
            }
        }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
rule-num	The number of a defined IPv6 prefix list rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Packets matching this rule are forwarded.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, destination-based routing is performed; that is, packets are sent using the normal forwarding channels.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy prefix-list6 <list-name> rule <rule-num> description <desc>

Allows you to specify a brief description for an IPv6 prefix list rule.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-num* **description** *desc*

delete policy prefix-list6 *list-name* **rule** *rule-num* **description**

show policy prefix-list6 *list-name* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list6 list-name {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
rule-num	The number of a defined IPv6 prefix list rule.
desc	A brief text description for the prefix list rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a prefix list rule.

Use the **delete** form of this command to remove a prefix list rule description.

Use the **show** form of this command to display the description for a prefix list rule.

policy prefix-list6 <list-name> rule <rule-num> ge <value>

Defines match criteria for an IPv6 prefix list rule based on a "greater-than-or-equal-to" numeric comparison.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-num* **ge** *value*

delete policy prefix-list6 *list-name* **rule** *rule-num* **ge**

show policy prefix-list6 *list-name* **rule** *rule-num* **ge**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list6 list-name {
        rule rule-num {
            ge value
        }
    }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
rule-num	The number of a defined IPv6 prefix list rule.
value	A number representing a network prefix. Network prefixes greater than or equal to this number will match this rule. The range of values is 0 to 128.

Default

If no prefix is specified, all network prefixes are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network prefix for determining routing. The network prefixes of incoming packets are compared with this value; if the prefix is greater than or equal to the specified prefix, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified “ge” prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as “ge” prefix.

policy prefix-list6 <list-name> rule <rule-num> le <value>

Defines a match criterion based on a "less-than-or-equal-to" numeric comparison for an IPv6 prefix list rule.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-num* **le** *value*

delete policy prefix-list6 *list-name* **rule** *rule-num* **le**

show policy prefix-list6 *list-name* **rule** *rule-num* **le**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list6 list-name {
        rule rule-num {
            le value
        }
    }
}
```

Parameters

list-name	The name of a defined IPv6 prefix list.
rule-num	The number of a defined IPv6 prefix list rule.
value	A number representing a network prefix. Network prefixes less than or equal to this number will match this rule. The range of values is 0 to 128.

Default

If no prefix is specified, all network prefixes are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network prefix for determining routing policy. The network prefixes of incoming packets are compared with this value; if the prefix is less than or equal to the specified prefix, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified "le" prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as "le" prefix.

policy prefix-list6 <list-name> rule <rule-num> prefix <ipv6net>

Defines match criteria for a prefix list rule based on an IPv6 network.

Syntax

set policy prefix-list6 *list-name* **rule** *rule-number* **prefix** *ipv6net*

delete policy prefix-list6 *list-name* **rule** *rule-num* **prefix**

show policy prefix-list6 *list-name* **rule** *rule-num* **prefix**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    prefix-list6 list-name {
        rule rule-number {
            prefix ipv6net
        }
    }
}
```

Parameters

list-name	The name of a defined prefix list.
rule-num	The number of a defined prefix list rule.
ipv6net	An IPv6 network. Networks exactly matching this network will match this rule. The format is *ipv6-address/prefix* (that is *<x:x:x:x:x:x:x:x>/<0-128>*).

Default

If no network is specified, all networks are considered to match the rule.

Usage Guidelines

Use the **set** form of this command to specify a network for determining routing policy. The network specified in incoming packets are compared with this value; if it exactly matches the network specified in this command, the rule is matched and the action specified for the rule is taken.

Exactly one comparison (**ge**, **le**, or **prefix**) may be specified for a prefix list rule.

Use the **delete** form of this command to remove the specified “ge” prefix. If no prefix is specified, all network prefixes are considered to match the rule.

Use the **show** form of this command to display the value specified as “ge” prefix.

policy route-map <map-name>

Defines a route map for policy-based routing.

Syntax

set policy route-map *map-name*

delete policy route-map *map-name*

show policy route-map *map-name*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   route-map map-name {}
}
```

Parameters

map-name	Multi-node. A text identifier for the route map. You can create multiple route maps by creating multiple **policy route-map** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a route map for policy-based routing.

Use the **delete** form of this command to remove a route map.

Use the **show** form of this command to display route map configuration.

policy route-map <map-name> description <desc>

Allows you to specify a brief description for a route map.

Syntax

set policy route-map *map-name* **description** *desc*

delete policy route-map *map-name* **description**

show policy route-map *map-name* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        description desc
    }
}
```

Parameters

map-name	The name of a defined route map.
desc	A brief text description for the route map.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a route map.

Use the **delete** form of this command to remove a route map policy description.

Use the **show** form of this command to display the description for a route map.

policy route-map <map-name> rule <rule-num>

Creates a rule for a route map.

Syntax

set policy route-map *map-name* **rule** *rule-num*

delete policy route-map *map-name* **rule** *rule-num*

show policy route-map *map-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
   route-map map-name {
      rule rule-num {}
   }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	Multi-node. A numeric identifier for the rule. The range is 1 to 4294967295. You can define multiple rules by creating multiple **rule** configuration nodes.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a route map rule.

Use the **delete** form of this command to remove a route map rule.

Use the **show** form of this command to display configuration settings for a route map rule.

policy route-map <map-name> rule <rule-num> action

Specifies the action to be taken for packets matching a route map rule.

Syntax

set policy route-map *map-name* **rule** *rule-num* **action** {**deny** | **permit**}

delete policy route-map *map-name* **rule** *rule-num* **action**

show policy route-map *map-name* **rule** *rule-num* **action**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            action {
                deny
                permit
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
deny	Packets matching this rule are silently dropped.
permit	Packets matching this rule are forwarded.

Default

Routes are denied.

Usage Guidelines

Use the **set** form of this command to define the action taken when received packets satisfy the match criteria for this rule.

If the action for a rule is **deny**, packets meeting the match criteria of the rule are silently dropped. If the action for the rule is **permit**, destination-based routing is performed; that is, packets are sent using the normal forwarding channels.

The default action of a route map is to deny; that is if no entries satisfy the match criteria the route is denied. To change this behavior, specify an empty **permit** rule as the last entry in the route map.

Use the **delete** form of this command to restore the default action for packets satisfying the match criteria.

Use the **show** form of this command to display action settings for this rule.

policy route-map <map-name> rule <rule-num> call <target>

Calls to another route map.

Syntax

set policy route-map *map-name* **rule** *rule-num* **call** *target*

delete policy route-map *map-name* **rule** *rule-num* **call**

show policy route-map *map-name* **rule** *rule-num*

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            call target
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
target	The identifier of the route map being called.

Default

None.

Usage Guidelines

Use the **set** form of this command to call to another route map.

The new route map is called after all **set** actions specified in the route map have been performed. If the called route map returns **permit**, then the matching and exit policies of the route map govern further behavior in the normal way. If the called route-map returns **deny**, processing of the route map completes and the route is denied, regardless of any further matching or exit policies.

Use the **delete** form of this command to remove this statement from the route map.

Use the **show** form of this command to display route map rule configuration settings.

policy route-map <map-name> rule <rule-num> continue <target-num>

Calls to another rule within the current route map.

Syntax

set policy route-map *map-name* **rule** *rule-num* **continue** *target-num*

delete policy route-map *map-name* **rule** *rule-num* **continue**

show policy route-map *map-name* **rule** *rule-num* **continue**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            continue target-num
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
target	The identifier of the route map rule being called.

Default

None.

Usage Guidelines

Use the **set** form of this command to call to another rule within the current route map. The new route map rule is called after all **set** actions specified in the route map rule have been performed.

Use the **delete** form of this command to remove this statement from the route map.

Use the **show** form of this command to display route map rule configuration settings.

policy route-map <map-name> rule <rule-num> description <desc>

Allows you to specify a brief description for a route map rule.

Syntax

set policy route-map *map-name* **rule** *rule-num* **description** *desc*

delete policy route-map *map-name* **rule** *rule-num* **description**

show policy route-map *map-name* **rule** *rule-num* **description**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            description desc
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
desc	A brief text description for the route map rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to create a description for a route map rule.

Use the **delete** form of this command to remove a route map rule description.

Use the **show** form of this command to display the description for a route map rule.

policy route-map <map-name> rule <rule-num> match as-path <list-name>

Defines a match condition for a route map based on an AS path list

Syntax

set policy route-map *map-name* **rule** *rule-num* **match as-path** *list-name*

delete policy route-map *map-name* **rule** *rule-num* **match as-path**

show policy route-map *map-name* **rule** *rule-num* **match as-path**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                as-path list-name
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
list-name	Matches the AS paths in the route with those permitted by the specified AS path list. The AS path list must already be defined.

Default

If no AS path match condition is specified, packets are not filtered by AS path.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on an AS path list.

Packets are matched based on whether the AS path listed in the route match the AS path defined by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the AS path match condition.

Use the **show** form of this command to display AS path match condition configuration.

policy route-map <map-name> rule <rule-num> match community

Defines a match condition for a route map based on BGP communities.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match community** {**community-list** *list-num* | **exact-match**}

delete policy route-map *map-name* **rule** *rule-num* **match community**

show policy route-map *map-name* **rule** *rule-num* **match community**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                community {
                    community-list list-num
                    exact-match
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
community-list *list-num*	Matches the BGP communities in the route with those permitted by the specified community list. The community list policy must already be defined. Either **community-list** or **exact-match** must be specified.

exact-match	BGP communities are to be matched exactly. Either **community-list** or **exact-match** must be specified.

Default

If no community list match condition is specified, packets are not filtered by BGP community.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on BGP communities.

Packets are matched based on whether the BGP communities listed in the route match the communities defined by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the BGP community match condition.

Use the **show** form of this command to display BGP community match condition configuration.

policy route-map <map-name> rule <rule-num> match interface <ethx>

Defines a match condition for a route map based on the first-hop interface.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match interface** *ethx*

delete policy route-map *map-name* **rule** *rule-num* **match interface**

show policy route-map *map-name* **rule** *rule-num* **match interface**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                interface ethx
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
ethx	Matches first hop interface specified in the route against the interface name.

Default

If no interface match condition is specified, packets are not filtered by interface.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on first-hop interface.

Packets are matched based on whether the first-hop interface of the route matches the interface specified by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the interface match condition.

Use the **show** form of this command to display interface match condition configuration.

policy route-map <map-name> rule <rule-num> match ip address

Defines a match condition for a route map based on IP address.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match ip address** {**access-list** *list-num* | **prefix-list** *list-name*}

delete policy route-map *map-name* **rule** *rule-num* **match ip address**

show policy route-map *map-name* **rule** *rule-num* **match ip address**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                ip address {
                        access-list list-num
                        prefix-list list-name
                    }
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
access-list *list-num*	Matches the source or destination IP address of the route against those permitted by the specified access list. The access list must already be defined. Either **access-list** or **prefix-list** must be specified.

prefix-list *list-name*	Matches the source or destination network of the route against those permitted by the specified prefix list. The prefix list must already be defined. Either **access-list** or **prefix-list** must be specified.

Default

If no IP address match condition is specified, packets are not filtered by IP address.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on IP address.

Packets are matched based on whether the source or destination IP address of the route matches an address contained in the specified access list or prefix list. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the IP address match condition.

Use the **show** form of this command to display IP address match condition configuration.

policy route-map <map-name> rule <rule-num> match ip nexthop

Defines a match condition for a route map based on the next-hop address.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match ip nexthop** {**access-list** *list-num* | **prefix-list** *list-name*}

delete policy route-map *map-name* **rule** *rule-num* **match ip nexthop**

show policy route-map *map-name* **rule** *rule-num* **match ip nexthop**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                ip {
                    nexthop {
                        access-list list-num
                        prefix-list list-name
                    }
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
access-list *list-num*	Matches the next-hop IP address in the route against those permitted by the specified access list. The access list must already be defined. Either **access-list** or **prefix-list** must be specified.

prefix-list *list-name*	Matches next-hop IP address in the route against those permitted by the specified prefix list. The prefix list must already be defined. Either **access-list** or **prefix-list** must be specified.

Default

If no next-hop match condition is specified, packets are not filtered by next hop.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on next-hop IP address.

Packets are matched based on whether the next-hop IP address of the route matches an address contained in the specified access list or prefix list. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the next-hop IP address match condition.

Use the **show** form of this command to display next-hop IP address match condition configuration.

policy route-map <map-name> rule <rule-num> match ip route-source

Defines a match condition for a route map based on the address from where a route is advertised.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match ip route-source** {**access-list** *list-num* | **prefix-list** *list-name*}

delete policy route-map *map-name* **rule** *rule-num* **match ip route-source**

show policy route-map *map-name* **rule** *rule-num* **match ip route-source**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                ip {
                    route-source {
                        access-list list-num
                        prefix-list list-name
                    }
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
access-list *list-num*	Matches routes advertised from addresses contained in the specified access list. The access list must already be defined. Either **access-list** or **prefix-list** must be specified.

prefix-list *list-name*	Matches routes advertised from addresses contained in the specified prefix list. The prefix list must already be defined. Either **access-list** or **prefix-list** must be specified.

Default

If no route source match condition is specified, packets are not filtered by route source.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on the address from where routes are advertised (its route source).

Packets are matched based on whether the route source matches an address contained in the specified access list or prefix list. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the route source match condition.

Use the **show** form of this command to display route source match condition configuration.

policy route-map <map-name> rule <rule-num> match ipv6 address

Defines a match condition for a route map based on IPv6 address.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match ipv6 address** {**access-list6** *list-num* | **prefix-list6** *list-name*}

delete policy route-map *map-name* **rule** *rule-num* **match ipv6 address**

show policy route-map *map-name* **rule** *rule-num* **match ipv6 address**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                ipv6 address {
                        access-list6 list-num
                        prefix-list6 list-name
                    }
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
access-list6 *list-num*	Matches the source or destination IP address of the route against those permitted by the specified access list. The access list must already be defined. Either **access-list6** or **prefix-list6** must be specified.

prefix-list6 *list-name*	Matches the source or destination network of the route against those permitted by the specified prefix list. The prefix list must already be defined. Either **access-list6** or **prefix-list6** must be specified.

Default

If no IPv6 address match condition is specified, packets are not filtered by IPv6 address.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on IPv6 address.

Packets are matched based on whether the source or destination IPv6 address of the route matches an address contained in the specified access list or prefix list. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the IPv6 address match condition.

Use the **show** form of this command to display IPv6 address match condition configuration.

policy route-map <map-name> rule <rule-num> match ipv6 nexthop

Defines a match condition for a route map based on the next-hop IPv6 address.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match ipv6 nexthop** {**access-list6** *list-num* | **prefix-list6** *list-name*}

delete policy route-map *map-name* **rule** *rule-num* **match ipv6 nexthop**

show policy route-map *map-name* **rule** *rule-num* **match ipv6 nexthop**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                ipv6 {
                    nexthop {
                        access-list6 list-num
                        prefix-list6 list-name
                    }
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
access-list6 *list-num*	Matches the next-hop IPv6 address in the route against those permitted by the specified access list. The access list must already be defined. Either **access-list6** or **prefix-list6** must be specified.

prefix-list6 *list-name*	Matches next-hop IPv6 address in the route against those permitted by the specified prefix list. The prefix list must already be defined. Either **access-list6** or **prefix-list6** must be specified.

Default

If no next-hop match condition is specified, packets are not filtered by next hop.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on next-hop IPv6 address.

Packets are matched based on whether the next-hop IPv6 address of the route matches an address contained in the specified access list or prefix list. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the next-hop IPv6 address match condition.

Use the **show** form of this command to display next-hop IPv6 address match condition configuration.

policy route-map <map-name> rule <rule-num> match metric <metric>

Defines a match condition for a route map based on the route’s metric.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match metric** *metric*

delete policy route-map *map-name* **rule** *rule-num* **match metric**

show policy route-map *map-name* **rule** *rule-num* **match metric**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                metric metric
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
metric	A number representing a route metric. This value is matched against the metric in the route.

Default

If no metric match condition is specified, packets are not filtered by metric.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based route metric.

Packets are matched based on whether the route metric matches that specified by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the route source match condition.

Use the **show** form of this command to display route source match condition configuration.

policy route-map <map-name> rule <rule-num> match origin

Defines a match condition for a route map based on the route’s origin.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match origin** {**egp** | **igp** | **incomplete**}

delete policy route-map *map-name* **rule** *rule-num* **match origin**

show policy route-map *map-name* **rule** *rule-num* **match origin**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                origin {
                    origin-code [egp|igp|incomplete]
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
egp:	Matches routes whose origin is an Exterior Gateway Protocol.
igp:	Matches routes whose origin is an Interior Gateway Protocol.
incomplete	Matches routes whose BGP origin code is incomplete.

Default

If no origin match condition is specified, packets are not filtered by BGP origin code.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based BGP origin.

Packets are matched based on whether the BGP origin code in the route matches that specified by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the origin match condition.

Use the **show** form of this command to display origin match condition configuration.

policy route-map <map-name> rule <rule-num> match peer <ipv4>

Defines a match condition for a route map based on peer IP address.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match peer** *ipv4*

delete policy route-map *map-name* **rule** *rule-num* **match peer**

show policy route-map *map-name* **rule** *rule-num* **match peer**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                peer ipv4
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
ipv4	An IPv4 address. This address is matched against the peer address in the route.

Default

If no peer address match condition is specified, packets are not filtered by peer IP address.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based peer IP address.

Packets are matched based on whether the address of the peer in the route matches that specified by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the peer address match condition.

Use the **show** form of this command to display peer address match condition configuration.

policy route-map <map-name> rule <rule-num> match tag <tag>

Defines a match condition for a route map based on OSPF tag.

Syntax

set policy route-map *map-name* **rule** *rule-num* **match tag** *tag*

delete policy route-map *map-name* **rule** *rule-num* **match tag**

show policy route-map *map-name* **rule** *rule-num* **match tag**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            match {
                tag tag
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
tag	A 32-bit value representing an OSPF tag. This value is matched against the contents of the OSPF external Link-State Advertisement (LSA) 32-bit tag field in the route.

Default

If no tag match condition is specified, packets are not filtered by tag.

Usage Guidelines

Use the **set** form of this command to define a match condition for a route map policy based on OSPF tag.

Packets are matched based on whether the value of the OSPF external LSA 32-bit tag field in the route matches that specified by this command. Depending on the action defined for the rule using policy route-map <map-name> rule <rule-num> action command, matched packets are either permitted or denied. Based on the forwarding information specified by the **set** statements in the route map rule, permitted packets are forwarded to their various destinations.

If more than one match condition is defined in a route map rule, the packet must match all conditions to count as a match. If no match condition is defined for the route map rule, all packets are considered to match the rule.

Use the **delete** form of this command to remove the OSPF tag match condition.

Use the **show** form of this command to display OSPF tag match condition configuration.

policy route-map <map-name> rule <rule-num> on-match

Specifies an alternative exit policy for a route map.

Syntax

set policy route-map *map-name* **rule** *rule-num* **on-match** {**goto** *rule-num* | **next**}

delete policy route-map *map-name* **rule** *rule-num* **on-match**

show policy route-map *map-name* **rule** *rule-num* **on-match**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            on-match {
                goto rule-num
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
goto *rule-num*	The number of a defined route map rule. When all matches listed in the route map rule succeed, the current route map rule is exited and this rule is invoked and executed. Note that jumping to a previous route map rule is not permitted.
next	When all matches listed in the route map rule succeed, the current route map rule is exited and the next rule in the sequence is invoked and executed.

Default

None.

Usage Guidelines

Use the **set** form of this command to define an exit policy for a route map entry, by specifying the route map rule to be executed when a match occurs. When all the match conditions specified by the route map rule succeed, the route map rule specified by this command is invoked and executed.

Normally, when a route map is matched, the route map is exited and the route is permitted. This command allows you to specify an alternative exit policy, by directing execution to a specified route map rule or to the next rule in the sequence.

Use the **delete** form of this command to remove the exit policy.

Use the **show** form of this command to display route map exit policy configuration.

policy route-map <map-name> rule <rule-num> set aggregator

Modifies the BGP aggregator attribute of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set aggregator** {**as** *asn* | **ip** *ipv4*}

delete policy route-map *map-name* **rule** *rule-num* **set aggregator**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                aggregator {
                    as asn
                    ip ipv4
                }
            }
        }
    }
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
as *asn*	Modifies the autonomous system number of the BGP aggregator in the route to the specified value. The range is 1 to 65535.
ip *ipv4*	Modifies the IP address of the BGP aggregator in the route to the specified IPv4 address.

Default

None.

Usage Guidelines

Use the **set** form of this command to modify the aggregator attribute of a route. When all the match conditions in the route map rule succeed, the aggregator attribute is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set as-path-prepend <prepend>

Sets or prepends to the AS path of the route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set as-path-prepend** *prepend*

delete policy route-map *map-name* **rule** *rule-num* **set as-path-prepend**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                as-path-prepend prepend
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
prepend	A string representing an AS path.

Default

None.

Usage Guidelines

Use the **set** form of this command to prepend a string to the AS path list in a route. When all the match conditions in the route map rule succeed, the specified string is prepended to the AS path in the route.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set atomic-aggregate

Sets the BGP atomic-aggregate attribute in a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set atomic-aggregate**

delete policy route-map *map-name* **rule** *rule-num* **set atomic-aggregate**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                atomic-aggregate
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.

Default

None.

Usage Guidelines

Use the **set** form of this command to set the BGP atomic aggregate attribute in a route. When all the match conditions in the route map rule succeed, the BGP atomic aggregate attribute is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set comm-list

Modifies the BGP community list in a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set comm-list** {**comm-list** *list-name* | **delete**}

delete policy route-map *map-name* **rule** *rule-num* **set comm-list**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                comm-list {
                    comm-list list-name
                    delete
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
comm-list *list-name*	Removes the communities in the specified community list from the route's community list. The community list must already be defined.
delete	Deletes the route's entire community list.

Default

None.

Usage Guidelines

Use the **set** form of this command to modify the BGP community list in a route. When all the match conditions in the route map rule succeed, the community list is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set community

Modifies the BGP communities attribute in a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set community** { "[**additive**] *community*" | **none**}

delete policy route-map *map-name* **rule** *rule-num* **set community**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                community community
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
additive	Appends the specified community to the existing communities in the route. Double-quotes must be used when **additive** is specified.
community	A BGP community. Supported values are a community number in *aa:nn* format, or the well-known BGP communities **local-AS**, **no-export**, **no-advertise**, or **internet**.

none	Remove communities attribute from BGP updates.

Default

When the **additive** keyword is not used, the specified community replaces the existing communities in the route.

Usage Guidelines

Use the **set** form of this command to modify the BGP communities attribute in a route. When all the match conditions in the route map rule succeed, the communities attribute is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set ip-next-hop <ipv4>

Modifies the next hop destination of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set ip-next-hop** *ipv4*

delete policy route-map *map-name* **rule** *rule-num* **set ip-next-hop**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                ip-next-hop ipv4
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
ip-next-hop *ipv4*	The IPv4 address of the next hop.

Default

None.

Usage Guidelines

Use the **set** form of this command to modify the next hop destination for packets that traverse a route map. When all the match conditions in the route map rule succeed, the next hop of the route is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set ipv6-next-hop <scope> <ipv6>

Modifies the IPv6 next hop destination of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set ipv6-next-hop** {**global** | **local**} *ipv6*

delete policy route-map *map-name* **rule** *rule-num* **set ipv6-next-hop** {**global** | **local**}

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                ipv6-next-hop {
                    global ipv6
                    local ipv6
                }
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
global	The next hop address is an IPv6 global address.
local	The next hop address is an IPv6 local address.
ipv6	The IPv6 address of the next hop.

Default

None.

Usage Guidelines

Use this command to modify the IPv6 next hop destination address for packets that traverse a route map. When all the match conditions in the route map rule succeed, the next hop of the route is modified as specified.

Use the **set** form of this command to modify the IPv6 next hop destination address for packets that traverse a route map.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set local-preference <local-pref>

Modifies the BGP local-pref attribute in a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set local-preference** *local-pref*

delete policy route-map *map-name* **rule** *rule-num* **set local-preference**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                local-preference local-pref
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
local-pref	The new value for the BGP local preference path attribute.

Default

None.

Usage Guidelines

Use the **set** form of this command to modify the BGP local-pref attribute for packets that traverse a route map. When all the match conditions in the route map rule succeed, the local-pref attribute of the route is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set metric <metric>

Modifies the metric of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set metric** *metric*

delete policy route-map *map-name* **rule** *rule-num* **set metric**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                metric metric
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
metric	A number representing the new metric to be used in the route.

Default

None.

Usage Guidelines

Use the **set** form of this command to modify the route metric for packets that traverse a route map. When all the match conditions in the route map rule succeed, the route metric is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set metric-type <type>

Specifies the OSPF external metric-type for a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set metric-type** *type*

delete policy route-map *map-name* **rule** *rule-num* **set metric-type**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                metric-type type
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
type-1	OSPF external type 1 metric. This metric uses both internal and external costs when calculating the cost to access an external network.
type-2	OSPF external type 2 metric. This metric uses only external cost when calculating the cost to access an external network.

Default

None.

Usage Guidelines

Use this command to specify the metric OSPF should use to calculate the cost of accessing an external network.

Use the **set** form of this command to specify the OSPF external metric type for a route.

Use the **delete** form of this command to delete the metric type.

Use the **show** form of this command to display the metric type.

policy route-map <map-name> rule <rule-num> set origin

Modifies the BGP origin code of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set origin** {*asn* | **egp** | **igp** | **incomplete**}

delete policy route-map *map-name* **rule** *rule-num* **set origin**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                origin [egp|igp|incomplete]
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
asn	An autonomous system number. The range is 1 to 65535.
egp	Sets the BGP origin code to egp (Exterior Gateway Protocol).
igp	Sets the BGP origin code to igp (Interior Gateway Protocol).
incomplete	Sets the BGP origin code to **incomplete**.

Default

None.

Usage Guidelines

Use the **set** form of this command to set the BGP origin code for packets that traverse a route map. When all the match conditions in the route map rule succeed, the BGP origin code is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set originator-id <ipv4>

Modifies the BGP originator ID attribute of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set originator-id** *ipv4*

delete policy route-map *map-name* **rule** *rule-num* **set originator-id**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                originator-id ipv4
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
ipv4	The IPv4 address to be used as the new originator ID.

Default

None.

Usage Guidelines

Use the **set** form of this command to set the BGP originator ID for packets that traverse a route map. When all the match conditions in the route map rule succeed, the BGP originator ID is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set tag <tag>

Modifies the OSPF tag value of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set tag** *tag*

delete policy route-map *map-name* **rule** *rule-num* **set tag**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                tag tag
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
tag	A 32-bit number representing the new value of the OSPF external Link-State Advertisement (LSA) tag field.

Default

None.

Usage Guidelines

Use the **set** form of this command to set the OSPF tag value for packets that traverse a route map. When all the match conditions in the route map rule succeed, the route tag is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

policy route-map <map-name> rule <rule-num> set weight <weight>

Modifies the BGP weight of a route.

Syntax

set policy route-map *map-name* **rule** *rule-num* **set weight** *weight*

delete policy route-map *map-name* **rule** *rule-num* **set weight**

show policy route-map *map-name* **rule** *rule-num* **set**

Command Mode

Configuration mode.

Configuration Statement

```
policy {
    route-map map-name {
        rule rule-num {
            set {
                weight weight
            }
        }
    }
}
```

Parameters

map-name	The name of a defined route map.
rule-num	The number of a defined route map rule.
weight	The BGP weight to be recorded in the routing table. The range is 0 to 65535.

Default

None.

Usage Guidelines

Use the **set** form of this command to set the BGP weight for routes. When all the match conditions in the route map rule succeed, the route weight is modified as specified.

Use the **delete** form of this command to delete this statement from the route map rule.

Use the **show** form of this command to display **set** statement configuration for route maps.

show ip access-list

Displays all IP access lists.

Syntax

show ip access-list

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display IP access lists.

Examples

Example 3-1 shows IP access lists.

Example 3-1 “show ip access-list”: Displaying IP access lists

```
vyatta@vyatta:~$ show ip access-list
ZEBRA:
Standard IP access list 1
    permit any
RIP:
Standard IP access list 1
    permit any
OSPF:
Standard IP access list 1
    permit any
BGP:
Standard IP access list 1
    permit any
vyatta@vyatta:~$
```

show ip as-path-access-list

Displays all as-path access lists.

Syntax

show ip as-path-access-list

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display as-path access lists.

Examples

Example 3-2 shows as-path access lists.

Example 3-2 “show ip as-path-access-list”: Displaying as-path access lists

```
vyatta@vyatta:~$ show ip as-path-access-list
AS path access list IN
    permit 50:1
vyatta@vyatta:~$
```

show ip community-list

Displays all IP community lists.

Syntax

show ip community-list

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display community lists.

Examples

Example 3-3 shows community lists.

Example 3-3 “show ip community-list”: Displaying community lists

```
vyatta@vyatta:~$ show ip community-list
Community (expanded) access list 101
    permit AB*
vyatta@vyatta:~$
```

show ip extcommunity-list

Displays all extended IP community lists.

Syntax

show ip extcommunity-list

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display extended IP community lists.

Examples

Example 3-4 shows extended IP community lists.

Example 3-4 “show ip extcommunity-list”: Displaying extended IP community lists

```
vyatta@vyatta:~$ show ip extcommunity-list
Community (expanded) access list 101
    permit AB*
vyatta@vyatta:~$
```

show ip prefix-list

Displays IP prefix lists.

Syntax

show ip prefix-list [**detail** | **summary** | *list-name* [**seq** *seq-num* | *ipv4net* [**first-match** | **longer**]]]

Command Mode

Operational mode.

Parameters

detail	Displays detailed information for all IP prefix lists.
summary	Displays summary information for all IP prefix lists.
list-name	Displays information about the named IP prefix list.
seq-num	Displays the specified sequence from the named IP prefix list.
ipv4net	Displays the select prefix of the named IP prefix list.
first-match	Displays the first match from the select prefix of the named IP prefix list.
longer	Displays the longer match of the select prefix from the named IP prefix list

Default

None.

Usage Guidelines

Use this command to display prefix lists.

Examples

Example 3-5 shows prefix lists.

Example 3-5 “show ip prefix-list”: Displaying prefix lists

```
vyatta@vyatta:~$ show ip prefix-list
ZEBRA: ip prefix-list ABC: 1 entries
   seq 1 permit 192.168.2.0/24 ge 25
RIP: ip prefix-list ABC: 1 entries
   seq 1 permit 192.168.2.0/24 ge 25
OSPF: ip prefix-list ABC: 1 entries
   seq 1 permit 192.168.2.0/24 ge 25
BGP: ip prefix-list ABC: 1 entries
   seq 1 permit 192.168.2.0/24 ge 25
vyatta@vyatta:~$
```

show ip protocol

Displays IP route maps per protocol.

Syntax

show ip protocol

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display IP route maps per protocol.

Examples

Example 3-6 shows IP route maps by protocol.

Example 3-6 “show ip protocol”: Displaying IP route maps by protocol

```
vyatta@vyatta:~$ show ip protocol
Protocol     : route-map
------------------------
system       : none
kernel       : none
connected    : none
static       : none
rip          : none
ripng        : none
ospf         : none
ospf6        : none
isis         : none
bgp          : none
hsls         : none
```

```
any         : none
vyatta@vyatta:~$
```

show route-map

Displays route map information.

Syntax

show route-map [*map-name*]

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to display route map information.

Examples

Example 3-7 shows route map information.

Example 3-7 “show route-map”: Displaying route map information

```
vyatta@vyatta:~$ show route-map
ZEBRA:
route-map MAP1, permit, sequence 1
  Match clauses:
  Set clauses:
  Call clause:
  Action:
    Exit routemap
RIP:
route-map MAP1, permit, sequence 1
  Match clauses:
    interface eth0
  Set clauses:
  Call clause:
```

```
  Action:
    Exit routemap
OSPF:
route-map MAP1, permit, sequence 1
  Match clauses:
    interface eth0
  Set clauses:
  Call clause:
  Action:
    Exit routemap
BGP:
route-map MAP1, permit, sequence 1
  Match clauses:
  Set clauses:
  Call clause:
  Action:
    Exit routemap
vyatta@vyatta:~$
```

Glossary of Acronyms

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
AMI	Amazon Machine Image
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
AWS	Amazon Web Services
BGP	Border Gateway Protocol
BIOS	Basic Input Output System
BPDU	Bridge Protocol Data Unit
CA	certificate authority
CCMP	AES in counter mode with CBC-MAC
CHAP	Challenge Handshake Authentication Protocol
CLI	command-line interface
DDNS	dynamic DNS
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6

DLCI	data-link connection identifier
DMI	desktop management interface
DMZ	demilitarized zone
DN	distinguished name
DNS	Domain Name System
DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
eBGP	external BGP
EBS	Amazon Elastic Block Storage
EC2	Amazon Elastic Compute Cloud
EGP	Exterior Gateway Protocol
ECMP	equal-cost multipath
ESP	Encapsulating Security Payload
FIB	Forwarding Information Base
FTP	File Transfer Protocol
GRE	Generic Routing Encapsulation
HDLC	High-Level Data Link Control
I/O	Input/Ouput
ICMP	Internet Control Message Protocol
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IGP	Interior Gateway Protocol
IPS	Intrusion Protection System
IKE	Internet Key Exchange
IP	Internet Protocol
IPOA	IP over ATM

IPsec	IP security
IPv4	IP Version 4
IPv6	IP Version 6
ISP	Internet Service Provider
KVM	Kernel-Based Virtual Machine
L2TP	Layer 2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAN	local area network
LDAP	Lightweight Directory Access Protocol
LLDP	Link Layer Discovery Protocol
MAC	medium access control
MIB	Management Information Base
MLPPP	multilink PPP
MRRU	maximum received reconstructed unit
MTU	maximum transmission unit
NAT	Network Address Translation
ND	Neighbor Discovery
NIC	network interface card
NTP	Network Time Protocol
OSPF	Open Shortest Path First
OSPFv2	OSPF Version 2
OSPFv3	OSPF Version 3
P2P	peer-to-peer
PAM	Pluggable Authentication Module
PAP	Password Authentication Protocol
PAT	Port Address Translation

PCI	peripheral component interconnect
PKI	Public Key Infrastructure
PPP	Point-to-Point Protocol
PPPoA	PPP over ATM
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PVC	permanent virtual circuit
QoS	quality of service
RADIUS	Remote Authentication Dial-In User Service
RHEL	Red Hat Enterprise Linux
RIB	Routing Information Base
RIP	Routing Information Protocol
RIPng	RIP next generation
Rx	receive
S3	Amazon Simple Storage Service
SLAAC	Stateless Address Auto-Configuration
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SSH	Secure Shell
SSID	Service Set Identifier
STP	Spanning Tree Protocol
TACACS+	Terminal Access Controller Access Control System Plus
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
ToS	Type of Service

Tx	transmit
UDP	User Datagram Protocol
vif	virtual interface
VLAN	virtual LAN
VPC	Amazon virtual private cloud
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	wide area network
WAP	wireless access point
WPA	Wired Protected Access