

## Chapter 7

# Summary of Routing Policy Configuration Statements

The following sections explain each of the routing policy configuration statements. The statements are organized alphabetically.

### apply-path

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|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <code>apply-path path;</code>   |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> policy-options prefix-list <i>name</i> ],<br>[edit policy-options prefix-list <i>name</i> ]  |
| <b>Description</b>              | Expand a prefix-list to include all prefixes pointed to by a defined path.  |
| <b>Options</b>                  | <i>path</i> —A string of elements composed of identifiers or configuration keywords that points to a set of prefixes. You can include wildcards (enclosed in angle brackets) to match more than one identifier.<br><br><i>prefix-list name</i> —Name of a list of Internet Protocol Version 4 (IPv4) or Internet Protocol version 6 (IPv6) prefixes. To create a named list of IP address prefixes, see “Configure Extended Match Conditions” on page 89. |
| <b>Usage Guidelines</b>         | See “Define Prefix Lists” on page 109.  |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.   |

## as-path

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| <b>Syntax</b>                   | <code>as-path name regular-expression;</code>   |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> policy-options],<br>[edit policy-options]  |
| <b>Description</b>              | Define an autonomous system (AS) path regular expression for use in a routing policy match condition.   |
| <b>Options</b>                  | <i>name</i> —Name that identifies the regular expression. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (double quotes).<br><br><i>regular-expression</i> —One or more regular expressions used to match the AS path. |
| <b>Usage Guidelines</b>         | See “Configure AS Path Regular Expressions” on page 89.   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.   |

## as-path-group

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|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <code>as-path-group group-name {<br/>    [ as-path name regular-expression ];<br/>}</code>  |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> policy-options],<br>[edit policy-options]  |
| <b>Description</b>              | Define a group containing multiple AS path regular expression for use in a routing policy match condition.  |
| <b>Options</b>                  | <i>group-name</i> —Name that identifies the AS path group. One or more AS path regular expressions must be listed below the as-path-group hierarchy.<br><br><i>name</i> —Name that identifies the regular expression. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (double quotes).<br><br><i>regular-expression</i> —One or more regular expressions used to match the AS path. |
| <b>Usage Guidelines</b>         | See “Configure AS Path Regular Expressions” on page 89.   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.   |

## community

|                        |  |
|------------------------|--|
| <b>Syntax</b>          | community <i>name</i> {<br>bandwidth <i>as:bandwidth</i> ;<br>invert-match;<br>members [ <i>community-ids</i> ];<br>}  |
| <b>Hierarchy Level</b> | [edit logical-routers <i>logical-router-name</i> policy-options],<br>[edit policy-options]   |
| <b>Description</b>     | Define a community or extended community for use in a routing policy match condition.  |
| <b>Options</b>         | <p><i>name</i>—Name that identifies the regular expression. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters. To include spaces in the name, enclose it in quotation marks (double quotes).</p> <p>bandwidth <i>as:bandwidth</i>—Link bandwidth community attribute. <i>as</i> specifies the autonomous system and <i>bandwidth</i> specifies bandwidth in bytes per second.</p> <p>invert-match—Invert the results of the community expression matching.</p> <p>members <i>community-ids</i>—One or more community members. If you specify more than one member, you must enclose all members in brackets.</p> <p>The format for community identifiers is:</p> <p style="text-align: center;"><i>as-number:community-value</i></p> <p><i>as-number</i> is the AS number and can be a value in the range 0 through 65,535. <i>community-value</i> is the community identifier and can be a number in the range 0 through 65,535.</p> <p>You also can specify <i>community-ids</i> for communities as one of the following well-known community names, which are defined in RFC 1997, <i>BGP Communities A ttribute</i>:</p> <p style="padding-left: 40px;">no-export—Routes containing this community name are not advertised outside a Border Gateway Protocol (BGP) confederation boundary.</p> <p style="padding-left: 40px;">no-advertise—Routes containing this community name are not advertised to other BGP peers.</p> <p style="padding-left: 40px;">no-export-subconfed—Routes containing this community name are not advertised to external BGP peers, including peers in other members' ASs inside a BGP confederation.</p> <p>You can explicitly exclude BGP community information with a static route using the <i>none</i> option. Include <i>none</i> when configuring an individual route in the route portion of the static statement to override a community option specified in the defaults portion of the statement.</p> |

The format for extended community identifiers is:

*type:administrator:assigned-number*

*type* is the type of extended community and can be either a target, origin, or domain-id community. The target community identifies the destination to which the route is going. The origin community identifies where the route originated. The domain-id community identifies the Open Shortest Path First (OSPF) domain from which the route originated.

*administrator* is the administrator. It is either an AS number or an IPv4 address prefix, depending on the type of extended community.

*assigned-number* identifies the local provider.

**Usage Guidelines** See “Configure Communities” on page 96.

**Required Privilege Level** routing—To view this statement in the configuration.  
routing-control—To add this statement to the configuration.

## damping

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|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <pre>damping <i>name</i> {     disable;     half-life <i>minutes</i>;     max-suppress <i>minutes</i>;     reuse <i>number</i>;     suppress <i>number</i>; }</pre>   |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> policy-options],<br>[edit policy-options]  |
| <b>Description</b>              | Define route flap damping properties to set on BGP routes.  |
| <b>Options</b>                  | <p><b>disable</b>—Disable damping on a per-prefix basis. Any damping state that is present in the routing table for a prefix is deleted if damping is disabled.</p> <p><b>half-life <i>minutes</i></b>—Decay half-life. <i>minutes</i> is the interval after which the accumulated figure-of-merit value is reduced by half if the route remains stable.<br/> <b>Range:</b> 1 through 45<br/> <b>Default:</b> 15 minutes</p> <p><b>max-suppress <i>minutes</i></b>—Maximum hold-down time. <i>minutes</i> is the maximum time that a route can be suppressed no matter how unstable it has been.<br/> <b>Range:</b> 1 through 720<br/> <b>Default:</b> 60 minutes</p> <p><b><i>name</i></b>—Name that identifies the set of damping parameters. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (double quotes).</p> <p><b>reuse <i>number</i></b>—Reuse threshold. <i>number</i> is the figure-of-merit value below which a suppressed route can be used again.<br/> <b>Range:</b> 1 through 20,000<br/> <b>Default:</b> 750 (unitless)</p> <p><b>suppress <i>number</i></b>—Cutoff (suppression) threshold. <i>number</i> is the figure-of-merit value above which a route is suppressed for use or inclusion in advertisements.<br/> <b>Range:</b> 1 through 20,000<br/> <b>Default:</b> 3000 (unitless)</p> |
| <b>Usage Guidelines</b>         | See “Configure Flap Damping Parameters” on page 130.  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>  |

## export

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|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | export [ <i>policy-names</i> ];  |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> protocols <i>protocol-name</i> ],<br>[edit protocols <i>protocol-name</i> ] |
| <b>Description</b>              | Apply one or more policies to routes being exported from the routing table into a routing protocol.                          |
| <b>Options</b>                  | <i>policy-names</i> —Names of one or more policies defined with a policy-statement statement.                                |
| <b>Usage Guidelines</b>         | See “Apply a Routing Policy” on page 57.   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.          |

## import

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|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | import [ <i>policy-names</i> ];  |
| <b>Hierarchy Level</b>          | [edit logical-routers <i>logical-router-name</i> protocols <i>protocol-name</i> ],<br>[edit protocols <i>protocol-name</i> ] |
| <b>Description</b>              | Apply one or more policies to routes being imported into the routing table from a routing protocol.                          |
| <b>Options</b>                  | <i>policy-names</i> —Names of one or more policies defined with a policy-statement statement.                                |
| <b>Usage Guidelines</b>         | See “Apply a Routing Policy” on page 57.   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.          |

## policy-options

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|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | policy-options { ... }  |
| <b>Hierarchy Level</b>          | [edit]  |
| <b>Description</b>              | Configure routing policy.   |
| <b>Options</b>                  | The statements are explained separately.  |
| <b>Usage Guidelines</b>         | See “Define Routing Policies” on page 41.   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration. |

## policy-statement

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Syntax  policy-statement policy-name {
            term term-name {
                from {
                    family family-name;
                    match-conditions;
                    policy subroutine-policy-name;
                    prefix-list name;
                    route-filter destination-prefix match-type <actions>;
                    source-address-filter destination-prefix match-type <actions>;
                }
                to {
                    match-conditions;
                    policy subroutine-policy-name;
                }
                then actions;
            }
        }

```

**Hierarchy Level** [edit logical-routers *logical-router-name* policy-options],  
[edit policy-options]

**Description** Define a routing policy, including subroutine policies.

**Options** *actions*—(Optional) One or more actions to take if the conditions match. The actions are described in Table 10 on page 49 and Table 11 on page 49.

*family family-name*—(Optional) Specify an address family protocol. Specify *inet* for an IPv4 address protocol. Specify *inet6* for a 128-bit IPv6 address protocol, and to enable interpretation of IPv6 router filter addresses. When *family* is not specified, the router uses the default IPv4 setting.

*from*—(Optional) Match a route based on its source address.

*match-conditions*—(Optional in *from* statement; required in *to* statement) One or more conditions to use to make a match. The qualifiers are described in Table 9 on page 44.

*policy subroutine-policy-name*—Use another policy as a match condition within this policy. The name identifying the subroutine policy can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (" "). For information about how to configure subroutines, see "Configure Subroutines" on page 120.

*policy-name*—Name that identifies the policy. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (double quotes).

*prefix-list name*—Name of a list of IPv4 or IPv6 prefixes. To create a named list of IP address prefixes, see "Configure Extended Match Conditions" on page 89.

`route-filter destination-prefix match-type <actions>`—(Optional) List of routes on which to perform an immediate match. *destination-prefix* is the IPv4 or IPv6 route prefix to match, *match-type* is the type of match (see Table 19 on page 113), and *actions* is the action to take if the *destination-prefix* matches.

`source-address-filter destination-prefix match-type <actions>`—(Optional) Multicast source addresses in multiprotocol BGP (MBGP) and Multicast Source Discovery Protocol (MSDP) environments on which to perform an immediate match. *destination-prefix* is the IPv4 or IPv6 route prefix to match, *match-type* is the type of match (see Table 19 on page 113), and *actions* is the action to take if the *destination-prefix* matches.

`term term-name`—Name that identifies the term.

`to`—(Optional) Match a route based on its destination address or the protocols into which the route is being advertised.

`then`—(Optional) Actions to take on matching routes. The actions are described in Table 10 on page 49 and Table 11 on page 49.

**Usage Guidelines** See “Define Routing Policies” on page 41 and “Configure Extended Match Conditions” on page 89.

**Required Privilege Level** `routing`—To view this statement in the configuration.  
`routing-control`—To add this statement to the configuration.

## prefix-list

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**Syntax** `prefix-list name {  
     ip-addresses;  
     apply-path path;  
 }`

**Hierarchy Level** [edit logical-routers *logical-router-name* policy-options],  
 [edit policy-options]

**Description** Define a list of IPv4 or IPv6 address prefixes for use in a routing policy statement or firewall filter statement.

**Options** *name*—Name that identifies the list of IPv4 or IPv6 address prefixes.

*ip-addresses*—List of IPv4 or IPv6 address prefixes, one IP address per line in the configuration.

The remaining statement is explained separately in this chapter.

**Usage Guidelines** See “Configure Prefix Lists” on page 108.

**Required Privilege Level** `routing`—To view this statement in the configuration.  
`routing-control`—To add this statement to the configuration.