



# A Commands

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This chapter describes the Cisco NX-OS Border Gateway Protocol (BGP) commands that begin with A.

# address-family ipv6 unicast

To enter IPv6 unicast address family mode, use the **address-family ipv6 unicast** command.

**address-family ipv6 unicast**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Router configuration mode

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 5.2(1)N1(1) | This command was introduced. |

**Usage Guidelines** This command does not require a license.

**Examples** This example shows how enter IPv6 unicast address family mode:

```
switch# configure terminal
switch(config)# router ospfv 1234
switch(config-router)# neighbor 2001:DB8:0:1::55 remote-as 64496
switch(config-router-neighbor)# address-family ipv6 unicast
switch(config-router-af)# next-hop-self
```

| Related Commands | Command                   | Description  |
|------------------|---------------------------|--|
|                  | area filter-list (OSPFv3) | Filters prefixes advertised in type 3 link-state advertisements (LSAs) between Open Shortest Path First (OSPF) areas of an Area Border Router (ABR). |

# address-family (BGP neighbor)

To enter the neighbor address family mode address-family mode and configure submode commands for the Border Gateway Protocol (BGP), use the **address-family** command. To disable the address family submode for configuring routing protocols, use the **no** form of this command.

**address-family ipv4 { multicast | unicast }**

**no address-family ipv4 { multicast | unicast }**

## Syntax Description

|                  |                                      |
|------------------|--------------------------------------|
| <b>ipv4</b>      | Specifies the IPv4 address family.   |
| <b>multicast</b> | Specifies multicast address support. |
| <b>unicast</b>   | Specifies unicast address support.   |

## Command Default

This command has no default settings.

## Command Modes

Neighbor configuration mode

## Command History

| Release     | Modification                 |
|-------------|------------------------------|
| 5.2(1)N1(1) | This command was introduced. |

## Usage Guidelines

Use the **address-family** command to enter various address family configuration modes while configuring BGP routing. When you enter the **address-family** command from neighbor configuration mode, you enable the neighbor address family and enter the neighbor address family configuration mode. The prompt changes to `switch(config-router-neighbor-af)#`.

You must configure the address families if you are using route redistribution, load balancing, and other advanced features. IPv4 neighbor sessions support IPv4 unicast and multicast address families.

From the neighbor address family configuration mode, the following parameters are available:



### Note

This applies to IPv4 multicast or unicast

- **advertise-map**—Conditionally advertises selected BGP routes.
- **default-originate**—Configures a BGP routing process to distribute a default route.
- **exit**—Exits from the current command mode.
- **maximum-prefix**—Controls how many prefixes can be received from a neighbor.
- **no**—Negates a command or sets its defaults
- **route-reflector-client**—Configures the router as a BGP route reflector.
- **soft-reconfiguration inbound**—Configures the switch software to start storing BGP peer updates.
- **suppress-inactive**—Advertises only active routes to peer.

This command requires the LAN Enterprise Services license.

### Examples

This example shows how to activate IPv4 multicast for neighbor 192.0.2.1 and place the device in neighbor address family configuration mode for the IPv4 multicast address family:

```
switch(config)# feature bgp
switch(config)# router bgp 64496
switch(config-router)# neighbor 192.0.2.1 remote-as 64496
switch(config-router-neighbor)# address-family ipv4 multicast
switch(config-router-neighbor-af)
```

### Related Commands

| Command                             | Description   |
|-------------------------------------|---|
| <b>advertise-map</b>                | Configures BGP conditional advertisement.                         |
| <b>default-originate (BGP)</b>      | Configures a BGP routing process to distribute a default route.   |
| <b>feature bgp</b>                  | Enables BGP configuration.  |
| <b>maximum-prefix</b>               | Controls how many prefixes can be received from a neighbor.       |
| <b>route-reflector-client</b>       | Configures the router as a BGP route reflector.                   |
| <b>soft-reconfiguration inbound</b> | Configures the switch software to start storing BGP peer updates. |
| <b>suppress-inactive</b>            | Advertises only active routes to peer.                            |

# address-family (BGP router)

To enter the address family mode or a virtual routing and forwarding (VRF) address-family mode and configure submode commands for the Border Gateway Protocol (BGP), use the **address-family** command. To disable the address family submode for configuring routing protocols, use the **no** form of this command.

**address-family ipv4 {multicast | unicast}**

**no address-family ipv4 {multicast | unicast}**

|                    |                  |                                      |
|--------------------|------------------|--------------------------------------|
| Syntax Description | <b>ipv4</b>      | Specifies the IPv4 address family.   |
|                    | <b>multicast</b> | Specifies multicast address support. |
|                    | <b>unicast</b>   | Specifies unicast address support.   |

|                 |                                       |
|-----------------|---------------------------------------|
| Command Default | This command has no default settings. |
|-----------------|---------------------------------------|

|               |   |
|---------------|---|
| Command Modes | Router configuration mode<br>VRF configuration mode |
|---------------|---|

| Command History | Release     | Modification                 |
|-----------------|-------------|------------------------------|
|                 | 5.2(1)N1(1) | This command was introduced. |

|                  |  |
|------------------|--|
| Usage Guidelines | Use the <b>address-family</b> command to enter various address family configuration modes while configuring BGP routing. When you enter the <b>address-family</b> command from router configuration mode, you enable the address family and enter global address family configuration mode. The prompt changes to <code>switch(config-router-af)#</code> . |
|------------------|--|

You must configure the address families if you are using route redistribution, address aggregation, load balancing, and other advanced features. IPv4 neighbor sessions support IPv4 unicast and multicast address families.

From the address family configuration mode, the following parameters are available:

**Note**

This applies to IPv4 multicast or unicast.

- **aggregate-address**—Configures BGP aggregate prefixes. See the **aggregate-address** command for additional information.
- **client-to-client reflection**—Enables client-to-client route reflection. Route reflection allows a BGP speaker (route reflector) to advertise IBGP learned routes to certain IBGP peers. Use the **no** form of this command to disable client-to-client route reflection. Default: Enabled.

- **dampening** [*half-life* | **route-map** *name*]*—*Configures the route flap dampening. Optionally, you can set the time (in minutes) after which a penalty is decreased. Once the route has been assigned a penalty, the penalty is decreased by half after the half-life period (which is 15 minutes by default). The process of reducing the penalty happens every 5 seconds. The default half-life is 15 minutes. Range: 1 to 45. Default: Disabled.
- **default-metric** *metric**—*Sets the default flap metric of redistributed routes. The **default-metric** command is used to set the metric value for routes redistributed into BGP with the **redistribute** command. A default metric can be configured to solve the problem of redistributing routes with incompatible metrics. Assigning the default metric will allow redistribution to occur. This value is the Multi Exit Discriminator (MED) that is evaluated by BGP during the best path selection process. The MED is a non-transitive value that is processed only within the local autonomous system and adjacent autonomous systems. The default metric is not set if the received route has a MED value. Range: 0 to 4294967295.

**Note**

When enabled, the **default-metric** command applies a metric value of 0 to redistributed connected routes. The **default-metric** command does not override metric values that are applied with the **redistribute** command.

- **distance** *ebgp-route* *ibgp-route* *local-route**—*Configures a rating of the trustworthiness of a routing information source, such as an individual router or a group of routers. BGP does not use discard routes for next-hop resolution. In general, the higher the value, the lower the trust rating. An administrative distance of 255 means the routing information source cannot be trusted at all and should be ignored. Use this command if another protocol is known to be able to provide a better route to a node than was actually learned via external BGP (eBGP), or if some internal routes should be preferred by BGP. Range: 1 to 255. Default: EBGp—20, IBGP—200.

**Caution**

Changing the administrative distance of internal BGP routes is considered dangerous and is not recommended. Improper configuration can introduce routing table inconsistencies and break routing.

- **exit***—*Exits from the current command mode.
- **maximum-paths** [**ibgp**] *parallel-paths**—*Configures the number of parallel paths to forward packets. The **maximum-paths** **ibgp** command is used to configure equal-cost or unequal-cost multipath load sharing for iBGP peering sessions. In order for a route to be installed as a multipath in the BGP routing table, the route cannot have a next hop that is the same as another route that is already installed. The BGP routing process will still advertise a best path to iBGP peers when iBGP multipath load sharing is configured. For equal-cost routes, the path from the neighbor with the lowest router ID is advertised as the best path. To configure equal-cost multipath load sharing, all path attributes must be the same. The path attributes include weight, local preference, autonomous system path (entire attribute and not just the length), origin code, Multi Exit Discriminator (MED), and Interior Gateway Protocol (IGP) distance. The optional **ibgp** keyword allows you to configure multipath for the IBGP paths. To return to the default, use the **no** form of this command. The range is from 1 to 16.
- **network***—*Configures an IP prefix to advertise. See the **network** command for additional information.
- **nexthop***—*Configures next-hop address tracking events for BGP processes.
- **no***—*Negates a command or sets its defaults.

- **redistribute**—Enables the redistribution of routes learned by other protocols into BGP. Redistribution is supported for both IPv4 routes. To disable the redistribution of routes learned by other protocols into BGP, use the **no** form of this command.
  - **direct route-map name**—Specifies directly connected routes.
  - **eigrp AS-num route-map name**—Specifies Enhanced Interior Gateway Protocol routes. Range: 1 to 65535.
  - **ospf src-protocol route-map name**—Specifies Open Shortest Path First (OSPF) routes.
  - **rip src-protocol route-map name**—Specifies Routing Information Protocol (RIP) routes.
  - **static route-map name**—Specifies static routes.
- **suppress-inactive**—Advertises only active routes to peer. See the **suppress-inactive** command for additional information.

This command requires the LAN Enterprise Services license.

### Examples

This example shows how to place the router in global address family configuration mode for the IPv4 unicast address family:

```
switch(config)# feature bgp
switch(config)# router bgp 64496
switch(config-router)# address-family ipv4 unicast
switch(config-router-af)#
```

### Related Commands

| Command                            | Description  |
|------------------------------------|--|
| <b>aggregate-address</b>           | Configures BGP summary addresses.                                |
| <b>client-to-client reflection</b> | Configures route reflection.                                     |
| <b>dampening</b>                   | Configures route flap dampening.                                 |
| <b>default-metric (BGP)</b>        | Configures the default metric for routes redistributed into BGP. |
| <b>distance (BGP)</b>              | Configures the administrative distance.                          |
| <b>feature bgp</b>                 | Enables BGP configuration.                                       |
| <b>maximum-paths (BGP)</b>         | Configures the maximum number of equal-cost paths.               |
| <b>network</b>                     | Configures an IP prefix to advertise.                            |
| <b>nexthop route-map</b>           | Configures route policy filtering for next hops.                 |
| <b>nexthop trigger-delay</b>       | Configures the BGP delay for triggering next-hop calculations.   |
| <b>redistribute (BGP)</b>          | Configures route redistribution for BGP.                         |
| <b>suppress-inactive</b>           | Advertises active routes to a BGP peer.                          |
| <b>timers (BGP)</b>                | Configures the BGP timers.                                       |

# advertise-map (BGP)

To configure Border Gateway Protocol (BGP) conditional advertisement, use the **advertise-map** command. To remove BGP conditional advertisement, use the **no** form of this command.

**advertise-map** *adv-map* { **exist-map** *exist-rmap* | **non-exist-map** *nonexist-rmap* }

**no advertise-map** *adv-map* { **exist-map** *exist-rmap* | **non-exist-map** *nonexist-rmap* }

|  |   |                |  |                                       |  |  |   |
|--|---|----------------|--|---------------------------------------|--|--|---|
| <b>Syntax Description</b>                    | <table> <tr> <td><i>adv-map</i></td><td>Route map with match statements that the route must pass before BGP passes the route to the next route map. The <i>adv-map</i> is a case-sensitive, alphanumeric string up to 63 characters.</td></tr> <tr> <td><b>exist-map</b><br/><i>exist-rmap</i></td><td>Specifies a route map with match statements for a prefix list. A prefix in the BGP table must match a prefix in the prefix list before BGP will advertise the route. The <i>exist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters.</td></tr> <tr> <td><b>non-exist-map</b><br/><i>nonexist-rmap</i></td><td>Specifies a route map with match statements for a prefix list. A prefix in the BGP table must not match a prefix in the prefix list before BGP will advertise the route. The <i>nonexist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters.</td></tr> </table> | <i>adv-map</i> | Route map with match statements that the route must pass before BGP passes the route to the next route map. The <i>adv-map</i> is a case-sensitive, alphanumeric string up to 63 characters. | <b>exist-map</b><br><i>exist-rmap</i> | Specifies a route map with match statements for a prefix list. A prefix in the BGP table must match a prefix in the prefix list before BGP will advertise the route. The <i>exist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters. | <b>non-exist-map</b><br><i>nonexist-rmap</i> | Specifies a route map with match statements for a prefix list. A prefix in the BGP table must not match a prefix in the prefix list before BGP will advertise the route. The <i>nonexist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters. |
| <i>adv-map</i>                               | Route map with match statements that the route must pass before BGP passes the route to the next route map. The <i>adv-map</i> is a case-sensitive, alphanumeric string up to 63 characters.  |                |  |                                       |  |  |   |
| <b>exist-map</b><br><i>exist-rmap</i>        | Specifies a route map with match statements for a prefix list. A prefix in the BGP table must match a prefix in the prefix list before BGP will advertise the route. The <i>exist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters.  |                |  |                                       |  |  |   |
| <b>non-exist-map</b><br><i>nonexist-rmap</i> | Specifies a route map with match statements for a prefix list. A prefix in the BGP table must not match a prefix in the prefix list before BGP will advertise the route. The <i>nonexist-rmap</i> is a case-sensitive, alphanumeric string up to 63 characters.   |                |  |                                       |  |  |   |

**Command Default** None

**Command Modes** BGP neighbor address family configuration mode

| <b>Command History</b> | <table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>5.2(1)N1(1)</td><td>This command was introduced.</td></tr> </table> | Release | Modification | 5.2(1)N1(1) | This command was introduced. |
|------------------------|--|---------|--------------|-------------|------------------------------|
| Release                | Modification   |         |              |             |                              |
| 5.2(1)N1(1)            | This command was introduced.   |         |              |             |                              |

**Usage Guidelines** Use the **advertise-map** command to conditionally advertise selected routes. The routes or prefixes that BGP conditionally advertises are defined in two route maps, the *adv-map* and an *exist-map* or *nonexist-map*. The *exist-map* or *nonexist-map* specifies the prefix that the BGP tracks. The *adv-map* specifies the prefix that BGP advertises to the specified neighbor when the condition is met.

This command requires the LAN Enterprise Services license.

**Examples** This example shows how to configure BGP conditional advertisement:

```
switch# configure terminal
switch(config)# router bgp 65536
switch(config-router)# neighbor 192.0.2.2 remote-as 65537
switch(config-router-neighbor)# address-family ipv4 unicast
switch(config-router-neighbor-af)# advertise-map advertise exist-map exist
switch(config-router-neighbor-af)# exit
switch(config-router-neighbor)# exit
switch(config-router)# exit
switch(config)# route-map advertise
switch(config-route-map)# match as-path pathList
```



```
switch(config-route-map)# exit
switch(config)# route-map exit
switch(config-route-map)# match ip address prefix-list plist
switch(config-route-map)# exit
switch(config)# ip prefix-list plist permit 209.165.201.0/27
switch(config)#
```

**Related Commands**

| Command            | Description                             |
|--------------------|---|
| <b>feature bgp</b> | Enables BGP.                            |
| <b>neighbor</b>    | Configures a BGP peer.                  |
| <b>show ip bgp</b> | Displays BGP configuration information. |

# aggregate-address (BGP)

To create a summary address in a Border Gateway Protocol (BGP) routing table, use the **aggregate-address** command. To remove the summary address, use the **no** form of this command.

**aggregate-address** *address/length* [**advertise-map** *map-name*] [**as-set**] [**attribute-map** *map-name*] [**summary-only**] [**suppress-map** *map-name*]

**no aggregate-address** *address/mask-length* [**advertise-map** *map-name*] [**as-set**] [**attribute-map** *map-name*] [**summary-only**] [**suppress-map** *map-name*]

| Syntax Description                   |  |  |
|--------------------------------------|--|--|
| <i>address/length</i>                |  | Aggregate IPv4 address and mask length. Valid value for <i>length</i> is 1 to 32.  |
| <b>advertise-map</b> <i>map-name</i> |  | (Optional) Specifies the name of the route map used to select attribute information from specific routes.  |
| <b>as-set</b>                        |  | (Optional) Generates the autonomous system set path information and community information from the contributing paths.   |
| <b>attribute-map</b> <i>map-name</i> |  | (Optional) Specifies the name of the route map used to set the attribute information for specific routes. The <i>map-name</i> is an alphanumeric string up to 63 characters. |
| <b>summary-only</b>                  |  | (Optional) Filters all more-specific routes from updates.  |
| <b>suppress-map</b> <i>map-name</i>  |  | (Optional) Specifies the name of the route map used to conditionally filter more specific routes. The <i>map-name</i> is an alphanumeric string up to 63 characters.         |

| Command Default |   |
|-----------------|---|
|                 | The atomic aggregate attribute is set automatically when an aggregate route is created with this command unless the <b>as-set</b> keyword is specified. |

| Command Modes |                              |
|---------------|------------------------------|
| Release       | Modification                 |
| 5.2(1)N1(1)   | This command was introduced. |

| Usage Guidelines |   |
|------------------|---|
|                  | You can implement aggregate routing in BGP either by redistributing an aggregate route into BGP, or by using the conditional aggregate routing feature. |

The **aggregate-address** command without keywords creates an aggregate entry in the BGP routing table if any more-specific BGP routes are available that fall within the specified range. (A longer prefix which matches the aggregate must exist in the RIB.) The aggregate route will be advertised as coming from your autonomous system and will have the atomic aggregate attribute set to show that information might be missing. (By default, the atomic aggregate attribute is set unless you specify the **as-set** keyword.)

The **as-set** keyword creates an aggregate entry using the same rules that the command follows without this keyword, but the path advertised for this route will be an AS\_SET consisting of all elements contained in all paths that are being summarized. Do not use this form of the **aggregate-address** command when aggregating many paths, because this route must be continually withdrawn and updated as autonomous system path reachability information for the summarized routes changes.

The **summary-only** keyword not only creates the aggregate route (for example, 192.\*.\*.\*) but also suppresses advertisements of more-specific routes to all neighbors. If you want to suppress only advertisements to certain neighbors, you may use the **neighbor distribute-list** command, with caution. If a more-specific route leaks out, all BGP routers will prefer that route over the less-specific aggregate you are generating (using longest-match routing).

The **suppress-map** keyword creates the aggregate route but suppresses advertisement of specified routes. You can use the match clauses of route maps to selectively suppress some more-specific routes of the aggregate and leave others unsuppressed. IP access lists and autonomous system path access lists match clauses are supported.

The **advertise-map** keyword selects specific routes that will be used to build different components of the aggregate route, such as AS\_SET or community. This form of the **aggregate-address** command is useful when the components of an aggregate are in separate autonomous systems and you want to create an aggregate with AS\_SET, and advertise it back to some of the same autonomous systems. You must remember to omit the specific autonomous system numbers from the AS\_SET to prevent the aggregate from being dropped by the BGP loop detection mechanism at the receiving router. IP access lists and autonomous system path access lists match clauses are supported.

The **attribute-map** keyword allows attributes of the aggregate route to be changed. This form of the **aggregate-address** command is useful when one of the routes forming the AS\_SET is configured with an attribute such as the community no-export attribute, which would prevent the aggregate route from being exported. An attribute map route map can be created to change the aggregate attributes.

This command requires the LAN Enterprise Services license.

## Examples

### AS-Set Example

This example shows how to create an aggregate BGP address in router configuration mode. The path advertised for this route will be an AS\_SET consisting of all elements contained in all paths that are being summarized.

```
switch(config)# router bgp 64496
switch(config-router)# aggregate-address 10.0.0.0 255.0.0.0 as-set
```

### Summary-Only Example

This example shows how to create an aggregate BGP address in address family configuration mode and apply it to the multicast database (SAFI) under the IP Version 4 address family. Because the **summary-only** keyword is configured, more-specific routes are filtered from updates.

```
switch(config)# router bgp 64496
switch(config-router)# address-family ipv4 multicast
switch(config-router-af)# aggregate-address 10.0.0.0 255.0.0.0 summary-only
```

### Conditional Aggregation Example

This example shows how to create a route map called MAP-ONE to match on an as-path access list. The path advertised for this route will be an AS\_SET consisting of elements contained in paths that are matched in the route map.

```
switch(config)# ip as-path access-list 1 deny ^1234_
switch(config)# ip as-path access-list 1 permit .*
switch(config)# !
```

## ■ aggregate-address (BGP)

```
switch(config)# route-map MAP-ONE
switch(config-route-map)# match ip as-path 1
switch(config-route-map)# exit
switch(config)# router bgp 64496
switch(config-router)# address-family ipv4
switch(config-router-af)# aggregate-address 10.0.0.0 255.0.0.0 as-set advertise-map
MAP-ONE
switch(config-router-af)# end
```

**Related Commands**

| Command   | Description          |
|-----------|----------------------|
| route-map | Creates a route map. |