This chapter describes configuration for performing maintenance of switch elements.

This chapter contains these sections:

- Section 10.1: Overview
- Section 10.2: Maintenance Mode Elements
- Section 10.3: Maintenance Mode Features
- Section 10.4: Maintenance Mode Configuration
- Section 10.5: Maintenance Mode Commands
10.1 Overview

Using maintenance mode, you can perform several maintenance activities such as:

- EOS image upgrade
- Initial configuration or reconfiguration of a production system
- Replacement of hardware
- Changing linecards or transceiver modules
- Replace, reattach, and reroute cables

Maintenance mode uses BGP to divert traffic away from the switch on which the maintenance tasks need to be performed, minimizing traffic impact. You can set the traffic thresholds and time limits at which the switch, or parts of the switch, is considered to be available for maintenance tasks.

Maintenance mode can be activated on a switch at boot-up or during operation. The mode provides the following benefits:

- Rerouting of traffic when the mode is activated during operation and other routes are present
- Replacement of hardware in modular systems or systems with redundant hardware

The switch is placed into maintenance mode, serviced, and then returned to normal operation.
10.2 Maintenance Mode Elements

Maintenance mode elements include Units, Groups of Interfaces and BGP Peers, and Profiles. Arista Network switches provide maintenance mode operations performed on a fundamental, configurable element, referred to as a Unit. Maintenance mode will quiesce a unit, which places the unit into maintenance mode by gracefully transitioning traffic away from it.

The most common maintenance mode operations such as removing from service an entire switch system or individual components of the switch, including a single linecard, interface, or BGP peer, can be achieved using minimal configuration.

10.2.1 Units

Units are configurable maintenance mode elements that comprise a collection of various groups. In addition, units contain policies which decide whether the member groups should be put into maintenance mode automatically upon boot. Built-in units are configured by default, such as the System unit representing the entire system. All maintenance mode operations are executed at the unit level.

An interface, interface range, and BGP peer (or peer-group) can be directly put under maintenance.

10.2.1.1 Built-in Units

There are various built-in units such as System and Linecard<n>. Fixed systems contain only one built-in unit called System, which comprises the interface group containing all Ethernet interfaces and sub-interfaces; and BGP groups per VRF containing all the peers in the respective VRF.

Modular Systems have both System and Linecard<n> units. Linecard<n> units are present for each linecard which comprises the Linecard<n> groups containing all Ethernet interfaces and sub-interfaces of that linecard.
10.2.1.2 User-configured Units

You can also configure customized units containing user-defined groups and policies as shown in the following example. A custom group called BG1 with a custom interface IG1 and a unit profile UP1 is created. The show command displays the details.

```
switch(config)#maintenance
switch(config-maintenance)# unit UNIT1
switch(config-unit-UNIT1)# group bgp BG1
switch(config-unit-UNIT1)# group interface IG1
switch(config-unit-UNIT1)# profile unit UP1
switch(config-unit-UNIT1)# exit
switch(config-maintenance)# show maintenance units
```

```
Unit Name: System
Origin: Built-in
Status: Not Under Maintenance
Unit Profile: Default
Time Since Last State Change: never
Bgp Groups:
AllBgpNeighborVrf-default
Interface Groups:
AllEthernetInterface
Unit Name: UNIT1
Origin: User Configured
Status: Under Maintenance
Unit Profile: UP1
Time Since Last State Change: 0:00:08 ago
Bgp Groups:
BG1
Interface Groups:
IG1
```

10.2.2 Groups of Interfaces and BGP Peers

Maintenance mode group types include the groups for interfaces and BGP peers. Groups are identified by a group name unique to a particular group type.

By default, several built-in groups are available on the device such as `linecard` groups containing physical interfaces.

10.2.2.1 Built-in Groups

There are several built-in groups such as `AllEthernetInterface`, `Linecard1`, `Linecard2`, etc., `AllBgpNeighborVrf-<vrf_name>`. `AllEthernetInterface` is the built-in interface group which contains all physical Ethernet interfaces and sub-interfaces on the switch, and is a part of `System` unit. Whereas on modulars `Linecard1`, `Linecard2`, etc., are the built-in groups which contain respective linecard interfaces and sub-interfaces; and are part of the `Linecard1` and `Linecard2` units respectively. `AllBgpNeighborVrf-<vrf_name>` is the built-in BGP group which contains all the BGP peers in that particular VRF.
10.2.2.2 User-defined Groups

The following set of commands sets up a custom group (IG1) of interfaces, which includes physical ports, port-channels and SVIs.

```
switch(config)#group interface IG1
switch(config-group-if-IG1)#interface Ethernet1
switch(config-group-if-IG1)#interface Port-Channel1,20
switch(config-group-if-IG1)#interface Vlan1-20
switch(config-group-if-IG1)#exit
switch(config)#
```

**Note**

User-defined interface groups do not contain sub-interfaces.

The following set of commands sets up a custom group (BG1) of BGP peers.

```
switch(config)#group bgp BG1
switch(config-group-bgp-BG1)#neighbor 10.0.0.1
switch(config-group-bgp-BG1)#neighbor BGP_PG1
switch(config-group-bgp-BG1)#vrf vrf1
switch(config-group-bgp-BG1)#exit
switch(config)#
```

**Note**

BGP groups are specific to VRF.

10.2.3 Profiles

Profiles are configurable maintenance mode elements that define policies for related software or hardware components to carry out maintenance mode operations.

10.2.3.1 Default Profiles

Default profiles are the built-in policies which are applied to groups interface/BGP and unit.

The default profile is used in the absence of an explicit interface/BGP profile associated with the group, or explicit unit profile associated with the unit.

- **Interface Profile**

  Default interface profile has rate-monitoring load-interval set to 60 seconds, threshold set to 100 kbps, and shutdown disabled as shown. The max-delay parameter is set to 300 seconds but is not enabled.

  ```
  switch(config-maintenance)#show maintenance profile interface default
  Interface Profile: Default
  Rate Monitoring:
  load-interval: 60 seconds
  threshold (in/out): 100 kbps
  shutdown:
  enabled: no
  max-delay: 300 seconds
  ```
• **BGP Profile**
  Default BGP profile has route-map with set clauses—set community GSHUT additive and set local-preference 0.

  switch(config-maintenance)#show maintenance profile bgp default
  Bgp Profile: Default
  Initiator route-map: SystemGenerated
  route-map SystemGenerated permit 10
  Description:
  description System generated initiator route-map
  Match clauses:
  SubRouteMap:
  Set clauses:
  set local-preference 0
  set community GSHUT additive

• **Unit Profile**
  Default unit profile has on-boot setting disabled.

  switch(config-maintenance)#show maintenance profiles unit default
  Unit Profile: Default
  On-boot:
  enabled: no
  duration: 300 seconds

10.2.3.2 **User-defined Profiles**
You can define your own profiles which can be associated to groups or set as default profiles.

**Interface Profile:** The following set of commands sets up an Interface Profile(IP1) with load interval set to 10 seconds, rate-monitoring threshold set to 100kbps and the maximum delay for shutting down the interface set to 100 seconds. The interface will be shutdown with cause maint-down if traffic does not drain below the threshold even after the specified maximum delay period of 100 seconds.

  switch(config)#maintenance
  switch(config-maintenance)#profile interface IP1
  switch(config-profile-intf-IP1)#rate-monitoring load-interval 10
  switch(config-profile-intf-IP1)#rate-monitoring threshold 100
  switch(config-profile-intf-IP1)#shutdown max-delay 100
  switch(config-profile-intf-IP1)#exit
  switch(config-maintenance)#

  An interface profile can be associated to only interface groups using the following set of commands.

  switch(config)#group interface IG1
  switch(config-group-if-IG1)#maintenance profile interface IP1
  switch(config-group-if-IG1)#exit
  switch(config)#

  You can set the interface profile as the default interface profile using the following set of commands.

  switch(config)#maintenance
  switch(config-maintenance)# profile interface IP1 default
  switch(config-maintenance)# exit
  switch(config)
Bgp Profile: The following set of commands sets up a BGP profile(BP1) with initiator route-map called RM which will be applied for both inbound and outbound directions.

```
switch(config)#maintenance
switch(config-maintenance)#profile bgp BP1
switch(config-profile-bgp-BP1)#initiator route-map RM inout
switch(config-profile-bgp-BP1)#exit
switch(config-maintenance)#
```

A BGP profile can be associated to both interface and bgp groups using the following commands.

```
switch(config)#group interface IG1
switch(config-group-if-IG1)#maintenance profile bgp BP1
switch(config)# group bgp BG1
switch(config-group-bgp-BG1)# maintenance profile bgp BP1
switch(config-group-bgp-BG1)# exit
switch(config)#
```

You can set the bgp profile as the default bgp profile using the following set of commands.

```
switch(config)# maintenance
switch(config-maintenance)# profile bgp BP1 default
switch(config-maintenance)# exit
switch(config)#
```

Unit Profile: The following set of commands sets up a Unit profile(UP1) with on-boot duration of 300 seconds. The unit will enter into maintenance mode at boot-up and exit maintenance mode at the end of 5 minutes (300sec) after boot-up.

```
switch(config-maintenance)#profile unit UP1
switch(config-profile-unit-UP1)#on-boot duration 300
switch(config-profile-unit-UP1)#exit
switch(config-maintenance)#
```

A Unit profile can be associated to a Unit using the following commands.

```
switch(config)# maintenance
switch(config-maintenance)# unit UNIT1
switch(config-unit-UNIT1)# profile unit UP1
switch(config-unit-UNIT1)# exit
switch(config-maintenance)#
```

You can set the Unit profile as the default Unit profile using the following set of commands.

```
switch(config)# maintenance
switch(config-maintenance)# profile unit UP1 default
switch(config-maintenance)# exit
switch(config)#
```
10.3 Maintenance Mode Features

Arista Network switches provide maintenance mode features including rate monitoring, BGP maintenance route map, on-boot maintenance, and EventMgr integration.

10.3.1 Rate Monitoring

Rate monitoring provides a mechanism to monitor traffic on interfaces identified for maintenance. You can set the traffic threshold and a time limit for the interface to be shutdown for maintenance tasks.

A shutdown parameter can be configured in the interface profile that signals the interface to be shutdown after it has entered maintenance mode.

The max-delay parameter specifies the maximum number of seconds to allow for traffic to dissipate from the interface before the interface is shutdown. The default interface profile settings are shown in the output of the `show maintenance profile interface default` command.

**Note**
The exclusive rate monitoring of sub-interfaces is not supported. Sub-interfaces inherit the interface profile from its parent interface. In case of multiple sub-interfaces configured for single parent interface, rate monitoring of parent interface include aggregate values of all respective sub-interfaces.

10.3.2 BGP Maintenance Route Map

Route-maps are used within a BGP maintenance profile to tag the inbound and outbound routes in order to direct traffic away from the unit. The default profile tags the inbound and outbound routes with the global shutdown community. Other methods can be configured under the route-map such as alternate communities, or by using AS_PATH prepend operations.

10.3.3 On-boot Maintenance

There are two ways of placing a unit in maintenance mode on switch boot-up:

- The unit is placed into maintenance mode prior to the switch reboot, and the running-config is saved prior to switch boot-up.
- The on-boot property in the unit maintenance profile specifies that the unit will be placed into maintenance mode as part of boot-up, and remains so for the specified duration.

**Note**
The duration value in the on-boot unit maintenance profile starts as soon as the unit is put into maintenance mode on boot-up.
10.4 Maintenance Mode Configuration

You can configure maintenance mode for the entire device, specific linecards, or any other Unit. You can set up configuration for maintenance mode for the device at boot-up or while it is running.

**Note**

Explicit maintenance of sub-interfaces is not supported. Sub-interfaces are put into maintenance implicitly in case of built-in unit maintenance and interface maintenance but not in case of user-configured units.

10.4.1 Unit (System, Linecard\(n\), etc.) Configuration

Arista Network switches provide the ability to place the switch in maintenance mode, and configuration options for groups, profiles, associating profiles with groups, units, and maintenance mode operations. System is a predefined (built-in) unit on all switches. Built-in groups include AllEthernetInterface, AllBgpNeighborVRF-<vrf_name>, and Linecard\(n\). Linecard\(n\) can also be a built-in unit and can be differentiated depending on the command being used as shown.

- switch(config-maintenance)# unit Linecard\(n\)
- switch(config)# group interface Linecard\(n\)

Built-in unit System comprises the following groups:

- **AllEthernetInterface** - a built-in interface group which contains all physical Ethernet interfaces on the switch on a fixed system
- **Linecard\(n\)** - a built-in interface group which contains all interfaces for the linecard numbered ‘\(n\)’ for modular systems
- **AllBgpNeighborVRF-<vrf_name>** - a built-in BGP group which contains all the BGP peers in the named VRF.

For each Linecard ‘\(n\)’, there is a built-in unit which consists of all the Linecard\(n\) groups.

By default, the default interface and BGP profiles are applied to the built-in interface and BGP groups and the default built-in unit profile is applied to the built-in unit. You can also configure your own profiles and choose a default.

In the following example, traffic is flowing through multiple switches in the spine to and from one switch to another, when you elect to put one of the Units (entire switch or parts thereof) in the spine switch in maintenance mode. The traffic is then gracefully steered away from the Unit, provided other paths are available. Traffic will continue to flow through the Unit placed into maintenance mode, if no other path is available.
Example

Note
The illustration shows an entire switch as the Unit. You can replace switch with Linecardn or another relevant Unit as appropriate.

Figure 10-1: Traffic flow pattern between TOR and Core – Before Maintenance

Figure 10-2: Traffic flow pattern between TOR and Core – After unit on Spine-1 is put into Maintenance

You can see the status of the Unit (System) using the `show maintenance units System` command for the example above before the system is placed into maintenance mode. If the device being placed into maintenance mode is modular and the Unit is a linecard, replace the argument `System` with `Linecardn` to see the status of the Unit (Linecardn).

```
switch(config)# show maintenance units System
Unit Name: System
  Origin: Built-in
  Status: Not Under Maintenance
  Unit Profile: Default
  Time Since Last State Change: never
  Bgp Groups:
    ALLBgpNeighborVrf-default
  Interface Groups:
    AllEthernetInterface
```
You can then place the Unit (System) into maintenance mode and recheck the status using the sequence of commands shown:

```
switch(config-maintenance)# unit System
switch(config-built-in-unit-System)# quiesce
switch(config-built-in-unit-System)# exit
switch(config-maintenance)# show maintenance
```

Flags:
- o - On-boot maintenance
- v - Violating traffic threshold

<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Under Maintenance</td>
<td>0:02:03 ago</td>
<td></td>
</tr>
</tbody>
</table>

```
switch(config-maintenance)# show ip bgp summary
```

Router identifier 1.1.1.1, local AS number 101

<table>
<thead>
<tr>
<th>Neighbor</th>
<th>V</th>
<th>AS</th>
<th>MsgRcvd</th>
<th>MsgSent</th>
<th>InQ</th>
<th>OutQ</th>
<th>Up/Down State</th>
<th>PfxRcd</th>
<th>PfxAcc</th>
</tr>
</thead>
<tbody>
<tr>
<td>m 1.1.1.2</td>
<td>4</td>
<td>100</td>
<td>24</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>00:00:40 Estab</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>m 3.3.3.33</td>
<td>4</td>
<td>102</td>
<td>15</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>00:06:23 Estab</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note**
The 'o' flag is shown for on-boot maintenance in the `show maintenance` command and the 'm' neighbor status flag in the `show ip bgp summary` command indicates that the peer is in maintenance mode.

### 10.4.2 On-boot Maintenance Mode Configuration

To configure on-boot maintenance, you can use one of two methods:

- Use `quiesce config`
- Use on-boot profile

#### 10.4.2.1 Using quiesce config: You must perform the following tasks to place the Unit in maintenance mode on boot-up using the `quiesce` command.

**Step 1** Place the unit into maintenance mode prior to switch reboot using the following commands.

```
switch(config)#maintenance
switch(config-maintenance)# unit System
switch(config-unit-System)# quiesce
switch(config-unit-System)# exit
switch(config-maintenance)# show maintenance
```

Flags:
- o - On-boot maintenance
- v - Violating traffic threshold

<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Status</th>
<th>Time since last change</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Under Maintenance</td>
<td>00:01:10 ago</td>
</tr>
</tbody>
</table>

**Step 2** Save the running-config using the following command.

```
switch(config)# copy running-config startup-config
Copy completed successfully
switch(config)#
```
Step 3  Reload the device.

```
switch(config)# reload
Proceed with reload? [Confirm] Yes
Connection to switch closed.
```

After the device comes up, you must execute the `no quiesce` command for the Unit to come out of maintenance mode. You can check the status of the device after it comes up using the `show maintenance` command.

```
switch# show maintenance
Flags:
o - On-boot maintenance
v - Violating traffic threshold

Unit Name                Status                  Time since last change    Flags
----------------------- ----------------------- -------------------------- ----- 
System                  Under Maintenance           00:03:10 ago
```

10.4.2.2 Using on-boot profile: The on-boot property in the Unit maintenance profile specifies that the Unit will be placed into maintenance mode as part of boot-up for the specified duration. You must perform the following tasks to use this method.

Step 1  Check to see if the on-boot maintenance mode is enabled using the `show maintenance profiles unit default`.

```
switch# show maintenance profiles unit default
Unit Profile: Default
On-boot:
    enabled: no
    duration: 300 seconds
```

Step 2  Configure an on-boot profile with on-boot enabled and a duration specified. Make this the default Unit profile. The following code example shows the creation of an on-boot duration of 300 seconds in the profile unit UP1

```
switch(config)# maintenance
switch(config-maintenance)# profile unit UP1
switch(config-profile-unit-UP1)# on-boot duration 300
switch(config-profile-unit-UP1)# exit
switch(config-maintenance)# profile unit UP1 default
switch(config-maintenance)# show maintenance profiles unit default
Unit Profile: UP1
    On-boot:
        enabled: yes
        duration: 300 seconds
```

Step 3  Save the running-config and reload the device.

```
switch(config)# copy running-config startup-config
Copy completed successfully
switch(config)# reload
Connection to switch closed.
```
Step 4  After the device comes up, execute the `show maintenance` and `show maintenance units System` commands.

```
switch(config)# show maintenance
Flags:
o - On-boot maintenance
v - Violating traffic threshold
Unit Name Status Time since last change Flags
---------------------- ----------------------- -------------------------- -----
System Under Maintenance 00:00:08 ago o
```

```
switch(config)# show maintenance units System
Unit Name: System
  Origin: Built-in
  Status: Under Maintenance (on-boot)
  Unit Profile: UP1
  Time Since Last State Change: 0:00:16 ago
  Will come out of on-boot Maintenance after 0:04:43
  Interface Groups:
    AllEthernetInterface
  History:
    2017-01-18 00:44:39 old state: 'maintenanceModeEnter' to new state: 'underMaintenance' 0:00:16 ago
    2017-01-18 00:43:54 old state: 'active' to new state: 'maintenanceModeEnter' 0:01:01 ago
```

The ‘o’ - flag shows that unit System is under maintenance due to on-boot profile. Also, `show maintenance units System` output shows the following - ‘Will come out of on-boot Maintenance after 0:04:43’, which is the time remaining of the specified duration of 5 minutes.

The Unit will come up in maintenance mode when the device boots up and will exit maintenance mode once the specified duration of 300 seconds in the default profile is completed. The BGP sessions will remain under maintenance for the duration and will resume after the specified duration is over.

10.4.3 Interface-level Maintenance Mode Configuration

To configure the maintenance mode at interface-level, you must perform the following tasks:

Step 1  Configure an interface-level profile (or use a pre-configured one). The following code example creates a user-defined interface profile IP1 with a rate-monitoring load-interval of 100 seconds, a rate-monitoring threshold of 500 kbps and a maximum shutdown delay of 100 seconds.

```
switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-maint-if-Et5)#rate-monitoring load-interval 100
switch(config-maint-if-Et5)#rate-monitoring threshold 500
switch(config-maint-if-Et5)#shutdown max-delay 100
```

Step 2  Make the user-defined interface profile IP1 as the default interface profile.

```
switch(config-maintenance)# profile interface IP1 default
```

Step 3  Place the interface into maintenance mode.

```
switch(config)#maintenance
switch(config-maintenance)#interface Ethernet 1
switch(config-maint-if-Et1)#quiesce
```

Step 4  Remove the interface from maintenance mode once the service has been performed.
Example

```bash
switch(config-maintenance)#interface Ethernet 1
switch(config-maint-if-Et1)#no quiesce
```

**Note**
If interface Et1 has sub-interfaces (Et1.1, Et1.2,...) with BGP peers on these sub-interfaces, then these
sub-interfaces are also placed into maintenance mode. The `show maintenance interface <sub-interface> detail`
command displays the maintenance state of sub-interfaces.

10.4.4 Entering Maintenance Mode

Enter configuration commands `unit` and `quiesce` using the `maintenance profile bgp` mode command to
place the switch into maintenance mode. The following code sequence places unit foo, the interface 3/3, and BGP 1.1.1.1 in maintenance mode.

```
Example
switch(config)#maintenance
switch(config-maintenance)#unit foo
switch(config-unit-foo)#quiesce
switch(config-unit-foo)#exit
switch(config-maintenance)#interface ethernet 3/3
switch(config-maint-if-Et3/3)#quiesce
switch(config-unit-if-Et3/3)#exit
switch(config-maintenance)#bgp 1.1.1.1
switch(config-maint-bgp-1.1.1.1)#quiesce
switch(config-maint-bgp-1.1.1.1)#exit
switch(config-maintenance)#
```

10.4.5 Exiting Maintenance Mode

Enter configuration commands `unit` and `no quiesce` using the `maintenance profile bgp` mode command for the switch to exit maintenance mode. The following code sequence causes unit foo, the interface 3/3, and BGP 1.1.1.1 to exit maintenance mode.

```
Example
switch(config)#maintenance
switch(config-maintenance)#unit foo
switch(config-unit-foo)#no quiesce
switch(config-unit-foo)#exit
switch(config-maintenance)#interface ethernet 3/3
switch(config-maint-if-Et3/3)#no quiesce
switch(config-unit-if-Et3/3)#exit
switch(config-maintenance)#bgp 1.1.1.1
switch(config-maint-bgp-1.1.1.1)#no quiesce
switch(config-maint-bgp-1.1.1.1)#exit
switch(config-maintenance)#
```

10.4.6 Configuring Event Handlers

Enter configuration options for the `show maintenance` command to fire at different stages while
entering or exiting maintenance mode.
Example for Maintenance Mode Event Handler for all Stages

```
switch(config)#event-handler foo
switch(config-handler-foo)#trigger on-maintenance enter unit unit-foo all
switch(config-handler-foo)#action bash /mnt/flash/mm-event-handler-script
switch(config-handler-foo)#timeout 20
switch(config-handler-foo)#exit
switch(config)#
```

**Note**
The user is expected to configure the timeout value. This is time within which the script should complete execution and exit. If the script has not exited by the end of this period, then the following will occur:
1. Send the SIGUSR1 signal to the script.
2. Wait for a GRACE-PERIOD of 10 seconds for the script to exit.
3. If the script does not exit even after that GRACE-PERIOD, then send a SIGKILL to the script.
4. The maintenance operation progresses to the next stage.

GRACE-PERIOD is not configurable.

```
switch(config)#event-handler bar
switch(config-handler-bar)#trigger on-maintenance exit unit unit-foo before stage ratemon
switch(config-handler-bar)#action bash /mnt/flash/mm-event-handler-script
switch(config-handler-bar)#exit
switch(config)#
```

### 10.4.7 Configuring Groups

Enter the maintenance mode configuration options for groups with the `maintenance` and `group bgp` commands.

**Example for group interface IG1**

```
switch(config)#group interface IG1
switch(config-group-if-IG1)#interface Ethernet1
switch(config-group-if-IG1)#interface Port-Channel1,20
switch(config-group-if-IG1)#interface Vlan1-20
switch(config-group-if-IG1)#exit
switch(config)#
```

**Example for group bgp BG1**

```
switch(config)#group bgp BG1
switch(config-group-bgp-BG1)#neighbor 10.0.0.1
switch(config-group-bgp-BG1)#neighbor BGP_PG1
switch(config-group-bgp-BG1)#vrf vrf1
switch(config-group-bgp-BG1)#exit
switch(config)#
```

**Note**
BGP groups are specific to VRF.

### 10.4.8 Configuring Profiles

Enter the maintenance mode configuration options for profiles with the `profile interface`, `rate-monitoring threshold`, `profile bgp`, and `profile unit <profile_name>` commands.

These command examples assign a user configured profile as the `default` profile.
Example for profile interface IP1

switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-profile-intf-IP1)#rate-monitoring load-interval 10
switch(config-profile-intf-IP1)#rate-monitoring threshold 100
switch(config-profile-intf-IP1)#shutdown max-delay 100
switch(config-profile-intf-IP1)#profile interface IP1 default
switch(config-profile-intf-IP1)#exit
switch(config-maintenance)#

Example for profile bgp BP1

switch(config-maintenance)#profile bgp BP1
switch(config-profile-bgp-BP1)#initiator route-map rmap inout
switch(config-profile-bgp-BP1)#profile bgp BP1 default
switch(config-profile-bgp-BP1)#exit
switch(config-maintenance)#

Example for profile unit UP1

switch(config-maintenance)#profile unit UP1
switch(config-profile-unit-UP1)#on-boot duration 300
switch(config-profile-unit-UP1)#profile unit UP1 default
switch(config-profile-unit-UP1)#exit
switch(config-maintenance)#

10.4.9  Associating Profiles with Groups

Enter the maintenance mode configuration options for associating profiles with groups using the `maintenance` and `group bgp` command.

Example

switch(config)#group interface IG1
switch(config-group-if-IG1)#maintenance profile bgp BP1
switch(config-group-if-IG1)#maintenance profile interface IP1
switch(config-group-if-IG1)#

Note  An interface/BGP profile can be associated with the interface group, and a BGP profile can be associated with the BGP group.

10.4.10  Configuring Units

Enter the maintenance mode configuration options for units using the `unit`, `group bgp`, and `maintenance` commands.

Example

switch(config)#maintenance
switch(config-maintenance)#unit foo
switch(config-unit-foo)#group bgp BG1
switch(config-unit-foo)#group interface IG1
switch(config-unit-foo)#profile unit UP1
10.4.11 Show Commands

Maintenance mode show commands display general and detailed information associated with maintenance mode.

10.4.11.1 show maintenance

This example of the show maintenance command displays maintenance mode details.

Example

```plaintext
switch(config)#show maintenance
Flags:
o - On-boot maintenance
v - Violating traffic threshold
Unit Name               Status                   Time since last change    Flags
---------------------- ----------------------- -------------------------- -----  
System                 Not Under Maintenance             never                   ----
Foo                    Under Maintenance              0:00:14 ago         ov   
Interface Name         Status                   Time since last change    Flags
---------------------- ----------------------- -------------------------- -----  
Ethernet4              Entering Maintenance           0:00:24 ago           ----
Bgp Neighbor(vrf: defa Status                   Time since last change    Flags
---------------------- ----------------------- -------------------------- -----  
12.12.12.12            Under Maintenance              0:00:04 ago           ----
Bgp Neighbor(vrf: red) Status                   Time since last change    Flags
---------------------- ----------------------- -------------------------- -----  
12.12.12.13            Under Maintenance              0:00:34 ago           ----
```

switch(config)#

10.4.11.2 show maintenance summary

This example of the show maintenance summary command displays a summary of maintenance mode information.

Example

```plaintext
switch(config)#show maintenance summary
Number of Units configured: 3
Number of Units not under maintenance: 2
Number of Units entering maintenance: 1
Number of Units under maintenance: 0
Number of Units exiting maintenance: 0
Directly Put Under Maintenance:
   Number of interfaces entering maintenance: 0
   Number of interfaces under maintenance: 2
   Number of bgp peers entering maintenance: 0
   Number of bgp peers under maintenance: 3
Rate Monitoring:
   Number of interfaces entering maintenance: 0
   Number of interfaces under maintenance: 4
   Number of interfaces under maintenance with threshold violation: 0
   Number of interfaces shutdown for maintenance: 0
```

switch(config)#
10.4.11.3 show maintenance units

This example of the `show maintenance units` command displays maintenance mode units details.

**Example**

```
switch(config)#show maintenance units
Unit Name: Linecard3
  Origin: User Configured
  Status: Under Maintenance
  Unit Profile: Default
  Time Since Last State Change: 0:12:07 ago
  Interface Groups:
    IG1
  Interface Traffic Threshold violations:
    Current violations: 1
    Et1
    Total violations, during maintenance: 5
  History:
    2016-04-27 04:00:42 old state: 'maintenanceModeEnter' to new state: 'underMaintenance' 0:12:07 ago
Unit Name: System
  Origin: Built-in
  Status: Not Under Maintenance
  Unit Profile: Default
  Time Since Last State Change: never
  Interface Groups:
    AllEthernetInterface

switch(config)#
```

10.4.11.4 show maintenance bgp

This example of the `shutdown max-delay` command displays maintenance mode BGP details for all IPs and VRFs.
Example

```
switch(config)#show maintenance bgp ip all vrf all
BGP peer maintenance information for VRF default
  Router identifier 2.2.2.1, local AS number 1
    Neighbor: 2.2.2.2
      Maintenance State: Not Under Maintenance
  BGP peer maintenance information for VRF red
    Router identifier 6.6.6.1, local AS number 1
    Neighbor: 1.1.1.2
    Maintenance State: Not Under Maintenance
    Router identifier 2.2.2.1, local AS number 1
    Neighbor: 2.2.2.2
    Maintenance State: Not Under Maintenance
    Maintenance route-map: SystemGenerated
      route-map SystemGenerated permit 10
        Description:
        Match clauses:
        Set clauses:
        set community GSHUT additive
        set local-preference 0
    Selected profile from BGP groups: Default
```

```
switch(config)#
```

10.4.11.5 show maintenance interface

This example of the `show maintenance interface status` command displays maintenance mode interface details.

Example

```
switch(config)#show maintenance interface
Flags:
  v - Violating traffic threshold
  s - Shutdown for maintenance

<table>
<thead>
<tr>
<th>Interface</th>
<th>Status</th>
<th>Rate (Mbps)</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet1</td>
<td>Under Maintenance</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet2</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet3</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet4</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet5</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

```
switch(config)#
```

10.4.11.6 show maintenance interface status quiesced

This example of the `show maintenance interface status quiesced` command displays maintenance mode interface status details for quiesced interfaces.
Example

```
switch(config)#show maintenance interface status quiesced
Flags:
v - Violating traffic threshold
s - Shutdown for maintenance

<table>
<thead>
<tr>
<th>Interface</th>
<th>Status</th>
<th>Rate (Mbps)</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet1</td>
<td>Under Maintenance</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet2</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet4</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
```

switch(config)#

10.4.11.7 show maintenance groups

This example of the `shutdown max-delay` command displays maintenance mode group details.

Example

```
switch(config)#show maintenance groups
Interface Group: IG1
  Interfaces:
    Et4-6
  Profiles:
    Interface Profile: IP1
    Units: newEt
  Bgp Group: BG
  Neighbors:
    IPv4 Peers: 4.4.4.2, 1.1.1.2, 3.3.3.2
    IPv6 Peers: 3::3
  Bgp Profile: prepend
  Units: newBG

switch(config)#
```

10.4.11.8 show maintenance profiles

This example of the command displays maintenance mode profile details.

Example

```
switch(config)#show maintenance profiles
Interface Profile: INTFPROFILE
  Rate Monitoring:
    load-interval: 444 seconds
    threshold (in/out): 4000 Kbps
  shutdown:
    enabled: yes
    max-delay: 399 seconds
  Bgp Profile: BGPPROFILE
    Initiator route-map:
      name: rm
  Unit Profile: UNITPROFILE
    On-boot:
      enabled: yes
      duration: 340 seconds
```

switch(config)#
10.4.11.9 show interface status

This example of the `show interface <intf_name> status` command displays maintenance mode information for interfaces.

Example

```
switch(config)#show interface status
Port  Name          Status       Vlan  Duplex  Speed  Type                  Flags
Et1   connected     1    full    10G  EbraTestPhyP  mv
Et2   connected     1    full    10G  EbraTestPhyP  m
Et3   maint-down    1    full    10G  EbraTestPhyP  m
Et4   maint-down    1    full    10G  EbraTestPhyP  m
Et5   connected     1    full    10G  EbraTestPhyP
Et6   connected     1    full    10G  EbraTestPhyP
```

switch(config)#

10.4.11.10 show interface ethernet

This example of the `show interface ethernet` command displays maintenance mode information for an ethernet interface.

Example

```
switch(config)#show interface ethernet 4
Ethernet4 is down, line protocol is down (maint-down)
  Hardware is Ethernet, address is 0000.0101.0004 (bia 0000.0101.0004)
  Ethernet MTU 9214 bytes, BW 10000000 kbit
  Full-duplex, 10Gb/s, auto negotiation: off, uni-link: unknown
  Down 18 minutes, 39 seconds
  Under maintenance for 18 minutes, 42 seconds
  2 link status changes since last clear
  Last clearing of "show interface" counters never
  5 minutes input rate 0 bps (0.0% with framing overhead), 0 packets/sec
  5 minutes output rate 0 bps (0.0% with framing overhead), 0 packets/sec
  0 packets input, 0 bytes
  Received 0 broadcasts, 0 multicast
  0 runts, 0 giants
  0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
  0 PAUSE input
  94 packets output, 11562 bytes
  Sent 0 broadcasts, 94 multicast
  0 output errors, 0 collisions
  0 late collision, 0 deferred, 0 output discards
  0 PAUSE output
```

switch(config)#

10.4.11.11 show ip bgp neighbors

This example of the `show ip bgp neighbors` command displays IP BGP neighbors maintenance mode details.
Example

```
switch(config)#show ip bgp neighbors 1.1.1.2
BGP neighbor is 1.1.1.2, remote AS 1, external link
...
Prefix statistics:
IPv4 prefixes: 0 0
IPv6 prefixes: 0 0
Inbound route map is foo
Outbound route map is foo
Session is under maintenance
Maintenance-mode:
   Inbound and Outbound policy
   Route map is SystemGenerated
```

```
switch(config)#
```

10.4.11.12 show ip bgp summary

This example of the `show ip bgp summary` command displays maintenance mode information for IP BGP.

Example

```
switch(config)#show ip bgp summary
BGP summary information for VRF default
Router identifier 192.168.201.13, local AS number 100
Neighbor Status Codes: m - Under maintenance
Neighbor V AS MsgRcvd MsgSent InQ OutQ Up/Down State PfxRcd PfxAcc
m 1.0.0.1 4 300 983 988 0 0 16:16:03 Estab 1 1
m 1.0.1.1 4 300 983 983 0 0 16:15:58 Estab 1 1
```

```
switch(config)#
```

10.4.11.13 show maintenance stages

These examples of the `show maintenance stages` command display maintenance mode stages details.

Example

```
switch(config)#show maintenance stages
Maintenance Enter Stage Sequence
No. Stage Description
------- -------------- --------------------------
1     bgp BGP Maintenance processing
2     ratemon Interface Rate Monitoring
```

```
Maintenance Exit Stage Sequence
No. Stage Description
------- -------------- --------------------------
1     ratemon Interface Rate Monitoring
2     bgp BGP Maintenance processing
```

```
switch(config)#
```
Example

```
switch(config)#show maintenance bgp receiver route-map
description System generated receiver route-map
match community GSHUT-LIST

route-map SystemGenerated permit 10
match community GSHUT-LIST
route-map SystemGenerated permit 50
match community GSHUT-LIST
```

tg232(s1)(config)#show maintenance profiles interface
tg232(s1)(config)#show maintenance profiles bgp
tg232(s1)(config)#show maintenance profiles unit
tg232(s1)(config)#show maintenance profiles unit default

```
Unit Profile: Default
On-boot:
  enabled: no
  duration: 300 seconds
```

```
switch(config)#
```

Example

```
switch(config)#show maintenance profiles interface default
Interface Profile: Default
  Rate Monitoring:
    load-interval: 60 seconds
    threshold (in/out): 100 Kbps
  shutdown:
    enabled: no
    max-delay: 300 seconds

switch(config)#
```

Example

```
switch(config)#show maintenance profiles bgp default
Bgp Profile: Default
  Initiator route-map: SystemGenerated
    route-map SystemGenerated permit 10
    description System generated initiator route-map
    set local-preference 0
    set community GSHUT additive

switch(config)#
```
Example

```
switch(config)#show maintenance profiles unit default
Unit Profile: Default
   On-boot:
       enabled: no
       duration: 300 seconds
```

```
switch(config)#
```

10.4.12 Syslog Messages

Maintenance mode syslog messages are as follows:

- MaintenanceMode: `%MMODE-4-MAINT_OP_WARNING`: Unit config is deleted for unit foo. The unit is still undergoing maintenance operation.


- MaintenanceMode: `%ETH-6-MAINTENANCE_DOWN`: Interface Et1 has been shutdown for maintenance.

- MaintenanceMode: `%MMODE-5-INTF_PROFILE_CHANGE`: For interface Et1 interface profile changed to IP1.

- Rib: `%BGP-6-MAINTENANCE-MODE`: peer 1.1.1.1 is placed under maintenance.

- Rib: `%BGP-6-MAINTENANCE-MODE`: peer 1.1.1.1 is taken out of maintenance.
10.5 Maintenance Mode Commands

Global Configuration Commands
- group bgp
- group interface
- maintenance

Group Configuration Commands
- interface
- maintenance profile bgp
- maintenance profile interface
- neighbor
- vrf

Maintenance Configuration Commands
- bgp <peer> [vrf <vrf_name>]
- interface
- profile bgp
- profile unit <profile_name> default
- profile interface
- profile interface <profile_name> default
- profile unit
- profile unit <profile_name> default
- unit

Unit Configuration Commands
- group bgp <group_name>
- group interface <group_name>
- profile unit
- quiesce

Interface Profile Configuration Commands
- rate-monitoring load-interval
- rate-monitoring threshold
- shutdown max-delay

BGP Profile Configuration Commands
- initiator route-map <route-map-name> inout

Unit Profile Configuration Commands
- on-boot duration

EventMgr Configuration Commands
- trigger on-maintenance

Display Commands
- show maintenance
- show maintenance bgp
- show maintenance bgp receiver route-map
- show maintenance debug
- show maintenance groups
- show maintenance interface
• show maintenance interface status
• show maintenance profiles
• show maintenance stages
• show maintenance summary
• show maintenance units

Enhanced Commands to show Maintenance Status
• show interface
• show interface <intf_name> status
• show ip | ipv6 bgp
• show ip | ipv6 bgp summary [ vrf <vrf_name> ]
**bgp <peer> [vrf <vrf_name>]**

The `bgp <peer> [vrf <vrf_name>]` command places the switch in maintenance dynamic BGP unit configuration mode. If no VRF is specified, the BGP peer is considered to be in the DEFAULT VRF, otherwise, in the specified VRF.

The command creates the dynamic BGP unit if the specified dynamic BGP unit does not exist prior to issuing the command.

The `no bgp <peer> [vrf <vrf_name>]` and `default bgp <peer> [vrf <vrf_name>]` removes the dynamic BGP unit from `running-config`.

**Command Mode**
- Maintenance Configuration

**Command Syntax**

```
bgp  ipv4_addr  [vrf <vrf_name>]  
bgp  ipv6_addr  [vrf <vrf_name>]  
bgp  peer_group_name  [vrf <vrf_name>]  
<no | default> bgp  ipv4_addr|ipv6_addr|peer_group_name  [vrf <vrf_name>]  
```

**Parameters**
- `ipv4_addr` BGP neighbor IPv4 address
- `ipv6_addr` BGP neighbor IPv6 address
- `peer_group_name` BGP peer group name
- `vrf_name` name of the VRF to which the BGP peer belongs

**Commands available in maintenance dynamic interface unit configuration mode:**
- `quiesce`

**Example**

- This command creates dynamic BGP unit for IPv4 addr 1.0.1.1, IPv6 addr 1::1 with quiesce and peer-group PG in VRF VRF1 under maintenance configuration.

```
switch(config)#maintenance
switch(config-maintenance)#bgp 1.0.1.1
switch(config-maint-bgp-1.0.1.1)#exit
switch(config-maintenance)#bgp 1::1
switch(config-maint-bgp-1::1)#quiesce
switch(config-maint-bgp-1::1)#exit
switch(config-maintenance)#bgp PG vrf VRF1
switch(config-maint-bgp-PG)#exit
switch(config-maint-bgp-PG)#show active
maintenance
  bgp 1.0.1.1
  
  bgp 1::1
    quiesce
  !
  bgp PG vrf VRF1
switch(config-maintenance)#
```
**group bgp**

The `group bgp <group_name>` command places the switch in group-BGP configuration mode for configuring the members of a BGP group in a particular VRF and associating a BGP maintenance profile for these members.

The command creates the group if the specified group does not exist prior to issuing the command. The `no group bgp <group_name>` and `default group bgp <group_name>` removes the BGP group.

**Command Mode**

Global Configuration

**Command Syntax**

```
group bgp group_name
no group bgp group_name
default group bgp group_name
```

**Parameters**

- `group_name` name of the BGP group

**Commands available in group-BGP configuration mode:**

- `neighbor (ipv4 address | ipv6 address | peer-group)`
- `vrf (vrf-name)`
- `maintenance profile bgp`

**Note**

Built-in BGP groups like `AllBgpNeighborVrf-default` and `AllBgpNeighborVrf-<vrf_name>` do not allow neighbor configuration. Only BGP maintenance profile can be associated to them.

**Example**

- This command creates a BGP group BG1 and enters into group BGP BG1 configuration mode.
  ```
  switch(config)#group bgp BG1
  switch(config-group-bgp-BG1)# show active
  group bgp BG1
  exit
  switch(config-group-bgp-BG1)#
  ```

- This command enters into BGP built-in configuration mode for AllBgpNeighborVrf-default.
  ```
  switch(config)#group bgp AllBgpNeighborVrf-default
  switch(config-builtin-group-bgp-AllBgpNeighborVrf-default)#show active
  group bgp AllBgpNeighborVrf-default
  exit
  switch(config-builtin-group-bgp-AllBgpNeighborVrf-default)#exit
  switch(config)#show maintenance groups bgp AllBgpNeighborVrf-default
  BGP Group: AllBgpNeighborVrf-default
  Origin: Built-in
  Neighbors:
        Ipv4 Peers: 1.0.0.1, 1.0.1.2
  Bgp Profile: Default
  Vrf: default
  Units: System
  switch(config)#
  ```
**group bgp <group_name>**

The `group bgp <group_name>` command adds a BGP group to a unit.

The `no group bgp <group_name>` and `default group bgp <group_name>` removes the BGP group from a unit.

**Command Mode**

Maintenance Unit Configuration

**Command Syntax**

```
group bgp group_name
no group bgp group_name
default group bgp group_name
```

**Parameters**

- `group_name` name of the BGP group

**Example**

- This command adds a BGP group **BG1** to unit **UNIT1**.

```
switch(config)#maintenance
switch(config-maintenance)# unit UNIT1
switch(config-unit-UNIT1)# group bgp BG1
switch(config-unit-UNIT1)# show active maintenance
  unit UNIT1
    group bgp BG1
switch(config-unit-UNIT1)
```
**group interface**

The `group interface` command places the switch in group-intf configuration mode for configuring the members of interface group and associating a BGP/interface maintenance profile for these members.

The command creates the group if the specified group does not exist prior to issuing the command.

The `no group interface <group_name>` and `default group interface <group_name>` removes the interface group.

**Command Mode**

Global Configuration

**Command Syntax**

```
group interface group_name

no group interface group_name

default group interface group_name
```

**Parameters**

- `group_name` name of the interface group

**Commands available in group-BGP configuration mode:**

- `interface`
- `maintenance profile bgp`
- `maintenance profile interface`

**Note**

Built-in Interface groups like `AllEthernetInterface`, `Linecard3`, `Linecard4`, etc. do not allow interface configurations. Only BGP/interface maintenance profiles can be associated to them.

**Example**

- This command creates an interface group IG1 and enters into group interface IG1 configuration mode.

  ```
  switch(config)#group interface IG1
  switch(config-group-if-IG1)# show active
  group interface IG1
  exit
  switch(config-group-if-IG1)#
  ```

- This command enters into built-in interface group `AllEthernetInterface`.

  ```
  switch(config)#group interface AllEthernetInterface
  switch(config-builtin-group-if-AllEthernetInterface)# show active
  group interface AllEthernetInterface
  exit
  switch(config-builtin-group-if-AllEthernetInterface)# exit
  switch(config)# show maintenance groups interface AllEthernetInterface
  Interface Group: AllEthernetInterface
  Origin: Built-in
  Interfaces:
    Et1, Et2, Et3, Et4, Et5/1, ... Et34, Et35, Et36
  Profiles:
    Interface Profile: Default
    Bgp Profile: Default
  Units: System#
  ```
**group interface <group_name>**

The `group interface <group_name>` command adds an interface to a unit.

The `no group interface <group_name>` and `default group interface <group_name>` removes the interface group from a unit.

**Command Mode**

Maintenance Unit Configuration

**Command Syntax**

```
group interface group_name
no group interface group_name
default group interface group_name
```

**Parameters**

- `group_name` name of the interface group

**Example**

- This command adds an interface group IG1 to unit UNIT1.

```
switch(config)#maintenance
switch(config-maintenance)# unit UNIT1
switch(config-unit-UNIT1)# group interface IG1
switch(config-unit-UNIT1)# show active
maintenance
    unit UNIT1
        group interface IG1
switch(config-unit-UNIT1)
```
**initiator route-map <route-map-name> inout**

The `initiator route-map <route-map-name> inout` command is a maintenance BGP profile configuration option for assigning the initiator route-map, which will be applied to inout (inbound and outbound).

The `no initiator route-map <route-map-name> inout` and `default initiator route-map <route-map-name> inout` removes this configuration from the BGP profile.

**Command Mode**

Maintenance-Profile-BGP Configuration

**Command Syntax**

```
initiator route-map route-map-name inout
no initiator route-map
default initiator route-map
```

**Parameters**

- `route-map-name` initiator route-map name

**Example**

- This command configures initiator route-map RM1 within a BGP profile BP1.

```
switch(config)#maintenance
switch(config-maintenance)#profile bgp BP1
switch(config-profile-bgp-BP1)#initiator route-map RM1 inout
switch(config-profile-bgp-BP1)#show active
maintenance
  profile bgp BP1
    initiator route-map RM1 inout

switch(config-profile-bgp-BP1)#
```
interface

The `interface` command adds interfaces to interface group.

The `no interface <intf-name>` and `default interface <intf-name>` removes the interface from the group.

**Command Mode**
- Group-Interface Configuration

**Command Syntax**
```
interface interface-name
no interface interface-name
default interface interface-name
```

**Parameters**
- `interface-name` name of the interface
  - ethernet `e_range` Ethernet interfaces specified by `e_range`
  - port-channel `p_range` port channel interfaces specified by `p_range`
  - vlan `v_range` vlans specified by `v_range`.

Valid `e_range`, `p_range` and `v_range` formats include number, range, or comma-delimited list of numbers and ranges. Valid Ethernet numbers depend on the Ethernet interfaces available on the switch.

**Example**
- This command adds **Ethernet8**, **Ethernet9**, and **port-channel10** to the interface group **IG1**.

  ```
  switch(config)#group interface IG1
  switch(config-group-if-IG1)#interface Ethernet8-9
  switch(config-group-if-IG1)#interface port-channel10
  switch(config-group-if-IG1)#show active
  group interface IG1
    interface Et8-9
    interface Po10
  switch(config-group-if-IG1)#exit
  switch(config)#
  ```
interface

The `interface <intf-name>` command places the switch in maintenance dynamic interface unit configuration mode.

The command creates the dynamic interface unit if the specified dynamic interface unit does not exist prior to issuing the command.

The `no interface <intf-name>` and `default interface <intf-name>` removes the dynamic interface unit from `running-config`.

Command Mode
Maintenance Configuration

Command Syntax

- `interface interface-name`
- `no interface interface-name`
- `default interface interface-name`

Parameters

- `interface-name` name of the interface
- `ethernet e_range` Ethernet interfaces specified by `e_range`
- `port-channel p_range` port channel interfaces specified by `p_range`
- `vlan v_range` vlans specified by `v_range`.

Valid `e_range, p_range` and `v_range` formats include number, range, or comma-delimited list of numbers and ranges.

Note
Different dynamic interface units are created for each interface in the range.

Commands available in maintenance dynamic interface unit configuration mode:

- `quiesce`

Example

- This command creates two dynamic interface units for interfaces Ethernet1-2 under maintenance configuration.

```
switch(config)#maintenance
switch(config-maintenance)#interface Ethernet1-2
switch(config-maint-if-Et1-2)#exit
switch(config-maintenance)#show active
maintenance
  interface Ethernet1
  !
  interface Ethernet2
switch(config-maintenance)#
```
maintenance

The maintenance command allows you to enter maintenance configuration mode and specify maintenance configuration options.

The no maintenance and default maintenance command removes the maintenance configuration from the running-config.

Command Mode
Global Configuration

Command Syntax

- maintenance
- no maintenance
- default maintenance

Commands available in maintenance configuration mode:
- unit
- bgp
- interface
- profile bgp
- profile interface
- profile unit
- profile interface <profile-name> default
- profile bgp <profile-name> default
- profile unit <profile-name> default

Examples
- This example shows the commands to enter maintenance configuration mode and configure maintenance related parameters.

```
switch(config)#maintenance
switch(config-maintenance)#profile unit foo
switch(config-profile-unit-foo)#on-boot duration 300
switch(config-profile-unit-foo)#exit
switch(config-maintenance)#unit U1
switch(config-unit-U1)#group interface IG1
switch(config-unit-U1)#group bgp BG1
switch(config-unit-U1)#profile unit foo
switch(config-unit-U1)#exit
switch(config-maintenance)#show active maintenance
  profile unit foo
    on-boot duration 300
  unit U1
    group interface IG1
    group bgp BG1
    profile unit foo
switch(config-maintenance)#
```
maintenance profile bgp

The `maintenance profile bgp <profile-name>` command associates a BGP maintenance profile to an interface/BGP group. A BGP profile can be associated to both the interface and BGP group.

The `no maintenance profile bgp <profile-name>` and `default maintenance profile bgp <profile-name>` removes the profile from the interface/BGP group.

Command Mode
- Group-Interface Configuration
- Group-BGP Configuration
- Built-in-Group-Interface Configuration
- Built-in-Group-BGP Configuration

Command Syntax

```
maintenance profile bgp profile-name
no maintenance profile bgp profile-name
default maintenance profile profile-name
```

Parameters
- `profile name` name of the BGP profile

Example
- This command adds BGP profile BP1 to a BGP group BG1.

```
switch(config)#group bgp BG1
switch(config-group-bgp-BG1)#neighbor 1.0.1.1
switch(config-group-bgp-BG1)#neighbor 1::1
switch(config-group-bgp-BG1)#neighbor PG
switch(config-group-bgp-BG1)#maintenance profile bgp BP1
switch(config-group-bgp-BG1)#show active
  group bgp BG1
    neighbor 1.0.1.1
    neighbor 1::1
    neighbor PG
    maintenance profile bgp BP1
switch(config-group-bgp-BG1)#exit
switch(config)#
```

- This command adds BGP profile BP1 to interface group IG1.

```
switch(config)#group interface IG1
switch(config-group-if-IG1)#interface Ethernet8-9
switch(config-group-if-IG1)#maintenance profile bgp BP1
switch(config-group-if-IG1)#show active
  group interface IG1
    interface Eth8-9
    maintenance profile bgp BP1
switch(config-group-if-IG1)#exit
switch(config)#
```

- This command adds BGP profile BP1 to built-in interface group AllEthernetInterface.

```
switch(config)#group interface AllEthernetInterface
switch(config-built-in-group-if-AllEthernetInterface)#maintenance profile bgp BP1
switch(config-built-in-group-if-AllEthernetInterface)#show active
  group interface AllEthernetInterface
    maintenance profile bgp BP1
switch(config-built-in-group-if-AllEthernetInterface)#
```
maintenance profile interface

The `maintenance profile interface <profile-name>` command associates interface profile to interface group.

The `no maintenance profile interface <profile-name>` and `default maintenance profile interface <profile-name>` removes the interface profile from interface group.

**Command Mode**
- Group-Interface Configuration
- Built-in-Group-Interface Configuration

**Command Syntax**
- `maintenance profile interface <profile-name>`
- `no maintenance profile interface <profile-name>`
- `default maintenance profile interface <profile-name>`

**Parameters**
- `profile-name` name of the interface profile

**Example**
- This command adds interface profile `IP1` to interface group `IG1`.
  ```
  switch(config)#group interface IG1
  switch(config-group-if-IG1)#interface Ethernet8-9
  switch(config-group-if-IG1)#maintenance profile interface IP1
  switch(config-group-if-IG1)#show active
  group interface IG1
  
  interface Et8-9
  
  maintenance profile interface IP1
  ```

- This command adds interface profile `IP1` to built-in interface group `AllEthernetInterface`
  ```
  switch(config)#group interface AllEthernetInterface
  switch(config-group-if-AllEthernetInterface)#maintenance profile interface IP1
  switch(config-group-if-AllEthernetInterface)#show active
  group interface AllEthernetInterface
  
  maintenance profile interface IP1
  ```
neighbor

The neighbor command adds BGP peer(s) to a BGP group. The neighbors can be IPv4, IPv6 or a peer-group. The no neighbor <peer> and default neighbor <peer> removes the BGP peer from the group.

Command Mode
  Group-BGP Configuration

Command Syntax
  neighbor ipv4_addr
  no neighbor ipv4_addr
  default neighbor ipv4_addr
  neighbor ipv6_addr
  no neighbor ipv6_addr
  default neighbor ipv6_addr
  neighbor peer-group-name
  no neighbor peer-group-name
  default neighbor peer-group-name

Parameters
  • ipv4_addr   BGP neighbor ipv4 address
  • ipv6_addr   BGP neighbor ipv6 address
  • peer-group-name   BGP peer group name

Example
  • This command adds ipv4 peer 1.0.1.1, ipv6 peer 1::1 and peer-group PG to the BGP group BG1.
    switch(config)#group bgp BG1
    switch(config-group-bgp-BG1)#neighbor 1.0.1.1
    switch(config-group-bgp-BG1)#neighbor 1::1
    switch(config-group-bgp-BG1)#neighbor PG
    switch(config-group-bgp-BG1)#group bgp BG1
    switch(config-group-bgp-BG1)#neighbor 1.0.1.1
    switch(config-group-bgp-BG1)#neighbor 1::1
    switch(config-group-bgp-BG1)#neighbor PG
    switch(config-group-bgp-BG1)#exit
    switch(config)#
on-boot duration

The on-boot duration command is a maintenance unit profile configuration option for specifying the duration after which the associated unit will be brought out of maintenance after reboot. The on-boot property in the maintenance unit profile specifies that the unit will be placed into maintenance mode as part of boot-up, and remain so for the specified duration.

The no on-boot and default on-boot removes this configuration from the unit profile.

**Command Mode**

Maintenance-Profile-Unit Configuration

**Command Syntax**

```
on-boot duration duration
no on-boot
default on-boot
```

**Parameters**

- `duration` number of seconds for which unit will remain under maintenance after reboot (from 300 to 3600 seconds)

**Example**

- This command configures on-boot duration of 1000 seconds in profile unit UP1.

```
switch(config)#maintenance
switch(config-maintenance)#profile unit UP1
switch(config-profile-unit-UP1)#on-boot duration 1000
switch(config-profile-unit-UP1)#show active
maintenance
    profile unit UP1
        on-boot duration 1000

switch(config-profile-unit-UP1)#
```
profile bgp

The **profile bgp** command places the switch in maintenance profile BGP configuration mode for configuring initiator route-map.

The command creates the profile if the specified BGP profile does not exist prior to issuing the command.

The **no profile bgp <profile-name>** and **default profile bgp <profile-name>** removes the profile from running-config.

**Command Mode**

Maintenance Configuration

**Command Syntax**

```
profile bgp profile-name
no profile bgp profile-name
default profile bgp profile-name
```

**Parameters**

- **profile-name** name of the BGP profile

**Commands available in maintenance profile BGP configuration mode:**

- **initiator route-map (route-map name) inout**

**Example**

- This command creates BGP profile BP1.

```
switch(config)#maintenance
switch(config-maintenance)#profile bgp BP1
switch(config-profile-bgp-BP1)#show active
maintenance
    profile bgp BP1

switch(config-profile-bgp-BP1)#
```
profile bgp <profile_name> default

The `profile bgp <profile_name> default` command configures a user-configured BGP profile as default BGP profile.

The `no profile bgp <profile_name> default` and `default profile bgp <profile_name> default` removes the user-configured BGP profile as default BGP profile.

**Command Mode**
- Maintenance Configuration

**Command Syntax**

```
profile bgp profile_name default
no profile bgp profile_name default
default profile bgp profile_name default
```

**Parameters**
- `profile_name` name of the BGP profile

**Example**
- This command configures user configured BGP profile BP1 as default BGP profile.

```
switch(config)#maintenance
switch(config-maintenance)#profile bgp BP1
switch(config-profile-bgp-BP1)#initiator route-map RM1 inout
switch(config-profile-bgp-BP1)#exit
switch(config-maintenance)#
switch(config-maintenance)#show maintenance profile bgp default
Bgp Profile: Default
Initiator route-map: SystemGenerated
route-map SystemGenerated permit 10
Description:
    description System generated initiator route-map
Match clauses:
Set clauses:
    set community GSHUT additive
    set local-preference 0

switch(config-maintenance)#
switch(config-maintenance)#profile bgp BP1 default
switch(config-maintenance)#show maintenance profile bgp default
Bgp Profile: BP1
    Initiator route-map: RM1
switch(config-maintenance)#
switch(config-maintenance)#show active maintenance
profile bgp BP1
    initiator route-map RM1 inout
profile bgp BP1 default

switch(config-maintenance)#
```
**profile interface**

The **profile interface** command places the switch in maintenance profile interface configuration mode for configuring rate-monitoring threshold, load-interval, and shutdown max-delay.

The command creates the profile if the specified interface profile does not exist prior to issuing the command.

The **no profile interface <profile-name>** and **default profile interface <profile-name>** removes the profile from running-config.

**Command Mode**

Maintenance Configuration

**Command Syntax**

```
profile interface profile-name
no profile interface profile-name
default profile interface profile-name
```

**Parameters**

- **profile-name**  name of the interface profile

**Commands available in maintenance profile interface configuration mode:**

- rate-monitoring load-interval
- rate-monitoring threshold
- shutdown max-delay

**Example**

- This command creates interface profile IP1.

```
switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-profile-intf-IP1)#show active maintenance
  profile interface IP1

switch(config-profile-intf-IP1)#
```
profile interface `<profile_name>` default

The **profile interface `<profile_name>` default** command configures a user-configured interface profile as default interface profile.

The **no profile interface `<profile_name>` default** and **default profile interface `<profile_name>` default** removes the user-configured interface profile as default interface profile.

**Command Mode**

  Maintenance Configuration

**Command Syntax**

```
profile interface profile_name default
no profile interface profile_name default
default profile interface profile_name default
```

**Parameters**

- `<profile_name>` name of the interface profile

**Example**

- This command configures user configured interface profile IP1 as default interface profile.

  ```
  switch(config)#maintenance
  switch(config-maintenance)#profile interface IP1
  switch(config-profile-intf-IP1)#rate-monitoring load-interval 100
  switch(config-profile-intf-IP1)#rate-monitoring threshold 500
  switch(config-profile-intf-IP1)#shutdown max-delay 100
  switch(config-profile-intf-IP1)#exit
  switch(config-maintenance)#
  switch(config-maintenance)#show maintenance profile interface default
  Interface Profile: Default
  Rate Monitoring:
  load-interval: 60 seconds
  threshold (in/out): 100 kbps
  shutdown:
  enabled: no
  max-delay: 300 seconds
  
  switch(config-maintenance)#
  switch(config-maintenance)#profile interface IP1 default
  switch(config-maintenance)#show maintenance profile interface default
  Interface Profile: IP1
  Rate Monitoring:
  load-interval: 100 seconds
  threshold (in/out): 500 kbps
  shutdown:
  enabled: yes
  max-delay: 100 seconds
  switch(config-maintenance)#
  switch(config-maintenance)#show active maintenance
  profile interface IP1 default
  profile interface IP1
  rate-monitoring load-interval 100
  rate-monitoring threshold 500
  shutdown max-delay 100
  
  switch(config-maintenance)#
  ```
profile unit

The profile unit command places the switch in maintenance profile unit configuration mode for configuring on-boot duration.

The command creates the profile if the specified BGP profile does not exist prior to issuing the command.

The no profile unit <profile-name> and default profile unit <profile-name> removes the profile from running-config.

Command Mode
Maintenance Configuration

Command Syntax

profile unit profile-name
no profile unit profile-name
default profile unit profile-name

Parameters

- profile-name name of the unit profile

Commands available in maintenance profile unit configuration mode:
- on-boot duration

Example

- This command creates unit profile UP1.

```bash
switch(config)#maintenance
switch(config-maintenance)#profile unit UP1
switch(config-profile-unit-UP1)#show active maintenance
  profile unit UP1

switch(config-profile-unit-UP1)#
```
profile unit <profile_name>

The `profile unit <profile_name>` command associates unit profile to a particular unit.

The `no profile unit <profile_name>` and `default profile unit <profile_name>` removes the unit profile from a unit.

**Command Mode**

- Maintenance-Unit Configuration
- Maintenance-Built-in-Unit Configuration

**Command Syntax**

- `profile unit profile-name`
- `no profile unit`
- `default profile unit`

**Parameters**

- `profile-name` name of the unit profile

**Examples**

- This command adds unit profile UP1 to UNIT1.

```plaintext
switch(config)#maintenance
switch(config-maintenance)#unit UNIT1
switch(config-unit-UNIT1)#group interface IG1
switch(config-unit-UNIT1)#exit
switch(config-maintenance)#show maintenance units UNIT1
Unit Name: UNIT1
 Origin: User Configured
 Status: Not Under Maintenance
 Unit Profile: Default
 Time Since Last State Change: never
 Interface Groups:
 IG1

switch(config-maintenance)#unit UNIT1
switch(config-unit-UNIT1)#profile unit UP1
switch(config-unit-UNIT1)#show maintenance units UNIT1
Unit Name: UNIT1
 Origin: User Configured
 Status: Not Under Maintenance
 Unit Profile: UP1
 Time Since Last State Change: never
 Interface Groups:
 IG1
switch(config-unit-UNIT1)#show active maintenance
unit UNIT1
 group interface IG1
 profile unit UP1

switch(config-unit-UNIT1)#
```


- This command adds unit profile **UP2** to built-in unit **System**.

```plaintext
class(config)#maintenance
class(config-maintenance)#profile unit UP2
class(config-profile-unit-UP2)#on-boot duration 600
class(config-profile-unit-UP2)#exit
class(config-maintenance)#
class(config-maintenance)#unit System
class(config-builtin-unit-System)#show active maintenance
ten System
class(config-builtin-unit-System)#exit
class(config-maintenance)#show maintenance units System
Unit Name: System
  Origin: Built-in
  Status: Not Under Maintenance
  Unit Profile: Default
  Time Since Last State Change: never
  Interface Groups:
    AllEthernetInterface

class(config-maintenance)#
class(config-maintenance)#unit System
class(config-builtin-unit-System)#profile unit UP2
class(config-builtin-unit-System)#show active maintenance
ten System
  profile unit UP2
class(config-builtin-unit-System)#exit
class(config-maintenance)#show maintenance units System
Unit Name: System
  Origin: Built-in
  Status: Not Under Maintenance
  Unit Profile: UP2
  Time Since Last State Change: never
  Interface Groups:
    AllEthernetInterface

class(config-maintenance)#
```
**profile unit <profile_name> default**

The `profile unit <profile_name> default` command configures a user-configured unit profile as default unit profile.

The `no profile unit <profile_name> default` and `default profile unit <profile_name> default` removes the user-configured unit profile as default unit profile.

**Command Mode**

Maintenance Configuration

**Command Syntax**

```
profile unit profile_name default
no profile unit profile_name default
default profile unit profile_name default
```

**Parameters**

- `profile_name` name of the interface profile

**Example**

- This command configures user-configured unit profile UP1 as the default unit profile.

  ```
  switch(config)#maintenance
  switch(config-maintenance)#profile unit UP1
  switch(config-profile-unit-UP1)#on-boot duration 1000
  switch(config-profile-unit-UP1)#exit
  switch(config-maintenance)#
  switch(config-maintenance)#show maintenance profiles unit default
  Unit Profile: Default
  On-boot:
  enabled: no
  duration: 300 seconds

  switch(config-maintenance)#profile unit UP1 default
  switch(config-maintenance)#show maintenance profile unit default
  Unit Profile: UP1
  On-boot:
  enabled: yes
  duration: 1000 seconds
  switch(config-maintenance)#
  switch(config-maintenance)#show active maintenance
  profile unit UP1 default
  profile unit UP1
  on-boot duration 1000

  switch(config-maintenance)#
  ```
**quiesce**

The `quiesce` command places a unit or dynamic interface/BGP unit into maintenance mode, gracefully transitioning traffic away from it.

The `no quiesce` and `default quiesce` exits the unit from maintenance.

**Command Mode**

- Maintenance-Unit Configuration
- Maintenance-Built-in-Unit Configuration
- Maintenance Dynamic-Interface Unit Configuration
- Maintenance Dynamic-Bgp Unit Configuration

**Command Syntax**

```
quiesce
no quiesce
default quiesce
```
Examples

- This command places unit UNIT1, interface Et1, BGP peer 1.0.1.1 in VRF default, BGP peer 1::1 in VRF VRF1 into maintenance.

```
switch(config)#group interface IG1
switch(config-group-if-IG1)#interface Ethernet3-6
switch(config-group-if-IG1)#maintenance profile interface IP1
switch(config-group-if-IG1)#exit
switch(config)#maintenance
switch(config-maintenance)#unit UNIT1
switch(config-unit-UNIT1)#group interface IG1
switch(config-unit-UNIT1)#quiesce
switch(config-unit-UNIT1)#exit
switch(config-maintenance)#interface Ethernet1
switch(config-maint-if-Et1)#quiesce
switch(config-maint-if-Et1)#exit
switch(config-maintenance)#bgp 1.0.1.1
switch(config-maint-bgp-1.0.1.1)#quiesce
switch(config-maint-bgp-1.0.1.1)#exit
switch(config-maintenance)#bgp 1::1 vrf VRF1
switch(config-maint-bgp-1::1)#quiesce
switch(config-maint-bgp-1::1)#exit
switch(config-maintenance)#show active maintenance
  bgp 1.0.1.1
    quiesce
  bgp 1::1 vrf VRF1
    quiesce
  interface Et1
    quiesce
  unit UNIT1
    quiesce

switch(config-maintenance)#show maintenance
Flags:
  o - On-boot maintenance
  v - Violating traffic threshold

<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Not Under Maintenance</td>
<td>never</td>
<td>-----</td>
</tr>
<tr>
<td>UNIT1</td>
<td>Under Maintenance</td>
<td>0:00:06 ago</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interface Name</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet1</td>
<td>Entering Maintenance</td>
<td>0:00:06 ago</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bgp Neighbor(vrf: defa</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0.1.1</td>
<td>Under Maintenance</td>
<td>0:00:06 ago</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bgp Neighbor(vrf: VRF1</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>1::1</td>
<td>Under Maintenance</td>
<td>0:00:06 ago</td>
<td>-----</td>
</tr>
</tbody>
</table>

switch(config-maintenance)#
```
The `rate-monitoring load-interval` command is a maintenance interface profile configuration option for configuring the interface’s rate monitoring load interval with a load interval value between 5 and 600 seconds.

**Command Mode**

- Maintenance-Profile-Interface Configuration

**Command Syntax**

```bash
rate-monitoring load-interval load_interval
no rate-monitoring load-interval
default rate-monitoring load-interval
```

**Parameters**

- `load_interval` load interval value between 5 and 600 seconds

**Example**

- This command configures the rate monitoring load interval for the profile interface `IP1` to a load interval of 10 seconds.

```bash
switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-profile-intf-IP1)#rate-monitoring load-interval 10
switch(config-profile-intf-IP1)#show active
maintenance
    profile interface IP1
        rate-monitoring load-interval 10

switch(config-profile-intf-IP1)#
```
rate-monitoring threshold

The **rate-monitoring threshold** command is a maintenance interface profile configuration option for configuring the interface’s rate monitoring threshold with a threshold value between 1 and 4294967295 kilobytes.

The **no rate-monitoring threshold** and **default rate-monitoring threshold** removes this configuration from the interface profile.

**Command Mode**

Maintenance-Profile-Interface Configuration

**Command Syntax**

```
rate-monitoring threshold threshold_in_kbps
no rate-monitoring threshold
default rate-monitoring threshold
```

**Parameters**

- **threshold_in_kbps** threshold in kilobytes per second (kbps) between 1 and 4294967295 kilobytes

**Example**

- This command configures the rate monitoring threshold for the profile interface **IP1** to a threshold of 1000 kilobytes per second (kbps).

```
switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-profile-intf-IP1)#rate-monitoring threshold 1000
switch(config-profile-intf-IP1)# show active maintenance
  profile interface IP1
    rate-monitoring threshold 1000

switch(config-profile-intf-IP1)#
```
**show interface**

The `show interface` command displays detailed information about the interface. It displays an extra line that reads: “Under maintenance for time in hours and minutes”.

**Command Mode**

EXEC

**Command Syntax**

```
show interface intf_name
```

**Parameters**

- `intf_name`  name of the interface
- `ethernet e_range`  Ethernet interfaces specified by `e_range`
- `port-channel p_range`  port channel interfaces specified by `p_range`
- `vlan v_range`  vlans specified by `v_range`

**Note**

Valid `e_range`, `p_range` and `v_range` formats include number, range, or comma-delimited list of numbers and ranges. Valid Ethernet numbers depend on the Ethernet interfaces available on the switch.

**Example**

- This command displays detailed information about Ethernet 16/1 interface.

```
switch#show interface ethernet 16/1
Ethernet16/1 is up, line protocol is up (connected)
   Hardware is Ethernet, address is 001c.7373.efc7
   Internet address is 1.0.1.1/24
   Broadcast address is 255.255.255.255
   Address determined by manual configuration
   IP MTU 1500 bytes, BW 40000000 kbit
   Full-duplex, 40Gb/s, auto negotiation: off, uni-link: n/a
   Up 4 hours, 44 minutes, 36 seconds
   Under maintenance for 4 hours, 22 minutes, 26 seconds
   Loopback Mode : None
   2 link status changes since last clear
   Last clearing of "show interface" counters 4:45:12 ago
   5 minutes input rate 20 bps (0.0% with framing overhead), 0 packets/sec
   5 minutes output rate 20 bps (0.0% with framing overhead), 0 packets/sec
   580 packets input, 46286 bytes
   Received 1 broadcasts, 0 multicast
   0 runts, 0 giants
   0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
   0 PAUSE input
   601 packets output, 48954 bytes
   Sent 7 broadcasts, 15 multicast
   0 output errors, 0 collisions
   0 late collision, 0 deferred, 0 output discards
   0 PAUSE output
switch#
```
show interface <intf_name> status

The `show interface <intf_name> status` command displays an 'm' flag if the interface is undergoing maintenance operation.

**Command Mode**

**EXEC**

**Command Syntax**

```
show interface [ <intf_name> ] status
```

**Parameters**

- `intf_name` name of the interface
- `ethernet e_range` Ethernet interfaces specified by `e_range`
- `port-channel p_range` port channel interfaces specified by `p_range`
- `vlan v_range` vlans specified by `v_range`

**Note**

Valid `e_range, p_range` and `v_range` formats include number, range, or comma-delimited list of numbers and ranges. Valid Ethernet numbers depend on the Ethernet interfaces available on the switch.

**Example**

- This command display tabular output and shows 'm' flag for Ethernet16/1 status.

```
switch#show interface Ethernet16/1 status
Port  Name       Status   Vlan  Duplex Speed  Type          Flags
Et1   disabled   1       auto auto  1000BASE-T
...   
Et14/1 connected 2       full  40G  40GBASE-CR4
Et15/1 connected 2       full  40G  40GBASE-CR4
Et16/1 connected routed full  40G  40GBASE-CR4   m
Et17/1 notconnect 1      full  10G  Not Present
...   
switch#
```
show ip | ipv6 bgp

The `show ip | ipv6 bgp` command displays maintenance related information when relevant.

**Command Mode**
EXEC

**Command Syntax**

```
show ip bgp neighbors <peer_addr> [vrf <vrf_name>]
show ipv6 bgp peers <peer_addr> [vrf <vrf_name>]
```

**Parameters**

- `peer_addr` name of the peer
- `ipv4_addr` BGP neighbor IPv4 address
- `ipv6_addr` BGP neighbor IPv6 address
- `peer-group-name` BGP peer group name
- `vrf_name` name of the VRF
Example

- This command displays the ‘m’ flag in show ip bgp summary output for peer 1.0.1.2 which is in maintenance mode.

```
switch#show ip bgp neighbors 1.0.1.2
BGP neighbor is 1.0.1.2, remote AS 300, external link
  BGP version 4, remote router ID 0.0.2.1, VRF default
  Negotiated BGP version 4
  Last read 00:00:09, last write 00:00:11
  Hold time is 180, keepalive interval is 60 seconds
  Configured hold time is 180, keepalive interval is 60 seconds
  Connect timer is inactive
  Idle-restart timer is inactive
  Session is under maintenance
  BGP state is Established, up for 04:55:11
  Number of transitions to established: 1
  Last state was OpenConfirm
  Last event was RecvKeepAlive
  Neighbor Capabilities:
    Multiprotocol IPv4 Unicast: advertised and received and negotiated
    Four Octet ASN: advertised and received
    Route Refresh: advertised and received and negotiated
    Send End-of-RIB messages: advertised and received and negotiated
    Additional-paths Receive:
      IPv4 Unicast: advertised and received
  Restart timer is inactive
  End of rib timer is inactive
  Message statistics:
    InQ depth is 0
    OutQ depth is 0
    Sent          Rcvd
    Opens:    1  1
    Notifications: 0  0
    Updates:   6  2
    Keepalives: 297 297
    Route-Refresh: 0  0
    Total messages: 304 300
  Prefix statistics:
    Sent          Rcvd
    IPv4 Unicast:  2  1
    IPv6 Unicast:  0  0
  Inbound updates dropped by reason:
    AS path loop detection: 0
    Enforced First AS: 0
    Malformed MPBGP routes: 0
    Originator ID matches local router ID: 0
    Nexthop matches local IP address: 0
    Unexpected IPv6 nexthop for IPv4 routes: 0
    Nexthop invalid for single hop eBGP: 0
  Inbound paths dropped by reason:
    IPv4 labeled-unicast NLRIs dropped due to excessive labels: 0
  Outbound paths dropped by reason:
    IPv4 local address not available: 0
    IPv6 local address not available: 0
  Maintenance-mode:
    Inbound and Outbound policy
    Route map is SystemGenerated
    Local AS is 200, local router ID 0.0.1.1
    TTL is 1
```
Local TCP address is 1.0.1.1, local port is 179
Remote TCP address is 1.0.1.2, remote port is 51936
Auto-Local-Addr is disabled
TCP Socket Information:
  TCP state is ESTABLISHED
  Recv-Q: 0/32768
  Send-Q: 0/32768
  Outgoing Maximum Segment Size (MSS): 1448
  Total Number of TCP retransmissions: 0
Options:
  Timestamps enabled: yes
  Selective Acknowledgments enabled: yes
  Window Scale enabled: yes
  Explicit Congestion Notification (ECN) enabled: no
Socket Statistics:
  Window Scale (wscale): 9,7
  Retransmission Timeout (rto): 204.0ms
  Round-trip Time (rtt/rtvar): 7.5ms/3.0ms
  Delayed Ack Timeout (ato): 40.0ms
  Congestion Window (cwnd): 10
  TCP Throughput: 15.45 Mbps
  Advertised Recv Window (rcv_space): 14480
switch#
**show ip | ipv6 bgp summary [ vrf <vrf_name>]**

The `show ip | ipv6 bgp summary [ vrf <vrf_name>]` command displays the ‘m’ flag if the BGP IPv4 or IPv6 peer is undergoing maintenance operation.

**Command Mode**

EXEC

**Command Syntax**

```
show ip bgp summary [ vrf <vrf_name> ]
show ipv6 bgp summary [ vrf <vrf_name> ]
```

**Parameters**

- `vrf_name` name of the VRF

**Example**

- This command displays the ‘m’ flag in `show ip bgp summary` output for peer 1.0.1.2 which is in maintenance mode.

```
switch#show ip bgp summary
BGP summary information for VRF default
Router identifier 0.0.1.1, local AS number 200
Neighbor Status Codes: m - Under maintenance
                  Neighbor    V  AS    MsgRcvd   MsgSent  InQ  OutQ  Up/Down  State  PfxRcd  PfxAcc
                   1.0.0.1     4  100      292       296    0     0 04:47:44  Estab 1       1
                   m 1.0.1.2     4  300      292       296    0     0 04:47:44  Estab 1       1
switch#
```
show maintenance

The **show maintenance** command provides brief information about all units/dynamic interface unit/dynamic bgp unit and status.

'**o**' - flag displays that unit is undergoing or has undergone a maintenance operation because of on-boot.

'**v**' - flag displays that one/some of the interfaces are violating traffic, i.e. traffic for those interfaces is above threshold.

**Command Mode**

EXEC

**Command Syntax**

    show maintenance

**Examples**

- This command displays maintenance mode details.

```
switch# show maintenance
Flags:
o - On-boot maintenance
v - Violating traffic threshold

<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Not Under Maintenance</td>
<td>never</td>
<td></td>
</tr>
<tr>
<td>Foo</td>
<td>Under Maintenance</td>
<td>0:00:40 ago</td>
<td>o</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interface Name</th>
<th>Status</th>
<th>Time since last change</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet16/1</td>
<td>Entering Maintenance</td>
<td>0:00:02 ago</td>
<td>v</td>
</tr>
<tr>
<td>Bgp Neighbor(vrf: defa)</td>
<td>Status</td>
<td>Time since last change</td>
<td>Flags</td>
</tr>
<tr>
<td>1.0.0.2</td>
<td>Not Under Maintenance</td>
<td>never</td>
<td></td>
</tr>
<tr>
<td>Bgp Neighbor(vrf: red)</td>
<td>Status</td>
<td>Time since last change</td>
<td>Flags</td>
</tr>
<tr>
<td>2.0.1.2</td>
<td>Under Maintenance</td>
<td>0:00:16 ago</td>
<td></td>
</tr>
</tbody>
</table>

switch#
```
show maintenance bgp

The `show maintenance bgp` command displays detailed maintenance information about BGP peers.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance bgp <ipv4_addr> [vrf <vrf_name>] | <ipv6_addr> [vrf <vrf_name>] |
<peer_group> [vrf <vrf_name>] | ip all [vrf <vrf_name> | vrf all] | ipv6 all |
[vrf <vrf_name> | vrf all]
```

**Parameters**

- `ipv4_addr`  BGP neighbor ipv4 address
- `ipv6_addr`  BGP neighbor ipv6 address
- `peer_group` BGP peer group name
- `vrf_name`   name of the VRF to which peer belongs
- `ip all vrf vrf_name`  all ipv4 peers in specified VRF
- `ipv6 all vrf vrf_name`  all ipv6 peers in specified VRF
- `ip all vrf all`  all ipv4 peers in all the VRFs
- `ipv6 all vrf all`  all ipv6 peers in all the VRFs

**Example**

- This command displays maintenance information about BGP peers 1.0.0.1 and 1.0.1.1 and maintenance route-map applied.

```
switch# show maintenance bgp ip all vrf all
BGP peer maintenance information for VRF default
Router identifier 0.0.1.1, local AS number 200
Neighbor: 1.0.0.1
  Maintenance state: Under Maintenance
  Maintenance route-map: SystemGenerated
Neighbor: 1.0.1.2
  Maintenance state: Under Maintenance
  Maintenance route-map: SystemGenerated

switch#
```
**show maintenance bgp receiver route-map**

The `show maintenance bgp receiver route-map` command displays receiver route-map which is applied during maintenance operation.

**Command Mode**

EXEC

**Command Syntax**

`show maintenance bgp receiver route-map`

**Example**

- This command displays receiver route-map contents.

```plaintext
switch#show maintenance bgp receiver route-map
route-map SystemGenerated permit 10
    Description:
        description System generated receiver route-map
    Match clauses:
        match community GSHUT-LIST
    SubRouteMap:
    Set clauses:
route-map SystemGenerated permit 50
    Description:
        description System generated receiver route-map
    Match clauses:
    SubRouteMap:
    Set clauses:switch#
```
show maintenance debug

The `show maintenance debug` command displays the history of various maintenance operations on a unit/interface/BGP peer.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance debug bgp [peer_name] | interface [intf_name] | units [unit_name]
```

**Parameters**

- `bgp` display history of all dynamic BGP units which have undergone maintenance operation
- `interface` display history of all dynamic interface units which have undergone maintenance operation
- `units` display history of all units which have undergone maintenance operation
- `peer_name` name of the peer
  - `ipv4_addr` BGP neighbor IPv4 address
  - `ipv6_addr` BGP neighbor IPv6 address
  - `peer-group-name` BGP peer group name
- `intf_name` name of the interface
  - `ethernet e_range` Ethernet interfaces specified by `e_range`
  - `port-channel p_range` port channel interfaces specified by `p_range`
  - `vlan v_range` vlans specified by `v_range`

**Note**

Valid `e_range, p_range` and `v_range` formats include number, range, or comma-delimited list of numbers and ranges. Valid Ethernet numbers depend on the Ethernet interfaces available on the switch.

- `unit_name` name of the unit
Example

- This command displays history of maintenance operation on Ethernet 16/1.

```plaintext
switch#show maintenance debug interface Ethernet 16/1-4
Interface Ethernet16/1
History:
  Maintenance Enter Stage Progression started 4:07:07 ago @ 2016-08-29 22:38:54
  0.000000  maintEnter stages started
  0.000091  stage begin started
  0.000151  event begin:EventMgr started
  0.004222  event begin:EventMgr completed
  0.004256  stage begin is complete
  0.004315  stage before_bgp started
  0.004368  event before_bgp:EventMgr started
  0.005820  event before_bgp:EventMgr completed
  0.005843  stage before_bgp is complete
  0.005904  stage bgp started
  0.005947  event bgp:Rib started
  0.013821  event bgp:Rib completed
  0.013855  stage bgp is complete
  0.013921  stage after_bgp started
  0.013974  event after_bgp:EventMgr started
  0.015848  event after_bgp:EventMgr completed
  0.015878  stage after_bgp is complete
  0.015935  stage before_ratemon started
  0.015982  event before_ratemon:EventMgr started
  0.017394  event before_ratemon:EventMgr completed
  0.017423  stage before_ratemon is complete
  0.017470  stage ratemon started
  0.017506  event ratemon:MaintenanceMode started
  5.021404  event ratemon:MaintenanceMode completed
  5.021438  stage ratemon is complete
  5.021500  stage after_ratemon started
  5.021556  event after_ratemon:EventMgr started
  5.023223  event after_ratemon:EventMgr completed
  5.023247  stage after_ratemon is complete
  5.023300  stage end started
  5.023352  event end:EventMgr started
  5.024683  event end:EventMgr completed
  5.024705  stage end is complete
  5.024762  maintEnter stages complete
```
show maintenance groups

The `show maintenance groups` command displays all the interface/BGP groups along with their members and associated profiles.

Command Mode

EXEC

Command Syntax

```
show maintenance groups interface | bgp <group_name>
```

Parameters

- `interface` display only interface groups
- `bgp` display only BGP groups
- `group_name` name of the group

Example

- This command displays group details for built-in interface group `AllEthernetInterface` and built-in BGP group `AllBgpNeighborVrf-default` and user-configured interface group `IG1`.

```
switch#show maintenance groups
Interface Group: AllEthernetInterface
 Origin: Built-in
 Interfaces:
   Et1, Et2, Et3, Et4, Et5/1, Et5/2, Et5/3, Et5/4, Et6/1, Et6/2, Et6/3, Et6/4, Et7/1, Et7/2, Et7/3, Et7/4, Et8/1, Et8/2, Et8/3, Et8/4, Et9/1, Et9/2, Et9/3, Et9/4, Et10/1, Et10/2, Et10/3, Et10/4, Et11/1, Et11/2, Et11/3, Et11/4, Et12/1, Et12/2, Et12/3, Et12/4, Et13/1, Et13/2, Et13/3, Et13/4, Et14/1, Et14/2, Et14/3, Et14/4, Et15/1, Et15/2, Et15/3, Et15/4, Et16/1, Et16/2, Et16/3, Et16/4, Et17/1, Et17/2, Et17/3, Et17/4, Et18/1, Et18/2, Et18/3, Et18/4, Et19/1, Et19/2, Et19/3, Et19/4, Et20/1, Et20/2, Et20/3, Et20/4, Et21/1, Et21/2, Et21/3, Et21/4, Et22/1, Et22/2, Et22/3, Et22/4, Et23/1, Et23/2, Et23/3, Et23/4, Et24/1, Et24/2, Et24/3, Et24/4, Et25/1, Et25/2, Et25/3, Et25/4, Et26/1, Et26/2, Et26/3, Et26/4, Et27/1, Et27/2, Et27/3, Et27/4, Et28/1, Et28/2, Et28/3, Et28/4, Et29, Et30, Et31, Et32, Et33, Et34, Et35, Et36
 Profiles:
   Interface Profile: low-load-interval-profile
   Bgp Profile: Default
 Units: System
Interface Group: IG1
 Origin: User Configured
 Interfaces:
   Et1, Et2, Et3, Et4, Po10, Po11, Po12
 Profiles:
   Interface Profile: IP1
   Bgp Profile: BP1
 Units: UNIT1
Bgp Group: AllBgpNeighborVrf-default
 Origin: Built-in
 Neighbors:
   Ipv4 Peers: 1.0.0.1, 1.0.1.2
   Bgp Profile: Default
   Vrf: default
 Units: System
```

switch#
show maintenance interface

The **show maintenance interface** command displays detailed information about interfaces and their maintenance status with traffic rates.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance interface [intf_name [detail] | detail]
```

**Parameters**

- **intf_name** name of the interface or sub-interface. Options include:
  - ethernet *e_range* Ethernet interfaces specified by e_range
  - port-channel *p_range* port channel interfaces specified by p_range
  - vlan *v_range* vlans specified by v_range
  - **detail** provides the detailed rate-monitoring information

**Guidelines**

Valid *e_range*, *p_range* and *v_range* formats include number, range, or comma-delimited list of numbers and ranges.

**Example**

- This command displays interface status and traffic rates.

```
switch#show maintenance interface
Flags:
v - Violating traffic threshold
s - Shutdown for maintenance

<table>
<thead>
<tr>
<th>Interface</th>
<th>Status</th>
<th>Rate (Mbps)</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet1</td>
<td>Not Under Maintenance</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethernet2</td>
<td>Not Under Maintenance</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethernet3</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethernet4</td>
<td>Not Under Maintenance</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet35</td>
<td>Entering Maintenance</td>
<td>8.7</td>
<td>2.9</td>
</tr>
<tr>
<td>Ethernet36</td>
<td>Not Under Maintenance</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

switch#
```
- This command displays detailed information about the interface Ethernet16/1.

```
switch#show maintenance interface Ethernet16/1 detail
Ethernet16/1 is Under Maintenance
  Groups: AllEthernetInterface
  Selected profiles from Interface groups:
    Interface Maintenance profile: low-load-interval-profile
    Bgp Maintenance profile: Default
  Bgp:
    Maintenance State: Under Maintenance
    Vrf: default
      Neighbor: 1.0.1.2
        Maintenance routemap: SystemGenerated
    Rate Monitoring:
      Passive monitoring since 0:42:25 ago
    Total samples taken: 236
      Before Maintenance:
        Below threshold: 1
        Above threshold: 0
      After Maintenance:
        Below threshold: 235
        Above threshold: 0
    Last sample information:
      Sample taken 0:00:04 ago
      In: 0.0 Mbps
      Out: 0.0 Mbps
```

switch#
show maintenance interface status

The show maintenance interface status command displays maintenance status and rates for interfaces.

Command Mode
EXEC

Command Syntax
show maintenance interface status active | entering | exiting | quiesced

Parameters
- active interfaces which are active
- entering interface which are entering maintenance
- exiting interface which are exiting maintenance
- quiesced interface which are under maintenance

Example
- This command displays interface status and traffic rates of interfaces which are quiesced.

```
switch#show maintenance interface status quiesced
Flags:
v - Violating traffic threshold
s - Shutdown for maintenance

<table>
<thead>
<tr>
<th>Interface</th>
<th>Status</th>
<th>Rate (Mbps)</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>Ethernet1</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet2</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet3</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet4</td>
<td>Not Under Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet16/1</td>
<td>Under Maintenance</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Port-Channel10</td>
<td>Under Maintenance</td>
<td>100.5</td>
<td>50.5</td>
</tr>
<tr>
<td>Port-Channel11</td>
<td>Entering Maintenance</td>
<td>15.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Port-Channel10</td>
<td>Under Maintenance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

switch#
```
show maintenance profiles

The `show maintenance profiles` command displays all the interface/BGP/unit profiles configuration.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance profiles interface | bgp | unit <profile_name>
```

**Parameters**

- `interface` display only interface profiles
- `bgp` display only BGP profiles
- `unit` display only unit profiles
- `profile_name` name of the profile

**Example**

- This command displays profile configuration details for interface profile IP1, unit profile UP1 and BGP profile BP1.

```
switch #show maintenance profiles
Interface Profile: IP1
  Rate Monitoring:
    load-interval: 444 seconds
    threshold (in/out): 4000 Kbps
  shutdown:
    enabled: yes
    max-delay: 399 seconds
Bgp Profile: BP1
  Initiator route-map:
    name: RM1
Unit Profile: UP1
  On-boot:
    enabled: yes
    duration: 340 seconds

switch #
```
show maintenance stages

The show maintenance stages command displays stages of maintenance operation while entering/exiting maintenance.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance stages [enter | exit]
```

**Parameters**

- **enter**  display maintenance stages during maintenance enter operation
- **exit**   display maintenance stages during maintenance exit operation

**Example**

- This command displays maintenance mode stages details.

  ```
  switch #show maintenance stages
  No. Stage Description
  --------- -------------- --------------------------
  1 bgp BGP Maintenance processing
  2 ratemon Interface Rate Monitoring
  
  Maintenance Exit Stage Sequence
  No. Stage Description
  --------- -------------- --------------------------
  1 ratemon Interface Rate Monitoring
  2 bgp BGP Maintenance processing
  
  switch 
  ```

- This command displays maintenance mode stage details during entry.

  ```
  switch #show maintenance stages enter
  No. Stage Description
  --------- -------------- --------------------------
  1 bgp BGP Maintenance processing
  2 ratemon Interface Rate Monitoring
  
  switch#
  ```
show maintenance summary

The **show maintenance summary** command displays summarized information about the maintenance mode operations such as number of units configured, number of units Entering/Exiting maintenance etc.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance summary
```

**Example**

- This command displays summary of maintenance mode operations.

```
switch# show maintenance summary
Number of Units Configured: 0
Number of Units Exiting Maintenance: 0
Number of Units Entering Maintenance: 0
Number of Units Not Under Maintenance: 1
Number of Units Under Maintenance: 0
Directly Put Under Maintenance:
  Number of interfaces Entering Maintenance: 0
  Number of interfaces Under Maintenance: 1
  Number of bgp peers Entering Maintenance: 0
  Number of bgp peers Under Maintenance: 1
Rate Monitoring:
  Number of interfaces Entering Maintenance: 0
  Number of interfaces Under Maintenance: 1
  Number of interfaces Under Maintenance with threshold violation: 0
  Number of interfaces shutdown for maintenance: 0
```

switch#
show maintenance units

The `show maintenance units` command displays detailed information about the particular unit.

**Command Mode**

EXEC

**Command Syntax**

```
show maintenance units [unit_name]
```

**Parameters**

- `unit_name` name of unit

**Example**

- This command displays maintenance units details.

```
switch# show maintenance units
Unit Name: System
  Origin: Built-in
  Status: Not Under Maintenance
  Unit Profile: Default
  Time Since Last State Change: never
  Bgp Groups:
    AllBgpNeighborVrf-default
  Interface Groups:
    AllEthernetInterface

Unit Name: UNIT1
  Origin: User Configured
  Status: Under Maintenance
  Unit Profile: UP1
  Time Since Last State Change: 0:00:08 ago
  Bgp Groups:
    BG1
  Interface Groups:
    IG1
  History:
    2016-08-29 23:05:30  old state: 'maintenanceModeEnter' to new state: 'underMaintenance' 0:00:08 ago
    2016-08-29 23:05:30  old state: 'active' to new state: 'maintenanceModeEnter' 0:00:08 ago

switch#
```
shutdown max-delay

The `shutdown max-delay` command is a maintenance interface profile configuration option for configuring the maximum duration after which the interface is shutdown with a value between 1 and 4294967295 seconds.

The `no shutdown` and `default shutdown` removes this configuration from the interface profile.

**Command Mode**
Maintenance-Profile-Interface Configuration

**Command Syntax**

```
shutdown max-delay delay
no shutdown max-delay delay
default shutdown max-delay delay
```

**Parameters**
- `delay` maximum shutdown delay between 1 and 4294967295 seconds

**Example**
- This command configures the shutdown max-delay for the profile interface IP1 to 500 seconds or one hour.

```
switch(config)#maintenance
switch(config-maintenance)#profile interface IP1
switch(config-profile-intf-IP1)#shutdown max-delay 500
switch(config-profile-intf-IP1)#show active
maintenance
    profile interface IP1
        shutdown max-delay 500
```

switch(config-profile-intf-IP1)#
trigger on-maintenance

The trigger on-maintenance command is an event handler configuration for triggering actions during the maintenance operation of a unit, interface and BGP peer at specified stages.

The event-handler configuration takes effect only after exiting the event-handler configuration mode.

Command Mode

Event-handler Configuration

Command Syntax

trigger on-maintenance <enter | exit> <unit <unit_name> | bgp <ipv4_addr|ipv6_addr| peer_group> [vrf <vrf_name>] | interface <intf_name>> <begin | end | all |<before | after> stage <stage_name>>

Parameters

- **enter**  trigger on-maintenance event-handler on maintenance enter operation
- **exit**  trigger on-maintenance event-handler on maintenance exit operation
- **bgp**  trigger event-handler on dynamic BGP unit maintenance operation
  - **pv4_addr**  BGP neighbor ipv4 address
  - **pv6_addr**  BGP neighbor ipv6 address
  - **peer_group**  BGP peer group name
- **vrf vrf_name**  name of the VRF to which BGP peer belongs
- **interface**  trigger event-handler on dynamic interface unit maintenance operation
  - **intf_name**  name of the interface
    - **ethernet**  trigger event-handler on specified Ethernet interface
    - **port-channel**  trigger event-handler on specified port channel interface
    - **vlan**  trigger event-handler on specified vlan

Note

Comma-delimited list, ranges are not supported.

- **unit**  trigger event-handler on maintenance operation of unit
- **begin**  action is triggered in the beginning of maintenance operation
- **end**  action is triggered at the end of maintenance operation
- **stage_name**  action is triggered at specified stage
  - bgp and ratemon are the two stages
- **all**  action is triggered at all the stages
- **before**  action is triggered before the specified stage
- **after**  action is triggered after the specified stage
Examples

- This command configures event-handler **E1**, which triggers on maintenance an enter operation of unit **UNIT1** at all the stages.

```bash
switch(config)#event-handler E1
switch(config-handler-E1)#trigger on-maintenance enter unit UNIT1 all
switch(config-handler-E1)#action bash FastCli -c "show maintenance"
switch(config-handler-E1)# exit
switch(config)# show event-handler E1
Event-handler E1
  Trigger: Asynchronous on-maintenance enter unit UNIT1 all delay 0 seconds
  Threshold Time Window: 0 Seconds, Event Count: 1 times
  Action: FastCli -c "show maintenance"
  Action expected to finish in less than 10 seconds
  Last Trigger Detection Time: Never
  Total Trigger Detections: 0
  Last Trigger Activation Time: Never
  Total Trigger Activations: 0
  Last Action Time: Never
  Total Actions: 0

switch(config)#
```

- This command configures event-handler **E2**, which triggers on maintenance an exit operation of dynamic interface unit **Ethernet1** before stage bgp.

```bash
switch(config)#event-handler E2
switch(config-handler-E2)#trigger on-maintenance exit interface Ethernet1 before stage bgp
switch(config-handler-E2)#action bash FastCli -c "show maintenance summary"
switch(config-handler-E2)# exit
switch(config)# show event-handler E2
Event-handler E2
  Trigger: Asynchronous on-maintenance exit interface Ethernet1 before stage bgp delay 0 seconds
  Threshold Time Window: 0 Seconds, Event Count: 1 times
  Action: FastCli -c "show maintenance summary"
  Action expected to finish in less than 10 seconds
  Last Trigger Detection Time: Never
  Total Trigger Detections: 0
  Last Trigger Activation Time: Never
  Total Trigger Activations: 0
  Last Action Time: Never
  Total Actions: 0

switch(config)#
```
This command configures event-handler E3, which triggers on maintenance an enter operation of dynamic BGP unit 1::1 in VRF VRF1 at the last stage end.

switch(config)#event-handler E3
switch(config-handler-E3)#trigger on-maintenance enter bgp 1::1 vrf VRF1 end
switch(config-handler-E3)#action bash FastCli -c "show maintenance bgp ip all vrf all"
switch(config-handler-E3)# exit
switch(config)# show event-handler E3
Event-handler E3
Trigger: Asynchronous on-maintenance enter bgp 1::1 vrf VRF1 end delay 0 seconds
Threshold Time Window: 0 Seconds, Event Count: 1 times
Action: FastCli -c "show maintenance bgp ip all vrf all"
Action expected to finish in less than 10 seconds
Last Trigger Detection Time: Never
Total Trigger Detections: 0
Last Trigger Activation Time: Never
Total Trigger Activations: 0
Last Action Time: Never
Total Actions: 0

switch(config)#
unit

The `unit <unit_name>` command places the switch in maintenance unit configuration mode for configuring BGP/interface groups in the unit.

The command creates the unit if the specified unit profile does not exist prior to issuing the command. The `no unit <unit-name>` and `default unit <unit-name>` removes the unit from `running-config`.

**Command Mode**
Maintenance Configuration

**Command Syntax**

```
unit linecard l_range | unit_name
no unit linecard l_range | unit_name
default unit linecard l_range | unit_name
```

**Parameters**
- `Linecard l_range` name of the Linecard built-in unit
- `0 l_range` linecards available on the switch
- `unit_name` name of the user-configured unit

**Commands available in maintenance unit configuration mode:**
- group interface
- group bgp
- profile unit
- quiesce

**Note**
Built-in units like `System`, `Linecard3`, `Linecard4`, etc. do not allow group configuration but unit profile can be associated to these units.

**Examples**
- This command creates maintenance unit UNIT1.
  ```
  switch(config)#maintenance
  switch(config-maintenance)#unit UNIT1
  switch(config-unit-UNIT1)#show active maintenance
  unit UNIT1
  switch(config-unit-UNIT1)#
  ```
- This command enters the built-in `Linecard1` unit configuration mode.
  ```
  switch(config)#maintenance
  switch(config-maintenance)#unit Linecard1
  switch(config-built-in-unit-Linecard1)#show active maintenance
  unit Linecard1
  switch(config-built-in-unit-Linecard1)#
  ```
vrf

The `vrf` command specifies the VRF for BGP group. All the neighbors configured in the BGP group are considered to be members of the BGP group in the particular VRF context.

The `no vrf <vrf-name>` and `default vrf <vrf-name>` removes the VRF configuration from the BGP group and sets the VRF context to “default”.

**Command Mode**
Group-BGP Configuration

**Command Syntax**

```plaintext
vrf vrf_name
no vrf vrf_name
default vrf vrf_name
```

**Parameters**
- `vrf_name` name of the VRF in a group belonging to neighbors in that group

**Example**
- This command specifies VRF `VRF1` for the neighbors in the BGP group `BGP1`.

```
switch(config)#group bgp BGP1
switch(config-group-bgp-BG1)#neighbor 1.0.1.1
switch(config-group-bgp-BG1)#neighbor 1::1
switch(config-group-bgp-BG1)#neighbor PG
switch(config-group-bgp-BG1)#vrf VRF1
switch(config-group-bgp-BG1)#show active
group bgp BGP1
    neighbor 1.0.1.1
    neighbor 1::1
    neighbor PG
    vrf VRF1
switch(config-group-bgp-BG1)#exit
switch(config)#
```