



## SGT Based QoS

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The SGT Based QoS feature supports the application of security group for packet classification for user group and role based or device based QoS traffic routing.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Prerequisites for SGT Based QoS

- The user groups and devices used for SGT Based QoS configuration must be assigned to the appropriate SGT groups. SGT definition and mapping can be done through Cisco ISE or through static SGT classification on the network device.

## Restrictions for SGT Based QoS

- The SGT Based QoS feature does not support application prioritization within a user group.

- The SGT Based QoS feature does not support combining match application or match protocol criteria with the match sgt criteria within a policy.

## Information About SGT Based QoS

### SGT Based QoS

Security Group classification includes both Source and Destination Group, which is specified by source SGT and DGT. The SGT Based QoS feature enables prioritized allocation of bandwidth and QoS policies for a defined user group or device. The SGT Based QoS feature provides you the capability to assign multiple QoS policies to an application or traffic type initiated by different user groups. Each user group is defined by a unique SGT value and supports hierarchical and non-hierarchical QoS configuration. The SGT Based QoS feature supports both user group and device based QoS service levels for SGT/DGT based packet classification. The SGT Based QoS feature supports defining of user groups based on contextual information for QoS policy prioritization.

## How to Configure SGT Based QoS

### Configuring User Group, Device, or Role Based QoS Policies

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map** *class-map-name*
4. **match security-group source tag** *sgt-number*
5. **match security-group destination tag** *dgt-number*
6. **end**

#### DETAILED STEPS

|        | Command or Action  | Purpose  |
|--------|--|--|
| Step 1 | <b>enable</b><br><b>Example:</b><br>Device> enable                         | Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul> |
| Step 2 | <b>configure terminal</b><br><b>Example:</b><br>Device# configure terminal | Enters global configuration mode.  |
| Step 3 | <b>class-map</b> <i>class-map-name</i><br><b>Example:</b>                  | Specifies the class-map and enters class-map configuration mode.   |

|               | Command or Action  | Purpose   |
|---------------|--|---|
|               | Device(config)# class-map cl   |   |
| <b>Step 4</b> | <b>match security-group source tag</b> <i>sgt-number</i><br><br><b>Example:</b><br>Device(config-cmap)# match security-group source tag 1000           | Configures the value for security-group source security tag.            |
| <b>Step 5</b> | <b>match security-group destination tag</b> <i>dgt-number</i><br><br><b>Example:</b><br>Device(config-cmap)# match security-group destination tag 2000 | Configures the value for security-group destination security tag.       |
| <b>Step 6</b> | <b>end</b><br><br><b>Example:</b><br>Device(config-cmap)# end  | Exits route-map configuration mode and returns to privileged EXEC mode. |

## Configuring and Assigning Policy-Map to an Interface

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-map-name*
4. **class** *class-map-name*
5. **bandwidth percent** *number*
6. **set dscp** *codepoint value*
7. **end**
8. **interface** *type slot/subslot/port [. subinterface-number]*
9. **service-policy** {**input** | **output**} *policy-map-name*
10. **end**

### DETAILED STEPS

|               | Command or Action  | Purpose   |
|---------------|--|---|
| <b>Step 1</b> | <b>enable</b><br><br><b>Example:</b><br>Device> enable                         | Enables privileged EXEC mode.<br><br>• Enter your password if prompted. |
| <b>Step 2</b> | <b>configure terminal</b><br><br><b>Example:</b><br>Device# configure terminal | Enters global configuration mode.                                       |
| <b>Step 3</b> | <b>policy-map</b> <i>policy-map-name</i><br><br><b>Example:</b>                | Specifies the policy-map and enters policy-map configuration mode.      |

|                | Command or Action   | Purpose   |
|----------------|---|---|
|                | <code>Device(config)# policy-map p1</code>  |   |
| <b>Step 4</b>  | <b>class</b> <i>class-map-name</i><br><b>Example:</b><br><code>Device(config-pmap)# class c1</code>   | Specifies the class and enters class configuration mode.                              |
| <b>Step 5</b>  | <b>bandwidth percent</b> <i>number</i><br><b>Example:</b><br><code>Device(config-pmap-c)# bandwidth percent 20</code>                                       | Configures the value for bandwidth percent.   |
| <b>Step 6</b>  | <b>set dscp</b> <i>codepoint value</i><br><b>Example:</b><br><code>Device(config-pmap-c)# set dscp ef</code>  | Configures the Differentiated Services Code Point (DSCP) value.                       |
| <b>Step 7</b>  | <b>end</b><br><b>Example:</b><br><code>Device(config-pmap-c)# end</code>  | Exits policy-map class action configuration mode and returns to privileged EXEC mode. |
| <b>Step 8</b>  | <b>interface</b> <i>type slot/subslot/port [. subinterface-number]</i><br><b>Example:</b><br><code>Device(config)#interface gigabitEthernet0/0/0.1</code>   | Specifies the interface information and enters interface configuration mode.          |
| <b>Step 9</b>  | <b>service-policy</b> { <b>input</b>   <b>output</b> } <i>policy-map-name</i><br><b>Example:</b><br><code>Device(config-if)# service-policy input p1</code> | Assigns policy-map to the input of an interface.                                      |
| <b>Step 10</b> | <b>end</b><br><b>Example:</b><br><code>Device(config-if)# end</code>  | Exits interface configuration mode and returns to privileged EXEC mode.               |

## Displaying and Verifying SGT Based QoS Configuration

### SUMMARY STEPS

1. **enable**
2. **show class-map**
3. **debug cpl provisioning {api | db | errors | ttc}**

### DETAILED STEPS

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**Step 1**    **enable**  
**Example:**  
`Device> enable`

Enables privileged EXEC mode.

- Enter your password if prompted.

## Step 2 show class-map

### Example:

```
Device# show class-map

Class Map match-any class-default (id 0)
  Match any

Class Map match-all c1 (id 1)
  Match security-group source tag 1000
  Match security-group destination tag 2000
```

Displays class-map information.

## Step 3 debug cpl provisioning{api | db | errors | ttc}

### Example:

```
Device# debug cpl provisioning api

CPL Policy Provisioning Manager API calls debugging is on

Enables debugging for Call Processing Language (CPL) provisioning.
```

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# Configuration Examples for SGT Based QoS

## Example: Configuring User Group, Device, or Role Based QoS Policies

The following example shows how to configure User Group, Device, or Role Based QoS Policies:

```
enable
configure terminal
class-map c4
  match security-group source tag 7000
  match security-group destination tag 8000
end
policy-map p5
  class c4
    bandwidth percent 50
    set dscp ef
  end
interface gigabitEthernet0/0/0.1
  service-policy input p5
```

## Additional References for SGT Based QoS

### Related Documents

| Related Topic                                      | Document Title  |
|--|---|
| Cisco IOS commands                                 | <a href="#">Cisco IOS Master Command List, All Releases</a>                 |
| Cisco IOS IP Routing Protocol Independent commands | <a href="#">Cisco IOS IP Routing Protocol Independent Command Reference</a> |
| Cisco TrustSec Overview                            | <a href="#">Understanding Cisco TrustSec</a>                                |

### Technical Assistance

| Description   | Link  |
|---|---|
| <p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p> | <a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a> |

## Feature Information for SGT Based QoS

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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*Table 1: Feature Information for SGT Based QoS*

| Feature Name  | Releases | Feature Information  |
|---------------|----------|--|
| SGT Based QoS |          | <p>The SGT Based QoS feature supports classification of packets based on Security Group Tag (SGT) for grouping the traffic into user groups and devices to match the defined QoS policies.</p> <p>The following commands were introduced or modified: <b>debug cpl provisioning</b>, <b>class-map match security-group destination tag</b>, <b>match security-group source tag</b>, <b>show class-map</b>.</p> |

