



Service Groups

This feature provides the ability to apply an aggregate QoS service policy across multiple VLAN subinterfaces or service instances that are on the same physical interface. The Service Group feature allows network administrators to create service groups, add members (such as service instances) to those service groups, and apply service policies to the groups. The service policies contain the aggregate features (such as traffic policing and queueing) that can be applied to the groups. These service policies are in compliance with the Service-Level Agreement (SLA) negotiated between the service provider and the subscribers.

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Restrictions for Service Groups

- Only EFP service instances, routed sub-interfaces and aggregate port-channel sub-interfaces can be added as members of service groups.
Each service instance or sub-interface can belong to only one service group at time.
- The service group must exist before any member can join the group.
- All members of a service group must reside on the same physical interface or same aggregate port-channel interface.
- Sub-interfaces or service instances that are members of a service group cannot have a QoS policy applied to the interfaces, even if the service group does not have a QoS policy applied.
- MPOL is not supported on aggregate port-channel when policy is applied on aggregated port-channel main interface, port-channel sub-interface cannot be attached by any policy, or be configured as a member of a service-group.
- Sub-interface belongs to service group and sub-interface applied with service-policy cannot be configured on the same aggregate port-channel simultaneously.
- Each sub-interface belongs to only one service group at a time.

- Interfaces that are a member of a service group cannot have a QoS policy applied.
- A batch configuration including both "define service-group" and "add sub-interface to service-group" may result in membership error, and vice versa in the unconfiguration.

So it is recommended to define the service-group before adding subinterfaces or service instances to it, and removing them from the service-group before deleting the service-group or deleting the subinterfaces or service instances.

Information About Service Groups

Service Instances and Service Groups

A service instance is a configuration object (container) that holds all management and control plane attributes and parameters that apply to that service instance on a per-port basis. Different service instances that correspond to the same Ethernet Virtual Connection (EVC) must share the same name. Service instances are associated with a global EVC object through their shared name.

The Service Groups feature allows you to create service groups and apply aggregate features to those service groups. Service groups are created with input and output policies. Members join these groups by configuring the group ID in their configuration.

Make note of the following actions when enabling the service group feature:

- A service group must be created before a QoS policy can be configured on the service group.
- A service group sub-interface or service instance must be created before it can be bound to its group interface.

When disabling the service group feature:

- A service group sub-interface or service instance must be unbound from the service group interface before the service member interface is deleted.
- A service group sub-interface or service instance unbound from the service group interface before the service group interface is deleted.
- A QoS policy must be removed from the service group interface before the service group interface is deleted.

How to Configure Service Groups

Creating a Service Group

Before you begin

In this procedure, you need to specify the name of a QoS policy to be attached to the service group. The QoS policy must already exist.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **service-group** *service-group-identifier*
4. **description** *descriptive-text*
5. **service-policy** {**input** | **output**} *policy-map-name*
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	service-group <i>service-group-identifier</i> Example: Device(config)# service-group 20	Creates a service group and enters service-group configuration mode. <ul style="list-style-type: none"> • Enter the service group number. The number of service groups that can be created varies by Device.
Step 4	description <i>descriptive-text</i> Example: Device(config-service-group)# description subscriber account number 105AB1	(Optional) Creates a description of the service group. <ul style="list-style-type: none"> • Enter a description (for example, additional information about the group) of the service group. Descriptions can be a maximum of 240 characters.
Step 5	service-policy { input output } <i>policy-map-name</i> Example: Device(config-service-group)# service-policy input policyl	(Optional) Attaches a policy map to the service group, in either the ingress (input) or egress (output) direction. <ul style="list-style-type: none"> • Enter either the input or output keyword and the name of the previously created policy map.
Step 6	end Example: Device(config-service-group)# end	(Optional) Returns to privileged EXEC mode.

Adding or Deleting Service Group Members



Note The following restrictions apply to service group members:

- A member can join only one service group at a time.
- All members of a service group must reside on the same physical interface.
- Service instances cannot join the same group from multiple interfaces. Group members must come from the same interface, as shown in the sample configuration below:

```
interface GigabitEthernet 2/0/0
service instance 1 ethernet
group 32
service instance 2 ethernet
group 32
interface GigabitEthernet 2/0/0.2
encapsulation dot1q 2
group 37
interface GigabitEthernet 2/0/1
service instance 1 ethernet
group 32 |<--Disallowed because this group has members in g2/0/0 already |
>
```

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **service instance** *service-instance-number* **ethernet**
5. **group** *service-group-identifier*
6. **no group** *service-group-identifier*
7. **exit**
8. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
Step 3	interface <i>type number</i> Example: Device(config)# interface GigabitEthernet 0/1/0	Configures an interface and enters interface configuration mode.
Step 4	service instance <i>service-instance-number</i> ethernet Example: Device(config-if)# service instance 200 ethernet	Specifies the service instance to be added or deleted from a service group and enters service configuration mode.
Step 5	group <i>service-group-identifier</i> Example: Device(config-if-srv)# group 20	Number of the service group specified by the member will be added.
Step 6	no group <i>service-group-identifier</i> Example: Device(config-if-srv)# no group 20	(Optional) Number of the service group specified by the member will be added.
Step 7	exit Example: Device(config-if-srv)# exit	(Optional) Returns to interface configuration mode.
Step 8	end Example: Device(config-if-srv)# end	(Optional) Returns to privileged EXEC mode.

Deleting a Service Group

Before you begin

- A service member interface must be unbound from the service group interface before the service group interface is deleted.
- A QoS policy must be removed from the service group interface before the service group interface is deleted.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **no service-group** *service-group-identifier*
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	no service-group <i>service-group-identifier</i> Example: Device(config)# no service-group 20	Deletes a service group and deletes all members from the service group. <ul style="list-style-type: none"> • Enter the service group number to be deleted. <p>Note When you delete a service group, all members of the service group are automatically removed from the service group.</p>
Step 4	end Example: Device(config)# end	(Optional) Exits global configuration mode.

Verifying the Service Group Configuration

SUMMARY STEPS

1. enable
2. show running-config service-group
3. show service-group {*service-group-identifier* | all}
4. show service-group interface *type number*
5. show service-group stats
6. show service-group state
7. show service-group traffic-stats
8. show policy-map interface *type number* service group {*service-group-identifier*}
9. show policy-map target service-group {*service-group-identifier*}
10. show ethernet service instance [detail]
11. clear service-group traffic-stats
12. debug service-group {all | error | feature | group | interface | ipc | member | qos | stats}

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	show running-config service-group Example: Device# show running-config service-group	(Optional) Displays the running service-group configuration.
Step 3	show service-group { <i>service-group-identifier</i> all } Example: Device# show service-group all	(Optional) Displays service-group configuration information for one or all service groups.
Step 4	show service-group interface <i>type number</i> Example: Device# show service-group interface gigabitethernet 3/1	(Optional) Displays service-group membership information by interface. <ul style="list-style-type: none"> • Enter the interface type and number.
Step 5	show service-group stats Example: Device# show service-group stats	(Optional) Displays service-group statistical information.
Step 6	show service-group state Example: Device# show service-group state	(Optional) Displays state information about service groups.
Step 7	show service-group traffic-stats Example: Device# show service-group traffic-stats	(Optional) Displays traffic statistics for all the members of a service group. <ul style="list-style-type: none"> • The information displayed is the combined total of the traffic statistics for all members.
Step 8	show policy-map interface <i>type number</i> service group { <i>service-group-identifier</i> } Example: Device# show policy-map interface gigabitEthernet 9/5 service group	(Optional) Displays policy-map information for service groups. <ul style="list-style-type: none"> • Enter the interface type and number.

	Command or Action	Purpose
Step 9	<p>show policy-map target service-group <i>{service-group-identifier}</i></p> <p>Example:</p> <pre>Device# show policy-map target service-group 1</pre>	<p>(Optional) Displays policy-map information for service groups that have members attached to the specified interface.</p> <ul style="list-style-type: none"> • Enter the service group identifier.
Step 10	<p>show ethernet service instance [detail]</p> <p>Example:</p> <pre>Device# show ethernet service instance detail</pre>	<p>(Optional) Displays information about the service instances.</p> <p>Note To display the service group number, use the detail keyword.</p>
Step 11	<p>clear service-group traffic-stats</p> <p>Example:</p> <pre>Device# clear service-group traffic-stats</pre>	<p>(Optional) Clears the traffic statistics for the service group.</p> <p>Note Clearing the traffic statistics for the service group does not clear the traffic statistics for the group members. To clear the traffic statistics for group members, use the clear ethernet service instance command. For more information about the clear ethernet service instance command, see the Cisco IOS Carrier Ethernet Command Reference.</p>
Step 12	<p>debug service-group {all error feature group interface ipc member qos stats}</p> <p>Example:</p> <pre>Device# debug service-group qos</pre>	<p>(Optional) Debugs service-group events and errors.</p>

Adding or Deleting a Subinterface from a Service Group



Note If a subinterface is already a member of a group, you cannot add it to another group. To move a subinterface, first delete it from the current group, then add it to the new group.

>

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **group** *service-group-identifier*
5. **no group** *service-group-identifier*
6. **exit**
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface <i>type number</i> Example: Device(config)# interface GigabitEthernet 1/1/0.30 or Device(config)# interface range GigabitEthernet 1/1/0.30 - GigabitEthernet 1/1/0.36	Configures a subinterface and enters subinterface configuration mode. <ul style="list-style-type: none"> • Enter the interface type and the subinterface number. or Configures a range of subinterfaces and enters subinterface configuration mode. <ul style="list-style-type: none"> • Enter the interface types and the subinterface numbers.
Step 4	group <i>service-group-identifier</i> Example: Device(config-subif)# group 20	Number of the service group to which the subinterfaces will be added. <ul style="list-style-type: none"> • Enter the service group number.
Step 5	no group <i>service-group-identifier</i> Example: Device(config-subif)# no group 30	(Optional) Number of the service group from which the subinterfaces will be deleted. <ul style="list-style-type: none"> • Enter the service group number.
Step 6	exit Example: Device(config-subif)# exit	(Optional) Returns to interface configuration mode.
Step 7	end Example: Device(config-subif)# end	(Optional) Returns to privileged EXEC mode.

Verifying the Subinterface Configuration

SUMMARY STEPS

1. `enable`
2. `show running-config service-group`
3. `show service-group {service-group-identifier | all}`
4. `show service-group interface type number`
5. `show policy-map target service-group service-group-identifier`
6. `show service-group stats`
7. `show service-group state`
8. `show service-group traffic-stats`
9. `clear service-group traffic-stats`
10. `debug service-group {all | error | feature | group | interface | ipc | member | qos | stats}`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	show running-config service-group Example: Device# show running-config service-group	(Optional) Displays the running service-group configuration.
Step 3	show service-group {service-group-identifier all} Example: Device# show service-group all	(Optional) Displays service-group configuration information for one or all service groups.
Step 4	show service-group interface type number Example: Device# show service-group interface gigabitethernet 3/1	(Optional) Displays service-group membership information by interface. <ul style="list-style-type: none"> • Enter the interface type and number.
Step 5	show policy-map target service-group service-group-identifier Example: Device# show policy-map target service-group 1	(Optional) Displays the policy-map information for all service groups or the specified service group. <ul style="list-style-type: none"> • Enter the target and service group.
Step 6	show service-group stats Example:	(Optional) Displays service-group statistical information.

	Command or Action	Purpose
	Device# show service-group stats	
Step 7	show service-group state Example: Device# show service-group state	(Optional) Displays state information about service groups.
Step 8	show service-group traffic-stats Example: Device# show service-group traffic-stats	(Optional) Displays the traffic statistics for all the members of a service group. <ul style="list-style-type: none"> • The information displayed is the combined total of the traffic statistics for all members.
Step 9	clear service-group traffic-stats Example: Device# clear service-group traffic-stats	(Optional) Clears the traffic statistics for the service group. <p>Note Clearing the traffic statistics for the service group does not clear the traffic statistics for the group members. To clear the traffic statistics for group members, use the clear ethernet service instance command. For more information about the clear ethernet service instance command, see the <i>Cisco IOS Carrier Ethernet Command Reference</i>.</p>
Step 10	debug service-group {all error feature group interface ipc member qos stats} Example: Device# debug service-group qos	(Optional) Debugs service-group events and errors.

Configuration Examples for Service Groups

Example Creating a Service Group

In the following example, service group 20 has been created:

```
Device> enable
Device# configure terminal
Device(config)# service-group 20
Device(config-service-group)# description account number 105AB1
Device(config-service-group)# service-policy input policy1
Device(config-service-group)# end
```

Example Adding Service Instance Members to a Service Group

In the following example, service instance 200 will be added to service group 20:

```

Device> enable

Device# configure terminal

Device(config)# interface GigabitEthernet 1/0

Device(config-if)# service instance 200 ethernet

Device(config-if-srv)# group 20

Device(config-if-srv)# end

```

Example Adding Subinterfaces to a Service Group

In the following example, subinterface g3/7.12 will be added to service group 10:

```

Device> enable

Device# configure terminal

Device(config)# interface GigabitEthernet 3/7.12

Device(config-subif)# group 10

Device(config-subif)# end

```

Example Deleting Service Instance Members from a Service Group

In the following example, service instance 300 will be deleted from service group 30 on a port channel:

```

Device> enable
Device# configure terminal
Device(config)# interface GigabitEthernet 1/0.56 or
Device(config-if)# service instance 300 ethernet
Device(config-if-srv)# no group 30
Device(config-if-srv)# end

```

Example Deleting Subinterfaces from a Service Group

In the following example, subinterface g3/7.12 will be deleted from service group 10:

```

Device> enable
Device# configure terminal
Device(config)# interface g3/7.12
Device(config-subif)# no group 10
Device(config-subif)# end

```

Example Deleting a Service Group

In the following example, service group 20 will be deleted:

```
Device> enable

Device# configure terminal

Device(config)# no service-group 20

Device(config)# end
```

Example Verifying the Service Group Configuration

This section contains sample output from the **show policy-map target service-group** command. The **show policy-map target service-group** command displays policy-map information for service groups.



Note This command is one of several that you can use to verify the service-group configuration. For additional commands that can be used, see *Verifying the Service Group Configuration*.

In the following example, service group 1 is specified. Service group 1 contains two policy maps (service policies), policy1 and policy2. Traffic policing is enabled in the EVC policy map. Traffic queuing is enabled in the ISG policy map.

```
Device# show policy-map target service-group 1

GigabitEthernet9/5: Service Group 1

Service-policy input: policy1

Class-map: class-default (match-any)
 0 packets, 0 bytes
 5 minute offered rate 0000 bps, drop rate 0000 bps
Match: any
police:
  cir 200000 bps, bc 6250 bytes
  conformed 0 packets, 0 bytes; actions:
    transmit
  exceeded 0 packets, 0 bytes; actions:
    drop
  conformed 0000 bps, exceed 0000 bps

Service-policy output: policy2

Counters last updated 00:00:34 ago
Class-map: class-default (match-any)
 0 packets, 0 bytes
 5 minute offered rate 0000 bps, drop rate 0000 bps
Match: any
Queueing
queue limit 131072 packets
(queue depth/total drops/no-buffer drops) 0/0/0
```

```
(pkts output/bytes output) 0/0
bandwidth remaining ratio 2
```

How to Configure Service-group Support on Aggregate Port-channel

Adding Service Instance Members to a Service Group

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **service-group** *service-group-identifier*
4. **service-policy** {**input** | **output**} *policy-map-name*
5. **platform qos port-channel-aggregate** *port-channel-number*
6. **interface port-channel** *port-channel-number*
7. **interface** *interface*
8. **channel-group** *number*
9. **interface port-channel** *port-channel-number.subinterface-number*
10. **encapsulation dot1Q** *vlan-id* **second-dot1q** *vlan-id*
11. **group** *service-group-identifier*
12. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	service-group <i>service-group-identifier</i> Example: Device(config)# service-group 10	Adds a service group and all members to the service group.
Step 4	service-policy { input output } <i>policy-map-name</i> Example: Device(config-service-group)# service-policy input policy1 Device(config-service-group)# service-policy output policy2	(Optional) Attaches a policy map to the service group, in either the ingress (input) or egress (output) direction. <ul style="list-style-type: none">• Enter either the input or output keyword and the name of the previously created policy map.

	Command or Action	Purpose
Step 5	platform qos port-channel-aggregate <i>port-channel-number</i> Example: Device(config)# platform qos port-channel-aggregate 1	Enables aggregate mode for a port-channel interface. Note It must be configured before a port-channel is created. Enable aggregate mode before a port-channel interface is attached by policy, or subinterfaces of the port-channel to be added to a service-group.
Step 6	interface port-channel <i>port-channel-number</i> Example: Device(config)# interface port-channel 1	Enters interface configuration mode to configure a specific port channel.
Step 7	interface <i>interface</i> Example: Device(config)# interface g0/0/0	Configures physical interface as a member link of the port-channel.
Step 8	channel-group <i>number</i> Example: Device(config)# channel-group 1	Adds the physical interface to the port-channel 1 as a member link.
Step 9	interface port-channel <i>port-channel-number.subinterface-number</i> Example: Device(config)# interface port-channel 1.10	Enters interface configuration mode to configure a specific port channel subinterface.
Step 10	encapsulation dot1Q <i>vlan-id</i> second-dot1q <i>vlan-id</i> Example: Device(config-subif)# encapsulation dot1Q 10 second-dot1q 11	Defines the matching criteria to map Q-in-Q ingress frames on the port-channel subinterface. Note Configuring second-dot1q is optional.
Step 11	group <i>service-group-identifier</i> Example: Device(config-subif)# group 10	Adds the port-channel sub interface to the specified service-group.
Step 12	end Example: Device(config-subif)# end	Returns to privileged EXEC mode.

Deleting Service Instance Members from a Service Group

SUMMARY STEPS

1. enable
2. configure terminal

3. **interface port-channel** *port-channel-number.subinterface-number*
4. **no group** *service-group-identifier*
5. **no service-group** *service-group-identifier*
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface port-channel <i>port-channel-number.subinterface-number</i> Example: Device(config)# interface port-channel 1.10	Enters interface configuration mode to configure a specific port channel subinterface.
Step 4	no group <i>service-group-identifier</i> Example: Device(config-subif)# no group 10	Removes the port-channel sub-interface from the service group specified by the number.
Step 5	no service-group <i>service-group-identifier</i> Example: Device(config-subif)# no service-group 10	Deletes a service group. Note All members should be removed from the service group first.
Step 6	end Example: Device(config)# end	Returns to privileged EXEC mode.

Configuration Examples for Service-group on Aggregate Port-channel

Example: Adding Service Instance Members to a Service Group

```
Device> enable
Device# configure terminal
Device(config)# service-group 10
Device(config-service-group)# service-policy input policy1
```



```

Device(config-service-group)# service-policy output policy2
Device(config)# platform qos port-channel-aggregate 1
Device(config)# interface port-channel 1
Device(config)# interface g0/0/0
Device(config-if)# channel-group 1
Device(config)# interface port-channel 1.10
Device(config-subif)# encapsulation dot1Q 10 second-dot1q 11
Device(config-subif)# group 10
Device(config-subif)# end

```

Example: Deleting Service Instance Members to a Service Group

```

Device> enable
Device# configure terminal
Device(config)# interface port-channel 1.10
Device(config-subif)# no group 10
Device(config-subif)# no service-group 10
Device(config)# end

```

Additional References

Related Documents

Related Topic	Document Title
QoS commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples.	<i>Cisco IOS Quality of Service Solutions Command Reference</i>
Debug commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples.	<i>Cisco IOS Debug Command Reference</i>
MQC, policy maps	"Applying QoS Features Using the MQC" module
Service instance configuration information and concepts	<i>Cisco IOS Carrier Ethernet Configuration Guide</i>
Service instance commands	<i>Cisco IOS Carrier Ethernet Command Reference</i>

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	--

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Service Groups

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.

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. An account on Cisco.com is not required.

Table 1: Feature Information for Service Groups

Service Groups	12.2(33)SRE	<p>The Service Groups feature allows network administrators to create service groups, add members (such as service instances) to those service groups, and apply service policies (also known as policy maps) to those newly created groups.</p> <p>In Release 12.2(33)SRE, this feature was introduced on the Cisco 7600 series router.</p> <p>The following commands were introduced or modified: clear service-group traffic-stats, debug service-group, description, group, service-group, service instance ethernet, service-policy, show policy-map interface service group, show running-config service-group, show service-group, show service-group interface, show service-group state, show service-group stats, show service-group traffic-stats.</p>
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