Shaping on Dialer Interfaces

The Shaping on Dialer Interfaces feature provides support for Point-to-Point Protocol over Ethernet (PPPoE) and Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) configurations on dialer interfaces. The feature provides support for Modular QoS CLI (MQC)-based queuing and shaping that supports per-customer quality of service (QoS). Parent policies are attached to an Ethernet in the First Mile (EFM) interface, and child policies are attached to individual dialer interfaces. Class of service (CoS) values are set by applying a policy to the dialer interface. The feature also enables the collection of queuing statistics on the dialer interface and the polling of traffic counters for dialer interfaces.

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 at the end of this module.

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.

Restrictions for Shaping on Dialer Interfaces

- The output queueing policy must have a parent class-default shaper, and any other queueing actions must be configured in a child policy.

Information About Shaping on Dialer Interfaces

QoS on PPP Session on Dialer Interfaces

The Shaping on Dialer Interfaces feature consolidates the output queueing and classification on the egress interface (where all the queueing features are run). The police and set features (such as CoS marking) also work in the output path.

MQC-based QoS queuing and shaping features can be used to attach flat class-default shaped policies to the EFM and attach HQoS parent-shaped policies to the dialer interface.

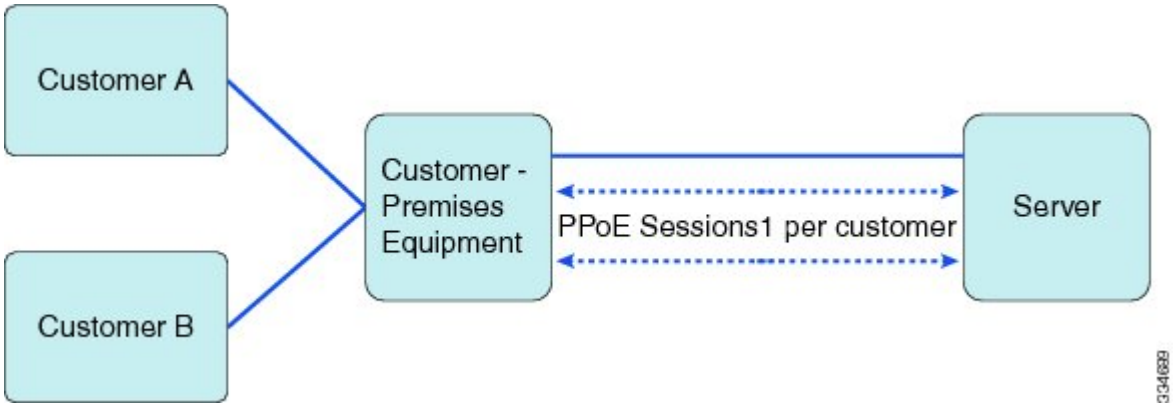
Policies are applied to the dialer interface using the **service-policy** command. In addition the related show and debug commands display policy and queueing statistics associated with the dialer target.

Note In Cisco ASR1000 devices, dialer policy is suspended when there is no forwarding interface configured for the dialer. However, in Cisco ISR devices, the dialer policy is not suspended when there is no forwarding interface configured.

QoS Dialer Interface Topology

The following figure shows the supported topology for the Shaping on Dialer Interfaces feature:

Figure 1: Shaping on Dialer Interfaces Topology



The Customer Premises Equipment (CPE) is shared between several customers. Each customer connects to the CPE through a VLAN on a Gigabit Ethernet port. The CPE connects to the service over a DSL using an EFM interface (this looks like an Ethernet connection but uses DSL) over which all the incoming VLANs will be forwarded. The traffic for each VLAN (customer) is transmitted in a separate PPP session. Each session is set up using a dialer interface.

How to Configure Shaping on Dialer Interfaces

Configuring an Output Queueing Policy for Dialer Interfaces

Before You Begin

Because the dialer target is added to the dynamic target API, the output queueing policy must have a parent class-default shaper with any other queueing actions configured in a child policy.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-map-name*
4. **class** *class-name*
5. **priority percent** *percentage*
6. **exit**
7. **class** *class-name*
8. **bandwidth percent** *percentage*
9. **exit**
10. **class** {*class-name* | **class-default**}
11. **fair-queue**
12. **exit**
13. **exit**
14. **policy-map** *policy-map-name*
15. **class class-default**
16. **shape average** *target-bit-rate*
17. **service-policy** *policy-map-name*
18. **exit**
19. **exit**
20. **interface** *type number*
21. **service-policy output** *policy-name*
22. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**policy-map** *policy-map-name* **Example:** `Device(config)# policy-map child`	Specifies the name of the policy map created earlier and enters policy-map configuration mode. • Enter the policy map name.
Step 4	**class** *class-name* **Example:** `Device(config-pmap)# class voice`	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier. • Enter the name of the class or enter the **class-default** keyword.
Step 5	**priority percent** *percentage* **Example:** `Device(config-pmap-c)# priority percent 30`	Specifies that the amount of guaranteed bandwidth will be specified by the percent of available bandwidth.
Step 6	**exit** **Example:** `Device(config-pmap-c)# exit`	Returns to policy-map configuration mode.
Step 7	**class** *class-name* **Example:** `Device(config-pmap)# class video`	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier. • Enter the name of the class or enter the **class-default** keyword.
Step 8	**bandwidth percent** *percentage* **Example:** `Device(config-pmap-c)# bandwidth percent 50`	Specifies that the amount of guaranteed bandwidth will be specified by the percent of total bandwidth.
Step 9	**exit** **Example:** `Device(config-pmap-c)# exit`	Returns to policy-map configuration mode.

	Command or Action	Purpose
Step 10	**class** {*class-name* | **class-default**} **Example:** `Device(config-pmap)# class class-default`	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier. • Enter the name of the class or enter the **class-default** keyword.
Step 11	**fair-queue** **Example:** `Device(config-pmap-c)# fair-queue`	Enables flow-based fair queueing in this class.
Step 12	**exit** **Example:** `Device(config-pmap-c) exit`	Returns to policy-map configuration mode.
Step 13	**exit** **Example:** `Device(config-pmap) exit`	Returns to global configuration mode.
Step 14	**policy-map** *policy-map-name* **Example:** `Device(config)# policy-map parent`	Specifies the name of a policy map and enters policy-map configuration mode. • Enter the policy map name.
Step 15	**class class-default** **Example:** `Device(config-pmap)# class class-default`	Creates the class-default class.
Step 16	**shape average** *target-bit-rate* **Example:** `Device(config-pmap-c)# shape average 1000000`	Specifies average rate traffic shaping as bits-per-second on an interface.
Step 17	**service-policy** *policy-map-name* **Example:** `Device(config-pmap-c)# service policy child`	Configures a service policy policy map.

	Command or Action	Purpose
Step 18	**exit** **Example:** `Device(config-pmap-c) exit`	Returns to policy-map configuration mode.
Step 19	**exit** **Example:** `Device(config-pmap) exit`	Returns to global configuration mode.
Step 20	**interface** *type number* **Example:** `Device(config)# interface Dialer 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 21	**service-policy output** *policy-name* **Example:** `Device(config-if)# service-policy output parent`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 22	**exit** **Example:** `Device(config-if) exit`	Returns to global configuration mode.

Configuring QoS for PPPoEoA for Dialer Interfaces

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [**name-tag**]
4. **no ip address**
5. **no atm ilmi-keepalive**
6. **exit**
7. **interface** *type number* [**name-tag**]
8. **pvc** *vpi/vci*
9. **vbr-nrt** *output-pcr output-scr*
10. **pppoe-client dial-pool-number** *number*
11. **exit**
12. **exit**
13. **interface** *type number* [**name-tag**]
14. **mtu** *ip-address*
15. **ip address** *ip-address mask*
16. **encapsulation** *encapsulation-type*
17. **dialer pool** *number*
18. **dialer-group** *number*
19. **service-policy output** *name*
20. **exit**
21. **dialer-list** *dialer-group* **protocol** *protocol-name* **permit**

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.

	Command or Action	Purpose
Step 3	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface ATM 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 4	**no ip address** **Example:** `Device(config-if)# no ip address`	Disables IP processing on the interface.
Step 5	**no atm ilmi-keepalive** **Example:** `Device(config-if)# no atm ilmi-keepalive`	Disables Interim Local Management Interface (ILMI) keepalives on the interface.
Step 6	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 7	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface ATM 0.1 point-to-point`	Configures an interface type and enters interface configuration mode. • Enter the interface type, number, and name.
Step 8	**pvc** *vpi/vci* **Example:** `Device(config-if)# pvc 4/46`	Creates an ATM permanent virtual circuit (PVC), and enters ATM virtual circuit configuration mode. • Enter the ATM network virtual path identifier (VPI) and ATM network virtual channel identifier (VCI) for this PVC.
Step 9	**vbr-nrt** *output-pcr output-scr* **Example:** `Device(config-if-atm-vc)# vbr-nrt 738 738`	Configures the variable bit rate-nonreal time (VBR-NRT) quality of service (QoS) and specifies the output peak cell rate (PCR), and output sustainable cell rate (SCR) for an ATM permanent virtual circuit (PVC).
Step 10	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-if-atm-vc)# pppoe-client dial-pool-number 1`	Configures a PPP over Ethernet (PPPoE) client and specifies the dial-on-demand routing (DDR) functionality.

	Command or Action	Purpose
Step 11	**exit** **Example:** `Device(config-if-atm-vc)# exit`	Exits ATM virtual circuit configuration mode.
Step 12	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 13	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 14	**mtu** *ip-address* **Example:** `Device(config-if)# mtu 1200`	Adjusts the maximum packet size or maximum transmission unit (MTU) size.
Step 15	**ip address** *ip-address mask* **Example:** `Device(config-if)# ip address 172.16.0.0 255.0.0.0`	Sets the primary IP address for the interface. • Enter the IP address and the IP address mask.
Step 16	**encapsulation** *encapsulation-type* **Example:** `Device(config-if)# encapsulation ppp`	Sets the encapsulation method used by the interface.
Step 17	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 1`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.
Step 18	**dialer-group** *number* **Example:** `Device(config-if)# dialer-group 1`	Controls access by configuring the interface to belong to a specific dialing group.

	Command or Action	Purpose
Step 19	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 20	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 21	**dialer-list** *dialer-group* **protocol** *protocol-name* **permit** **Example:** `Device(config)# dialer-list 1 protocol ip permit`	Defines a dial-on-demand routing (DDR) dialer list for dialing by protocol or by a combination of a protocol and a previously defined access list.

Configuring QoS for PPPoE for Dialer Interfaces

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [**name-tag**]
4. **ppp enable group** *group-name*
5. **pppoe-client dial-pool-number** *number*
6. **exit**
7. **interface** *type number* [**name-tag**]
8. **mtu** *ip-address*
9. **ip address** *ip-address mask*
10. **encapsulation** *encapsulation-type*
11. **dialer pool** *number*
12. **dialer-group** *number*
13. **service-policy output** *name*
14. **exit**
15. **dialer-list** *dialer-group* **protocol** *protocol-name* **permit**

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** *type number* [**name-tag**] **Example:** `Device(config)# interface Ethernet 0/0`	Configures an interface type and enters interface configuration mode. • Enter the interface type, number, and name.
Step 4	**ppp enable group** *group-name* **Example:** `Device(config-if)# ppp enable group global`	Enables PPPoE sessions on an Ethernet interface or subinterface.
Step 5	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-if)# pppoe-client dial-pool-number 1`	Configures a PPPoE client and to specify the dial-on-demand routing (DDR) functionality.
Step 6	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 7	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 8	**mtu** *ip-address* **Example:** `Device(config-if)# mtu 1200`	Adjusts the maximum packet size or maximum transmission unit (MTU) size.
Step 9	**ip address** *ip-address mask*	Sets the primary IP address for the interface.

	Command or Action	Purpose
	Example: `Device(config-if)# ip address 172.16.0.0 255.0.0.0`	• Enter the IP address and the IP address mask.
Step 10	**encapsulation** *encapsulation-type* **Example:** `Device(config-if)# encapsulation ppp`	Sets the encapsulation method used by the interface.
Step 11	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 1`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.
Step 12	**dialer-group** *number* **Example:** `Device(config-if)# dialer-group 1`	Controls access by configuring the interface to belong to a specific dialing group.
Step 13	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 14	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 15	**dialer-list** *dialer-group* **protocol** *protocol-name* **permit** **Example:** `Device(config)# dialer-list 1 protocol ip permit`	Defines a dial-on-demand routing (DDR) dialer list for dialing by protocol or by a combination of a protocol and a previously defined access list.

Configuring QoS for PPPoA for Dialer Interfaces

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [**name-tag**]
4. **pvc** *vpi/vci*
5. **vbr-nrt** *output-pcr output-scr output-maxburstsize*
6. **dialer pool-member** *number*
7. **protocol** *protocol*
8. **exit**
9. **exit**
10. **interface** *type number* [**name-tag**]
11. **mtu** *ip-address*
12. **ip address** *ip-address mask*
13. **encapsulation** *encapsulation-type*
14. **dialer pool** *number*
15. **dialer-group** *number*
16. **service-policy output** *name*
17. **exit**
18. **dialer-list** *dialer-group* **protocol** *protocol-name* **permit**

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** *type number* [**name-tag**] **Example:** `Device(config)# interface ATM 0.1 point-to-point`	Configures an interface type and enters interface configuration mode. • Enter the interface type, number, and name.

	Command or Action	Purpose
Step 4	**pvc** *vpi*/*vci* **Example:** `Device(config-if)# pvc 4/46`	Creates an ATM permanent virtual circuit (PVC), and enters ATM virtual circuit configuration mode. • Enter the ATM network virtual path identifier (VPI) and ATM network virtual channel identifier (VCI) for this PVC.
Step 5	**vbr-nrt** *output-pcr output-scr output-maxburstsize* **Example:** `Device(config-if-atm-vc)# vbr-nrt 738 738 32`	Configures the variable bit rate-nonreal time (VBR-NRT) quality of service (QoS) and specifies the output peak cell rate (PCR), output sustainable cell rate (SCR), and output maximum burst cell size for an ATM permanent virtual circuit (PVC).
Step 6	**dialer pool-member** *number* **Example:** `Device(config-if-atm-vc)# dialer pool-member 1`	Configures a physical interface to be a member of a dialer profiles dialing pool.
Step 7	**protocol** *protocol* **Example:** `Device(config-if-atm-vc)# protocol ppp dialer`	Configures a static map for an ATM permanent virtual circuit (PVC), switched virtual circuit (SVC), or virtual circuit (VC) class.
Step 8	**exit** **Example:** `Device(config-if-atm-vc)# exit`	Exits ATM virtual circuit configuration mode.
Step 9	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 10	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 11	**mtu** *ip-address* **Example:** `Device(config-if)# mtu 1200`	Adjusts the maximum packet size or maximum transmission unit (MTU) size.
Step 12	**ip address** *ip-address mask*	Sets the primary IP address for the interface.

	Command or Action	Purpose
	Example: `Device(config-if)# ip address 172.16.0.0 255.0.0.0`	• Enter the IP address and the IP address mask.
Step 13	**encapsulation** *encapsulation-type* **Example:** `Device(config-if)# encapsulation ppp`	Sets the encapsulation method used by the interface.
Step 14	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 1`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.
Step 15	**dialer-group** *number* **Example:** `Device(config-if)# dialer-group 1`	Controls access by configuring the interface to belong to a specific dialing group.
Step 16	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 17	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 18	**dialer-list** *dialer-group* **protocol** *protocol-name* **permit** **Example:** `Device(config)# dialer-list 1 protocol ip permit`	Defines a dial-on-demand routing (DDR) dialer list for dialing by protocol or by a combination of a protocol and a previously defined access list, .

Configuring QoS for Multiple Sessions on Dialer Interfaces

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [**name-tag**]
4. **ppp enable group** *group-name*
5. **pppoe-client dial-pool-number** *number*
6. **pppoe-client dial-pool-number** *number*
7. **pppoe-client dial-pool-number** *number*
8. **exit**
9. **interface** *type number* [**name-tag**]
10. **dialer pool** *number*
11. **service-policy output** *name*
12. **exit**
13. **interface** *type number* [**name-tag**]
14. **dialer pool** *number*
15. **service-policy output** *name*
16. **exit**
17. **interface** *type number* [**name-tag**]
18. **dialer pool** *number*
19. **service-policy output** *name*
20. **exit**

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.

	Command or Action	Purpose
Step 3	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Ethernet 0/0`	Configures an interface type and enters interface configuration mode. • Enter the interface type, number, and name.
Step 4	**ppp enable group** *group-name* **Example:** `Device(config-if)# ppp enable group global`	Enables PPPoE sessions on an Ethernet interface or subinterface.
Step 5	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-if)# pppoe-client dial-pool-number 1`	Configures a PPPoE client and to specify the dial-on-demand routing (DDR) functionality.
Step 6	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-if)# pppoe-client dial-pool-number 2`	Configures a PPPoE client and to specify the dial-on-demand routing (DDR) functionality.
Step 7	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-if)# pppoe-client dial-pool-number 3`	Configures a PPPoE client and to specify the dial-on-demand routing (DDR) functionality.
Step 8	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 9	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 10	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 1`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.

	Command or Action	Purpose
Step 11	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 12	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 13	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 1`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 14	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 2`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.
Step 15	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 16	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 17	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 2`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 18	**dialer pool** *number* **Example:** `Device(config-if)# dialer pool 3`	Specifies the dialing pool that the dialer interface uses to connect to a specific destination subnetwork.

	Command or Action	Purpose
Step 19	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output dialer-output-sp`	Attaches a policy map to an output interface that will be used as the service policy for the interface.
Step 20	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.

Applying CoS Values to a Dialer Interface

Class of Service (CoS) values are set by applying a policy to the dialer interface.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-map-name*
4. **class class-default**
5. **set cos** *cos-value*
6. **exit**
7. **exit**
8. **interface** *type number* [**name-tag**]
9. **service-policy output** *name*
10. **exit**
11. **interface** *type number* [**name-tag**]
12. **encapsulation** *encapsulation-type*
13. **pppoe-client dial-pool-number** *number*
14. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Device> enable`	• Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**policy-map** *policy-map-name* **Example:** `Device(config)# policy-map output_cos`	Specifies the name of the policy map created earlier and enters policy-map configuration mode. • Enter the policy map name.
Step 4	**class class-default** **Example:** `Device(config-pmap)# class class-default`	Creates the default class for traffic classification and enters policy-map class configuration mode.
Step 5	**set cos** *cos-value* **Example:** `Device(config-pmap-c)# set cos 1`	Specifies an IEEE 802.1Q CoS value from 0 to 7.
Step 6	**exit** **Example:** `Device(config-pmap-c)# exit`	Returns to policy-map configuration mode.
Step 7	**exit** **Example:** `Device(config-pmap)# exit`	Returns to global configuration mode.
Step 8	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Dialer 1`	Configures an interface type and enters interface configuration mode. • Enter the interface type and number.
Step 9	**service-policy output** *name* **Example:** `Device(config-if)# service-policy output output-cos`	Attaches a policy map to an output interface that will be used as the service policy for the interface.

	Command or Action	Purpose
Step 10	**exit** **Example:** `Device(config-if)# exit`	Exits interface configuration mode.
Step 11	**interface** *type number* [**name-tag**] **Example:** `Device(config)# interface Ethernet 0.10`	Configures an interface type and enters sub-interface configuration mode. • Enter the interface type and number.
Step 12	**encapsulation** *encapsulation-type* **Example:** `Device(config-subif)# encapsulation dot1q 10`	Sets the encapsulation method used by the interface.
Step 13	**pppoe-client dial-pool-number** *number* **Example:** `Device(config-subif)# pppoe-client dial-pool-number 1`	Configures a PPPoE client and to specify the dial-on-demand routing (DDR) functionality.
Step 14	**exit** **Example:** `Device(config-subif)# exit`	Returns to global configuration mode.

Configuration Examples for Shaping on Dialer Interfaces

Example: Configuring Output Queuing Policy for a Dialer Interface

The following example shows how to configure parent and child policy maps and how to attach the parent map to the dialer interface:

```
Device(config)# policy-map childExample
 Device(config-pmap)# class voice
  Device(config-pmap-c)# priority percent 30
  Device(config-pmap-c)# exit

 Device(config-pmap)# class video
  Device(config-pmap-c)# bandwidth percent 50
  Device(config-pmap-c)# exit

 Device(config-pmap)# class class-default
  Device(config-pmap-c)# fair-queue
  Device(config-pmap-c)# exit
```

```
Device(config)# policy-map parent
 Device(config-pmap)# class class-default
  Device(config-pmap-c)# shape average 1000000
  Device(config-pmap-c)# service-policy child
  Device(config-pmap-c)# exit

Device(config)# interface dialer 0
 Device(config-if)# service-policy output parent
```

Example: Configuring QoS for PPPoEoA for a Dialer Interface

```
Device(config)# interface ATM 0
 Device(config-if)# no ip address
 Device(config-if)# no atm ilmi-keepalive
 Device(config-if)# exit

Device(config)# interface ATM 0.1 point-to-point
 Device(config-if)# ip address 192.168.0.0 255.255.255.224
 Device(config-if)# pvc 4/46
  Device(config-if-atm-vc)# vbr-nrt 738 738
  Device(config-if-atm-vc)# pppoe-client dial-pool-number 1
  Device(config-if-atm-vc)# exit
 Device(config-if)# exit

Device(config)# interface Dialer 0
 Device(config-if)# mtu 1200
 Device(config-if)# ip address 172.16.0.0 255.0.0.0
 Device(config-if)# encapsulation ppp
 Device(config-if)# dialer pool 1
 Device(config-if)# dialer-group 1
 Device(config-if)# service-policy output dialer-output-sp
!
Device(config)# dialer-list 1 protocol ip permit
```

Example: Configuring QoS for a PPPoE on a Dialer Interface

```
Device(config)# interface ethernet 0/0
 Device(config-if)# pppoe enable group global
 Device(config-if)# pppoe-client dial-pool-number 1
 Device(config-if)# exit

Device(config)# interface Dialer 0
 Device(config-if)# mtu 1200
 Device(config-if)# ip address 172.16.0.0 255.0.0.0
 Device(config-if)# encapsulation ppp
 Device(config-if)# dialer pool 1
 Device(config-if)# dialer-group 1
 Device(config-if)# service-policy output dialer-output-sp
 Device(config-if)# exit

Device(config)# dialer-list 1 protocol ip permit
```

Example: Configuring QoS for PPPoA on a Dialer Interface

```
Device(config)# interface ATM 0.1 point-to-point
 Device(config-if)# ip address 192.168.0.0 255.255.255.224
 Device(config-if)# pvc 4/46
  Device(config-if-atm-vc)# vbr-nrt 738 738
  Device(config-if-atm-vc)# dialer pool-member 1
```

```
  Device(config-if-atm-vc)# protocol ppp dialer
  Device(config-if-atm-vc)# exit
 Device(config-if)# exit

Device(config)# interface Dialer 0
 Device(config-if)# mtu 1200
 Device(config-if)# ip address 172.16.0.0 255.0.0.0
 Device(config-if)# encapsulation ppp
 Device(config-if)# dialer pool 1
 Device(config-if)# dialer-group 1
 Device(config-if)# service-policy output dialer-output-sp
 Device(config-if)# exit

Device(config)# dialer-list 1 protocol ip permit
```

Example: Configuring QoS for Multiple Sessions on a Dialer Interface

```
Device(config)# interface ethernet 0/0
 Device(config-if)# pppoe enable group global
 Device(config-if)# pppoe-client dial-pool-number 1
 Device(config-if)# pppoe-client dial-pool-number 2
 Device(config-if)# pppoe-client dial-pool-number 3
 Device(config-if)# exit

Device(config)# interface Dialer 0
 Device(config-if)# dialer pool 1
 Device(config-if)# service-policy output dialer-output-sp
 Device(config-if)# exit

Device(config)# interface Dialer 1
 Device(config-if)# dialer pool 2
 Device(config-if)# service-policy output dialer-output-sp
 Device(config-if)# exit

Device(config)# interface Dialer 2
 Device(config-if)# dialer pool 3
 Device(config-if)# service-policy output dialer-output-sp
 Device(config-if)# exit
```

Example: Applying CoS Values to a Dialer Interface

```
Device> enable
Device# configure terminal
Device(config)# policy-map output_cos
Device(config-pmap)# class class-default
Device(config-pmap-c)# set cos 1
Device(config-pmap-c)# exit
Device(config-pmap)# exit
Device(config)# interface Dialer 1
Device(config-if)# service-policy output output-cos
Device(config-if)# exit
Device(config)# interface Ethernet 0.10
Device(config-subif)# encapsulation dot1q 10
Device(config-subif)# pppoe-client dial-pool-number 1
Device(config-subif)# exit
```

Additional References for Shaping on Dialer Interfaces

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
QoS commands	*Cisco IOS Quality of Service Solutions Command Reference*
MQC	*QoS: Modular QoS: Command-Line Interface Configuration Guide*

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 Shaping on Dialer Interfaces

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 Shaping on Dialer Interfaces

Feature Name	Releases	Feature Information
Shaping on Dialer Interfaces	15.3(1)T Cisco IOS XE Release 3.13S	The Shaping on Dialer Interfaces feature provides support for PPPoE/A configurations on dialer interfaces.