



# Policy Enforcement and Usage Monitoring

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## Policy Enforcement and Usage Monitoring

You can enforce dynamic QoS policies and upstream and downstream TCP or UDP data rates on 802.11 clients seamlessly without disrupting the client's ongoing sessions. The feature ensures that clients do not have to get dissociated from the network. All the authentication methods: 802.1X, PSK, web authentication, and so on, are supported.

The APs periodically send client statistics including bandwidth usage to the Controller. The AAA server receives Accounting-Interim messages which include the clients data utilization at the configured intervals. The AAA server accumulates information about data consumption for each client and when the client exhausts the data limit, the AAA server sends a change-of-authorization (CoA) message to the Controllers. Upon successful CoA handshakes, the Controllers apply and send new policies to the APs.

### Restrictions on Policy Enforcement and Usage Monitoring

- Only FlexConnect local switching mode is supported.

## Configuring Policy Enforcement and Enabling Change-of-Authorization (CLI)

For more information, follow the utility specified in Utilities for configuring Security section of this guide.

### Procedure

	Command or Action	Purpose
Step 1	<code>configure terminal</code> Example:	Enters global configuration mode.

	Command or Action	Purpose
	Device# configure terminal	
<b>Step 2</b>	<b>aaa server radius dynamic-author</b> <b>Example:</b> Device(config)# aaa server radius dynamic-author	Creates a local server RADIUS profile in the controller.
<b>Step 3</b>	<b>client client-ip-addr server-key key</b> <b>Example:</b> Device(config-locsvr-da-radius)# client 3.2.4.3 server-key testpwd	Configures a server key for a RADIUS client.
<b>Step 4</b>	<b>[Optional] show aaa command handler</b> <b>Example:</b> Device#show aaa command handler	Displays the AAA CoA packet statistics.

## Example: Configuring Policy Enforcement and Usage Monitoring

Policy enforcement and usage monitoring is applied on a group where a class-map is created for QoS policies. This is done via CoA.

Given below is a sample configuration for policy enforcement and usage monitoring:

```

aaa new-model
 radius server radius_free
 address ipv4 10.0.0.1 auth-port 1812 acct-port 1813
 key cisco123
 exit

aaa new-model
 aaa server radius dynamic-author
 client 10.0.0.1 server-key cisco123
aaa new-model
 aaa group server radius rad_eap
 server name radius_free
 exit
aaa new-model
 dot1x system-auth-control
 aaa authentication dot1x eap_methods group rad_eap
 dot1x system-auth-control
class-map client_dscp_clsmapout
match dscp af13
exit
class-map client_dscp_clsmapin
match dscp af13
exit
policy-map qos_new
 class client_dscp_clsmapout
 police 512000 conform-action transmit exceed-action drop
 policy-map qos_nbn
 class client_dscp_clsmapin
 police 1600000 conform-action transmit exceed-action drop
 wlan test1 3 test2

```

```
    broadcast-ssid
    security wpa wpa2 ciphers aes
    security dot1x authentication-list eap_methods
no shutdown
exit
wireless profile policy named-policy-profile
shutdown
    vlan 10
    aaa-override
    no central association
    no central dhcp
    no central switching
    no shutdown
wireless tag policy named-policy-tag
    wlan test1 policy named-policy-profile
wireless profile flex FP_name_001
    native-vlan-id 10
wireless tag site ST_name_001
    no local-site
    flex-profile FP_name_001
    exit
ap test-ap
    policy-tag named-policy-tag
    site-tag ST_name_001
    exit
aaa authorization network default group radius
exit
```

## Verifying Policy Usage and Enforcement

To view the detailed information about the policies applied to a specific client, use the following command:

```
Device# show wireless client mac-address mac-address detail
```

To view client-level mobility statistics, use the following command:

```
Device# show wireless client mac-address mac-address mobility statistics
```

To view client-level roaming history for an active client in a sub-domain, use the following command:

```
Device# show wireless client mac-address mac-address mobility history
```

To view detailed parameters of a given profile policy, use the following command:

```
Device# show wireless profile policy detailed policy-name
```

