

限制部署指南的无线双向费率

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Conventions](#)

[概述](#)

[重要事实](#)

[AAA改写在AP和WLC的BDRL](#)

[AAA的限制为FlexConnect改写](#)

[双向费率限制的WLC配置-中央交换](#)

[双向费率限制的WLC配置-本地交换](#)

[限制CLI配置的费率](#)

[限制中央交换的费率-示例CLI配置案件](#)

[在下行数据流配置的速率限制应用的每SSID](#)

[速率限制在每SSID适用和每客户端在下行数据流配置](#)

[速率限制适用的每SSID取代在下行数据流配置的全局QoS配置文件](#)

[在上行数据流配置的速率限制应用的每SSID](#)

[速率限制应用每客户端在上行数据流配置](#)

[速率限制在上行数据流配置一起适用每SSID和每客户端](#)

[速率限制适用的每SSID取代在上行数据流配置的全局QoS配置文件](#)

[文档ID 113682](#)

Introduction

本文提供信息关于怎样设置限制(BDRL)功能的双向费率(介绍在版本7.3)。

另外，本文提供信息关于怎样配置限制的费率全局，每WLAN或每个客户端，并且显示这些设置如何适用于在每种配置的数据流，并且一个设置如何取代其他用不同的配置设置。

在本文提供的示例展示数据流获得如何影响了有限制设置的另外费率，当选择全局，每SSID或每个客户端，当执行不同的配置设置时。

为展示限制双向的费率的功能，在本文的示例显示在本地传送方式的接入点(AP)配置或弹性在本地交换模式下连接中央交换模式，并且屈曲连接。

推荐得到某类数据流生成器发现限制设置的费率的结果。在本文中，iPerf例如数据流生成器使用。

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

本文档中的信息基于以下软件和硬件版本：

- 运行AireOS 8.8.111.0软件的无线局域网控制器。
- Wave1 APs : 1700/2700/3700和3500 (1600/2600/3600也支持BDRL，但是AireOS在版本8.5.x的支持末端)。
- Wave2 APs : 1800/2800/3800/4800，1540和1560。

The information in this document was created from the devices in a specific lab environment.

All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to [Cisco Technical Tips Conventions](#) for more information on document conventions.

概述

此部分描述8.8.111.0版本的BDRL。

在版本7.2中和前，有仅能力限制下行吞吐量在SSID间和每个全局接口的用户。

BDRL介绍在7.3版本，为通知1室内APs，速率限制在两可以被定义上行和下行数据流，以及在a每个WLAN基本类型。单个配置这些速率限制。速率限制在WLAN可以被配置直接地而不是QoS配置文件，将改写配置文件值。

BDRL添加能力定义用户的吞吐量限额他们的与一更高的粒度的无线网络的。此能力准许设置优先服务为特定的一套的客户端。

此的一潜在的用例在热点情况(咖啡店、机场等等)公司能为大家的地方提供一项自由LOW吞吐量服务，并且充电高吞吐量服务的用户。

Note: 速率限制的实施在控制器和AP完成。

重要事实

- 费率限制为APs在本地和FlexConnect模式(中央和本地交换)下支持。
- 当控制器被连接，并且时使用中央交换控制器将处理仅每客户端速率限制的下行实施。
- AP永远将处理上行数据流和每SSID速率限制的实施工下行数据流的。
- 对于本地交换的环境，两个上行与下行速率限额在AP将被强制执行。在AP的实施在dot11驱动程序里将发生。这是当前分类存在的地方。
- 在两个方向，每客户端速率限制是适用/首先检查，并且每SSID速率限制是适用/其次检查。
- WLAN费率限制永远将取代WLAN和用户的全局QoS设置。
- 限制的费率为TCP和UDP数据流只运作。其他流量类型(IPSec、GRE、ICMP、CAPWAP等等)不可以是有限的。
- 使用AVC规则，您能限制一个特定应用程序的带宽在WLAN加入的所有客户端的。这些带宽合

- 同共存与每客户端下行费率限制。每客户端下行速率限制优先于每个应用程序速率限制。
- 在移动性锚点外国设置的BDRL配置在锚点和外国WLC需要被执行。作为最佳实践，推荐执行在两个的相同配置WLCs避免所有功能破损。
- 关于移动性Express配置，开始AireOS 8.7，以下支持双向费率限制：每个客户端每BSSID
- 每WLAN这些支持BDRL当前支持的Wave1 APs：1600/2600/3600，1700/2700/3700，3500。
- 每WLAN这些支持BDRL当前支持的Wave2 APs：1800/2800/3800/4800。
- 每WLAN室外Wave2 APs APs支持BDRL：1540和1560。
- 所有网平台(1520，1550，1530，1570...)请勿支持此功能。
- 这些控制器支持费率限制：5508，5520，WiSM-2，3504，7500和8500系列。在虚拟控制器平台(vWLC)上，FlexConnect中央交换不支持每客户端下行费率限制。

AAA改写在AP和WLC的BDRL

您能有AAA为FlexConnect APs改写为两个动态地分配QoS级别和带宽合同本地地在Web验证的WLANs和802.1X验证的WLANs的交换数据流。两个上行和下行参数被发送到对应的AP。

表1：此表说明双向费率限制哪里被强制执行。

	本地传送方式	FlexConnect中央交换	FlexConnect本地交换	弹性连接独立
每个下行客户端	WLC	WLC	AP	AP
每个上行客户端	AP	AP	AP	AP
每下行SSID	AP	AP	AP	AP
每上行SSID	AP	AP	AP	AP

有下行速率限制认为QoS配置文件页的中的选项。已经利用QoS配置文件功能有另外的粒度和功能的用户。

与配置速率限制的折衷方案在QoS配置文件下是只有可用四个QoS的配置文件。因此，只有四套使用的配置选项。

并且，因为QoS配置文件被运用于相关的SSID的所有客户端，所有客户端被联络到同样SSID将有同样费率被限制的参数。

表2：此表显示排列顺序双向费率限制。

AAA	AAA QoS配置文件	WLAN	WLAN QoS配置文件	适用于客户端
100 Kbps	200 Kbps	300 Kbps	400 Kbps	100 Kbps
X				200 Kbps
X	X			300 Kbps
X	X	X		400 Kbps
X	X	X	X	无限

AAA的限制为FlexConnect改写

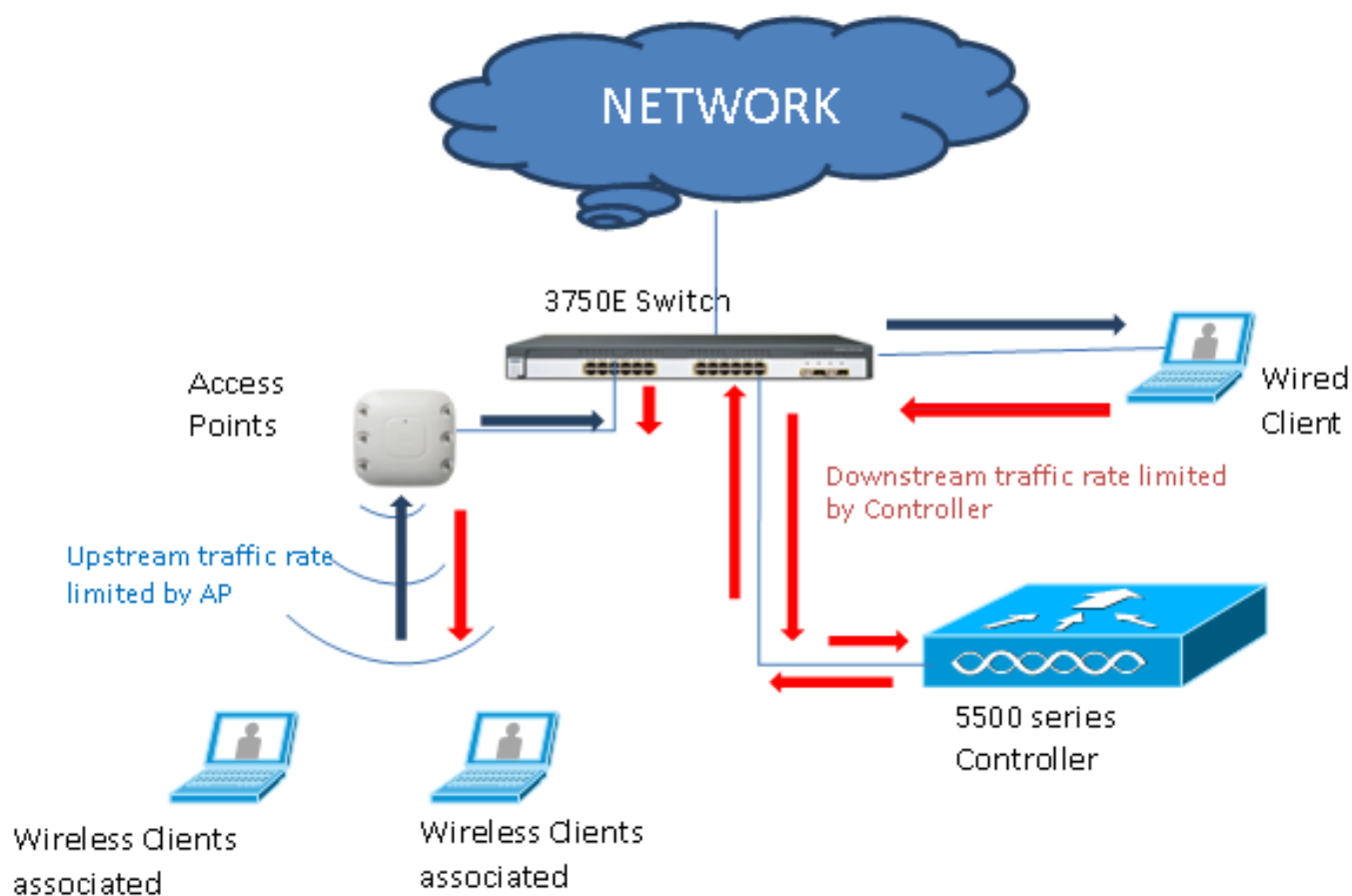
- 如果不当前bidirectionalrate limitingis，AAA覆盖不能发生。
- 客户端的QoS档案可以是白金，即使对应的WLAN的QoS配置文件是银。AP允许客户端发送在语音队列的信息包。然而，监听的会话初始化协议(SIP)在WLAN被禁用保证SIP客户端的数据

- 流不去语音队列。
- 支持ISE服务器。
- 上行速率限制参数与下行参数是相等的，从AAA覆盖。
- 不支持本地认证。

双向费率限制的WLC配置-中央交换

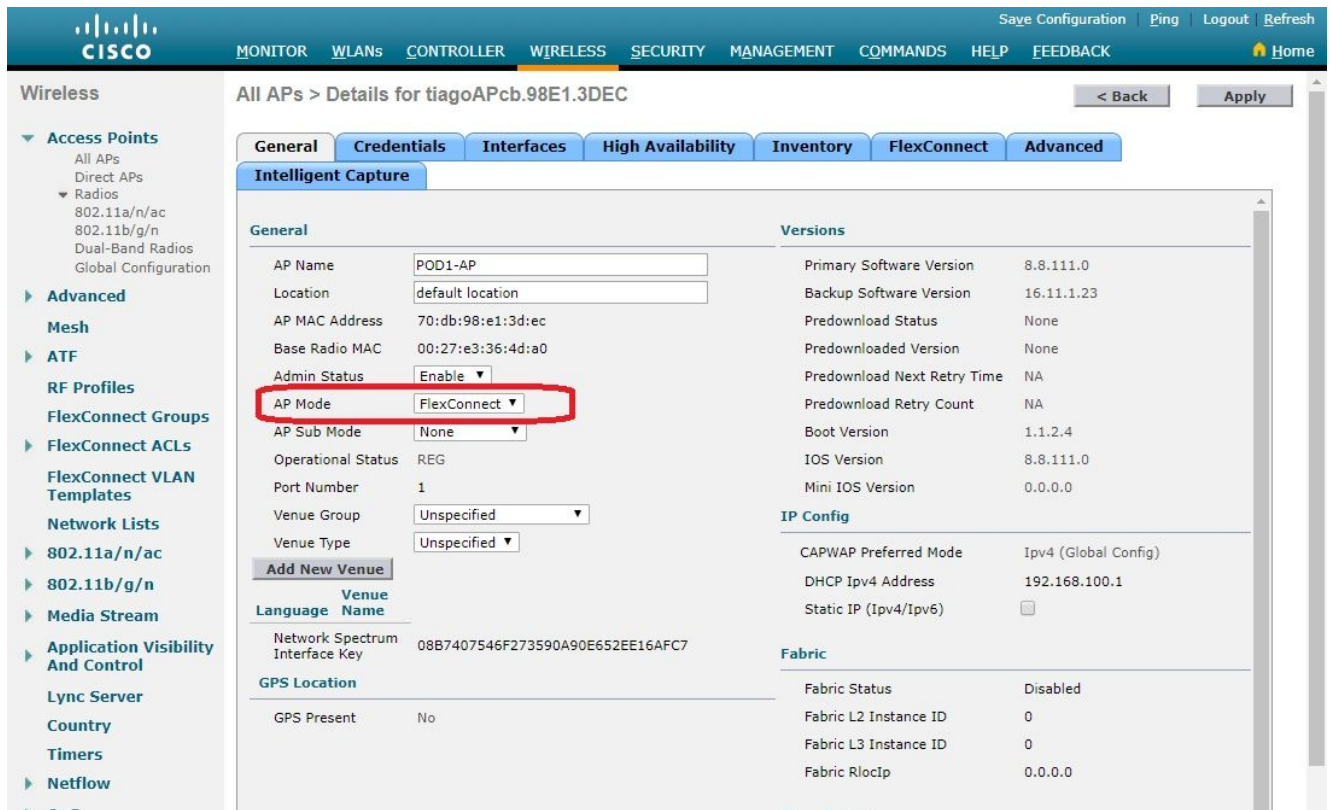
此部分为在中央交换模式配置的BDRL提供一拓扑示例，基本交换机集成。

Rate Limiting while Central Switching

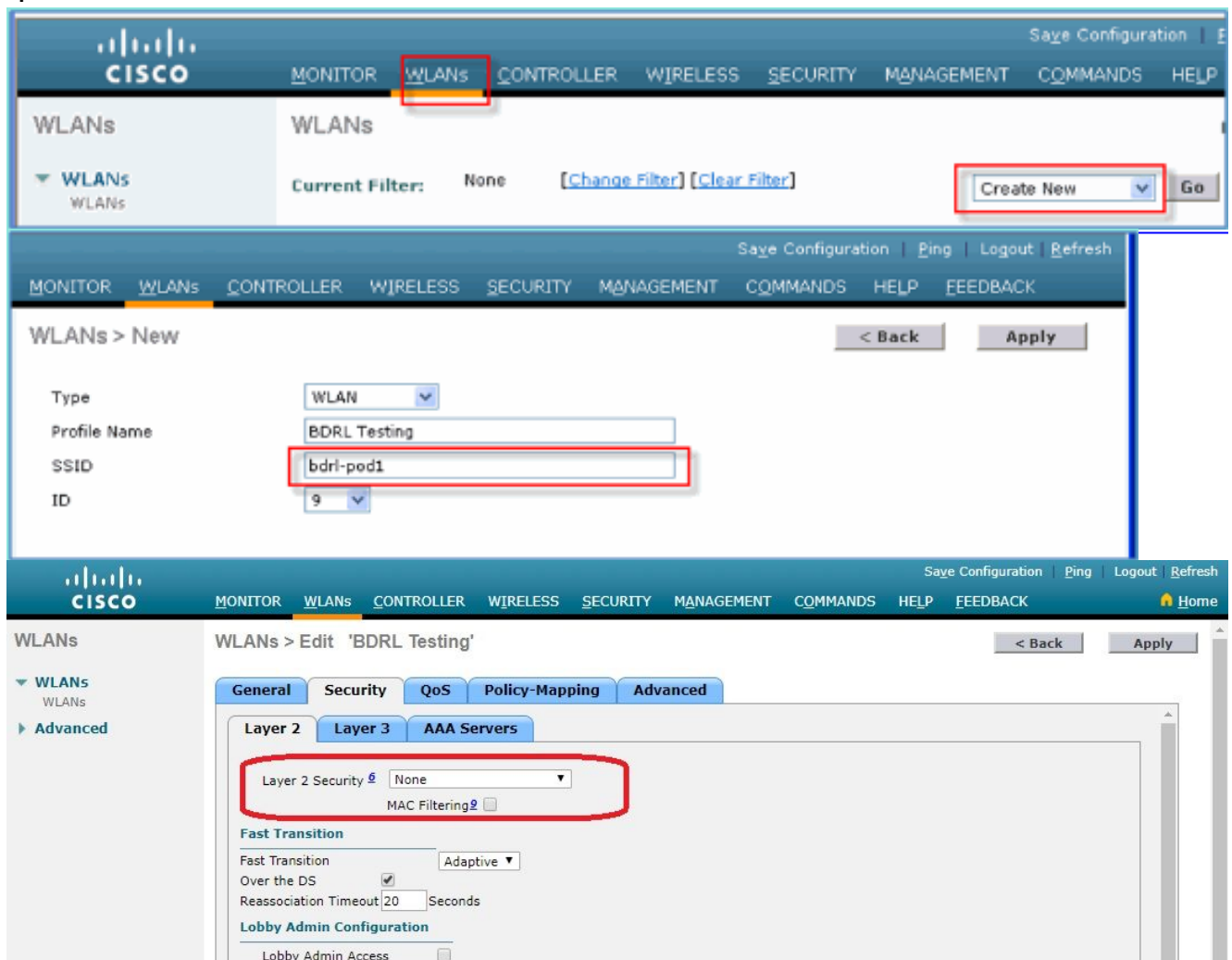


参数配置限制在WLC的费率使用GUI或CLI。配置通过选择QoS配置文件和配置限制参数的多种费率执行。配置通过选择QoS配置文件和配置限制参数的多种费率执行。当限制参数的费率设置到“0”时，限制功能的费率不是工作。每WLAN有与它产生关联的QoS配置文件除配置之外在QoS配置文件。WLAN配置总是改写并且取代在QoS配置文件配置的参数。

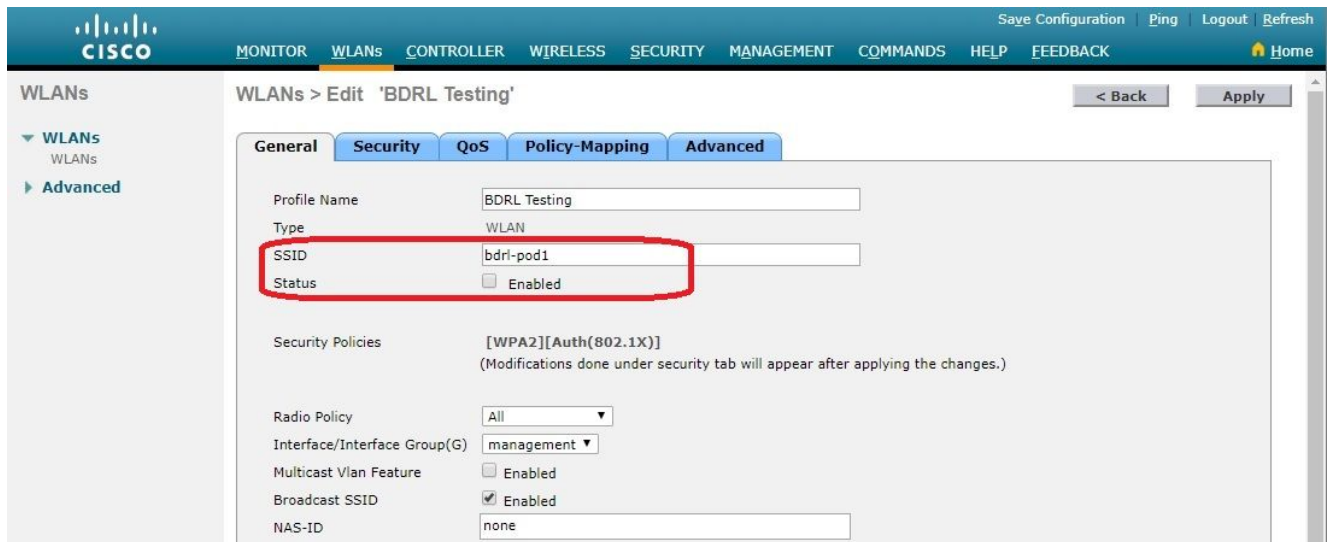
1. 配置或验证在控制器的AP被配置作为弹性连接AP在中央交换模式下，或者在本地传送方式。
示例如下
：



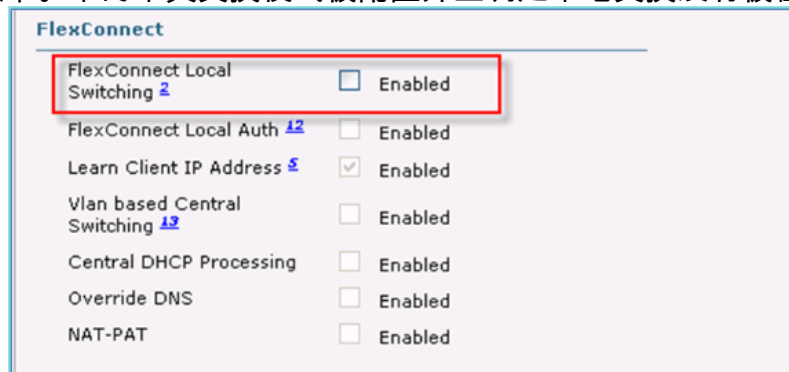
2. 用期望安全配置WLAN，例如“bdrl-pod1”在控制器。此示例显示安全集无为了简化测试



3. 这时不enable (event) WLAN。此示例是为Pod1

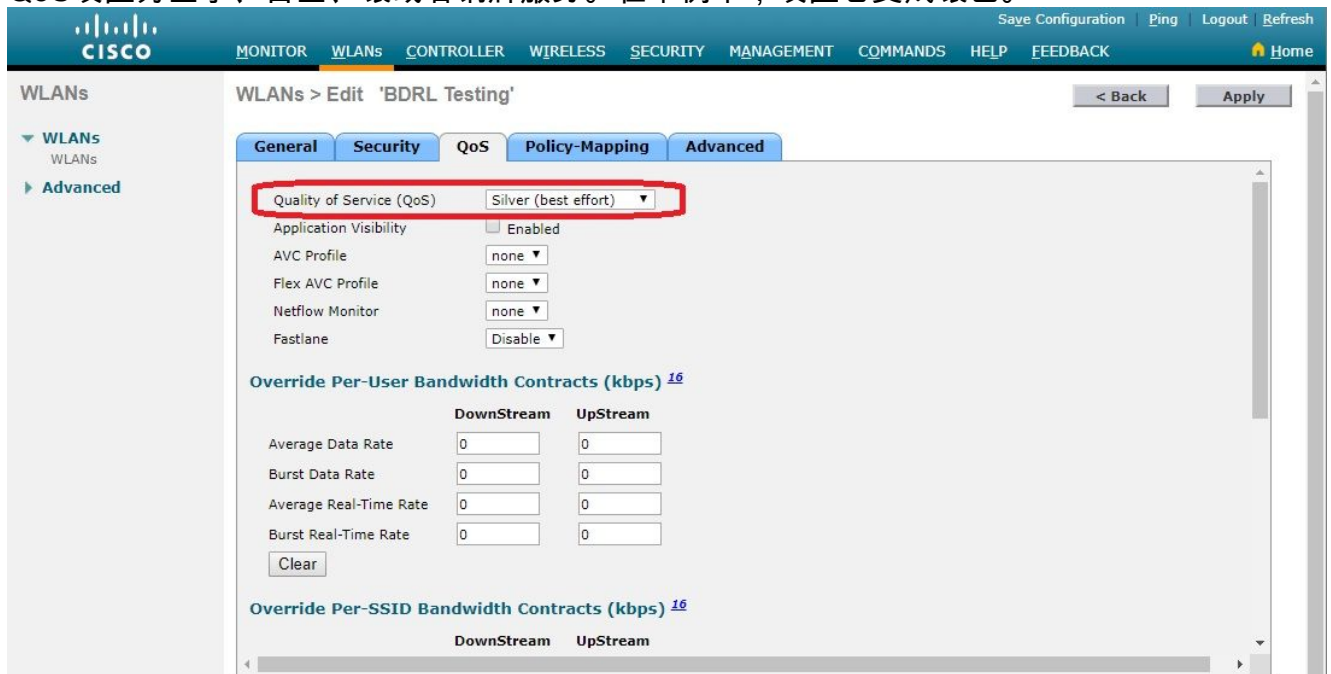


4. 确定WLAN为在高级选项卡。下的中央交换模式被配置并且确定本地交换没有被检查。或者



，请配置本地交换模式。

5. 配置或验证限制参数的所有费率设置到“0”在WLAN "bdrl-pod1"的单个用户和每SSID的。QoS设置为金子、白金、银或者铜牌服务。在本例中，设置它变成银色。



6. 用期望速率限制配置在控制器的QoS银配置文件。在本例中，配置速率限制对2 Mbps下行的和上行和WLAN的和单个用户。**Note:** 在配置前，请确定802.11a/b/g/n网络是失效的。在配置以后，enable (event)再他们。如果网络不是失效的，限制配置的费率不被保存。**Note:** 数据价格设定是为TCP/IP流量，并且实时费率是为UDP数据流测试。

Wireless

MONITOR WLANs CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP FEEDBACK Home

Save Configuration Ping Logout Refresh

Wireless

Access Points
All APs
Direct APs
Radios
802.11a/n/ac
802.11b/g/n
Dual-Band Radios
Global Configuration

Advanced

Mesh

ATF

RF Profiles

FlexConnect Groups

FlexConnect ACLs

FlexConnect VLAN Templates

Network Lists

802.11a/n/ac

802.11b/g/n

Media Stream

Application Visibility And Control

Lync Server

Country

Timers

Netflow

QoS Profiles Roles Qos Map

Edit QoS Profile

QoS Profile Name silver

Description For Best Effort BDRL

Per-User Bandwidth Contracts (kbps) *

	DownStream	UpStream
Average Data Rate	2000	2000
Burst Data Rate	2000	2000
Average Real-Time Rate	2000	2000
Burst Real-Time Rate	2000	2000

Per-SSID Bandwidth Contracts (kbps) *

	DownStream	UpStream
Average Data Rate	2000	2000
Burst Data Rate	2000	2000
Average Real-Time Rate	2000	2000
Burst Real-Time Rate	2000	2000

WLAN QoS Parameters

Maximum Priority besteffort

Unicast Default Priority besteffort

Multicast Default Priority besteffort

Wired QoS Protocol

Protocol Type 802.1p

802.1p Tag 0

Foot Notes

1. Override Bandwidth Contracts parameters are specific to per Radio of AP. The value zero (0) indicates the feature is disabled

7. Enable (event)所有网络。并且， enable (event)配置的WLAN能生效。
8. 为了验证适当配置费率限制，请用SSID配置无线工作站正如在示例“bdrl-pod1”开放式验证并且连接到该WLAN。
9. 当系统被连接到该WLAN时，请启动数据流生成器(例如iPerf)并且观察费率限制对2 Mbps上行和下行。
10. 下种配置是适用限制在WLAN每SSID的费率设置。此示例显示限制在上行和下行的每SSID费率设置为3 Mbps。 **Note:** 如以前指示，当设置在两个方向时的BDRL，单个用户的速率限制首先被检查，并且每SSID速率限制其次被检查。两个改写全局QoS设置。

MONITOR WLANs CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP FEEDBACK Home

Save Configuration Ping Logout Refresh

WLANs

WLANs

Advanced

WLANs > Edit 'BDRL Testing'

General Security QoS Policy-Mapping Advanced

Override Per-User Bandwidth Contracts (kbps) 16

	DownStream	UpStream
Average Data Rate	0	0
Burst Data Rate	0	0
Average Real-Time Rate	0	0
Burst Real-Time Rate	0	0

Clear

Override Per-SSID Bandwidth Contracts (kbps) 16

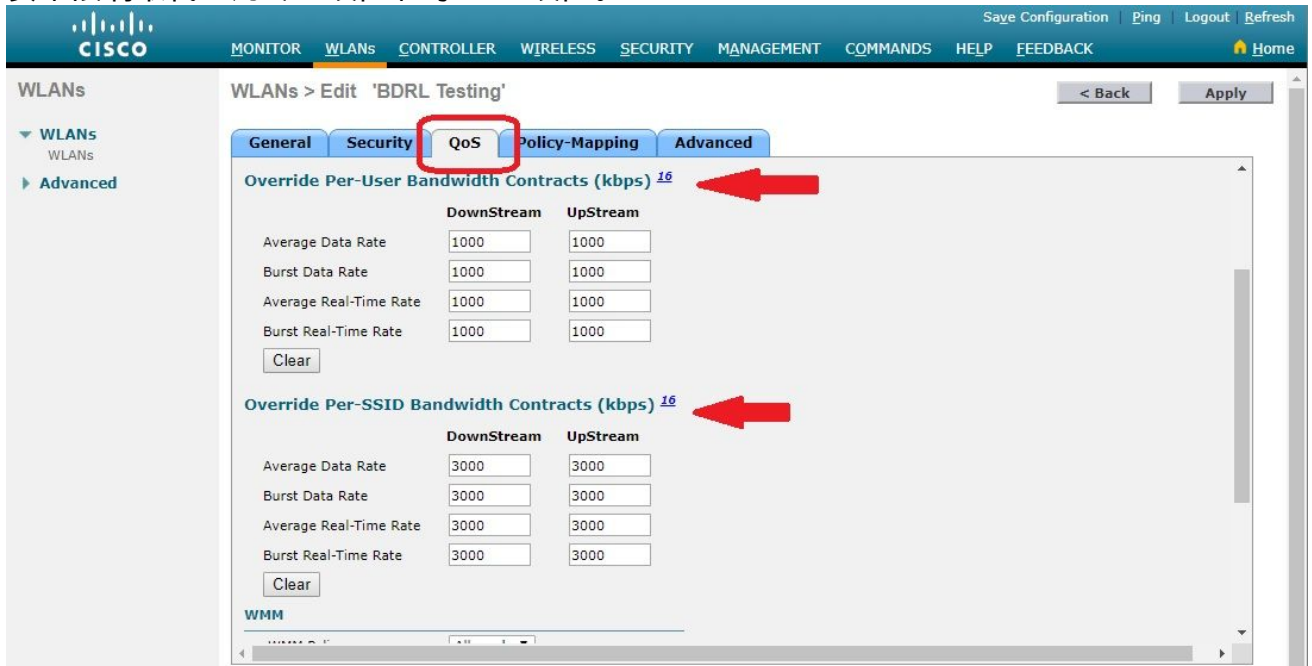
	DownStream	UpStream
Average Data Rate	3000	3000
Burst Data Rate	3000	3000
Average Real-Time Rate	3000	3000
Burst Real-Time Rate	3000	3000

Clear

WMM

此配置显示出，在“每SSID的”设置取代QoS设置。

11. 启动数据流生成器正如在两个方向的前面的示例。首先上行，然后请观察费率限制数据流。您注意该费率限制每SSID取代了2 Mbps全局QoS配置文件设置。
12. 在下种配置中请执行同一个设置。然而，这次单个用户费率限制被配置对1 Mbps。单个用户费率限制取代全局QoS设置和每SSID设置。



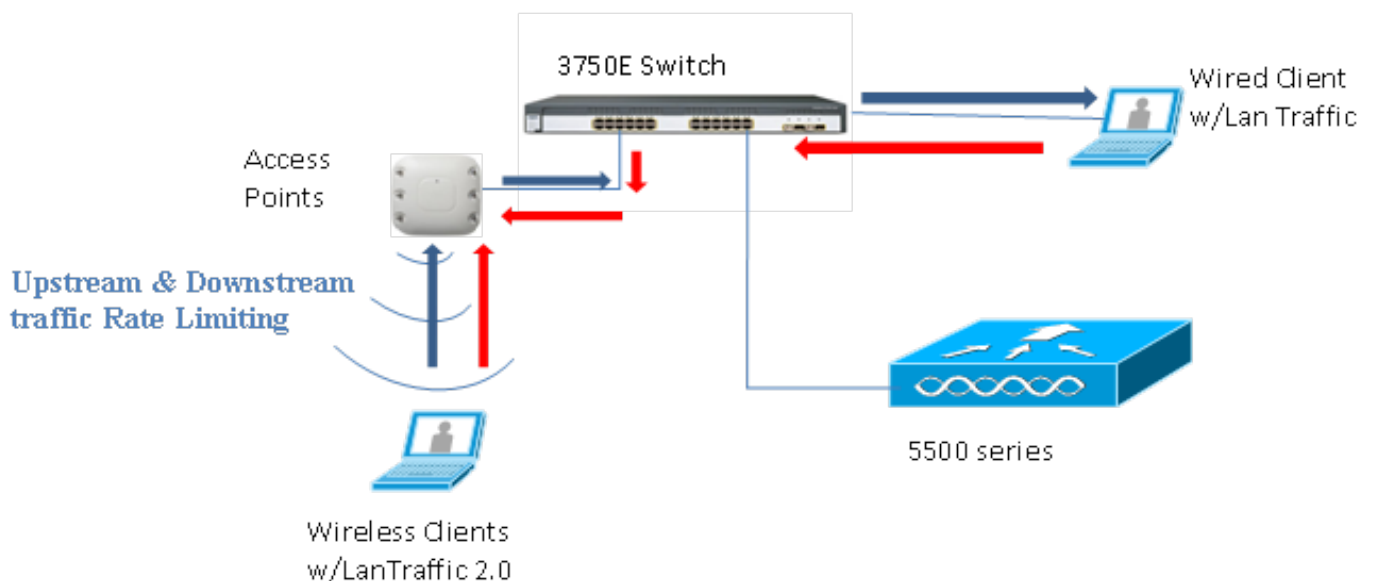
13. 启动数据流生成器正如在两个方向的前面的示例。首先上行，然后请观察费率限制数据流。您注意费率限制单个用户1 Mbps设置取代那每SSID费率限制3 Mbps和2 Mbps全局QoS配置文件设置。

双向费率限制的WLC配置-本地交换

此部分为在本地交换模式配置的BDRL提供拓扑示例、基本交换机集成和示例测试个案。

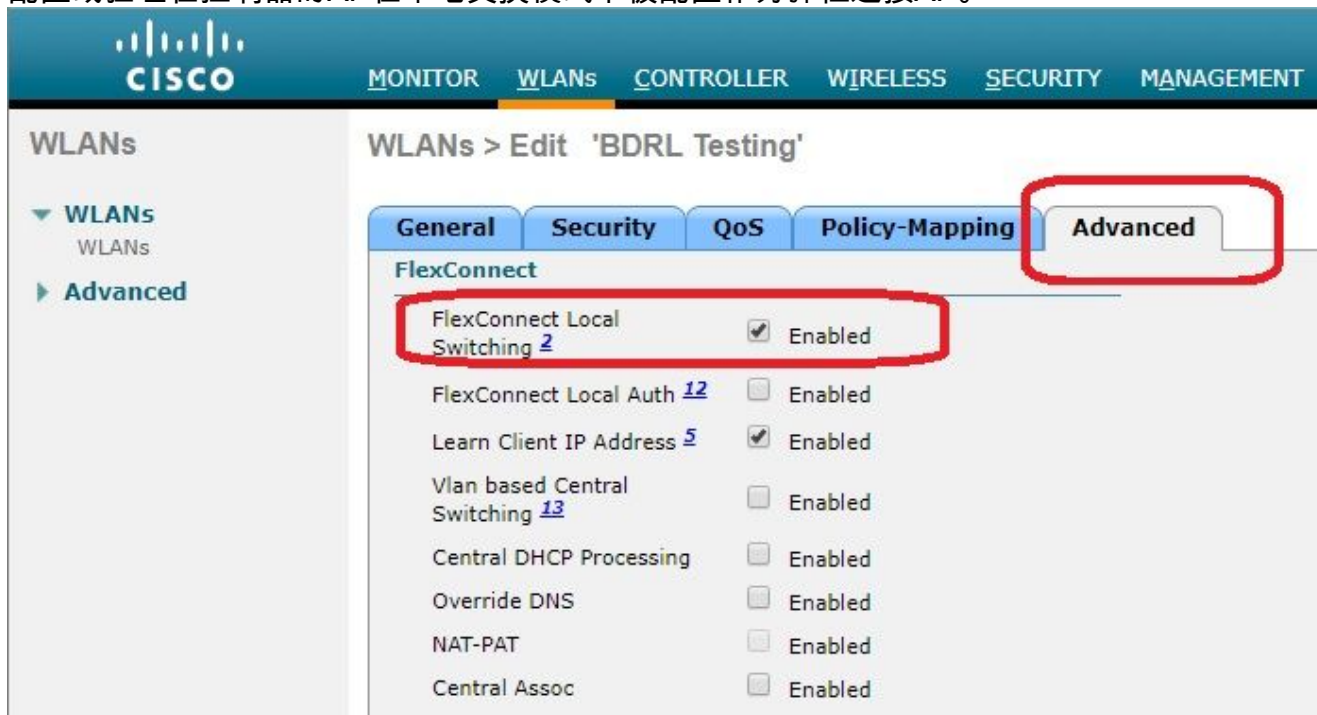
Note: 此拓扑不是一个实际实验室拓扑结构。它为功能解释只被提交。

Rate Limiting while Local Switching



当AP输入独立模式时，各自下行策略和上游政策在AP上安装。这些策略不是永久性的，并且不会被保存在AP在重新启动。

1. 配置或验证在控制器的AP在本地交换模式下被配置作为弹性连接AP。



2. 再配置限制本地交换模式的所有费率参数，您为中央交换执行或本地传送方式AP。然后，请观察结果。
3. 执行步骤2-13从前面的部分。

对限制CLI配置估计

QoS配置文件配置：

```
config qos [average-data-rate | average-realtime-rate | burst-data-rate | burst-realtime-rate]
[bronze | gold | silver | platinum] [per-ssid | per-client] [downstream | upstream] limit
```

WLAN覆盖配置：

```
config wlan qosid override-rate-limit [average-data-rate | average-realtime-rate | burst-data-
rate | burst-realtime-rate] [per-ssid | per-client] [downstream | upstream] limit
```

类似请显示命令也提供显示QoS配置文件配置和信息包统计数据。

```
(wlc)>show qos [bronze | gold | silver | platinum]
```

Description.....	For Best Effort	
Maximum Priority.....	besteffort	
Unicast Default Priority.....	besteffort	
Multicast Default Priority.....	besteffort	
protocol.....	none	
Per-ssid Limits	Upstream	DownStream
Average Data Rate.....	0	0
Burst Data Rate.....	0	0
Average Realtime Data Rate.....	0	0
Realtime Burst Data Rate.....	0	0
Per-client Limits	Upstream	DownStream

```

Average Data Rate..... 0 0
Burst Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Realtime Burst Data Rate..... 0 0

```

(wlc)> show wlan [wlan-id]

```

Quality of Service..... Silver
Scan Defer Priority..... 4,5,6
Scan Defer Time..... 100 milliseconds
WMM..... Allowed
WMM UAPSD Compliant Client Support..... Disabled
Media Stream Multicast-direct..... Enabled
Rate-limit Override Enabled/Disabled
Per-ssid Limits Upstream DownStream
Average Data Rate..... 0 0
Burst Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Realtime Burst Data Rate..... 0 0
Per-client Limits Upstream DownStream
Average Data Rate..... 0 0
Burst Data Rate..... 0 0
Average Realtime Data Rate..... 0 0
Realtime Burst Data Rate..... 0 0
CCX - AironetIe Support..... Enabled
CCX - Gratuitous ProbeResponse (GPR)..... Disabled
CCX - Diagnostics Channel Capability..... Disabled

```

(wlc)> show client details [mac-addr]

```

Client Statistics:
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

对限制中央交换估计-采样CLI配置盒

在下行数据流配置的速率限制应用的每SSID

这是为了配置在下行数据流的速率限制每SSID。吞吐量为根据配置被关联的对该SSID所有客户端是有限的。

1. 使用这些命令，禁用802.11a和802.11b无线电：

(wlc)> show client details [mac-addr]

```

Client Statistics:
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

2. 输入此命令为了定义平均的数据速率在TCP通信流每SSID的Kbps :

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

3. 输入此命令为了定义突发传输数据速率在TCP通信流每SSID的Kbps :

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. 定义平均的实时费率在UDP数据流每SSID的Kbps :

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

5. 定义高峰实时费率在UDP数据流每SSID的Kbps :

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

6. 使用此命令 , 映射在WLAN的此QoS配置文件 :

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
```

```
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

7. Enable (event) 802.11 a和802.11b无线电。

8. 检查上述值正确地配置使用这些显示命令：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

9. 关联两个或多个客户端对上述WLAN。然后，更比上面被定义的参数请开始发送TCP和UDP数据流从配线到使用数据流生成器的无线客户端(例如，LAN数据流工具或iPerf)。例如，如果平均值数据比率=每SSID和突发传输数据速率1000 Kbps =每SSID 2000 Kbps，所有客户端一起然后共享带宽。并且，客户端数据流不应该一起超出超过1000 Kbps每AP无线电平均。

10. 使用此show命令，检查客户端统计数据：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

11. 重复与其他QoS配置文件的测试个案：铜牌服务、金子和白金。

速率限制在每SSID适用和每客户端在下行数据流配置

这是为了配置速率限制每SSID和每客户端在下行数据流。吞吐量相应地被限制。

1. 使用这些命令，禁用802.11a和802.11b无线电：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

2. 定义平均的数据速率在TCP通信流每SSID的Kbps和每客户端：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
```

```
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

3. 定义突发传输数据速率在TCP通信流每SSID的Kbps和每客户端：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. 定义平均的实时费率在UDP数据流每SSID的Kbps和每客户端。

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

5. 定义高峰实时费率在UDP数据流每SSID的Kbps和每客户端：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

6. 使用此命令，映射在WLAN的此QoS配置文件：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

7. Enable (event) 802.11 a和802.11b无线电。

8. 检查上述值正确地配置使用这些显示命令：

```
(wlc)> show client details [mac-addr]
```


Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

9. 关联两个或多个客户端对上述WLAN。然后，更比上面被定义的参数请开始发送TCP和UDP数据流从配线到使用数据流生成器的无线客户端(例如，LAN数据流工具或iPerf)。

10. 使用此show命令，检查客户端统计数据：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

11. 重复与其他QoS配置文件的测试个案：铜牌服务、金子和白金。

速率限制适用的每SSID取代在下行数据流配置的全局QoS配置文件

在下行WLAN每SSID定义的速率限制改写值被定义在QoS配置文件下。

1. 配置UDP和TCP通信流的速率限制在QoS配置文件下，例如，银。

2. 映射在WLAN的此QoS配置文件。

3. 使用这些命令，配置在WLAN的不同的速率限制值：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. 关联不同的客户端对WLAN，并且开始发送数据流从配线到无线边。

5. 检查在WLAN配置的值是否是overriden。请使用这些显示命令验证WLAN覆盖是启用的。

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
```

```
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

在上行数据流配置的速率限制应用的每SSID

这是为了验证速率限制是在上行数据流的应用的每SSID。吞吐量为根据配置被关联的对该WLAN所有客户端是有限的。

1. 使用这些命令，禁用802.11a和802.11b无线电：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

2. 定义费率在TCP和UDP数据流的Kbps每SSID：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

3. 使用此命令，映射在WLAN的此QoS配置文件：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. Enable (event) 802.11 a和802.11b无线电。

5. 检查上述值正确地被配置使用这些显示命令：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
```

```
Number of EAP Id Request Msg Timeouts..... 0
```

6. 关联两个或多个客户端对上述WLAN。然后，更比上面被定义参数请开始发送TCP和UDP数据流从无线到使用数据流生成器的有线客户端(例如，LAN数据流工具)。例如，如果平均值数据比率=每SSID和突发传输数据速率1000 Kbps =每SSID 2000 Kbps，所有客户端一起然后共享带宽。并且，客户端数据流不应该一起超出超过1000 Kbps每AP无线电平均。

7. 使用此**show**命令，检查客户端统计数据：

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

8. 可选：重复与其他QoS配置文件的测试个案：铜牌服务、金子和白金。

速率限制应用每客户端在上行数据流配置

验证的这，当费率限制是应用每客户端在上行数据流，吞吐量为根据配置被关联的对该WLAN所有客户端是有限的。

1. 使用这些命令，禁用802.11a和802.11b无线电：

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

2. 定义费率在每客户端TCP和UDP的数据流的Kbps：

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

3. 使用此命令，映射在WLAN的此QoS配置文件：

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
```

```
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. Enable (event) 802.11 a和802.11b无线电。

5. 检查上述值正确地配置使用这些显示命令：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

6. 关联两个或多个客户端对上述WLAN。然后，更比上面被定义的参数请开始发送TCP和UDP数据流从无线到使用数据流生成器的有线客户端(例如，LAN数据流工具)。客户端例如，如果平均值数据比率=每SSID和突发传输数据速率1000 Kbps =每SSID 2000 Kbps，所有客户端一起然后共享带宽和数据流不应该一起超出超过1000 Kbps每AP无线电平均。

7. 使用此show命令，检查客户端统计数据：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

8. 可选：重复与其他QoS配置文件的测试个案：铜牌服务、金子和白金。

速率限制应用每SSID和每客户端一起在上行数据流配置

这是为了验证，当费率限制是应用每SSID和每客户端在上行数据流时，吞吐量相应地被限制。

1. 使用这些命令，禁用802.11a和802.11b无线电：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

2. 定义费率在每客户端TCP和UDP的数据流和每SSID的Kbps：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```
Number of Data Bytes Received..... 160783
```

```

Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

3. 使用此命令，映射在WLAN的此QoS配置文件：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```

Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

4. Enable (event) 802.11 a和802.11b无线电。

5. 检查上述值正确地配置使用这些显示命令：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```

Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

6. 关联两个或多个STA对上述WLAN。然后，更比上面被定义的参数请开始发送TCP和UDP数据流从无线到使用数据流生成器的有线客户端(例如，LAN数据流工具)。例如，如果平均值数据比率=每SSID 5000 Kbps和平均值数据比率=每个客户端1000 Kbps，其中每一个客户端对1000 Kbps然后被限制。并且，所有客户端数据流不应该一起超出超过5000 Kbps每AP无线电平均。

7. 使用此show命令，检查客户端统计数据：

```
(wlc)> show client details [mac-addr]
```

Client Statistics:

```

Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0

```

8. 可选：重复与其他QoS配置文件的测试个案：铜牌服务、金子和白金。

速率限制适用的每SSID取代在上行数据流配置的全局QoS配置文件

这是为了验证在上行WLAN每SSID定义的速率限制改写值被定义在QoS配置文件下。

1. 配置UDP和TCP通信流的速率限制在QoS配置文件下，例如，银。
2. 映射在WLAN的此QoS配置文件。
3. 使用这些命令，配置在WLAN的不同的速率限制值：

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```

4. 关联不同的客户端对WLAN，并且开始发送数据流从无线到纸的反面。
5. 检查在WLAN配置的值是否是overridden。请使用show命令的此验证WLAN覆盖是启用的。

```
(wlc)> show client details [mac-addr]
```

```
Client Statistics:
```

```
Number of Data Bytes Received..... 160783
Number of Realtime Bytes Received..... 160783
Number of Data Bytes Sent..... 23436
Number of Realtime Bytes Sent..... 23436
Number of Data Packets Received..... 592
Number of Realtime Packets Received..... 592
Number of Data Packets Sent..... 131
Number of Realtime Packets Sent..... 131
Number of Interim-Update Sent..... 0
Number of EAP Id Request Msg Timeouts..... 0
```