

Traffic Shaping

Objective

The objective of this article is to describe the steps to configure traffic shaping in a CBW network.

If you are unfamiliar with terms in this document, check out [Cisco Business: Glossary of New Terms](#).

Applicable Devices | Firmware Version

- 140AC ([Data Sheet](#)) | 10.0.1.0 ([Download latest](#))
- 145AC ([Data Sheet](#)) | 10.0.1.0 ([Download latest](#))
- 240AC ([Data Sheet](#)) | 10.0.1.0 ([Download latest](#))

Introduction

Traffic shaping is a bandwidth control technique. It is used on computer networks and delays some or all datagrams. Traffic shaping is created to comply with a specified traffic profile. Traffic shaping maximizes or guarantees performance, boosts latency. It can also increase available bandwidth for certain kinds of packets. Application-based traffic shaping is the most common form of traffic shaping.

The goal of configuring traffic shaping is to buffer and queue excess packets above the committed rates. Traffic shaping is less likely to drop excess packets because excess packets are buffered. It buffers packets up to the length of the queue. Drops may occur if excess traffic is continuous at high rates. It typically avoids retransmissions due to dropped packets. One drawback of configuring traffic shaping is, it can introduce delay due to queuing, particularly deep queues.


Configuration

This toggled section highlights tips for beginners.

Logging In

Log into the Web User Interface (UI) of the Primary AP. To do this, open a web browser and enter <https://ciscobusiness.cisco.com> You may receive a warning before proceeding. Enter your credentials. You can also access the Primary AP by entering [https://\[ipaddress\]](https://[ipaddress]) (of the Primary AP) into a web browser.

Tool Tips

If you have questions about a field in the user interface, check for a tool tip that looks like the following: 

Trouble locating the Expand Main Menu icon?

Navigate to the menu on the left-hand side of the screen, if you don't see the menu button, click



this icon to open the side-bar menu.

Cisco Business App

These devices have companion apps that share some management features with the web user interface. Not all features in the Web user interface will be available in the App.

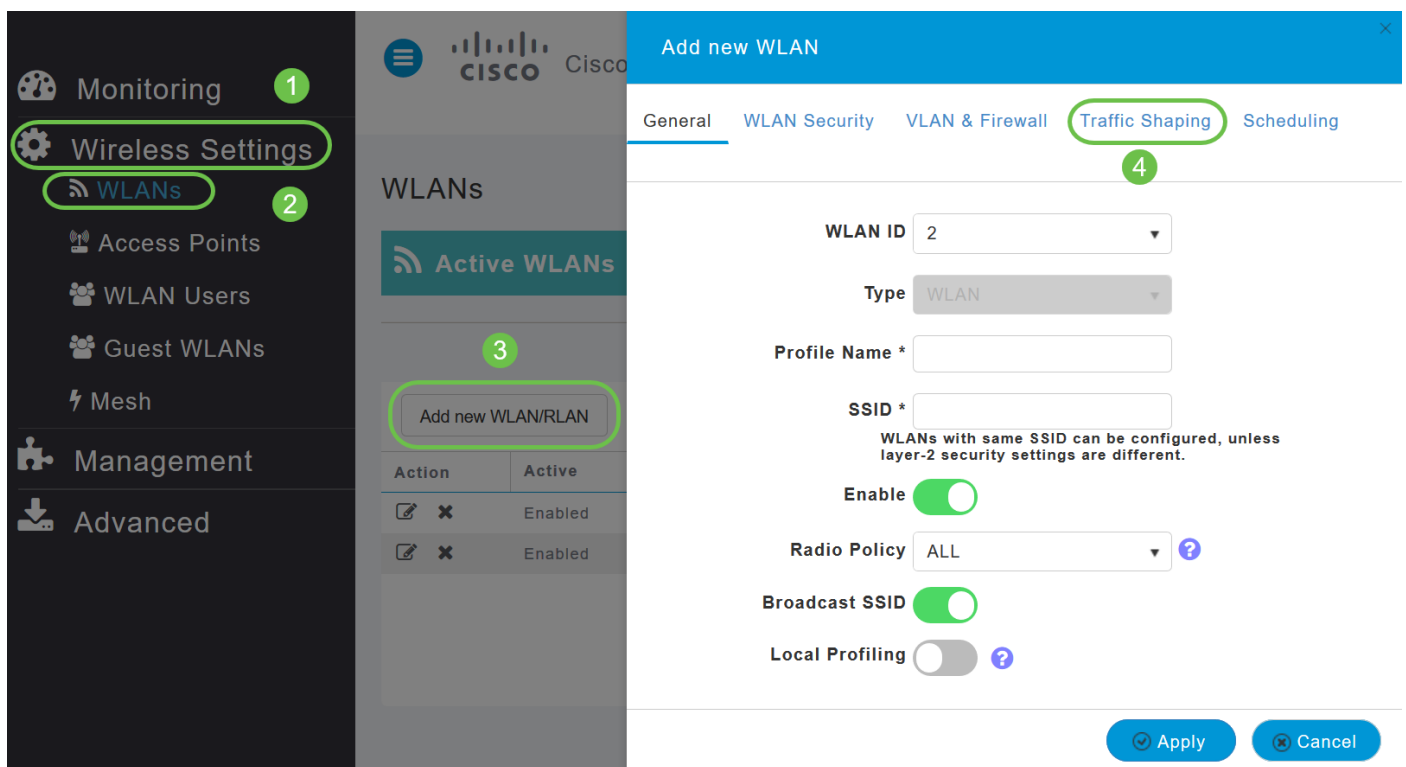
[Download iOS App](#) [Download Android App](#)

Frequently Asked Questions

If you still have unanswered questions, you can check our frequently asked questions document. [FAQ](#)

Steps for configuring traffic shaping in CBW network are:

Step 1. Navigate to **Wireless Settings > WLANs > Adding new WLAN/RLAN > Traffic Shaping**



Step 2. On the *Traffic Shaping* tab, configure the following parameters:

i) **Quality of service (QoS)** — QoS refers to the capability of a network to provide better service to selected network traffic. It prioritizes traffic over various technologies. The goal of QoS is to grant dedicated bandwidth, latency, controlled jitter and, and improved loss characteristics. Latency parameters are required by some real-time and interactive traffic.

The CBW Primary AP supports the following four QoS levels. Under the QoS tab, from the QoS drop-down list, choose one of the following QoS levels:

Platinum (Voice) — Ensures a high quality of service for voice over wireless.

Gold (Video) — Supports high-quality video applications.

Silver (Best Effort) — Supports normal bandwidth for clients.

Bronze (Background) — Provides the lowest bandwidth for guest services.



Default setting is *Silver (Best Effort)*.

ii) Choose the desired values (in **Kbps**) for the following:

Specify the **Rate limits per client** and **Rate limits per BSSID** using the following criteria:

Average downstream bandwidth limit — Define the average data rate TCP traffic by entering the rate in Kbps in the Average Data Rate text boxes.

Average real-time downstream bandwidth limit — Define the average real-time rate for UDP traffic per user by entering the rate in Kbps in the Average Real-Time Rate text boxes.

Average upstream bandwidth limit — Define the average data rate TCP traffic by entering the rate in Kbps in the Average Data Rate text boxes.

Average real-time upstream bandwidth limit — Define the average real-time rate for UDP traffic per user by entering the rate in Kbps in the Average Real-Time Rate text boxes.

Per WLAN Traffic Shaping is NOT supported. If you see options for this, you are using an old firmware version. In this case, you need to delete the WLAN, do a firmware upgrade, and create the WLAN again. Click on the hyperlinks for instructions to [Upgrade firmware](#) or [Add/Edit a WLAN](#).

Rate limits per client

Average downstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average real-time downstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average upstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average real-time upstream bandwidth limit	<input type="text" value="0"/>	kbps	?

Rate limits per BSSID

Average downstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average real-time downstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average upstream bandwidth limit	<input type="text" value="0"/>	kbps	?
Average real-time upstream bandwidth limit	<input type="text" value="0"/>	kbps	?

Please select the bandwidth range between 0 to 512000. Only numbers are accepted. Average Data Rate is used to measure TCP traffic while Average Real-time rate is used for UDP traffic. They are measured in kbps for all the entries. The values for Average Data Rate and Average Real-time rate can be different because they are applied to different upper layer protocols such as TCP and UDP. These different values for the rates do not impact the bandwidth.

iii) **Fastlane** — Wireless application traffic in real-time environments often needs to be prioritized by its type. For example, due to real time application constraints, voiceover Wi-Fi traffic needs a higher priority than Safari web traffic.

Various standards exist to help network devices agree on how different types of traffic are marked to make sure they are prioritized. QoS Fastlane greatly simplifies this agreement process so that network congestion is minimized and time sensitive traffic (like voice or video) is delivered on time.

On enabling the Fastlane, the QoS is set to platinum such that voice traffic has higher priority than any other traffic.

Fastlane 

- Disabled
- Enabled

Enabling Fastlane will update QoS value to platinum.

iv) **Application Visibility Control (AVC)** - AVC classifies applications using the Network-Based Application Recognition (NBAR2) engine and provides application-level visibility in wireless networks. A list of recognized applications is available [here](#). Application Visibility enables the

Primary AP to detect and recognize more than 1000 applications and perform real-time analysis and monitor network congestion and network link usage. This feature contributes to the **Applications By Usage** statistic in the Monitoring > Network Summary.

To enable Application Visibility Control, choose Enabled from the Application Visibility drop-down list. Otherwise, choose **Disabled** which is the default option.

Application Visibility Control



Disabled

Disabled

Enabled

v) **AVC Profile** – It displays the Wireless LAN (WLAN) name.

Click **Add Rule** to allow/deny specific applications when the clients get connected to the specific WLAN.

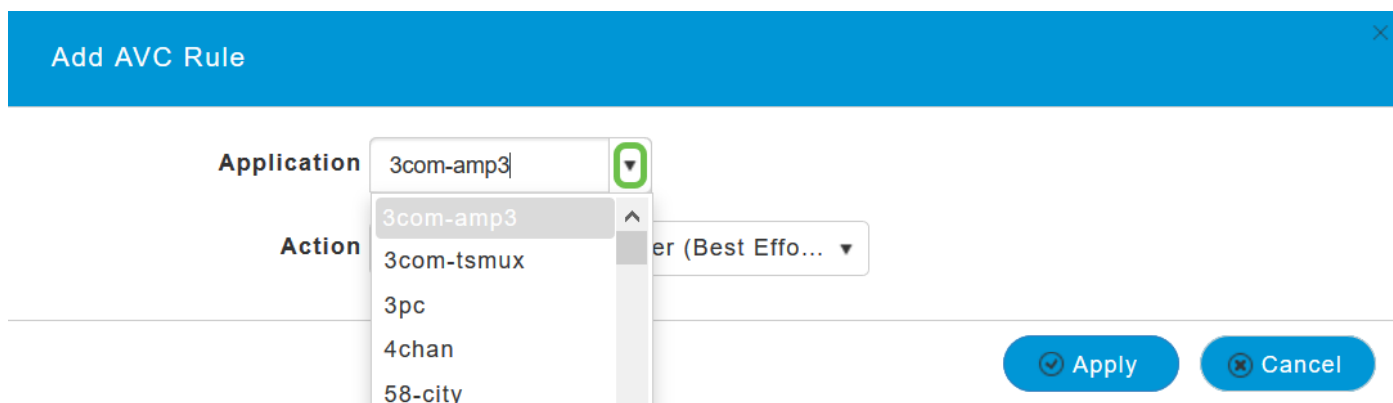


AVC Profile

Add Rule

Action	S.L. No.	Application	Action	Average Rate	Burst Rate
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On the pop-up screen, select the **Application** from the list of applications that can be allowed/denied.



Add AVC Rule

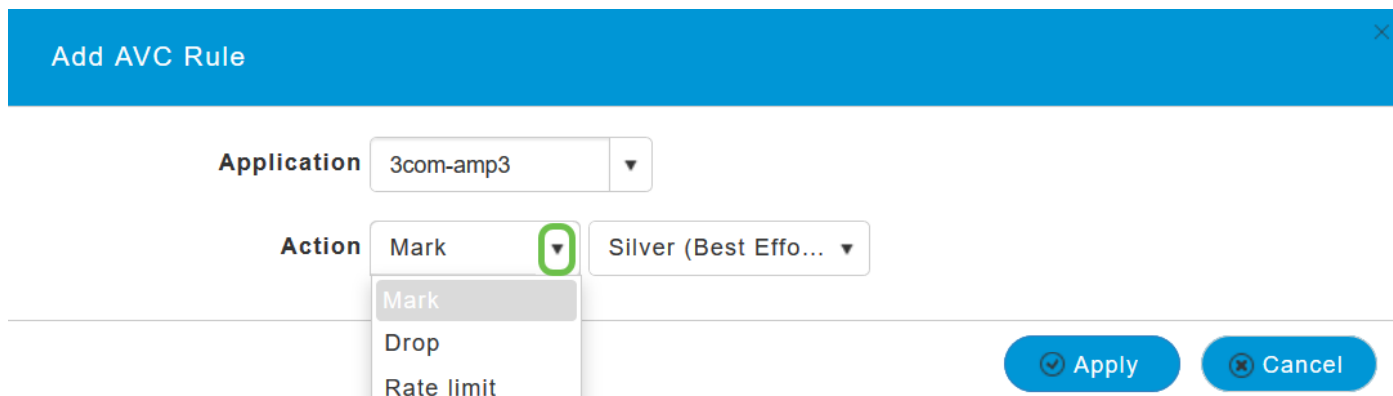
Application: 3com-amp3

Action: 3com-amp3, 3com-tsmux, 3pc, 4chan, 58-city

Silver (Best Effo...)

Apply Cancel

Choose the **Action**, choose **Mark** to allow the application, **Drop** to deny the application and **Rate limit** to limit the rate at which the application runs.



Add AVC Rule

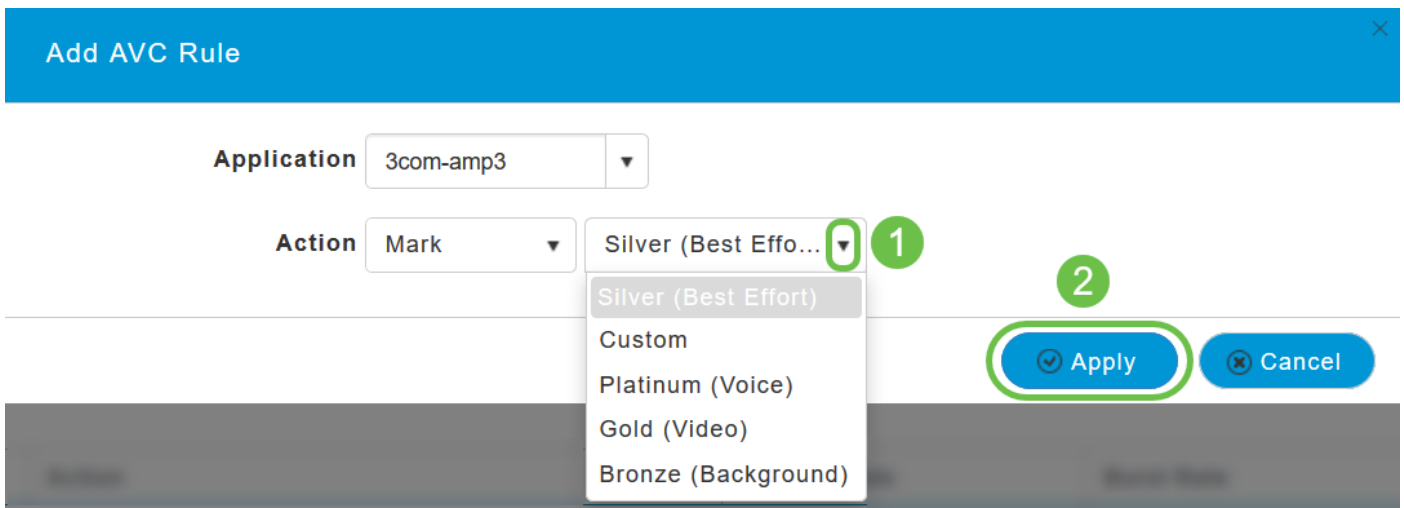
Application: 3com-amp3

Action: Mark, Drop, Rate limit

Silver (Best Effo...)

Apply Cancel

Now, select the QoS profile from the drop-down list, click **Apply** to save the configuration for AVC Rule.



Silver (Best Effort) is selected by default, you may change the same.

Once you are sure that all the above-mentioned parameters are configured and the configuration parameters for the remaining tabs under *Add new WLAN* page are done then click **Apply** to save the configuration.



Conclusion

You have now completed the steps to configure traffic shaping in a Cisco Business Wireless network.

Check out other mesh wireless articles that might interest you:

[Frequently Asked Questions Radius Firmware Upgrade RLANs Application Profiling Client Profiling Primary AP Tools Umbrella WLAN Users Logging Rogues Interferers Configuration Management Port Configuration Mesh Mode Welcome to CBW Mesh Networking Guest Network using Email Authentication and RADIUS Accounting Troubleshooting Using a Draytek Router with CBW](#)