Role in Wireless Campus Network

The Cisco AireOS wireless LAN controllers centrally manage QoS policies on wireless LAN access points, as well as perform advanced QoS operations, such as Application Visibility and Control classification, marking and policing.

QoS Design Steps

There are three main steps required to configure QoS on AireOS WLCs:

1. Select and tune the desired QoS Profile
2. Configure an AVC Profile
3. Apply the QoS and AVC Profiles on the WLAN and (optionally) enable Application Visibility

Step 1: Selecting and Tuning the QoS Profile

QoS Profiles are applied to both upstream and downstream flows on WLC egress. The WLAN QoS Profile defines (as shown in Figure 1):

- Per-User Bandwidth Contracts—(Optional) per-user limits for average and peak data and realtime traffic rates.
- Per-SSID Bandwidth Contracts—(Optional) per-SSID limits for average and peak data and realtime traffic rates.
- WLAN Maximum Priority—The highest DSCP marking value that may be used on the WLAN; this value can override AVC policies as well DSCP-values received from the wired network. As such, in multiservice WLANs, it is generally recommended to ensure that the Maximum Priority value be set to voice (i.e., platinum).
- Unicast and Multicast Default Priority—The default DSCP marking value to be used on the WLAN for all traffic not explicitly classified by an overriding AVC Profile. Typically these values are set as best effort (i.e., silver), however there may be cases where this default value may be set to background (i.e., bronze), such as if applied to a guest WLAN.
- Wired QoS Protocol—Can be set to 802.1p and the maximum CoS value can be defined per WLAN

Figure 1 esign Recommendations for the Platinum QoS Profile for an Employee WLAN

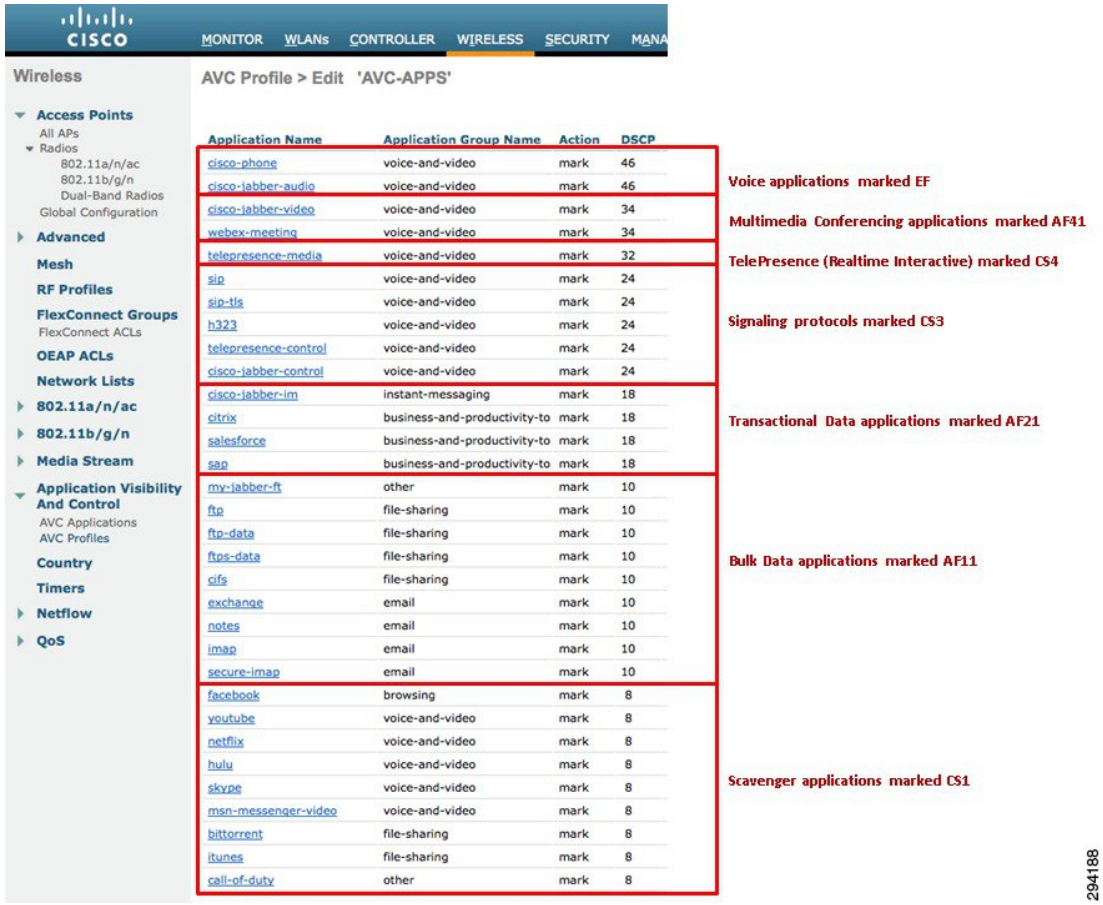
Step 2: Configure an AVC Profile
AVC Profiles are applied to both upstream and downstream flows on WLC ingress. While this may simplify the QoS policy configuration on the WLC, it has design implications in upstream/downstream mapping.

Additionally, each WLAN can have only one AVC profile attached to it to control applications, however an AVC Profile can be attached to multiple WLANs. Also, an AVC Profile can contain a maximum of 32 application rules and a maximum of 16 AVC profiles can be created on a WLC. Also, only 3 AVC applications may be policed in a given profile.

As has been previously discussed, it also is important to note that each WLAN can have both a QoS Profile and an AVC Profile attached to it. The AVC Profile is applied when the packet *enters* the WLC and the QoS policy is applied when packet *exits* the WLC. QoS Profiles may define a Maximum Priority (DSCP value) for packet marking, which will override any AVC Profile marking policy. Thus care should be taken that QoS and AVC Profiles are correctly configured to complement-and not contradict-one another.

An example AVC Profile is shown in Figure 2.

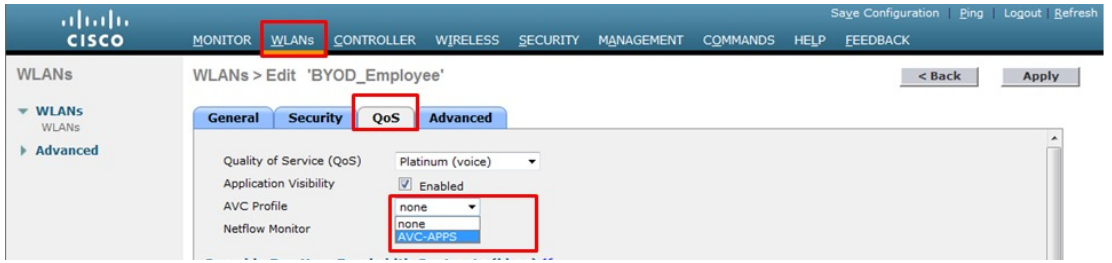
Figure 2 Example AVC Profile for an Employee WLAN



Step 3: Apply the QoS and AVC Profiles on the WLAN and (optionally) enable Application Visibility
With the QoS and AVC Profiles defined, all that remains is to enable these on a given WLAN, as shown in Figure 3.

Additionally, by checking the box for AVC, Application Visibility can also be enabled on the WLAN.

Figure 3 Example AVC Profile for an Employee WLAN



For more details, see the AVC/QoS Design chapter of the BYOD CVD at:

http://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/Borderless_Networks/Unified_Access/BYOD_Design_Guide/BYOD_AVC.html

And/or the Cisco Press book: End-to-End QoS Network Design (Second Edition)-Chapter 19