

How to use 802.11e (prioritization) on the Open BAT WLAN interfaces

- 2018-02-09 - BAT, WLC (HiLCOS)

802.11e is quite easy to enable on the OpenBAT. By default it's even enabled. It makes possible the sending of traffic on the WLAN interfaces using 4 priority queues.

To process a frame or packet accordingly to priority rules, the BAT relies on 2 things: 802.1p (priority contained in VLAN tagged frames). If there's no VLAN tag then it uses the Diffserv field.

The ideal case would consist in having end devices (such as IP phones) able to send traffic with a priority value present in the Diffserv field.

In this case, no need to do VLAN configuration on the Open BAT or on the devices around. But a mapping between the DSCP value and the priority queue (Access Category) must nevertheless be configured.

This mapping can be done via the Web interface under:
HiLCOS-Menu-Tree > Setup > LAN-Bridge > Priority Mapping

The table below may help you for the mapping (take care that in rel 9.10 the ToS value in decimal must entered)

CoS = Class of Service

DSCP = Differentiated Services Code Point

ToS = Type of Service

AF = Assured Forwarding

IPP = IP Precedence

CS = Class Selector

DP = Drop Probability

| Application | CoS=IPP | AF | DSCP | ToS | ToS_HEX | DP |
|-------------|---------|------|------|-----|---------|--------|
| Scavanger | 1 | CS1 | 8 | 32 | 20 | |
| Bulk-Data | 1 | AF11 | 10 | 40 | 28 | Low |
| - | 1 | AF12 | 12 | 48 | 30 | Medium |

| | | | | | | |
|-------------------|---|------|----|-----|----|--------|
| - | 1 | AF13 | 14 | 56 | 38 | High |
| Network_Mgmt. | 2 | CS2 | 16 | 64 | 40 | |
| Transaction_Data | 2 | AF21 | 18 | 72 | 48 | Low |
| - | 2 | AF22 | 20 | 80 | 50 | Medium |
| - | 2 | AF23 | 22 | 88 | 58 | High |
| Call_Signaling | 3 | CS3 | 24 | 96 | 60 | |
| Mission-Critical | 3 | AF31 | 26 | 104 | 68 | Low |
| Streaming-Video | 3 | AF32 | 28 | 112 | 70 | Medium |
| - | 3 | AF33 | 30 | 120 | 78 | High |
| - | 4 | CS4 | 32 | 128 | 80 | |
| Interactive-Video | 4 | AF41 | 34 | 136 | 88 | Low |
| - | 4 | AF42 | 36 | 144 | 90 | Medium |
| - | 4 | AF43 | 38 | 152 | 98 | High |
| - | 5 | CS5 | 40 | 160 | A0 | |
| Voice | 5 | EF | 46 | 184 | B8 | |
| Routing | 6 | CS6 | 48 | 192 | C0 | |
| - | 7 | CS7 | 56 | 224 | E0 | |

If it's not the case (No priority defined in the Diffserv field) then "unfortunately" traffic must be differentiated using the 802.1p field. In other words the upstream L2 network must prioritize the traffic (on layer 2) and the Open BAT must have a VLAN configuration to allow the forwarding of tagged frames.

Assigning a 802.1p prio can be done letting all the devices in VLAN 1 (default VLAN). Per default, VLAN 1 frames are sent untagged, it means that the 802.1p field is missing. If we want to use priority based on 802.1p but don't want to separate traffic in different VLANs then we just have to take care that:

- VLAN 1 frames are sent tagged to the Open BAT and have a priority index.
- The Open BAT has the VLAN module enabled and has a VLAN configuration to send and receive VLAN 1 tagged frames on the LAN and on the WLAN interface.

To make a VLAN configuration on the Open BAT you can refer to the lesson "How to configure VLANs on the OpenBAT"