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 trafic 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"