WBSn' VLANs Capabilities

1. INTRODUCTION

This document describes the variety of network topologies and features that are supported by WBSn VLAN capabilities.

2. GENERAL DESCRIPTION

WBSn implementation separates the network level definition of VLANs from wireless definitions of VAPs (Virtual APs, also called SSIDs or BSSIDs), MAC association and packet priority.

When configuring a VLAN several parameters are set. The important one is the VLAN tag. VLAN tag is 12 bit long, therefore, maximum of 4096 VLANs can be configured on WBSn (note that since VLAN tag 0 is not being used we indicate that 4095 VLANs are supported by WBSn).

As explained in the coming sections, after VLANs are configured they are mapped to different wireless parameters to achieve different capabilities as desired by the customer.

2.1 MAPPING VLANS TO VAPS

VAPs are being configured as Wireless interfaces.
The table below shows the mapping of VLANs to VAPs.

		Interfaces					
Index	VLAN ID	Ethernet	Management	VAP 1	VAP 2	VAP 3	VAP 4
1	3599	√	√			√	
2	101	√		√			
3	73	√		√			√

As depicts by the table a single VLAN can be mapped to multiple VAPs (e.g. VLAN 73), and multiple VLANs can be passed to a single VAP (e.g. both VLAN 101 and VLAN 73 are linked to VAP 1). In this mode one untagged VLAN can be defined per interface (e.g. Ethernet, VAP).

By this matching one can achieve several capabilities:

1. All (4095) VLANs can be passed on an interface (Ethernet or VAP) – transparency mode
2. All (4095) VLANs can be spread over all 16 VAPs
3. Few VLANs are being passed to every VAP

Note: when multiple VLANs are passed on a VAP it is expected that the receiving end (CPE) will be capable to handle multiple VLANs, and to pass the tagged VLAN traffic to the clients connected to it on the other end (at the branch network).

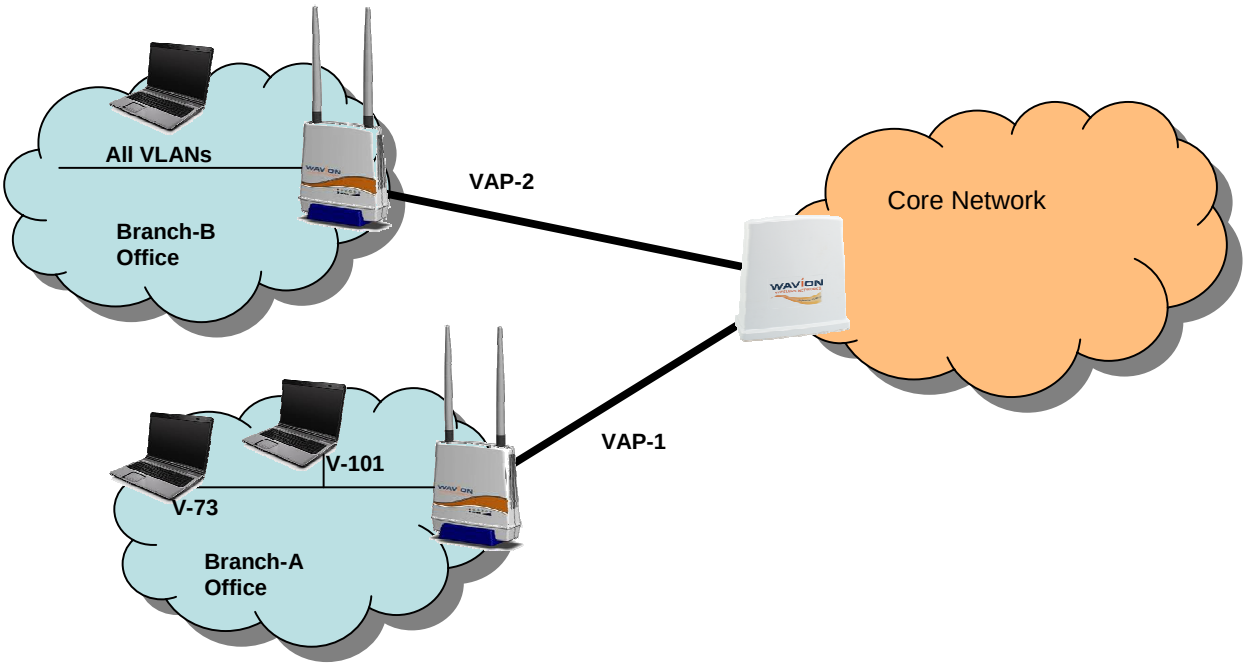

Figure 1: multiple-VLANs VAP are passed to CPEs

2.2 MAPPING VLANS TO MAC ADDRESS – DYNAMIC VLAN

Wavion introduces the capability of having VLAN per client. With this feature the WBSn consults an internal list (static mapping) or an external RADIUS server (dynamic mapping) to determine the specific VLAN to match the associated MAC address. This feature enables the operator to provide VLAN per client.

Moreover, WBSn has the capability to encapsulate the RADIUS-assigned-VLAN with an external VLAN. This is basically a Q-in-Q implementation where the external VLAN is determined by the VAP and the internal VLAN is determined by the RADIUS server.

With this capability, WBSn can support 16x4095 unique QinQ VLAN assignments (16 external VLANs and 4095 internal VLANs).

2.3 MAPPING VLANS TO PRIORITY

Wavion supports the capability of mapping VLANs to priorities. The traffic priority of packets received from the Wireless interface is inspected and the mapping to VLAN is done accordingly.

		Interfaces					
Index	VLAN ID	Ethernet	Management	VAP-2			
				Priority–1	Priority-2	Priority-X …	…
1	5	√		√			
2	17	√			√		
3	80	√				√	

Wireless priority is implemented by WMM where 4 AC (Access Categories) are used to carry 8 different priority values. These 8 values can be mapped to VLANs. When the priority mapping is being used WBSn supports up to (8x16) 128 VLANs.

Further discussion with the customer is needed for defining the end-to-end solution addressing the specific customer need.