IEEE P802.11
Wireless LANs

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| Bridging Architecture Considerations |
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**Discussion**

Abstract

This document follows discussions about how 802.11 architecture fits into an 802.1Q Bridge architecture (per 11ak direction), and a (potential?) desire to show SAP interfaces as horizontal lines in architecture figures (“up is up, and down is down), per 11-16/720.

In this document, concepts are built toward the above two goals, starting from the 802.1Q “Baggy Pants” figure, for discussion by ARC SC and 802.1, leading to discussions and recommendations to TGak.

Revision History

R0 – First revision.

Over recent months, there has been an ongoing discussion about ensuring all 802 – or at least 802.11 – architectural drawings show service interfaces (SAPs) as horizontal lines, with the service user entity(ies) shown above the service provider entity. This has become known as the “up is up, down is down” view of architecture figures. This is particularly focused on data plane structures, but generally applies to management/control planes as well.

There has been some challenge to this view, for example one member has formulated an alternative view in 11-16/457r1 starting at slide 22. The other side of this discussion has also been presented in 11-16/720r0, through slide 9, although ending with a realization that there are other styles in current use in specifications such as 802.1Q. This “up is up, down is down” view was reviewed by the ARC SC during the September 2016 face to face meeting. There was general agreement and support for the direction, with some requests for clarifications.

This document attempts to continue in that general direction, looking toward the implications on 802.1Q’s “Baggy pants” figure, and TGak’s approach to architecture figures for GLK/11ak.

This is the “Baggy pants” figure (Figure 8-2) from 802.1Q-2014:



This is a proposed “redraw” of this figure, with “up is up, down is down”:



At a “leaf node” (including an 802.11 non-AP STA), we have this (derived from 802.1AC concepts):



When used within a larger system, the resulting bridged network is as shown:



The above is where we are today, with 802.1Q and 802.1AC concepts.

But, 802.11 APs are defined to not require 802.1Q components for the bridging relay/forwarding functions. As such, 802.11 AP lack the switching capabilities, relying on the DS instead.



Which is why current (as specified) 802.11 APs cannot form part of a bridged network. (Of course, proprietary extensions can be added that solve this – but we’re trying to focus on 802 Standard-based solutions…)

So, for 11ak to add appropriate facilities to allow an 802.11AP to act as the lower layers of a 802.1Q Bridge Port, we get this:



And, finally, for an 802.11 GLK non-AP STA, we get this:

