IEEE P802.11
Wireless LANs

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| STA meaning convention |
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Abstract

This submission contains discussion about how we use the phrase “<adjective> STA” in IEEE Std 802.11, partially in response to REVmd CID 4419, but also for general use and avoidance of confusion in the future.

R0 – initial version.

R1 – Editorial changes, from REVmd review on May 27, 2020.

***Discussion*:**

REVmd CID 4419 has raised concern that ultimately goes to the root of what we mean by the phraseology “<adjective> STA”.

Let’s start by noting the use of the concept “instance” in our definitions of terms like STA, or a MIB capability.

Definition of “station (STA)” in 3.1:

A logical entity that is a singly addressable instance of a medium access control (MAC) and physical layer (PHY) interface to the wireless medium (WM).

MIB attribute types and meaning (11-09/533r1):

* + ***Capability***: Static, initialized by entity as part of instantiation, read by other entities.

There is a pattern here, that the concept of a given “STA” is intended to be an instance of a STA, as it is executing. The capabilities of such a STA are dependent on how that instantiation was configured when it was created.

Note also that we are concerned with interoperability and externally visible behaviour, in our Standard. As such, many things that are possible in reality, but which are beyond consideration of such interoperability, are beyond our scope.

For example, an implementation that is capable of being instantiated as many different types of STAs (or with different capabilities) from a single computer image, is not considered to be all those types of STA (or have all those capabilities) simultaneously. Rather, we only consider a given instantiation, with a given type/role and set of capabilities.

For example, a device and image which can be instantiated as either an AP or a non-AP STA is *NOT* considered therefore to be a STA “that implements” both AP and non-AP function and therefore is both an AP and a non-AP STA simultaneously (and has to meet all the requirements of both, simultaneously).

Similarly, other <adjective> STAs, should not be based on what the implemented image is capable of doing, but rather should be based on how that image was instantiated.

There are times when a given instantiation can be more than one type (a QoS WNM STA, for example), or when a STA instantiation can change its capabilities dynamically. Such cases need to be described in the Standard, at least in so much as they affect interoperability and expectation of behaviour.

However, where such changes are beyond the scope of the Standard (are not expected behaviour within our domain of interoperability), we should declare these changes to be effectively impossible for a given instantiation, and rather are examples of one instance being stopped, and a new instance created with changed capabilities.

This is already implied in our Standard, where we do not take into consideration that a STA may dynamically “change its stripes” and we do not address any for of signalling or behaviour limits/requirements on such a change. This is also already implied – albeit weakly – in the way we use and define our terms for STA and capabilities.

It would be better if we were explicit about this, for avoidance of doubt/confusion in the future.

***Recommendation:***

In subclause 1.4, add a paragraph at the end (which will juxtapose it with phrases like “<name> frame” and “<name> request”:

“References in this standard to “<adjective> STA” correspond to a specific instance of a STA implementation that will statically support and execute the <adjective> feature or role for the lifetime of the instance. Such a STA implementation may be capable of a different configuration where <adjective> is not supported (or even a mutually exclusive state is supported instead), but the switch from support to nonsupport of <adjective> is beyond the scope of this standard. The <adjective> support is to be understood as static for the lifetime of the instance, unless explicitly discussed otherwise.”