IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Submission  CR NSTR link pair definition | | | | |
| Date: 2021-04-13 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Matthew Fischer | Broadcom | 250 Innovation Drive, San Jose, CA 95134 |  | [Matthew.fischer@broadcom.com](mailto:Matthew.fischer@broadcom.com) |
|  |  |  |
|  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions to TGbe CC34 CIDs as listed:

1482 1661 2071 2141 2259 2455 2958

Related to the subject definition of NSTR link pair and link in general.

Revisions:

* R0: Initial version of the document.
* R1:
  + Added CID list in the abstract section of the document
  + Turned off “show paragraphs and spaces”
* R2:
  + Change the reference in the definition from 35.3.13.3 to 35.3.13.4 to coordinate with changes in those subclauses.
* R3:
  + CID 1661 proposed changes – move the 35.3.13.4 normative definition of NSTR into the definition here
  + CID 1482 – new CID for this doc, adds a proposed change to include a note taken from 35.3.13.4
* R4:
  + Add CID 1482 to the list of covered CIDs in the abstract

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

**CIDs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution (Proposed)** |
| 1482 | Dibakar Das | 35.3.13.4 | 142.35 | Move the note as part of the definition of NSTR link pairs. Also, define the term "NSTR link pairs" precisely by reinstating the red highlighted text in P142 L1. | as in comment. | Revise – TGbe editor to move the cited note from 35.3.13.4 to the definition of NSTR pair, with modification of links to WM interfaces |
| 1661 | GEORGE CHERIAN | 3.1 | 0.00 | Move the definition of "Nonsimultaneous transmit and receive (NSTR) link pair" to 3.2 | As in the comment | Revise – TGbe editor to move the definition of NSTR link pair from 3.1 to 3.2 and pull the more formal definition of NSTR from 35.3.13.3 to this definition. |
| 2071 | Joseph Levy | 3.1 | 29.18 | Unfortunately 802.11 uses the term link to describe both a logical link (as defined by 802) and an RF "link" that provides the a "link" via the WM between two STAs. This is a source of potential confusion in the 802.11 specification. While It is fairly clear what type of link is being referred to in the measurement clauses based on context or in the GLK and TDLS clauses (always the logical link), it is not clear in clauses that use the term for both meanings. The specification text describing MLO use both WM link and logical link definitions. e.g. The term multi-link is used to describe the multiple WM links used by MLO and an MLO device provides a single logical link over these multiple WM links. This is very confusing and makes the specification of MLO difficult to understand. The specification must be clear as to what the term link is referring to. It should be noted that the term "logical link" is an 802 defined term and is used in most 802 specification, where is often referred to as simply a link (e.g. LSAP link service assess point, in 802.1AX where multiple links are aggregated to form a single logical link, and point to point link). 802.11 is an 802 specification and should use terminology that aligned with other 802 specifications. Also of concern is the ongoing TGbe work on low latency links (which are logical links and not WM links). In 802, other 802 specification, and 802.11 the term link is generally used to describe a SAP to SAP connection, a logical link. | Throughout the 802.11be amendment clarify which type of link the term "link" is referring to. So that it is clear which type of link is being discussed. e.g. use the terms: "logical link" and "WM link" | Revise – TGbe editor shall, per the specific instructions found in the proposed changes section of 11-21/0530r4 for CID 2071:  change all instances of “link” to “WM link”  add a definition of “WM link” as “The logical communications channel between two WM interfaces …”  Modify the definition of MLD to include WM link |
| 2141 | Laurent Cariou | general | 0.00 | editorial harmonize NSTR/non-STR throughout the spec | as in comment | Revise – TGbe editor to change all instances of “non-STR” to NSTR throughout the TGbe draft standard |
| 2259 | Michael Montemurro | 3.1 | 29.18 | It's hard to determine what the context is here for link. What is the link between. | Change "A pair of links for which a STA of an MLD has" to "A pair of links between STAs affiliated with associated MLDs that have" | Revise – TGbe editor to change links to “WM interfaces” throughout the definition, in which case, the problem noted by the commenter is resolved, but differently than suggested. Also change “NSTR link pair” to “NSTR WM interface pair” throughout the draft. |
| 2455 | Payam Torab Jahromi | 3.1 | 29.18 | Is NSTR relationship between two links a declaration by an STA that terminates one of those two links or declaration by the MLD? That is, is it possible to have 2 links, link 1 and link 2, respectively terminating on STA 1 and STA 2 within an MLD, and then see STA1 declaring them as NSTR, but STA2 declaring them as STR? It seems NSTR relationship should be at MLD level, meaning in this case the MLD comprising STA 1 and STA 2 declares/decides a link pair to be NSTR. | Change the definition to "A pair of links for which an MLD has indicated a nonsimultaneous transmit and receive relationship as defined in 35.3.13.3 (Nonsimultaneous transmit and receive (NSTR) operation). Each link of such a pair is a member of the NSTR link pair." | Revise – TGbe editor to change links to “WM interfaces” throughout the definition, in which case, the problem noted by the commenter is resolved, but differently than suggested. Also change “NSTR link pair” to “NSTR WM interface pair” throughout the draft. |
| 2958 | Tomoko Adachi | 3.1 | 29.18 | I think "Each link of such a pair is a member of the NSTR link pair." is no use. On the other hand, a STA that indicated an nonsimultaneous transmit and receive relationship shall be a peer STA on either side of the link. | Change the definition to "A pair of link where a STA of an MLD on either side of the link has indicated an nonsimultaneous transmit and receive relationship as defined in 35.3.13.3 (Nonsimultaneous transmit and receive (NSTR) operation)." | Revise – TGbe editor to change links to “WM interfaces” throughout the definition, in which case, the problem noted by the commenter is resolved, but differently than suggested. Also change “NSTR link pair” to “NSTR WM interface pair” throughout the draft. |

**Discussion**

**SEE CID 2259**

Existing definition within 3.1 Definitions:

**station (STA):** 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).

Should the definition be modified to read as:

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

Or, how about:

**station (STA):** A logical entity that is a singly addressable instance of a medium access control (MAC) and a physical layer (PHY) which includes an interface to the wireless medium (WM).

Note that if we choose to NOT change the existing definition, then in the proposed changes below, then we could change

“NSTR link pair”

To any of:

“NSTR WM interface pair”

“NSTR PHY pair”

“NSTR PHY interface to the WM pair”

**Proposed changes**

***TGbe editor: Within TGbe Draft D0.4, change the definition of NSTR link pair found in subclause 3.1 Definitions, as shown:***

**3.1 Definitions**

**Nonsimultaneous transmit and receive (NSTR) WM interface pair:** A pair of WM interfaces of an MLD for which the receiver requirements specified in Clause 36 (Extremely high throughput (EHT) PHY specification) are not met on one WM interface when a STA of the MLD is transmitting on the other link. Each WM interface of such a pair is a member of the NSTR WM interface pair. **(#1661, #2259, #2455, #2958)**

NOTE—If an MLD supports transmission on WM interface 1 concurrent with reception on WM interface 2, but cannot support transmission on WM interface 2 concurrent with reception on WM interface 1, this pair of WM interfaces is NSTR.

***TGbe editor: Within TGbe Draft D0.4, change all occurrences of “NSTR link pair” to “NSTR WM interface pair”.* (#2259, #2455, #2958)**

***TGbe editor: Within TGbe Draft D0.4, move the definition of NSTR link pair found in subclause 3.1 Definitions to subclause 3.2 Definitions specific to IEEE 802.11.* (#1661)**

***TGbe editor: Within TGbe Draft D0.4, change all occurrences of “link” to “WM link”.* (#2071)**

***TGbe editor: Within TGbe Draft D0.4, subclause 3.2 Definitions specific to IEEE 802.11, modify the definition of multi-link device (MLD) as shown:* (#2071)**

**3.2 Definitions specific to IEEE 802.11**

multi-link device (MLD): A device that is a logical entity and has more than one affiliated station (STA) which allows the device to operate multiple WM links and has a single medium access control (MAC) service access point (SAP) to logical link control (LLC), which includes one MAC data service. **(#2071)**

***TGbe editor: Within TGbe Draft D0.4, insert the following new definitions at the end of the subclause:* (#2071)**

**Wireless medium (WM) interface:** The logical interface through which the 802.11 PHY attaches to the WM. There is one WM interface per PHY. **(#2259, #2455, #2958)**

**Wireless medium (WM) link:** The logical communications channel between two wireless medium interfaces belonging to two different STAs that do not share the same instance of a MAC SAP to LLC. **(#2071)**