IEEE P802.11
Wireless LANs

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| Resolutions to CIDs 1142, 1220, 1446 and 1447 |
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Abstract

The submission resolves the comments for ILS Synchronization detected field.

The ILS Synchronization field indicates that many initial link setup requests are transmitted simultaneously and larger randomization of the link setup messages transmission times is required.

The submission solves CIDS 1142, 1220, 1446 and 1447.

**Solved CIDS:**

**CID1142:**

**Comment:** The AP procedures to use the Synchronization Detected field are not described.

**Proposed change**:

Please add the following paragraph to the end of the clause 10.25.10.1:" The AP should set the Synchronization Detected subfield of ILS Synchronization field of ILSC Information field to 1 if any of the conditions below are met:

- The AP detects a peak of transmitted Association Request frames after the AP has transmitted a Beacon or a Probe Response frame and few or no transmissions of Association Request frame after the peak.

- The AP detects high percent of time after its Beacon frame transmission during which the carrier sense (CS) mechanism, as defined in 9.3.2.1, indicates a channel busy by either the physical or virtual CS mechanism and lower percent of time during which the CS mechanism indicates channel busy after the peak."

**CID1220**

**Comment:**

There are multiple issues with Figure 8-183ap and the paragraph in line 13 page 48, e.g.,

1) what is a "peak"? How much/many association request traffic is a peak?

2) why is called Synchronization detected when detected a Peak? Hard to connect those two words.More importantly, confusing with the synchronication concept in subsection 10.1.

3) why use a 1-byte for a 1-bit info? Why not just use one of the reserved bit in the ILSC bitmap field?

**Proposed change:**

Make the following changes:

1. provideclarificaiton to "Peak";

2. in subsection 8.4.2.187 and subsection 10.25.10, change "synchronization detected" to "detected heavy load of link setup requests"

3. use one of the reserved bits in ILSC bitmap field to indicate "detected heavy load of link setup requests".

**CID1446**

**Comment:**

The behavior of the Synchronization Detected bit is not explained in clause 10.25.10.2

If the logic is based only on condition that the ILS synchronization subfield is present then a optional ILS synchronization subfield of 1 octet length seems redundant. The bit 3, ILS Synchronization bit, in ILSC Type subfield is sufficient.

**Proposed change:**

Explain how Synchronization Detected bit is used to define STA behavior or delect the ILS synchronization subfield and base the logic on just the bit 3 in ILSC Type subfield.

**CID 1447**

**Comment:**

The ILS synchronization subfield seems to define an action and not a condition that needs to be satisfied. However, the line 26 of this page seems to consider this subfield also as resuling in a condition.

**Proposed change:**

Instead of "each and every", modify text to indicate that the ILS synchronization subfield is omited in accessing the STAs ILSC value

**Discussion:**

The ILS Synchronization is poor name, because synchronization refers to the timing and synchronization function. The more descriptive name is peak that identifies high density of the transmitted link setup messages.

The peak typically occurs when many STAs are scanning and receive the same information at the same time. For instance, when passive scanning STAs receive a Beacon frame, they all get the information of the available AP at the same time.

The detection of the peak and setting of the Link Setup Peak are out of the scope of the standard. The QoS operations, use of the measurements, network planning and channel selection are all operations that are out of the scope of the standard. Perhaps the operating principles will be solved by other standardization group.

**Discussion:**

Many CIDS talk about the name of the subfield.

The FILS synchronization Detected was considered to be bad name, because it is easily confused with the timing and synchronization function.

The name Link Setup Peak was considered as one candidate name. The peak is typically used as “peak throughput”, “peak performance”, i.e. it is maximum obtained value. The peak was not considered to be correct word, because we are not detecting the very maximum, just detecting that there are bursty periods, when many link setup frames are transmitted.

The name Link Setup Burst was considered to express clearly multiple link setup messages transmission after beacon or probe response frame transmission or after the ILS Time expires.

**All the comments are revised with the following changes to 802.11 D0.5:**

**8.4.2.187 Differentiated Initial Link Setup element**

***Instructions to the editor.Change as shown. Please note that ILS Synchronization Detected field is deleted from Figure 8-183am***

The Differentiated Initial Link Setup element includes the conditions for a STA to determine the initial linksetup category (ILSC) value for the duration specified in the element. The Differentiated Initial Link Setup element is optionally present in the Beacon, and Probe Response frames. The Differentiated Initial LinkSetup element is defined in Figure 8-183al.

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The Element ID field is equal to the Differentiated Initial Link Setup element value in Table 8-54.

The Length field is 1 octet long. It specifies the length of Differentiated Initial Link Setup element in octets.

The ILSC Information field is of variable length, it indicates the conditions to determine the value of the initial link setup category (ILSC) for the time as indicated in the ILS Time field.

The ILSC Information field contains one ILSC Type bitmap subfield and at least one of the four optional subfields including ILS User Priority, MAC Address Filter, ~~ILS Synchronization~~ and Vendor Specific Category, as specified in Figure 8-183am.

***Instructions to the editor: The ILS Synchronization is deleted from the figure 8.183am.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ILSC Type | ILS User Priority | MAC Address Filter | Vendor Specific Category |
| Octets: | 1 | 0 or 1 | 0 or 1 | 0 or variable |

**Figure 8-183am — ILSC Information field format**

The ILSC Type ~~bitmap~~ subfield is 1 octet in length and it is used to indicate the presence of the optional subfields in the ILSC Information field and the link setup bursty, as defined in Table 8-183al. A bit value of 1 in the ~~bitmap ILS~~ User Priority, MAC Address Filter and Vendor Specific Category subfields indicates that the corresponding ILSC subfield is present.

**Table 8-183al — ILSC Type subfield format**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ILS User Priority | MAC Address Filter | Vendor Specific Category | ~~ILS Synchronization~~ Link Setup Bursty | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 4 |

The value 1 of the ~~Synchronization Detected subfield of~~ Link Setup Bursty ~~ILS Synchronization~~ subfield indicates that the APhas detected peakof transmitted Initial Link Setup Request frames after the AP has transmitted Beacon orProbe Response frame. Value 0 indicates that the peak is not detected.

**10.25.10.1 AP procedures for differential initial link setup**

***Instructions to the editor: Add the following paragraphto the end of the clause***.

The Link Setup Bursty subfield of the ILSC Type subfield of ILS Information field of the Differentiated Link Setup element should be set to 1 only if AP considers that it is congested by bursty link setup operations. When AP considers that it congested by bursty link setup operations is out of the scope of the standard.

**10.25.10.2 Non-AP STA procedures for differentiated initial link setup**

***Instructions to the editor: Change the second paragraph as shown. Add the following paragraphto the end of the clause***.

A STA is considered an ILSC STA with its ILSC value set to 1 that is allowed for fast initial link setup only when ~~it satisfies~~ the condition specified in ILS User Priority, Vendor Specific and MAC Address Filter ~~each and every optional~~ subfield that ~~is~~ are present in the ILSC information field are met . If the STA does not satisfy one or more optional subfields present in the ILSC information field, then the STA is not considered an ILSC STA and its ILSC value is set to 0. A logical AND operation of all the conditions in the present optional subfields is used to determine whether the STA is an ILSC STA. The logical AND is not needed if only one optional subfield is present.