IEEE P802.11
Wireless LANs

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| Proposed Draft Text: SBP frames |
| Date: 2022-02-14 |
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Abstract

This submission contains the draft text for sensing by proxy frames to help the creation of TGbf draft D0.1.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Add two options for request/response/termination frame format.

# Introduction

SBP request/response frames’ fomat are proposed.

SBP request/response frames are defind in the **SFD** as follows:

(Motion 38, 21/1692r4) A Sensing by Proxy Request frame, which allows a non-AP STA to invoke a sensing by proxy procedure, is defined.

* The format and contents of the Sensing by Proxy Request frame are TBD.

(Motion 38, 21/1692r4) A Sensing by Proxy Response frame, which allows an AP STA to accept or reject a request for a sensing by proxy procedure, is defined.

* The format and contents of the Sensing by Proxy Response frame are TBD.

(Motion 38, 21/1692r4) An optional sensing by proxy (SBP) procedure is defined in which:

* An “SBP request” consists of a non-AP STA sending an SBP Request frame to an SBP-capable AP STA.
	+ A STA that sends an SBP Request frame to invoke SBP (and, as a result, WLAN sensing) is denoted by “SBP requesting STA”.
* An AP STA that receives an SBP request shall send to the SBP requesting STA an SBP Response frame to accept or reject the request.
* An AP STA that accepts an SBP request shall initiate a WLAN sensing procedure with one or more non-AP STAs using operational parameters derived from those indicated within the SBP Request frame.
	+ Whether the SBP requesting STA participates or not in the WLAN sensing procedure as a sensing responder is TBD.
* Measurement results obtained in a WLAN sensing procedure resultant from an SBP request shall be reported to the SBP requesting STA.

(Motion 54, 21/1941r1) How the SBP Requesting STA identifies the Measurement Setup ID is TBD.

# Discussion

As proposed and discussed, we need both Public Action frames and protected sensing frames.

21/1828r4 SP3 (23Y/0N/8A):

* + 11bf shall define both public and protected action frames, which include sensing measurement setup request/response, sensing measurement report, sensing measurement setup termination, and SBP request/response frames.
	+ Note: Other public and protected action frames for sensing are TBD.

And we also discussed to have measurement setup ID in SBP response frame.

22/0125r3 SP (20Y/2N/17A):

Do you support the method of assigning Measurement Setup ID for the SBP Requesting STA in Sensing by proxy (SBP) procedure?

* + AP assigns the Measurement Setup ID in its SBP Response frame.

And also we may have two directions for the design of SBP frames:

Opt1 "SBP request/response/termination frames with different Action field values", see page 3;

Opt2 "SBP request/response/termination frames share a same Action field value and are differentiated by an 'SBP subtype' field", see page 6.

**SP1:**

Which option do you prefer to define the SBP frames?

Opt1: "SBP request/response/termination frames with different Action field values"

Opt2: "SBP request/response/termination frames share a same Action field value and are differentiated by an 'SBP subtype' field"

Opt1/Opt2/Abstain

**SP2:**

Do you agree to incorporate the proposed text of 22/0222r2 into 11bf D0.1?

Y/N/A

***Editing instructions formatted like this are intended to be copied into the TGbf D0.1 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

# Text proposal – Editor instructions

9.4.1.11 Action Field

***TGbf editor: Insert a new action category for protected sensing frames to Table 9-51 while maintaining***

***the numerical order and updating the reserved range:***

**Table 9-51—Category values**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code**  | **Meaning**  | **See subclause**  | **Robust**  | **Group Addressed Privacy**  |
| …  |
| <ANA>  | Protected Sensing Frame  | 9.6.X  | Yes  | No  |

# *Proposed text for Opt1:*

9.6 Action frame format details

9.6.7 Public Action details

9.6.7.1 Public Action frames

***TGbf editor: Insert new entries in Table 9-364 as shown below:***

**Table 9-364—Public Action field values**

|  |  |
| --- | --- |
| **Public Action field value**  | **Description**  |
| <ANA> | SBP request  |
| <ANA> | SBP response |
| <ANA> | SBP termination  |
| <ANA> | Reserved  |

9.6.7.X1 Sensing by Proxy (SBP) Request frame format

The Sensing by Proxy Request frame allows a non-AP STA to invoke a sensing by proxy procedure. The format of the SBP Request frame Action field is defined in Table 9-xxx1.

**Table 9-xxx1 Sensing by Proxy Request frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Public Action |
| 3 | Dialog Token |
| 4 | TBD |

The Category field is defined in 9.4.1.11 [802.11].

The Public Action field is defined in 9.6.7.1 [802.11].

The Dialog Token field is set to a nonzero value chosen by the STA sending the SBP request to

identify the request/response transaction.

Other fields are TBD.

9.6.7.X2 Sensing by Proxy (SBP) Response frame format

The Sensing by Proxy Response frame is transmitted by an AP STA to accept or reject a request for a sensing by proxy procedure. The format of the SBP Response frame Action field is defined in Table 9-xxx2.

**Table 9-xxx2 Sensing by Proxy Response frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Public Action |
| 3 | Dialog Token |
| 4 | Status Code |
| 5 | Measurement Setup ID |
| 6 | TBD |

The Category field is defined in 9.4.1.11 [802.11].

The Public Action field is defined in 9.6.7.1 [802.11].

The Dialog Token field is set to the same value as the Dialog Token field of the corresponding SBP

Request frame.

The Status Code field is defined in 9.4.1.9.

The Measurement Setup ID field is set to the Measurement Setup ID value corresponding to the measurement setup initiated by the AP STA that accepts the corresponding SBP request. The Measurement Setup ID field is present in an SBP Response frame only if the status code is equal to SUCCESS (TBD).

Other fields are TBD.

9.6.7.X3 Sensing by Proxy (SBP) Termination frame format

The Sensing by Proxy Termination frame allows a STA(TBD) to terminate a sensing by proxy procedure. The format of the SBP Termination frame Action field is defined in Table 9-xxx3.

**Table 9-xxx3 Sensing by Proxy Termination frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Public Action |
| 3 | Measurement Setup ID |
| 4 | TBD |

The Category field is defined in 9.4.1.11 [802.11].

The Public Action field is defined in 9.6.7.1 [802.11].

The Measurement Setup ID field is set to the Measurement Setup ID value corresponding to the measurement setup that was initiated by the sensing by proxy procedure, which is intended to be terminated.

Other fields are TBD.

9.6.Z Protected Sensing frame format details

9.6.Z.1 Protected Sensing Frame Action field

The Protected Sensing Frame Action field, in the one octet immediately after the category field, differentiates between various Protected Sensing frames as shown in the Table 9-xxx4 (Protected Sensing Frame Action Field values).

**Table 9-xxx4—Protected Sensing Frame Action field values**

|  |  |
| --- | --- |
| **Value**  | **Meaning**  |
| <ANA>  | Reserved  |
| <ANA> | A protected SBP request frame. The format of frame after the action field is identical to the format of SBP public action (9.6.7.X1 Sensing by Proxy (SBP) Request frame format). It is carried in a Management Action frame.  |
| <ANA> | A protected SBP response frame. The format of frame after the action field is identical to the format of SBP public action (9.6.7.X2 Sensing by Proxy (SBP) Response frame format). It is carried in a Management Action frame.  |
| <ANA> | A protected SBP termination frame. The format of frame after the action field is identical to the format of SBP public action (9.6.7.X3 Sensing by Proxy (SBP) Termination frame format). It is carried in a Management Action frame.  |
| <ANA> | Reserved  |

# *Proposed text for Opt2:*

9.6 Action frame format details

9.6.7 Public Action details

9.6.7.1 Public Action frames

***TGbf editor: Insert new entries in Table 9-364 as shown below:***

**Table 9-364—Public Action field values**

|  |  |
| --- | --- |
| **Public Action field value**  | **Description**  |
| <ANA> | SBP |
| <ANA> | Reserved  |

9.6.7.X1 Sensing by Proxy (SBP) frame format

The Sensing by Proxy frame is used to support the sensing by proxy procedure described in 11.X.Y (Sensing by Proxy (SBP) procedure). The format of the SBP frame Action field is defined in Table 9-xxx1.

**Table 9-xxx1 Sensing by Proxy Request frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Public Action |
| 3 | Dialog Token |
| 4 | SBP subtype |
| 5 | Measurement Setup ID |
| 6 | TBD |

The Category field is defined in 9.4.1.11 [802.11].

The Public Action field is defined in 9.6.7.1 [802.11].

The Dialog Token field in an SBP request frame is set to a nonzero value chosen by the STA sending the SBP request to identify the request/response transaction.

The Dialog Token field in an SBP response frame is set to the same value as the Dialog Token field of the corresponding SBP request frame.

The Dialog Token field in an SBP termination frame is set to a TBD value.

The SBP subtype field is TBD octet(s), and is set to a value from the Table 9-xxx2 to represent requesting or responding or terminating a sensing by proxy procedure as described in 11.X.Y(Sensing by Proxy (SBP) procedure).

**Table 9-xxx2 SBP subtype values**

|  |  |
| --- | --- |
| **Values** | **Description** |
| 0 | Request |
| 1 | Response |
| 2 | Termination |
| 4~255 | Reserved |

The Measurement Setup ID field is not present in an SBP request frame.

The Measurement Setup ID field in an SBP response frame is set to the Measurement Setup ID value corresponding to the measurement setup initiated by the AP STA that accepts the corresponding SBP request. The Measurement Setup ID field is present in an SBP Response frame only if the status code is equal to SUCCESS (TBD).

The Measurement Setup ID field in an SBP termination frame is set to the Measurement Setup ID value corresponding to the measurement setup that was initiated by the sensing by proxy procedure, which is intended to be terminated.

Other fields are TBD.

9.6.Z Protected Sensing frame format details

9.6.Z.1 Protected Sensing Frame Action field

The Protected Sensing Frame Action field, in the one octet immediately after the category field, differentiates between various Protected Sensing frames as shown in the Table 9-xxx3 (Protected Sensing Frame Action Field values).

**Table 9-xxx3—Protected Sensing Frame Action field values**

|  |  |
| --- | --- |
| **Value**  | **Meaning**  |
| <ANA>  | Reserved  |
| <ANA> | A protected SBP frame. The format of frame after the action field is identical to the format of SBP public action (9.6.7.X1 Sensing by Proxy (SBP) frame format). It is carried in a Management Action frame.  |
| <ANA> | Reserved  |