IEEE P802.11
Wireless LANs

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| Proposed Draft TextNSEP Priority Access |
| Date: 2020-9-08 |
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Abstract

This submission proposes draft text to be included in 802.11be Draft 0.1 for the following Topic:

* Priority access support for NS/EP services

This contribution addresses the following motions:

* [Motion 50]
	+ The 802.11be amendment shall define mechanism(s) in support of priority access to a non-AP STA for national security (NS)/emergency preparedness (EP) Priority Service

NOTE – A non-AP STA for NS/EP Priority Service is a regular non-AP STA authorized to NS/EP service.

* [Motion 126, #SP90]
	+ The NS/EP Priority Service if supported by a non-AP STA, shall use an action frame to indicate the need for priority access to its associated AP STA and to be included in Release 1 specification.
* [Motion 131, #SP 207]
	+ The Priority Service Information shall be defined in EHT MAC Capability Information Element to exchange the NS/EP Priority Service capability information between AP STA and non-AP STA

This document is based on IEEE P802.11-REVmd (D4.0).

Revisions:

* Rev 0: Initial version of the document
* Rev 1: Incorporated comments from Editor and on the reflector, and offline exchanges
* Rev 2: Incorporated additional comments from Editor and on the reflector, and offline exchanges
* Rev3: : Incorporated additional comments received on the reflector, and from offline exchanges
* Rev4: Incorporated comments received during presentation and from offline exchanges
* Rev 5: Incorporated comments received during presentation and from offline exchanges

3. Definitions, Acronyms, and Abbreviations

3.1 Definitions

***TGbe editor: Add a new definition in the appropriate location within subclause 3.1 Definitions, as shown:***

**National Security and Emergency Preparedness (NSEP) Priority Access:** On-demand capability that provides higher priority to traffic generated by authorized non-access point (AP) stations (STA) and to traffic destined for authorized non-access point (AP) stations (STA).

**National Security and Emergency Preparedness (NSEP) traffic:** The traffic generated by a non-access point (AP\_ station (STA) or traffic destined for a non-access point (AP) station (STA) when the NSEP Priority Access isenabled.

**3.4 Abbreviations and acronyms**

***TGbe editor: Add a new definition in the appropriate location within subclause 3.4 Definitions specific to IEEE Std 802.11, as shown:***

NSEP National Security and Emergency Preparedness

4.5 Overview of the Services

***TGbe editor: Add a new subclause 4.5.x NSEP Priority Access within section 4.5 as follows:***

4.5.x NSEP Priority Access

Existing national security and emergency preparedness (NSEP) communications services[[1]](#footnote-1) in multiple countries provide priority for voice and data exchanges on public networks. NSEP Priority Access is intended to provide capabilities to support such priority services on IEEE 802.11-based networks[[2]](#footnote-2).

NSEP Priority Access provides prioritized access to system resources for authorized users to increase their probability of successful communication during periods of network congestion. Priority access involves preferential treatment in obtaining channel access and in allocation of network resources. The service is only available to designated, authorized devices who normally represent a small fraction of the overall number of devices operating in the area.

APs that have NSEP Priority Access activated advertise this capability in Beacon and Probe Response frames. Non-AP STAs which intend to use NSEP Priority Access query APs that advertise NSEP Priority Access to gain additional details prior to association. During Association, APs verify the authority of non-AP STAs to use NSEP Priority Access. This could be accomplished using a subscription service provider’s authorization infrastructure via an SSPN interface. The AP might store the results of this authorization process locally to enable subsequent verification. AP might also use this information to confirm authority during (re)Association.

NSEP Priority Access operates in an on-demand fashion. The STA invokes NSEP Priority Access when instructed to do so by an authorized user or a managed service provider who detects the need for priority..

Note 1: Detecting the need for priority is outside the scope of this Standard.

The non-AP STA requests NSEP Priority Access by sending a request to the AP. The AP confirms the authority of the non-AP STA to use NSEP Priority Access, e.g., using the locally stored verification information or reaching out to NSEP Service Provider via the SSPN interface, and sends a response to the requesting non-AP STA. Alternatively, the AP can enable NSEP Priority Access by sending an unsolicited request to a non-AP STA, and the non-AP STA confirms the request by sending a response. While NSEP Priority Access is enabled, all traffic to and from the non-AP is provided with preferential treatment. Either the AP or the non-AP STA can disable NSEP Priority Access by sending another request.

Note 2: The means by which the AP determines the need for priority is outside the scope of this Standard.

33. Extreme High Throughput (EHT) MAC specification

***TGbe editor: Add a new subclause 33.x NSEP Priority Access within section 33 as follows:***

33.x NSEP Priority Access

A STA with a value of true for dot11EHTNSEPPriorityAccessActivated shall set to 1 the NSEP Priority Access Supported subfield of the TBD EHT Capabilities element that it transmits and is capable of invoking NSEP Priority Access. A STA with a value of false for dot11EHTNSEPPriorityAccessActivated shall set to 0 the NSEP Priority Access Supported subfield of the TBD EHT Capabilities element that it transmits and is not capable of invoking NSEP Priority Access.

During the (re) Association process, the AP obtains information required to verify the authority of the non-AP STA to use NSEP Priority Access. The procedure by which the AP obtains such information is TBD.

To enable NSEP Priority Access when instructed to do so by a higher-layer function, a non-AP STA with dot11EHTNSEPPriorityAccessActivated equal to true shall transmit an NSEP Priority Access Request frame [9.6.x.2] with a value of Enable in the Request Type field to an associated AP with dot11EHTNSEPPriorityAccessActivated set to true. The AP verifies the authority of the requesting non-AP STA to use NSEP Priority Access. If the requesting non-AP STA is verified for NSEP Priority Access, the AP responds to the request by transmitting an NSEP Priority Access Response Action frame [9.6.x.3] with a value of SUCCESS in the Status Code field. Alternatively, an AP with dot11EHTNSEPPriorityAccessActivated set to true may instruct a non-AP STA to enable NSEP Priority Access using a TBD procedure.

Note 1: The mechanism by which the AP verifies the authority to use NSEP Priority Access is outside the scope of this Standard.

If the NSEP Priority Access Response frame transmitted by the AP or the non-AP STA that completes the negotiation contains a Status Code of SUCCESS, then the AP and non-AP STA shall apply NSEP Priority Access to NSEP traffic using a TBD procedure.

To disable NSEP Priority Access when instructed to do so by a higher-layer function, a non-AP STA with dot11EHTNSEPPriorityAccessActivated set to true shall send an NSEP Priority Access Request frame [9.6.x.2] with the value of DISABLE in the Request Type field to an associated AP with dot11NSEPPriorityAccessActivated set to true. The AP that receives an NSEP Priority Access Request frame with the value of DISABLE in the Request Type field from an associated non-AP STA shall transmit an NSEP Priority Access Response frame to the non-AP STA with a value of SUCCESS in the Status Code field. Alternatively, an AP with dot11EHTNSEPPriorityAccessActivated set to true may instruct the non-AP STA to disable NSEP Priority Access using a TBD procedure.

Additional details regarding NSEP Priority Access operation between non-AP MLD and AP MLD is TBD.

* Frame formats
* Status Code field

***TGbe Editor: Add new values to the Status code field in Table 9-50 – Status codes found in subclause 9.4.1.9 Status Code field.***

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| Table 9-50 – Status codes  |
| Status code | Name | Meaning |
|  |  |  |
|  |  |  |
| <ANA>. | NSEP\_DENIED\_UNAUTHORIZED | NSEP Priority Access denied because the non-AP STA is not authorized to use the service.  |
| <ANA>. | NSEP\_DENIED\_OTHER\_REASON | NSEP Priority Access denied due to reason outside the scope of this standard. |

**9.4.1.11 Action field**

***TGbe editor: Add a new value to the Category field in Table 9-51 – Category values found in subclause 9.4.1.11 Action field.***

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| Table 9-53 – Category values |
| Code | Meaning | See subclause | Robust | Group addressed privacy |
| <ANA>. | NSEP Priority Access | 9.6.x (NSEP Priority Access Action frame details) | Yes |  No  |

**9.4.2.26**

***TGbe editor: Add a new subclause 9.6.x NSEP Priority Access Action frame details within section 9.6 as follows:***

9.6.x NSEP Priority Access Action frame details

**9.6.x.1 General**

Two Action frame formats are defined for NSEP Priority Access. These frames are identified by the single-Octet NSEP Action field, which follows immediately after the Category field. The values of the NSEP Action field are defined in Table 9-XX1 (NSEP Priority Access Action field values).

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| Table 9-XX1 – NSEP Action field values |
| QoS Action fieldvalue | Meaning |
| 0 | Reserved |
| 1 | NSEP Priority Access Request |
| 2 | NSEP Priority Access Response |
| 3-255 | Reserved |

9.6.x.2 NSEP Priority Access Request frame format

The NSEP Priority Access Request frame is transmitted by a requesting STA to request a priority-access related action from another STA. The format of the NSEP Priority Access Request frame Action field is shown in Table 9-XX2 (NSEP Priority Access Request frame Action field format).

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| Table 9-XX2 – NSEP Priority Access Request frame Action field format |
| Order  | Information |
| 1 | Category |
| 2 | NSEP Action |
| 3 | Dialog Token |
| 4 | Request Type |

The Category field is defined in 9.4.1.11 (Action field).

The NSEP Action field is defined in 9.6.x.1 (NSEP Priority Access Action frame details).

The Dialog Token field is defined in 9.4.1.12 (Dialog Token field) and set by the requesting STA.

The NSEP Request Type field specifies the particular action sought by the requesting STA. The format of the NSEP Request Type field is shown in Figure 9-YYY (NSEP Request Type element format). The defined NSEP Request Type values are shown in Table 9-XX3 (NSEP Request Type definitions).

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|  | NSEP Request Type |
| Octets: | 1 |
| Figure 9-YYY – NSEP Request Type element format |
| Table 9-XX3 – NSEP Request Type definitions |
| Name | Value |
| Reserved | 0 |
| Enable | 1 |
| Disable | 2 |
| Reserved | 3-255 |

9.6.x.3 NSEP Priority Access Response frame format

The NSEP Priority Access Response frame is transmitted in response to a NSEP Priority Access Request frame. The format of the NSEP Priority Access Response frame Action field is shown in Table 9-XX4 (NSEP Priority Access Response frame Action field format).

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| TABLE 9-XX4 – NSEP Priority Access Response frame Action field format  |
| Order  | Information |
| 1 | Category |
| 2 | NSEP Action |
| 3 | Dialog Token |
| 4 | Status Code |

The Category field is defined in 9.4.1.11 (Action field).

The NSEP Action field is defined in 9.6.x.1 (NSEP Priority Access Action frame details).

The Dialog Token field value is copied from the Dialog Token field in the corresponding NSEP Priority Access Request frame.

The Status Code values are defined in Table 9-52 (Status codes).

**Straw Poll:**

Do you support incorporating the proposed draft text in this document 11-20/1434r5 to the TGbe Draft 0.1?

1. For example, NSEP Services in the US, including the Government Emergency Telephone Service and the Wireless Priority Service, run on commercial operator networks and are managed by the Emergency Communications Division of the Cybersecurity and Infrastructure Security Agency within the Department of Homeland Security. [↑](#footnote-ref-1)
2. Priority Access capabilities to support these services in other types of networks are defined in appropriate international standards, (e.g., Multimedia Priority Service (MPS) in 3GPP). [↑](#footnote-ref-2)