IEEE P802.11
Wireless LANs

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| Proposed Draft TextNS/EP Priority Services |
| 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, [24] and [104]]
	+ 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, [12] and [105]]
	+ 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.
* [SP 207] (Motion TBC)
	+ 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

3. Definitions, Acronyms, and Abbreviations

3.2 Definitions specific to IEEE Std 802.11

TGbe Editor: This is a new definition due to [Motion 50, [24] and [104]].

**NS/EP Priority Access:** On-demand capability that provides priority treatment of traffic to/from the authorized STAs.

**3.2 Abbreviations and acronyms**

TGbe Editor: This is a new abbreviation due to [Motion 50, [24] and [104]].

NS/EP National Security/Emergency Preparedness

4.5 Overview of the Services

TGbe Editor: This is new spec text addition due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]].

4.5.x NS/EP Priority Access

Existing national security and emergency preparedness communications services in multiple countries provide priority for voice and/or data exchanges on public networks. The ubiquity and ease of use of Wi-Fi networks makes it desirable to support such NS/EP priority communications on these networks as well. NS/EP Priority Access is defined to provide capabilities to support such Priority Services on Wi-Fi-based networks.

NS/EP Priority Access provides priority to system resource access for authorized users to enhance 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 individuals who normally represent a small fraction of the overall user base.

AP STAs that have NS/EP Priority Access activated advertise this capability in Beacon and Probe Response frames. Non-AP STAs with NS/EP Priority Access activated may query AP STAs that advertise NS/EP Priority Access Service to gain additional details prior to association. During Association, APs will verify the authority of non-AP STAs to use the priority access. This may be accomplished using a subscription service provider’s authorization infrastructure via an SSPN interface.

The NS/EP Priority Access is not an always-on capability, but rather operates in an on-demand fashion. When the user detects the need for priority, he/she invokes NS/EP Priority Access via a higher layer function within the non-AP STA. (Note: Detecting the need for priority is outside the scope of this Standard.) The non-AP STA enables NS/EP Priority Access by sending a Request Action frame to the AP. The AP STA confirms the authority of the non-AP STA to use NS/EP Priority Access and sends a Response Action frame. Alternatively, the AP STA can enable NS/EP Priority Access by sending a Request Action frame to the non-AP STA, which the non-AP STA confirms with a Response Action frame. While NS/EP Priority Access is enabled, all traffic to and from the non-AP STA is provided with preferential treatment. Either the AP STA or the non-AP STA can disable NS/EP Priority Access by sending a Request Action frame.

10. MAC sublayer functional description

TGbe Editor: This is new spec text due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]]

10.x.y Priority Access support for NS/EP services

Non-AP STAs with NS/EP Priority Access activated shall discover APs that actively support NS/EP Priority Access. When dot11PriorityServiceActivated is true, priority channel access for NS/EP Priority Access shall be active. When dot11PriorityServiceActivated is false, priority channel access is not active. AP STAs with NS/EP Priority Access active shall advertise their support for the priority access in Beacon and Probe Response frames. A non-AP STA with dot11PriorityServiceActivated equal true shall include the Priority Access Information in its Probe Request and (Re) Association Request frames. The mechanism by which NS/EP Priority Access is enabled is outside the scope of this standard.

An NS/EP Priority Service user’s non-AP STA associates with a supporting BSS via standard procedures prior to invocation of priority access. During the (re) Association process, the AP STA shall verify the authority of the non-AP STA to use NS/EP Priority Access. This authorization may involve interactions with a subscription service provider via an SSPN interface.

The non-AP STA shall signal the AP STA to enable priority access using a Request Action frame [9.6.x.2]. The AP STA shall verify the authority of the non-AP STA to use NS/EP Priority Access and then send a Response Action frame [9.6.x.3]. (Note: The mechanism by which the AP verifies the authority to use NS/EP Priority Access is implementation specific.) Alternatively, if the AP STA receives priority traffic destined for a non-AP STA, the AP STA shall instruct the non-AP STA to enable NS/EP Priority Access using a Request Action frame [9.6.x.2]. (Note: The method by which the AP STA recognizes traffic as requiring priority is implementation specific.) The non-AP STA shall confirm this instruction with a Response Action frame [9.6.x.3].

After these exchanges, the AP STA and non-AP STA shall apply priority treatment to all NS/EP traffic to and from the non-AP STA. Such priority shall involve treating all MSDUs as AC\_VO. AP STAs should give preference to traffic to and from the NS/EP priority access enabled non-AP STA over AC\_VO traffic to/from other non-NS/EP STAs. Priority Access shall remain in effect until disabled by either the AP STA or the non-AP STA.

A non-AP STA shall disable the priority access by sending a Request Action frame [9.6.x.2] to the AP STA, which the AP STA confirms with a Response Action frame [9.6.x.3]. An AP STA shall disable the priority access service by sending a Request Action frame [9.6.x.2] to the non-AP STA, which the non-AP STA confirms with a Response frame [9.6.x.3].

* Frame formats
* Status Code field

EDITOR: Add following rows to the referenced table and assign specific values of status codes from the Reserved set. This change is due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]].

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| * Status codes
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| Status code | Name | Meaning |
|  |  |  |
| X | NS/EP\_DENIED\_NO\_ASSOCIATION\_EXISTS | NS/EP Priority Service denied due to inability to confirm that association exists. |
| X+1 | NS/EP\_DENIED\_UNAUTHORIZED | NS/EP Priority Service denied because the non-AP STA is not authorized to use the service.  |
| X+2 | NS/EP\_DENIED\_OTHER\_REASON | NS/EP Priority Service denied due to reason outside the scope of this standard. |

**9.4.1.11 Action field**

TGbe EDITOR: Please update the referenced table to include the additional row shown below. (Note: Select a Category value from the Reserved set between 30 and 125. This change is due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]].

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| Table 9-53 – Category values |
| Code | Meaning | See subclause | Robust | Group addressed privacy |
| X | NS/EP Priority Service | 9.6.x (NS/EP Priority Service Action frame details) | Yes |  No  |

TGbe Editor: This is new spec text addition due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]].

9.6.x NS/EP Priority Access Action frame details

**9.6.x.1 General**

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

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

9.6.x.2 NS/EP Priority Access Request frame format

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

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

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

The NS/EP Action field is defined in 9.6.x.1 (NS/EP 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 NS/EP Request Type field specifies the particular action sought by the requesting STA. The format of the NS/EP Request Type field is shown in Figure 9-YYY (NS/EP Request Type element format). The defined NS/EP Request Type values are shown in Table 9-XX3 (NS/EP Request Type definitions).

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

TGbe Editor: This is new spec text addition due to [Motion 50, [24] and [104]] and [Motion 126, #SP90, [12] and [105]].

9.6.x.3 NS/EP Priority Access Response frame format

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

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

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

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

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

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