IEEE P802.11
Wireless LANs

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| 11bn PDT MAC Seamless Roaming |
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Abstract

This document contains Proposed Draft Text (PDT) for the Seamless Roaming feature of the proposed TGbn (UHR, Ultra High Reliability) amendment to the 802.11 standard.

**Revision information**

The following is a summary of the important changes that occurred within each revision of this document:

|  |  |
| --- | --- |
| **Revision** | **Major changes** |
| 0 | Initial revision |
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**Introduction**

Interpretation of a Motion to Adopt.

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe Draft. The abstract, revision information, introduction, explanation of the proposed changes and references sections are not part of the adopted material.

***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).***

**Explanation of the proposed changes:**

The proposed changes to the 802.11 TGbn draft within this document are based on the following motions adopted by the TGbn task group:

**Relevant passing motions:**

All the passing motions up to and including those in the 2024 November IEEE 802 Plenary Session (see [1]).

[Motion #2, [1]]

Move to add the following text to the TGbn SFD

* + 11bn defines a mechanism that enables a non-AP MLD to roam from one AP MLD to another AP MLD and the non-AP MLD remains in state 4 (see 11.3) during and after roaming to the other AP MLD

[Motion #26, [1]]

Move to add the following text to the TGbn SFD:

* Define in 11bn that when a non-AP MLD is in the process of roaming from the current AP MLD to a target AP MLD, the context related to the non-AP MLD is transferred to the target AP MLD such that it preserves the data exchange context for the non-AP MLD or the context can be renegotiated with the target AP MLD
	+ Details on what context can be transferred and what context can be renegotiated are TBD
	+ How to transfer the context is TBD.

[Motion #27, [1]]

Move to add the following text to the TGbn SFD:

* As part of the seamless roaming procedure, during roaming,
	+ after the request/response exchange that initiates notification of the DS mapping change from the current AP MLD to the target AP MLD,
		- The current AP MLD may deliver buffered DL data frames for a TBD period of time.
		- The non-AP MLD may retrieve buffered DL data frames from the current AP MLD
		- The non-AP MLD may send UL data to target AP MLD.
		- It is assumed that the target AP MLD is able to deliver data frames to non-AP MLD after the DS mapping change
	+ The current AP MLD may forward DL data to the target AP MLD.
		- When and how to initiate the forwarding of DL data is TBD

[Motion #44, [1]]

Move to add to the TGbn SFD the following:

* Define a request frame sent by a non-AP MLD in state 4 to initiate the roaming procedure
* The roaming procedure performs context transfer to the target AP MLD and perform the necessary changes of the DS mapping from the current AP MLD to the target AP MLD
* Define a response frame sent to the non-AP MLD to indicate readiness for the non-AP MLD to send class 3 frames to the target AP MLD
* TBD on data transmission from non-AP MLD to current AP MLD during the request/response frame exchange
* NOTE – What context is transferred is TBD.
* NOTE – TBD on which request/response frame to use

[Motion #162, [1]]

Move to add to the TGbn SFD the following:

* As part of seamless roaming procedure, before the request/response exchange requesting the roaming transition from a current AP MLD to a target AP MLD, a roaming preparation procedure can be performed that includes:
* Transfer or renegotiation of the context to a target AP MLD, and
* Setting up the link(s) with a target AP MLD.
* Details on what context can be transferred or renegotiated is TBD

**Text to be adopted begins here.**

***TGbn editor: Please add the following new subclause 37.x Seamless Roaming to the 802.11bn draft D0.1:***

**37.x Seamless Roaming**

**37.x.1 General**

Seamless Roaming only applies to non-AP MLD transitions between AP MLDs within the same ESS. Seamless Roaming comprises of a set of procedures that reduces the time during which connectivity is lost between a non-AP MLD and the DS during a transition between a current AP MLD and a target AP MLD. With these procedures, the non-AP MLD continues to remain in state 4 preserving the context for data transmission for a seamless experience.

**37.x.2 Roaming preparation procedure**

Before performing the roaming procedure as described in 37.x.3 (Roaming procedure), a roaming preparation procedure can be performed. The roaming preparation procedure includes:

• Transfer or renegotiation of the context (see 37.x.4 (Contexts)) to a target AP MLD, and

• Setting up the link(s) with a target AP MLD.

• Details on what context can be transferred or renegotiated is TBD

**37.x.3 Roaming procedure**

When a non-AP MLD intends to roam using the Seamless Roaming to a target AP MLD from the current AP MLD, the non-AP MLD shall send a TBD Request frame to the current AP MLD and the current AP MLD shall respond with a TBD Response frame. The current AP MLD may continue to deliver downlink data frames to the non-AP MLD for a TBD period of time. The non-AP MLD may choose to continue to receive downlink data frames from the current AP MLD.

Upon reception of the TBD Request frame, the current AP MLD shall:

* Transfer the context that is required for resuming operations with the target AP MLD (implementation-specific). The context that can be transferred is described in 37.x.4 (Contexts).
* The current AP MLD may forward any downlink data that is buffered to the target AP MLD [Actual mechanism TBD].

At the time the TBD Response frame is sent, the transfer of the context that is required for resuming operation to the target AP MLD shall be completed.

Upon reception of the TBD Response frame, the non-AP MLD may send class 3 frames to the target AP MLD.

After the TBD Request and Response frame exchange, if the DS is not already notified about the update of the destination mapping for the non-AP MLD, the DS is notified about the update of the destination mapping for the non-AP MLD if necessary.

**37.x.4 Contexts**

[Content TBD: a place holder for details of Contexts]

**Text to be adopted ends here.**

**References:**

1. [11-24-0171r20](https://mentor.ieee.org/802.11/dcn/24/11-24-0171-20-00bn-tgbn-motions-list-part-1.pptx): 11-24-0171-20-00bn-tgbn-motions-list-part-1, Alfred Asterjadhi (Qualcomm Inc.)