IEEE P802.11
Wireless LANs

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| [MLME Definition for TDD Slot Structure and TDD Slot Schedule] |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Lochan Verma | Qualcomm |  |  | lverma@qti.qualcomm.com |
| George Cherian |  |  |  |
| Solomon Trainin |  |  |  |
| Assaf Kasher |  |  |  |
| Carlos Cordeiro | Intel |  |  | Carlos.cordeiro@intel.com |
|  |  |  |  |
|  |  |  |  |
| Djordje Tujkovic | Facebook |  |  | djordjet@fb.com |
| Nabeel Ahmed | nabeel@fb.com |
| Dong Zheng | dongzheng@fb.com |
| Payam Torab | ptorab@fb.com |
|  |  |  |  |  |
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Abstract

The TDD Slot Structure and TDD Slot Schedule are delivered to MAC layer through MLME for TDD SP operation. This document proposes MLME definition for TDD Slot Structure and TDD Slot Schedule.

-Rev 0: Initial revision

**6.3.119 TDD schedule**

**6.3.119.1 Introduction**

This set of primitives supports the TDD scheduled access as described in 10.37.6.2.2.

**6.3.119.4 MLME-TDD-SLOT-STRUCTURE.request**

**6.3.119.4.1 Function**

This primitive requests TDD slot structure establishment in the MAC entity within an AP/PCP.

**6.3.119.4.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-STRUCTURE.request(

PeerSTAAddress,

TDDSlotStructureList,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC Address | Any valid individual MAC address | Specifies the MAC address of the STA that is the intended recipient of the TDD Slot Structure element. |
| TDDSlotStructureList | A set of TDD Slot Structure elements | As defined in 9.4.2.267 (TDD Slot Structure element) | Specifies the parameters within one or more TDD Slot Structure elements corresponding to a target STA.  |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.4.3 When generated**

This primitive is generated by the SME for an AP/PCP to establish TDD Slot structure in its MAC.

**6.3.119.4.4 Effect of receipt**

This request initiates TDD Slot Structure establishment according to procedures defined in 10.37.6.2.2 (SP with TDD channel access).

**6.3.119.5 MLME-TDD-SLOT-STRUCTURE.confirm**

**6.3.119.5.1 Function**

This primitive report the outcome of a TDD Slot Structure establishment according to procedures defined in 10.37.6.2.2 (SP with TDD channel access).

**6.3.119.5.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-STRUCTURE.confirm(

ResultCode,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| ResultCode | Enumeration | Success,Fail | Indicates the result of the TDD Slot Structure request received. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.5.3 When generated**

This primitive is generated by the MLME to report the result of TDD Slot structure establishment in the MAC entity of AP/PCP.

**6.3.119.5.4 Effect of receipt**

The SME is notified of the result of the procedure.

**6.3.119.6 MLME-TDD-Slot-Structure.indication**

**6.3.119.6.1 Function**

This primitive indicates receipt of a TDD slot structure from a specific peer MAC entity.

**6.3.119.6.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-STRUCTURE.indication(

 PeerSTAAddress,

TDDSlotStructureList,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC Address | Any valid individual MAC address | Specifies MAC address of the peer MAC entity from which TDD Slot Structure was received.  |
| TDDSlotStructureList | A set of TDD Slot Structure elements | As defined in 9.4.2.267 (TDD Slot Structure element) | Specifies the parameters within one or more TDD Slot Structure elements.  |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.6.3 When generated**

This primitive is generated by the MLME as a result of the receipt of TDD Slot Structure from a specific peer MAC entity.

**6.3.119.6.4 Effect of receipt**

The SME is notified of the receipt of TDD Slot Structure.

**6.3.119.7 MLME-TDD-SLOT-SCHEDULE.request**

**6.3.119.7.1 Function**

This primitive requests TDD slot schedule establishment in the MAC entity within a STA.

**6.3.119.7.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-SCHEDULE.request(

 PeerSTAAddress,

TDDSlotScheduleList,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC Address | Any valid individual MAC address | Specifies MAC address of the STA that is the intended recipient of the TDD Slot Schedule element.  |
| TDDSlotScheduleList | A set of TDD Slot Schedule elements | As defined in 9.4.2.268 (TDD Slot Schedule element) | Specifies the parameters within one or more TDD Slot Schedule elements corresponding to the target STA |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.7.3 When generated**

This primitive is generated by the SME for a STA to establish TDD Slot schedule in its MAC.

**6.3.119.7.4 Effect of receipt**

This request initiates TDD Slot schedule establishment according to procedures defined in 10.37.6.2.2 (SP with TDD channel access).

**6.3.119.8 MLME-TDD-SLOT-SCHEDULE.confirm**

**6.3.119.8.1 Function**

This primitive report the outcome of a TDD slot schedule establishment according to procedures defined in 10.37.6.2.2 (SP with TDD channel access).

**6.3.119.8.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-SCHEDULE.confirm(

ResultCode,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| ResultCode | Enumeration | Success,Fail | Indicates the result of the TDD Slot Schedule request received. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.8.3 When generated**

This primitive is generated by the MLME to report the result of TDD Slot schedule establishment in the MAC.

**6.3.119.8.4 Effect of receipt**

The SME is notified of the result of the procedure.

**6.3.119.9.1 MLME-TDD-SLOT-SCHEDULE.indication**

**6.3.119.9.1 Function**

This primitive indicates that a specific peer MAC entity is requesting TDD slot schedule with the local MAC entity.

**6.3.119.9.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-TDD-SLOT-SCHEDULE.indication(

 PeerSTAAddress,

TDDSlotScheduleList,

VendorSpecificInfo)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC Address | Any valid individual MAC address | Specifies MAC address of the peer STA from which the TDD Slot Schedule element is received.  |
| TDDSlotScheduleList | TDD Slot Schedule element | As defined in 9.4.2.268 (TDD Slot Schedule element) | Specifies the parameters within one or more TDD Slot Schedule elements received from peer STA. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.26 (Vendor Specific element) | Zero or more elements. |

**6.3.119.9.3 When generated**

This primitive is generated by the MLME as a result of the receipt of TDD SP Slot Schedule element from a specific peer MAC entity.

**6.3.119.9.4 Effect of receipt**

The SME is notified of the receipt of the TDD SP Slot Schedule.

**10.37.6.2.2 SP with TDD channel access**

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The parameters of the TDD structure and guard times that are used within a TDD SP are defined by the TDD Slot Structure element. A DMG AP or DMG PCP shall transmit one or more TDD Slot Structure elements it receives through MLME-TDD-Slot-Structure.request to each DMG STA that is expected to transmit or receive during a TDD SP. The DMG AP or DMG PCP issues MLME-TDD-Slot-Structure.confirm after transmitting the TDD Slot Structure elements, which may be included in DMG Beacon or Announce frames transmitted by the DMG AP or DMG PCP. ~~The TDD Slot Structure element may be included in DMG Beacon or Announce frames transmitted by the DMG AP or DMG PCP.~~ Upon reception of TDD Slot Structure elements, a DMG STA issues MLME-TDD-Slot-Structure.indication. Furthermore, upon reception of a TDD Slot Structure element corresponding to allocations identified by the Allocation ID subfield value within the element, a DMG STA shall adopt the TDD structure within the element for all the TDD SPs identified by the same Allocation ID subfield value until the time it receives an updated TDD Slot Structure element from the DMG AP or DMG PCP for the allocation. Each TDD structure shall be adopted at the time indicated by the value of the Slot Structure Start Time subfield within the element.

Except for the transmission of a TDD Beamforming frame prior to association, a DMG STA shall not transmit during a TDD SP unless it receives a TDD Slot Schedule element that indicates it is assigned to at least one TDD slot within the TDD SP by the DMG AP or DMG PCP. The DMG AP or DMG PCP shall transmit the TDD Slot Schedule elements it receives throgh MLME-TDD-Slot-Schedule.request to each DMG STA that is assigned to access the TDD SP through an Announce frame or Association Response frame before the time indicated by the value of the Slot Schedule Start time within each element. The DMG AP or DMG PCP issues MLME-TDD-Slot-Schedule.confirm after transmitting the TDD Slot Schedule elements. Upon reception of a TDD Slot Schedule element corresponding to allocations identified by the Allocation ID subfield value within the element, a DMG STA issues MLME-TDD-Slot-Schedule.indication and shall adopt the schedule within the element at the time indicated by the value of the Slot Schedule Start Time subfield within the element.

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References:

1. IEEE P802.11ay/D1.1, Feb 2018