IEEE P802.11
Wireless LANs

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| Proposed Text for ID Query Action Frame  |
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|  |  |  |  |  |

Abstract

This submission proposes a new action frame exchange to allow an AP and non-AP STA can use to exchange a unique identifier for the non-AP STA (within a secured link). The proposal is based on IEEE P802.11-2020.

Revisions:

* Rev 0: Initial version, prepared for TGbh consideration.
* Rev 1: Corrected typos; clarified “non-AP” on some occurrences of (unqualified) “STA”
* Rev 2: Modified ID Query Response frame to be more extensible. Added a NOTE to recommend an “opt in” and user control over the ID response for any given network.
* Rev 3: Updates per Oct 12 teleconference review.

***Editing instructions formatted like this (with highlight) are instructions to the TGbh editor.***

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

***Insert new subclause at the end of Subclause 6.3***

**6.3.X ID query**

**6.3.X.1 Introduction**

The following MLME primitives support the ID query process.

**6.3.X.2 MLME-IDQUERY.request**

**6.3.X.2.1 Function**

This primitive requests that an ID Query Request frame be sent to the specified peer MAC entity.

**6.3.X.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-IDQUERY.request(

PeerSTAAddress

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the ID query procedure. |

**6.3.X.2.3 When generated**

This primitive is generated by the SME to request ID query procedure with a specified peer MAC entity.

**6.3.X.2.4 Effect of receipt**

This primitive initiates an ID query procedure. The MLME subsequently issues an MLME-IDQUERY.confirm primitive that reflects the results.

**6.3.X.2 MLME-IDQUERY.confirm**

**6.3.X.2.1 Function**

This primitive reports the results of an ID query attempt with the specified peer MAC entity.

**6.3.X.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-IDQUERY.confirm(

PeerSTAAddress,

ResponseCode,

ID,

TTL

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | The address of the peer MAC entity from which the ID Query Response frame was received. |
| ResponseCode | Enumeration | SUCCESS, TIMEOUT | Indicates the result of the MLME-IDQUERY.request primitive. |
| ID | Sequence of octets | As defined in 9.6.30a.3 (ID Query Response frame) | The identifier provided by the peer MAC entity, or null if no identifier was provided. |
| TTL | Integer | As defined in 9.6.30a.3 (ID Query Response frame) | The time-to-live provided by the peer MAC entity for the provided ID, or null if the ID is permanent or not present. |

**6.3.X.2.3 When generated**

This primitive is generated by the SME as a result of an MLME-IDQUERY.request primitive and indicates the results of the ID query procedure.

**6.3.X.2.4 Effect of receipt**

The SME is notified of the results of the ID query procedure.

**6.3.X.2 MLME-IDQUERY.indication**

**6.3.X.2.1 Function**

This primitive indicates that an ID Query Request frame was received from a peer STA.

**6.3.X.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-IDQUERY.confirm(

PeerSTAAddress,

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | The address of the peer MAC entity from which the ID Query Request frame was received. |

**6.3.X.2.3 When generated**

This primitive is generated by the MLME as a result of the receipt of an ID Query Request frame.

**6.3.X.2.4 Effect of receipt**

The SME is notified of the receipt of the ID query request.

**6.3.X.2 MLME-IDQUERY.response**

**6.3.X.2.1 Function**

This primitive is used to send a response to an ID query request procedure from a peer STA.

**6.3.X.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-IDQUERY.response(

PeerSTAAddress,

ResponseCode,

ID,

TTL

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | The address of the peer MAC entity to which the ID Query Response frame is sent. |
| ID | Sequence of octets | As defined in 9.6.30a.3 (ID Query Response frame) | The identifier to be provided to the peer MAC entity, or null if no identifier is to be provided. |
| TTL | Integer | As defined in 9.6.30a.3 (ID Query Response frame) | The time-to-live to be provided to the peer MAC entity for the provided ID, or null if the ID is permanent or not present. |

**6.3.X.2.3 When generated**

This primitive is generated by the SME as a response to an MLME-IDQUERY.indication primitive and indicates the results of the ID query procedure.

**6.3.X.2.4 Effect of receipt**

Upon receipt of this primitive, the MLME constructs an ID Query Response frame as the response to the ID query procedure. This frame is then scheduled for transmission to the peer MAC address.

***Insert new row in Table 9-51 in 9.4.1.11 (Action field), after the last non-vendor specific entry***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Meaning** | **See Subclause** | **Robust** | **Group Addressed Privacy** |
| <ANA> | ID Query | 9.6.30a | Yes | No |
| <ANA+1> - 125 | Reserved | - | - | - |

***Insert new row in Table 9-153 (Extended Capabilities field) in 9.4.2.26***

|  |  |  |
| --- | --- | --- |
| **Bits** | **Information** | **Notes** |
| <ANA> | ID Query Capability | The STA sets ID Query Capability subfield to 1 to indicate the STA supports the ID Query action frame, and is configured to support ID sharing. It is set to 0 to indicate that it does not support this action frame exchange. |

***Add a new subclause at the end of subclause 9.6 (Action frame format details)***

**9.6.30a ID Query Action frame details**

**9.6.30a.1 ID Query Action field**

Two Action frame formats are defined, to allow an AP to query a non-AP STA for a unique identifier and for the non-AP STA to provide a response or unsolicited response. An ID Query Action field, in the octet field immediately after the Category field differentiates the formats. The ID Query Action field values associated with each frame format are defined in Table 9-aaa (ID Query Action field values).

**Table 9-aaa – ID Query Action field values**

|  |  |
| --- | --- |
| ID Query Action field value | Description |
| 0 | ID Query Request |
| 1 | ID Query Response |
| 2-255 | Reserved |

**9.6.30a.2 ID Query Request frame**

The ID Query Request frame uses the Action frame body format. It is transmitted from an AP to a non-AP STA to request that the non-AP STA provide an identifier that the AP may store, and may be used by the AP and infrastructure network for future identification of the non-AP STA. The format of the Action field in the ID Query Request frame is shown in Figure 9-bbb.

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Category | ID Query Action |

 Octets: 1 1

**Figure 9-bbb – ID Query Request frame Action field format**

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

The ID Query Action field is defined in 9.6.30a.1 (General).

**9.6.30a.3 ID Query Response frame**

The ID Query Response frame uses the Action frame body format. It is transmitted from a non-AP STA to an AP to provide a unique non-transitory identifier, either unsolicited or in response to a request from the AP. The format of the Action field in the ID Query Request frame is shown in Figure 9-ccc.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| Category | ID Query Action | ID Query Response Control | Response ID TTL | Response ID (optional) |

 Octets: 1 1 1 0 or 2 variable

**Figure 9-ccc – ID Query Response frame Action field format**

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

The ID Query Action field is defined in 9.6.30a.1 (General).

The ID Query Response Control field is shown in Figure 9-ddd (ID Query Response Control field format). The non-AP STA has the option to indicate that it will not provide an ID value or that an ID is provided.

 B0 B1 B2 B7

|  |  |  |
| --- | --- | --- |
| ID Present | TTL Present | Reserved |

 Bits: 1 1 6

**Figure 9-ddd – ID Query Response Control field format**

The ID Present subfield in the ID Query Response Control field indicates whether the Response ID subfield is present. If the ID Present subfield is 1, then the Response ID field is present and is defined in Figure 9-eee. If the ID Present subfield is 0, the Response ID field is not present.

|  |  |
| --- | --- |
| Length | ID |

 Octets: 1 variable

**Figure 9-eee – Response ID subfield format**

The Length field indicates the length of the ID field in octets.

The ID field provides the identification value that the requesting AP may use to identify this non-AP STA without regard to the MAC address used by the STA in the MAC header.

NOTE—The form and content of the ID provided is implementation specific. The uniqueness of the ID depends on the mechanism chosen to generate the ID, and it is recommended that the ID be appropriate to the context for its use by the network.

The TTL Present subfield in the ID Query Response Control field indicates whether the Response ID TTL field is present. If the TTL Present subfield is 1, then the Response ID TTL field is present and is defined in Table 9-ddd. When the TTL Present subfield is 1, the ID Present subfield is also 1. If the TTL Present subfield is 0, the Response ID TTL field is not present, and the ID (if present) is permanent.

**Table 9-ddd – Time to Live field values**

|  |  |
| --- | --- |
| Response ID TTL field value | Description |
| 0 | The ID is usable for the duration of this ESS association |
| 1-65534 | The ID is usable for the indicated time to live, in minutes |
| 65535 | The ID is usable for a vendor- or provider-specific period, specified outside the scope of this standard. |

When the TTL Present subfield and ID Present subfields in the ID Query Response Control field are both 0, the ID Query responder has declined to provide an ID.

***Add a new subclause at the end of clause 11 (MLME)***

**11.aa Identification Management**

A non-AP STA may use a local MAC address or an otherwise randomized MAC address before or after association. For some APs and network services, a local MAC address identification of the non-AP STA that may change with each ESS association (or more quickly) will restrict the services that an AP can offer without additional identification.

An AP may use the ID Query Request frame to request that a non-AP STA provide an identifying value that can be used in an implementation-specific manner, across association events, or optionally while not associated, to consistently identify the particular non-AP STA, even if its MAC address changes.

A non-AP STA may respond to an ID Query Request frame with an ID Query Response frame that carries an ID, or a non-AP STA may provide an ID Query Response frame without AP solicitation. The ID Query Response frame also indicates the amount of time that the AP may expect that ID to be valid in the time to live field.

The ID Query Response frame that carries an ID should be sent after a security context is in place and management frame protection has been negotiated between the requesting AP and the target STA, then the ID in the response will be secure and kept private. If the non-AP STA is associated to the AP, the security context is established as defined in 12.6.19 (Protection of Robust Management Frames), and 12.6.20 (Robust management frame selection procedure). If the non-AP STA is not associated to the AP, the security context is established using the Pre-Association Security Negotiation mechanism as defined in 12.12 (Pre-Association Security Negotiation).

NOTE—Whether or not to provide an ID to an AP or network is a decision of the non-AP STA and SME. It is highly recommended that the device provides a user interface to allow the user or administrator of the device to view and control the identifier provided to any network, or deny any identifier, as appropriate to the user’s level of trust in the network and its operator.

Alternatively, a non-AP STA may not respond to an ID Query Request frame or respond with an ID Query Response frame that declines to provide the requesting AP with an ID, for example, if the STA does not trust the AP.

NOTE—The AP’s SME might make the ID available to higher layers. Based on the query response or lack thereof from the non-AP STA, the AP or higher layer facilities might restrict the non-AP STA’s access in an implementation specific manner.

**TBD: Some PASN facilities explicitly mention Fine Timing Measurement frames, and need to be modified to support both Fine Timing Measurement and ID Query Request/Response frames. Pending finalization of 802.11az amendment.**