IEEE P802.11
Wireless LANs

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| Normative text for Probe Request parameters |
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Abstract

The submission contains normative text for response criteria to Probe Request frame.

The submission is related to 11-12-151r8 proposed Specification Framework Document requirements 6.1.2, 6.1.4 and 6.1.6.

**6.3.3 Scan**

**6.3.3.2 MLME-SCAN.request**

**6.3.3.2.2 Semantics of the service primitive**

*Instructions to Editor: Change the clause as shown with track changes:*

The primitive parameters are as follows:

MLME-SCAN.request(

 BSSType,

 BSSID,

 SSID,

 ScanType,

 ProbeDelay,

 ChannelList,

 MinChannelTime,

 MaxChannelTime,

 RequestInformation,

 SSID List,

 ChannelUsage,

 AccessNetworkType,

 HESSID,

 MeshID,

 FILS Request Parameters,

 VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| FILS Request Parameters | As defined in 8.4.2.ai1 | As defined in 8.4.2.ai1 | The parameters define the responding STAs.  |

* + - 1. Probe Request frame format

*Instructions to Editor: Add new element to Table 8-26 as shown with track changes.*

The frame body of a management frame of subtype Probe Request contains the information shown in Table 8–26 Probe Request frame body  (#33)

|  |
| --- |
| Table 8–26 Probe Request frame body   |
| Order | Information | Notes |
| 14 | FILS Request Parameters | The FILS Request Parameters are present if dot11FILSActivated is true. |
|  Last | Vendor Specific | One or more vendor-specific (#1684)elements are optionally present(#29). These (#1684)elements follow all other (#1684)elements(#1221). |

**8.4.2.ai1 FILS Request Parameters element**

*Instructions to Editor: Add new element type to the element type list.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Element Id | Length | Para Bitmap | FILS Criteria | Max Delay Limit | Minimum Data Rate | Received Signal Strength Limit | OUI Response Criteria |
| Octets: 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 |

**4 B5 B7e 8-ai2 CILS Cri refer to the same parameter defined in TSPEC.Figure 8-ai1— FILS Request Parameters element**

The Element Id is equal to the FILS Request Parameters element value in Table 8-ai.

The value of the Length field is the length of the element and set to value between 2 and 10 depending on the values of Para Bitmap field.

The Para Bitmap field 1 octet in length and illustrated in Figure 8-ai2. Bits 0 to 4 of the Para Bitmap field correspond to the Parameter fields present in the IE respectively.. A value of 1 in a bit indicates the corresponding parameter is present, and the value of 0 indicates the corresponding parameter is not present.

 B0 B1 B2 B3 B4 B5 B7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| FILS Criteria | Max Delay Limit | Minimum Data Rate | Received Signal Strength Limit | OUI Response Criteria | Reserved |

**Bits: 1 1 1 1 1 3**

**4 B5 B7e 8-ai2 CILS Cri refer to the same parameter defined in TSPEC.Figure 8-ai2 — Para Bitmap field**

The FILS Criteria field is 1 octet in length and is illustrated in Table 8-ai2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Comprehensive Response | BSS Delay Criteria  | HT Support Criteria | VHT Support Criteria | Reserved |
| Bits:  | 1 | 3 | 1 | 1 | 2 |

**4 B5 B7e 8-ai2 CILS Cri refer to the same parameter defined in TSPEC.Figure 8-ai3 — FILS Criteria field**

The Comprehensive Response field is set to 1 to indicate that the information of other BSSs are requested to be included to the response and otherwise the field is set to 0.

The BSS Delay Criteria field values and their mapping is provided in Table 8-ai3(Mapping of BSS Delay Criteria field).

**Table 8-ai3—Mapping of BSS Delay Criteria field**

|  |  |
| --- | --- |
| Value  | Explanation |
| 0 | The delay criteria is set to average access delay of the AC\_BK  |
| 1 | The delay criteria is set to average access delay of the AC\_BE |
| 2 | The delay criteria is set to average access delay of the AC\_VI |
| 3 | The delay criteria is set to average access delay of the AC\_VO |
| 4 | The delay criteria is set to average access delay of all ACs  |
| 5 – 6  | Reserved |
| 7 | Delay criteria is not in use |

The HT Support Criteria field is set to 1 to indicate that responding STA must be HT capable and otherwise set to 0.

The VHT Support Criteria field is set to 1 to indicate that responding STA must be VHT capable and otherwise set to 0.

The Max Delay Limit field is an unsigned integer that is multiplied by the 200µs to calculate the value of the maximum access delay for delay criteria as indicated by BSS Delay Criteria field of the FILS Criteria of the FILS Request Parameters element. Value 0 is reserved.

The Minimum Data Rate field is 4 octets long and contains an unsigned integer that specifies the lowest total data rate specified at the MAC\_SAP, in bits per second, for transport of MSDUs or A-MSDUs that the STA is going to transmit. The minimum data rate does not include the MAC and PHY overheads incurred in transferring the MSDUs or A-MSDUs.

The Received Signal Strength Limit (RSSL) field is an unsigned integer. The receivers of Probe Response frame is obliged to respond, if the reception power of the frame is equal or higher than -82dBm + RSSL value \* 0.5dBm. Value 255 indicates that receiver is obliged to respond regardless of the reception power of the Probe Request frame.

OUI Response Criteria field is a bitmap, in which the bit0 is set to 1 to indicate that the receiver must know the Organization Identifier field of the first listed Vendor Specific element in order to be obliged to respond to the request and otherwise set to 0. The following bits set the said response rule for the Organization Identifier fields of the following Vendor Specific elements. For instance, bit1 sets the criterium for the Organization Identifier field of the second Vendor Specific element. If the number of the Vendor Sepcific elements in the Probe Request frame is less than the amount of available bits in the OUI Response Criteria field, the remaining bits in the OUI Response Criteria field are set to 0.

**10.1.4.3.5 Criteria to respond to probe request**

*Instructions to Editor: Add the new Clause 10.1.4.3.5*

Only APs and STAs in an IBSS or in an MBSS respond to probe requests. A result of the procedures defined in this subclause is that in each infrastructure BSS and IBSS there is at least one STA that is awake at any given time to receive and respond to probe requests. In an MBSS, STAs might not be awake at any given time to respond to probe requests. In an infrastructure BSS or in an IBSS, a STA that sent a Beacon frame shall remain in the Awake state and shall respond to probe requests, subject to criteria in the next paragraph, until a Beacon frame with the current BSSID is received. If the STA is contained within an AP, it shall remain in the Awake state and respond to probe requests, subject to criteria in the next paragraphs. There may be more than one STA in an IBSS that responds to any given probe request, particularly in cases where more than one STA transmitted a Beacon frame following the most recent TBTT, either due to not receiving successfully a previous Beacon frame or due to collisions between beacon transmissions.

STAs receiving Probe Request frames shall respond only if the criteria below are met:

a) The Address 1 field in the probe request is the broadcast address or the specific MAC address of the STA, and either item b) or item c) below.

b) The STA is a mesh STA and

1) The Mesh ID in the probe request is the wildcard Mesh ID or the specific Mesh ID of the STA.

c) The STA is not a mesh STA and

1) The SSID in the probe request is the wildcard SSID, or the SSID in the probe request is the specific SSID of the STA, or the specific SSID of the STA is included in the SSID List element, and

2) The Address 3 field in the probe request is the wildcard BSSID or the BSSID of the STA.

Additionally, STAs with dot11InterworkingServiceActivated equal to true receiving Probe Request frames containing an Interworking field in the Extended Capabilities element set to 1 shall examine the Interworking element in the received Probe Request frame and respond with a probe response only if

d) The Access Network Type field in the Interworking element is the wildcard Access Network Type or the Access Network Type of the STA.

STAs with dot11RadioMeasurementActivated equal to true receiving a Probe Request frame with a DSSS Parameter Set element containing a Current Channel field value that different from the value of dot11CurrentChannel shall not respond to Probe Request frame.

STAs with dot11FILSActivated equal to true receiving a Probe Request frame with FILS Request Parameters element shall respond to Probe Request frame only if all the criteria below are met:

1. The access delay of the specific AC or average access delay is less than the criteria specified by the BSS Delay Criteria field and the Max Delay Limit field of the FILS Criteria field of the FILS Request Parameters element as explained in 8.4.2.ai1(FILS Request Parameters element)
2. The HT Support Criteria of the FILS Criteria field of the FILS Request Parameters element is set to 1 and the responding STA is HT STA.
3. The VHT Support Criteria of the FILS Criteria field of the FILS Request Parameters element is set to 1 and the responding STA is VHT STA.
4. The Minimum Data Rate field of the FILS Request Parameters element indicates lower data rate that can be provided over the MAC\_SAP.
5. The Received Signal Strength field of the FILS Request Parameters element indicates lower reception power limit than the reception power of the Probe Request frame as explained in 8.4.2.ai1(FILS Request Parameters element).
6. The STA knows the OUIs as specified by the OUI Response Criteria of the FILS Request Parameters element as explained in 8.4.2.ai1(FILS Request Parameters element).

**10.1.4.3.7 Sending a response to probe request**

*Instructions to Editor: Add the text to the new Clause 10.1.4.3.7*

If the Comprehensive Response field of the FILS Request Parameters element of the Probe Request, the Probe Response or Beacon frame may include information of other BSSs. The other BSSs information is carried in Neighbor List element of the Probe Response or Beacon frame, if the criteria as defined in 10.1.4.3.5.(Criteria to respond to probe request) are met for the included BSSs.The BSSs which information is included may have different primary channel as the responding STA. When information of other BSSs is included, the Probe Response or Beacon frame shall include NeighborList element.