IEEE P802.11
Wireless LANs

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| Limiting probe requests and responses |
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| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Jarkko Kneckt, Mika Kasslin, Gabor Bajko | Nokia Corporation | Otaniementie 19, 02150 Espoo Finland | +358504821550 | Jarkko.Kneckt@Nokia.com |
| Ping Fang**,** Yunsong Yang | Huawei Technologies Co. Ltd.  | Bldg. 7, Vision Software Park, Road Gaoxin South 9, Nanshan District, Shenze, Guangdong, China, 518057  | +86755 36839346 | Ping.Fang@Huawei.com |
| Givon Park, Kiseon Ryu | LG Electronics | LG R&D Complex 533, Hogye-1dong, Dongan-Gu, Anyang, Kyungki, 431-749, Korea | +82-31-450-1879 | Giwon.Park@lge.com |
| Lei Wang | InterDigital Communications | 781 Third Ave., King of Prussia, PA 19406 | +1 858 205 7286 | leiw@billeigean.com |

Abstract

The submission provides normative text to reduce the transmitted Probe Request and Probe Response frames.

The submission is related to 11-12-151r12 proposed Specification Framework Document requirements 6.1.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.7 and 6.2.9.

**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,

 FILSRequestParameters,

 VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| FILSRequestParameters | 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 | Probe Response Reception Time | The Probe Response Reception Time is optionally 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). |

**8.3.3.10 Probe Response frame format**

*Instructions to Editor: Add new element to Table 8-27 as shown with track changes.*

The frame body of a management frame of subtype Probe Response contains the information shown in Table 8-27. See additional details and procedures in 9.18.3 and 10.1.4, respectively.

**Table 8-27—Probe Response frame body**

|  |  |  |
| --- | --- | --- |
| Order | **Information** | **Notes** |
| 55 | NeighborReport | The NeighborReport is optionally present if dot11FILSActivated is true. |
| Last*–1* | Vendor Specific | One or more vendor-specific (#1684)elements are optionally present(#29). These (#1684)elements follow all other (#1684)elements(#1221), except the Requested (#1684)elements. |
| Last–*n* | Requested (#1684)elements | Elements requested by the Request (#1684)element of the Probe Request frame are present(#29) if dot11MultiDomainCapabilityActivated(#1005) is true. See 11.1.3.2.1 (Sending a probe response).(11k) |

**8.4.2.ai2Probe Response Reception Time element**

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

|  |  |  |
| --- | --- | --- |
| Element Id | Length | Max Channel Time |
| Octets: 1 | 1 | 1 |

**Figure 8-ai6 — Probe Response Reception Time element**

The Element Id is equal to the Probe Response Reception Time element value in Table 8-ai.

The value of the Length field is the length of the Probe Response Reception Time element and set to value 1.

The Max Channel Time field contains an unsigned integer of units of 100 microseconds. It presents the time that the transmitter will be available after the transmission of the Probe Request to receive the Probe Responses as shown in Figure 10-ai1 and Figure 10-3.

**10.1.4.3.3 Sending a probe request**

*Instructions to Editor: Add the text to the new Clause 10.1.4.3.3*

When an MLME receives an MLME-SCAN.request primitive with ScanType indicating an active scan, a STA may not transmit a Probe Request frame to a channel at which the STA has received:

* A broadcast addressed Probe Request frame to which the clause 10.1.4.3.5(Criteria to respond to probe request) allows at least the same responses as the information indicated in the received MLME-SCAN.request primitive.
* A broadcast addressed Probe Response or a Beacon frame containing at least the same information as indicated in the received MLME-SCAN.request primitive.

A Probe Request frame may contain Probe Response Reception Time element. When present, the Max Channel Time field of the Probe Response Reception Time element of the Probe Request frame is set to the Max Channel Time of the MLME-SCAN.request.

The SSID List element shall not be included in a Probe Request frame in an IBSS.

**10.1.4.3.4 Selecting the response frame to probe request**

*Instructions to Editor: Add the new Clause 10.1.4.3.4*

STAs receiving Probe Request frames shall respond, if the criteria to response to probe request as described in 10.1.4.3.5(Criteria to respond to probe request), are met.The STA shall response:

* with a Probe Response or a Beacon frame when dot11FILSActivated equal to true. More details on selecting the Probe Response or Beacon frame are described in 10.1.4.3.6(Probe response collision avoidance).
* with Probe Response frame when dot11FILSActivated equal to false

**10.1.4.3.6 Probe response collision avoidance**

*Instructions to Editor: Add the new Clause 10.1.4.3.6*

If a STA with dot11FILSActivated equal to true receives two or more Probe Request frames that meet the criteria to respond as specified in 10.1.4.3.5(Criteria to respond to probe request) and the STA has dot11OmitReplicateProbeResponses true, the responding STA may respond by a single Beacon or Probe Response frameaddressed to broadcast address. The Beacon or the broadcasted Probe Response frame shall contain all the information requested by the responded Probe Request frames. More details on selecting the Probe Response or Beacon frame are described below.

STAs with dot11FILSActivated equal to true should respond to one or more Probe Request frames addressed to broadcast address with a Beacon frame if the criteria below are met:

* The responding STA that is about to transmit a probe response receives an acknowledged Probe Response addressed to the requesting STA containing information of the BSS of the responding STA.
* The next TBTT of the responding STA is within dot11BeaconResponseDuration and is no later than any deadline of Probe Response Reception Time, if the Probe Response Reception Time element is present in any Probe Request frame.

**10.1.4.3.7 Sending a response to probe request**

*Instructions to Editor: Add the new Clause 10.1.4.3.7*

*The text which is moved from 10.1.4.3.2 or 802.11-2012 is written as black underlined text. The modifications of the text are shown in red strikeout and new additions are showin in blue underlined text.*

Probe Response frames shall be transmitted as directed frames to the address of the STA that generated the probe request, or to the broadcast address.

Requested Element IDs in the Request element shall be included in the Probe Response frame if the responding STA supports it. In an improperly formed Request element, a STA may ignore the first element requested that is not ordered properly and all subsequent elements requested. In the Probe Response frame, the STA shall return the requested elements in the same order as requested in the Request element.

If dot11RadioMeasurementActivated is true and if the Request element of the Probe Request includes the RCPI element ID, the STA shall include in the Probe Response an RCPI element containing the measured RCPI value of the received Probe Request frame. If no measurement result is available, the RCPI value shall be set to indicate that a measurement is not available.

If the Probe Response Reception Time element is present in the Probe Request frame, the responder with dot11FILSActivated true shall discard the pending untransmitted Probe Response frame to the Probe Request frame when the elapsed time equals to the value of the Max Channel Time field of the Probe Response Reception Time element of the Probe Request frame has been exceeded.

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, if the criteria as defined in 10.1.4.3.5.(Criteria to respond to probe request) are met for the included BSS.The BSSs which information is included may have different primary channel as the responding STA. When information of other BSSs is included, one Neighbor Report element is added to Probe Response or Beacon frame per one reported BSS.