IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| Link Setup Delay Query | | | | |
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|  |  |  |  |  |

Abstract

The submission provides normative to query link setup delays from the AP.

During the 802.11ai discussions many individuals have expressed worries that implementation of the APs and the infrastructure may cause differences to the link setup time.

The link setup delay is one of the key performance criteria to select the AP for link setup. This submission allows the terminal to obtain the AP side link setup time.

The submission solves the CID1150.

**8.4.4 Access Network Query Protocol (ANQP) elements**

*Instructions to the Editor: Add new row after AP List Response*

**Table 8-184 — ANQP-element definitions**

|  |  |  |
| --- | --- | --- |
| ANQP-element name | Info ID | ANQP-element (subclause) |
| Link Setup Delay | 275 | 8.4.4.ai1 |
| Reserved | 276 - 56796 | n/a |

**8.4.4.ai1 Link Setup Delay ANQP-element**

*Instructions to the Editor: Insert new clause 8.4.4.ai1*

The Link Setup Delay ANQP-element provides the signalling delays of the AP for the authentication or link setup signalling. The format of the Link Setup Delay ANQP-element is shown in

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Info ID | Length | Number of Handling Delays | Message Handling Delay 1 | ... | Message Handling Delay N |
| 2 | 2 | 1 | 1 | … | 1 |

**Figure 8-ai1 — Link Setup Delay ANQP-element format**

The Info ID field is equal to the value in Table 8-184 corresponding to the Link Setup Delay ANQP-element.

The Length field is a 2-octet field whose value is set to 1 plus the total length of the Delay of Message fields.

The Number of Handling Delays field indicates the number of Message Handling Delay fields in the Link Setup Delay ANQP-element.

The Message Handling Delay field is an unsigned integer and indicates time in units of 1 ms. The time is rounded down. The time is captured from the epoch when AP receives an authentication protocol frame from the STA to the epoch when the AP is able to initiate TXOP obtaining for the authentication protocol specific response frame to the STA.

The Message Handling Delay field indicates the delay of the first authentication protocol specific response frame. If the authentication protocol has more response frames than the number of the Message Handling Delay fields in the Link Setup Delay ANQP-element, the response delays that are not reported are considered unknown.

Value 254 indicates that the time is 254 ms or larger. Value 255 indicates that the time is not known.

**10.24 WLAN interworking with external networks procedures**

**10.24.3 Interworking procedures: generic advertisement service (GAS)**

*Instructions to the Editor:* Insert the following three new rows to Table 10-10

**Table 10-10 — ANQP usage**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | BSS | | IBSS |
| ANQP-element name | ANQP-element (subclause) | ANQP-element type | AP | Non-AP STA | STA |
| Query AP List | 8.4.4.20 | Q | T, R | T,R | T,R |
| AP List Response | 8.4.4.21 | S | T | R |  |
| Link Setup Delay | 8.4.4.ai1 | S | T | R | T, R |

### 10.24.3.2.ai1 Link Setup Delay

*Instructions to the Editor:* Insert the new subclause 10.24.3.2.ai1

A STA may use Link Setup Delay ANQP-element (see 8.4.4.ai1) to retrieve an AP's link setup delay using the Query List procedure in 10.24.3.2.2.