IEEE P802.11
Wireless LANs

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| Spec Text for Power Efficient eBCS |
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Abstract

This submission proposes SFD text related to power efficient eBCS.

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# TGbc Editor: please modify Clause 9 and Clause 11 of the TGbc Specification Framework Document as contained in 11-20/677r1 as follows:

# 9 Frame Formats

9.6.7 Public Action details

9.6.7.1 Public Action frames

*Insert the following new row into Table 9-363 (Public Action field values) in numeric order:*

**Table 9-363 – Public Action field values**

|  |  |
| --- | --- |
| Public Action field value | Description |
| <ANA> | E-BCS UL |
| <ANA> | eBCS Termination Notice |

9.6.7.x eBCS Service Termination Notice Frame

The eBCS Service Termination Notice frame is transmitted by a STA that is a transmitter of eBCS services to announce the termination of one or more of the eBCS services transmitted by the STA. (Straw Poll #14) The format of the eBCS Termination Notice frame Action field is shown in Figure 9-xxx (eBCS Termination Notice frame Action field format).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Category | Public Action  | eBCS Service Termination Information Set |
| Octets: | 1 | 1 | variable |
|  | Figure 9-xxx--eBCS Termination Notice frame Action Field format |

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

The Public Action field is defined in 9.6.7.1 (Public Action frames).

The eBCS Service Termination Information Set field contains one or more of eBCS Service Termination Info subfield.

The format of the eBCS Service Termination Info subfield is shown in Figure 9-xxx (eBCS Service Termination Info subfield format.)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | eBCS ServiceTermination Info Control | eBCS Service ID  | TitleLength | Title | Time to Termination | Negotiation Method | Negotiation Address Type | NegotiationAddress |
| Octets: | 1 | 1 | 0 or 1 | variable | 2 | 1 | 0 or 1 | variable |
|  | Figure 9-xxx--eBCS Service Termination Info subfield format |

The format of the eBCS Service Termination Info Control subfield is shown in Figure 9-xxx (eBCS Service Termination Info Control subfield format).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 B7 |
|  | Title Presence Indicator | Negotiation Address Presence Indicator  | Association Required | Reserved |
| bits: | 1 | 1 | 1 | 5 |
|  | Figure 9-xxx--eBCS Service Termination Info Control subfield format |

The value 1 in the Title Presence Indicator subfield indicates that a Title Length subfield and a Title subfield are present in the same eBCS Service Termination Info subfield. The value 0 indicates that a Title Length subfield and a Title subfield are not present in the same eBCS Service Termination Info subfield.

The value 1 in the Negotiation Address Presence Indicator subfield indicates that a Negotiation Address Type subfield and a Negotiation Address subfield are present in the same eBCS Service Termination Info subfield. The value 0 indicates that a Negotiation Address Type subfield and a Negotiation Address subfield are not present in the same eBCS Service Termination Info subfield.

The value 1 in the Association Required subfield indicates that association is required to consume the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield. The value 0 indicates that association is not required to consume the eBCS service identified by the eBCS Service ID ID contained in the eBCS Service ID subfield.

The eBCS Service ID subfield is 1 octet in length and indicates the ID of the eBCS service to be terminated.

The Title Length subfield is 1 octet in length indicates the length of the Title subfield in octets.

The Title subfield indicates the Title in UTF-8 format of the eBCS Service identified by the eBCS Service ID contained in the eBCS Service ID subfield.

The Time to Termination subfield is 2 octets in lengths and indicates the number of TBTTs until the eBCS Service identified by the eBCS Service ID contained in the eBCS Service ID subfield is terminated. The value 0 indicates that the eBCS Service identified by the eBCS Service ID in the same eBCS Service ID subfield has no specific termination time.

The Negotiation Method subfield is 1 octet in length and indicates the negotiation method to negotiate extension of the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield. The encoding of the Negotiation Method subfield is defined in Table 9-xxx (Negotiation Method subfield encoding).

|  |
| --- |
| Table 9-xxx—Negotiation Method subfield encoding |
| Negotiation Method subfield value | Meaning |
| 0 | No Negotiation |
| 1 | Negotiation through eBCS Service Request frames |
| 2 | Negotiation through ANQP/GAS eBCS Service Request frames |
| 3 | Negotiation through IP Request |
| 4-7 | Reserved |

The Negotiation Address Type subfield is 1 octet in length and indicates the type of the address included in the Negotiation Address subfield. The encoding of the Negotiation Address Type subfield is defined in Table 9-xxx (Negotiation Address Type subfield encoding).

|  |
| --- |
| Table 9-xxx—Negotiation Address Type subfield encoding |
| Negotiation Address Type value | Meaning |
| 0 | MAC Address |
| 1 | UDP/IPv4 Address |
| 2 | UDP/IPv6 Address |
| 3 | UDP/Hostname |
| 4-7 | Reserved |

The Negotiation Address subfield indicates the address to be used for negotiating for the extension of the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield. The format and the length of the Negotiation Address subfield depends on the value contained in the Negotiation Address Type subfield.

The Negotiation Address subfield contains a MAC address if the Negotiation Address Type is equal to 0.

The format of the Negotiation Address subfield when the Negotiation Address Type is equal to 1 is shown in Figure 9-xxx (Negotiation Address subfield format if the Negotiation Address Type is equal to 1).

|  |  |  |
| --- | --- | --- |
|  | IPv4 Address | Destination UDP Port  |
| octets: | 4 | 2 |
|  | Figure 9-xxx—Negotiation Address subfield format if the Negotiation Address Type is equal to 1 |

The IPv4 Address subfield indicates an IPv4 address used for negotiating the extension of the eBCS service.

The Destination UDP Port subfield indicates the UDP Port associated with the IPv4 address indicated in the IPv4 Address subfield in little endian format.

The format of the Negotiation Address subfield when the Negotiation Address Type is equal to 2 is shown in Figure 9-xxx (Negotiation Address subfield format if the Negotiation Address Type is equal to 2).

|  |  |  |
| --- | --- | --- |
|  | IPv6 Address | Destination UDP Port  |
| octets: | 16 | 2 |
|  | Figure 9-xxx—Negotiation Address subfield format if the Negotiation Address Type is equal to 2 |

The IPv6 Address subfield indicates an IPv6 address used for negotiating the extension of the eBCS service.

The Destination UDP Port subfield indicates the UDP Port associated with the IPv6 address indicated in the IPv6 Address subfield in little endian format.

The format of the Negotiation Address subfield when the Negotiation Address Type is equal to 3 is shown in Figure 9-xxx (Negotiation Address subfield format if the Negotiation Address Type is equal to 3).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Hostname Length | Hostname  | Destination UDP Port |
| octets: | 1 | Variable | 2 |
|  | Figure 9-xxx—Negotiation Address subfield format if the Negotiation Address Type is equal to 3 |

The Hostname Length subfield indicates the length of the Hostname subfield in octets.

The Hostname subfield indicates the host name for negotiating the extension of the eBCS service in UTF-8 format.

The Destination UDP Port subfield indicates the UDP Port associated with the host name indicated in the Hostname subfield in little endian format.

# 11 MLME

### 11.22.6 eBCS procedures

11.22.6.x eBCS Service Negotiation Procedure for Associated STAs

11.22.6.x eBCS Service Termination Notice Procedure

The eBCS Service Termination Notice Procedure allows a STA that is a broadcaster of eBCS services to indicate that one or more eBCS services that it is broadcasting is to be terminated.

An eBCS STA that is the broadcaster of one or more eBCS services shall start to transmit eBCS Service Termination Notice frames if one or more eBCS Service that it is transmitting will terminate within an interval that is equal to or shorter than dot11eBCSTerminationNoticeTime, if the STA is not periodically transmitting a schedule for the eBCS services that are to be terminated. If the eBCS STA starts to transmit eBCS Service Termination Notice frames, the STA shall transmit the eBCS Service Termination Notice frames with a period that is larger than dot11eBCSTerminationNoticeMinimumInterval and smaller than dot11eBCSTerminationNoticeMaximumInterval.

The eBCS STA transmitting an eBCS Service Termination Notice frame indicates in the Time to Termination subfield in a eBCS Service Termination Info subfield the number of TBTTs before the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield in the same eBCS Service Termination Info subfield terminates.

The eBCS STA transmitting an eBCS Service Termination Notice frame shall indicate in the Negotiation Method subfield in a eBCS Service Termination Info subfield the negotiation method that a STA should use to negotiate for the extension of the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield in the same eBCS Service Termination Info subfield.

The eBCS STA transmitting an eBCS Service Termination Notice frame may indicate in the Negotiation Address subfield in a eBCS Service Termination Info subfield the address associated with the negotiation method indicated in the Negotiation Method subfield in the same eBCS Service Termination Info subfield that a STA should use to negotiate for the extension of the eBCS service identified by the eBCS Service ID contained in the eBCS Service ID subfield in the same eBCS Service Termination Info subfield.

After transmitting a eBCS Service Termination Notice frame, a eBCS STA shall transmit an eBCS Service Termination Notice frame with an updated value in the Time to Termination subfield in an eBCS Service Termination Info subfield if the eBCS Service identified by the eBCS Service ID in the eBCS Service ID subfield in the same eBCS Service Termination Info subfield subfield has been negotiated to another duration or with a new Time to Termination value. If the negotiated duration for the eBCS service is longer than the maximum Time to Termination value, the transmitting STA shall set the Time to Termination to 0.

An eBCS STA that receives an eBCS Service Termination Notice frame may negotiate for the extension of an eBCS service if the eBCS service indicated in one of the eBCS Service Termination Info subfield terminates earlier than desired. The eBCS STA may negotiate the extension of the eBCS service using the negotiation method as indicated in the Negotiation Method in the eBCS Service Termination Info subfield and follow the procedures defined in 11.22.6.x (eBCS Service Negotiation Procedure for Associated STAs) and 11.23.3.3 (ANQP Procedures).

An eBCS STA shall skip the transmission of any eBCS Service Request frame or a frame containing an Enhanced Broadcast Request ANQP-element requesting for an eBCS service if the STA receives an eBCS Service Termination Notice frame with an acceptable Time to Termination value contained in the eBCS Service Termination Info subfield containing the eBCS Service ID of the eBCS service.