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 Termination Notice Frame

The eBCS Termination Notice frame is transmitted by a STA that is a transmitter of eBCSs to announce the termination of one or more of the eBCSs 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 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 Termination Information Set field contains one or more of eBCS Termination Info subfield.

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | eBCSTermination Info Control | eBCS ID  | TitleLength | Title | Time To Termination | Request Method | eBCS Address Type | eBCSAddress |
| Octets: | 1 | 1 | 0 or 1 | variable | 2 | 1 | 0 or 1 | variable |
|  | Figure 9-xxx--eBCS Termination Info subfield format |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 B7 |
|  | Title Presence Indicator | eBCS Address Presence Indicator  | Association Required | Reserved |
| bits: | 1 | 1 | 1 | 5 |
|  | Figure 9-xxx--eBCS 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 Termination Info subfield. The value 0 indicates that a Title Length subfield and a Title subfield are not present in the same eBCS Termination Info subfield.

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

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

The eBCS ID subfield is 1 octet in length and indicates the ID of the eBCS 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 identified by the eBCS ID contained in the eBCS ID subfield.

The Time To Termination subfield is 2 octets in lengths and indicates the number of TBTTs until the eBCS identified by the eBCS ID contained in the eBCS ID subfield is terminated. The value 0 indicates that the eBCS identified by the eBCBS Service ID in the eBCS ID subfield will be terminated at the following TBTT. The value 65535 indicates that the eBCS identified by the eBCS ID in the eBCS ID subfield has no specific termination time.

Note – The Time To Termination subfield indicates the expected termination time for the transmitter STA of the eBCS and does not indicate the expected termination time of the content associated with the eBCS.

The Requeest Method subfield is 1 octet in length and indicates the request method to request extension of the eBCS identified by the eBCS ID contained in the eBCS ID subfield. The encoding of the Request Method subfield is defined in Table 9-xxx (Request Method subfield encoding).

|  |  |
| --- | --- |
| Table 9-xxx—Request Method subfield encoding |  |
| Negotiation Method subfield value | Meaning | Notes |
| 0 | No Negotiation |  |
| 1 | Request through eBCS Request frames | eBCS request by STAs that are associated with the broadcaster |
| 2 | Request through ANQP/GAS eBCS Request frames | eBCS request by STAs that are not associated with the broadcaster |
| 3 | Request through IP Request | Out of band IP Request |
| 4-255 | Reserved |  |

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

|  |
| --- |
| Table 9-xxx—eBCS Address Type subfield encoding |
| eBCS Address Type value | Meaning |
| 0 | MAC Address |
| 1 | UDP/IPv4 Address |
| 2 | UDP/IPv6 Address |
| 3 | UDP/Hostname |
| 4-255 | Reserved |

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

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

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

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

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

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

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

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

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

|  |  |  |  |
| --- | --- | --- | --- |
|  | Hostname Length | Hostname  | Destination UDP Port |
| octets: | 1 | Variable | 2 |
|  | Figure 9-xxx—eBCS Address subfield format if the eBCS 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 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 Negotiation Procedure for Associated STAs

The transmitter of an eBCS determines whether it will continue broadcasting the requested eBCS service.

11.22.6.x eBCS Termination Notice Procedure

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

An eBCS STA that is the broadcaster of one or more eBCSs shall start to transmit eBCS Termination Notice frames if one or more eBCS 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 eBCSs that are to be terminated. If the eBCS STA starts to transmit eBCS Termination Notice frames, the STA shall transmit the eBCS Termination Notice frames with a period that is larger than dot11eBCSTerminationNoticeMinimumInterval and smaller than dot11eBCSTerminationNoticeMaximumInterval.

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

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

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

After transmitting a eBCS Termination Notice frame, a eBCS STA shall transmit an eBCS Termination Notice frame with an updated value in the Time To Termination subfield in an eBCS Termination Info subfield if the eBCS identified by the eBCS ID in the eBCS ID subfield in the same eBCS 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 is longer than the maximum Time To Termination value, the transmitting STA shall set the Time To Termination subfield to 65535.

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

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