IEEE P802.11
Wireless LANs

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| --- |
| Spec Text for eBCS Advertisement Frame |
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Abstract

This document describes a draft text proposal for eBCS Advertisement frames.

**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 Advertisement |

9.6.7.x eBCS Advertisement Frame

The eBCS Advertisement frame is transmitted by a STA to advertise the presence of one or more of the eBCS transmitted by the STA. The format of the eBCS Advertisement frame Action field is shown in Figure <ANA>.1 (eBCS Advertisement frame Action Field format).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Category | Public Action  | Number of eBCS Descriptions | eBCS Description |
| Octets: | 1 | 1 | 1 | variable |

**Figure <ANA>.1 -- eBCS Advertisement 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 Number of eBCS Descriptions fields, is used to indicate the number of eBCS Description fields that the frame includes, each eBCS Description field describes a single eBCS.

The eBCS Description field contains the description of a service available for broadcasting. The field contains 11 fields, the eBCS Info Control, the eBCS ID, Title Length, Title, Time to Termination, Negotiation Method, Negotiation Address Type, Next Schedule, URL Length and URL fields. See Figure <ANA>.2 (eBCS Description field).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | eBCS Info Control | eBCS ID | Title Length | Title | Time to Termination | Negotiation Method |
| Octets | 1 | variable | 0 or 1 | variable | 2 | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | eBCS AddressType | eBCS Address | Next Schedule | URL Length | URL |
| Octets | 0 or 1 | variable | 2 | 1 | variable |

Figure <ANA>.2 -- eBCS Description field

The eBCS Info Control field is 1 byte in length and contains indications whether certain broadcast information is contained in the eBCS Description field. The format of the eBCS Info Control field is shown in Figure <ANA>.3.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Title Presence Indicator | Negotiation Address Presence Indicator | Association Required | Next Schedule Presence Indicator | URL Presence Indicator | Reserved |
| Bits | 1 | 1 | 1 | 1 | 1 | 3 |

Figure <ANA>.3 -- eBCS Info Control field

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 Description field.

The value 1 in the Negotiation Address Presence Indicator subfield indicates that an eBCS Address Type subfield and an eBCS Address subfield are present in the same eBCS Description field. The value 0 indicates that an eBCS Address Type subfield and an eBCS Address subfield are not present in the same eBCS Description field.

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 contained in the eBCS ID subfield.

The value of 1 in the Next Schedule Presence Indicator subfield indicates that a Next Schedule subfield is present in the same eBCS Description field. The value of 0 indicates that a Next Schedule subfield is not present in the same eBCS Description field.

The value of 1 in the URL Presence Indicator subfield indicates that an URL Length and an URL fields are present in the same eBCS Description field. The value of 0 indicates that an URL Length and an URL fields are not present in the same eBCS Description field.

The eBCS ID subfield is 1 octet in length and indicates the ID of the eBCS advertised.

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 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 eBCBS Service ID in the eBCS Service ID subfield will be terminated at the following TBTT. The value 65535 indicates that the eBCS Service identified by the eBCS Service ID in the eBCS Service ID subfield has no specific termination time.

The Negotiation Method subfield is 1 octet in length and indicates the negotiation method for starting/stoping or extending the eBCS identified by the eBCS ID contained in the eBCS 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 | Notes |
| 0 | No Negotiation |  |
| 1 | Negotiation through eBCS Request frames | eBCS request by STAs that are associated with the broadcaster |
| 2 | Negotiation through ANQP/GAS eBCS Request frames | eBCS request by STAs that are not associated with the broadcaster |
| 3 | Negotiation through IP Request | Out of band IP Request |
| 4-7 | 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 |
| Negotiation Address Type value | Meaning |
| 0 | MAC Address |
| 1 | UDP/IPv4 Address |
| 2 | UDP/IPv6 Address |
| 3 | UDP/Hostname |
| 4-7 | Reserved |

The eBCS Address subfield indicates the address to be used for negotiating the starting/stopping or 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 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.

The Next Schedule subfield is 2 octets in length and indicates the number of TBTTs until the eBCS identified by the eBCS ID contained in the eBCS ID subfield is transmitted again. The value 0 indicates that the eBCS service identified by the eBCBS Service ID in the eBCS Service ID subfield will be terminated at the following TBTT. The value 65535 indicates that the eBCS Service identified by the eBCS Service ID in the eBCS Service ID subfield has no specific termination time.

The URL Length subfield is 1 octet in length and is set to 1 plus the number of octets in the URL subfield.

The URL subfield is a variable length field (as indicated in the URL Length subfield) that indicates the URL at which information relevant to the advertised service, might be retrieved. The URL field is formatted in accordance with IETF RFC 3986.

# 11 MLME

### 11.55 eBCS procedures

11.55.6.x eBCS Service Negotiation Procedure for Associated STAs

11.55.6.x eBCS Advertisement Procedure

The eBCS Advertisement frame allows a STA to indicate the availability of eBCS. A STA able to broadcast one or more eBCSs shall start to transmit eBCS Advertisement frames to indicate the availability of these eBCSs according to dot11eBCSAdvertisementPeriod.

The eBCS STA transmitting an eBCS Advertisement frame will include an eBCS Description field per eBCS to be advertised. Each eBCS will be identified by an eBCS ID. The eBCS Description may include fields used to provide: i) information on scheduling (Time to Termination and Next Schedule subfields) of the service, ii) negotiation mechanism to request the starting or extension (Negotiation Method, eBCS Address Type and eBCS Address subfield) of the service, and iii) information to be consumed by the end-user application (Title and URL subfields).

The eBCS STA transmitting an eBCS Advertisement frame indicates in the Time to Termination subfield in an eBCS Description field, 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 Description field terminates.

The eBCS STA transmitting an eBCS Advertisement frame indicates in the Next Schedule subfield in an eBCS Description field, 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 Description field is started again.

The eBCS STA transmitting an eBCS Advertisement frame shall indicate in the Negotiation Method subfield in an eBCS Description field the negotiation method that a STA should use to negotiate for the extension or starting of the eBCS identified by the eBCS ID contained in the eBCS ID subfield in the same eBCS Description field.

The eBCS STA transmitting an eBCS Advertisement frame may indicate in the eBCS Address subfield in a eBCS Description field the address associated with the negotiation method indicated in the Negotiation Method subfield in the same eBCS Description field that a STA should use to request the extension or the starting of the eBCS identified by the eBCS ID contained in the eBCS ID subfield in the same eBCS Description field.

The eBCS STA transmitting an eBCS Advertisement frame may indicate in the Title subfield in an eBCS Description field a human readable description of the eBCS identified by the eBCS ID contained in the eBCS ID subfield in the same eBCS Description field.

The eBCS STA transmitting an eBCS Advertisement frame may indicate in the URL subfield in an eBCS Description field an URL where the eBCS consumer can find more information about the service identified by the eBCS ID contained in the eBCS ID subfield in the same eBCS Description field, including information on registration or security aspects of it.

An eBCS station receiving an eBCS Advertisement frame may negotiate the broadcasting of any of the services advertised as indicated in the Negotiation Method in the eBCS Description field 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 willing to receive a certain eBCS, may 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 Advertisement frame with an acceptable Time to Termination value contained in the eBCS Description field containing the eBCS Service ID of the eBCS service.

An eBCS STA may delay the negotiation procedure through 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 Advertisement frame with a Next Schedule subfield indicating the eBCS, as identified by the eBCS ID subfield in the eBCS Description field, will be transmitted in the future.