Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>		
Title	**ARQ support for Primary Management connection**		
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Re:	IEEE 802.16Rev2/D2, Letter Ballot 26a Technical Comments		
Abstract	Proposal to provide support for ARQ for the primary management connection		
Purpose	Adopt proposed text changes for IEEE 802.16Rev2/D2 revision		
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ARQ support for Primary Management connection

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Explanation

Primary management connections support fragmentation. The large primary management connection messages will especially tend to be fragmented. Only errored fragments need to be retransmitted. Retransmitting the whole message is a waste of resources.

ARQ support for primary connections is proposed.

Proposed Text Changes

- ***Modify sections 6.3.2.3.23 and 6.3.2.3.23 as follows:***

6.3.2.3.23 SBC-REQ (SS basic capability request) message

[...]

The following parameters may be included:

Capabilities for construction and transmission of MAC PDUs (see 11.8.2)
Security Negotiation Parameters (see 11.8.4)
Service Information Query (see 11.8.9)
Visited NSP ID (see 11.8.11)
Auth Type for EAP (see 11.8.12)
MIH Capability Supported (see 11.8.10)
Extended capability (see 11.8.15)
ARQ support (11.8.x)
ARQ parameters (11.8.x)

[...]

6.3.2.3.24 SBC-RSP (SS basic capability response) message

[…]

The following parameters shall be included in the SBC-RSP if found in the SBC-REQ:

Physical Parameters Supported (see 11.8.3)
Bandwidth Allocation Support (see 11.8.1)

The BS response to the subset of SS capabilities present in the SBC-REQ message. The BS responds to the SS capabilities to indicate whether they may be used. If the BS does not recognize an SS capability, it may return this as “off” in the SBC-RSP. Only capabilities set to “on” in the SBC-REQ may be set “on” in the SBC-RSP, as this is the handshake indicating that they have been successfully negotiated.

Security Negotiation Parameters (see 11.8.4)
HMAC/CMAC Tuple

Either HMAC Tuple or CMAC Tuple shall be the final attribute in the message’s TLV attribute list. This attribute should be included in the message during HO reentry (see 11.1.2).

ARQ support (11.8.x)
ARQ parameters (11.8.x)

[…]

- ***Modify section 11.8 as follows:***

11.8 SBC-REQ/RSP management message encodings

[…]

11.8.x ARQ Support

This field indicates the availability of SS support for ARQ.

Type	Length	Value	Scope
10	1	0: No ARQ support capability 1: ARQ supported 2–255: Reserved	SBC-REQ, SBC-RSP

[…]

11.8.x ARQ Parameters

This field provides the fragmentation and ARQ parameters for the Primary Management connection. For purposes of ARQ parameter negotiation, the appearance of the field in the SBC-REQ message is equivalent to its appearance in the DSA-REQ message. The appearance of the field in the SBC-RSP message is equivalent to its appearance in the DSA-RSP message.

This field is a compound TLV that may take on any of the ARQ parameters described in 11.13.18. The subtype values defined for use within the 145/146 service flow definitions are applicable for this TLV as well.

Type	Length	Value	Scope
1	*variable*	Compound	SBC-REQ SBC-RSP

[…]

Modify section 11.7.8 as follows:

11.7.8 SS capabilities encodings

~~**11.7.8.1 ARQ Support**~~

~~This field indicates the availability of SS support for ARQ.~~

~~Type~~	~~Length~~	~~Value~~	~~Scope~~
~~10~~	~~1~~	~~0: No ARQ support capability~~ ~~1: ARQ supported~~ ~~2–255: Reserved~~	~~REG-REQ, REG-RSP~~

- ***Add SBC-REQ and SBC-RSP messages to the scope of the ARQ Enable TLV in 11.13.18.1 as follows:***

11.13.18.1 ARQ Enable TLV

This TLV indicates whether ARQ use is requested for the connection that is being setup. A value of 0 indicates that ARQ is not requested and a value of 1 indicates that ARQ is requested. The DSA-REQ shall contain the request to use ARQ or not. The DSA-RSP message shall contain the acceptance or rejection of the request. ARQ shall be enabled for this connection only if both sides report this TLV to be nonzero. The SS shall either reject the connection or accept the connection with ARQ.

Type	Length	Value	Scope
[145/146].181.18	1	0 = ARQ Not Requested/Accepted 1 = ARQ Requested/Accepted	DSA-REQ, DSA-RSP REG-REQ, REG-RSP SBC-REQ and SBC-RSP

When included in a SBC-REQ/RSP message, the TLV applies to the Primary Management connection.

- ***In the same way as above, add SBC-REQ and SBC-RSP messages to the scope of the ARQ parameters in the following sections:***

11.13.18.2 ARQ_WINDOW_SIZE TLV
11.13.18.3 ARQ_RETRY_TIMEOUT TLV
11.13.18.4 ARQ_BLOCK_LIFETIME TLV
11.13.18.5 ARQ_SYNC_LOSS_TIMEOUT TLV
11.13.18.6 ARQ_DELIVER_IN_ORDER TLV
11.13.18.7 ARQ_RX_PURGE_TIMEOUT TLV
11.13.18.8 ARQ_BLOCK_SIZE TLV
11.13.18.9 RECEIVER_ARQ_ACK_PROCESSING_TIME TLV