Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**SS De-Registration**
Date Submitted	**2004-03-13**
Source(s)	Phillip Barber Broadband Mobile Technologies, Inc. 8302 Sebastian Inlet Frisco, Tx 75035 Voice: +1 (972) 365-6314 Fax: +1 (925) 396-0269 [mailto:pbarber@BroadbandMobileTech.com] Ken Stanwood Ensemble Communications 9890 Towne Centre Dr. San Diego, CA 92121
Re:	PIEEE 802.16-REVd Sponsor ballot
Abstract	SS De-Registration
Purpose	Provide for a mechanism for SS to De-Register from current attachment to a BS
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SS De-Registration

Phillip Barber
Broadband Mobile Technologies
& Ken Stanwood
Ensemble Communications

Problem:
There is currently no mechanism within 16d or 16e for SS to de-register from a BS. In nomadic implementations, it is useful to promote a systematic method for SS to de-register from its current attachment point BS. Structured SS de-registration allows a BS to delete SS state machines and free up resources well ahead of termination of services because of link-loss discovery through required periodic ranging. Given that structured de-registration is even more necessary for mobile systems (qualifying between dropped-service mobile re-entry and actual intended de-registration is one example), it is prudent to support a specific method for conducting SS de-registration.

BS already have three mechanisms to force SS de-registration/re-registration: 1) the **6.4.2.3.22 Reset Command (RES-CMD) message**; 2) the **6.4.2.3.26 De/Re-register Command (DREG-CMD) message**; and 3) by the application of a 'permanent' Key failure during PKM key renewal, and since BS can trigger a key renewal at any time, a BS could terminate the SS attachment through this mechanism at will. So BS enjoy a plethora of mechanisms for initiating SS de-registration, even controlling on SS re-registration timing, while SS may only accomplish de-registration through the inelegant mechanism of service termination without notice.

Remedy:
In order to support nomadic service mode in 16d, and mobile modes in 16e, it is useful to support an SS de-registration MAC management message.

Remedy 1:
*[Add new management message to **6.4.2.3 MAC Management Message**, page 60, line 33; editor will make appropriate allocation of numbering for subsection and Management Message Type, set appropriate Table number nn, and adjust referenced Table 14 to include new Management Message Type reference]:*

6.4.2.3.?? SS De-registration Request (DREG-REQ) message

An SS may send a DREG-REQ message to a BS in order to request SS de-registration from Normal Operation service from the BS.

The MAC Management Message Type for this message is given in Table 14. The format of the message is shown in Table *nn*.

Table *nn*—De-registration Request (DREG-REQ) message format

Syntax	Size	Notes
DREG-REQ_Message_Format() {		
Management Message Type=??	8 bits	
De-registration_Request_Code	8 bits	0x00 = SS de-registration request from BS and network

		0x01-0xFF = reserved
TLV encoded parameters	Variable	
}		

An SS shall generate SS DREG-REQs including the following parameters:

De-registration Request Code

Request code identifying the type of de-registration request:

0x00 = SS de-registration request for de-registration from BS

0x01 – 0xFF = reserved

The DREG-REQ shall include the following parameters encoded as TLV tuples:

HMAC Tuple (see 11.1.2)

The HMAC Tuple shall be the last attribute in the message.'

Remedy 2:
*[In **6.4.2.3.26 De/Re-register Command (DREG-CMD) message**, page 92, lines 48-50]:*
Change language for DREG-CMD operation mechanics to allow both BS DREG-CMD unsolicited transmission and DREG-CMD in response to SS DREG-REQ.

'The DREG-CMD message shall be transmitted by the BS on an SS's Basic CID to force the SS to change its access state. The BS may transmit the DREG-CMD unsolicited or in response to an SS DREG-REQ message. Upon receiving a DREG-CMD, the SS shall take the action indicated by the action code.'

Remedy 3:
*[Modify **6.4.2.3.26 De/Re-register Command (DREG-CMD) message**, **Table 55—Action Codes and actions**, page 93, lines 12-28]:*
Create specific acknowledgement code for DREG-REQ in Table 55.

Table 55—Action Codes and actions

Action Code	Action
0x00	SS shall leave the current channel and attempt to access another channel
0x01	SS shall listen to the current channel but shall not transmit until an RES-CMD message or DREG_CMD with Action Code 0x00 is received.
0x02	SS shall listen to the current channel but only transmit on the Basic, Primary Management, and Secondary Management Connections.
0x03	SS shall return to normal operation and may transmit on any of its active connections.
0x04	SS shall terminate current Normal Operations with the BS; the BS shall transmit this action code only in response to any SS DREG-REQ
~~0x04~~ 0x05 – 0xFF	Reserved