Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	The way for forcing all SSs to be reset
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Re:	IEEE P802.16-2004/Cor1/D3
Abstract	This contribution proposes the scheme for forcing all SSs to be reset at once
Purpose	Discuss and adopt this contribution
Notice	
Release	
Patent Policy and Procedures	

The way for forcing all SSs to be reset

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1 Introduction

1.1 Problem Statement

When BS restarts due to some critical problem, SSs should be notified that BS restarts and SS has to perform the Network Entry for the information consistency between SSs and BS. After BS restarts, it doesn't know any information about SSs. Unfortunately, SSs also still try to send or receive a data because they don't know when BS restarted. Therefore, the restart of BS requires the Network Entry of all SSs for information synchronization between SSs and BS.

In current IEEE802.16d and 16e, there is a way for BS to force SS to perform the Network Entry. That is a RES-CMD message. But, this message is sent to SS by BS in unicast manner. Therefore, if BS wants all SSs to perform the Network Entry for clearing the some problem, BS has to send RES-CMD message to each SSS in ‘n’ times as the number of SSs which belong to BS.

We propose to introduce restart count as the number of times in which BS restarts in order make SSs recognize the BS restart.

1.2 Proposed Solution

We propose the restart count TLV encoding which is included in DCD message.

- Restart Count sent by BS :
  The restart count means the number of times in which BS restarts. This restart count is incremented by one whenever BS restarts. The restart count as TLV encoding is included in DCD message
- Restart Count saved in SS :
  The restart count, which BS sent via DCD message, is saved in SS in order to recognize whether BS restarts or not. Whenever SS receives DCD message from BS, it compare the restart count in DCD message with the old one saved in it. As a result, if SS detects the restart count in DCD message is different from the old one, SS decides to perform the Network Entry. Therefore, SS updates the old restart count with the restart count in DCD message and performs the Network Entry

BS may intentionally increment the restart count to be included in DCD message for the purpose of forcing all SSs to perform the Network Entry due to BS’s some problem.
Because the restart count is periodically broadcasted, the restart count scheme is available regardless of SS’s state (i.e. normal state, sleep, idle mode)

Figure 1 shows the operation by BS Restart Count TLV encoding in DCD message

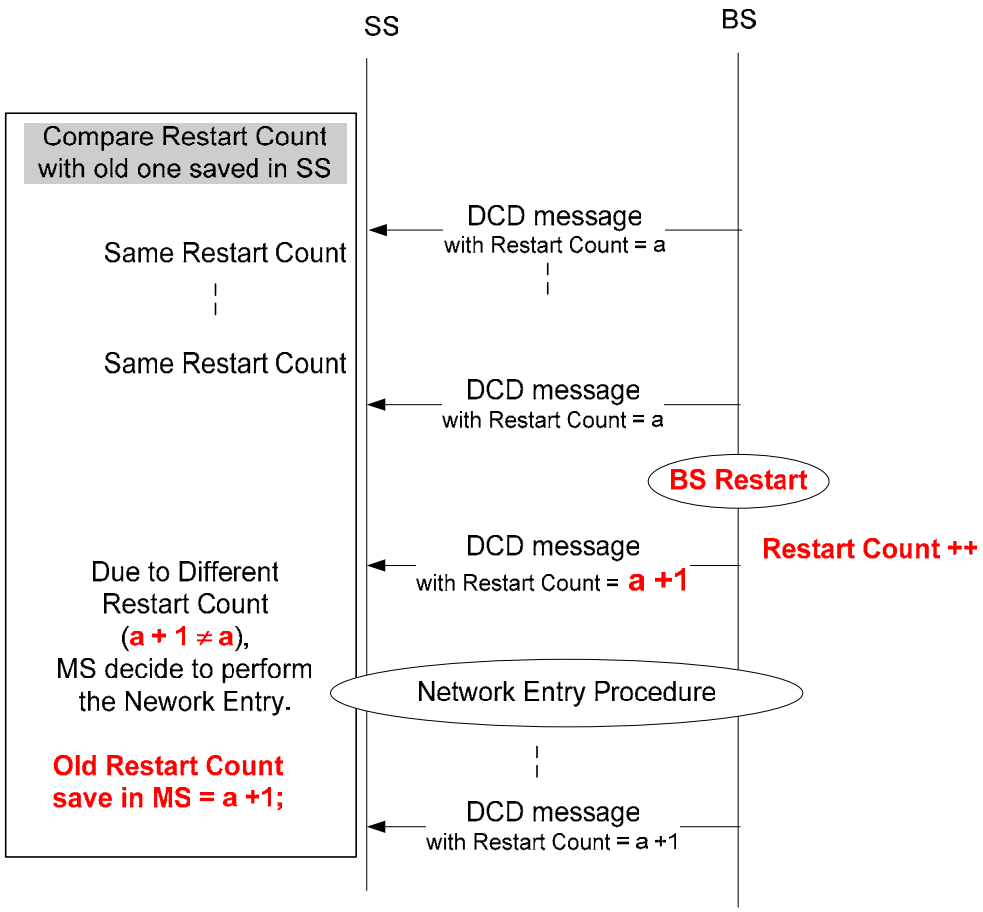

Figure 1 – The Operation by Restart Count TLV encoding in DCD message

2 Proposed Text Change

[Add the following text to Table 358 in Line 41, Page 185 of IEEE P802.16-2004/Cor1/D3 document]

Table 358— DCD channel encoding — WirelessMAN-OFDMA

Name	Type (1 byte)	Length	Value (Variable-length)	PHY scope
..	..	..	..	..
Maximum retransmission	20	1	Maximum number of retransmission in DL HARQ. Default value shall be 4 retransmissions.	OFDMA
BS Restart Count	xx	1	The number of times in which BS restarts (see 6.3.9.11)	All

[Insert the section 6.3.9.9 Forcing SSs to perform Network Entry in Line 41, Page 48 of P802.16-2004/Cor1/D3 document as follows]

6.3.9.9 Forcing SSs to perform Network Entry

BS shall maintain the count for the number of system reset due to a critical error or an operator's intention. This restart count is incremented by one whenever BS restarts. The restart count as TLV encoding is included in DCD message (refer to table 358). BS may intentionally increment the restart count to be included in DCD message for the purpose of forcing all SSs to perform the Network Entry.

After BS restarts, BS shall inform SSs to re-enter network through the incremented restart count in DCD message. The restart count, which BS sent via DCD message, is saved in SS in order to recognize whether BS restarts or not.
Restart count is updated by every BS Restart Count TLV encoding in DCD message sent by BS. In other words, whenever SS receives DCD message, it shall compare the restart count in DCD message with the old one saved in it. If SS detects the restart count in DCD message different from old one save in SS, it shall perform Network Entry.