

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>Backbone procedures for non-contention based association</b>	
Date Submitted	<b>2005-03-11</b>	
Source(s)	Beomjoon Kim, Kiseon Ryu, Aeran Youn LG Electronic Inc. LG R&D Complex, 533 Hogye-1dong, Dongan-gu, Anyang, 431-749, Korea	Voice: +82-31-450-7188 Fax: +82-31-450-7912 <a href="mailto:beom@lge.com">[mailto:beom@lge.com]</a>
Re:	Call for Comment on P802.16g Baseline Document	
Abstract	This contribution proposes two backbone messages for non-contention based association with corresponding usage examples.	
Purpose	To be discussed in Legacy Messages Ad-Hoc, IEEE802.16g	
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.	
Patent Policy and Procedures	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures < <a href="http://ieee802.org/16/ipr/patents/policy.html">http://ieee802.org/16/ipr/patents/policy.html</a> >, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair < <a href="mailto:chair@wirelessman.org">mailto:chair@wirelessman.org</a> > as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site < <a href="http://ieee802.org/16/ipr/patents/notices">http://ieee802.org/16/ipr/patents/notices</a> >.	

# Backbone procedures for non-contention based association

*Beomjoon Kim, Kiseon Ryu, Aeran Youn  
LG Electronics Inc.*

## 1. Introduction

Non-contention based association procedures are described in 6.3.20.1.2 and 6.3.20.1.3, IEEE802.16e/D6 document. The backbone procedures also need to be defined for its proper operations between Serving BS and Recommended BS for association. In this contribution, we define two new backbone messages for non-contention based association procedures, which are Association Notification (ASC-notification) message and Association Confirm (ASC-confirm) message.

If delay occurs during backbone communication between BSs, “successful rendezvous ratio” of non-contention based association may be decreased significantly. Therefore, we introduce a simple method to compensate the delay incurred over backbone communications using “Timestamp” field in Global Message Header which may be included in each backbone message. (See Fig. 1 below.)

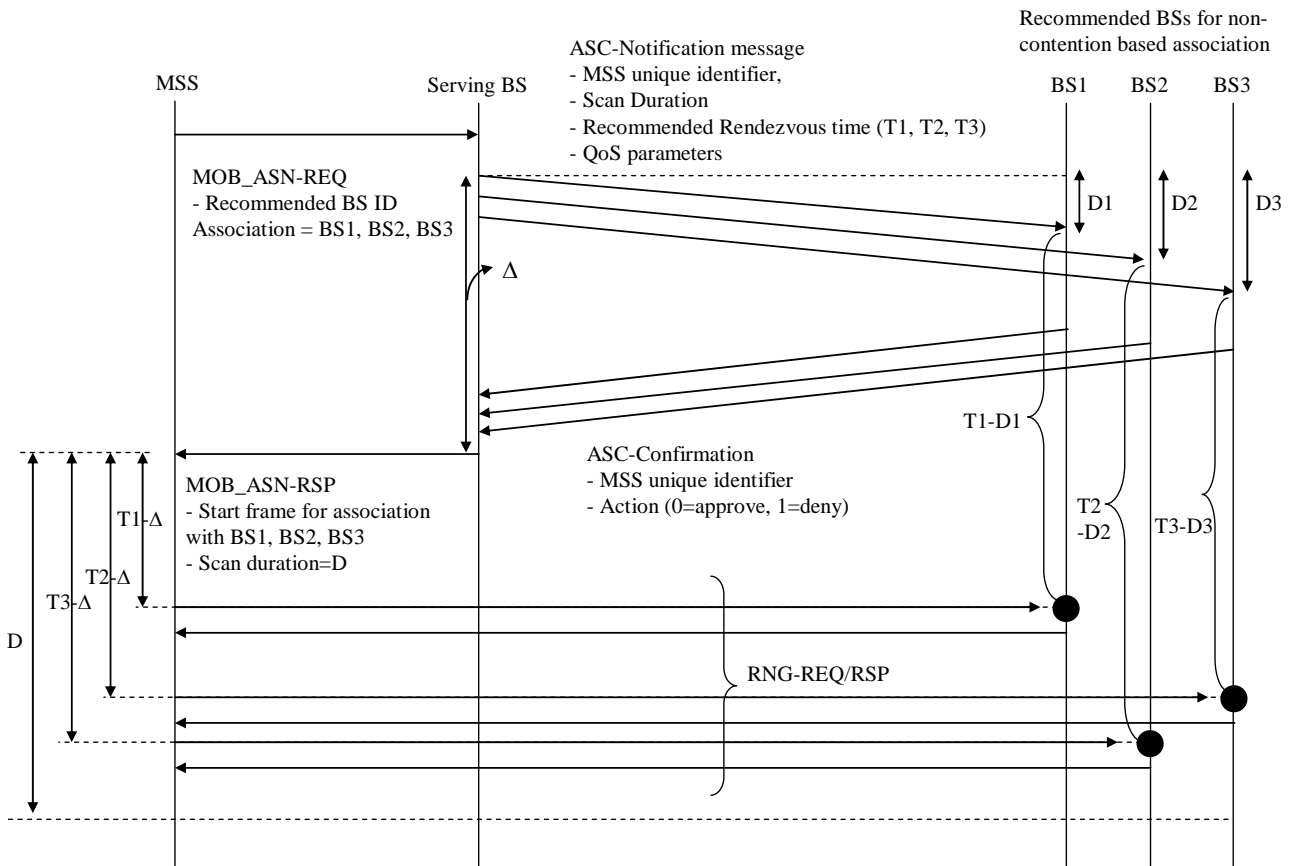


Fig. 1 An example of non-contention based Association

## 2. Proposed Text Change

[Add new subsection 14.5.9.5.1 Non-contention based association, line 52, pp. 13, IEEE802.16g-04/03r1:]

### 14.5.9.5.1 Non-contention based Association

The section describes backbone procedures for non-contention based Association specified in 6.3.20.1.2, which are performed using two Backbone messages; Association Notification (ASC-notification) message defined in 14.5.10.xx and Association Confirm (ASC-confirm) message in 14.5.10.yy.

Upon receiving MOB\_SCN-REQ message with Scan type=1, 'Association', BS shall transmit ASC-notification message to each BS identified as Recommended BS for Association in MOB\_SCN-REQ message. For each BS, a BS transmitting ASC-notification message shall determine an offset indicating that the BS receiving this message is requested to provide non-contention based ranging opportunity after the offset for the MSS specified in the message.

A BS receiving ASC-notification message shall transmit ASC-confirm message indicating whether it approves the requested uplink resource allocation for non-contention based ranging opportunity by setting Action Code=0, 'approve', or deny by setting Action Code=1, 'deny'. If BS approves the request, it shall provide the specified MSS with non-contention based ranging opportunity at the time indicated by Frame offset in ASC-notification message. A BS may evaluate Frame offset in ASC-notification message by compensating the delay incurred during ASC-notification message is being transmitted by referring to the Time Stamp value in Global Message Header defined in 14.5.10.xx.

After receiving ASC-confirm message from each BS, BS shall include identifier and rendezvous time in MOB\_SCN-RSP message only for BSs which approve the requested uplink resource allocation for non-contention based ranging opportunity. When BS determines rendezvous time, it may compensate the delay incurred by backbone procedures using Time Stamp value in Global Message Header defined in 14.5.10.xx.

[Add new subsection under 14.5.10.xx Global Message Header, line 11, pp. 14, IEEE802.16g-04/03r1:]

### 14.5.10.xx Global Message Header

<u>Type</u>	<u>Size</u>	<u>Notes</u>
<u>Message Type</u>	<u>8 bits</u>	
<u>Sender ID</u>	<u>48 bits</u>	<u>Unique identifier of a sender</u>
<u>Target ID</u>	<u>48 bits</u>	<u>Unique identifier of a receiver</u>
<u>Time Stamp</u>	<u>32 bits</u>	<u>Number of millisecond since midnight GMT (set to 0xffffffff to ignore)</u>
<u>Num Records</u>	<u>16 bits</u>	

[Add new subsection under 14.5.10.xx Association Notification (ASC-notification) message, line 11, pp. 14, IEEE802.16g-04/03r1:]

### 14.5.10.xx Association Notification (ASC-notification) message

If BS receives a MOB\_SCN-REQ message with Scan type=1, 'Association', it shall generate Association Notification (ASC-notification) message in the format shown in Table xxx in order to request a uplink resource allocation for non-contention based association during Scan duration.

Table xxx – Association Notification (ASC-notification) message format

<u>Field</u>	<u>Size</u>	<u>Notes</u>
<u>Global Message Header</u>	<u>152 bits</u>	<u>Refer to 14.5.10.nn Global Message Header</u>
<u>For (j=0; j&lt;Num_Records; j++) {</u>		
<u>MSS unique identifier</u>	<u>48 bits</u>	<u>48-bit unique identifier of MSS transmitting MOB_SCN-REQ message with Scan type=1, 'Association'.</u>
<u>Scan duration</u>	<u>8 bits</u>	<u>Duration (in unit of frame) of the requested scanning period in MOB_SCN-REQ message.</u>
<u>Frame offset</u>	<u>8 bits</u>	<u>Frame offset for recommended rendezvous time in unit of millisecond.</u>
<u>Num_SFID_Records</u>	<u>8 bits</u>	
<u>For (i=1; i&lt;Num_SFID_Records; i++) {</u>		
<u>SFID</u>	<u>32 bits</u>	
<u>Num_QoS_Records</u>	<u>8 bits</u>	
<u>For (i=1; i&lt;Num_QoS_Records; i++) {</u>		
<u>TLV encoded information</u>	<u>variable</u>	<u>11.13 Service flow management encodings.</u>
<u>}</u>		
<u>}</u>		
<u>Security field</u>	<u>TBD</u>	<u>A means to authenticate this message</u>
<u>}</u>		

The following parameters shall be included in the ASC-notification message.

MSS unique identifier

48-bit unique identifier of MSS transmitting MOB\_SCN-REQ message with Scan type=1, 'Association'.

Scan duration

Duration (in units of frames) of the requested scanning period in MOB\_SCN-REQ message.

Frame offset

Time offset (in unit of frame) that Serving BS requests Target BS to provide non-contention based ranging opportunity for the MSS. The offset shall be calculated from the time when serving BS transmits this message, and may be evaluated by referring to Timestamp field in this message.

[Add new subsection under 14.5.10.yy Association Confirm (ASC-confirm) message, line 11, pp. 14, IEEE802.16g-04/03r1:]

Association Confirm (ASC-confirm) message shall be transmitted in response to ASC-confirm message in the format shown in Table yyy. A BS may approve the requested uplink resource allocation for non-contention based ranging opportunity by setting Action Code=0, 'approve', or deny by setting Action Code=1, 'deny'.

Table yyy – Association Confirm (ASC-confirm) message format.

<u>Field</u>	<u>Size</u>	<u>Notes</u>
<u>Global Message Header</u>	<u>152 bits</u>	<u>Refer to 14.5.10.nn Global Message Header</u>
<u>For (j=0; j&lt;Num_Records; j++) {</u>		
<u>MSS unique identifier</u>	<u>48 bits</u>	<u>48-bit unique identifier of MSS requesting non-contention based association by transmitting MOB_SCN-REQ message.</u>
<u>Action Code</u>	<u>1 bit</u>	<u>0: approve 1: deny</u>
<u>reserved</u>	<u>7 bits</u>	
<u>}</u>		
<u>Security field</u>	<u>TBD</u>	<u>A means to authenticate this message</u>
<u>}</u>		

The following parameters shall be included in the ASC-notification message.

MSS unique identifier

48-bit unique identifier of MSS transmitting MOB\_SCN-REQ message with Scan type=1, 'Association'.

Action Code

Indicates whether BS approves the requested non-contention based ranging opportunity (Action Code=0) or not (Action Code=1).

### **3. References**

[1] IEEE802.16e/D6

[2] IEEE802.16g-04/03r1, "Baseline Document – P802.16g Management Plane Procedures and Services"