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| Project        | <b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                  |
| Title          | <b>Comments on MS association procedure in an MR network</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |
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| Source(s)      | Kanchei (Ken) Loa, Yi-Hsueh Tsai,<br>Yung-Ting Lee, Hua-Chiang Yin,<br>Shiann-Tsong Sheu, Youn-Tai Lee,<br><br>Institute for Information Industry<br>8F, No. 218, Sec. 2, Dunhua S. Rd.,<br>Taipei City 106, Taiwan                                                                                                                                                                                                                                                                                                                                                                                                      | Voice: +886-2-27399616<br>Fax: +886-2-23782328<br>loa@iii.org.tw |
| Re:            | IEEE 802.16j-07/043: "IEEE 802.16 Working Group Working Group Letter Ballot #28"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                  |
| Abstract       | This contribution proposes MS dedicated ranging and association in transparent and non-transparent mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                  |
| Purpose        | Text proposal for 802.16j Baseline Document.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |
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## Comments on MS association procedure in an MR network

Kanchei (Ken) Loa, Yi-Hsueh Tsai, Yung-Ting Lee, Hua-Chiang Yin, Shiann-Tsong Sheu, Youn-Tai Lee  
Institute for Information Industry (III)

### Introduction

In P802.16j/D1, the scheme of “association procedure in an MR network” for the RS operated in centralized scheduling mode is not defined. Therefore, we propose this contribution to support association procedure for the RS operated in centralized scheduling mode.

In order to facilitate the incorporation of this proposal into IEEE 802.16j standard, specific changes to the draft document P802.16j/D1 are listed below.

### Text Proposal

#### 6.3.22.1.3 Association procedure

*[Insert the following text at the end of 6.3.22.1.3:]*

When the serving MR-BS decides to recommend that the MS scan neighbor stations with association level 1 or 2, before sending the MOB\_SCN-RSP message, the MR-BS shall obtain association parameters available from the MS’s neighbor stations as follows:

- If a neighbor stations is in MR-cells the MS not attached to, the MR-BS shall obtain information via network backbone.
- If the neighbor station is an non-transparent RS w/unique BSID in the MR-cell the MS attached to, the MR-BS shall notified the RS with centralized scheduling by sending MR-ASC IEs containing Rendezvous time, unique CDMA code(s), transmission opportunity offset(s) for association level 2, and may allocate enough bandwidth to locally send RNG-RSP for association level 1, whereas the MR-BS shall obtain the information from the RS with distributed scheduling by sending an MR\_ASC-REQ message containing recommended association level.
- After receiving an MR\_ASC-REQ message, the RS shall send MR\_ASC-RSP message to MR-BS, which shall include the association parameters (i.e. Rendezvous time, CDMA code, and Transmission opportunity offset) if the association level is 1 or 2. Upon receiving MR\_ASC-RSP message, the serving MR-BS shall determine whether the association parameters satisfy the MS' association requirements or not. If they do, the serving MR-BS shall include those association parameters in the MOB\_SCN-RSP message.

#### 6.3.22.1.3.1 Association level 0—Scan/Association without coordination

*[Insert the following text at the end of 6.3.22.1.3.1:]*

If the neighbor station is an RS, it shall forward the RNG-REQ message to its serving MR-BS, which shall responds with an RNG-RSP message, which the RS shall forward to the MS.

#### 6.3.22.1.3.2 Association level 1—Association with coordination

*[Insert the following text at the end of 6.3.22.1.3.2:]*

If the neighbor station is an RS, it shall forward the RNG-REQ message to its serving MR-BS, which shall respond with an RNG-RSP message, which the RS shall forward to the MS.

### 6.3.22.1.3.3 Association level 2—Network-assisted association reporting

*[Modified the text as following indicated:]*

The serving BS will then coordinate the association procedure with the requested neighboring BSs in a fashion similar to association Level 1. However, when using this association type, the MS is required only to transmit the CDMA ranging code at the neighbor BS. Then the MS does not have to wait for RNG-RSP from the neighbor BS. Instead, the RNG-RSP information on PHY offsets will be sent by each neighbor BS to the serving BS/MR-BS (over the backbone network), where the RS shall report the RNG-RSP information to the serving MR-BS via MR-Code-REP message.

The serving BS/MR-BS may aggregate all ranging related information into a single MOB\_ASC\_REPORT message.

*[Delete the following subclauses:]*

~~6.3.22.1.4 Association procedure in an MR network~~

~~6.3.22.1.4.1 Association parameter acquisition~~

~~6.3.22.1.4.2 Association level 0~~

~~6.3.22.1.4.3 Association level 1~~

~~6.3.22.1.4.4 Association level 2~~

*[Insert the new subclause 8.4.5.9.4 in line xxx of page xxx as indicated]*

### 8.4.5.9.4 MR Association Scan IE (MR-ASC IE)

This IE transmitted from MR-BS to notify a non-transparent RS the dedicated ranging and bandwidth allocation for RS to send RNG-RSP message(s).

Table xxx—MR-ASC IE format

| <u>Name</u>                | <u>Length</u>         | <u>Description</u>                                                                                                                                                                                              |
|----------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>MR-ASC IE() {</u>       | <u>4 bits</u>         | <u>-</u>                                                                                                                                                                                                        |
| <u>Type</u>                | <u>5 bits</u>         | <u>0x12</u>                                                                                                                                                                                                     |
| <u>Length</u>              | <u>8 bits</u>         | <u>variable</u>                                                                                                                                                                                                 |
| <u>RCID_IE()</u>           | <u>4,8,12,16 bits</u> | <u>RS basic CID in RCID_IE format (see 8.4.5.3.20.1)</u>                                                                                                                                                        |
| <u>Rendezvous time</u>     | <u>8 bits</u>         | <u>LSBs of rendezvous time for MS in units of frame</u>                                                                                                                                                         |
| <u>INC_BW</u>              | <u>1 bit</u>          | <u>Include allocated bandwidth on RS access link</u>                                                                                                                                                            |
| <u>If(INC_BW == 0b1) {</u> | <u>-</u>              | <u>-</u>                                                                                                                                                                                                        |
| <u>DL-MAP IE index</u>     | <u>8 bits</u>         | <u>RS shall transmit message on the burst described by the k-th DL-MAP IE within the DL-MAP message broadcasted by the RS at the next available frame after rendezvous time, where k is the DL-MAP IE index</u> |

|                                            |                 |                                                    |
|--------------------------------------------|-----------------|----------------------------------------------------|
| <u>↓</u>                                   | <u>⌋</u>        | <u>⌋</u>                                           |
| <u>Nr of Code</u>                          | <u>7 bits</u>   | <u>Nr of unique CDMA code</u>                      |
| <u>for (n = 0; n &lt; Nr of Code; n++)</u> | <u>⌋</u>        | <u>⌋</u>                                           |
| <u>CDMA code</u>                           | <u>8 bits</u>   | <u>Indicates the dedicated CDMA code</u>           |
| <u>Transmission opportunity offset</u>     | <u>8 bits</u>   | <u>Identifies the dedicated ranging subchannel</u> |
| <u>↓</u>                                   | <u>⌋</u>        | <u>⌋</u>                                           |
| <u>padding</u>                             | <u>variable</u> | <u>Padding bits to ensure byte aligned</u>         |
| <u>↓</u>                                   | <u>⌋</u>        | <u>⌋</u>                                           |

**Rendezvous time**

This is offset, measured in units of frame duration (of the serving BS), when the corresponding Recommended BS is expected to provide non-contention-based ranging opportunity for the MS. The offset is given in MOB\_SCN-RSP message is transmitted.

**CDMA code**

A unique code assigned to the MS, to be used for association with the neighbor BS. Code is from the initial ranging codeset.

**Transmission opportunity offset**

A unique transmission opportunity assigned to the MS, to be used for association with the target BS in units of symbol duration.