Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	*Amendments to address some inconsistencies in the network entry procedure*
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Re:	IEEE 802.16j-07/043: “IEEE 802.16 Working Group Working Group Letter Ballot #28”
Abstract	This contribution is to address some inconsistencies in the network entry procedures
Purpose	Text proposal for 802.16j Draft Document.
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Amendments to address some inconsistencies in the network entry procedure

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Nortel

Introduction

The network entry procedure has several inconsistencies in 80216j/D3 after several key changes made in meeting #53. These are addressed in this contribution.

These are the main points that are addressed. These are addressed here:

In meeting #53 we concluded that all the RS configuration should happen at the configuration stage. Prior to that stage, BS even does not categorize it as a transparent RS (TRS) or Non-Transparent RS (NTRS). Therefore, we agreed that some changes are required to the network entry section. Specially, several TLV items in the REG_REQ/RSP TLV (11.7.8.10) need to be moved to new TLV (11.7.8.11) created only for REG-REQ as per the discussion.

Obtaining R-Link parameters (section 6.3.9.9.3) is not necessary before the neighborhood measurements stage because for neighborhood measurements the location of the R-Amble is located at the end of the DL subframe and that knowledge is not necessary. So, R-FCH information is not necessary and some of the statements such as "After that RS shall decode the R-FCH and R-MAP in the relay zone" are not correct (RS decode messages in the R-ZONE only after/at the configuration stage). The current text says different procedures for TRS and NTRS. These are not necessary and at this stage we even does not know that it is a transparent RS or not since this will be configured at the configuration stage.

- For this purpose, Section 6.3.9.9.3 can be deleted and some text is included to clarify the neighborhood measurement process in that section, i.e. the RS receives RCD message in the access zone and obtain the parameters for the neighborhood measurement and carries out neighborhood measurements.

Proposed Text Changes

[Delete Subclause 6.3.9.9.3 with all the text]

~~**6.3.9.9.3 Obtaining R-link parameters**~~

~~After registration, the transparent RS receives the R-MAP and RCD messages in the access zone from the access station in order to obtain the R-link parameters (see Figures 94g and 94h). The non-transparent RS shall obtain the location of the relay zone containing the R-FCH from the RCD message. MR-BS or nontransparent RS shall send either DL-MAP_IE with DIUC = 13 or STC_DL_Zone_IE with dedicated pilots bit set to 1 in the DL-MAP message in the access zone to ensure the MS does not process the signal transmitted in the relay zone. Afterward, the RS shall decode the R-FCH and R-MAP messages within the relay zone. In order to obtain the R-link parameters, the RS shall first search for the R-MAP message. Once the RS has received at least one R-MAP message and is able to decode a burst in the R-link successfully, the RS will achieve R-link MAC synchronization.~~

~~An RS MAC remains in synchronization as long as it continues to successfully receive the R-MAP . If the RS does not receive a valid R-MAP message in a period equal to the Lost R-MAP Interval it shall try to establish synchronization with another access station. The processes of acquiring synchronization and maintaining synchronization are illustrated in Figure 94g. Once the RS has re-established synchronization with the original access station or a new access station, the RS shall search for the RCD message broadcasted by the access station (see Figure 94h).~~

[Modify the text in Section 6.3.9.16 as follows]

6.3.9.16 RS neighbor station measurement report

During network entry or re-entry, after completion of registration, an RS may be required, as indicated by the RS network entry optimization TLV in the RNG-RSP message, to report (1) the signal strength and preamble index of neighbor non-transparent stations with unique BSIDs, and (2) signal strength and R-amble index of neighbor transparent stations or non-transparent stations with shared BSIDs. The RS obtains the neighbor monitoring scheme parameters from the RCD message which is sent by the access station over the access link. If the RS is a mobile RS, and the RCD message provides the TLV "preamble indices reserved for mobile RSs", the mobile RS shall report the signal strengths and preamble indices of these preambles. If a measurement report is required, the RS shall send the RS_NBR-MEAS-REP message (6.3.2.3.70) to the MR-BS after completion of registration. During the second stage access station selection stage, the MR-BS may assign the RS a preamble index based on the report from the RS. ~~If a measurement report is required, the RS shall send the RS_NBR-MEAS-REP message (6.3.2.3.70) to the MR-BS after completion of registration.~~

[Modify the text in Section 6.3.9.18.1 as follows]

6.3.9.18.1 Parameter configuration

During this phase, the MR-BS shall determine the RS's operation parameters and send an RS_Config-CMD message to configure these parameters at the RS (see 6.3.2.3.69) and start a T63 timer. The message shall contain the RS mode. It may also contain parameters for proper RS operation, such as the preamble index, R-amble index, the allocated management CID if the RS is operating in local CID allocation mode, RS frame offset etc. The RS shall respond by sending an MR_Generic-ACK message to the MR-BS and stop the T62 timer. After receiving the MR_Generic-ACK message from the RS, the MR-BS and the RS shall complete the RS network entry process, enter the operational state, and stop the T63 timer. The RS shall apply the configuration specified in the RS_Config-CMD message at the time indicated by the Frame Number Action. If the T63 timer expires before the MR-BS receives an MR_Generic-ACK message from the RS, the MR-BS shall retransmit the RS_Config-CMD message to the RS.

Afterward, the RS shall decode the R-FCH and R-MAP messages within the relay zone. In order to obtain the R-link parameters, the RS shall first search for the R-MAP message (see Figures 94g and 94h).. Once the RS has received at least one R-MAP message and is able to decode a burst in the R-link successfully, the RS will achieve R-link MAC synchronization. An RS MAC remains in synchronization as long as it continues to successfully receive the R-MAP . If the RS does not receive a valid R-MAP message in a period equal to the Lost R-MAP Interval it shall try to establish synchronization with another access station. The processes of acquiring synchronization and maintaining synchronization are illustrated in Figure 94g. Once the RS has re-established synchronization with the original access station or a new access station, the RS shall search for the RCD message broadcasted by the access station (see Figure 94h).

[Notes to the editor: The above section is moved from the deleted section 6.3.9.9.3. The figures 94g and 94h may be moved and re-numbeerd as required]

A non-transparent RS should maintain its synchronization by listening for the R-amble transmitted by its superordinate station (see 6.3.2.3.65). A transparent RS should maintain its synchronization by listening for the preamble transmission from its superordinate station. In the operational state, a non-transparent RS shall start transmitting its own frame start preamble at the frame indicated by the Frame Number Action in the RS_Config-CMD message. Whether an RS transmits an R-amble depends on the instruction received in the RCD message (see section 8.4.6.1.1.4). The frame number used by the RS shall take into account the RS Frame Offset TLV. If an RS Frame Offset is not provided, the RS shall use the same frame number as its superordinate station, i.e. the RS shall consider the RS Frame Offset is zero.

[Move the following TLV parameters from table (TLV 49) in subclause 11.7.8.10 to the table (TLV 50) in subclause 11.7.8.11 and reallocate the bits as appropriate]

Type Length Value Scope
Bit #1: Tunnel packet mode support
Bit #2: Tunnel burst mode support
Bit #4: Subordinate RS network entry support
Bit #6: Multicast management support
Bit #7: DL Flow control
Bit #8: RS centralized security support
Bit #9: RS distributed security support
Bit #10: Embedded path management support
Bit #11: Explicit path management support
Bit #12: Burst-based forwarding support
Bit #14: MOB_SLP-RSP support
Bit #15: MOB_SCN-RSP support
Bit #16: Superordinate RS of an RS group support