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Re:	Contribution on comments to IEEE P802.16e/D6	
Abstract	In this contribution, we newly define an IP management CID to support the managed/unmanaged MS should provide the IP management messages consistently and effectively.	
Purpose	Adoption	
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Usage of IP Management Connection

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1. Introduction

Current mechanism of the IP address allocation for the MS has some problems. The secondary management connection can be used as a means to transfer the standard IP management messages for IP address allocation, but it is supported only to the managed SSs. Therefore, the standard IP address allocation procedure cannot be provided by the secondary management connection to the unmanaged SSs.

There can be two possible alternatives. Two alternatives may be used for the MSs if the option is negotiated between the MS and the BS during the REG-REQ/RSP steps.

First alternative: we may use some default transport connection pre-provisioned by the BS as a means to transfer the IP management messages such as Mobile IP and DHCP messages. But, the pre-provisioned connection establishment procedure for default transport connection for IP management message transfer needs some more steps than that of the secondary management connections due to the separate DSA-REQ/RSP/ACK procedures for UL and DL service flows. Therefore, it is not useful for the MSs needs for fast network entry.

Second alternative: If the standard IP management connection supported mode is negotiated between the BS and the MS during the Registration procedure, then the BS can allocate the IP management connection ID in the REG-RSP message like the secondary management connection. IP management connection is very useful for the MSs requiring fast network entry such as providing the push-to-talk services by fast recovering of IP address from the Idle mode.

The following figure shows the IP establishment procedures via secondary management connection, IP management connection, or default transport connections.

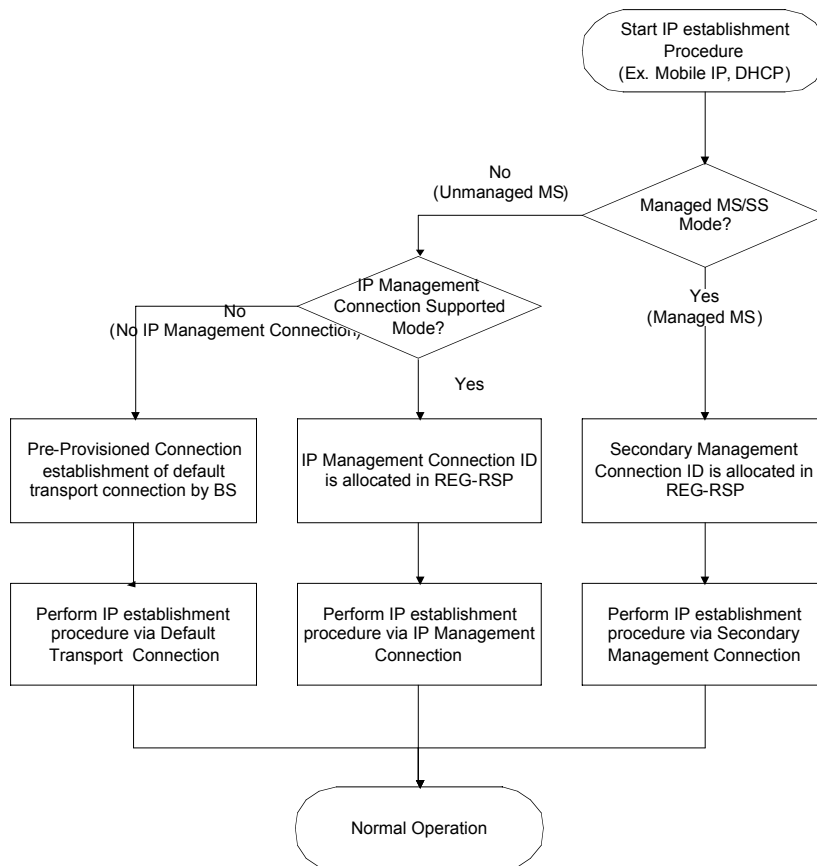


Figure 1. Alternatives of the IP establishment procedures

2. Proposed Text Changes

[Modify the corresponding sections as follows:]

[In P802.16e/D6, Section 6.3.9.10, p. 150, line 9-28, modify the existing text in section 6.3.9.10 as shown below:]

6.3.9.10 Establish IP Connectivity

For a managed MS, if mobile IP is being used, the MS may secure its address on the secondary management connection using mobile IP.

For an unmanaged MS, if mobile IP is being used, the MS may secure its address on the IP management connection using mobile IP.

Otherwise, for fixed SS and for MSs using IPv4 and not using mobile IP, the SS/MS shall invoke DHCP mechanisms [IETF RFC 2131] in order to obtain an IP address and any other parameters needed to establish IP connectivity. If the SS has a configuration file, the DHCP response shall contain the name of a file which contains further configuration parameters. For

fixed SS and for MSs using IPv6, the SS/MS shall either invoke DHCPv6 [IETF RFC 3315] or IPv6 Stateless Address Autoconfiguration [IETF RFC 2462] based on the value of a TLV tuple in REG-RSP.

For a managed SS the ~~Establishment~~ establishment of IP connectivity shall be performed on the SS's Secondary Management Connection. For an unmanaged SS, the establishment of IP connectivity may be performed on the SS's IP Management Connection or default Transport Connection pre-provisioned by BS depending on the IP management support mode (see Table 110).

The IP version parameter shall be included in the TLV described in ~~11.4.2.7~~ 11.7.5.

[In P802.16e/D6, modify the existing text in Table 345 as shown below:]

Table 345 CIDs

CID	Value	Description
Initial Ranging	0x0000	Used by SS and BS during initial ranging process.
Basic CID	0x0001 – m	The same value is assigned to both the DL and UL connection.
Primary management	m+1 – 2m	The same value is assigned to both the DL and UL connection.
Transport CIDs, <u>IP Management CIDs</u> , and Secondary Mgt CIDs	2m+1 – 0xFE9F	For the secondary management connection, the same value is assigned to both the DL and UL connection. <u>For the IP management connection, the same value is assigned to both the DL and UL connection.</u>
Multicast CIDs	0xFEA0 – 0xFEFE	For the downlink multicast service, the same value is assigned to all MSSs on the same channel that participate in this connection.
AAS initial ranging CID	0xFEFF	A BS supporting AAS shall use this CID when allocating a Initial Ranging period for AAS devices.
Multicast polling CIDs	0xFF00 – 0xFFFA	A BS may be included in one or more multicast polling groups for the purposes of obtaining bandwidth via polling. These connections have no associated service flow.
Normal mode multicast CID	0xFFFFB	Use for transmission of DL broadcast information to normal mode MSS.
Sleep mode multicast CID	0xFFFFC	Used for transmission of DL broadcast information to Sleep mode MSS.
Idle mode multicast CID	0xFFFFD	Used for transmission of DL broadcast information to Idle mode MSS.
Padding CID	0xFFFFE	Used for transmission of padding information by SS and BS.
Broadcast CID	0xFFFFF	Used for broadcast information that is transmitted on a downlink to all SS.

[In P802.16e/D6, Section 11.7.6, modify the existing text in section 11.7.6 as shown below:]

11.7.6 Number of CID supported

This field shows the number of uplink and downlink CIDs the MS can support. The minimum value in the uplink is three for managed SSs and two for unmanaged SSs. An SS shall support a Basic CID, a Primary Management CID, 0 or one IP Management CID, and 0 or more Transport CIDs.

[In P802.16e/D6, add the Section 11.7.24 as shown below:]

11.7.24 Standard IP management connection supported mode

This field indicate whether or not the unmanaged MS's IP address is managed by standard-based IP [such as Mobile IP, DHCP, etc.] messages over the IP management connection. When the MS indicates in the REG-REQ that it is Standard IP management supported mode, the BS and MS shall use this connection for handshaking the IP management messages such as Mobile IP, DHCP, etc.

Type	Length	Value	Scope
18	1	0: no IP management connection support 1: IP management connection support	REG-REQ REG-RSP

[In P802.16e/D6, Modify the text in the Section 11.7.10 as shown below:]

11.7.10 Method for allocating IP address for the secondary or IP management connection

Type	Length	Value
23	1	Bit #0: DHCP Bit #1: Mobile IPv4 Bit #2: DHCPv6 Bit #3: IPv6 Stateless Address Autoconfiguration Bit #4-7:

[In P802.16e/D6, Modify the text from the IEEE Std. 802.16-2004, Section 6.3.2.3.7; modify the existing text in section 6.3.2.3.7 as shown below:]

6.3.2.3.7 Registration request (REG-REQ) message

For PMP operation, the REG-REQ shall contain the following TLVs:

- Uplink CID Support (11.7.6)**
- SS management support (11.7.2)**
- IP management mode (11.7.3)**
- Standard IP management support mode (11.7.24)**

[In P802.16e/D6, Modify the text from the IEEE Std. 802.16-2004 as shown below:]

6.3.2.3.8 Registration response (REG-RSP) message

The REG-RSP shall contain the following TLVs:

- SS management support (11.7.2)**
Response to REG-REQ indicating the mode of SS management operation.
- Secondary Management CID (11.7.5)**
Present only if the SS has indicated in the REG-REQ that it is a managed SS.
- IP management CID (11.7.7)**

Present only if the MS has indicated in the REG-REQ that it is Standard IP management supported mode.

HMAC Tuple (11.1.2)

The HMAC Tuple attribute shall be the final attribute in the message's TLV attribute list.

In Mesh Mode, message digest is calculated using HMAC_KEY_D.

[In P802.16e/D6, add the Section 11.7.7 as shown below:]

11.7.7 IP Management CID

This parameter contains the IP Management CID issued to an MS .

<u>Type</u>	<u>Length</u>	<u>Value</u>	<u>Scope</u>
19	2	IP Management CID	REG-RSP