Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Implied Base Station Requirements to Support Secondary Management Connection.**
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Re:	Email call for comments on: Working Document: Corrigendum to IEEE Standard 802.16-2004, 80216maint-04/10
Abstract	Support for the SMC (Secondary Management Connection) is mandated on BS by the packet profile in table 401. In order for use of the SMC to be interoperable, choices must be made about how this is used. Inferred requirements on the BS seem to include: • BS modems that are not routers MUST provide proxy ARP service for all managed SSs. • MUST provide IP forwarding service for all managed SSs. (No broadcast or multicast.) • Either provide DHCP service directly, or act as DHCP relay agent for all managed SSs. The stated purpose of the SMC is to support an IP stack on the subscriber.
Purpose	Need for clarification of an interoperable interpretation of how a secondary management connection should be used.
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Clarification on Interoperability of Secondary Management Connection

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Abstract

Support for the SMC (Secondary Management Connection) is mandated on BS by packet profiles such as Table 401. In order for the SMC to be interoperable, choices must be made about how this is used. Inferred requirements on the BS seem to include:

- BS modems that are not routers MUST provide proxy ARP service for all managed SSs.
- MUST provide IP forwarding service for all managed SSs. (No broadcast or multicast.)
- Either provide a DHCP service directly, or act as DHCP relay agent for all managed SSs.

The stated purpose of the SMC is to support an IP stack on the subscriber.

Introduction

Support for the SMC (Secondary Management Connection) is mandated by profiles such as the packet profile in Table 401 for all BS.

The IEEE Std. 802.16-2004 subclause 6.3.1.1 defines the SMC for managed SSs as follows:

> [T]he Secondary Management Connection is used by the BS and SS to transfer delay tolerant, standards-based [Dynamic Host Configuration Protocol (DHCP), Trivial File Transfer Protocol (TFTP), SNMP, etc.] messages. These messages are carried in IP datagrams, as specified in 5.2.6. Messages carried on the Secondary Management Connection may be packed and/or fragmented. For the SCa, OFDM, and OFDMA PHY layers, management messages shall have CRC. Use of the secondary management connection is required only for managed SS.

Problem Statement

It should also be noted that the standard makes no provision for a broadcast DL-SMC (e.g., via well-known CID) that the BS could use to deliver secondary management messages (e.g., IP broadcast or multicast) to all managed SSs. The SMC is thus effectively a point-to-point link between BS and SS, and the following BS requirements may therefore be inferred:

1. Unless it is a router for the managed network, the BS shall provide a proxy ARP service for all managed SSs, so that the external router for the managed network can forward IP datagrams to the managed SSs.
2. Even if it is an 802.1D MAC bridge or 802.1Q VLAN bridge for user traffic, the BS shall provide an IP forwarding service for all managed SSs.
3. The BS shall either provide a DHCP service directly or else act as a DHCP relay agent for all managed SSs. (One or the other is mandatory, since DHCP requests are usually addressed to the limited broadcast IP destination address of 255.255.255.255, for which IP forwarding is disallowed. Since the SMC link is point-to-point, the BS is therefore the only possible destination for a limited broadcast from a managed SS.)

It is unclear whether the IEEE 802.16 WG intended the SMC to be a point-to-point link, for none of these derived requirements are mentioned in the standard. If so, then these requirements need to be explicitly defined.

An alternative would be to define a well-known CID for broadcast frames.

Proposal

Option 1:

Explicitly state that the following are mandatory requirements of the Base Station:

- BS modems that are not routers MUST provide proxy ARP service for all managed SSs.
- BS modems must provide IP forwarding service for all managed SSs in the downlink.
- Either provide a DHCP service directly, or act as DHCP relay agent for all managed SSs.

Option 2:

Define a well known CID for downlink broadcast to SMC for management of SSs via IP.