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Abstract	The Enhancement of the MAC Management Messages for the NSP Discovery.
Purpose	Adoption
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The Enhancement of the MAC Management Messages for the NSP Discovery

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Problem Definition

Operators have indicated that they plan to deploy fixed and mobile wireless networks that will support multiple concurrent authenticating logical bearer networks. That is, operators would be the underlying wireless network operator while subscribers would have business relationships, would authenticate with appropriate credentials, with one or more facilities based (or non-facilities based) Network Service Providers (NSP)s. In this very real network model, SS/MS knowledge of Operator ID to determine suitable networks for entry is inadequate. SS/MS need to know the Operator ID plus the ID of the NSPs supported by the available operator network in order to ascertain suitability for network connection.

An SS/MSS may encounter one or more of the following situations:

a) An Operator Network managed/owned by a single NSP administrative domain (also referred to as "Operator Network+NSP" deployment case).

b) An Operator Network shared by two or more NSPs (also referred to as "Operator Network sharing" deployment case).

c) A physical geographic region covered by two 2 or more Operator Networks, each of which may be of one of the flavors (i.e., "Operator Network+NSP" and "Operator Network sharing" cases) mentioned above.

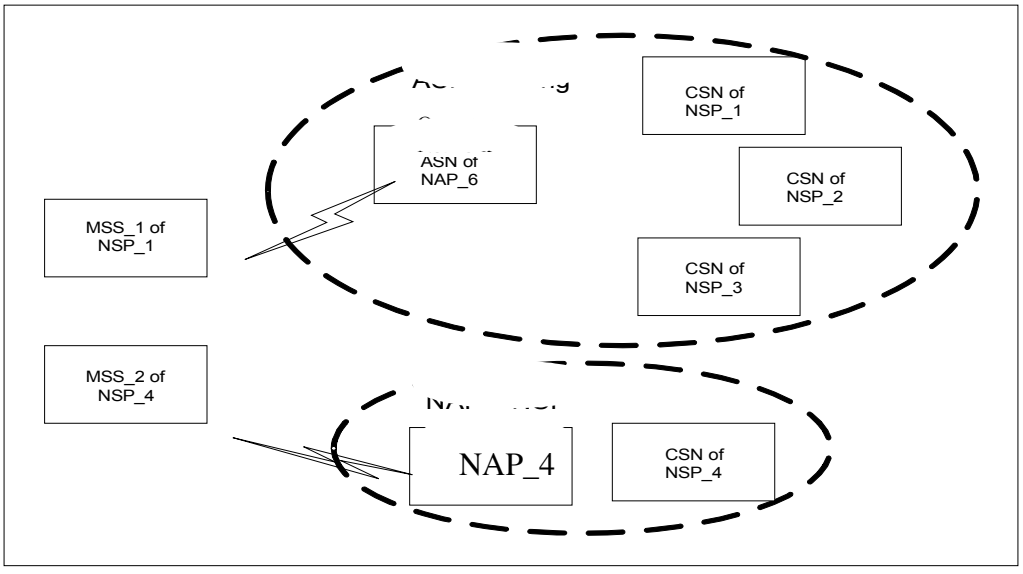

Figure 1 – A coverage area with overlapping ASNs

For example, as shown in Figure 1, MSS_1 and MSS_2 discover available NSPs and select one based on its configuration information. More specifically, MSS_1 prefers to connect to Operator Network of "NAP_6" because it is directly affiliated with MSS_1's home NSP through Operator Network sharing. And, MSS_2 prefers to connect to Operator Network of "NAP_4" because it is owned by MSS_2's home NSP (i.e., NSP_4).

There is a need for a solution framework that enables an SS/MSS to discover identities of available NSP(s) in a 802.16 wireless coverage area, and indicate its selected NSP to the Operator Network.

The procedure of the Network Discovery and Selection are divided into the following four stages:

1) **Operator Network Discovery:** An SS/MS detects available Operator Network(s) by scanning and decoding DL-MAP of Operator Network(s) on detected channel(s). The 24-bit value of the "operator ID" (see section 6.3.2.3.2 of 802.16-2004) within the "Base Station ID" parameter in the DL-MAP message is the Operator Network Identifier.
2) **NSP Discovery:** An SS/MS discovers all available NSPs associated with one or more detected Operator Networks.
3) **NSP Enumeration and Selection:** Automatic selection and manual selection should be supported.
4) **Operator Network Attachment based on NSP selection:** Following a decision to select an NSP, an SS/MS indicates its NSP selection by attaching to an Operator Network associated with the selected NSP, and by providing its identity and home NSP domain in form of NAI.

Remedy

For SS/MS with configuration information that includes a list of Operator Network+NSP unitary mappings, Operator Network Discovery of the NAP Identifier is sufficient to provide Operator Network and NSP.

In the event that more than one NSP is served by a detected Operator Network, an SS/MS can dynamically discover available NSP(s). A list of NSP identifiers, NSP IDs, can be broadcast by the Operator Network so the SS/MS may learn of available NSPs during initial scan or during the network entry. The Operator Network transmits the NSP ID list as part of the NBR-ADV broadcast management message with the NSP information included no less than once every five seconds. The BS may also transmit the list of NSP IDs as part of SBC-RSP in response to an SS/MS request through SBC-REQ.

Proposed Text Changes

[Modify the corresponding sections as follows:]

[Insert new subclause 11.8.8; editor to provide correct 'Type' code]

11.8.8 Service Information Query (SIQ) TLV

Service Information Query is included by MS in SBC-REQ to request the Service Network Provider Identifiers

supported by the Operator Network that includes the current BS.

Name	Type	Length	Value	Scope
SIQ	??	1	NULL	SBC_REQ

[Insert new subclause 11.8.9; editor to provide correct 'Type' code]

11.8.9 Service Identity Information(SII) TLV

Service Identity Information is a compound TLV that contains one or more Network Service Provider Identifiers, and it may be included in a SBC_RSP message. When an SBC_REQ message with an SIQ TLV is received, the BS should respond with an SBC_RSP message with an SII TLV.

Name	Type	Length	Value	Scope
SII TLV	??	3*n	Including n, 24 bit Network Service Provider IDs, n is greater than or equal to 1.	SBC_RSP

[Insert new subclause 11.18.2; editor to provide correct 'Type' code]

11.18.2 NSP List TLV

NSP List is an optional compound TLV that contains one or more Network Service Provider Identifiers, and it may be included in a MAC message transmitted on a broadcast CID.

Name	Type	Length	Value	Scope
NSP List	??	3*n	Including n, 24 bit Network Service Provider IDs, n is greater than or equal to 1.	SII Message

11.18.3 NSP Count TLV

NSP Count TLV is an optional TLV that indicate the change of the NSP list. It will be increased by one (modulo 256) by the Operator Network whenever the NSP list changes. NSP Count TLV should be sent in a more frequent manner than NSP List TLV.

Name	Type	Length	Value	Scope
NSP Count	??	1	Increment by one (modulo 256) by the Operator Network whenever the list of the NSP changes.	SII Message

Reference:
C80216g-05_003.pdf
Operator Operator
Network Network