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Re:		
Abstract	Apply handover primitives to MS as well	
Purpose	Adoption	
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Add an HO Initiation and Continue Primitive

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Abstract

The 802.16g draft is missing the trigger for Mobile Initiated Handover. When the NCMS at the MS decides to initiate a handover (as opposed to HO-Start) with the Serving BS it informs the 802.16 MS entity to send a MOB_MSHO-REQ listing the candidate BS for an upcoming HO-Start or HO-Cancel.

14.2.5.2.1 C-HO-REQ

This primitive is used by an 802.16 entity~~a BS~~ or NCMS to trigger a handover procedure. The Action Type included in this primitive defines the type of handover procedure to be performed. The possible Action Types for this primitive are listed in Table below:

Action Type	Description
HO-Serving	Handover procedure between current serving BS and NCMS or between MS and NCMS.
HO-Target	Handover procedure between target BS and NCMS
HO-Scan	Neighbor BS scanning procedure

The following sub-sections define the primitive when its action type is set to a specific action.

14.2.5.2.1.1 C-HO-REQ(Action_Type==HO-Serving)

Function:

This primitive is used by a serving BS, an MS, ~~-~~or the Mobility Management Services entity in NCMS to start an HO procedure. The primitive is~~ only~~ used by 802.16 BS, MS entity and NCMS~~ at BS side~~.

Semantics of the service primitive:

The following parameters are included in this primitive.

C-HO-REQ
(
Operation_Type(Action),
Action_Type(HO-Serving),

Destination(BS, MS, or NCMS),
Attribute _list:
Serving BSID
MS MAC Address
HO Type
Mode
Number of Recommended BSs
Candidate target BS list
Service flow information
CS parameter information
)

Serving BSID
Base station unique identifier (same number as that broadcasted on the DL-MAP message).
MS MAC Address
48-bit unique identifier used by MS.
HO Type
Indication of HO types; HHO or SHO/FBSS.
Mode
Various modes in Anchor BS update or Active Set Update.
Number of Recommended BSs
The number of BSs which are recommended by the MS or the serving BS as candidate target BSs. The information for each recommended BS is included in Candidate target BS list.
Candidate target BS list
For BS or MS generated primitive, this is the list of BSs which are recommended for a target BS or an active BS by the MS or BS. Additional HO quality information such as Service Level Prediction and RF Signal Information also can be included in this list. For NCMS generated primitive, this is the list of recommended target BSs by the Mobility Management Services entity. The BSs in the list may be the candidate target BSs for HO or an Anchor BS or Active BSs for SHO/FBSS according to the value of HO type and Mode. MS Access Information, Newly Allocation Information, and HO Quality Information can be included in this list.
Service flow information
Information of all the service flows that have been established between the MS and the serving BS.
CS parameter information
Approved IP filter rules of a service flow such as packet classification rule and IPv6 flow label.

When generated:

802.16 BS entity to NCMS:

This primitive is generated when the BS receives a MOB_MSHO-REQ message from the MS.

802.16 MS entity to NCMS:

This primitive is generated when the MS receives a MOB_BSHO-REQ message from the BS.

NCMS to 802.16 BS or MS entity:

This primitive is used when the Mobility Management Services entity in NCMS instructs the BS to start handover procedure for a particular MS or instructs the MS to start handover procedure.

Effect of receipt:

802.16 BS or MS entity to NCMS:

The Mobility Management Services entity in NCMS processes the information from this primitive. And it may trigger a handover procedure to one or more target BS.

NCMS to 802.16 BS entity:

The BS processes the information from this primitive and shall send MOB_BSHO-REQ to the MS to start the handover procedure.

NCMS to 802.16 MS entity:

The MS processes the information from this primitive and shall send MOB_MSHO-REQ to the BS to start the handover procedure.

14.2.5.2.2 C-HO-RSP

This primitive is used by an 802.16 entity or NCMS to respond a handover request. The Action Type included in this primitive defines the type of handover procedure to be performed. The possible Action Types for this primitive are listed in Table below:

Action Type	Description
HO-Serving	Handover procedure between current serving BS and NCMS or between MS and NCMS
HO-Target	Handover procedure between target BS and NCMS
HO-Scan	Neighbor BS scanning procedure

The following sub-sections define the primitive when its action type is set to a specific action.

14.2.5.2.2.1 C-HO-RSP(Action_Type==HO-Serving)

Function:

This primitive is generated by Mobility Management Services entity in NCMS or the serving 802.16 BS entity with the list of recommended target BSs. This primitive is sent in reply to the C-HO-REQ~~SP~~(HO-Serving) primitive. This primitive is also generated by the 802.16 MS entity when it receives MOB_BSHO-RSP from the BS.

Semantics of the service primitive:

The following parameters are included in this primitive.

C-HO-RSP
(
Operation_Type(Action),
Action_Type(HO-Serving),
Destination(BS or NCMS),
Attribute _list:
Serving BSID,
MS MAC Address,
HO Type,
Mode,
Number of Recommended BSs,
Recommended target BS list
)

Serving BSID
Base station unique identifier (same number as that broadcasted on the DL-MAP message).

MS MAC Address
48-bit unique identifier used by MS
HO Type
Indication of HO types; HO or SHO/FBSS
Mode
Various modes in Anchor BS update or Active Set Update
Number of Recommended BSs
The number of BSs which are recommended by the MS or the serving BS as candidate target BSs. The information for each recommended BS is included in Candidate target BS list
Recommended target BS list
The list must be a subset of the candidate target BS list from the corresponding HO request. The recommended target BS list is same as the one~~to be delivered to the MS~~ in the MOB_BSHO-RSP. The BSs in the list may be the candidate target BSs for HO or an Anchor BS or Active BSs for SHO/FBSS according to the value of HO type and Mode. MS Access Information, Newly Allocation Information, and HO Quality Information can be included in this list.

When generated:

802.16 BS entity to NCMS:
This primitive is generated to respond to C-HO-REQ(HO-Serving) primitive from NCMS.
802.16 MS entity to NCMS:
This primitive is generated to when the MS receives MOB_HOBS-RSP from the BS.
NCMS to 802.16 BS entity:
This primitive is used when the Mobility Management Services entity in NCMS accepts or rejects the HO request from the MS. This primitive includes a list of recommended target BSs from NCMS.

Effect of receipt:

802.16 BS entity to NCMS:
The Mobility Management Services entity in NCMS processes the information contained in the primitive.
802.16 MS entity to NCMS:
The Mobility Management Services entity in NCMS processes the information contained in the primitive. The NCMS may start the action phase of the handover.
NCMS to 802.16 BS entity:
The BS processes the information from this primitive and shall send MOB_BSHO-RSP to the MS.

14.2.5.2.1.5 C-HO-REQ (Action_Type==HO-Continue)

Function:

This primitive is used by the MS to inform the Mobility Management Services entity in the NCMS MS about the arrival of a MOB-BSHO_RSP MAC message in response to the previously generated MOB_MSHO-REQ message and the pruned down list of the candidate BSs selected by the Mobility Management in the NCMS for the upcoming actual HO phase.

Semantics of the service primitive:

The following parameters are included in this primitive.

C-HO-REQ

(
Operation_Type(Action)
Action_Type(HO-Continue),
Destination(NCMS),
Attribute _list:
Serving BSID,
MS MAC Address,
HO Type,
Mode,
Number of candidate target BSs,
List of candidate target BSs,
)

Serving BSID

Base station unique identifier (same number as that broadcasted on the DL-MAP message).

MS MAC Address

48-bit unique identifier used by MS

HO Type

Indication of HO types; HHO or SHO/FBSS

Mode

Various modes in Anchor BS update or Active Set Update

Number of candidate target BSs

Number of BSs which are recommended by the MS as candidate target BSs. The information of each recommended BS is included in the list of candidate target BSs.

List of candidate target BSs

This is the list of recommended target BSs that is pruned down by the serving BS. The BSs in the list may be the candidate target BSs for HHO or an Anchor BS or Active BSs for SHO/FBSS according to the value of HO type and Mode. MS Access Information, Newly Allocation Information, and HO Quality Information can be included in this list.

When generated:

802.16 MS entity to NCMS:

This primitive is used by the 802.16 MS entity to inform the Mobility Management Services entity about the arrival of a response to the previously generated C-HO_Req (Initiate) primitive.

Effect of receipt:

NCMS at the MS:

The NCMS learns about the pruned down list of the potential candidates BS to select as the final candidate.

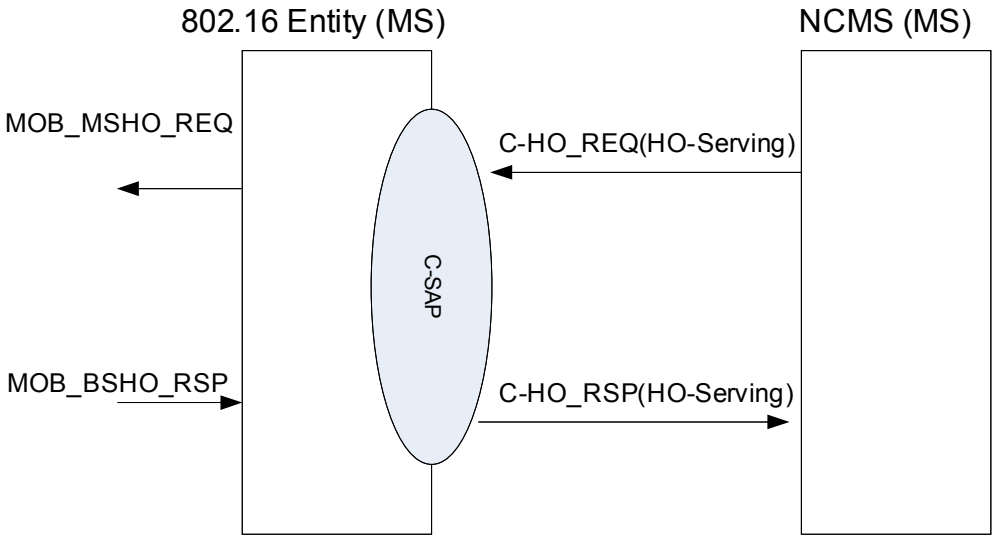

Figure xxx – Primitive flow between NCMS at the MS and the MS when HO is initiated by MS

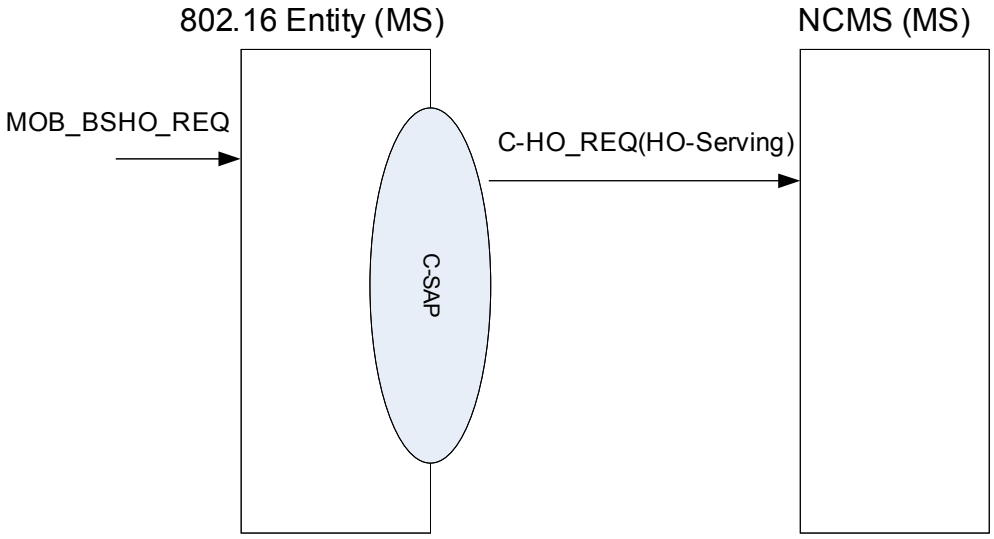

Figure xxx – Primitive flow between NCMS at the MS and the MS when HO is initiated by BS (recommend to be combined with Figure 489)