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Abstract	This contribution proposes RS handover procedure which is required when an RS migrates from the air-interface provided by one access station to the air-interface provided by another access station due to radio environment change or topology change, etc.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-06/026r2)	
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## **Relay Station Handover Procedure**

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### 1. Introduction

During normal operation, a RS may perform handover (change its access station) due to radio environment change or topology change, and etc.

In contribution C802.16j-07/097r3, RS initial network entry is addressed. In this contribution RS handover procedure is proposed.

### 2. RS HO procedure

The following Figure shows the RS HO procedure.

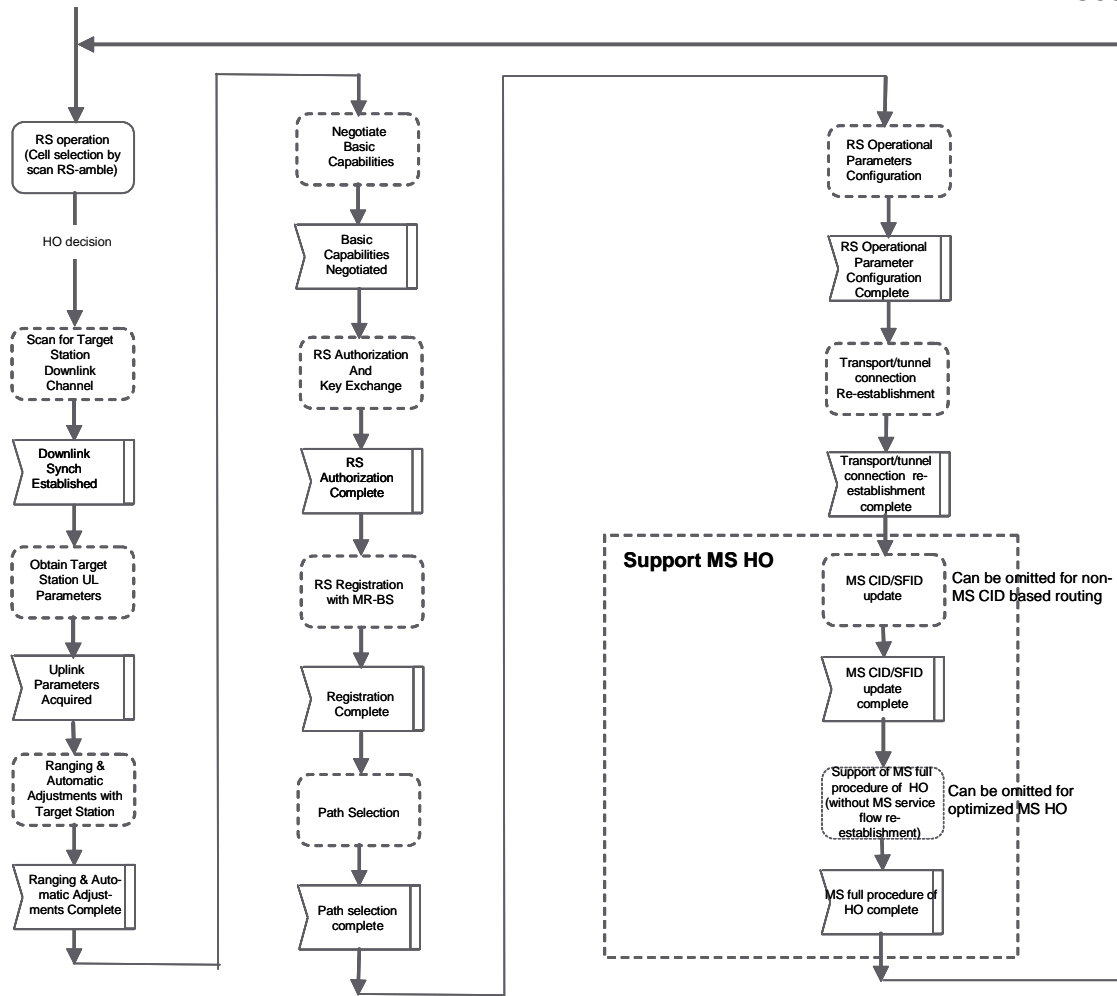


Figure 1. RS HO process

RS HO procedure reuses MS HO procedure with following addition operation steps:

- path selection
- RS operational parameter configuration
- Transport/tunnel connection re-establishment
- The stage of supporting possible HO of associated MSs is not required for RS in MBS mode. For a RS in MRS mode,
  - o The stage of MS service flow re-establishments is required only for MS CID based routing scheme. For non-MS CID based routing method (such as tunnel CID or destination RS basic CID based) this step can be omitted
  - o The stage of supporting MS HO can be omitted for optimized HO. For non-optimized MS HO, the MS service flow re-establishment can be omitted by implementing the following
    - for non-MS CID based forwarding, the target MR-BS can route DL data targeting MS associated to an access RS to the tunnel or basic connection of this RS. In this way there is concern of MS CID collision due to RS HO and there is no MS CID update is required.

- For MS CID based forwarding, the RS may use MS CID swapping method to avoid the MS involvement of MS regarding the MS service flow re-establishment.

### 3 Proposed text change

#### 3.1 Text change for RS HO description

*[Replace section 6.3.22.4 with the following]*

##### 6.3.22.4. RS handover

This section defines the RS HO process in which an RS migrates from the air-interface provided by one access station to the air-interface provided by another access station. The RS HO process is depicted in Figure xxx.

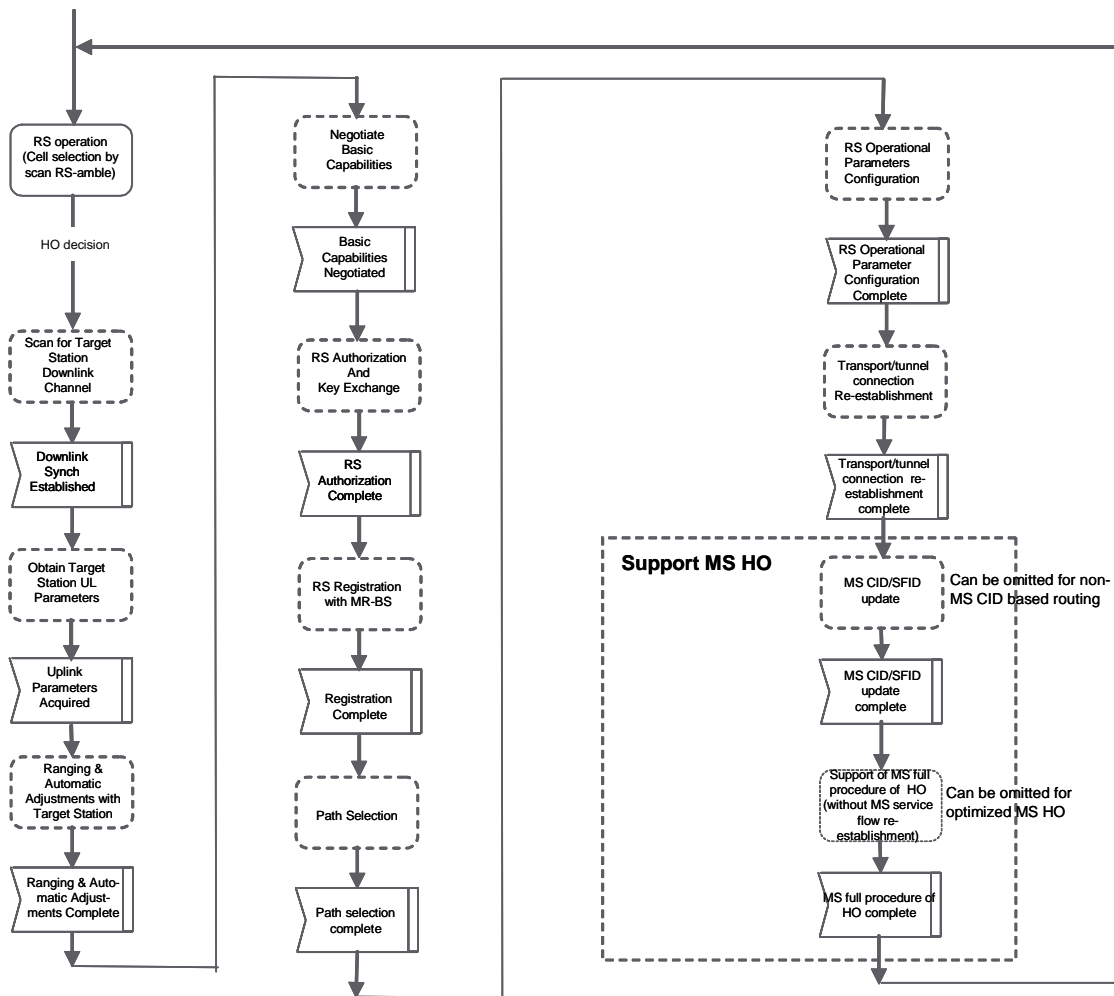


Figure XXX. RS HO process

The RS HO process consists of stages of MS HO process and following additional stages

- Path selection – This stage enable the target MR-BS to indicate a path re-reselection. The target MR-BS may decide to skip this step if the bit #0 in RS HO optimization TLV of MOB\_BS\_RSP/REQ is set
- RS operational parameter configuration – This stage enable the target MR-BS to reconfigure RS operational parameters. The target MR-BS may decide to skip tis step if the bit #1 in RS HO optimization TLV of MOB\_BS\_RSP/REQ is set
- Tunnel/connection re-establishment – this stage enable the target MR-BS to re-establish connection/tunnel for a RS. The target MR-BS may decide to skip this step if the bit #2 in RS HO optimization TLV of MOB\_BS\_RSP/REQ is set
- Support of MS HO stage is not required for RS in MBS mode and needed only for RS in MRS mode. This stage includes two sub-stages:
  - o Support of MS service flow re-establishment – This step is required only if MS CID based data forward is in use. In this case, this stage is used for the target MR-BS to inform the requesting RS regarding the CID/SFID updates of associated MSs/RS. For non-MS CID based data forwarding schemes, this step can be omitted. In this case, there is no MS CID/SFID is required. Since for DL data packet forwarding after the RS HO, the MR-BS can route the DL data packet of MSs associated with the RS to the tunnel/basic connection of this RS and no MS CID collision would happen.
  - o Support full set of MS HO – This sub-stage can be omitted if optimized HO is possible. For non-optimized MS HO, the MS service flow re-establishment can always be omitted for non-MS CID based routing; for MS CID based forwarding, the RS may use CID swapping to avoid involvement of MS regarding the MS service flow re-establishment.

### 3.2 Text change for MOB\_BSHO-REQ/RSP message modification

*[Insert the following to the end of 6.3.2.3.52]*

The MOB-BSHO-REQ message may include the following TLV:

#### **RS HO Optimization (see 11.20)**

This TLV is used to indicate those stages that can be omitted during RS HO.

*[Insert the following to the end of 6.3.2.3.54]*

The MOB-BSHO-RSP message may include the following TLV:

#### **RS HO Optimization (see 11.20)**

This TLV is used to indicate those stages that can be omitted during RS HO.

*[Insert subclause 11.20]*

11.20 MOB-BS-RSP message encodings11.20.1 RS HO optimization

<u>Type</u>	<u>Length</u>	<u>Value</u>	<u>Scope</u>
<u>1</u>	<u>1</u>	<u>Bit #0 = 1 – path selection is omitted</u> <u>Bit #1: = 1 – RS operational parameter configuration is omitted</u> <u>Bit# 2 = 1: RS connection/tunnel re-establishment is omitted</u> <u>Bit #3 = 1: MS service flow re-establishment sub-stage is omitted</u>	<u>MOB_BSHO-REQ/RSP</u>