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Re:	The contribution corresponding to commentary 112	
Abstract	This document is to explain overall scanning and HO operation for the IEEE 802.16e. This document describes a call flow and flow chart to assist understanding of HO operation for IEEE802.16e	
Purpose	Propose overall scenarios of scanning and handoff for IEEE 802.16	
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Overall Handoff procedures for IEEE 802.16e

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1 Introduction

The document, which is a response contribution to commentary # 112 in the last meeting, is to describe overall scanning and HO operation in IEEE802.16e. We show the operation of scanning by MSS request, scanning by BSS request, periodic scanning during HO process, HO by MSS request and HO by BSS request. However, current draft does not specify and contain the procedures previously proposed and introduced. Therefore, here we propose changed parameters, call flow diagram and some miscellaneous changes in order to make firm the IEEE802.16e specification for supporting the mobility.

2 Proposed Scenarios of Scanning and Handoff

2.1 Functionality

2.1.1 Request to scan neighbors by BS

—HO by BS request may be generated. If the quality of received power of MSS is bad BS may request MSS to scan neighbor BSs and to handoff to the neighbor BS having better $S/(I+N)$. So, BS must be able to request MSS to send SCAN_RSP message and scan neighbor BSs without requesting to scan by MSS.

2.1.2 Periodic scanning during HO process

—During HO process, MSS can return to the cell coverage of serving BS. So the periodic scanning neighbor BSs during HO process is necessary to detect this situation. If MSS detect that $S/(N+I)$ of serving BS is better than $S/(N+I)$ of target BS during certain time MSS shall cancel HO process.

2.1.3 HO by BS request

BS may request MSS to handoff in the case of heavy load or requesting to handoff by force.

BS must choose one target BS among neighbor BSs having enough of $S/(N+I)$ to handoff. So, MSS receiving of BSHO_REQ message shall scan neighbor BSs and send HO_RSP message including neighbor BSs having enough of $S/(N+I)$ to handoff. Then BS choose the target BS among the list selected by MSS and know the target BS to handoff.

3 Text to be inserted into standard

6.2.2.3.45 Scanning Interval Allocation Response (MOB_SCN-RSP) message

A MOB_SCN-RSP message shall be transmitted by the BS in response to an MOB_SCN-REQ message sent by an MSS and may be transmitted by the BS to request of MSS scanning neighbor in unsolicited manner.

The format of the MOB_SCN-RSP message is depicted in Table 56af.

6.2.2.3.46 BS HO Request (MOB_BSHO-REQ) message

The BS may transmit a MOB_BSHO-REQ message when it wants to initiate an HO. A MSS receiving this message shall scan recommended neighbor BSs in this message. The message shall be transmitted on the basic CID.

Annex D Messages sequence charts (MSCs)

This annex provides MSCs for the procedures of handoff and sleep mode operations.

D.1 Handoff MSCs

D.1.1 Neighbors advertisement and scanning of neighbors

The following figures describes the messages flow for neighbors advertisement and scanning of neighbors by the MSS request , BSS request and periodic scanning of neighbors during Handoff:-

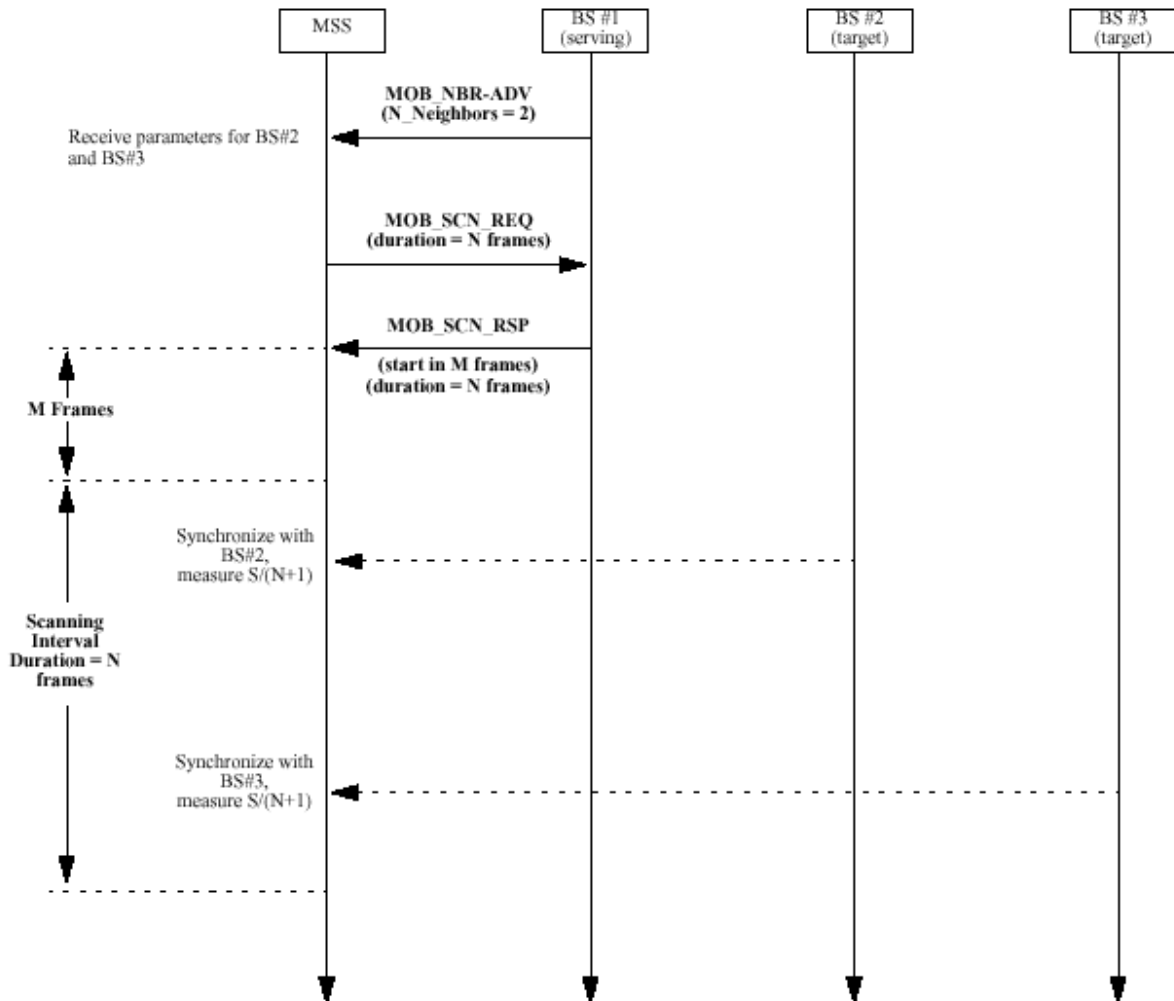


Figure D.1—Example of BS advertisement and MSS scanning (without association) by MSS request

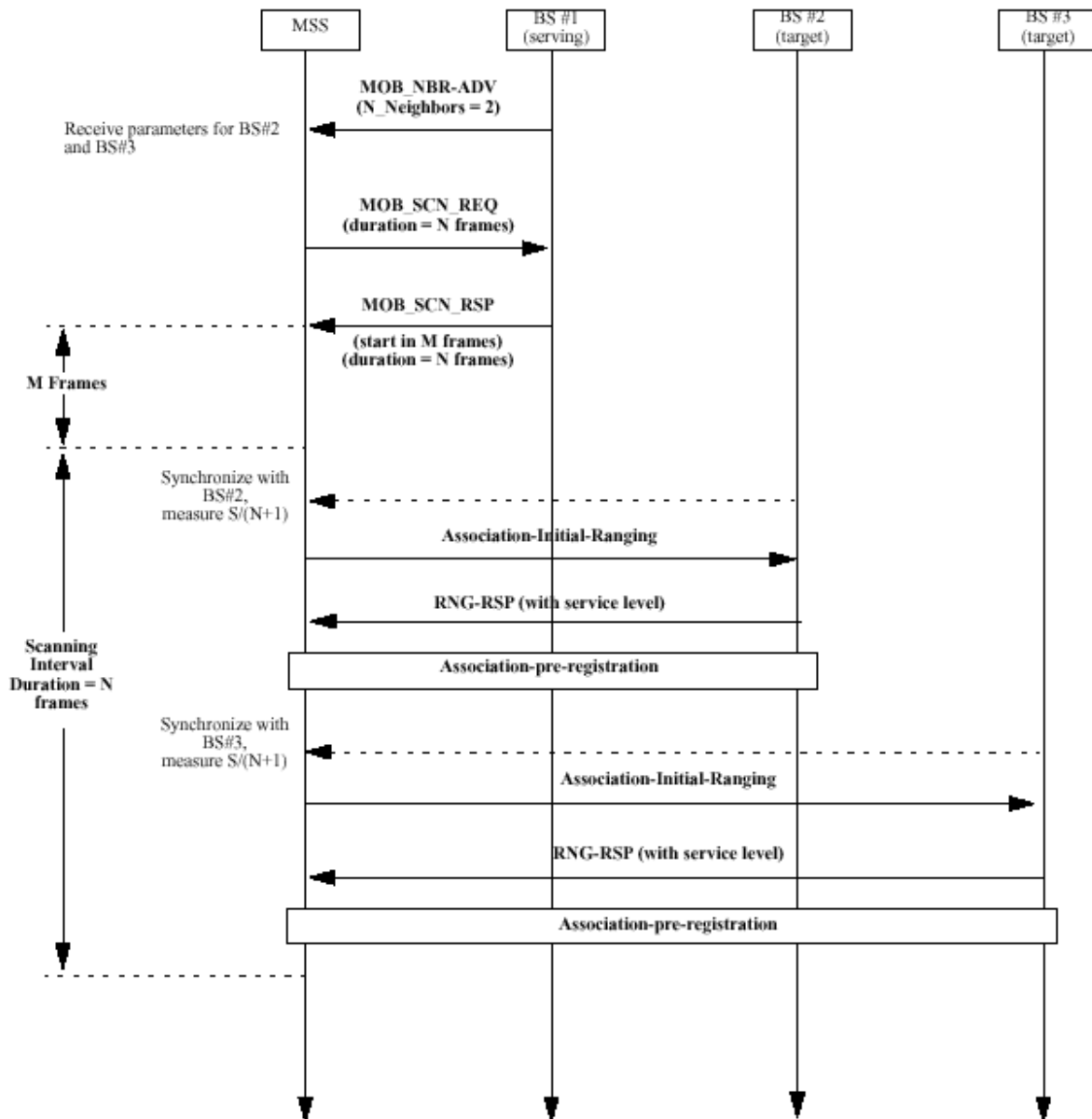


Figure D.2—Example of BS advertisement and MSS scanning (with association) by MSS request

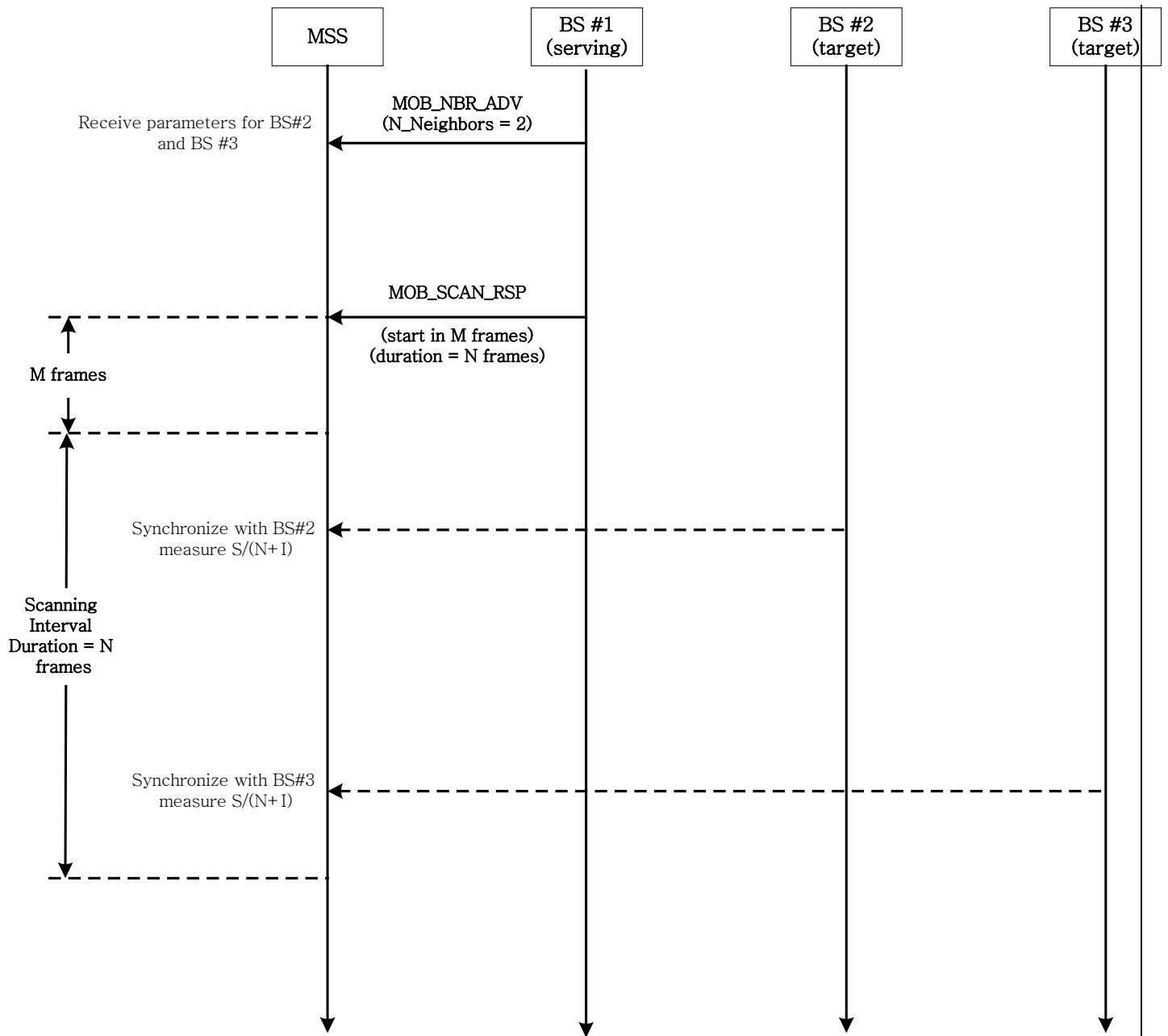


Figure D.3—Example of BS advertisement and scanning (without association) by BSS request

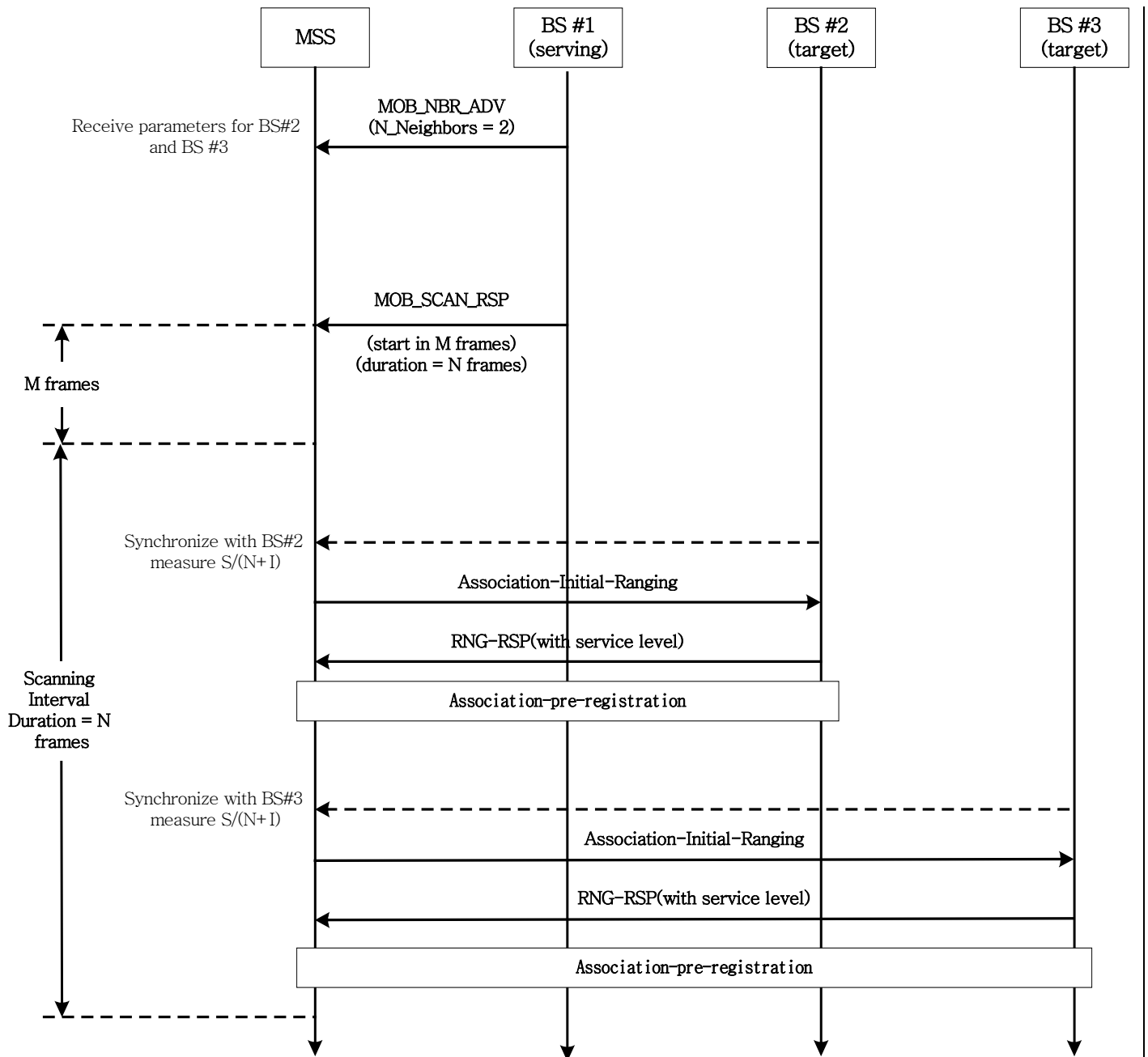


Figure D.4—Example of BS advertisement and scanning (with association) by BSS request

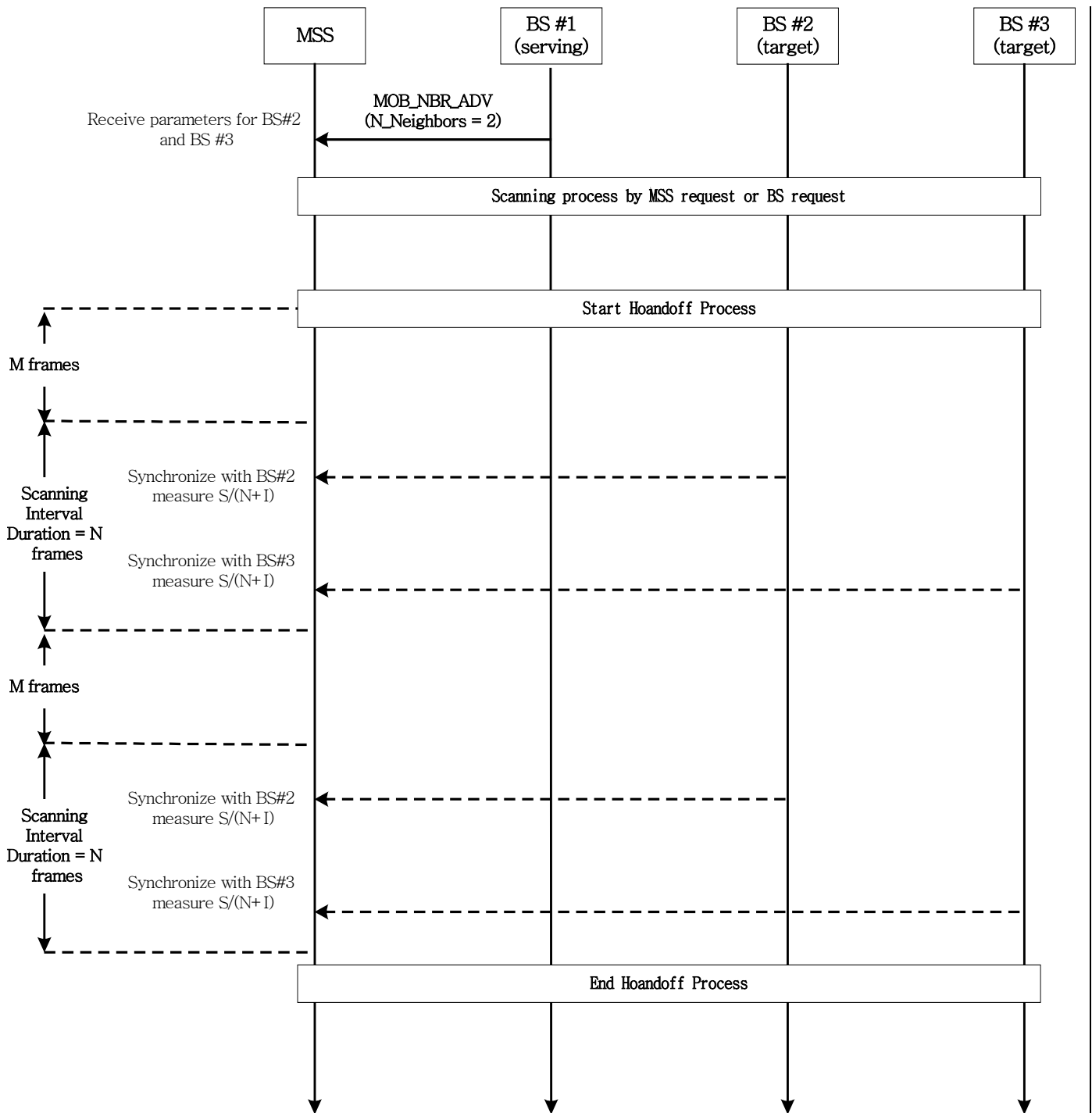


Figure D.5—Example of periodic scanning during Handoff process

D.1.2 Handoff

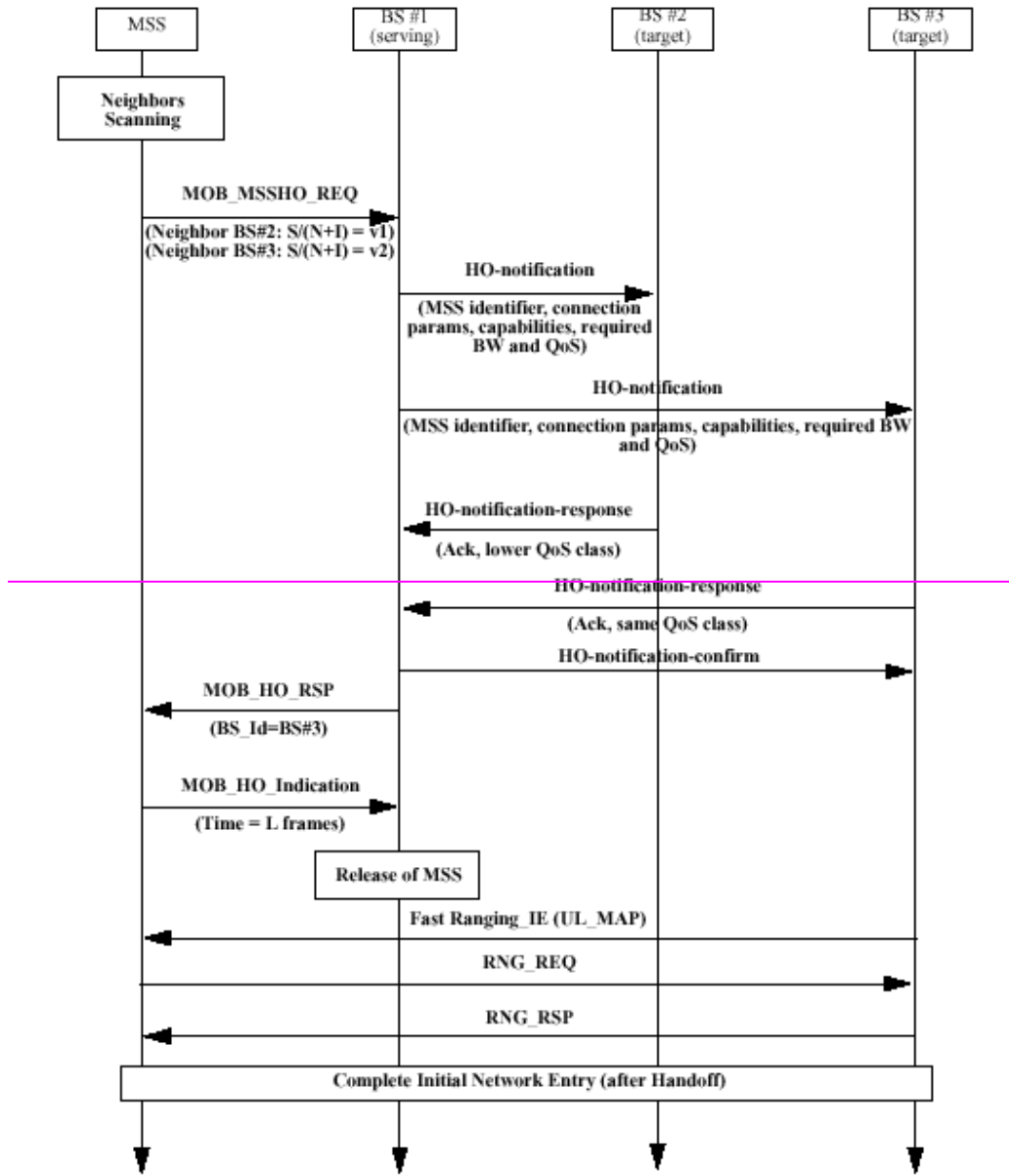


Figure D.3—BS-Initiated HO

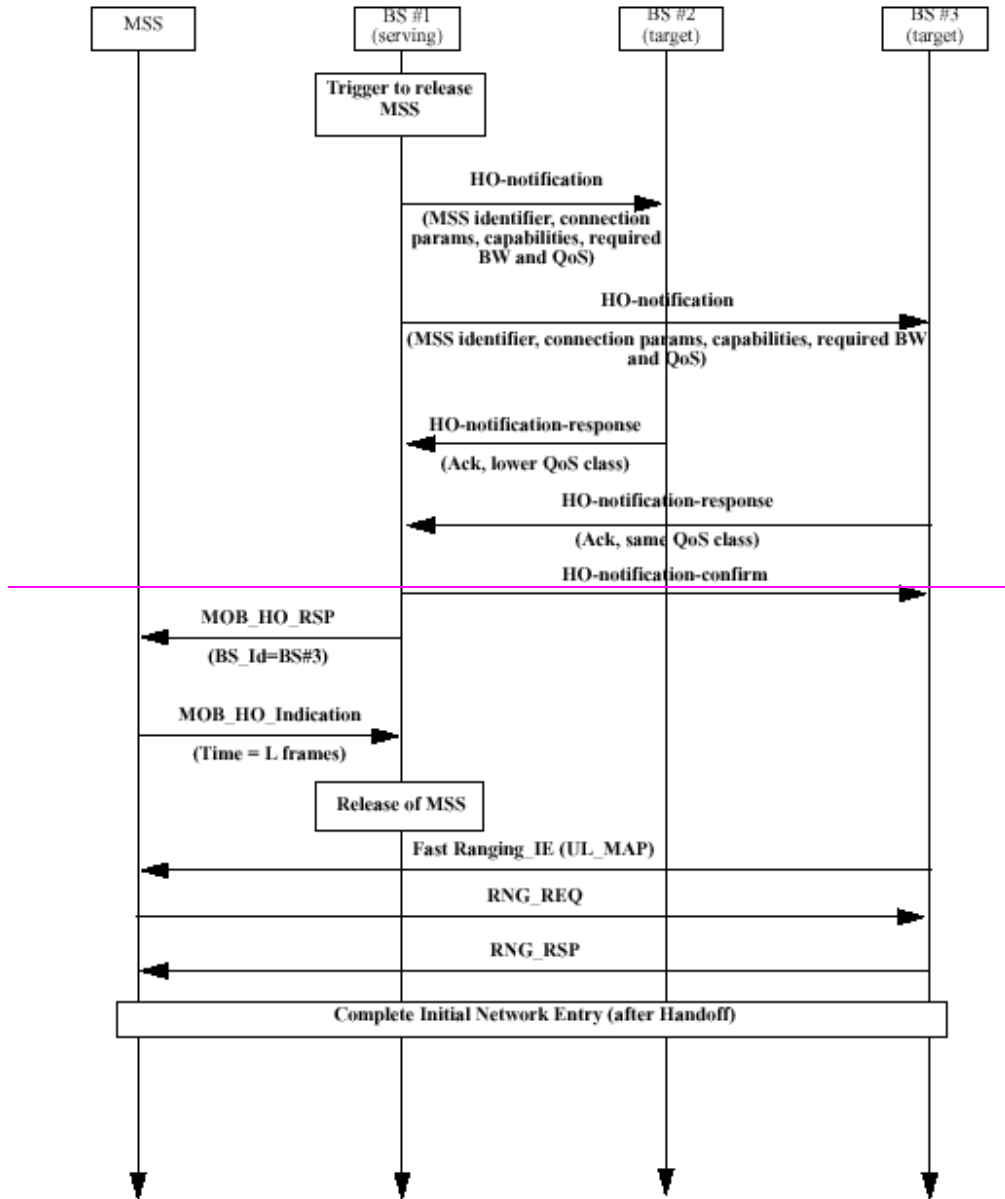


Figure D.4—MSS-Initiated HO

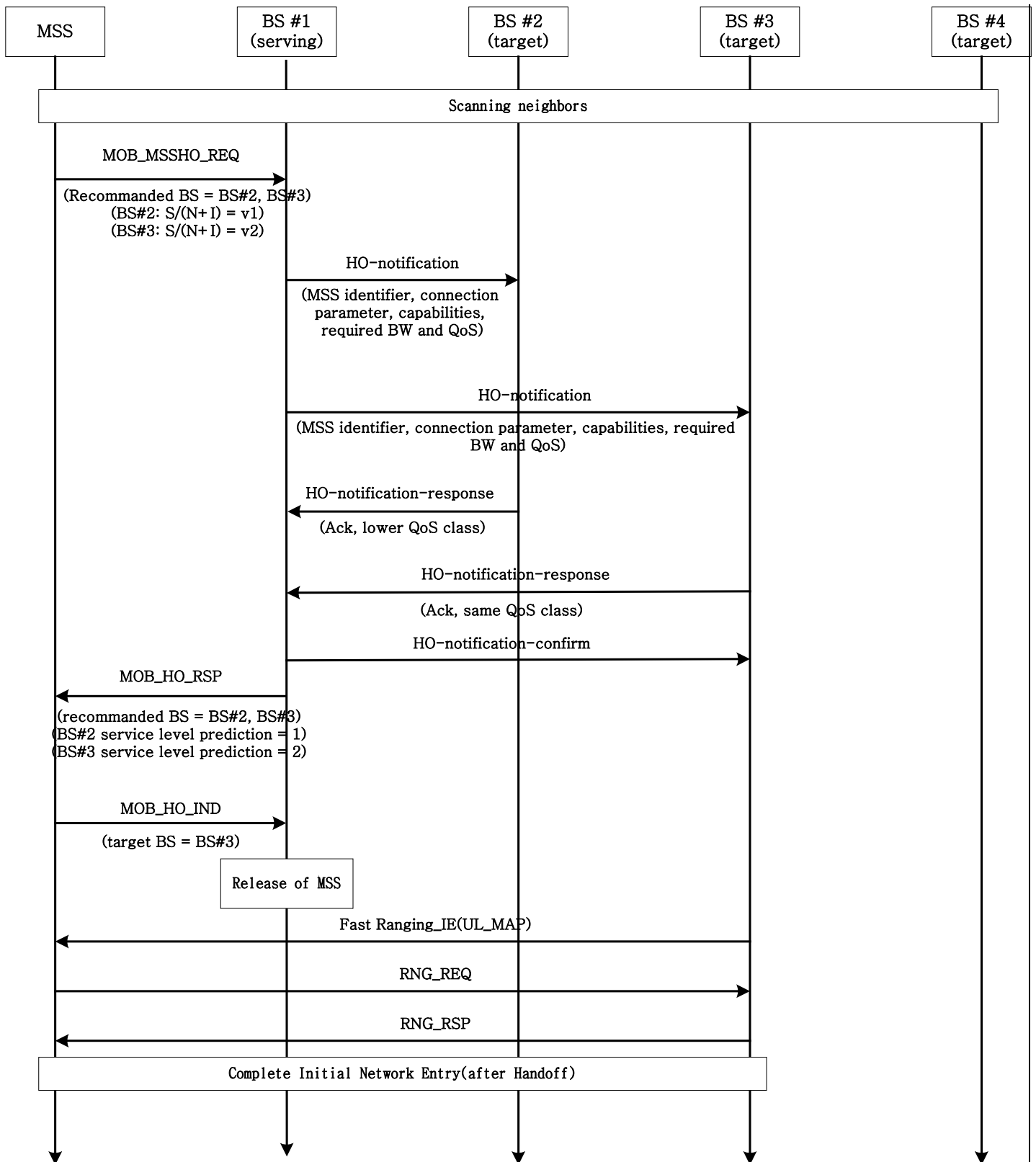


Figure D.6 HO process by MSS request

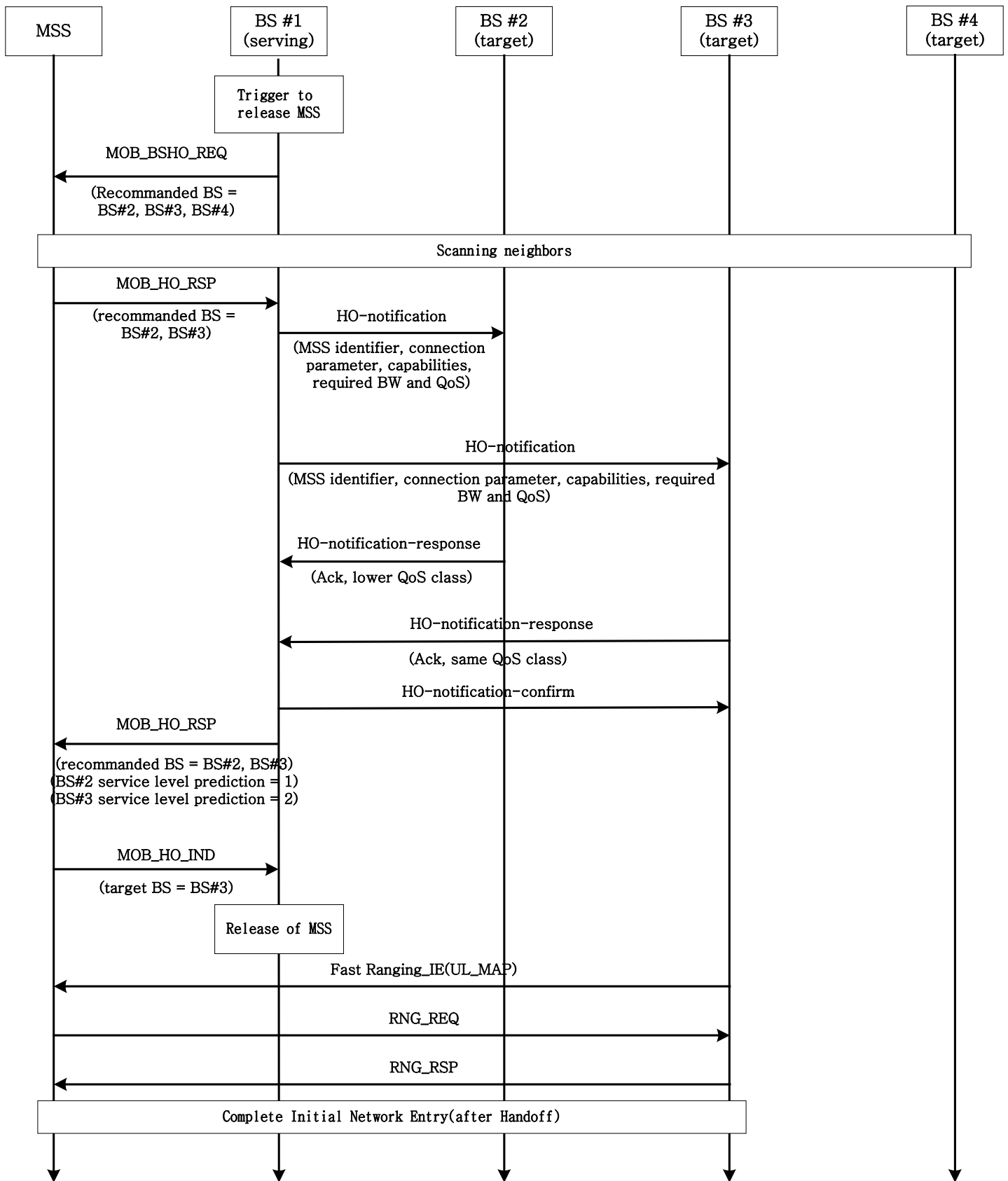
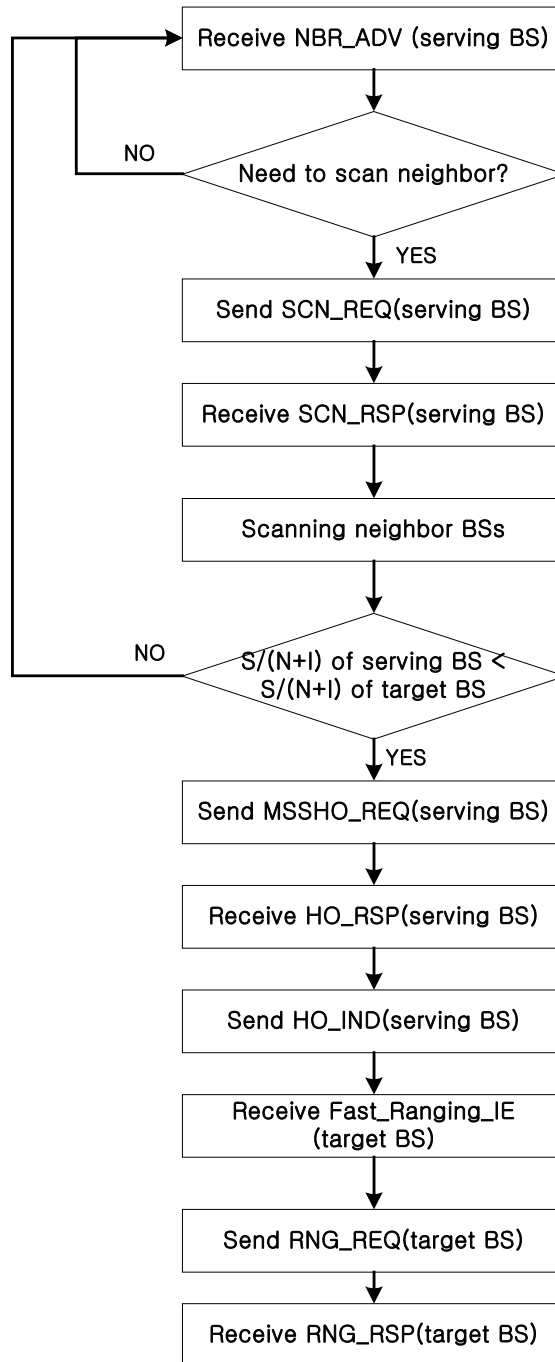


Figure D.7 HO process by BSS request**Annex E Block Diagram**

This annex provides Block Diagram for the procedures of handoff

E.1 Handoff Block Diagram**E.1.1. Handoff by MSS request**Figure E.1 HO process block diagram in MSS by MSS request

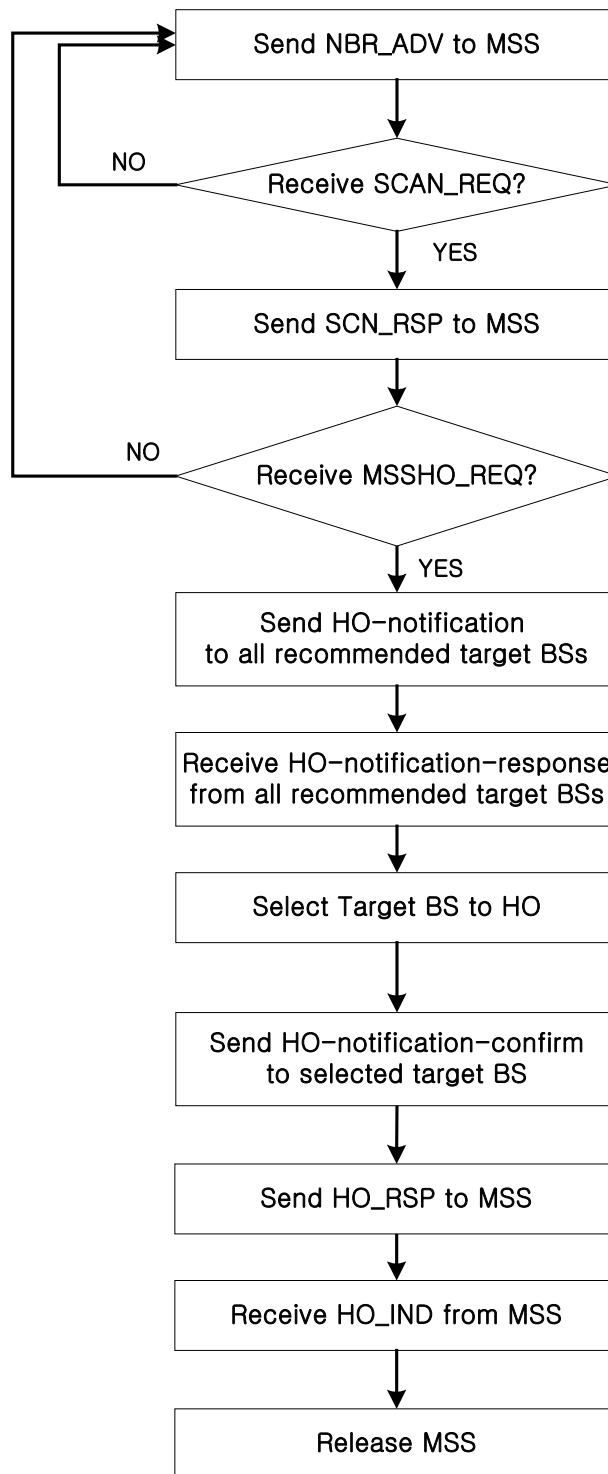


Figure E.2 HO process block diagram in Serving BSS by MSS request

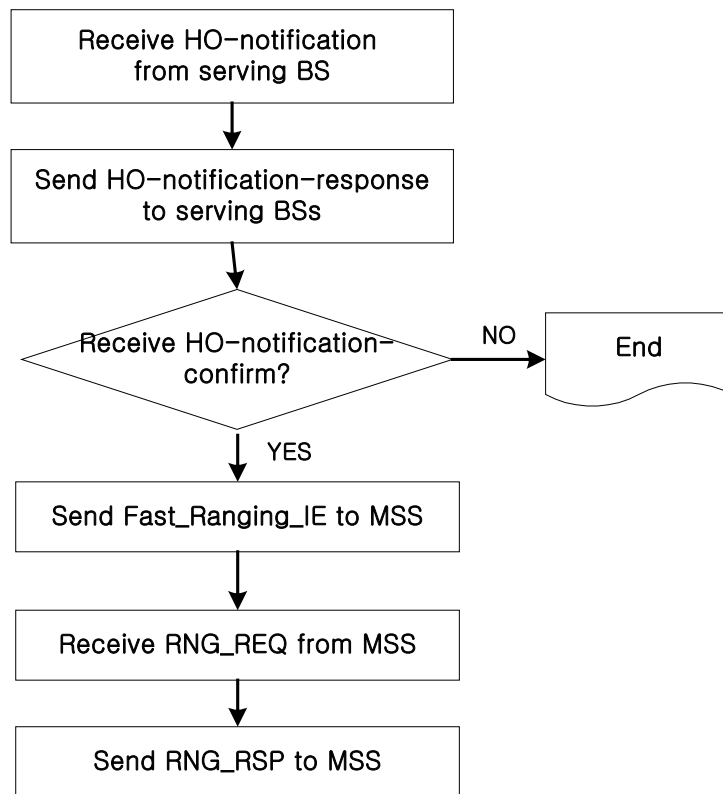


Figure E.2 HO process block diagram in Target BSS by MSS request

E.1.2. Handoff by BSS request

HO process block diagram in Target BSS by BSS request is same to HO process block diagram in Target BSS by MSS request.

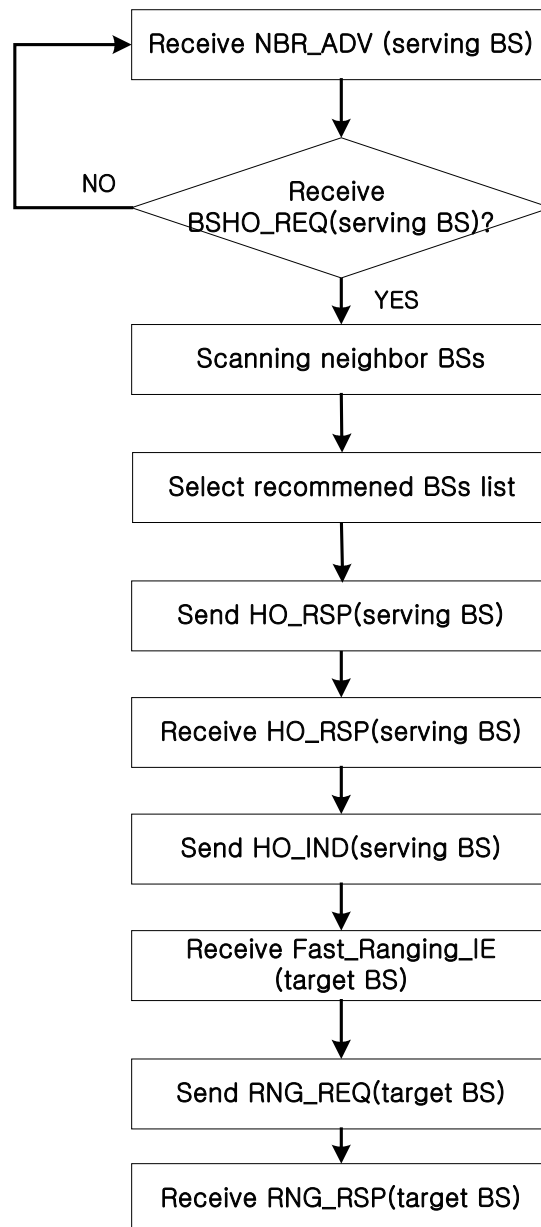


Figure E.4 HO process block diagram in MSS by BSS request

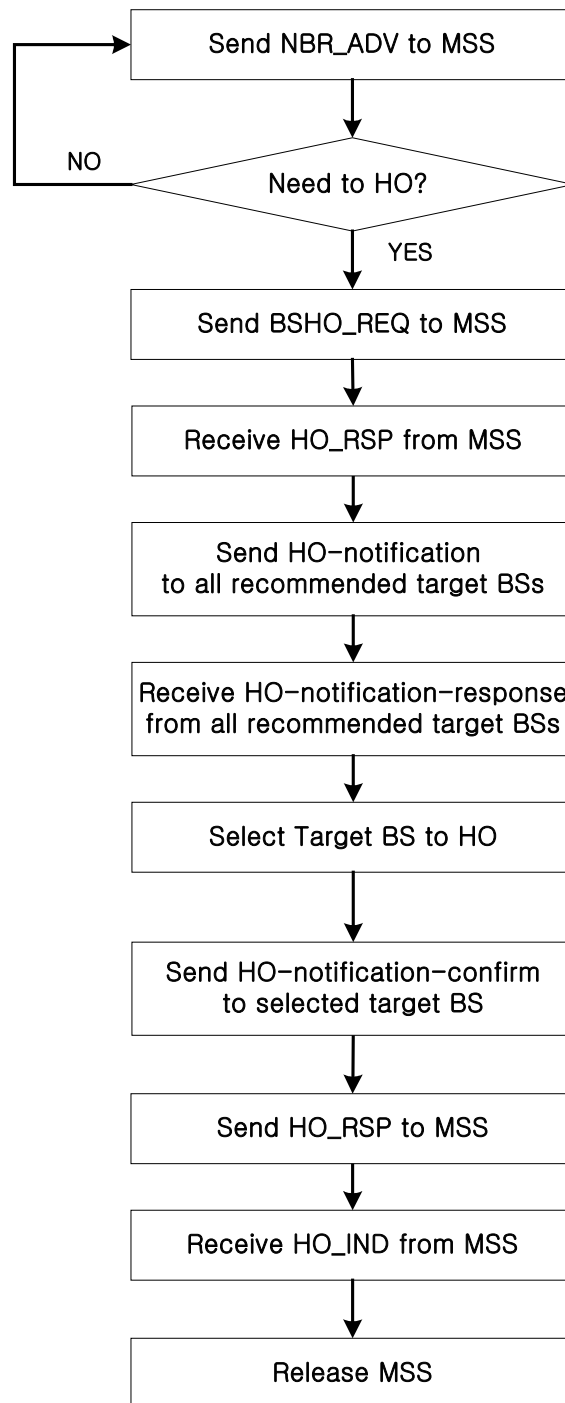


Figure E.5 HO process block diagram in Serving BSS by BSS request