TSG-RAN Working Group 2 (Radio layer 2 and Radio layer 3)   *TSGR2#2(99)077*

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Agenda Item: 8.1.2

Source: LG Information & Communications, Ltd. KOREA

Title: Multicast Data Transmission and Reception Procedures

Document for: Proposal of Multicast Service Procedures

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1. Overview

This contribution proposes the interface between the access stratum and non-access stratum for multicast service.

2. Reference

[1] 3GPP S2.04, UE Procedures in Idle Mode

[2] 3GPP S2.01, Radio Interface Protocol Architecture

[3] 3GPP S2.21, MAC protocol specification

[4] GSM 01.60 Version 6.0.0 Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Requirements specification of GPRS

[5] GSM 02.60 Version 7.0.0 Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 1

[6] TIA/EIA/637-A Short Message Service for Spread Spectrum Systems

[7] 3GPP TSG RAN WG2 #2 99/075, Definitions of multicast service and requirement

[8] 3GPP TSG RAN WG2 #2 99/076, Definition and characteristics of channels for multicast

3. Introduction

Multicast service is initiated by the *Non-Access Stratum* (NAS). NAS requests the transfer of multicast data to the *Access Stratum* (AS), which is responsible for the multicast data delivery using appropriate formats. That is, communications between NAS and AS are needed. In this contribution, we propose procedures for multicast service from receiver perspective rather than from multicast service provider perspective.

4. Inter-Layer Interfaces for Multicast Service

Inter-layer interfaces for multicast service consist of the followings:

1) **Multicast Data Reception Request** –NAS requests AS for the preparation of multicast service.

2) **Multicast Data Reception Release –** NAS requests AS for multicast service release

Multicast service setup procedure is performed only when UE wants to initiate multicast data reception. In other words, UE does not have to perform the multicast service setup whenever it changes its serving cell or area. With this setup procedure, UE gets the information about ciphering key so as to decode the multicast data.
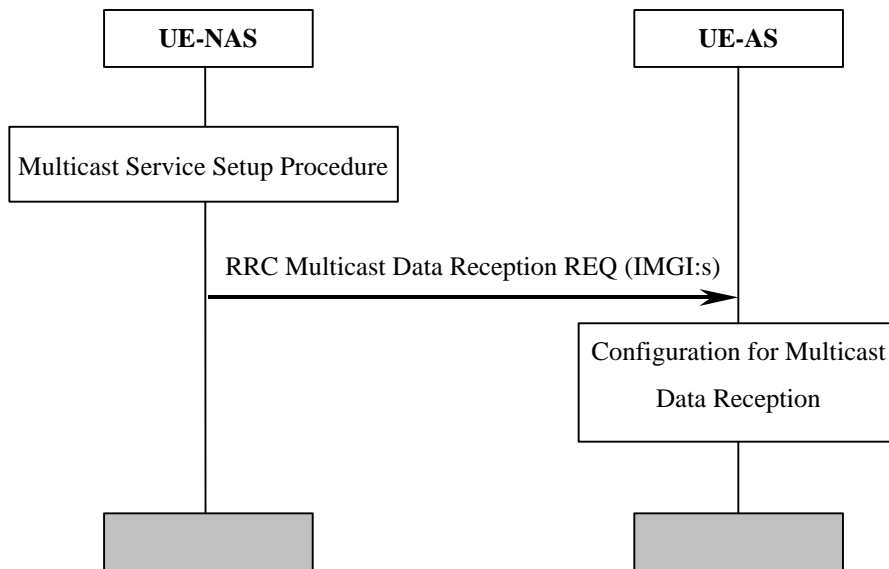
Multicast service setup procedure is performed only by non-access stratum, as shown in figure 1. Parameters contained in the primitives can be changed in the future.
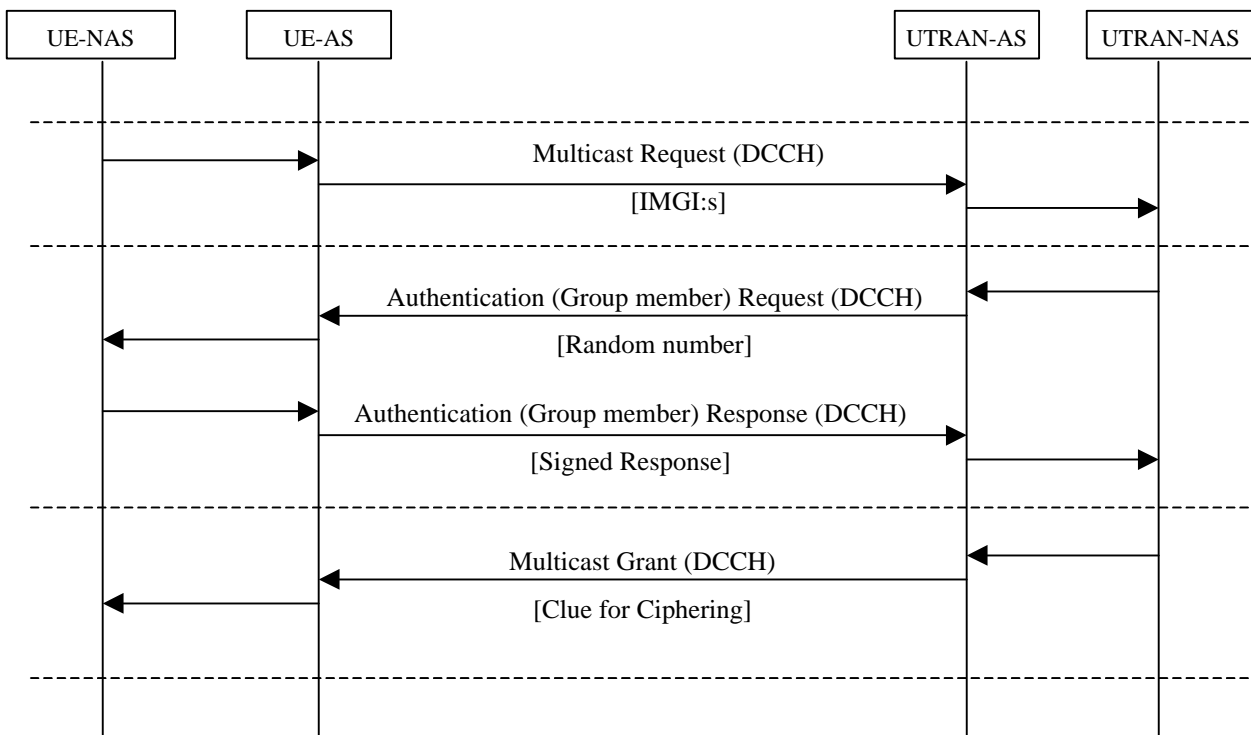
[Figure 1 Example of Multicast Service Setup Procedure]

UE sends Multicast Request together with IMGI information to UTRAN when it wants to initiate multicast service reception. Then, UTRAN takes authentication procedures for that user before it grants the multicast service. After the successful authentication, UTRAN sends Multicast Grant message to UE together with the information for ciphering.
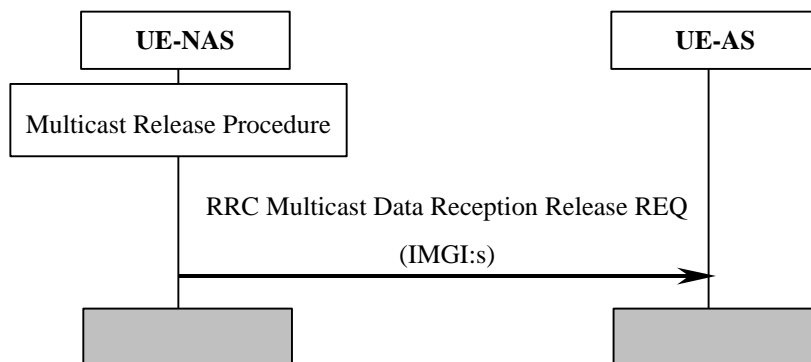
5. Multicast Data Reception Request Procedure

[Figure 2 Multicast Service Request Procedure]

NAS takes the Multicast service setup procedure first. Then, it requests RRC Multicast Data Reception REQ to AS. Then, AS do the configuration in order to receive multicast data.
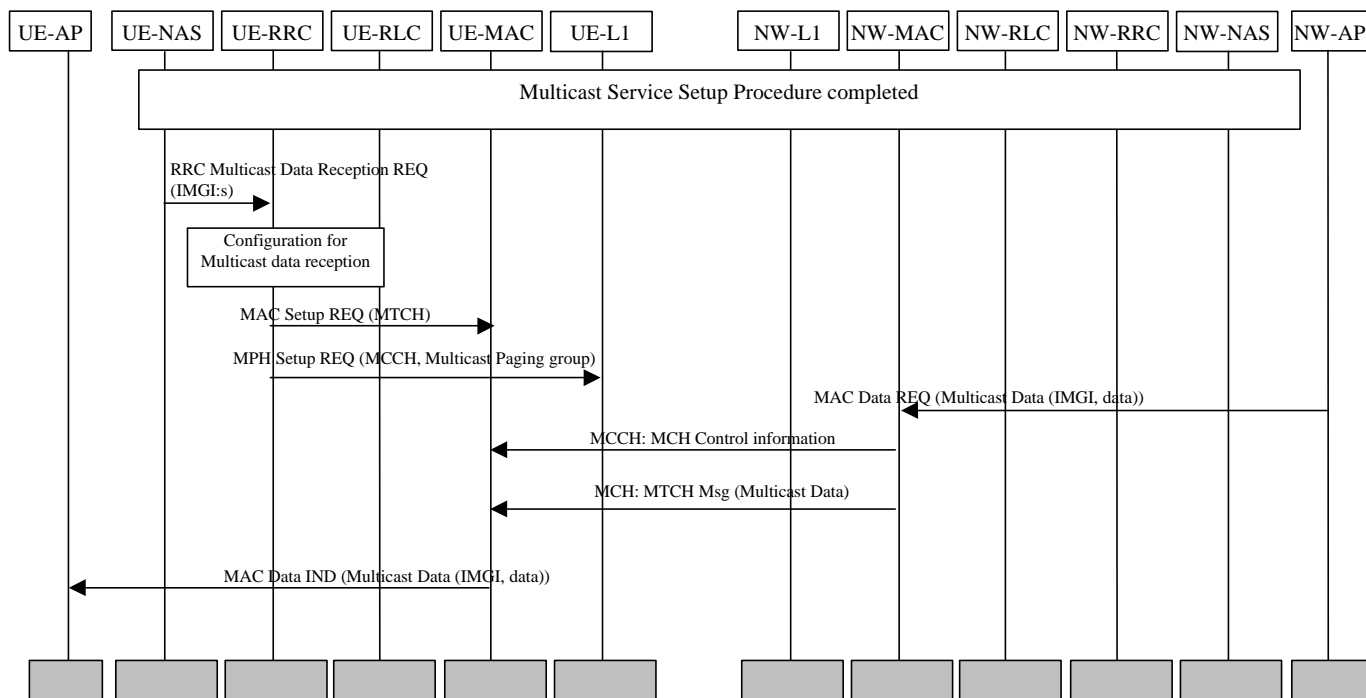
6. Multicast Data Reception Release Procedure

[Figure 3 Multicast Data Reception Release Procedure]

UE-NAS requests UE-AS to release the multicast data reception associated with specific IMGI.

7. Example of Multicast Data Reception between interlayers

[Figure 4 Example sequence of multicast data reception]

After the completion of Multicast Service Setup procedure, UE-NAS sends RRC Multicast Data Reception request to UE-RRC. Then, UE-RRC performs configuration for multicast data reception. In doing this, UE-RRC sends UE-MAC layer the MAC Setup Request for MTCH. It also sends UE-L1 layer the MPH Setup Request for MCCH.

When NW-MAC layer receives MAC Data transmission Request from NW-AP together with the multicast data to be transmitted, it executes the task using MCCH and MCH. When UE-MAC layer detects the reception of multicast data destined to the UE, it sends UE-AP layer the MAC Data IND to indicate the multicast data reception.

8. Proposals

We propose the section 5, 6, and 7 in this proposal to be added to S2.04