



# vMTAS 1.9 Technical Product Description Business Line AS

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TECHN PRODUCT DESCR

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# 1 Introduction

## 1.1 Scope

This document is part of MTAS TPD document series and focuses on Business Line AS. For MTAS common features [1] and other application server features, please read other TPD documents.

## 1.2 Terminology

Following is the basic terminology used in context of BLAS.

Business Line AS	Business Line AS provides multimedia telephony (MMTel) services to the UC users. MMTel Services are grouped in the Business Line AS base and the BL value packs. Each base/value pack is controlled by a single license.
UC System	An enterprise Unified Communication (UC) system provides enterprise communication services such as voice (including IP telephony), instant messaging (chat), presence information, audio conferencing, web conferencing & video conferencing. The UC system is IP-based but not integrated into IMS as one or more application servers. UC-System is the main service engine for the UC user. Multiple enterprises are typically hosted/connected to the same UC system.
Unified Communication (UC) User	A UC user is an enterprise user defined in the UC system. This user may have zero or more fixed devices/clients that are connected to the UC system. It can also have one IMS-connected (VoLTE) device to make use of mobility services. This user receives its communication services mainly from the UC system. The user is also referred as the VoLTE UC User.
VoLTE for Unified Communication	Standard VoLTE solution extended with the external UC System makes the VoLTE for Unified Communication Solution. The is a multi-vendor enterprise communications solution that provides the both UC services and the mobility features to the UC users.



## 1.3 Overview

Ericsson MTAS Business Line AS (BL AS) is a new AS product intended to realize IMS communication functions required by the enterprises. As a baseline, it provides a set of IR.92 services to enable the operator to provide the needed IMS-based supplementary services to the UC users. In addition, it provides, through the “Unified Communication Routing” service, the functionality required for the VoLTE for Unified Communication solution. The “UC Routing” service is triggered for all VoLTE for Unified Communication users’ originating and terminating calls involving VoLTE connected devices except emergency calls. UC Routing service route the VoLTE calls to the UC System which is the main service engine for the UC user and provides enterprise communication services.

Specific Business Line AS functions for the VoLTE for Unified Communication solution include:

- Provisioning support for UC system identification and routing information
- Routing loop avoidance.
- Supporting and enhancing UC system number translation and normalization by modification of the consumer normalization and translation behavior and providing additional proprietary information to the UC system needed for enterprise service execution
- Alignment with current and future network usage of VoLTE related services (IMS multi-persona, 3GPP/VoWiFi mobility, IN services etc.)

Business Line AS is realized in the MTAS product and network integration is easier for customers already using Ericsson’s MMTel AS and SCC AS as these customers only need to integrate VoLTE for Unified Communication specific additions to existing interfaces for example charging and provisioning.

Business Line AS can be deployed as a stand-alone network element or co-exist with the MMTel AS and/or the SCC AS.

Following diagram describes the Business Line AS deployment in the IMS network.

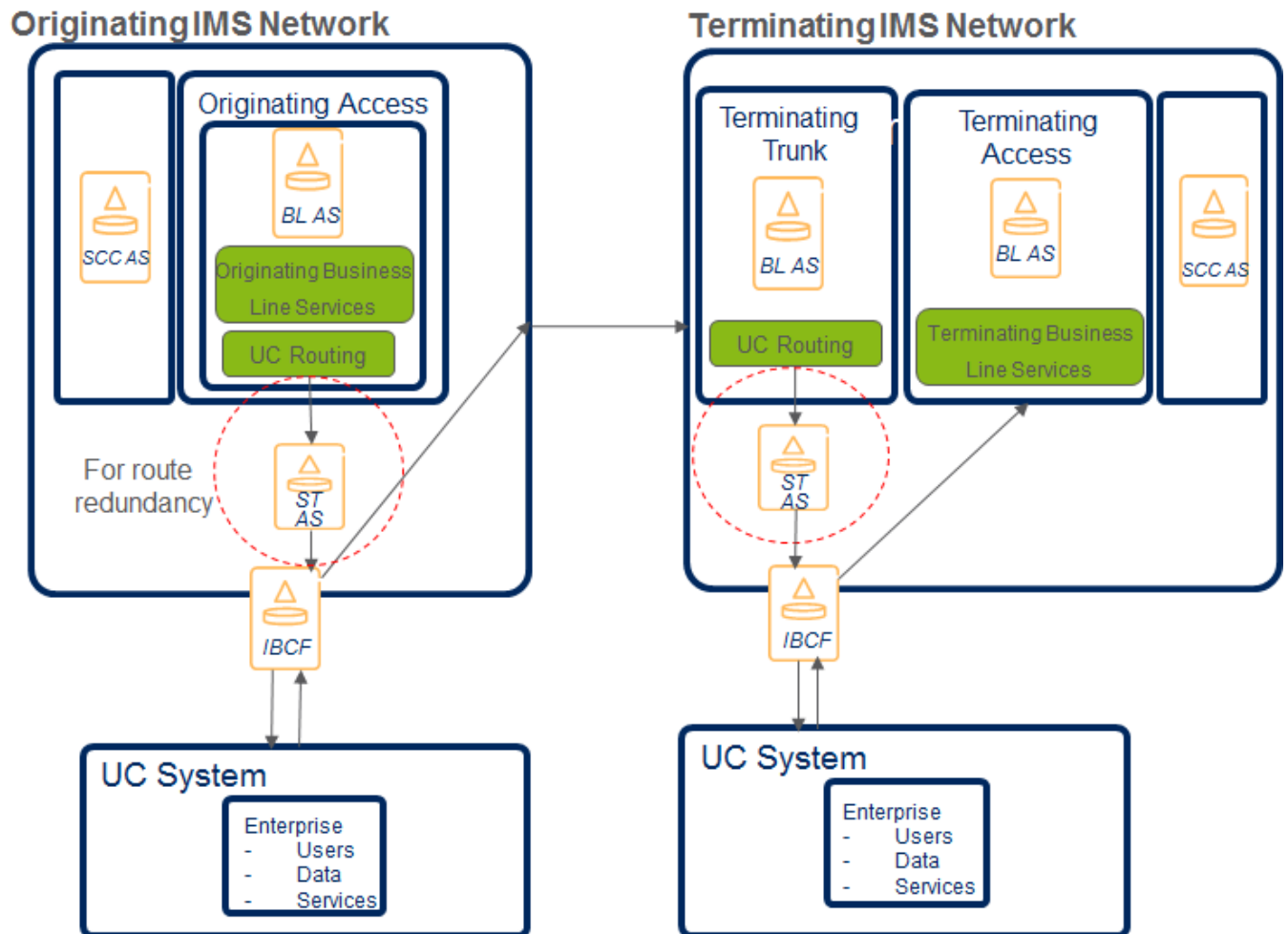


Figure 1: Business Line AS Execution Contexts

Business Line AS is invoked in the following execution contexts.

### Originating Access

When the Business Line AS is invoked in this leg, it provides the provisioned business line services for the user. After originating business line services are executed, call is routed to the UC system. The routing mechanism, which is described in more detail in section 2.2.2.1, relies on retargeting by the Business Line AS.

### Terminating Trunk

To ensure that terminating calls to VoLTE UE of the VoLTE UC users are routed via the UC system, an additional terminating trigger is configured in HSS for VoLTE UC users. The trigger adds the parameter 'sc=term-trunk' in the top most Route header in the INVITE message sent towards the Business Line AS. Once the Business Line AS is invoked in the terminating trunk call leg, it modifies the SIP INVITE with necessary information to route the request to the UC system, see 2.2.2.2 for more details. This terminating trunk Business Line AS invocation does not perform any terminating business line services for the VoLTE UC user.



## Terminating Access

After executing the terminating UC services; terminating UC system routes the VoLTE call (via the IBCF) towards the terminating Business Line AS. IBCF adds a proprietary header Ericsson-UCMobility-UC-Ext: sescase=connect to identify the terminating access call leg. Business Line AS is invoked to execute the terminating business line services for the served VoLTE UC user. Note that only UC Routing was executed in the 'Terminating Trunk Call Leg'.

Note: ST AS is invoked to provide the route redundancy using static routes. SCC AS provides SRVCC and ICS services. Please refer to the ST AS [3] and SCC AS [4] documentation for more details.

### 1.4 Change History

Revision	Date	Comments/Changes
A	2017-10-17	First Business Line AS release
B	2017-10-30	Added the Session Continuation Support in BL UC/PBX Rerouting value pack

## 2 Business Line AS Features

Features in the Business Line Application Server are grouped together in the 'Voice Base pack' and the additional 'value packs'. All features in the 'Voice Base pack' are controlled by a single Business Line AS base license. Value packs may have one or more features. Feature(s) in the value packs are controlled by a single BL value pack license. For Business Line AS deployment in the VoLTE for Unified Communication solution; following base/value packs are required as a bare minimum.

- 'Business Line AS Base' for the basic business line services
- 'BL UC/PBX Rerouting' for routing business calls to the external UC System

### 2.1 Business Line AS Base

#### 2.1.1 Description

Business Line AS Base pack provides the following features.

- Call Admission Control
- Communication Prioritization
  - Priority service
  - Priority call



- Calling Party Category (CPC)
- Call Return
- Closed User Group
- Communication Completion Services
- Communication Barring
  - Address Policing
  - Dial Plan
    - Nodal Dial Plan
    - Dial Plan – OTP-controlled per-VTP Dial Plan
    - Dial Plan – VTP-controlled per-VTP Dial Plan
  - Basic Barring – Barring Programs
  - Incoming Communication Barring Rule Based (ICB)
  - Outgoing Communication Barring Rule Based (OCB)
  - Anonymous Communication Rejection (ACR)
  - Operator Black List
  - Operator White List
  - Operator Anonymous Communication Rejection
  - Malicious Communication Identification
  - Malicious Communication Rejection
  - Dynamic Black List
- International and National Toll Restriction
- Communication Diversion (CD)
  - Communication Deflection
  - Communication Diversion - Operator Blacklist
  - Communication Diversion - to Voice Mail
  - Communication Diversion Notification
  - Communication Diversion Rule Based
  - Communication Forwarding – Busy (CFB)





- Communication Forwarding - No Reply (CFNR)
  - Communication Forwarding – Unconditional (CFU)
  - Communication Diversion after BYE
- Communication Waiting
- Charging
  - Offline Charging
  - Online Charging
  - Advice of Charge
  - Account Activation
  - Administration of user's language preference
  - Flexible AVP
  - Subscriber Credit Notification
  - Japanese Charging
  - Terminating OCS initiated final announcements towards a caller
- Distinctive Ring
- Explicit Communication Transfer
- Gateway Model
- Hold Communication
- Hotline
- Identity Presentation
  - Originating Identity Presentation (OIP)
  - Originating Identity Restriction (OIR)
  - Terminating Identity Presentation (TIP)
  - Terminating Identity Restriction (TIR)
  - Flexible Identity Presentation (FIP)
  - Multiple Subscriber Number
  - Calling Name Identity Presentation (CNIP)
- Mr interface



- Multiple Languages Support
- Number Handling
  - Abbreviated Dialing
  - Number Normalization
  - Number Translation
  - Carrier Pre-Select
  - Carrier Select
  - Short Number Dialing
  - Number Portability
- Provisioning
  - Service Profile
- Preconditions
- Self-Administration
  - Self-Administration via Supplementary Service Codes (SSC)
  - Self-Administration via Ut Interface
- Support for IPv6
- Tone and Announcement Management
  - Network Announcement
    - Requested Announcement
  - Customized Alerting Tones (CAT)
  - Dial Tone Management
  - Network Provided Ring Back Tone (RBT)
  - Generic Announcement
- Three Party Call
- Wholesale

To see the feature details; refer to Technical Product Description MMTel AS [2].



## **2.1.2 Example Call Flows**

See Technical Product Description MMTel AS [2] to see the call flows of the services in the Business Line AS Base pack.

## **2.1.3 Configuration Management**

Business Line AS must be configured to serve the UC users. Business Line AS operator can configure the same MTAS node to serve both the business and consumer subscribers also.

## **2.1.4 Performance Management**

See Technical Product Description MMTel AS [2].

## **2.1.5 Provisioning**

Business Line AS operator must provision the users as business subscribers in the provisioning.

See Technical Product Description MMTel AS [2] to see provisioning details for the rest of the services in the Business Line AS Base pack.

## **2.1.6 Service Interactions**

VoLTE for Unified Communication has two service engines (Business Line AS; UC System). Service interactions between these two service engines is to be analyzed by the operator.

UC/PBX Rerouting value pack is mandatory to deploy the Business Line AS in the VoLTE for Unified Communication Solution.

To see the details of service interactions in the Business Line AS, refer Technical Product Description MMTel AS [2].

## **2.1.7 Fault Management**

Business Line AS Base License absent alarm. See the alarm OPI [5].

Business Line AS Base Capacity License Exceeded alarm (TSP only). See the alarm OPI [11].

## **2.2 BL UC/PBX Rerouting**

### **2.2.1 Description**

BL UC/PBX Rerouting value pack provides the following feature.

- Unified Communication Routing Service

Unified Communication Routing service routes the VoLTE calls to the UC System to execute enterprise communication services for the UC VoLTE user.



## 2.2.2 Example Call Flows

### 2.2.2.1 Route Originating Call to the UC System

Unified Communication Routing service routes the mobile originated call from the UC VoLTE user to the UC System by rewriting the R-URI of the outgoing INVITE to the originating UC routing number (OUCRN) so that the originating enterprise services could be executed in the UC System.

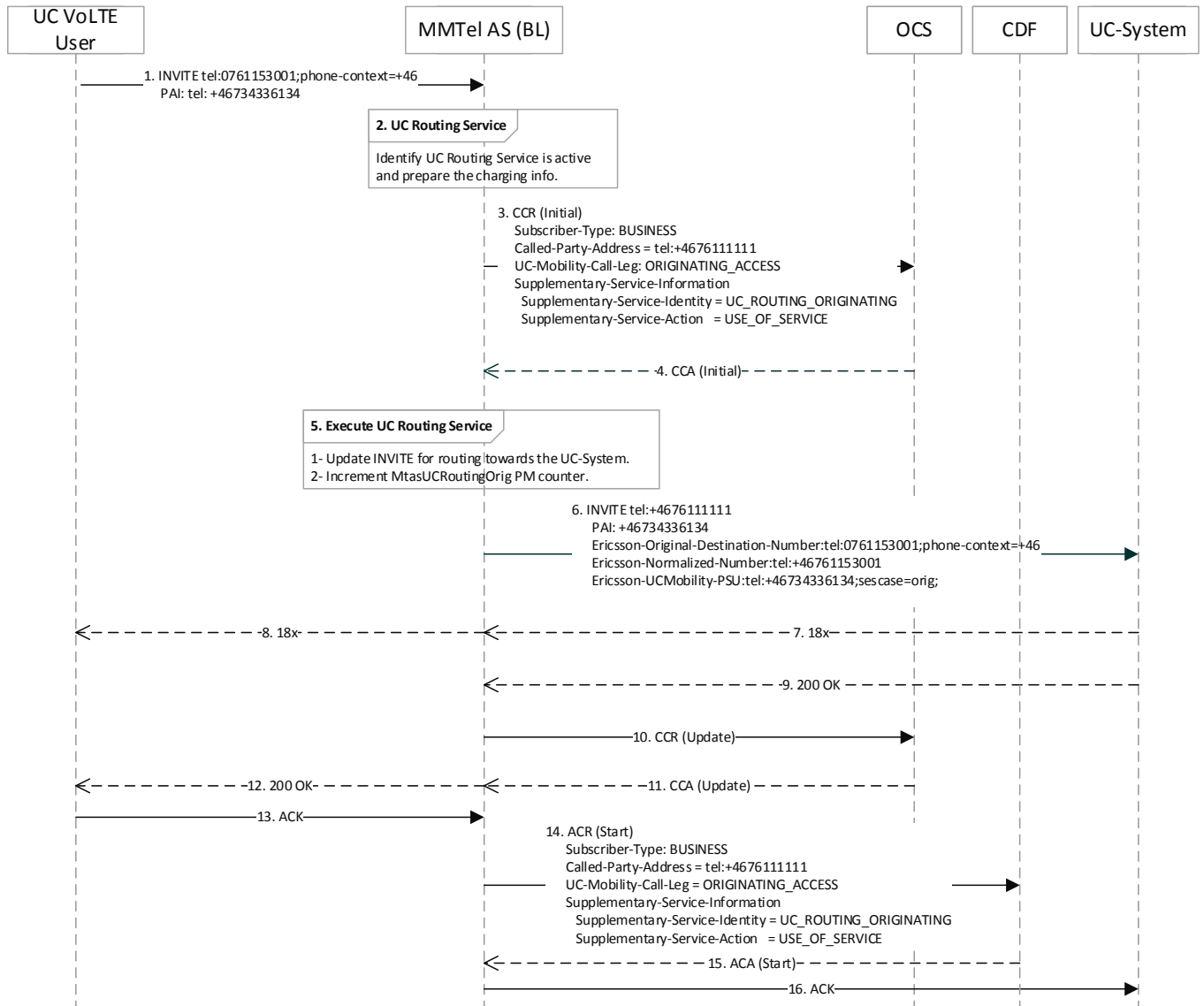


Figure 2: Route Originating VoLTE call to the UC System

When routing the originating VoLTE call; Business Line AS adds the following information as SIP proprietary headers in the outgoing INVITE sent towards the UC System to execute the originating enterprise services.

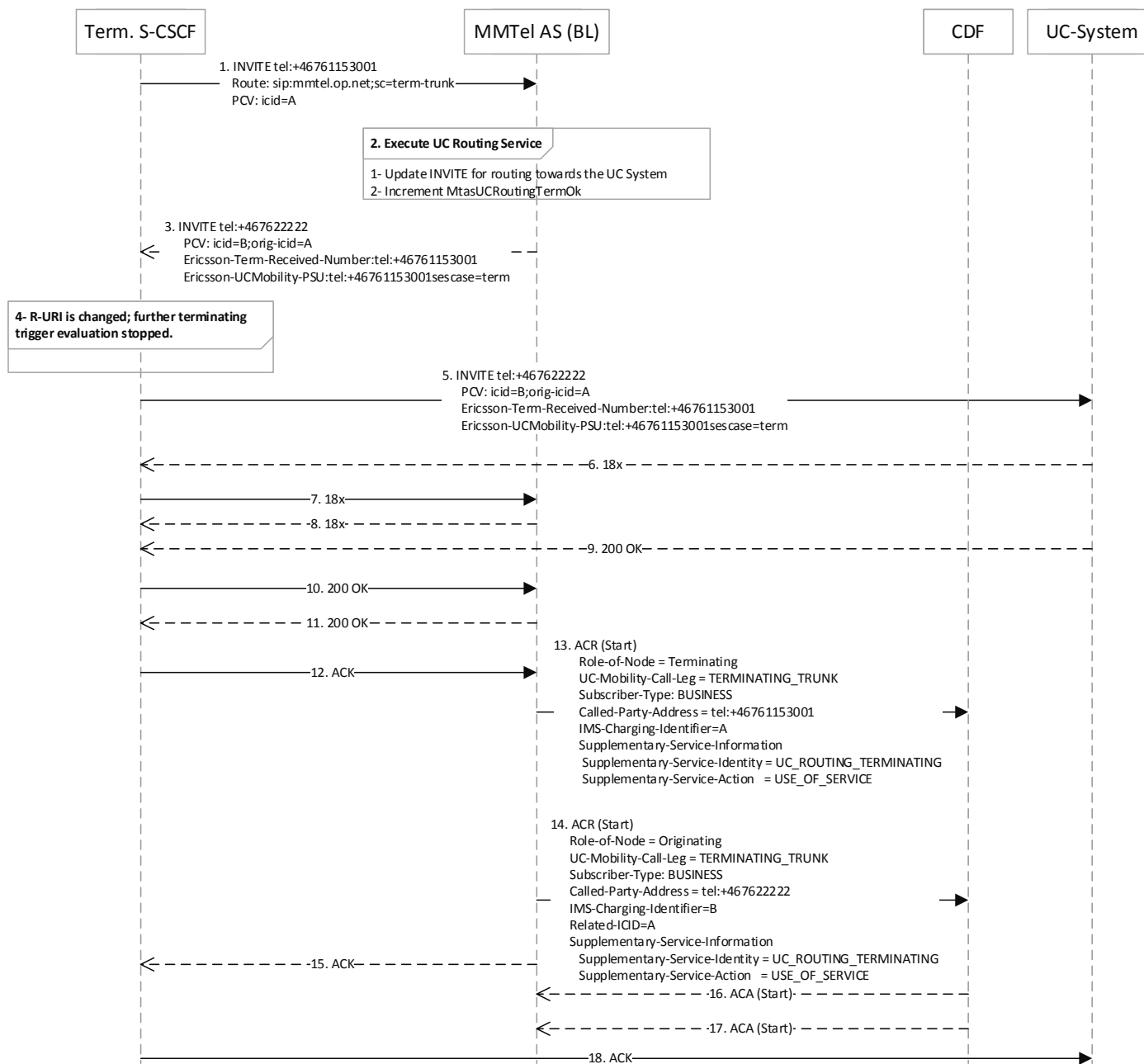


- Ericsson-UCMobility-PSU
  - Served-user identity of the VoLTE UC user and the session case (Originating)
- Ericsson-Original-Destination-Number
  - Called user's identity as received in the R-URI of the incoming INVITE
- Ericsson-Normalized-Number
  - Normalized Number (of the Called user's identity)

Originating UC System executes the originating enterprise services for the served user identified by the Ericsson-UCMobility-PSU.

#### 2.2.2.2 Route Terminating Trunk Call to the UC System

Unified Communication Routing service routes the mobile terminated calls for the UC VoLTE user to the UC System so that the terminating enterprise services could be executed in the UC System.



**Figure 3: Route Terminating Trunk Call to UC System**

Business Line AS receives the INVITE from the S-CSCF and identifies that this is the terminating-trunk session (*sc=term-trunk in the top most Route header*)  
Only UC Routing service is executed in the term-trunk session.

When routing the terminating call; Business Line AS adds the following information as SIP proprietary headers in the outgoing INVITE sent towards the UC System to execute the terminating enterprise services.

- Ericsson-UCMobility-PSU



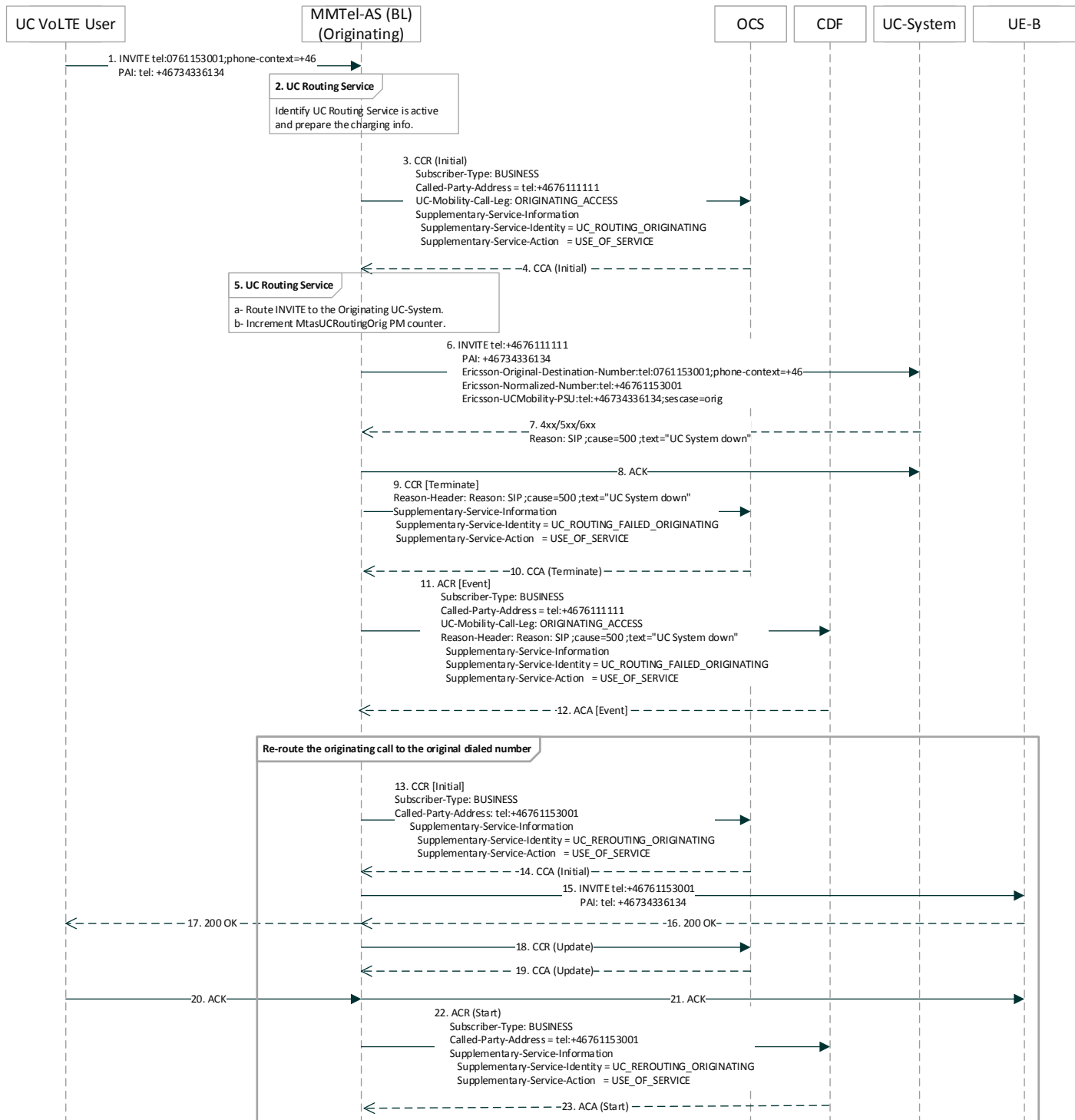
- Served-user identity of the VoLTE UC user and the session case (Terminating)
- Ericsson-Term-Received-Number
  - Called user's identity as received in the R-URI of the incoming INVITE

Terminating UC System executes the terminating enterprise services for the served UC user identified by the Ericsson-UCMobility-PSU header.

#### 2.2.2.3 Originating Session Continuation

On receiving the configurable SIP final error response(s) from the UC-System, originating BL AS reroutes the call to the original dialed number.

*Note: Operator can configure any individual response(s) or range(s) from the 4xx/5xx/6xx error responses for triggering the originating/terminating session continuation.*



**Figure 4: Originating Session Continuation**

1-6 are same as in the Route Originating to the UC System 2.2.2.1.

In step-7; INVITE is rejected by the remote network with the 500 SIP error response. *Note: BL AS is configured to execute the session continuation for this error response.*





Existing charging sessions (online/offline) are terminated. CCR [Terminate] and the ACR [Event] both reports the Supplementary-Service-Identity containing UC-ROUTING-FAILED-ORIGINATING to indicate that the call towards the UC-System is failed. See steps 9/11.

CCR-I is sent to the OCS. Note that the Called-Party-Address AVP contains the original dialed number (instead of the OUCRN) and the Supplementary-Service-Identity reports the UC-REROUTING-ORIGINATING indicating that the originating session continuation is triggered. See step 13.

After receiving successful CCA-I (step-14); BL AS re-routes the call towards the original dialed number in the normalized form (see step-15).

After successful session establishment; BL AS sends ACR [Start] and reports the Called-Party-Address that contains the original dialed number and also reports UC-REROUTING-ORIGINATING in the Supplementary-Service-Identity to indicate that the originating session continuation is triggered. See step-22.

#### 2.2.2.4 Terminating Session Continuation

On receiving the configurable SIP final error response(s) from the UC-System, terminating-trunk BL AS reroutes the call to the original dialed number as received in the R-URI of the incoming INVITE.

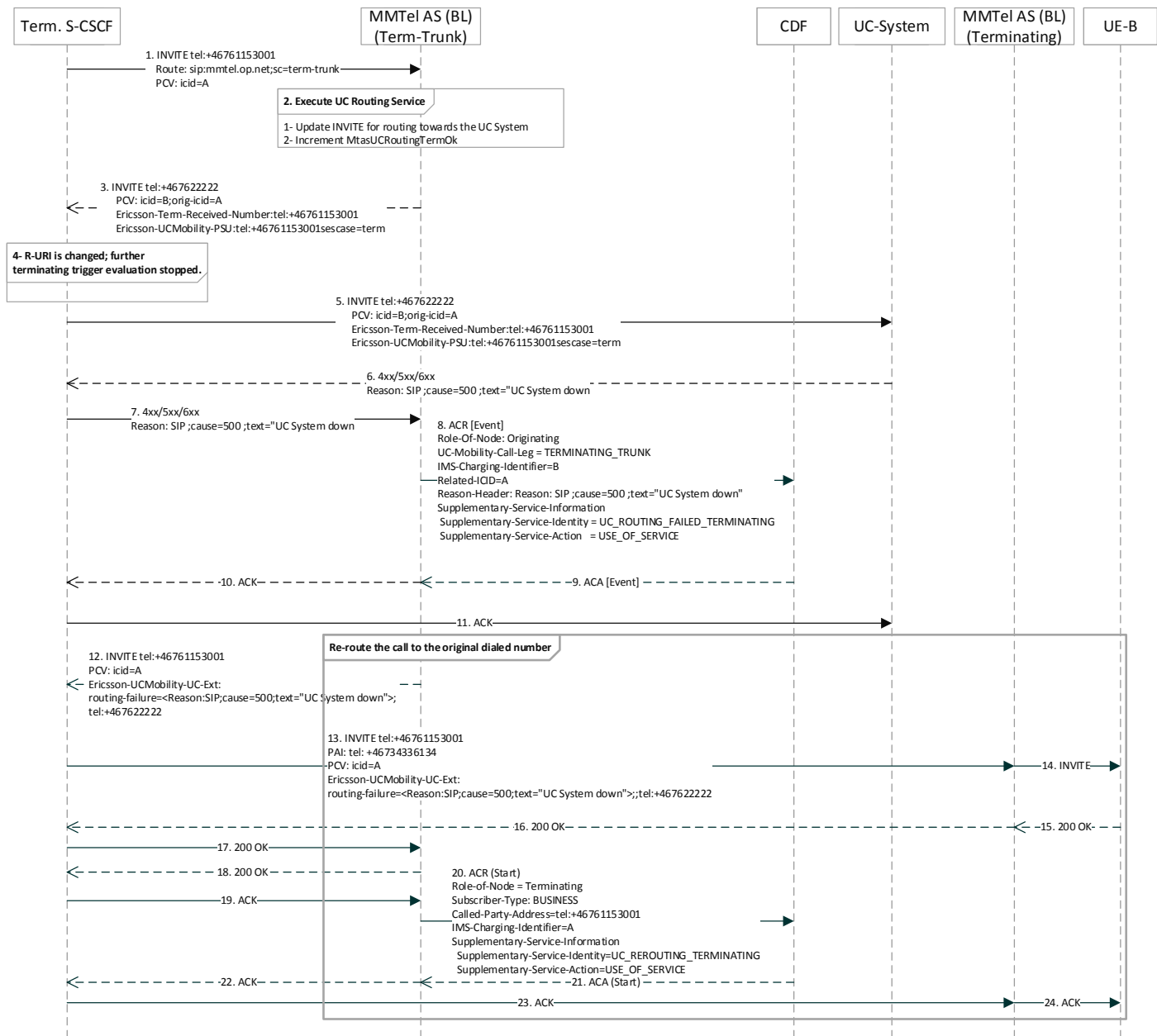


Figure 5: Terminating Session Continuation

1-5 Same steps as in Route Terminating Trunk Call to the UC System 2.2.2.2.

The communication session routed towards the UC-System is rejected with the 500 final SIP error response containing the optional Reason header (step 6/7).  
**Note:** BL AS is configured to execute the session continuation for this error response.



BL AS sends the ACR [Event] to inform CDF about the failed routing towards the UC-System for the terminating trunk call leg. ACR [Event] reports the Supplementary-Service-Identity containing the UC-ROUTING-FAILED-TERMINATING to indicate that the call towards the UC-System is failed. See step-8.

Session continuity function re-routes the INVITE by putting the originally dialed number in the R-URI. A SIP proprietary header (Ericsson-UCMobility-UC-Ext) with an attribute "routing-failure" is also added in that INVITE. The attribute contains the SIP Reason header if present in the 500 error, followed by the terminating UC routing number (TUCRN) as shown. INVITE is sent to the S-CSCF. See step 12.

After successful session establishment; BL AS sends ACR [Start] and reports the Called-Party-Address that contains the original dialed number and also reports UC-REROUTING-TERMINATING in the Supplementary-Service-Identity to indicate that the terminating session continuation is triggered. See step-20.

## **2.2.3 Service Interactions**

### **2.2.3.1 Call Admission Control**

An incoming call terminated within the UC system, is not counted as a session of a served business VoLTE user by the CAC service.

### **2.2.3.2 Communication Waiting**

An incoming call terminated within the UC system, is not counted as a session of a served business VoLTE user by the Mobile CW service.

### **2.2.3.3 Ad-hoc Conference and Three Party Call**

Session continuation is not triggered for the conference and three party dial out legs from the focus towards the conference/3-party participants.

## **2.2.4 Configuration Management**

Following UC Routing service configuration are provided using the CM attributes:

- Enable/disable the service
- Name of SIP Proprietary headers
- Name of the charging profile for the terminating trunk call leg
- Error response sent when the UC routing is unavailable in the terminating call leg



## **2.2.5 Performance Management**

Following PM counters are applicable for the UC Routing Service.

- Successful invocations. Increment when originating INVITE is routed towards the UC System
- Successful invocations. Increment when terminating INVITE is routed towards the UC System
- Unsuccessful invocations. Increment when the UC routing service is unavailable in the terminating-trunk call leg.

## **2.2.6 Provisioning**

Business Line AS operator can provision the UC routing service in the service profile and assign that profile to all the UC users within the same enterprise. Business Line AS can also provision the UC routing service for individual UC users without using the service profile.

## **2.2.7 Fault Management**

BL UC Routing License absent alarm. See the alarm OPI [6].

# **2.3 BL Multimedia**

## **2.3.1 Description**

BL Multimedia value pack provides the following features.

- Add/Drop Media
- File Sharing
- Text Chat
- Video Communication
- Video Fallback to Audio

## **2.3.2 Example Call Flows**

Same as described in the Technical Product Description MMTel AS [2].

## **2.3.3 Configuration Management**

Same as described in the Technical Product Description MMTel AS [2].

## **2.3.4 Performance Management**

Same as described in the Technical Product Description MMTel AS [2].



### **2.3.5 Provisioning**

Same as described in the Technical Product Description MMTel AS [2].

### **2.3.6 Fault Management**

BL Multimedia License Absent Alarm. See the alarm OPI [7].

## **2.4 BL Service Exposure**

### **2.4.1 Description**

BL Service Exposure value pack provides the following features.

- Flexible Service Format Selection
- Parlay-X

### **2.4.2 Example Call Flows**

Same as described in the Technical Product Description MMTel AS [2].

### **2.4.3 Configuration Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.4.4 Performance Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.4.5 Provisioning**

Same as described in the Technical Product Description MMTel AS [2].

### **2.4.6 Fault Management**

BL Service Exposure License Absent Alarm. See the alarm OPI [8].

## **2.5 BL Legacy IN reuse**

### **2.5.1 Description**

BL Legacy IN reuse value pack provides the following features.

- CAPv2 SSF
- GSM Compatible SSF



## **2.5.2 Example Call Flows**

Same as described in the Technical Product Description MMTel AS [2].

## **2.5.3 Configuration Management**

Same as described in the Technical Product Description MMTel AS [2].

## **2.5.4 Performance Management**

Same as described in the Technical Product Description MMTel AS [2].

## **2.5.5 Provisioning**

Same as described in the Technical Product Description MMTel AS [2].

## **2.5.6 Fault Management**

BL Legacy IN reuse License Absent Alarm. See the alarm OPI [9].

BL Legacy IN Reuse Capacity License Exceeded Alarm (TSP only). See the alarm OPI [12].

## **2.6 BL Location Services**

### **2.6.1 Description**

BL Location Services value pack provides following feature.

- Location Based Number Translation

### **2.6.2 Example Call Flows**

Same as described in the Technical Product Description MMTel AS [2].

### **2.6.3 Configuration Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.6.4 Performance Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.6.5 Provisioning**

Same as described in the Technical Product Description MMTel AS [2].

### **2.6.6 Fault Management**

BL Locations Services License Absent Alarm. See the alarm OPI [10].



## **2.7 BL Ad-Hoc Group Call**

### **2.7.1 Description**

BL Ad-Hoc Group Call value pack provides following features.

- Ad-hoc Conference
  - Dial-out Multi-Party Conference
  - Conference Notifications

### **2.7.2 Example Call Flows**

Same as described in the Technical Product Description MMTel AS [2].

### **2.7.3 Configuration Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.7.4 Performance Management**

Same as described in the Technical Product Description MMTel AS [2].

### **2.7.5 Provisioning**

Same as described in the Technical Product Description MMTel AS [2].

### **2.7.6 Fault Management**

BL Ad-Hoc Group Call Capacity License Exceeded Alarm (TSP Only). See the alarm OPI [13].



### 3 Acronyms and Abbreviations

3GPP	3rd Generation Partnership Project
AS	Application Server
BL AS	Business Line Application Server
BP	Barring Program
CAC	Call Admission Control
CB	Communication Barring
CD	Communication Deflection
CDIV	Communication Diversion
CFB	Communication Forwarding on Busy
CFNL	Communication Forwarding Not Logged in
CFNR	Communication Forwarding No Reply
CFU	Communication Forwarding Unconditional
CM	Configuration Management
CNIP	Calling Name Identity Presentation
CSCF	Call Session Control Function
HSS	Home Subscriber Server
I-CSCF	Interrogating CSCF
ICB	Incoming Communication Barring
ICS	IMS Centralized Services
IMS	IP Multimedia Subsystem
IN	Intelligent Network
MMTel	Multi-Media Telephony
MTAS	Multimedia Telephony Application Server
OIP	Originating Identity Presentation
OIR	Originating Identity Restriction
PBX	Private Branch Exchange





OTP	Operating Telephony Provider
SIP	Session Initiation Protocol
SRVCC	Single Radio Voice Call Continuity
SSC	Supplementary Service Code
TIP	Terminating Identity Presentation
TIR	Terminating Identity Restriction
VoLTE	Voice over LTE
VoWiFi	Voice over WiFi
VTP	Virtual Telephony Provider



## 4 Reference Documents

- [1] vMTAS 1 Technical Product Description Common Features, 1/221 02-FGC 101 3266
- [2] MTAS Technical Product Description MMTel AS, 2/221 02-FGC 101 2990
- [3] MTAS Technical Product Description SIP Trunking AS, 5/221 02-FGC 101 2990
- [4] MTAS Technical Product Description SCC AS, 3/221 02-FGC 101 2990
- [5] CBA: MtasMmt, BL Voice Base License Absent, 124/1543 AVA 901 29/n\*\*  
TSP: MtasMmt, BL Voice Base License Absent, 124/1543 AVA 901 09/n\*\*
- [6] CBA: MtasLicenses, BL UC Routing License Absent, 123/1543 AVA 901 29/n\*\*  
TSP: MtasLicenses, BL UC Routing License Absent, 123/1543 AVA 901 09/n\*\*
- [7] CBA: MtasLicenses, BL Multimedia License Absent, 121/1543 AVA 901 29/n\*\*  
TSP: MtasLicenses, BL Multimedia License Absent, 121/1543 AVA 901 09/n\*\*
- [8] CBA: MtasLicenses, BL Service Exposure License Absent, 122/1543 AVA 901 29/n\*\*  
TSP: MtasLicenses, BL Service Exposure License Absent, 122/1543 AVA 901 09/n\*\*
- [9] CBA: MtasLicenses, BL Legacy IN Reuse License Absent, 119/1543-AVA 901 29/n\*\*  
TSP: MtasLicenses, BL Legacy IN Reuse License Absent, 119/1543-AVA 901 09/n\*\*
- [10] CBA: MtasLicenses, BL Location Services Support License Absent, 120/1543 AVA 901 29/n\*\*  
TSP: MtasLicenses, BL Location Services Support License Absent, 120/1543 AVA 901 09/n\*\*
- [11] TSP: MtasLicenses, BL Voice Base Capacity License Exceeded, 127/1543-AVA 901 09/n\*\*
- [12] TSP: MtasLicenses, BL Legacy IN Reuse Capacity License Exceeded, 128/1543-AVA 901 09/n\*\*
- [13] TSP: MtasLicenses, BL Ad-Hoc Group Call Capacity License Exceeded, 129/1543-AVA 901 09/n\*\*