

# MTAS MMTel Management Guide

MTAS

USER GUIDE

**Copyright**

© Ericsson AB 2016–2019. All rights reserved. No part of this document may be reproduced in any form without the written permission of the copyright owner.

**Disclaimer**

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.

**Trademark List**

All trademarks mentioned herein are the property of their respective owners. These are shown in the document Trademark Information.



# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Prerequisites	1
<b>2</b>	<b>Overview</b>	<b>3</b>
2.1	Subfunctions	3
2.2	Interaction with Other Services	10
<b>3</b>	<b>MMTel Configuration</b>	<b>11</b>
3.1	MMTel Administrative State Configuration	11
3.2	Wholesale for MMTel Configuration	11
3.3	MMTel Terminated Unregistered Behavior Configuration	12
3.4	Long Duration Call Supervision for MMTel AS Configuration	12
3.5	Service Data Configuration	15
3.6	MMTel No Reply Timer	18
3.7	Charging	18
3.8	Reject Response Configuration	19
3.9	Terminal Selection	19
3.10	Early Media Announcement	19
3.11	NPLI Retrieval Configuration	20
3.12	Charging Interworking for MMTel AS Configuration	23
3.13	Communication Diversion Loop Detection	23
3.14	Local Ring Back	23
3.15	Mobile User Determination	24
3.16	MMTel for Business Line	25
3.17	Configure Established MMTel Session Performance Measurement	25
3.18	MMTel Services for User Without MMTel Subscription	25
3.19	Nuisance Call Handling	26
3.20	Mobile Subscription Charging Information Configuration	26
3.21	Multiple Mobile Subscriptions Configuration	27
3.22	Renegotiation Request Retry on 500 Error	27
3.23	Roaming Determination Configuration	27
<b>4</b>	<b>Performance Management</b>	<b>29</b>



<b>5</b>	<b>Fault Management</b>	<b>31</b>
----------	-------------------------	-----------



# 1 Introduction

This document describes how to configure the Multimedia Telephony MMTel service in the MTAS.

## 1.1 Prerequisites

It is assumed that the user of this document is familiar with the O&M area, in general.

### 1.1.1 Licenses

To enable the MMTel service, the MMTel AS Voice Base licenses must be installed.

For more information about the MMTel AS Voice Base licenses, see [MTAS Licenses](#).

### 1.1.2 Documents

Before starting any procedure in this document, ensure that the following documents are available:

- Ericsson Command-Line Interface User Guide
- Managed Object Model (MOM)

### 1.1.3 Conditions

The following condition must apply:

- An Ericsson Command-Line Interface (ECLI) session in Exec mode is in progress.





## 2 Overview

This document describes the basic MMTel service that the MTAS offers to its subscribers.

MMTel is one of the IMS Services formats and provides the user with services belonging to the telephony service format. Additional 3GPP/TISPAN defined Supplementary Services, for example Communication Diversion (CDIV) and Communication Hold/Resume, can be executed depending on the profile of the user.

### 2.1 Subfunctions

This section describes the subfunctions provided by the MMTel service.

#### 2.1.1 MMTel Session Control

An MMTel session is a session with services:

- Setup MMTel session
  - Policing
  - No reply timer
- Modify MMTel session
- Release MMTel session

The Policing is neutral to the media transport profile. For example, the Real-Time Transport Protocol (RTP) / Audio-Visual Profile with Feedback (AVPF) profile is supported for each stream where the RTP / AVP transport is applicable.

#### 2.1.2 Services for Unregistered Users

MMTel depending on configuration and other services, for example CDIV, play an announcement to the caller before rejecting the incoming call, in the case served user is not registered.

#### 2.1.3 Feature Tag Processing

Table 1 details the processing of feature tags in the Accept-Contact header. Where “Known” implies a feature tag configured in, `mtasMmtPrimaryFeatureTag` and `mtasMmtSecondaryFeatureTags`, and “Unknown” implies a feature tag not configured in, `mtasMmtPrimaryFeatureTag` and `mtasMmtSecondaryFeatureTags`.



The value “urn: urn-7: 3gpp-service.ims.icsi.mmtel” is configured in the `mtasMmtPrimaryFeatureTag` attribute by default.

With the extended feature tag function, it is possible to tag the primary feature tag with a specified value defined in the attribute `mtasMmtExtendedStringFeatureTag`, for example “audio;explicit;require”. The function extended feature tag is configured in `mtasMmtExtendedFeatureTag` and `mtasMmtExtendedStringFeatureTag` MO attributes.

A new Accept-Contact header entry is added if the following conditions apply:

- The `mtasMmtExtendedFeatureTag` attribute is set to true.
- The received INVITE does not contain an Accept-Contact header with the primary feature tag as defined in `mtasMmtPrimaryFeatureTag`.

The new Accept-Contact header entry contains the primary feature tag as defined by `mtasMmtPrimaryFeatureTag` extended by the feature tag extension as defined by `mtasMmtExtendedStringFeatureTag`.

An Accept-Contact header entry is extended if the following conditions apply:

- The `mtasMmtExtendedFeatureTag` attribute is set to true.
- The received INVITE contains an Accept-Contact header with the primary feature tag as defined in `mtasMmtPrimaryFeatureTag`, without the extension as defined in `mtasMmtExtendedStringFeatureTag`.

The Accept-Contact header entry is extended by the feature tag extension as defined by `mtasMmtExtendedStringFeatureTag`.

Table 1 Accept-Contact Header Actions Taken in MTAS

Accept-Contact Headers	Action Taken
“Known” feature tag present in one of the Accept-Contact headers in the initial incoming INVITE.	<p>The session is accepted as an MMTel session if any of the known feature tags are present in the Accept-Contact.</p> <p>If the Accept-Contact header in the initial incoming INVITE does not contain the <code>mtasMmtPrimaryFeatureTag</code> but contains <code>mtasMmtSecondaryFeatureTags</code>, then the <code>mtasMmtPrimaryFeatureTag</code> is added. If there is a feature tag value defined in the <code>mtasMmtPrimaryFeatureTag</code> of urn-type for example “urn:urn-7:3gpp-service.ims.icsi.mmtel”. The following feature tag is added unless <code>+g.3gpp.icsi-ref</code> is present in the <code>mtasMmtSecondaryFeatureTags</code>.</p> <pre>+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mmtel"</pre> <p>This feature tag is also copied into the Contact header.</p>





Table 1 Accept-Contact Header Actions Taken in MTAS

Accept-Contact Headers	Action Taken
“Unknown” feature tag present- along with a recognized MMTel feature tag in one of the Accept-Contact headers in the initial incoming INVITE.	Same as in the previous row.
“Unknown” feature tag present with no MMTel recognizable feature tag in any of the Accept-Contact headers in the initial incoming INVITE.	The session is rejected with a 406 if none of the configured feature tags in <code>mtasMmtSecondaryFeatureTags</code> or <code>mtasMmtPrimaryFeatureTag</code> matches any of the Accept-Contact headers.
No Accept-Contact headers present.	<ul style="list-style-type: none"> <li>• If there are no Accept-Contact headers present in the initial incoming INVITE, and if the <code>mtasMmtAllowNoFeatureTag</code> is “true” then the session is accepted, and a feature tag is added to the Accept-Contact and contact headers, using the value defined in the <code>mtasMmtPrimaryFeatureTag</code>.</li> <li>• If there is a feature tag defined in <code>mtasMmtPrimaryFeatureTag</code> of urn-type for example “urn:urn-7:3gpp-service.ims.icsi.mmtel”, the following two feature tags are added:  <code>+g.3gpp.icsi-ref="urn:urn-7:3gpp-service.ims.icsi.mmtel"</code></li> </ul> <p>The session is rejected with a 406 if <code>mtasMmtAllowNoFeatureTags</code> configured false.</p>
No feature tag present in any of the Accept-Contact headers in the initial incoming INVITE.	Same as in the previous row.

### 2.1.3.1 Subscriber Specific Feature Tag Preference

Subscribers can be provisioned with specific feature tag preferences. In this case MTAS adds an Accept-Contact header with the defined preference in the terminating case. One example use of this function is to let Multimedia Telephony Application Server (MMTel AS) provide an access domain preference per subscriber, used by the SCC-AS.

For example, if the served user is provisioned with:

```
<mmt-op:feature-tag-preferences>
<mmt-op:feature-tags>lte;gsm</mmt-op:feature-tags>
</mmt-op:feature-tag-preferences>
```

The outgoing INVITE contains:



Accept-Contact: `*;lte;gsm`

Feature tag preferences are only applicable to served user's legs.

## 2.1.4 Prefix for Voice and Video Calls Configuration

With the prefix for voice and video call function, it is possible to add a configurable prefix number for voice and video calls to route such calls through a specific breakout point through the BGCF. The function is configured in `mtasMmtMediaBasedRoutingAudioPrefix`.

## 2.1.5 Configuration and Provisioning Options for Other Services

In addition to the basic MMTel session handling, MMTel provides configuration and provisioning support for other Supplementary Services:

- Provisioning of common target list and common device list, that can be used by more than one Supplementary Service
- Provisioning and configuration of attributes for time and calendar handling, used by more than one Supplementary Service
- Configuration of terminal selector prefix

## 2.1.6 Media Policy

With rule-based Media Policy subservice, it is possible to block certain media streams in offered SDP. Every rule matches on exactly one type of media, and media type must be one of the media types defined by [RFC 4566](#) (“audio”, “video”, “text”, “application”, and “message”). Only “allow” action set to “false” is to be allowed, which determines that the media type-matched by the rule-should be blocked. Rule matching is to continue until all rules are checked.

`MtasMediaPolicyLocalStreamBlocked` and `MtasMediaPolicyRemoteStreamBlocked` are incremented by 1 when local or remote media streams are blocked in an SDP offer, respectively.

### 2.1.6.1 XML Configuration

Media policy configuration is part of the operator configuration. It is in the operator service data part of subscriber service XML. Media policy rules are based on Common Policy rules but only matching on media type is supported.

Example:



```
<mmt-data:operator-configuration>
<mmt-data:operator-service-data>
<mmt-op:operator-media-policy activated="true">
  <cp:ruleset>
    <cp:rule id="video">
      <cp:conditions>
        <ss:media>video</ss:media>
      </cp:conditions>
      <cp:actions>
        <ss:allow>false</ss:allow>
      </cp:actions>
    </cp:rule>
  </cp:ruleset>
</mmt-op:operator-media-policy>
</mmt-data:operator-service-data>
</mmt-data:operator-configuration>
```

Media Policy feature can be activated by setting activated attribute of operator-media-policy tag to “true”.

The rule set consists of zero or many rules, and one rule consists of exactly one condition and one action.

Media Policy rule can have the following condition:

#### — media

This condition evaluates to “true” if one of the media types in “m=” line in offered SDP matches the value of this condition, the types are defined in [RFC 4566](#) (“audio”, “video”, “text”, “application”, and “message”).

Media Policy rule can have the following action:

#### — allow

Allow action can only have false value. This means that a matched media stream is not allowed.

## 2.1.7

### Communication Diversion Loop Detection

In addition to the basic MMTel session handling, MMTel provides a subfunction called Communication Diversion Loop Detection. The subfunction Call Diversion Loop at the terminating MMTel AS is based on the Public User Identity (PUI) of the served user and the information received in the History-Info header in the initial INVITE. If there is a loop detected, MMTel AS sends 482 Loop Detected with reason 482, Warning (399, “Call Diversion Loop Detected”) to the caller. MMTel AS detects a call diversion loop by comparing the PUI of the served user and the content of the History-Info header.



## 2.1.8 P-Asserted-Service/P-Preferred-Service Header Processing

If CM attribute `mtasMmtPAssertedServiceBehavior` is set, every INVITE requests (value 1 and 2) and optionally 18x/200 OK for INVITE responses (value 1) sent by the AS includes a P-Asserted-Service header configured with CM `mtasMmtDefPAssertedService`. In addition, any received P-Preferred-Service header is removed from messages when sending further.

## 2.1.9 Network or MTAS-Provided Local Ring Back

The `mtasMmtLocalRingBackMode` attribute defines if there is to be a user-controlled ring back or network-provided ring back. The default value of the attribute is 0, which is user-controlled ring back.

The `mtasMmtLocalRingbackAnnouncementName` attribute defines the name of the generic announcement to be used in local ring back scenario. If this attribute is empty or does not specify an instance of the MO `MtasGaAnn`, no announcement is played.

## 2.1.10 MMTel for Business Line

MMTel AS is by default deployed for consumer type of subscribers. However, there is also the option to deploy MMTel AS for Business Line with Unified Communication System (UCS) for enterprise services. Separate licenses for Business Line must then be in place. For more details on such deployment, see Section 3.16 MMTel for Business Line on page 25.

## 2.1.11 Mobile Subscription Charging Information

Mobile subscription and device information can be reported in charging per call depending on both configuration and provisioning.

### 2.1.11.1 Basic Subscription Information

IMSI is reported in the Subscription-Id AVP as type `END_USER_IMSI`.

IMEI and UUID available in the `sip.instance` feature tag of SIP messages during call establishment, reported in User-Equipment-Info and Instance-ID AVPs if available.

### 2.1.11.2 Extended Subscription Information

Extended subscription information includes the following information per mobile subscription:

- Default IMPU of the subscriber reported in the Subscription-ID AVP as type `END_USER_SIP_URI`.



- IMPI of subscription reported in the User-Name AVP.
- MSISDN of the subscriber reported in the Subscription-ID AVP as type END\_USER\_E164.
- IMSI of the subscriber reported in the Subscription-ID AVP as type END\_USER\_IMSI.

**Note:** Only END\_USER\_SIP\_URI is reported for diversion cases. `mtasChargingProfileDefaultSubscriptionReportingBehavior` can be used to report other values when set.

- `DefaultIMPU`: Only default IMPU is reported.
- `DefaultIMPU_IMSI`: IMSI of default subscription and default IMPU are reported.
- `DefaultSubscription`: IMSI, MSISDN of default subscription and default IMPU are reported.
- `DefaultSubscriptionAndDeviceInfo`: IMSI, MSISDN, IMPI of default subscription, default IMPU, Device IMPI and Device IMEI of registered device with default subscription are reported.

### 2.1.12 Multiple Mobile Subscriptions

MMTel AS supports subscribers with multiple mobile subscriptions (CS and EPS, or EPS only) within a single IRS.

Identical MMTel AS service settings are applied to all mobile devices. Extended subscription information is reported in charging.

### 2.1.13 Roaming Determination

The MMTel AS determines the roaming status of a subscriber based on the mobile country code (MCC) and the mobile network code (MNC) of the network that the subscriber is connected to, for example, the visited network and the MCC and MNCs of the home network that is serving the subscriber. The roaming determination depends on if the request is done in an originating or terminating domain, and on the phase that the call setup is in when the request is done, that is, if the call set up is before or after alerting.

For more information, see Section 3.23 Roaming Determination Configuration on page 27.



## 2.2 Interaction with Other Services

A user can be in addition to basic MMTel have Supplementary Services tied to the subscription. A Supplementary Service can then change the behavior of MMTel. A possible service interaction is described for each subfunction where it can occur.



## 3 MMTel Configuration

The MMTel service is controlled by the `MtasMmt` Managed Object (MO). An overview of the MMTel MO structure is shown in Figure 1.

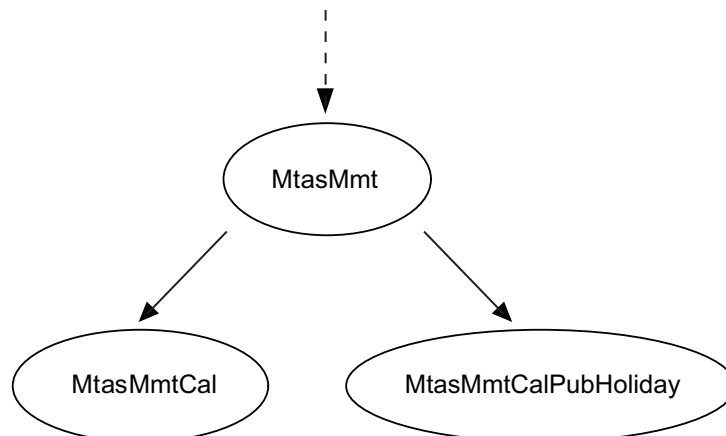


Figure 1 MMTel MO Structure

For configurable MOs and attributes related to the MMTel services, see [Managed Object Model \(MOM\)](#).

### 3.1 MMTel Administrative State Configuration

The MMTel service is enabled by setting the `mtasMmtAdministrativeState` attribute in the `MtasMmt` MO to 1 (Unlocked). If the `mtasMmtAdministrativeState` is set to 0 (Locked), no 3PTY service is provided by the MTAS.

### 3.2 Wholesale for MMTel Configuration

The MMTel service supports Wholesale. MMTel is configurable on Virtual Telephony Provider (VTP) level.

Wholesale for MMTel is activated when the following attributes are set to 1 (Unlocked):

- The `vtasMmtAdministrativeState` attribute in the `VtasMmt` MO.
- The `mtasMmtAdministrativeState` attribute in the `MtasMmt` MO.

**Note:** For VTP domains provisioned in the Home Subscriber Server (HSS), the Operating Telephony Provider (OTP) administrative state (`mtasMmtAdministrativeState`) takes precedence over the VTP administrative state.



For more information about the Wholesale service, see [MTAS Wholesale Support Management Guide](#).

### 3.3 MMTel Terminated Unregistered Behavior Configuration

The terminating Unregistered behavior in MTAS is decided by the CM attribute `mtasMmtTermUnregBehavior`. This attribute specifies the trigger criteria for the terminating unregistered state, and this specification can be either when an initial INVITE is received in the terminating unregistered session case or when a SIP 480 is received after the initial INVITE has been sent to S-CSCF. When an initial SIP INVITE is received in MTAS for the terminating unregistered session case, no services dependent on the unregistered state is to be started. Instead the initial INVITE is sent to S-CSCF and the services dependent on the unregistered state are started if a 480 response is received from S-CSCF. The MTAS is responding with 480 Temporarily Unavailable when configured to act on the INVITE.

**Note:**

- Services dependent on unregistered state are not started after an 18x message is received by the MTAS.
- The initial INVITE trigger criteria cannot be used with the Flexible Communication Distribution service.

### 3.4 Long Duration Call Supervision for MMTel AS Configuration

In addition to the basic MMTel session handling, MMTel AS provides supervision for long duration calls on Originating and Terminating MTAS. MTAS starts supervision timer on call establishment. On timer expiry, the call is disconnected with reason set as “Long Duration Call” in the Reason header of BYE and in a charging message. This feature is enabled by setting the `mtasMmtLongDurationCallAdministrativeState` to 1 (Unlocked). If the `mtasMmtLongDurationCallAdministrativeState` is set to 0 (Locked), no supervision is applied.

The `MtasMmtLongDurationCall10k` PM Counter is incremented when long duration supervision timer expired. It is a keyed counter with possible values as Orig, Term, and Dest\_Orig.

Long Duration Call Supervision timer value is configured in minutes and the value range is from 0 to 11,000 minutes. The user can configure Originating and Terminating calls specific timer value under `MtasMmtLongDurationCall` as explained in the following sections.





### 3.4.1 Supervision for Originating Calls Configuration

The user can configure long call supervision timer by setting different timer values under the `MtasMmtLongDurationCallOrig` MO as described in the following sections.

#### 3.4.1.1 Default Originating Timer Configuration

The default originating supervision timer value is configured by the `mtasMmtLongDurationCallOrigTimer`. The default timer value is 480 minutes. If this timer value is set to zero, the long duration call supervision is disabled for all originating calls. This timer value is used by default when other originating supervision timers are not applicable. Diverted calls must be treated as “Originating calls” and must use originating configurations attributes.

Example configuration:

```
mtasMmtLongDurationCallOrigTimer: 480
```

#### 3.4.1.2 Service Number Specific Originating Timer Configuration

Service number-specific supervision timer is applied when the destination number is identified as Service Number and the `mtasMmtLongDurationCallOrigTimer` must have a non-zero value. If this timer value is set to zero, the long duration call supervision is disabled for Service Numbers. It is set with `mtasMmtLongDurationCallOrigServiceNumberTimer`. The default timer value is 480 minutes.

The following are examples of service numbers:

- Destination classified as OSN/NSN by Number Normalization configuration
- DNM Location-based short code
- National short code classified by Number Translation
- Directory assistant (OCT) call

Example configuration:

```
MtasMmtLongDurationCallOrigServiceNumberTimer: 480
```

#### 3.4.1.3 Destination Categories Configuration

When the destination number is matched with operator defined destination categories, the corresponding timer value is used for supervision of long duration call. The `mtasMmtLongDurationCallOrigTimer` must have a non-zero value for this timer to be applicable. The user can define destination categories by configuring the `mtasMmtLongDurationCallDestCatList` attribute within the `MtasMmtLongDurationCallDestCat` MO, and the timer value for the same is



set with the `mtasMmtLongDurationCallDestCatTimer` attribute. The default timer value is 480 minutes. If the timer value is set to zero, the long duration call supervision is disabled for all originating calls matched with the specific destination category.

The user can configure multiple `MtasMmtLongDurationCallDestCat` MO with integer number under `MtasMmtLongDurationCallDestCats` MO.

However, the `mtasMmtLongDurationCallOrigDestCat` attribute must be set in the `MtasMmtLongDurationCallOrig` MO to define the set of destination category configurations that are applicable for long duration originating call supervision. It is a set of integers where each integer represents destination category configuration from the `MtasMmtLongDurationCallDestCat` MO. The lowest integer number has the highest priority in destination category matching.

### Destination Category List Configuration

The `mtasMmtLongDurationCallDestCatList` is a list of strings and each entry is a substring matched with a normalized target request URI.

The use of the wildcard character “^” (circumflex) is allowed in `mtasMmtLongDurationCallDestCatList` entries. Each occurrence of “^” matches any single character. For example, `+46^^7196992` matches both `+46107196992` and `+46207196992`.

The definition of TEL URIs and SIP embedded TEL URIs (that is, SIP URI with `user=phone`) is supported. If both the destination and the entry URIs are TEL or SIP embedded TEL URIs, then the substring matching is performed only for the number part of the entry.

The substring match can be limited to left-string number prefix match if the entry starts with colon “:” or plus “+” characters, followed by the number prefix.

Entry configuration examples:

— “tel:+1800”, “sip:+1800@;user=phone”

Left-string match of the global number prefix “+1800”

— “tel:411”, “sip:411@;user=phone”

Substring match of the number “411”, the “411” can appear in any position of the destination URI

— “:411”

Left-string match of local number prefix “411”

— “+1^^^700”, “tel:+1^^^700”, “sip:+1^^^700@;user=phone”

Left-string number prefix matches including wildcard characters, any destination in the range of +1000700 and +1999700 (for example,



tel:+10007001111 or sip:+10007001111@operator.com;user=phone) is considered as destination category matched

— “example.com”

Substring domain match, any destination URI including the subdomain of “example.com” is considered as destination category matched

Example configuration:

```
MtasMmtLongDurationCallOrig MO:
  mtasMmtLongDurationCallOrigDestCat: 1
MtasMmtLongDurationCallDestCats MO:
MtasMmtLongDurationCallDestCat MO: 1
mtasMmtLongDurationCallDestCatList: "tel:+1800"
mtasMmtLongDurationCallDestCatList: ":411"
mtasMmtLongDurationCallDestCatTimer: 480
```

**Note:** When the feature is activated and the destination category list is configured in full capacity (250 entries), there is an average capacity dip of about 1%. This is because all originating calls are subjected to destination category matching through iterating all entries in worst case. It is recommended to configure destination category-specific numbers as service numbers to avoid destination category matching.

#### 3.4.1.4 MMTel AS Terminating Calls Configuration

Default Terminating Supervision timer is configured with the `mtasMmtLongDurationCallTermTimer`. If this timer value is set to zero, the long duration call supervision is disabled for all terminating calls. Default timer value is 479 minutes.

Example configuration:

```
mtasMmtLongDurationCallTermTimer: 479
```

## 3.5 Service Data Configuration

### 3.5.1 Operator Subscription Level Service Configuration

The operator can configure the following:

- Activate/deactivate the User Common Data subscription for the subscriber.
- Set the maximum number of targets in the common target list and in the common device list for the user.
- Allow/disallow the use of the common device list and the holiday list for the user.
- Configure terminal selector prefix.



- Provision subscriber type BUSINESS or CONSUMER.
- Provision multi-persona.

In the MMTel configuration data for a subscriber, the operator indicates whether the subscriber is allowed to initiate MMTel through the CAI3G protocol. For more information, see [MTAS CAI3G Interface](#).

### 3.5.2 Subscriber Subscription Level Service Configuration

The user part of the User Common Data includes the following data:

#### Common target list

Holding user-defined names and the related URIs, that can be used as target in more than one service.

- Fixed target list (true/false, changeable only by the operator) When fixed-targets is set to “true”, then the target identities are set by the operator and cannot be changed by the user.
- User-defined name
- URI

#### Common device list

Holding user-defined names and the related terminal selectors, identifying the served terminals of the user.

- Fixed target list (true/false, changeable only by the operator) When fixed-targets is set to “true”, then the target identities are set by the operator and cannot be changed by the user.
- User-defined name
- Terminal selector (feature tag)

#### UTC offset

Holding the offset to be taken from UTC when determining times of day and when each day starts and ends. This attribute is considered when evaluating time conditions not containing the offset. If neither of them is provisioned, the offset given by CM attribute `mtasMmtCa1UtcOffset` is used.

**Note:** When setting the value of this attribute, the Daylight Saving Time correction is to be considered as well.

The recommended way of specifying the UTC is to use the CM attribute `mtasMmtCa1UtcOffset`.



### Start day of week

Holding the starting day of the week, used when evaluating time conditions related to weeks of the year or containing weekly repetition. It also serves as base of determining the week number. When the attribute is set to the Monday, the week number is set according to ISO 8601; week no. 1 in the year is the first week with at least 4 days from the new year. Otherwise week no. 1 is the week of 1st of January. If this attribute is omitted, then the starting day from the CM attribute `mtasMmtCalStartDayOfWeek` is used.

### Non-workday list

Holding list of weekdays considered as non-workday during evaluation of the time conditions. If this attribute is omitted, then the workday list from the CM attribute `mtasMmtCalNonWorkday` is used.

### Holiday list

Holding a list of private holidays to be used during evaluation of the time conditions associated. Use also the public holidays defined by CM attribute `MtasMmtCalPubHoliday` (yes/no).

## 3.5.3

### Calendar Configuration and Recommendation for Summer/Winter Time

The `mtasMmtCalStartDayOfWeek` attribute specifies the starting day of the week. This attribute is used when evaluating service rules with conditions on calendar weeks. It also serves as base of determining the week number. When the attribute is set to the default value, the week number is set according to ISO 8601. That is, week no. 1 in the year is the first week with at least 4 days from the new year. Otherwise week no. 1 is the week of 1st of January. If the served user has been provisioned with own starting day of the week in the user document, then this attribute is ignored.

The `mtasMmtCalUtcOffset` attribute specifies the offset to be taken from UTC during evaluation of time-related service rule conditions. If the attribute is set to the default value, then days and times are based on UTC. This attribute is ignored if the user has provisioned UTC offset in the condition or in the user common data of the user document.

**Note:** When setting the value of this attribute, the Daylight Saving Time correction is to be considered as well.

Offset can be + or - regarding UTC, that is, [+ -] hour is 00-23 ([0-1][0-9]|2[0-3]) minute is 00-59, that is, [0-5][0-9].

The `mtasMmtCalNonWorkday` attribute specifies the days of week that are considered as NOT working days during evaluation of time-related service rule conditions. This attribute is ignored if the user has provisioned nonworkday list in the user common data of the user document.



The `MtasMmtCalPubHoliday` attribute is created by the user.

### 3.5.4 Mobile Subscription Configuration

The operator can provision mobile subscriptions of the subscriber in the operator configuration part of User Common Data.

The following attributes must be provisioned per subscription:

- `IMPI`: Must be unique among all subscriptions.
- `cs-capable`: Defines if the subscription is CS capable or not. Must be set to `TRUE` or `FALSE`.
- `DEFAULT SUBSCRIPTION`: Must be present for only one of the subscriptions.

The following attributes are optional per subscription. If not provisioned, MTAS fetches the information from HSS:

- `MSISDN`
- `IMSI`

## 3.6 MMTel No Reply Timer

The `mtasMmtNoReplyTimer` attribute specifies the no-reply timer for MMTel sessions. The `mtasMmtOrigNoReplyTimer` is applicable for originating MMTel sessions if it is enabled ( $> 0$ ), `mtasMmtNoReplyTimer` is then applicable only for the terminating MMTel sessions. Either timer is started when 180 Ringing is received.

## 3.7 Charging

This section describes the Charging attributes.

For more information about charging in the MTAS, see [MTAS Charging Management Guide](#).

### Charging Profile

The `mtasMmtChargingProfileRef` attribute points to the charging profile that is applicable for MMTel.

### Charged Service Id

The `mtasMmtChargedServiceId` attribute specifies the charged service id, in feature tag format, for MMTel calls, to be included in charging data.



## 3.8 Reject Response Configuration

The `mtasMmtSendSipTermResponse` attribute is used to change/set which SIP error response the MMTel unregistered, Network Announcement or Incoming Communication Barring service have to send when an announcement has been played.

## 3.9 Terminal Selection

The `mtasMmtTerminalSelectorPrefix` attribute indicates that the prefix added in front of each provisioned feature parameter used for selecting a single terminal (terminal selector). The prefix is for adding such elements of the feature parameter that are not relevant for the end user. For example, the leading '+' indicating non-RFC 3840 base parameters, or tags for operator/vendor specific namespace, for example "+g.operator.7."

The `mtasMmtAscfAdministrativeState` attribute indicates the administrative state of the AS Controlled Forking feature. This attribute determines if MTAS can use terminal selector in the INVITEs sent to the served user.

## 3.10 Early Media Announcement

This section describes the early media announcement attributes.

### Precondition Timer

The `mtasMmtPreconditionTimer` attribute specifies the time limit imposed to achieve the QoS precondition ([RFC 3312](#)) when attempting to play an announcement in early media. 0 has the special meaning that no timer is used to supervise the achievement of preconditions.

For more information about QoS precondition, see the following standards:

— [RFC 3312](#)

— [RFC 3262](#)

### 199 Provisional Response Configuration

The `mtasMmt199Generation` attribute indicates the administrative state of the 199 provisional response generation. If set to Enabled, 199 provisional response is generated when MTAS initiates the release of the MTAS established announcement early dialog.

The `mtasMmt199Method` attribute modifies when the 199 provisional response is to be sent. This attribute effects only if `mtasMmt199Generation` is set to Enabled.



The `mtasMmt199Method` attribute can be set to the following:

- `199_ON_CONTINUE`: 199 provisional response is generated only when the session continues after terminating the early dialog, according to 3GPP standards TS 24.642 and 24.628.
- `199_ON_ALL`: 199 provisional response is generated for all MTAS initiated early dialogs. Value `199_ON_ALL` has been deprecated and is not to be used.

The `mtasMmtGen199Reliably` attribute indicates whether the 199 provisional response is generated reliably or unreliably. If set to `Enabled`, MTAS generates a 199 provisional response reliably.

## 3.11 NPLI Retrieval Configuration

The following attributes are used to configure Network Provided Location Information (NPLI):

- `mtasMmtNpliTerminating`

This attribute defines the policy for terminating NPLI retrieval in MMTel AS on incoming 180/200 response on INVITE, or re-INVITE, without valid CGI/ECGI in the network PANI.

NPLI for a mobile (2G/3G or VoLTE capable) can be retrieved from HSS over Sh interface both on session establishment and session renegotiation. The following options are available:

- 0 – NPLI disabled
- 1 – Retrieve from LTE PS access domain
- 2 – Retrieve from LTE and GPRS PS access domain
- 3 – Retrieve from GPRS PS access domain
- 4 – Retrieve from CS access domain
- 5 – Retrieve from the access domain as given by call case/registration
- 6 – Retrieve from, in this order, CS, GPRS PS, or LTE PS access domain. When one domain returns a valid result, the Location Information is not retrieved from the next access domain in the list.

When `mtasMmtNpliTerminating` is set to 6, then MMTel retrieves Location Information on terminating INVITE instead of 180/200 responses and checks access domains in the order CS, PS SGNS, and PS MME. After receiving valid information from one of them, other domains are not checked.

The access domain and node used in the NPLI retrieval from HSS is given by the following data and in the listed order:





- 1 The call case
  - 2 Registration data
  - 3 Default setting. If no other data is available about the served user, then the default setting as defined by this CM attribute is used.
- `mtasMmtNpliOriginating`  
  
This attribute defines the policy for originating NPLI retrieval in MMTel AS on incoming INVITE without valid CGI/ECGI in the network PANI.  
  
For settings and order to getting data from HSS, see the `mtasMmtNpliTerminating` attribute.
  - `mtasMmtNpliOriginatingOnSessionRelease`  
  
This attribute enables the NPLI retrieval on session release in the originating MMTel. NPLI retrieval on session release is triggered on receiving BYE or 200-OK (BYE) from the originating user. The policy defined by the `mtasMmtNpliOriginating` attribute applies for NPLI queries triggered on session release.
  - `mtasMmtNpliTerminatingOnSessionRelease`  
  
This attribute enables the NPLI retrieval on session release in the terminating MMTel. NPLI retrieval on session release is triggered on receiving BYE or 200-OK (BYE) from the terminating user. The policy defined by the `mtasMmtNpliTerminating` attribute applies for NPLI queries triggered on session release.  
  
**Note:** It is recommended to set the charging CM attribute `mtasChargingProfileReportAtDisconnection` to 1 (TRIGGER\_ON\_BYE\_OR\_BYE\_RESPONSE) in the MMTel charging profile assigned to the subscribers.
  - `mtasMmtNpliTerminatingActiveLocationRetrieval`  
  
Attribute `mtasMmtNpliTerminatingActiveLocationRetrieval` must be used together with the `mtasMmtNpliTerminating` policy set to 6, in order to decide whether active location retrieval is made. If value of `mtasMmtNpliTerminatingActiveLocationRetrieval` is set to 1, paging to the UE is triggered.  
  
When the `mtasMmtNpliTerminatingActiveLocationRetrieval` attribute is set to 0, the stored value in HSS is read.
  - `mtasMmtNpliDefaultAccessType`  
  
This attribute defines the access-type part of a PANI header: "access-type; network-provided;" generated by MTAS in the following cases:



- Terminating call to unregistered UE
- Out-of-dialog NOTIFY (charging-info;SMS-DeReg) message is received from the SCG node.

— `mtasMmtNpliPaniCondition`

This attribute defines which PANI in the incoming SIP event to check for validity in the NPLI feature in MMTel AS. If set to 1, then either a valid network PANI or a valid user PANI is required.

When the `mtasMmtNpliPaniCondition` is set to 0, a valid network PANI is needed.

— `mtasMmtNpliCSLocationInformation`

This attribute defines if the Visitor Location Register (VLR) number or Mobile Switching Center (MSC) number provided by NPLI Carrier Select (CS) Location Information, are added as extra parameters to the Access-Network-Information AVP, towards charging and P-Access-Network-Information (PANI) header used in SIP signaling. This attribute is considered only for terminating calls.

The default value of the attribute is 0, which means that only the Cell Global Identity (CGI) is added to the Access Network Information AVP and PANI header.

If the attribute value is 1, then the CGI, or the VLR Number, or the MSC Number, or all three, are added to the Access Network Information AVP and PANI header.

— `mtasMmtNpliOriginatingCSLocationInformation`

This attribute defines if the Visitor Location Register (VLR) number or Mobile Switching Center (MSC) number provided by NPLI Carrier Select (CS) Location Information, are added as extra parameters to the Access-Network-Information AVP, towards charging and P-Access-Network-Information (PANI) header used in SIP signaling. This attribute is considered only for originating calls.

The default value of the attribute is 0, which means that only the Cell Global Identity (CGI) is added to the Access Network Information AVP and PANI header.

If the attribute value is 1, then the CGI, or the VLR Number, or the MSC Number, or all three, are added to the Access Network Information AVP and PANI header.



## 3.12 Charging Interworking for MMTel AS Configuration

Interworking between MMTel AS and charging to report configured message body is decided by `mtasMmtChargingInterworkingSupport` and `mtasChargingProfileFlexResponseEntry` attributes configuration.

`mtasMmtChargingInterworkingSupport` attribute specifies message body types which Originating MMTel AS adds to the Accept header in outgoing INVITE message. Originating MMTel AS reports the message body contents in group AVP Transaction-info in online and offline charging messages based on the Charging Profile and `mtasChargingProfileFlexResponseEntry` attribute configuration.

## 3.13 Communication Diversion Loop Detection

The MMTel service enables the Communication Diversion Loop Detection function by setting the `mtasMmtLoopDetection` attribute in the `MtasMmt` MO to 1 (enabled). If the `mtasMmtLoopDetection` is set to 0 (disabled), no checks for Communication Diversion Loop Detection are performed.

## 3.14 Local Ring Back

The Local Ring Back function ensures correct generation of local Ring Back Tone towards caller at some scenarios by applying the following:

- Alert-Info parameter filtering.
- Local Ring Back Tone fallback at diversion.
- Local Ring Back Tone fallback after early announcement generated by Originating MTAS.

The Alert-Info filtering function prevents an `Alert-Info:rtrequest` by the terminating network to reach the caller, therefore avoiding a potentially incorrect generation of the local ring tone.

The “local ring back fallback at diversion” function provides ring tone towards caller in call diversion scenarios where a previous network or called party provided ring tone ends but with continued alerting. The function is required by some originating legacy networks that cannot switch to local ring tone generation following through-connection, that is, having received ring tone as early media. A prerequisite for the fallback function to trigger is that the initial INVITE includes a no-fork directive and that early media during alerting suddenly ends following diversion.

The renegotiation performed by the terminating MMTel AS towards the diverted target as part of the terminating local ringback function, can fail if the callee receives re-INVITE before ACK(INVITE). MTAS can be configured



to apply a delay before initiating the renegotiation by setting attribute `mtasMmtReInviteDelayTime` to a non-zero value.

MTAS can in addition initiate a retry if receiving a 500 response to the re-INVITE with a Retry-After header if setting the attribute `mtasMmtReInviteRetryAfterSupport` to enable. The attribute `mtasMmtReInviteRetryAfterTimeMax` sets the maximum acceptable value of the re-INVITE retry time. The received Retry-After value is truncated to the upper limit, if it is exceeded.

The “local ring back fallback after early announcement generated by Originating MTAS” function provides ring tone towards caller in the call where early announcement generated by Originating MTAS and later first response from callee side is empty 180 Ringing. The function is required by some originating legacy networks that cannot switch to local ring tone generation following through-connection, that is, having received ring tone as early media. A prerequisite for the fallback function to trigger is that the initial INVITE includes a no-fork directive, that early media played from Originating MTAS to caller, and that first response from caller side is empty 180 Ringing.

The attribute `mtasMmtLocalRingBackMode` in the `MtasMmt` MO defines if there is user-controlled ring back or network provided ring back. For “local ring back tone fallback at diversion” case attribute `mtasMmtLocalRingBackMode` must be configured to any of the values:

- 1 = NETWORK\_PROVIDED
- 2 = NETWORK\_PROVIDED\_ORIG\_TERM

For “local ring back tone fallback after announcement generated by Originating MTAS” case, attribute `mtasMmtLocalRingBackMode` must be configured to value:

- 2 = NETWORK\_PROVIDED\_ORIG\_TERM

For user-controlled ring back case, attribute `mtasMmtLocalRingBackMode` must be configured to value:

- 0 = USER\_CONTROLLED

## 3.15 Mobile User Determination

MMTel AS provides the optional configuration `mtasMmtMobileUserDetermination` to determine served user as a mobile subscriber. The domain/sub-domain value of this attribute, typically in the IMS format `ims.mnc<MNC>.mcc<MCC>.3gppnetworks.org`, is right string match with the served users IP Multimedia Public User Identity (IMPU) domain part present in the Implicit Registration Set (IRS).



## 3.16 MMTel for Business Line

MMTel AS can be configured to serve Business Line (BL) users in a Unified Communication System (UCS) solution. A separate set of licenses for business deployment enables the MMTel services, and also a service to route Originating and Terminating calls to UCS for enterprise services (UC Routing).

MMTel AS is configured to serve the business line users when `mtasMmtServedSubscriberType` is set to `BUSINESS` (1) or `BUSINESS_AND_CONSUMER` (2). A served user is identified as being a business user if provisioned as `subscriber-type = BUSINESS`.

For more information about MMTel for Business Line users, see the following documents:

- MTAS Unified Communication Routing Management Guide
- MTAS Licenses
- MTAS External Network Configuration
- MTAS Examples of Provisioning Requests

## 3.17 Configure Established MMTel Session Performance Measurement

The MMTel AS provides minimum, average, and maximum number of established MMTel sessions for a measurement Granularity Period. The MMTel service enables the established MMTel session performance measurement function by setting the `mtasMmtEstablishedSessionGauge` attribute in the `MtasMmt` MO to 1 (`SESSION_GAUGE_ENABLED`). If the `mtasMmtEstablishedSessionGauge` is set to 0 (`SESSION_GAUGE_DISABLED`), no established MMTel Session performance measurements are performed. The minimum, average, and maximum calculation is based on the set of established MMTel sessions count values, which are reported within the measurement period. The following apply:

- The number of established MMTel sessions count is incremented by 1 on 200 OK reception of INVITE.
- The number of established MMTel sessions count is decremented by 1 BYE.

## 3.18 MMTel Services for User Without MMTel Subscription

MMTel AS can be configured to serve a user without MMTel subscription. For the service to work, the following conditions must be met:

- CM attribute `mtasMmtNoSubscriptionSupported` in the `MtasMmtNoSubscription` MO is set to `true`.



- The topmost route header in the initial INVITE includes a parameter with the same value as configured in the `mtasMmtNoSubscriptionRouteParameter` attribute.
- Outgoing Communication Barring (OCB) Global Whitelist is configured.

Outgoing calls of this user are by default barred unless the called number matches a white listed destination, for example, customer care.

When this type of call is allowed, the outgoing INVITE includes the calling party identity in the P-Asserted-Identity and From headers as configured Public User Identity (PUI) in attribute `mtasMmtNoSubscriptionSharedPUI`. This asserted identity is set as private in the SIP signaling.

The number of established sessions by subscribers without MMTel subscription is limited. The value is configured by attribute `mtasMmtNoSubscriptionSimultaneousLimit`. Any new call attempt, which exceeds the maximum number of simultaneous calls, is rejected with a 486 Busy response code.

## 3.19 Nuisance Call Handling

MMTel AS provides call handling support for emergency nuisance calls.

If CSCF detects that a subscriber is making a nuisance call, MMTel AS can be triggered to play a specific final announcement before rejection.

The function is an extension to the Service for users without the MMTel subscription feature but applies to all subscribers; with or without an MMTel subscription.

A call is treated as a nuisance call by MMTel AS if the Request URI (set by the CSCF) matches the configuration and the user is classified as not having an MMTel subscription.

## 3.20 Mobile Subscription Charging Information Configuration

### 3.20.1 Basic Subscription Information

IMSI provisioned in element IMSI of User Common Data.

### 3.20.2 Extended Subscription Information

Attribute `mtasMmtMobileBehaviour` must be set to `MOBILE_ENHANCEMENT_ON`.

At least one mobile subscription provisioned in User Common Data.



## 3.21 Multiple Mobile Subscriptions Configuration

The following configuration must be set to utilize Multiple Mobile Subscription support:

- All mobile subscriptions provisioned in User Common Data.
- CM attribute `mtasMmtMultiMobileSupport` must be set to `ALL_MOBILE_SUBSCRIPTIONS_ACTIVE`.
- CM attribute `mtasMmtTransparentMode` must be set to `TRANSPARENT_MODE_ENABLED`.
- Valid Multi Sim license.
- Flexible Communication Distribution configuration as defined by MTAS Flexible Communication Distribution Management Guide.

## 3.22 Renegotiation Request Retry on 500 Error

MMTel AS can receive 500 error response with Retry-After header for a relayed mid-dialog renegotiate request triggered by either Re-INVITE or UPDATE in downstream or upstream direction. In such scenario MMTel AS retries the renegotiation request after the delay time indicated in the received Retry-After header. The function is controlled with the CM `mtasMmtMidCallRenegotiationRetryAfterSupport`. The attribute `mtasMmtReInviteRetryAfterTimeMax` sets the maximum acceptable value of the retry time. If the received Retry-After value is exceeded it truncated to the upper limit.

## 3.23 Roaming Determination Configuration

The MMTel AS determines the roaming status of a subscriber based on the configuration of the attributes `mtasMmtVersion` and `mtasMmtDomesticRoaming` in the MO `mtasMmt`. In Table 2, configuration of roaming determination for different values of `mtasMmtDomesticRoaming` and the MO `mtasComCcmMccMncHome` is described.



Table 2 Roaming Determination Configuration

mtasMmtDomesticRoaming	mtasComCcmMccMncHome	Description
ENHANCED_SUPPORT	N/A (except OCB and ICB)	<p>Roaming checks are service independent, meaning all services use the same algorithm for roaming determination.</p> <p>For most services, roaming is determined by MCC only.</p> <p>For some services, such as Ro Suppression, T-CSI Suppression, and CB, roaming is determined by MCC and MNC comparison. These services can be configured to do roaming determination based on MCC only or on both MCC and MNC.</p>
FULL_SUPPORT	No instance	<p>Roaming checks are service independent, meaning all services use the same algorithm for roaming determination.</p> <p>For most services, roaming is determined by both MCC and MNC.</p> <p>For services that are not interested in domestic roaming, such as CAT, and RBT, roaming is determined by comparing MCC only.</p> <p>Only one MNC, coming from the IMPI or IMPU, is used for the home network.</p>
FULL_SUPPORT	Defined	<p>Roaming checks are service independent, meaning all services use the same algorithm for roaming determination.</p> <p>For most services, roaming is determined by both MCC and MNC.</p> <p>For services that are not interested in domestic roaming, such as CAT, and RBT, roaming is determined by comparing MCC only.</p> <p>Home MNCs are based on mtasComCcmMccMncHome.</p>





## 4 Performance Management

For measurements related to the MMTel services, see MTAS Performance Measurements.





## 5 Fault Management

For alarms related to the MMTel service, see [MTAS Alarm List](#).