

MTAS CAPv2 Management Guide

MTAS

USER GUIDE

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1 Introduction

This document describes how to configure the Global System for Mobile Communications (GSM) Compatible Service Switching Function (SSF) 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 GSM Compatible SSF function in the MTAS, the Legacy IN Reuse license must be installed.

For more information about the Legacy IN Reuse license, refer to *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)*
- *Signaling Manager User Guide*

1.1.3 Conditions

The following conditions must apply:

- An Ericsson Command-Line Interface (ECLI) session in Exec mode is in progress.
- SS7 configuration is performed as described in *MTAS SS7 Management Guide*.





2 Overview

This document describes the CAMEL Application Part (CAP) support that the MTAS offers to Service Layer applications which make it possible for an application in the Service Layer to influence an MMTel call. The CAP support is based on the [3GPP TS 09.78 v7.1.0](#) specification.

2.1 Applicable URIs

CAMEL services are only started for calls between Tel URIs and Tel URIs embedded in SIP.

2.2 Limitations in Supported Functionality

The following are the limitations in supported functionality:

- CAMEL services are started for a subscriber that has CAP provisioned. It is not required that the user has CAP Provisioned when using B-Number based CAP Triggering.
- MTAS does not support establishing a connection to an assisting SRF.
- Tariff switching during an ongoing call is not supported.
- Advice of Charge using CAMEL data is not supported.
- Play announcement and Prompt and Collect is only supported during call setup, that is, no mid-call announcements or collection is supported.

2.3 Mapping of SIP Request and Responses to CAP Operations

This section describes the mapping of SIP requests and responses to CAP operations, as shown in Table 1.

Table 1 Mapping of SIP Requests and Responses to CAP Operations

SIP	CAP	Comment
INVITE	Initial Detection Point (IDP)	Collected_Info (DP2), Terminating_Attempt_Authorized (DP12)
CANCEL	Event Report BCSM (ERB)	O/T_Abandon (DP10/DP18)
BYE	ERB	O/T_Disconnect (DP9/DP17)

*Table 1 Mapping of SIP Requests and Responses to CAP Operations*

SIP	CAP	Comment
BYE	Call Information Report (CIR), Apply Charging Report (ACR)	If requested
486, 600 in originating MTAS	ERB	O_Busy (DP5)
408, 480, 487 preceded by CANCEL from MTAS and 603 in both Originating and Terminating MTAS	ERB	O/T_No_Answer (DP6/DP14)
4xx, 5xx, 6xx except the ones explicitly listed as received by originating MTAS	ERB	Route_Select_Failure (DP4)
4xx, 5xx, 6xx except the ones explicitly listed as received by terminating MTAS	ERB	T_Busy (DP13)
200 OK	ERB	O/T_Answer (DP7/DP15)

2.4 Mapping of SIP Headers to CAP Information Elements

This section describes the mapping of SIP headers to CAP information elements, as shown in Table 2.

Table 2 Mapping of SIP Headers to CAP Information Elements

SIP Header	CAP Information Element	Comment
Req-URI	IDP.CalledPartyNumber IDP.CalledPartyBCDNumber	
P-Asserted-Id	IDP.CallingPartyNumber	
P-Access-Network-Info	IDP.LocationNumber	The value is derived from configured tables in MTAS. See Section 2.10 MtasCommonData Configuration to Fetch Location Number on page 11 for further details.



Table 2 Mapping of SIP Headers to CAP Information Elements

SIP Header	CAP Information Element	Comment
P-Access-Network-Info	IDP.LocationInformation .CellIdOrLAI	When no network-provided PANI header is available and when Network Provided Location Information (NPLI) retrieval is enabled on the originating side in the MMTel Telephony AS, this IE is populated with the results fetched from the HSS.
History-Info	IDP.OriginalCalledPartyID IDP.RedirectingPartyID IDP.RedirectionInformation	

2.5 Mapping of CAP Operations to SIP

This section describes the mapping of CAP operations to SIP, as shown in Table 3.

Table 3 Mapping of CAP Operations to SIP

CAP	SIP	Comment
Connect	INVITE	In the forward direction.
Continue	INVITE	In the forward direction.
Release Call	BYE if the session was established, 480 otherwise	480 is sent in the backwards direction. BYE is sent in both directions.

2.6 Mapping of CAP Information Elements to SIP Headers

This section describes the mapping of CAP information elements to SIP, as shown in Table 4.

Table 4 Mapping of CAP Information Elements to SIP Headers

CAP Information Element	SIP Header
CON.CallingPartysCategory	This element is added to the P-Asserted-Identity. If this element is received with a New Destination Routing Address (CAMEL initiated diversion), the CPC is added to the History-Info element describing the original target.
CON.DestinationRoutingAddress	Req-URI
CON.GenericNumber	This element overwrites the display name in the From header and the P-Asserted-Identity header. When configured, this element also overwrites the number in the From and P-Asserted-Identity headers.
RC.Cause	Reason header with the value Q.850 and a cause parameter containing this information element.
CON.RedirectionInformation	History-Info header

2.7 Other Mappings to CAP Information Elements

Table 5 Other Mappings to CAP Information Elements

Mapping From	CAP Information Element	Comment
Always set to “speech”.	IDP.BearerCapability	
The provisioned Calling Party Category value if existing otherwise set to “ordinary calling subscriber”.	IDP.CallingPartysCategory	
Unique value generated by MTAS.	IDP.CallReferenceNumber	
Collected_Info or Terminating_Attempt Authorised Detection Point (DP).	IDP.EventTypeBCSM	



Table 5 Other Mappings to CAP Information Elements

Mapping From	CAP Information Element	Comment
IMSI from Cached Contact Data or IMSI provisioned in Northbound Call Control (NCC) transparent data, or IMSI provisioned in User Common Data.	IDP.IMSI	
<ul style="list-style-type: none"> • IPRoutingAddress not supported. • VoiceBack supported. • VoiceInformation not supported through speech recognition. • VoiceInformation not supported through voice recognition. • Generation of voice announcement from Text not supported. 	IDP.IPSSPCapabilities	
Configured Global Title.	IDP.MSCAddress	
Configured Global Title.	IDP.GMSCAddress	
Provisioned service key in the NCC service data or the configured service-key in mtasNccBNumberList if B-Number is matched.	IDP.ServiceKey	
MTAS local time and zone.	IDP.TimeAndTimeZone	
Retrieval from HSS when NPLI is enabled.	IDP.LocationInformation	See Section 2.11 NPLI Configuration to Fetch Location Information and Location Number on page 11 for further details.
mtasNccVlrAddressForWiFi	IDP.LocationInformation.vlr-number	When a PANI header is available in the incoming INVITE and the access-type starts with IEEE-802.11 for originating MTAS



2.8 Map Announcements from IN to IMS

To map announcements from the Intelligent Network (IN) layer to IMS, do as follows:

- Copy all announcements used in the IN and configure them in the Media Resource Function Processor (MRFP) or in the Media Resource Function Controller (MRFC) used in IMS, while keeping all their identities.
- Reuse the media server in the IN layer by configuring the address of it in the MTAS. This process requires *Mr* or *Mp* support in the IN media server.

For more information about the announcements, refer to *MTAS Announcement Management Guide*.

2.8.1 Mapping of CAP Information Elements to SIP Through Mr

This section describes the mapping of CAP information elements to SIP through Mr as shown in Table 6 and Table 7.

Table 6 Mapping of CAP PlayAnnouncement Information Elements to URI Parameters

Information Element	URI Parameters
Elementary Message ID	play
Variable Message.elementaryMessageID	play
Variable Message.variableParts	param[n]
Number Of Repetitions	repeat
Duration	duration
Interval	delay

Table 7 Mapping of CAP PromptAndCollect Information Elements to VXML Elements

Information Element	VXML Script Impact
Minimum Number Of Digits	Controls the lower boundary in of the repeat attribute in the item element. Default is 1. It supports 1–16. If Minimum Number Of Digits equals to 1, and Maximum Number Of Digits equals to 5, there is<item repeat="1-5"> in VXML.



Information Element	VXML Script Impact
Maximum Number Of Digits	Controls the upper boundary in of the repeat attribute in the item element. Default is 1. It supports 1–16.
End Of Reply Digit	Handled by DTMF Grammars SRGS 1.0. Must be added to a VXML script or use the <code>termchar</code> property.
Cancel Digit	Defines the cancel digit in the grammar and reprompts if it is detected.
Start Digit	Use javascript to remove the “start digit” from the user input before returning the result.
First Digit Time Out	Handled by the “timeout” attribute in the <code><prompt></code> tag or the <code>timeout</code> property.
Inter Digit Time Out	Handled by the <code>interdigittimeout</code> property.
Error Treatment	Handled by catching the “noinput”/“nomatch” exception and reprompts.
Interruptable Ann Ind	Handled by the “bargain” attribute in the <code><prompt></code> tag.
Elementary Message ID/Elementary Message IDs	Handled by the <code><prompt></code> tag.
Variable Message	Handled by the “interpret-as” attribute in the <code><say-as></code> tag.
Number Of Repetitions	Handled by repeating the <code><audio></code> element.
Duration	Not supported.
Interval	Not supported.

2.8.2 Mapping of CAP Information Elements to H248 Through Mp

This section describes the mapping of CAP information elements to H248 through Mp as shown in Table 8 and Table 9.

CAP PlayAnnouncement element mapping to signals “AASB/PLAY”.



Table 8 Mapping of CAP PlayAnnouncement Information Elements to Parameters in H248 Message

Information Element	Parameters in H248 Signal
Elementary Message ID/Variable Message	an
Number Of Repetitions	it
Duration	duration
Interval	iv

CAP PromptAndCollect element mapping to signal “AASDC/PLAYCOL”.

Table 9 Mapping of CAP PromptAndCollect Information Elements to Parameters in H248 Message

Information Element	Parameters in H248 Signal
Minimum Number Of Digits	In dm (playColDigitMap)
Maximum Number Of Digits	In dm (playColDigitMap)
End Of Reply Digit	eik
Cancel Digit	rik
Start Digit	pend
First Digit Time Out	playColDigitMap: T
Inter Digit Time Out	playColDigitMap: L,S
Error Treatment	nd
Interruptable Ann Ind	ni
Elementary Message ID	ip
Number Of Repetitions	it
Duration	ipt
Interval	iv

2.9 Allow IN Service to Keep Control

To allow the IN service to keep control of a call if there is call setup failure, for example, when a called user is busy or not reachable, the value of `mtasSipCancel2FinalResponseTimer` must be increased from the default value, 5 seconds, to the recommended value 35 seconds. Refer to *Managed Object Model (MOM)* for more details.

Note: The value can be tuned per deployment, 35 seconds is just a recommendation.



2.10 MtasCommonData Configuration to Fetch Location Number

The location number is fetched by the MTAS by doing a database lookup. The mapping is required to be configured by the operator. Details about the configuration can be found in *Managed Object Model (MOM)*.

The Managed Object Class (MOC) `MtasCommonDataAccNetwTypeAccInfo` matching the location information of the subscriber is fetched and the attribute `mtasCommonDataAccNetwTypeAccInfoLocNum` is read. This attribute contains the location number.

The complete key used to find correct `MtasCommonDataAccNetwTypeAccInfo` is a concatenation of the access-type part of the `PANI` header, the character "&" and the access-info part of the `PANI` header.

2.10.1 Example

`PANI` header:

```
P-Access-Network-Info:3GPP-E-UTRAN;utran-cell-id-3gpp="24001A123B123456";network-provided
```

Key used for lookup:3GPP-E-UTRAN&240010000B123456

If the access-type equals "3GPP-GERAN", MTAS uses the value of the `cgi-3gpp` element and maps this to a location number using the configuration data in the `MtasCommonDataAccTypeAccInfo` MOs.

If the access-type equals "3GPP-UTRAN-FDD" or "3GPP-UTRAN-TDD", MTAS uses the value of the `utran-cell-id-3gpp` element and maps this to a location number using the `MtasCommonDataAccTypeAccInfo` MOs.

If the access-type equals "3GPP-E-UTRAN-FDD" or "3GPP-E-UTRAN-TDD", MTAS uses the value of the `utran-cell-id-3gpp` element and maps this to a location number using the `MtasCommonDataAccTypeAccInfo` MOs.

2.11 NPLI Configuration to Fetch Location Information and Location Number

Network Provided Location Information (NPLI) retrieval in MMTel Telephony AS can be enabled to retrieve Location Information from HSS for populating `CAPv2 IDP.LocationInformation` IE and `CAPv2 IDP.LocationNumber` IE.

The configuration policy 6 for CM parameters `mtasMmtNpliOriginating` and `mtasMmtNpliTerminating` is required. The policy 6 tries a fixed order of domain after considering the registered data. For `mtasMmtNpliTerminating`, the policy 6 is also the only option to trigger the NPLI when `INVITE` arrives, which is needed for CAMEL interaction.

In addition, the configuration `mtasMmtNpliTerminatingActiveLocationRetrieval` can be used together with `mtasMmtNpliTerminating` policy 6, to decide whether active location retrieval is done, which means paging towards the UE is triggered.

Refer to *MTAS CAP Support* for details on `IDP.LocationInformation` and `IDP.LocationNumber`.

2.12 Applicable Trigger Detection Points

The MTAS supports all Trigger Detection Points in the Originating Basic Call State Machine (O-BCSM) and in the Terminating Basic Call State Machine (T-BCSM), refer to specification [3GPP TS 09.78 v7.1.0](#) for details.

Refer to *MTAS Charging Management Guide* for more information.

2.13 Subfunctions

The subfunctions included in the GSM Compatible SSF function are described in this section.

Setting up charging in MTAS is described in *MTAS Charging Management Guide* and needs be done to enable CAPv2 to send additional charging data.

2.13.1 CAMEL Prepaid Charging

The CAMEL prepaid charging subfunction provides the CAMEL service control over the call duration. If the CM `mtasNccCreditAnnouncementName` is configured, the configured warning tone is played to the served user 30 seconds before the allowed duration has been reached, if the earlier received CAPv2 Apply Charging (ACH) message included “Release If Duration Exceeded” with a tone parameter.

Note: The warning tone is not played when Communication Diversion, CAMEL Diversion, or 3-Party service is executed.

2.13.2 Playing Announcement

The playing announcement is initiated by the CAMEL service and enables the CAMEL service to play announcements to the calling user (caller).

For more information about MTAS announcements, refer to *MTAS Announcement Management Guide*.



2.13.3 Provisioning Data

If the operator wants to provision a user, with either originating or terminating triggers either the `originating-service-key` or the `terminating-service-key` element must be set to the value `-1`.

Setting the `originating-service-key` or the `terminating-service-key` to 0 or a greater value means that IN is to be triggered.

For more information about user provisioning, see Section 3.5 Service Data Provisioning on page 28 and refer to *MTAS CAI3G Interface*.

2.14 B-Number Based CAP Triggering

If `mtasNccBNumberBasedTrigger` is enabled, a CAP IDP is triggered when the user part of the SIP R-URI is matching with configured B-numbers. The following attributes must be configured in CM `mtasNccBNumberList`: `<B-Number-pattern>`, `<gsm-scf-address>`, `<service-key>`, `<default-call-handling>`. Each field is separated by “|”.

B-Number-Pattern

The B-Number-Pattern can include one or several wildcard characters; “^” in any position of the number part. The presence of such wildcard character is interpreted as any value (0-9) in the left-string number prefix matching. The following are configuration examples:

- Number pattern “+1800” matches with the following R-URI examples:
tel:+1800, sip:+1800@xxx;user=phone, sip:+180012345@xxx;user=phone
- Number pattern “411” matches with the following R-URI examples:
tel:411;phone-context=xxx, sip:411;phone-context=xxx@xxx;user=phone, sip:41112345; phone-context=xxx@xxx;user=phone
- Number pattern “+1^^700” includes wildcard characters and matches with the following R-URI examples: tel:+10007001111 or tel:+13217001111 or sip:+14567001111@xxx;user=phone

gsm-scf-address

If the B-Number is matched, IDP is sent to the configured SCF address.

service-key

If the B-Number is matched, it defines the `originating-service-key` used in IDP. The supported format is integer.

**default-call-handling**

If the B-Number is matched, but IDP cannot be sent because of no LocationInfo, no IMSI, or for some other reason, the call continues or is released based on this configuration.

2.15 Interaction with Other Services

This section specifies the service interactions between the MMTel services and services that can be realized in the Service Layer. Generally, it is either the MMTel service or the Service Layer service that is active, which is done by provisioning the user correctly. For example, barring rules for a specific user must only exist in the MMTel or in the Service Layer.

Another example is that if MMTel Communication Diversion (CDIV) is provisioned, then CAMEL diversion is not to be enabled in the Service Layer and conversely.

2.15.1 Abbreviated Dialing

The CAMEL service is started after the Abbreviated Dialing service. Therefore, a short number is translated to a long number before it is handled by the CAMEL service.

For more information about the Abbreviated Dialing service, refer to *MTAS Abbreviated Dialing Management Guide*.

2.15.2 Address Policing

The Address Policing service is applied when the CAMEL service has translated the dialed number.

For more information about the Address Policing service, refer to *MTAS Address Policing Management Guide*.

2.15.3 Advice of Charge

No interaction.

2.15.4 AS Chaining

This section describes AS chaining.



2.15.4.1 Communication Diversion

When the Originating AS Chaining is enabled and when CAMEL diversion is triggered, the CAMEL service utilizes the `P-Served-User` header and the generic parameter of the header to indicate whether O-CSI is applicable. The CAMEL interaction for the diverted call leg is suppressed in terminating MTAS for the diverting user (B) and instead is triggered in the diverting user's (B) AS triggering originating execution.

2.15.4.2 Conference

When Originating AS Chaining is enabled, the CAMEL invocation for MO case for the Conference Participants is triggered where the `INVITE` to a participant is created, and then when the `INVITE` is routed to the Conference Creator's AS again, the CAMEL invocation is not triggered.

2.15.5 AS Interworking

No interaction.

2.15.6 Calling Party Category

If a Calling Party Category is received from the CAMEL service, this value overrides the Calling Party Category value provisioned for this user.

For more information about the Calling Party Category service, refer to *MTAS Calling Party Category Management Guide*.

2.15.7 Call Return

Originating CAMEL invocation is done for the `INVITE` sent when the served user wants to call the last user, who called the served user.

2.15.8 Carrier Select Services

The NCC service is executed before the Carrier Select service, so the Carrier Selection Code (CSC) can be present in the B-Number. Therefore all possible CSC codes are considered in the B-Number list configuration, in the B-Number matching table or in wild-carding. The following are examples:

- Entry "+91^^700"

Matching for tel:+91321700 or sip:+91321700@xxx;user=phone
Where "+91" is the CC of India, "321" is a CSC code with 3 digits, and "700" is a service number.

- Entry "^^700"



Matching for tel: 321700;phone-context=xxx or sip:321700;
phone-context=xxx@xxx;user=phone

Where “321” is a CSC code with 3 digits, and “700” is a service number.

2.15.9 Charging Service

For more information about the Charging service, refer to *MTAS Charging Management Guide*.

2.15.9.1 Online Charging

The CAMEL service affects MMTel online charging. The impact depends on which CAP operation is received or sent. The following CAP operations have an impact:

2.15.9.1.1 Initial DP (IDP)

The data used to populate IDP is only sent to charging when CON or CUE is received. The IMSI sent in the IDP is reported in the Subscription-ID AVP.

The use of the CAMEL service (O-CSI/T-CSI/Destination based CAP Trigger) is reported in the Supplementary-Service-Identity AVP.

2.15.9.1.2 Connect (CON)

When the request URI is changed, that is, when New Destination number is received in CON, then the new number is reported in Called-Party-Address AVP for call leg A to B (originating side) and for call leg B to C (terminating side).

When a Calling Party Category is received the P-Asserted-Identity is updated with this value then this is present in the Calling-Party-Address AVP.

2.15.9.2 Offline Charging

The CAMEL service affects MMTel offline charging. The impact depends on which CAP operation is received or sent. The following CAP operations have an impact:

2.15.9.2.1 Initial DP (IDP)

The data used to populate IDP is only sent to charging when CON or CUE is received. The IMSI sent in the IDP is reported in the Subscription-ID AVP.

The generated call referenced number used to populate the call referenced number element in IDP is reported in the GSM-Call-Reference-Number AVP. The MSC address in the IDP is populated with the configured global title in `mtasCsiGlobalTitle` and is reported in the MSC-Address AVP.



The use of the CAMEL service (O-CSI/T-CSI/Destination based CAP Trigger) is reported in the Supplementary-Service-Identity AVP.

2.15.9.2.2 Connect (CON)

If a CAMEL diversion takes place, the new diversion target is set in the Charging Function. The user B that is diverting the call is reported in the Redirecting-Party-Address AVP.

When Generic Number is configured to replace the number in P-Asserted-Identity and From headers, the Generic number added to P-Asserted-Identity header is reported in the Calling-Party-Address for call leg A to B (originating side) and for call leg B to C (terminating side).

When the request URI is changed, that is, when New Destination number is received in CON, then the new number is reported in Called-Party-Address AVP for call leg A to B (originating side) and for call leg B to C (terminating side).

When a Calling Party Category is received the P-Asserted-Identity is updated with this value then this is present in the Calling-Party-Address AVP. The Ericsson specific AVP IMS-Service-Identity is set to CAMEL_DIVERSION when new number received in CON for the MT case.

2.15.9.2.3 Furnish Charging Information (FCI)

Any free format data received in a CAP FCI is stored in the Service-Specific-Data AVP. Only the latest received free format data received in FCI is reported in the Service-Specific-Data AVP. In case of earlier received FCI, free format data is overwritten.

The value Party To Charge information element is used as the charged party.

The Service-Specific-Type is set to CAMEL.

2.15.10 Closed User Group

No interaction.

2.15.11 Communication Barring

This section describes the CAMEL service interaction with Outgoing Communication Barring (OCB) and Incoming Communication Barring (ICB).

For more information about the Barring services, refer to *MTAS Barring and Dial Plan Services Management Guide*.



2.15.11.1 OCB

OCB is performed on the result from the CAMEL service invocation on the originating MTAS, meaning that any New Destination address received from the Service Control Point (SCP) is checked by the OCB service. The same applies on a terminating MTAS for a diverted call.

2.15.11.2 ICB

ICB is performed on the terminating MTAS before CAMEL service invocation.

2.15.12 Communication Completion

A CAMEL service invocation is made on the call leg to the called user.

For more information about the Communication Completion service, refer to *MTAS Communication Completion Management Guide*.

2.15.13 Communication Diversion

If a CAMEL call diversion takes place, that is, when the SCP sends a new called party number in the CAPv2 CON message, then the MMTel CDIV service is not started. If an MMTel CDIV at Busy or No-Reply service diverts the call, and if the SCP node armed event report with RRB (tBusy or tNoAnswer) before that, the ERB notification is not sent by the CAMEL service.

MTAS triggers CAMEL interaction for the B to C leg (transit) when MMTel CDIV has been done. This is needed when no CAMEL diversion takes place, for example, CUE or CON with the same number is received.

The CAMEL service in MTAS knows when MMTel CDIV is done for Call Forwarding Unconditional (CFU) and populates the IDP.OriginalCalledPartyID, IDP.RedirectingPartyID, and the IDP.RedirectingInformation for MT case. In this case, MTAS assumes that the SCP does not trigger a CAMEL diversion since this prevents the MMTel CDIV to be performed and the data sent in the IDP for MT case is then faulty.

MMTel CDIV triggered for other cases, for example Call Forwarding No Reply (CFNR), the IDP for MT case cannot be populated with redirecting related information since it is sent before the INVITE is sent to B and MTAS does not know if MMTel CDIV is performed.

In case of Communication Deflection, the deflected call is subject to CAMEL control in the same way as for a forwarded call.

If ACH with ReleaseIfDurationExceeded is received in the B-C leg CAMEL session and the CM mtasSsfSupportReleaseIfDurationExceeded is true, the call is released after the last time the slice expires.



For more information about the CDIV service, refer to *MTAS Communication Diversion Management Guide*.

2.15.14 Communication Waiting

No interaction.

2.15.15 Conference Collocated Deployment

CAMEL interaction is not started for the `INVITE` sent for conference creation. For the Dial-out case, a CAMEL invocation, based on the O-CSI for the Conference Participant, is done for every outgoing call leg.

For the Move Active Session to Existing Conference case, the original CAMEL sessions are preserved based on the OCSI/TCSI provisioning and the call scenario.

If ACH with `ReleaseIfDurationExceeded` is received in one CAMEL session and `CM_mtasSsfSupportReleaseIfDurationExceeded` is true, the whole conference is released after the last time slice expires.

Terminating services for a participant, including CAMEL service invocation, is executed as for any terminating call. No specific action related to CAMEL is taken related to that the terminating user is a Conference Participant.

For more information about the conference services, refer to *MTAS Ad-hoc Conference Management Guide*.

2.15.16 Customized Alerting Tones

If the CAMEL service orders update of the `From` header, the MTAS passes on the updated `From` header to the Customized Alerting Tones (CAT) Server.

For more information about the CAT service, refer to *MTAS Customized Alerting Tones Management Guide*.

2.15.17 Flexible Communication Distribution

One CAMEL invocation is made for the original target, but no CAMEL invocations are made for the outgoing Flexible Communication Distribution (FCD) call legs. If a CAMEL diversion takes place, FCD is not executed.

For more information about the FCD service, refer to *MTAS Flexible Communication Distribution Management Guide*.



2.15.18 Flexible Service Format Selection

It is not possible to suppress the execution of the CAMEL service by using the Flexible Service Format Selection (FSFS) function.

For more information about the FSFS service, refer to *MTAS Flexible Service Format Selection Management Guide*.

2.15.19 Gateway Model

No interaction.

2.15.20 Generic Announcement

No interaction.

2.15.21 Group Call Admission Control

No interaction.

2.15.22 Hold

No interaction.

2.15.23 Hotline

No interaction.

2.15.24 Identity Presentation

When the CAMEL service invocation results in the reception of a `CONNECT` message including a `Generic Number` parameter, this number is included in the display name part of the `From` and `P-Asserted-Identity` headers in the `INVITE` message. If configured, the `Generic Number` of a `CONNECT` also replaces the number in `From` and `P-Asserted-Identity` headers.

When Identity Presentation is enabled, the OCNIP and CNIP service does not allow presentation of the `From` and `P-Asserted-Identity` headers unless CNIP license is available and OCNIP and CNIP is enabled. When Identity Presentation is not enabled, the `Generic Number` is present in the `From` and `P-Asserted-Identity` headers when received in `CON`.

The MTAS uses the values “presentation allowed” and “presentation restricted” for the `IDP.CallingPartyNumber.ScreeningIndicator` parameter field. If the SIP `Privacy` header contains any of the values `id`, `user`, or `header`,



the MTAS maps this to “presentation restricted”. In all other cases, the MTAS uses the value “presentation allowed”.

For more information about the Identity Presentation service, refer to *MTAS Identity Presentation Management Guide*.

2.15.25 Japanese Charging

No interaction.

2.15.26 Malicious Communication Identification

No interaction.

2.15.27 Media Resources and User Interaction

Media resources are known to the MTAS by configuration. These resources exist either in an MRFP or in an MRFC. The protocols used to access the media resources are H.248 if there is an MRFP, or SIP if there is an MRFC.

For more information about the media functions in MTAS, refer to the following documents:

- *MTAS Interface to MRF (Mr)*
- *MTAS H.248 Support*

2.15.28 MMTel

No interaction.

2.15.29 Multiple Languages

No interaction.

2.15.30 Network Announcement

No interaction.

2.15.31 Network Ringback Tone

No interaction.



2.15.32 Number Normalization

The numbers sent to the CAMEL service in the information elements of the IDP, can, or cannot be in a normalized format. This process enables the CAMEL services like VPN groups to translate the dialed number into a public number.

Numbers received from the CAMEL service is not in a normalized format. The Number Normalization common component must be configured in a way that allows all non-global numbers received from the CAMEL service to be normalized.

For more information about the Number Normalization service, refer to *MTAS Number Normalization Management Guide*.

2.15.33 Number Portability

A Number Portability analysis is made on numbers received from the CAMEL service.

For more information about the Number Portability service, refer to *MTAS Number Portability Management Guide*.

2.15.34 Number Translation

The number translation analysis is made on number received from the CAMEL service.

2.15.35 Operator Controlled Transfer

No interaction.

2.15.36 Parlay X

CAMEL interaction is not started when Parlay X is enabled. This is controlled by the NCC transparent data.

2.15.37 Priority Call

No interaction.

2.15.38 Session Transfer to Own Device

One CAMEL invocation is made for the original target, but no CAMEL invocations are made for the outgoing Session Transfer to Own Device (STOD) call legs. If a CAMEL diversion takes place, STOD is not executed.



For more information about the STOD service, refer to *MTAS Session Transfer to Own Device Management Guide*.

2.15.39 Short Number Dialing

The CAMEL service handles the request URI before it is seen by the Short Number Dialing (SND) service, meaning that the CAMEL service translate a short number into a public number before the SND handles the destination address.

For more information about the SND service, refer to *MTAS Short Number Dialing Management Guide*.

2.15.40 Subscriber Credit Notification

No interaction.

2.15.41 Supplementary Service Codes

The SSC service handles the request URI before it is seen by the CAMEL service. The SSC is not started on a Follow-on Call.

For more information about the SSC service, refer to *MTAS Supplementary Service Codes Management Guide*.

2.15.42 Three Party Call

The CAMEL service is executed on the call legs for the three-party participants as for a normal originating or terminating session independently of the three-party execution. No CAMEL service is executed on the call leg for the three-party originator.

For more information about the Three Party service, refer to *MTAS Three Party Management Guide*.

2.15.43 Unregistered Subscriber Service

No interaction but the CAMEL service is started for unregistered subscribers in the same way as for registered subscribers to handle calls from both 2G/3G access. For LTE/4G access the subscribers are registered to IMS, which is not the case for calls for 2G/3G.

For more information about the subscriber data in MTAS, refer to *MTAS Subscriber Data Management Guide*.



2.15.44 User Call Admission Control

No interaction.

2.15.45 Video Fallback to Audio

No interaction.

2.15.46 Voicemail Service

No interaction.

2.15.47 Wholesale

No interaction.



3 GSM Compatible SSF Configuration

An overview of the GSM Compatible SSF MO structure is shown in Figure 1.

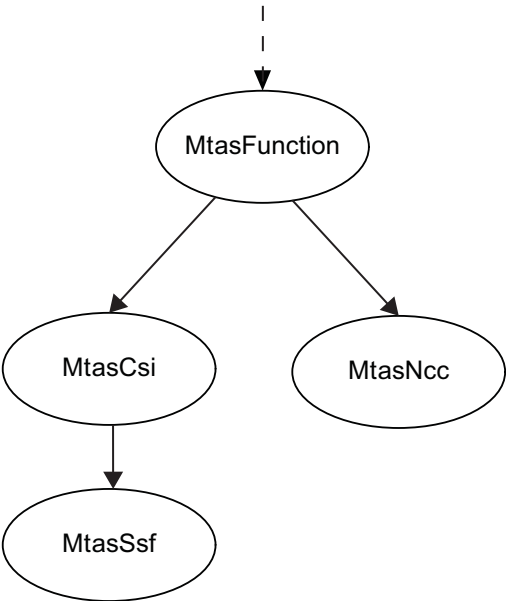


Figure 1 GSM Compatible SSF MO Structure

For configurable MOs and attributes related to the GSM Compatible SSF, refer to *Managed Object Model (MOM)*.

3.1 NCC Configuration

The NCC service is enabled by setting the `mtasNccAdministrativeState` attribute in the `MtasNcc` MO to 1 (Unlocked). More configuration activities are listed in Table 10.

Table 10 More Configuration Activities for NCC

Activity	Attribute
Defines the URI path for the Playcol announcement files on the MRFP. It is read when CAP operation Prompt and Collect parameter Error Treatment is set to help.	<code>mtasNccCapPcAnnHelpUri</code>
Unlocks the Northbound Call Control (NCC) Service which initiates CAMEL interactions.	<code>mtasNccAdministrativeState</code>



Table 10 More Configuration Activities for NCC

Activity	Attribute
Enables the NCC service in MTAS to use the IMSI provisioned in NCC transparent data when no IMSI is received in the IRS data from the HSS. If IMSI is provisioned in User Common Data, then this configuration parameter does not have any impact, the NCC service always uses the provisioned IMSI.	mtasNccImsiBehavior
Decides whether only the display-name of the From and P-Asserted-Identity headers is to be updated with the Generic Number received in the CONNECT, or if the phone-number is to be replaced in From and P-Asserted-Identity header too.	mtasNccGenNumBehavior
Allows the IN service to keep control of a call if there is call setup failure, see Section 2.9 Allow IN Service to Keep Control on page 10 for further details.	mtasSipCancel2FinalResponseTimer (5–35 seconds)
Defines the pre-defined value to be encoded as TBCD string in CAPv2 IE IDP.locationInformation.vlr-number towards SCP when a PANI header is available in the incoming INVITE and the access-type starts with IEEE-802.11 for originating MTAS.	mtasNccVlrAddressForWiFi
Defines whether the CAMEL triggering based on B-Number is supported. If it is enabled, an IDP can be sent based on the mtasNccBNumberList configuration.	mtasNccBNumberBasedTrigger
Defines a list of strings, including <B-Number-pattern>, <gsm-scf-address>, <service-key>, <default-call-handling>. Each field is separated by “ ”.	mtasNccBNumberList
Defines whether MTAS reports the use of the CAMEL service to charging in Supplementary-Service-Information AVP (both Rf and Ro interfaces).	mtasNccReportSsiToCharging
Defines the name of the generic announcement, specified in an instance of MtasGaAnn, to be used when the credit limit reached for the served user is notified and a warning tone is required by ACH message sent from SCP. If this attribute is empty or does not specify an instance of MtasGaAnn, no announcement is played.	mtasNccCreditAnnouncementName



3.2 CSI Configuration

The CSI is enabled by setting the `mtasCsiAdministrativeState` attribute in the `MtasCsi` MO to 1 (Unlocked), and the `mtasSsfCapv2AdministrativeState` attribute in the `MtasSsf` MO to 1 (Unlocked). More configuration activities are listed in Table 11.

Table 11 More Configuration Activities for CSI

Activity	Attribute
Defines the Subsystem Number that MTAS uses in the SS7 network when MTAS has the role of an SSF.	<code>mtasCsiSsfSubsystemNumber</code>
Defines the remote Subsystem Number that MTAS uses in the SS7 network when MTAS in the role of the SSF sends the IDP to.	<code>mtasCsiRemoteScfSubsystemNumber</code>
The global title that MTAS is assigned in the SS7 network.	<code>mtasCsiGlobalTitle</code>
Unlocks the CSI Subsystem which enables CAMEL interaction. When unlocked MTAS also binds to the SS7-stack in platform.	<code>mtasCsiAdministrativeState</code>
Defines the Subsystem Number that MTAS uses in the SS7 network when MTAS has the role of an SCF. Set it to 0 when MTAS does not have the SCF role.	<code>mtasCsiScfSubsystemNumber</code>
Unlocks the CAPv2 functionality in MTAS.	<code>mtasSsfCapv2AdministrativeState</code>
Decides whether MTAS support ACH. <code>ReleaseIfDurationExceeded</code> . If it is false, the <code>ACHReleaseIfDurationExceeded</code> is ignored by MTAS and SCP need to send an extra RC to release the call.	<code>mtasSsfSupportReleaseIfDurationExceeded</code>
Defines whether to suppress the T-CSI CAP service trigger or not when the served subscriber is located in the Home Public Land Mobile Network (HPLMN).	<code>mtasSsfSuppressTerminatingServiceInHplmn</code>

3.3 SS7 Configuration

The configuration of the SS7 stack with ETSI INAP, and SCTP is described in *MTAS SS7 Management Guide*.

3.4 Administrative States for GSM Compatible SSF Configuration

The GSM Compatible SSF is enabled by setting the `mtasCsiAdministrativeState` attribute, `mtasSsfCapv2AdministrativeState` attribute, and the `mtasNccAdministrativeState` attribute in the `MtasCsi` MO, `MtasSsf` MO, and the `MtasNcc` MO to 1 (Unlocked). If the `mtasSsfCapv2AdministrativeState` attribute, `mtasCsiAdministrativeState` attribute, or the `mtasNccAdministrativeState` attribute is set to 0 (Locked), the GSM Compatible SSF is not activated in the MTAS.

3.5 Service Data Provisioning

This section describes how to configure the service data used by the NCC service.

3.5.1 Operator Subscription Level Service Configuration

The operator can activate or deactivate the NCC service subscription for the subscriber by setting the user data using CAI3G protocol through the XDMS. For more information about the CAI3G protocol, refer to MTAS CAI3G Interface.

The following applies:

- NCC CAP-related elements are not to be enabled with NCC Parlay X elements and conversely.
- The activated elements decide whether the user is provisioned with the NCC service or not.
- The `gsm-scf-address` is the global title to the SCF.
- Originating-service-key identifies the application to trigger in the SCF.
- Terminating-service-key identifies the application to trigger in the SCF.
- Default-call-handling defines how the call is to proceed in case a failure in the CAMEL interaction.
- IMSI is the IMSI for the subscriber and NCC service uses this when IRS does not contain IMSI and when `mtasNccImsiBehavior` is configured to use this IMSI. Typically used for unregistered subscribers when the IMSI in IRS is blocked on the HSS. If IMSI is not configured in the NCC service data, but IMSI element is present in the subscription element of the User Common Data, the NCC service uses that IMSI.



```
<?xml version="1.0" encoding="UTF-8"?> <soap-env:Envelope xsi:schemaLocation=
"http://schemas.xmlsoap.org/soap/envelope/../../cai3g/schemas/Soap-Envelope.xsd
http://schemas.ericsson.com/cai3g1.2/../../cai3g/schemas/
cai3g1.2_header-fault-corrected.xsd http://schemas.ericsson.com/mtas/mmtel/cai3g..
/schemas/mmtel_aggregated_service.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:soap-env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:mc="http://schemas.ericsson.com/mtas/mmtel/cai3g"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
<soap-env:Header>
  <cai3g:SessionId>S1</cai3g:SessionId>
  <cai3g:TransactionId>1</cai3g:TransactionId>
  <cai3g:SequenceId>100</cai3g:SequenceId>
</soap-env:Header>
<soap-env:Body>
  <cai3g:Create>
    <cai3g:MOType>MMTel@http://schemas.ericsson.com/mtas/mmtel/cai3g</cai3g:MOType>
    <cai3g:MOId>
      <mc:publicId>sip:user@telco.com</mc:publicId>
    </cai3g:MOId>
    <cai3g:MOAttributes>
      <mc:createMMTel publicId="sip:user@telco.com">
        <mc:publicId>sip:user@telco.com</mc:publicId>
        <mc:northbound-call-control>
          <mc:ncc-operator-configuration>
            <mc:activated>true</mc:activated>
            <mc:gsm-scf-address>46123456789</mc:gsm-scf-address>
            <mc:originating-service-key>1⇒
          </mc:originating-service-key>
            <mc:terminating-service-key>2⇒
          </mc:terminating-service-key>
            <mc:default-call-handling>release⇒
          </mc:default-call-handling>
            <mc:imsi>2400111</mc:imsi>
          </mc:ncc-operator-configuration>
        </mc:northbound-call-control>
      </mc:createMMTel>
    </cai3g:MOAttributes>
  </cai3g:Create>
</soap-env:Body>
</soap-env:Envelope>
```

Example 1 Provisioning NCC to Enable CAMEL Interaction in MTAS





4 Performance Management

For measurements related to the GSM Compatible SSF, refer to *Managed Object Model (MOM)*.





5 Fault Management

For alarms related to the GSM Compatible SSF, refer to *MTAS Alarm List*.