

# MTAS VNF Management Guide

## MTAS

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### USER GUIDE

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# 1 Introduction

This document describes the management of the MTAS Virtual Network Function (VNF).

## 1.1 Prerequisites

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

### 1.1.1 Documents

Before any of the procedures in this document are done, the following documents must be available:

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

### 1.1.2 Conditions

The following condition must apply:

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





## 2 Overview

The MTAS is an Application Server (AS) on the ISC interface in an IMS network. Its purpose is to provide real time, peer-to-peer communication services. One use case of that type of communication service is Multimedia Telephony (MMTel), where the MTAS provides the basic communication services, supplementary services, and supporting functions. In this case, the MTAS is deployed as an MMTel Telephony AS which enables activation of MMTel type of services, see Section 5 on page 9.

Another use case is Service Centralization and Continuity (SCC) where the MTAS is provisioned as an SCC-AS and provides with the SCC services to Voice over LTE (VoLTE) subscribers, see Section 6 on page 11.

A third use case is SIP Trunking where MTAS handles access between IMS Network of the operator and enterprise PBXs and provides the PBX with regulatory and supplementary services. In this case the MTAS is deployed as an ST AS, see Section 7 on page 13.

An SIP framework, used for implementing user agent functionality, is included in the MTAS, providing API for making and terminating calls, SDP media negotiations, authentication, regular transactions, and reliable provisional responses. UDP and TCP are used as transport protocols for the SIP messages. See Section 8 on page 15 for further information.

The XDMS function provides access to the subscriber data in the Home Subscriber Server (HSS), for user terminals and operators. The users have different access rights, and use different communication protocols, like XCAP requests over the Ut interface, and CAI3G requests over the SOAP interface, see Section 12 on page 23.

The MTAS also implements supporting functions such as charging (see Section 10 on page 19), using Diameter over TCP, and media functions, using H.248 over SCTP, which can be used by the communication services.

These functions are implemented on the underlying platform, which provides telecom grade High Availability and robustness. On a network level, redundancy is achieved by using a dynamic allocation concept for subscribers. Subscriber data is accessed on the Sh interface, using Diameter over TCP, to the HSS, see Section 11 on page 21.

The MTAS VNF is for signalling only, and does not handle multimedia. When sessions handled by the MTAS VNF need to interact with multimedia, the interaction is performed by a Media Resource Function Processor (MRFP) controlled by a Media Resource Function Controller (MRFC) function within MTAS, see Section 14 on page 29. The integrated MRFC function in the MTAS gives efficiency gains, as compared to interacting with an MRFC through a Call Session Control Function (CSCF).



The MTAS can be used in mobile, fixed, or FMC type of networks. It is as such access agnostic. The architecture has been designed to allow for easy extension with further services.

The MTAS provides measurements supporting Forecast, Quality of Service (QoS), and Fault investigation (see Section 18 on page 379, in the form of statistics, and MTAS counters for congestion and QoS, and by counters on function level and protocol level, see Section 16 on page 33).





## 3 MTAS Management

The activation, deactivation, and handling of incoming traffic are controlled by the `mtasFunctionAdministrativeState` attribute in the *MtasFunction* Managed Object (MO). For detailed information, refer to *Managed Object Model (MOM)*.

### 3.1 Activate MTAS

To activate the MTAS:

1. Navigate to the **MtasFunction** MO.
2. Set the **mtasFunctionAdministrativeState** attribute to 1 (Unlocked).
3. Click **Submit**.

If MMTel services are going to be activated, refer to *MTAS Service Management Guide*.

If ST AS services are going to be activated, refer to *MTAS SIP Trunking Service Management Guide*.

Otherwise proceed with the next step.

4. Perform a backup. For more information, refer to *Create Backup*.

As a result, the MTAS is activated, and traffic is accepted.

### 3.2 Deactivate MTAS

It is possible to deactivate the MTAS using either of the following options:

- To deactivate the MTAS gracefully, where the MTAS deactivates after all the current sessions are cleared down normally, see Section 3.2.1 Deactivate Gracefully on page 5.
- To deactivate the MTAS forcefully, where the MTAS tears down the current sessions, see Section 3.2.2 Deactivate Forcefully on page 6.

#### 3.2.1 Deactivate Gracefully

To deactivate the MTAS gracefully:

1. Navigate to the **MtasFunction** MO.
2. Set the **mtasFunctionAdministrativeState** attribute to 2 (Shuttingdown).



3. Click **Submit**.

### 3.2.2

#### **Deactivate Forcefully**

A locked state means that the function is idle and no new requests are being accepted.

The duration of forceful deactivation varies from a few minutes to up to 20 minutes at most, depending on the number of sessions that are terminated.

To force the MTAS into a locked state:

1. Navigate to the **MtasFunction** MO.
2. Set the **mtasFunctionAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.

**Note:** This action is allowed when the initial state is either `unlocked` or `Shuttingdown`.



## 4 License Management

The use of services and functionality in an MTAS VNF are limited by licenses. Licenses affect the availability of an AS, a service and functionality, or the limitation in capacity for a service. A license is a permission to use a service or capacity level of a service. A license is identified by a name and a version.

Management of licenses includes the following activities:

- Adding licenses
- Checking license data
- Checking license use

### 4.1 Description

For more information to handle relevant licenses, refer to *MTAS Licenses*.





## 5 MMTel Telephony AS Management

The activation, deactivation, and handling of incoming traffic are controlled by the `mtasMmtAdministrativeState` attribute in the *MtasMmt* MO. For more details, refer to *Managed Object Model (MOM)*.

### 5.1 Activate MMTel Telephony AS

To activate the MMTel Telephony AS:

1. Navigate to the **MtasMmt** MO.
2. Set the **mtasMmtAdministrativeState** attribute to **1** (Unlocked).
3. Click **Submit**.

### 5.2 Deactivate MMTel Telephony AS

To deactivate the MMTel Telephony AS, use one of the following options:

- To deactivate the MMTel Telephony AS gracefully, see Section 5.2.1 Deactivate Traffic Gracefully on page 9.
- To deactivate MMTel Telephony AS forcefully, see Section 5.2.2 Deactivate Traffic Forcefully on page 9.

#### 5.2.1 Deactivate Traffic Gracefully

To deactivate the MMTel Telephony AS gracefully:

1. Navigate to the **MtasMmt** MO.
2. Set the **mtasMmtAdministrativeState** attribute to **2** (Shuttingdown).
3. Click **Submit**.

#### 5.2.2 Deactivate Traffic Forcefully

The duration of forceful deactivation varies from a few minutes to up to 20 minutes at most, depending on the number of sessions that are terminated.

To force the MMTel Telephony AS into a locked state:

1. Navigate to the **MtasMmt** MO.
2. Set the **mtasMmtAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.

**Note:** This action is allowed when the initial state is either `unlocked` or `Shuttingdown`.

## 5.3 MMTel Services Management

Each service in an MMTel Telephony AS is described by a service MO that holds attributes to define the behavior of that particular service. The administrative state of the MO controls whether the service is available to the network. References to charging profiles define the charging behavior for the service.

Management of services for an MMTel Telephony AS includes the following activities:

- Activating supplementary services
- Deactivating supplementary services
- Setting the attributes of supplementary services

For more information to handle services, refer to *MTAS Service Management Guide*.

For details regarding the `MtasMmt` MO, refer to *Managed Object Model (MOM)*.



## 6 SCC-AS Management

The activation, deactivation, and handling of incoming traffic are controlled by the `mtasSccAdministrativeState` attribute in the *MtasScc* MO. For details, refer to *Managed Object Model (MOM)*.

### 6.1 Activate SCC-AS

To activate the SCC-AS:

1. Navigate to the **MtasScc** MO.
2. Set the **mtasSccAdministrativeState** attribute to **1** (Unlocked).
3. Click **Submit**.

### 6.2 Deactivate SCC-AS

To deactivate the SCC-AS, use one of the following options:

- To deactivate the SCC-AS gracefully, see Section 6.2.1 Deactivate Traffic Gracefully on page 11.
- To deactivate SCC-AS forcefully, see Section 6.2.2 Deactivate Traffic Forcefully on page 11.

#### 6.2.1 Deactivate Traffic Gracefully

To deactivate the SCC-AS gracefully:

1. Navigate to the **MtasScc** MO.
2. Set the **mtasSccAdministrativeState** attribute to **2** (Shuttingdown).
3. Click **Submit**.

#### 6.2.2 Deactivate Traffic Forcefully

To force the SCC-AS into a locked state:

1. Navigate to the **MtasScc** MO.
2. Set the **mtasSccAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.

**Note:** This action is allowed when the initial state is either `unlocked` or `Shuttingdown`.



## 6.3 Collocated SCC-AS and MMTel Telephony AS

The SCC-AS and MMTel Telephony AS can be collocated in an MTAS VNF by activating both functions. SCC and MMTel sessions can then be activated simultaneously. Apart from the services, the other support functions in the MTAS VNF are available to both SCC-AS and MMTel Telephony AS.

## 6.4 SCC Services Management

Each service in an SCC-AS is described by a service MO that holds attributes to define the behavior of that particular service. The administrative state of the MO controls whether the service is available to the network. References to charging profiles define the charging behavior for the service.

To handle the SCC services, refer to *MTAS IMS Centralized Services Management Guide* and *MTAS SRVCC Management Guide*.

For details regarding the `MtasScc` MO, refer to *Managed Object Model (MOM)*.

For information about how to manage charging profiles, refer to *MTAS Charging Management Guide*.





## 7 ST AS Management

The activation, deactivation, and handling of incoming traffic are controlled by the `mtasStAdministrativeState` attribute in the *MtasSt* MO. For more details, refer to *Managed Object Model (MOM)*.

### 7.1 Activate ST AS

To activate the ST AS:

1. Navigate to **MtasMmt** MO in the CM browser.
2. Set the **mtasStAdministrativeState** attribute to **1** (Unlocked).
3. Click **Submit**.

### 7.2 Deactivate ST AS

To deactivate the ST AS, use one of the following options:

- To deactivate the ST AS gracefully, see Section 7.2.1 Deactivate Traffic Gracefully on page 13.
- To deactivate MMTel Telephony AS forcefully, see Section 7.2.2 Deactivate Traffic Forcefully on page 13.

#### 7.2.1 Deactivate Traffic Gracefully

To deactivate the ST AS gracefully:

1. Navigate to **MtasSt** MO in the CM browser.
2. Set the **mtasStAdministrativeState** attribute to **2** (Shuttingdown).
3. Click **Submit**.

#### 7.2.2 Deactivate Traffic Forcefully

To force the ST AS into a locked state:

1. Navigate to **MtasSt** MO in the CM browser.
2. Set the **mtasStAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.

**Note:** This action is allowed when the initial state is either `unlocked` or `shuttingdown`.



## 7.3 ST AS Services Management

Each service in an ST AS is described by a service MO that holds the attributes to define the behavior of that particular service. The administrative state of the MO controls whether the service is available to the network.

Management of services for an ST AS includes the following activities:

- Activating supplementary services.
- Deactivating supplementary services.
- Setting the attributes of supplementary services.

For more information to handle services, refer to *MTAS SIP Trunking Service Management Guide*.

For details regarding the ST AS MO, refer to *Managed Object Model (MOM)*.



## 8 SIP Management

Management of SIP for an MTAS VNF includes the following activities:

- Changing SIP ports
- Changing SIP parameters

### 8.1 Description

For information to handle SIP, refer to *MTAS SIP Management Guide*.

For detailed information about the *MtasSip* MO, refer to *Managed Object Model (MOM)*.

### 8.2 Traffic Activation

MMTel traffic is activated through the MMTel Telephony AS, see Section 5.1 Activate MMTel Telephony AS on page 9.

SCC traffic is activated through the SCC-AS, see Section 6.1 Activate SCC-AS on page 11.

SIP Trunking traffic is activated through the ST AS, see Section 7.1 Activate ST AS on page 13.

### 8.3 Traffic Deactivation

MMTel traffic is deactivated through the MMTel Telephony AS, see Section 5.2 Deactivate MMTel Telephony AS on page 9.

SCC traffic is deactivated through the SCC-AS, see Section 6.2 Deactivate SCC-AS on page 11.

SIP trunking traffic is deactivated through the ST AS, see Section 7.2 Deactivate ST AS on page 13.





## 9 CS Interworking Management

IMS services can be delivered to Circuit Switched (CS) users through the CAPv2 support where the MTAS (SCC-AS) acts as Service Control Function (SCF). The SCC-AS helps in the service domain selection from Mobile Switching Center (MSC)/Gateway MSC (GMSC) Service Switching Function (SSF) to offer IMS service to users attached to the CS domain.

IMS services can interwork with Intelligent Network (IN) services through the CAPv2 support where the MTAS (MMTel Telephony AS) acts as SSF. The MMTel Telephony AS handles service interactions between IN services and MMTel services for the IMS users.

CS interworking is configured through the GSM Compatible SSF function, for more information, refer to *MTAS CAPv2 Management Guide*.

The MTAS (SCC-AS) acts as SCF, when CS interworking is activated through the `mtasCsiAdministrativeState` attribute in the *MtasCsi* MO.

When the MTAS (MMTel Telephony AS) acts as SSF, the activation, deactivation, and handling of CS interworking for IN services is controlled by the following attributes:

- The `mtasNccAdministrativeState` attribute in the *MtasNcc* MO.
- The `mtasCsiAdministrativeState` attribute in the *MtasCsi* MO.
- The `mtasSsfCapv2AdministrativeState` attribute in the *MtasSsf* MO.

For more information about the attributes to activate, deactivate and handle CS interworking, refer to *Managed Object Model (MOM)*.





## 10 Charging Management

The charging behavior in an MTAS VNF is defined by charging MOs and charging profiles connected to a service.

Management of charging includes the following activities:

- Definition of a charging destination by configuring the Diameter stack
- Definition of charging profiles
- Connecting a charging profile to a service

### 10.1 Description

For more information to handle charging, refer to *MTAS Charging Management Guide*.







# 11 Subscriber Data Management

The subscriber data behavior in an MTAS VNF is defined by a subscriber data MO.

Management of subscriber data includes the following activities:

- Configure the Diameter stack
- Configure the Sh interface
- Change optional parameters
- Query and purge

## 11.1 Description

For more information to handle subscriber data, refer to *MTAS Subscriber Data Management Guide*.





## 12 XDMS Management

The XDMS behavior in an MTAS VNF is defined by an XDMS MO.

Management of XDMS includes the following activities:

- Configuring the Diameter stack
- Configuring the Sh interface
- Configuring Ut interface
- Configuring CAI3G interface
- Changing optional parameters

### 12.1 Description

For information to handle XDMS, refer to *MTAS Subscriber Data Management Guide*.

### 12.2 Activate Provisioning by CAI3G Manager

To activate provisioning by the CAI3G Manager:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsCai3gAdministrativeState** attribute to **1** (Unlocked).
3. Click **Submit**.

### 12.3 Deactivate Provisioning by CAI3G Manager

To deactivate the provisioning by CAI3G Manager, use one of the following options:

- To deactivate provisioning by CAI3G manager gracefully, see Section 12.3.1 Deactivate Provisioning by CAI3G Manager Gracefully on page 23.
- To deactivate provisioning by CAI3G manager forcefully, see Section 12.3.2 Deactivate Provisioning by CAI3G Manager Forcefully on page 24.

#### 12.3.1 Deactivate Provisioning by CAI3G Manager Gracefully

To deactivate the CAI3G provisioning function within the MTAS gracefully:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsCai3gAdministrativeState** attribute to **2** (Shuttingdown).
3. Click **Submit**.

### 12.3.2 Deactivate Provisioning by CAI3G Manager Forcefully

A locked state means that the function is idle and no new requests are being accepted.

To force the MTAS provisioning over CAI3G function into a locked state:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsCai3gAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.

## 12.4 Activate Provisioning by Ut Client

To activate provisioning by the Ut Client:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsUtAdministrativeState** attribute to **1** (Unlocked).
3. Click **Submit**.

## 12.5 Deactivate Provisioning by Ut Client

To deactivate the provisioning by the Ut Client, use one of the following options:

- Deactivating provisioning by the Ut client gracefully, see Section 12.5.1 Deactivate Provisioning by Ut Client Gracefully on page 24.
- Deactivating provisioning by Ut client forcefully, see Section 12.5.2 Deactivate Provisioning by Ut Client Forcefully on page 25.

### 12.5.1 Deactivate Provisioning by Ut Client Gracefully

To deactivate gracefully the Ut provisioning function within the MTAS:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsUtAdministrativeState** attribute to **2** (Shuttingdown).
3. Click **Submit**.



## 12.5.2 Deactivate Provisioning by Ut Client Forcefully

To deactivate the Ut provisioning function gracefully within the MTAS:

1. Navigate to the **MtasXdms** MO.
2. Set the **mtasXdmsUtAdministrativeState** attribute to **0** (Locked).
3. Click **Submit**.





## 13 Number Normalization Management

The Number Normalization behavior in an MTAS (XDMS) VNF is defined by Number Normalization MOs.

Management of Number Normalization includes the following activities:

- Definition of Number Normalization profiles
- Definition of domain names from which `user=phone` parameter is missing
- Definition of contexts
- Definition of substitution rules
- Definition of Operator Service Numbers (OSNs)
- Definition of National Significant Numbers (NSNs)

### 13.1 Description

For information how to handle Number Normalization, refer to *MTAS Number Normalization Management Guide*.

For more information about Number Normalization Common Components parameters, refer to *Managed Object Model (MOM)*.







## 14 Media Resource Function Management

The implementation of the Media Resource Function (MRF) in the MTAS makes it possible to provide some of the services defined in the MTAS VNF.

Management of the MRFP and the MRFC includes the following activities:

- Creating an MRFP
- Activating an MRFP
- Deactivating an MRFP
- Deleting an MRFP
- Changing MRFP and MRFC parameters

### 14.1 Description

For information on how to handle the Media Resource Function, refer to *MTAS Media Control Management Guide*.





## 15 Announcement Management

Announcement is played for audio or video, or both, in different services provided by the MTAS. When configuring announcement, the announcement codes must be set by the operator. For more information about announcement management, refer to *MTAS Announcement Management Guide*.





## 16 Performance Measurements Management

The Performance Management (PM) system is structured into several Measurement Jobs containing a group of measurements. Measurement Jobs can be active or inactive, making all measurements in a Measurement Job either active or not active. For details, including a complete description of all Measurement Jobs and measurements provided by the MTAS VNF, refer to *MTAS Performance Measurements*.

The available measurement groups and types are deployed with MTAS installation and can be viewed through the OAM interface. Management and handling of measurement jobs are described in *Performance Management*.

Limitation: currently threshold-based alarms are not available.

### 16.1 Measurement XML Files Management

Measurements are stored in XML files. For XML files handling, refer to *Performance Management*





# 17 Log Management

For information to handle logs, refer to *Data Collection Guideline for MTAS*.







## 18 Fault Management

For MTAS alarms, refer to *MTAS Alarm List*.

Each MTAS alarm relates to a specific alarm OPI document.

For general instructions regarding fault handling, refer to *Fault Management* and *Check Alarm Status*.





## 19 Security Management

An MTAS VNF supports definition of users and user groups, and assignment of privileges to a group. Also, external communication protection and protection of signaling traffic is supported. For more information, refer to *User Management*.





## 20 Recovery

If any of the procedures described in this document fail to complete as expected, then the following procedures are to be employed in sequence until normal behavior is restored.

**Note:** A software restart will interfere with a software upgrade and is only to be performed after all recovery mechanisms, described in the software upgrade procedure, have been tried (and failed).

### 20.1 Software Restart of MTAS

If an exception has caused the MTAS to cease responding, do a software restart as follows:

1. Navigate to the **MtasFunction** MO.
2. Set the **mtasFunctionRestart** attribute to **1** (Restart Active).
3. Click **Submit**.
4. To verify that the restart has completed, read the value of the `mtasFunctionRestart` attribute. If the value has been reset to **0**, the restart is completed

### 20.2 System Restore

For information to restore the system from backup, refer to *System Backup and Restore*.





## 21 Backup of MTAS

A backup of an MTAS VNF contains all data to restore the VNF to the state when the backup was performed. The backup can be used for an irrecoverable execution error, or after the execution of a manual cluster reload in the system.

**Note:** A backup must never be performed while a Software Restart of the MTAS is in progress.

For description of the configuration data stored in a backup, refer to *Managed Object Model (MOM)*.

For backup instructions, refer to *System Backup and Restore*.

For specific instructions related to back up, refer to *Create Backup*.







## 22 Maintenance Schedule of MTAS

Refer to Table 1 for a description of the minimum recommended maintenance procedures to be performed on the MTAS VNF on weekly and monthly basis.

*Table 1 Maintenance Procedures*

Interval	Action
Every week	Check and clean the file system, and back up the system. For more information, refer to <i>System Backup and Restore</i> .
Every month	Perform a product inventory. For more information, refer to <i>Software Inventory Management</i> .