

MTAS Short Number Dialing Management Guide

MTAS

USER GUIDE

Copyright

© Ericsson AB 2016, 2017. 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

| | | |
|----------|--|-----------|
| 1 | Introduction | 1 |
| 1.1 | Prerequisites | 1 |
| 2 | Overview | 3 |
| 2.1 | SND Domain and SND Number | 3 |
| 2.2 | Originating MTAS | 4 |
| 2.3 | Terminating MTAS | 4 |
| 2.4 | Convert SND Number to SND Identity | 4 |
| 2.5 | Charging | 4 |
| 2.6 | Subfunctions | 5 |
| 2.7 | Interaction with Other Services | 5 |
| 3 | SND Configuration | 9 |
| 3.1 | Announcement Configuration | 9 |
| 3.2 | Number Normalization Configuration | 9 |
| 3.3 | Configuration Activities | 10 |
| 3.4 | SND Administrative State Configuration | 11 |
| 3.5 | Wholesale for SND Configuration | 11 |
| 3.6 | Service Data Management | 11 |
| 4 | Performance Management | 13 |
| 5 | Fault Management | 15 |





1 Introduction

This document describes how to configure the Short Number Dialing (SND) 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 SND service, the MMTel AS Voice Base license must be installed.

For more information about the MMTel AS Voice Base 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)*

1.1.3 Conditions

The following condition must apply:

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





2 Overview

The SND service provides the members in a group the possibility to call each other through short numbers common to all members of the group. Other services, such as CDIV and Conference, can be used together with this service.

The SND service affects presentation, charging, and routing, for example, to route a call from the caller to the receiver of the call based on the SND identity in the Request-URI, see Figure 1.

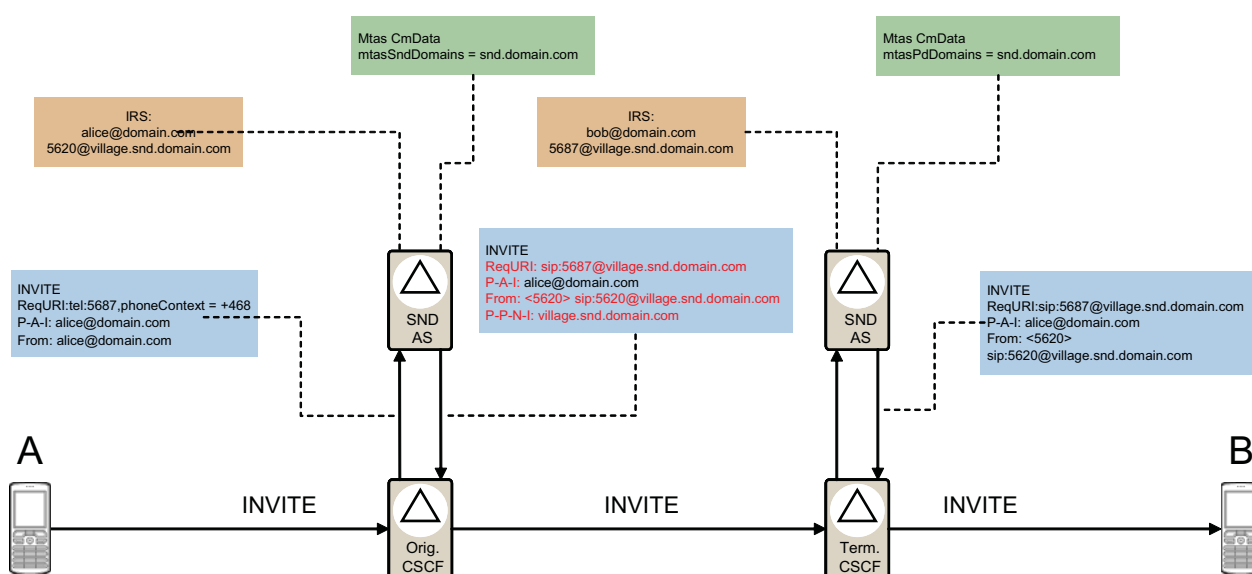


Figure 1 SND Service Impacts

2.1 SND Domain and SND Number

An SND call is based on two concepts, SND domain and SND number. To recognize an SND domain, a list of possible SND domains must be configured in the MTAS. All the configured domains and their subdomains are considered as the SND domains.

To recognize an SND number, the Number Normalization (NN) service must be configured for the purpose. NN adds prefix "EF" to the destination number to indicate that the number is an SND number.

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



2.2 Originating MTAS

The main task for the SND service in the originating MTAS is to recognize an SND call by checking the Req URI and the SND identity of the caller. A valid SND call is then tagged by adding the P-Private-Network-Indication (PNNI) header in the outgoing `INVITE`. If the check fails, the request continues with the normal MTAS originating procedure. The SND service in the originating MTAS never rejects a call.

2.3 Terminating MTAS

The main task for the SND service in the terminating MTAS is to recognize an SND call by checking the Req URI and the PNNI header. If the call is a valid SND call, the SND service removes the PNNI header and passes the request forward. Otherwise, the call is rejected by 403 forbidden. Before rejecting the call, the SND service can also play announcement in the backward direction to the caller according to the configuration.

2.4 Convert SND Number to SND Identity

An SND call is routed in the network by its SND identity, but not the SND number. Therefore, the SND service in the originating MTAS must convert an SND number in the incoming `INVITE` to the corresponding SND identity in the outgoing `INVITE`. The conversion is triggered by NN, which tags an SND number with an “EF” prefix. The SND then converts the SND number in as follows, depending on if the number is carried by a tel URI or a SIP URI:

- Convert tel URI
Incoming: tel: 5687
Outgoing: sip:5687@village.snd.domain.com
All other parameters in the tel URI are copied.
- Convert embedded tel
Incoming: tel: 5687@xxx; user=phone
Outgoing: sip:5687@village.snd.domain.com
Parameter user=phone is removed, and all other parameters in the embedded tel are copied.

2.5 Charging

The originating MTAS adds two Attribute-Value Pairs (AVPs) for indicating SND call in charging, as follows:

- The Supplementary-Service-Identity is added with the value “Short Number Dialing”
- The Supplementary-Service-Action is added with the value “Use of Service”



For more information about the charging protocols, refer to the following documents:

- *Diameter Offline Charging in MTAS*
- *Diameter Online Charging in MTAS*

2.6 Subfunctions

The subfunctions included in the SND service are described in this section.

2.6.1 SND Call

This subfunction provides the basic call establishment between two SND users inside the same SND domain.

2.6.2 Announcements

This subfunction plays audio, video, or audio-video announcement when the SND service is active.

For more information about announcement handling and attributes for the SND service, refer to *MTAS Announcement Management Guide*.

2.7 Interaction with Other Services

This section describes the SND interaction with other services.

2.7.1 Communication Diversion

The SND service is started after the CDIV, and it adds the `PNNI` header to the outgoing `INVITE` if it is an SND case. In other cases, the `PNNI` header is not added.

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

2.7.2 Conference

The SND service is only triggered when an SND user invites another SND user to the conference by `REFER`. The `PNNI` header is added to indicate the SND call. The conference server (focus) is required to copy the `PNNI` header from the `Refer-To` header in the incoming `REFER` to the `INVITE` sent to the Conference Participant.



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

2.7.3 Call Admission Control

The Call Admission Control (CAC) service consists of User CAC (UCAC) and Group CAC (GCAC). UCAC has no interaction with the SND service since it does not need the remote identity in a call for its function. The GCAC can use either XML specified limits, or Profile specified limits. For the XML specified limits, there is not any interaction with the SND service owing to the same reason as for the UCAC. For the Profile specified limits, there can be interaction with SND service as the remote identity is needed. For the originating calls, the Req URI is needed for GCAC Profile specified limits. Since the SND service is started before the GCAC, the Req URI is already converted to the SND identity when GCAC is started. Therefore, a limit for originating SND calls can be configured. For the terminating calls, the P-A-I is needed for GCAC Profile specified limits. As the P-A-I does not carry any SND information, it is not possible to configure a limit for terminating SND calls.

For more information about the Call Admission Control (CAC) service, refer to *MTAS Call Admission Control Management Guide*.

2.7.4 Flexible Communication Distribution

The SND service is started after the Flexible Communication Distribution (FCD), and it adds the `PNNI` header to the outgoing `INVITE` if it is an SND case. In other cases, the `PNNI` header is not added.

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

2.7.5 Communication Barring

The Communication Barring (CB) service consists of Outgoing Communication Barring (OCB) and Incoming Communication Barring (ICB). For `INVITE` and `REFER` messages, both OCB and ICB have interaction with the SND service. The OCB uses the Req URI for controlling `INVITE`, and the Refer-To for controlling `REFER`. Since the SND service is started before the OCB for the originating calls, the Req URI or Refer-To is already converted to the SND identity when OCB is started. Therefore, SND-related OCB can be performed. ICB does not control `REFER`, but it controls `INVITE`. For `INVITE` without Referred-By, the ICB can control both P-A-I and From depending on the configuration. For SND-related ICB, the control is to be on From which carries the SND identity. For `INVITE` with Referred-By, the ICB only controls the header. As Referred-By carries an SND identity for SND call, SND-related ICB can therefore be performed.

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



2.7.6 Carrier Select

Carrier Select (CS) is depending on the Dialed String Analysis (DSA) for analyzing and fetching the Carrier Identity Code (CIC) which is the prefix to the dialed number. Carrier Select Rn (CSRn) is depended on the Dialed String Analysis (DSA) for analyzing and fetching the Carrier Select Code (CSC) which is the prefix to the dialed number. Since the DSA is started before the NN, the CIC/CSC prefix is removed before the NN.

Since the SND service is started after the NN but before the CS/CS Rn, a Req URI with an SND number is already converted to a SIP URI by the SND service when the CS/CS Rn is started. Since the CS/CSRn only applies on tel URI and embedded Tel, it does not apply on SIP URI with an SND identity. Therefore, when the dialed number is an SND number with CIC or CSC prefix, only the SND service is triggered and not the CS/CSRn.

For more information about the CS services, refer to *MTAS Carrier Select and Carrier Pre-Select Management Guide*.

2.7.7 Carrier Pre-Select

Since the SND service is started before the Carrier Pre-Select (CPS) and Carrier Pre-Select Rn (CPSRn), the Req URI with an SND number is already converted to a SIP URI by the SND service when the CPS/CPSRn is started. Since the CS/CSRn only applies on tel URI and embedded tel, it does not apply on SND identity. Therefore, when the dialed number is an SND number with CPS/CPSRn configured, only the SND service is triggered and not the CPS/CPSRn.

For more information about the Carrier Pre-Select (CPS) services, refer to *MTAS Carrier Select and Carrier Pre-Select Management Guide*.

2.7.8 Communication Completion

Communication Completion (CC) allows a caller who has attempted to call a subscriber who is not available, to activate a CC request against that subscriber. Later on when the receiver of the call is available, a recall is initiated by the originating MTAS by sending `INVITE` both to the caller and to the receiver of the call.

For the recall to the original caller, the default identity of the caller is used as the Req URI in the recall. Since the original caller is controlled by the originating MTAS, the recall is straight forward.

For the recall to the original receiver of the call, the select of the Req URI for the recall can be different. It can be in the `NOTIFY` from the terminating MTAS or in the original call. The recall can fail or be successful depending on if the Req URI is an SND identity or not. If the Req URI is an SND identity, the recall is rejected by the terminating MTAS owing to the lack of `PNNI`. The reason is that the SND service is not involved in the recall, and the `PNNI` is not added.



If the Req URI is not an SND identity (for example, the default PUI of UE-B is used), the recall is routed to the receiver of the call as a non-SND call.

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

2.7.9 Identity Presentation

The SND service only interacts with the Dynamic ad-hoc Identity Presentation, where the Supplementary Service Codes (SSCs) are dialed as a prefix to the destination number.

Since the preanalysis is performed by the SSC before the SND service, any received SSCs prefix are removed from the Req URI before the SND is started. If the Req URI contains an SND number, the SND service operates as if the identity had been provided by the calling user.

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

2.7.10 Abbreviated Dialing

Since the Abbreviated Dialing is started before the SND service, any received Abbreviated Dialing code has been replaced with the stored target URI before the SND service is started. If the stored Abbreviated Dialing target is an SND identity, the SND service operates as if the identity had been provided by the calling user.

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

2.7.11 Dialed Number Mapping

There is no interaction between the SND service and the Dialed Number Mapping (DNM) service. However, the SND service depends on the DNM service. The SND service must not be activated if the DNM service is provisioned.

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



3 SND Configuration

The MO structure of the SND service is illustrated in Figure 2. The *MtasSnd* MO is the child to the *MtasMmt* MO. The *MtasSnd* MO contains attributes that control the SND service.

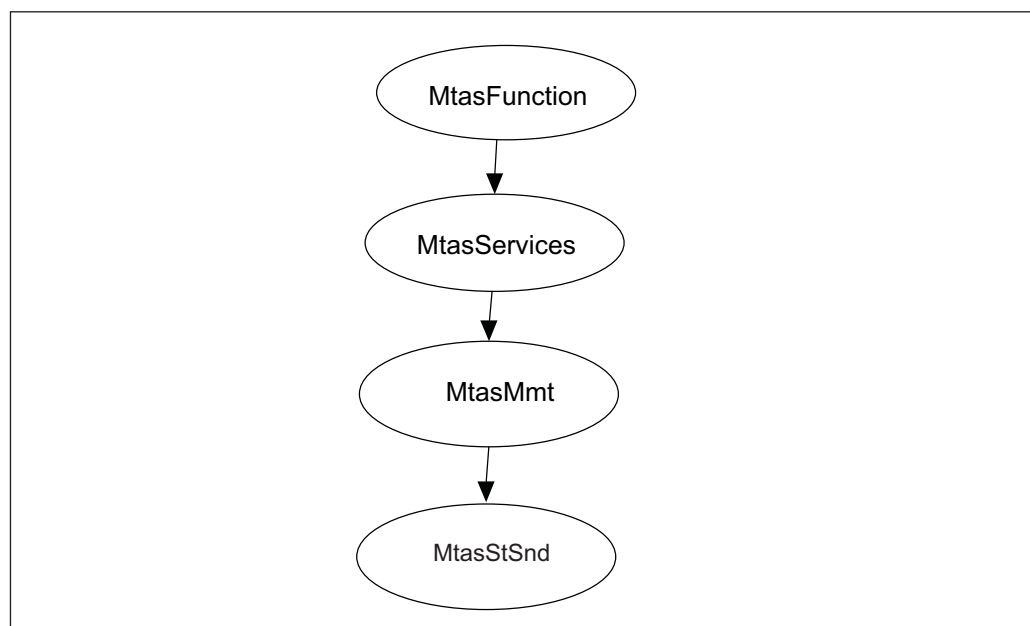


Figure 2 SND MO Structure

Configurable MOs and attributes related to the SND service are defined in *Managed Object Model (MOM)*.

3.1 Announcement Configuration

Announcement is played to a caller when the SND service is activated.

Announcement handling and SND announcement attributes are described in *MTAS Announcement Management Guide*.

3.2 Number Normalization Configuration

The normalization data must be configured for the NN to recognize the SND number, in the following order:

1. Profile
2. Context



3. Rule

An example configuration of the NN for recognizing all number with 3–5 digits as SND number is shown in the following tables:

Table 1 Configured Profile Data for Profile = Sweden

| Profile Name: numNormProfileName | Profile Context: numNormProfileContext |
|----------------------------------|--|
| sweden | se |
| | +46 |

Table 2 Configured Contexts for Profile = Sweden

| Configured Context: numNormContextRule | Substitution Expression Index: numNormContextSubRulesIndex |
|--|--|
| +46 | Snd_Index1 |
| se | Snd_Index1 |

Table 3 Configured Rule for Substitution Data Snd_Index1

| Index: numNormSubstitutionRuleIndex | Substitution Expression |
|-------------------------------------|--|
| Snd_Index1 | 0:/^([0-9]{3,5})\$/EF\1/:TRUE ⁽¹⁾ |

(1) [0-9] matches a short telephone number consisting of digits. {3,5} matches a short number with the range of three to five digits (up to the operator). EF is an internal code used by the SND service.

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

3.3 Configuration Activities

The extra configuration activity is listed in the following table:

Table 4 Configuration Activity

| Activity | Attribute |
|---|----------------|
| Specifying the SND domains. All subdomains of the specified domains are treated as SND domains. | mtasSndDomains |

It is not allowed to remove the last SND domain if the SND administrative state is unlocked. For more information about the SND attributes, refer to *Managed Object Model (MOM)*.



3.4 SND Administrative State Configuration

The SND service is enabled by setting the `mtasSndAdministrativeState` attribute in the `MtasSnd` MO to 1 (Unlocked). If the `mtasSndAdministrativeState` is set to 0 (Locked), no SND service is provided by the MTAS.

The SND service must not be unlocked if `mtasIdPresFromHeaderScreening` is set to 1 (enabled). The SND service must not be unlocked if `mtasIdPresFromHeaderDenorm` is set to 1 (enabled). The SND service must not be unlocked if no SND domain has been defined.

The SND service must not be unlocked if `mtasDnmAdministrativeState` is set to 1 (unlocked).

3.5 Wholesale for SND Configuration

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

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

- The `vtasSndAdministrativeState` attribute in the `VtasSnd` MO
- The `mtasSndAdministrativeState` attribute in the `MtasSnd` MO

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

3.6 Service Data Management

No service data for the SND service is configured for the subscriber data.





4 Performance Management

Measurements related to the SND service are detailed in *MTAS Performance Measurements*.





5 Fault Management

Alarms related to the SND service are listed in *MTAS Alarm List*.