

Configuring MiVoice MX-ONE SIP trunk with ENUM

i.e. E.164 number mapping via DNS look-up

[OPERATIONAL DIRECTIONS](#)



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GENERAL

These operational directions provide one example of how to address other IP-PBXes or SIP entities in general over SIP trunk by using DNS, i.e. reverse look-up of E.164 telephone numbers.

The functionality uses E.164 Number Mapping according to RFC 6116.

International Public Telecommunication Numbers in the international format defined in ITU-T's Recommendation E.164 can be transformed into DNS names. Following this, the practical example below assumes that the peer IP-PBX systems are addressed by their international format numbers.

A practical example can look like the figure below, where node 2 is addressed via a SIP route from node 1 using DNS look-up:

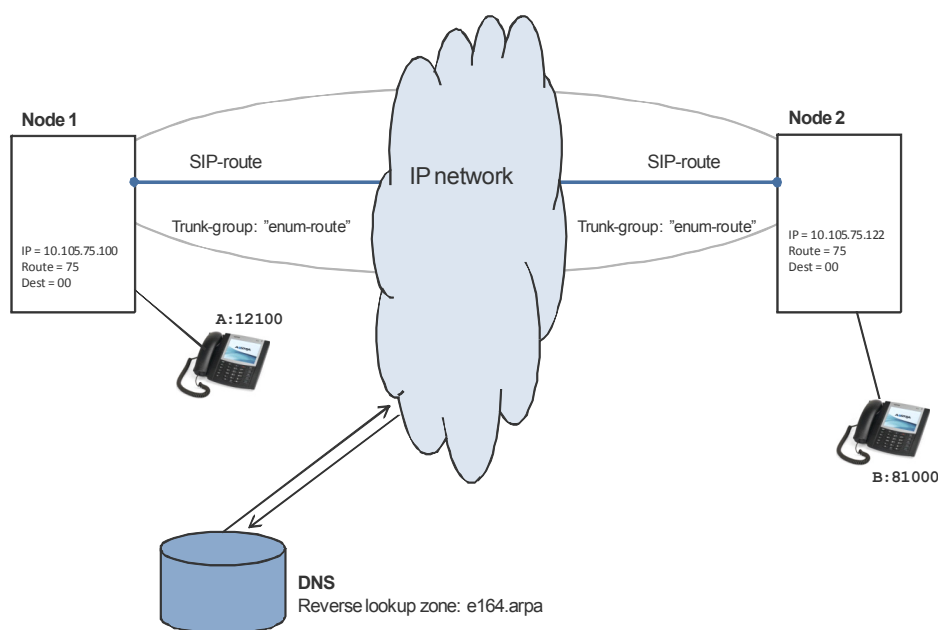


Figure 1: Example using ENUM trunk. Node 1 is addressed with +461234xxxxx, and Node 2 with +465678xxxxx

The DNS (or DNSes) must be configured with look-up zone e164.arpa: 6.4.e164.arpa. IN NS enum-dns.se.aastra.com.

```
; From Node 1 - accessing the SIP route by destination 00 and dialing +46 5678 xxxxx
*.8.7.6.5.6.4.e164.arpa. NAPTR 10 100 "u" "E2U+sip"
"!\\+465678(\\d*)!sip:+465678\\1@10.105.75.122;transport=udp;tgrp=enum-route!i".
```

```
; From Node 2 - accessing the SIP route by destination 00 and dialing +46 1234xxxxx
*.4.3.2.1.6.4.e164.arpa. NAPTR 10 100 "u" "E2U+sip"
"!\\+461234(\\d*)!sip:+461234\\1@10.105.75.100;transport=udp;tgrp=enum-route!i".
```

Note: The DNS examples above for each node are one line entries in the DNS configuration (but here shown in two lines due to space limits).

The numbers are written with reverse DNS notation: 46123412100 will be written as 0.0.1.2.1.4.3.2.1.6.4.e164.arpa.

General expressions can be used to generate parts of the SIP-URI. The result of the expression is placed before the “@” in the SIP-URI (replacing the “\1”). The star (*) acts as a wild-card: *.4.3.2.1.6.4 will handle all numbers starting with 461234.

A forwarder pointing to the ENUM-DNS must be set up in the first server (LIM 1) of every MX-ONE system using this feature.

More complex configurations, with several domain levels and multiple DNS, can also be set up. See MX-ONE System Planning (DNS section).

2 PREREQUISITES

Appropriate knowledge about DNS and SIP.

The text string that forms the URI must begin with a “sip:” when used by MX-ONE.

3 AIDS

I/O-terminal

4 REFERENCES

In these operational directions references are made to the following documents:

Command description: Route data

Command description: number_initiate

Command description: number_data_initiate

Command description: sip_route

Command description: number_conversion_initiate (optional)

5 PROCEDURE

The normal work-flow for route administration shall be followed (see Operational Directions for Route data), with the addition of some ENUM specific settings in the sip_route command.

6 EXECUTION

6.1 ENUM INITIATION EXAMPLE

6.1.1 INITIATE THE COMMON DATA FOR THE SIP ROUTE (USING MX-ONE TIE-LINE PROFILE)

Key the following commands to initiate the SIP route:

ROCAI:ROU=75,SEL=711000000000010,SERV=3110000001,SIG=1111111000A0,BCAP=001100,TRAF=03151515,TRM=4;.

RODAI:ROU=75,TYPE=TL66,VARC=00000000,VARI=00000000,VARO=00000000;

Key the following command to set the ENUM specific data:

sip_route -set -route 75 -profile ENUM-tieline -remotetelip enum:e164.arpa -uristring0 "tel:+?" -accept TRUNK_INFO -match tgrp=enum-route

Initiate the equipment position of the external line(s) in the previously defined route 75:

ROEQI:ROU=75,TRU=1-1;

Note: The URI string (-uristringx) in the command will be replaced by the result from the ENUM resolve. The format of the URI string (-uristringx) must be "tel:+?".

Note: The accept condition could be any kind supported by the sip_route command. It is not really connected to the ENUM feature.

Note: The parameter -remotetelip with the format "enum:e164_search_suffix" enables the ENUM lookup.

6.1.2 INITIATE NUMBER AND DESTINATION DATA IN NODE 1

To initiate the external destination number data in node 1, key the commands:

number_initiate -numbertype ED -number 00

number_data_initiate -externalnumber 0000465678 -minlength 15 -maxlength 15

RODDI:ROU=75,DEST=00,ADC=1115000000025000100000000000,SRT=5;.

To compose the complete calling party number, enter the command

RONDI:ROU=75,EXNOPR=1-46;

RONDI:ROU=75,EXNOPR=2-1234;

To convert the received B-number, enter the command:

number_conversion_initiate -entry 461234 -conversiontype 0 -route 75 -truncate 6 -numbertype 1 -newtype 5.

6.1.3 INITIATE NUMBER AND DESTINATION DATA IN NODE 2

To initiate the external destination number data in node 2, key the commands:

number_initiate -numbertype ED -number 00

number_data_initiate -externalnumber 0000461234 -minlength 15 -maxlength 15

RODDI:ROU=75,DEST=00,ADC=1115000000025000100000000000,SRT=5;.

To compose the complete calling party number, enter the command
 RNDI:ROU=75,EXNOPR=1-46;

RNDI:ROU=75,EXNOPR=2-5678;

To convert the received B-number, enter the command:

number_conversion_initiate -entry 465678 -conversiontype 0 -route 75 -truncate 6
 -numbertype 1 -newtype 5.

6.1.4

TRAFFIC EXAMPLE WITH THE SETTINGS ABOVE

A SIP call using E.164 look-up:

1. Extension A (with directory number 12100) in node 1 calls extension B (81000) in node 2 using SIP route 75 (with external destination 00).
2. The number dialed by extension A is 00 00 46 567881000.
3. Node 1 requests a DNS look-up at 0.0.0.1.8.8.7.6.5.6.4.e164.arpa
4. The DNS makes a reverse look-up and returns:

```
NAPTR 10 100 "u" "E2U+sip"
"!\\+465678(\\d*)!sip:+465678\\1@10.105.75.122;trans-
port=udp;tgrp=enum-route!i".
```
5. Outgoing INVITE is sent from node 1, based on the DNS look-up, with SIP-URI (replacing the default "tel:+?" in the sip_route command):

```
INVITE sip:+46567881000@10.105.75.122;transport=udp;tgrp=enum-route
SIP/2.0
```

...

```
Contact:<sip:+46123412100@10.105.75.100:5060;transport=udp>
To:<sip:+46567881000@10.105.75.122;trans-
port=udp;user=phone;tgrp=enum-route>
From:"Georg Ohm"<tel:+46123412100>;tag=907dc18
```
6. Necessary number conversion may be done for the incoming call in node 2, as for any kind of external line call.
7. Extension 81000 in node 2 will ring if it is idle.

6.2

ENUM REMOVAL

6.2.1

REMOVAL OF ENUM SETTINGS

Key the command *sip_route -remove -route 75*

The command handles removal of the SIP route, including ENUM settings.

Also remove all other route data for route 75 if applicable.

6.3 ENUM PRINTOUT

6.3.1 PRINTING OF ENUM SETTINGS

Key the command *sip_route -print -route 75*

The command handles printout of SIP route data, including ENUM, i.e. E.164 number translation data.

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TERMINATION

If DNS configuration has to be modified, the instance (person) responsible for the DNS shall be informed. If route access codes are new or modified, the instance responsible for the PBX shall be informed.

If exchange data have been altered (initiated or removed) and no more changes are to be done, a dump to backup media shall be done.