



A MITEL  
PRODUCT  
GUIDE

# MiVoice MX-ONE

## Installation and Configuration Guide for GX and EX Controller

Release 7.5

1/1531-ANF 901 63 Uen E 2023-01-06

January 2023

## Notices

The information contained in this document is believed to be accurate in all respects but is not warranted by **Mitel Networks<sup>TM</sup> Corporation (MITEL<sup>®</sup>)**. The information is subject to change without notice and should not be construed in any way as a commitment by Mitel or any of its affiliates or subsidiaries. Mitel and its affiliates and subsidiaries assume no responsibility for any errors or omissions in this document. Revisions of this document or new editions of it may be issued to incorporate such changes. No part of this document can be reproduced or transmitted in any form or by any means - electronic or mechanical - for any purpose without written permission from Mitel Networks Corporation.

## Trademarks

The trademarks, service marks, logos and graphics (collectively "Trademarks") appearing on Mitel's Internet sites or in its publications are registered and unregistered trademarks of Mitel Networks Corporation (MNC) or its subsidiaries (collectively "Mitel") or others. Use of the Trademarks is prohibited without the express consent from Mitel. Please contact our legal department at [legal@mitel.com](mailto:legal@mitel.com) for additional information. For a list of the worldwide Mitel Networks Corporation registered trademarks, please refer to the website: <http://www.mitel.com/trademarks>.

®, <sup>TM</sup> Trademark of Mitel Networks Corporation

© Copyright 2023, Mitel Networks Corporation

All rights reserved

# Contents

|  |           |
|--|-----------|
| <b>1 Introduction.....</b>                                       | <b>1</b>  |
| <b>2 Prerequisites.....</b>                                      | <b>2</b>  |
| <b>3 Upgrading Firmware In A GX-Gateway / EX-Controller.....</b> | <b>3</b>  |
| 3.1 Firmware Upgrade.....  | 3         |
| 3.1.1 Setup of Communication Server.....                         | 3         |
| 3.1.2 Firmware Installation.....                                 | 5         |
| 3.1.3 Special Actions for Firmware Upgrade of EX-Controller..... | 5         |
| 3.1.4 Rollback to Previous Firmware.....                         | 7         |
| <b>4 Setting up Virtual Machine in an EX-Controller.....</b>     | <b>8</b>  |
| 4.1 Install and Configure Virtual Machine.....                   | 8         |
| 4.1.1 Prerequisites.....   | 8         |
| 4.1.2 Upload ISO-image to Internal Storage.....                  | 9         |
| 4.2 Create the Virtual Machine.....                              | 11        |
| <b>5 Setting up MX-ONE for Branch Node Solution.....</b>         | <b>16</b> |
| 5.1 Number Analysis.....   | 16        |
| 5.2 Extension Data.....  | 17        |
| 5.3 Least Cost Routing Data.....                                 | 18        |
| 5.4 Route Data.....  | 20        |
| 5.4.1 ROCAP.....   | 20        |
| 5.4.2 RODAP.....   | 21        |
| 5.4.3 RODDP.....   | 21        |
| 5.4.4 Number Prefixing.....                                      | 22        |
| 5.4.5 SIP ROUTE.....   | 23        |
| <b>6 Setting up GX Gateway with ISDN Trunks.....</b>             | <b>26</b> |
| 6.1 Logon.....   | 26        |
| 6.2 Network Settings.....  | 27        |
| 6.2.1 Host.....  | 27        |
| 6.2.2 Interfaces.....  | 30        |

|   |    |
|---|----|
| 6.2.3 Local Firewalls.....              | 30 |
| 6.3 Session Board Controller (SBC)..... | 31 |
| 6.3.1 Configuration.....                | 32 |
| 6.3.2 Routing Rulesets.....             | 32 |
| 6.3.3 local_users_ca.....               | 34 |
| 6.3.4 trunk_lines_ca.....               | 38 |
| 6.3.5 MX-One_Lim1.....                  | 40 |
| 6.3.6 MX-One_trunk.....                 | 41 |
| 6.3.7 VOIP-trunk2.....                  | 42 |
| 6.4 ISDN.....                           | 44 |
| 6.4.1 Primary Rate Interface.....       | 44 |
| 6.4.2 Basic Rate Interface.....         | 47 |
| 6.5 POTS.....                           | 49 |
| 6.5.1 Config.....                       | 49 |
| 6.5.2 FXS Configuration.....            | 50 |
| 6.5.3 FXO Configuration.....            | 51 |
| 6.6 SIP.....                            | 54 |
| 6.6.1 Gateways.....                     | 54 |
| 6.6.2 Servers.....                      | 55 |
| 6.6.3 Registrations.....                | 56 |
| 6.6.4 Authentication.....               | 57 |
| 6.6.5 Transport.....                    | 59 |
| 6.6.6 Interop.....                      | 59 |
| 6.6.7 Misc.....                         | 60 |
| 6.7 Media.....                          | 61 |
| 6.7.1 Codecs.....                       | 61 |
| 6.8 Call Router.....                    | 62 |
| 6.8.1 Route Config.....                 | 62 |
| 6.9 Management.....                     | 67 |
| 6.9.1 Backup/Restore.....               | 67 |
| 6.9.2 File.....                         | 67 |

## **7 Setting up GX-GATEWAY with SIP Trunks..... 70**

|   |    |
|---|----|
| 7.1 Logon.....                          | 70 |
| 7.2 Network Settings.....               | 71 |
| 7.2.1 Host.....                         | 71 |
| 7.2.2 Interfaces.....                   | 73 |
| 7.2.3 Local Firewalls.....              | 74 |
| 7.3 Session Board Controller (SBC)..... | 75 |
| 7.3.1 Configuration.....                | 76 |
| 7.3.2 Routing Rulesets.....             | 76 |
| 7.3.3 local_users_ca.....               | 78 |
| 7.3.4 trunk_lines_ca.....               | 82 |
| 7.3.5 MX-One_Lim1.....                  | 84 |
| 7.3.6 MX-One_trunk.....                 | 85 |

|       |                     |    |
|-------|---------------------|----|
| 7.3.7 | VOIP-trunk2.....    | 87 |
| 7.4   | SIP.....            | 88 |
| 7.4.1 | Gateways.....       | 88 |
| 7.4.2 | Servers.....        | 89 |
| 7.4.3 | Registrations.....  | 90 |
| 7.4.4 | Authentication..... | 90 |
| 7.4.5 | Transport.....      | 91 |
| 7.4.6 | Misc.....           | 92 |
| 7.5   | Media.....          | 93 |
| 7.5.1 | Codecs.....         | 93 |
| 7.6   | Call Router.....    | 94 |
| 7.6.1 | Route Config.....   | 94 |
| 7.7   | Management.....     | 97 |
| 7.7.1 | Backup/Restore..... | 97 |
| 7.7.2 | File.....           | 98 |

## **8 Setup for Redundant MX-ONE Registration using EX Controller/GX Gateway.....99**

|       |   |     |
|-------|---|-----|
| 8.1   | Introduction.....   | 99  |
| 8.2   | Prerequisites.....  | 100 |
| 8.3   | Setup for Redundant MX-ONE Registration using EX Controller/GX Gateway..... | 100 |
| 8.3.1 | DNS Server.....   | 100 |
| 8.3.2 | Configuration Files for SIP Extensions.....                                 | 100 |
| 8.3.3 | Changes in MX-ONE.....  | 101 |
| 8.3.4 | Changes in EX Controller/ GX Gateway.....                                   | 101 |
| 8.3.5 | Changes in Call Agent Settings.....   | 105 |

## **9 Known Limitations..... 107**

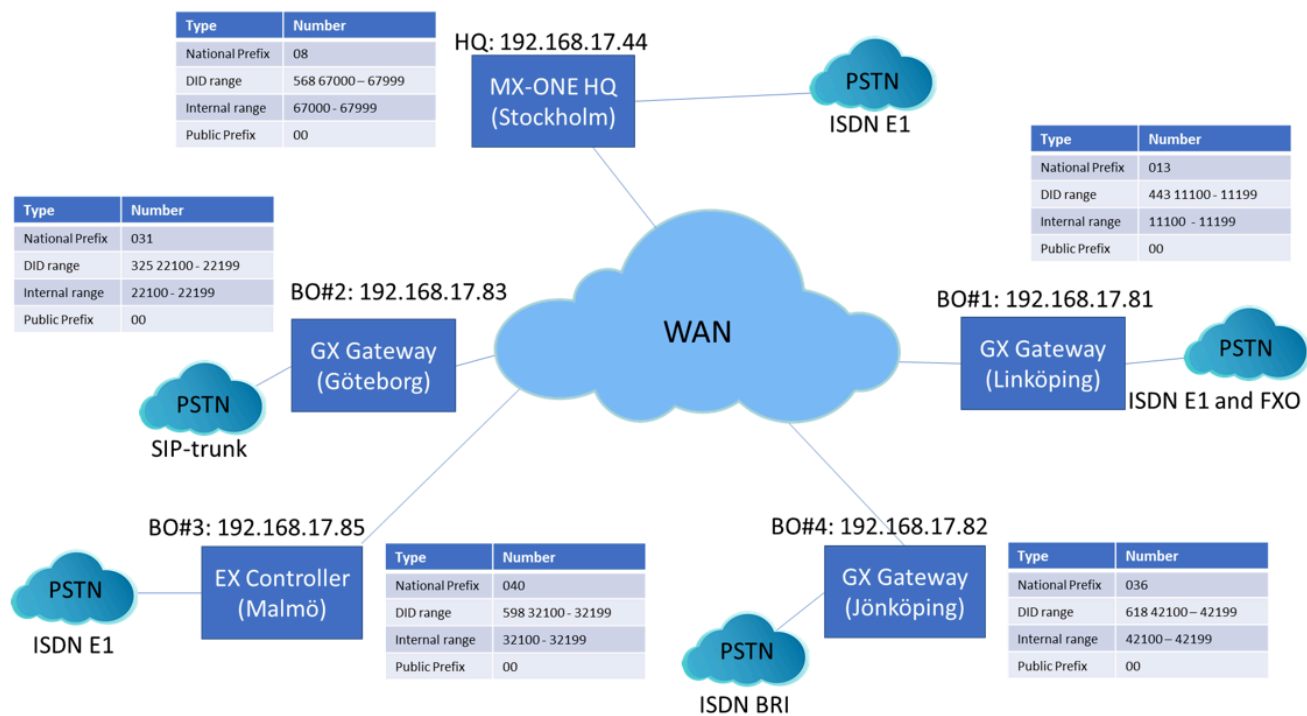
## **10 Installing the MiVoice MX-ONE 7.x Telephony software on the EX Gateway.....108**

# Introduction

This document describes a typical scenario for a branch office with survivability and local presence.

It contains both the GX and the EX gateways.

Figure 1: EX and GX Controller Gateways



When planning the number series in the branch office following must be considered:

- The extension range must be coherent and matching the local DID number series (if local presence is used).
- MX-ONE SW must be at least version 7.0.
- The firmware level of the EX-Controller and GX-Gateway shall be at least **DGW 42.3.1032-MT** with profile 'S100-MT-D2000-45' for GX-Gateway and 'STNL-MT-D2000-65' for EX-Controller.

Other considerations/restrictions:

- A SIP outbound proxy address must be assigned in the startup.cfg file, that is, the SIP outbound proxy address is the local address of the EX-Controller or GX-Gateway.
- VDP log on with SCA/SCABR and EDN-numbers is not working when assigned to a soft key. A possible workaround can be for each SIP-line specify an outbound proxy and port. For example,
  - sip line3 outbound proxy: <IP-address of gateway>
  - sip line3 outbound proxy port: 5060

This must be repeated for each SIP-line that is allocated for SCA/SCABR or EDN.

- Make sure that sufficient SBC licenses are installed before starting to configure the system.

# Upgrading Firmware In A GX-Gateway / EX-Controller

3

This chapter contains the following sections:

- [Firmware Upgrade](#)

The setting up of MX-ONE is not described in this document since it does not differ from an ordinary MX-ONE set.

## 3.1 Firmware Upgrade

Firmware upgrade can be performed with several options:

Following are the two types of licenses:

- FTP
- TFTP
- HTTP
- HTTPS

### 3.1.1 Setup of Communication Server

- **FTP**

1. Set an FTP service on the assigned server.
2. Ensure that the FTP server can be reached by the GX Gateway / EX Controller unit.

#### Note:

If the file server is located behind a firewall, ensure that the TCP port 21 is open.

- **TFTP**

1. Set a TFTP service on the assigned server.
2. Ensure that the TFTP server can be reached by the GX Gateway / EX Controller unit.



**Note:**

If the file server is located behind a firewall, ensure that the TCP port 69 is open.

- **HTTP Server**

1. Set an HTTP service on the assigned server.
2. Ensure that the HTTP server can be reached by the GX Gateway / EX Controller unit.

**Note:**

If the file server is located behind a firewall, ensure that the TCP port 80 is open.

- **HTTPS Server**

1. Set an HTTPS service on the assigned server.
2. Ensure that the HTTPS server can be reached by the GX Gateway / EX Controller unit.

**Note:**

If the file server is located behind a firewall, ensure that the TCP port 443 is open.

3. Ensure that in the **Management/Certificates** tab, in the Certificate Import Through **Web Browser** table, there is a certificate that authenticates the **HTTPS server selected** in the Path field, and that Other is selected in the Type field.
4. Set the configuration parameters.

Copy the firmware program (.bin file), to the file server you have chosen to use (FTP, HTTPS, TFTP, or HTTP server).

### 3.1.2      Firmware Installation

When the communication server is ready with the new version of firmware.

1. Go to **Management > Firmware Upgrade**.

2. Figure 2: Firmware Upgrade



3. Enter the correct protocol and address information where the new firmware is located.

Figure 3: Firmware Packs Configuration

| Firmware Packs Configuration |  |
|------------------------------|--|
| <b>Single File</b>           |  |
| Mfp Url:                     | <input type="text" value="http://192.168.17.8/isoimages/43.1.1264-GX-50.bin"/> |
| <b>Multiple Files</b>        |  |
| Version:                     | <input type="text"/>   |
| Firmware Pack:               | <input type="text" value="Dgw"/>   |
| Transfer Protocol:           | <input type="text" value="HTTP"/> <input type="button" value="v"/>             |
| Host Name:                   | <input type="text" value="0.0.0.0"/>   |
| Location:                    | <input type="text"/>   |
| <b>Transfer Credentials</b>  |  |
| User Name:                   | <input type="text"/>   |
| Password:                    | <input type="text"/>   |

4. Click **Apply & Install Now**.

### 3.1.3      Special Actions for Firmware Upgrade of EX-Controller

**Note:**

If a Virtual Machine (VM) is running on the EX-Controller it is very important to shutdown of the operating system running on the EX-controller before doing any upgrade or reboot. The shutdown method must be the recommended method for the installed OS.

When the EX-Controller is upgraded to new firmware an extra step to finalize the upgrade procedure must take place.

When the new firmware is started a special script file must be executed to setup the SBC and SIP functionality.

### 1. Go to **Management > Configurations Scripts**.



### 2. Select the file **Survivability\_Enable.cfg** from the drop-down menu.

Figure 4: Execute Scripts

 A screenshot of the 'Execute Scripts' form. The form has two sections: 'Transfer Parameters' and 'Execution Parameters'. In the 'Transfer Parameters' section, the 'Generic File Name' and 'Specific File Name' fields are empty. The 'Transfer Protocol' is set to 'HTTPS'. The 'Host Name' is set to '0.0.0.0:0'. The 'Location' field is empty. The 'User Name' and 'Password' fields are empty. In the 'Execution Parameters' section, the 'Privacy Key' field is empty. The 'Allow Repeated Execution' is set to 'Enable'. A drop-down menu is open next to the 'Specific File Name' field, showing a list of files: 'FXO\_Country\_Defaults.cfg', 'Survivability.cfg', 'PRI\_China-DSS1.cfg', 'Survivability\_Enable.cfg' (highlighted), 'PRI\_NorthAmerica-NI2.cfg', 'PRI\_NorthAmerica-NI1.cfg', 'PRI\_Default.cfg', and 'FXO\_North-America\_3km.cfg'.

### 3. Click **Apply & Execute Now**. Wait until the unit reboots, when the reboot is done the firmware upgrade procedure is finalized. When prompted, select **restart required services**.

### 3.1.4 Rollback to Previous Firmware

The GX Gateway or EX Controller supports a rollback option to its previous version. If for any reasons, a rollback is needed, select the **Rollback**.

| Firmware Packs Installed |              |                  |               |               |
|--------------------------|--------------|------------------|---------------|---------------|
| Name                     | Version      | Profile          | Bank          |               |
| Dgw                      | 43.1.1264    | S100-MT-D2000-50 | Main - In Use | Factory Reset |
| Dgw                      | 42.3.1032-MT | S100-MT-D2000-45 | Recovery      | Rollback      |

Wait until the unit reboots when the reboot is done and the rollback procedure is finalized.

# Setting up Virtual Machine in an EX-Controller

This chapter contains the following sections:

- [Install and Configure Virtual Machine](#)
- [Create the Virtual Machine](#)

This section only covers the upload of an ISO-image to the EX-Controller.

## 4.1 Install and Configure Virtual Machine

There are two methods to install the SW in a virtual machine:

- Upload an ISO-image to internal file storage.
- Use an ISO-image on a bootable USB stick.

### 4.1.1 Prerequisites

Before creating and installing a new virtual machine there are a few actions that must be done. If any pre-installed virtual machine exists, that virtual machine must be deleted.



1. Go to **System > VM**.
2. Click the Plus (+) to create the virtual machine

3. Click **Stop** icon to stop or pause VM if running and click **Delete** icon to delete VM.

| Virtual Machine Status |          |                   |        |      |                 |          |              |              |          |         |
|------------------------|----------|-------------------|--------|------|-----------------|----------|--------------|--------------|----------|---------|
| Vm Name                | Iso Name | MAC Address       | Vnc Id | Usb  | Network Adapter | Ram (Mb) | Storage (Gb) | Image Format | Nb Cores | State   |
| exdeploy               |          | 12:e7:b0:0c:5d:8e | 0      | None | e1000           | 1024     | 20           | qcow2        | 1        | Started |

| Virtual Machine Configuration |                      |  |                                |                                   |                                    |                                   |   |
|-------------------------------|----------------------|--|--------------------------------|-----------------------------------|------------------------------------|-----------------------------------|---|
| Vm Name                       | Iso Name             | MAC Address                                    | Vnc Id                         | Usb                               | Network Adapter                    | Startup                           | Actions   |
| exdeploy                      | <input type="text"/> | <input type="text" value="12:e7:b0:0c:5d:8e"/> | <input type="text" value="0"/> | <input type="text" value="None"/> | <input type="text" value="e1000"/> | <input type="text" value="Auto"/> | <input type="button" value="Play"/> <input type="button" value="Stop"/> <input type="button" value="Pause"/> <input type="button" value="Reset"/> <input type="button" value="Delete"/> |

| Virtual Machine Creation |                      |                      |                                  |                                |
|--------------------------|----------------------|----------------------|----------------------------------|--------------------------------|
| Vm Name                  | Ram (Mb)             | Storage (Gb)         | Image Format                     | Nb Cores                       |
| <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text" value="raw"/> | <input type="text" value="1"/> |

**Note:**

The **exdeploy** VM is only used for MiVoice Business application. It cannot be used with MX-ONE.

## Virtual Machines

- Click the Plus (+) to create the virtual machine.
- Configure a link as a virtual switch.
- Go to **Network > Interfaces**.
- From the **Virtual Switch** selection list, select **Enable** as a link that you wish to enable for the virtual switch.

| Ethernet Link Configuration |                                   |                                      |                      |  |                                     |
|-----------------------------|-----------------------------------|--------------------------------------|----------------------|--|-------------------------------------|
| Link                        | MTU                               | 802.1x Authentication                | EAP Username         | EAP Certificate Validation                     | Virtual Switch                      |
| eth1                        | <input type="text" value="1500"/> | <input type="text" value="Disable"/> | <input type="text"/> | <input type="text" value="Trusted And Valid"/> | <input type="text" value="Enable"/> |
| eth2-5                      | <input type="text" value="1500"/> | <input type="text" value="Disable"/> | <input type="text"/> | <input type="text" value="Trusted And Valid"/> | <input type="text" value="Enable"/> |

8. Click **Apply**.

## 4.1.2 Upload ISO-image to Internal Storage

Figure 5: File

| System                | Network          | SIP Proxy        | SBC          | ISDN | POTS | SIP            | Media | Telephony | Call Router | Management | Reboot |
|-----------------------|------------------|------------------|--------------|------|------|----------------|-------|-----------|-------------|------------|--------|
| Configuration Scripts | Backup / Restore | Firmware Upgrade | Certificates | SNMP | CWMP | Access Control | File  | Misc      |             |            |        |

1. Go to **Management > File**.
2. Select the **Destination** to **vm/drives/** from the drop-down list.
3. Specify the **URL** where the ISO-images is located.

Figure 6: Import File Through URL

| Import File Through URL  |   |
|--------------------------|---|
| Last Import File Result: | None  |
| Import File Parameters   |   |
| Destination:             | vm/drives/  |
| URL:                     | http://192.168.17.8/isoimages/MX7.0.0.hf2.rc5.iso |
| Username:                |   |
| Password:                |   |

4. Click **Import** and wait. As the MX-ONE image is quite large (around 6 GB) it will take some time.

Figure 7: Last Import File Result

| Import File Through URL  |             |
|--------------------------|-------------|
| Last Import File Result: | Downloading |
| Import File Parameters   |             |
| Destination:             |             |
| URL:                     |             |
| Username:                |             |
| Password:                |             |

5. When the upload is finished, check that the **Last Import File Result** is Success.

Figure 8: Import File Success

| Import File Through URL  |         |
|--------------------------|---------|
| Last Import File Result: | Success |
| Import File Parameters   |         |
| Destination:             |         |
| URL:                     |         |
| Username:                |         |
| Password:                |         |

## 6. Double check in the internal file storage that file exists.

Figure 9: Internal Files

| Internal files                 |  |                                   |   |
|--------------------------------|--|-----------------------------------|---|
| Name                           | Description  | Size                              |   |
| conf/FXO_Country_Defaults.cfg  | FXO Country Defaults   | 1 KB                              | — |
| conf/FXO_North-America_3km.cfg | FXO North-America 3km  | 1 KB                              | — |
| conf/PRI_China-DSS1.cfg        | China DSS1   | 3 KB                              | — |
| conf/PRI_Default.cfg           | PRI default configuration  | 3 KB                              | — |
| conf/PRI_NorthAmerica-NI1.cfg  | North America NI1  | 3 KB                              | — |
| conf/PRI_NorthAmerica-NI2.cfg  | North America NI2  | 3 KB                              | — |
| conf/Survivability_Enable.cfg  | Configures the EX Controller for MX-ONE survivability environment.   | 29 KB                             | — |
| conf/Survivability.cfg         | Configures the unit to use the SipProxy service for basic use cases. | 1 KB                              | — |
| vm/drives/MX7.0.0.2.rc5.iso    | Bootable disc file   | 6.3 GB                            | — |
| 9 file(s)                      |  | Total: 6.3 GB / Available: 2.3 GB |   |

## 4.2 Create the Virtual Machine

Figure 10: VM

|             |          |           |           |           |           |                |             |           |             |            |        |
|-------------|----------|-----------|-----------|-----------|-----------|----------------|-------------|-----------|-------------|------------|--------|
| System      | Network  | SIP Proxy | SBC       | ISDN      | POTS      | SIP            | Media       | Telephony | Call Router | Management | Reboot |
| Information | Services | Hardware  | Endpoints | Event Log | Local Log | Packet Capture | Diagnostics | VM        |             |            |        |

### 1. Go to **System > VM**.



2. In the Virtual Machine Creation table, fill in the following field details.

- **Vm Name:** Enter a name for VM, special characters like hyphens (-) are not allowed.
- **Ram (Mb):** This value shall be 7168 (maximum amount that is available).
- **Storage (Gb):** Min 100 GB, if less than 100 GB the Linux file structure is not setup properly.
- **Image Format:** choose **raw** for maximum performance or **qcow2** for space efficiency and flexibility.
- **No Cores:** This value will be 3.

Figure 11: Virtual Machine

| Virtual Machine Status |          |             |        |     |                 |          |              |              |          |       |
|------------------------|----------|-------------|--------|-----|-----------------|----------|--------------|--------------|----------|-------|
| Vm Name                | Iso Name | MAC Address | Vnc Id | Usb | Network Adapter | Ram (Mb) | Storage (Gb) | Image Format | Nb Cores | State |
|                        |          |             |        |     |                 |          |              |              |          |       |

| Virtual Machine Configuration |          |             |        |     |                 |         |         |
|-------------------------------|----------|-------------|--------|-----|-----------------|---------|---------|
| Vm Name                       | Iso Name | MAC Address | Vnc Id | Usb | Network Adapter | Startup | Actions |
|                               |          |             |        |     |                 |         |         |

| Virtual Machine Creation            |                                   |                                  |                                  |                                |
|-------------------------------------|-----------------------------------|----------------------------------|----------------------------------|--------------------------------|
| Vm Name                             | Ram (Mb)                          | Storage (Gb)                     | Image Format                     | Nb Cores                       |
| <input type="text" value="mxone7"/> | <input type="text" value="7168"/> | <input type="text" value="100"/> | <input type="text" value="raw"/> | <input type="text" value="3"/> |
| +                                   |                                   |                                  |                                  |                                |

**Note:**

It is not possible to modify the settings (RAM, name, and so on) once the virtual machine has been created. The only way to change the settings, is to delete the virtual machine and to create it once again.

3. Click Plus (+) icon to create the virtual machine. The following message is displayed.

Figure 12: Virtual Machine Creation Message

It is not possible to modify the settings (RAM, name, etc.) once the Virtual Machine has been created. The only way to change the settings, is to delete the Virtual Machine and to create it once again.

Click Ok to create the Virtual Machine or Cancel to discard changes.

4. Click **OK**. The following screen is displayed after the creation of the Virtual Machine.

Virtual Machines

Figure 13: Virtual Machine Status

Virtual Machine Status

| Vm Name | Iso Name | MAC Address       | Vnc Id | Usb  | Network Adapter | Ram (Mb) | Storage (Gb) | Image Format | Nb Cores | State   |
|---------|----------|-------------------|--------|------|-----------------|----------|--------------|--------------|----------|---------|
| mxone7  |          | 12:b0:c9:0b:ec:8c | 0      | None | e1000           | 7168     | 100          | raw          | 3        | Stopped |

Virtual Machine Configuration

| Vm Name | Iso Name             | MAC Address                                    | Vnc Id                         | Usb             | Network Adapter  | Startup           | Actions  |
|---------|----------------------|--|--------------------------------|-----------------|------------------|-------------------|--|
| mxone7  | <input type="text"/> | <input type="text" value="12:b0:c9:0b:ec:8c"/> | <input type="text" value="0"/> | <div>None</div> | <div>e1000</div> | <div>Manual</div> | <div><div></div><div></div><div></div><div></div><div></div></div> |

Virtual Machine Creation

| Vm Name              | Ram (Mb)             | Storage (Gb)         | Image Format   | Nb Cores     |
|----------------------|----------------------|----------------------|----------------|--------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <div>raw</div> | <div>1</div> |

+

Apply

Cancel

Using Locally Stored ISO-image

5. In the **Iso Name** field, enter the name of the ISO-image stored in the internal file system.
6. In the **Startup** field, select **Auto**.

Figure 14: Virtual Machine Configuration

Virtual Machine Configuration

| Vm Name | Iso Name                                       | MAC Address                                    | Vnc Id                         | Usb             | Network Adapter  | Startup         | Actions  |
|---------|--|--|--------------------------------|-----------------|------------------|-----------------|--|
| mxone7  | <input type="text" value="MX7.0.0.2.rc5.iso"/> | <input type="text" value="12:9d:0c:0b:ec:8c"/> | <input type="text" value="0"/> | <div>None</div> | <div>e1000</div> | <div>Auto</div> | <div><div></div><div></div><div></div><div></div><div></div></div> |

7. Click **Start** to start installation form ISO-image. Ensure that the **State** field is changed to **Started**.
8.

Figure 15: Virtual Machine Started Status

Virtual Machine Status

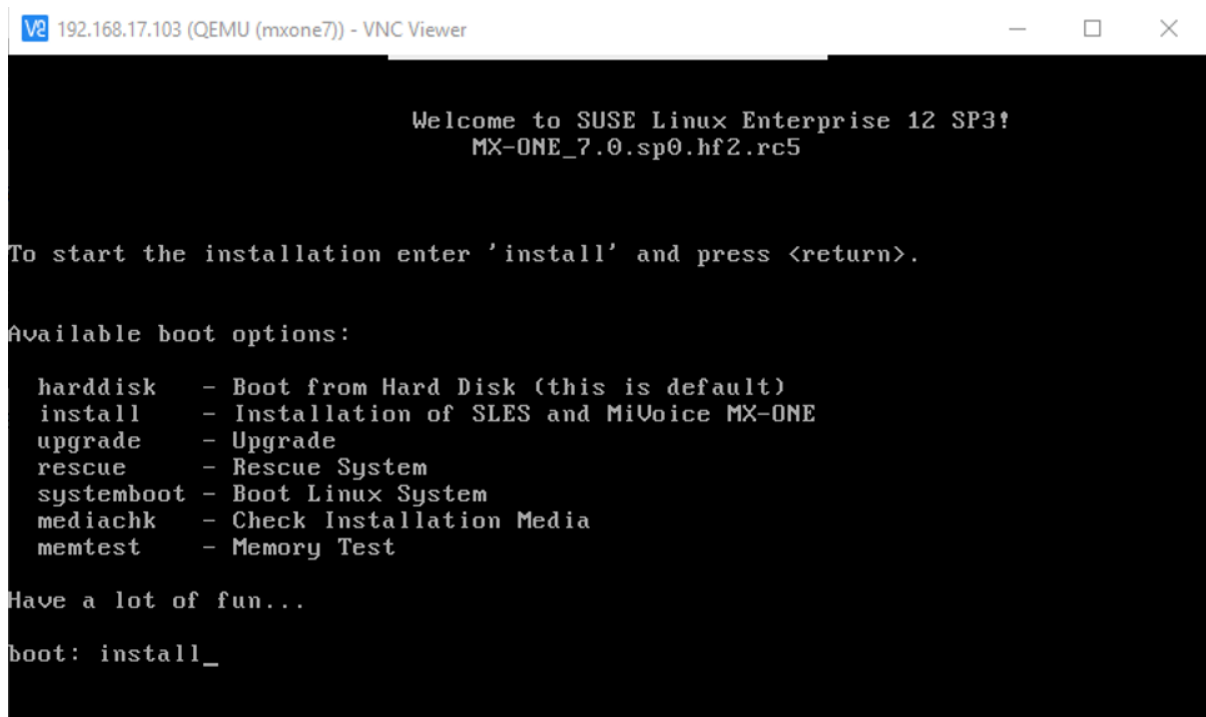
| Vm Name | Iso Name          | MAC Address       | Vnc Id | Usb  | Network Adapter | Ram (Mb) | Storage (Gb) | Image Format | Nb Cores | State   |
|---------|-------------------|-------------------|--------|------|-----------------|----------|--------------|--------------|----------|---------|
| mxone7  | MX7.0.0.2.rc5.iso | 12:9d:0c:0b:ec:8c | 0      | None | e1000           | 7168     | 100          | qcow2        | 3        | Started |

9. Start a VNC-viewer and attach to the **Vnc id** stated in the **Virtual Machine Status** table.

**Note:**

UltraVNC Viewer, TightVNC Viewer, and VNC Viewer are presently supported.

10. At the **boot:** prompt, type **install**. The installation continues as a normal MX-ONE installation. The following screen is displayed.



```

Welcome to SUSE Linux Enterprise 12 SP3!
MX-ONE_7.0.sp0.hf2.rc5

To start the installation enter 'install' and press <return>.

Available boot options:

  harddisk  - Boot from Hard Disk (this is default)
  install   - Installation of SLES and MiVoice MX-ONE
  upgrade   - Upgrade
  rescue    - Rescue System
  systemboot - Boot Linux System
  mediachk  - Check Installation Media
  memtest   - Memory Test

Have a lot of fun...

boot: install_

```

### Using bootable USB-Stick

11. Ensure that your USB external device contains the Operating System installation media, that is bootable and connected. When downloading, the OS provides architecture choices to choose either AMD64 (64 bit OS) or i386/i686 (32 bit OS). You must choose the architecture for an INTEL processor.
12. Select **All** from the **Usb** field and click **Apply**.

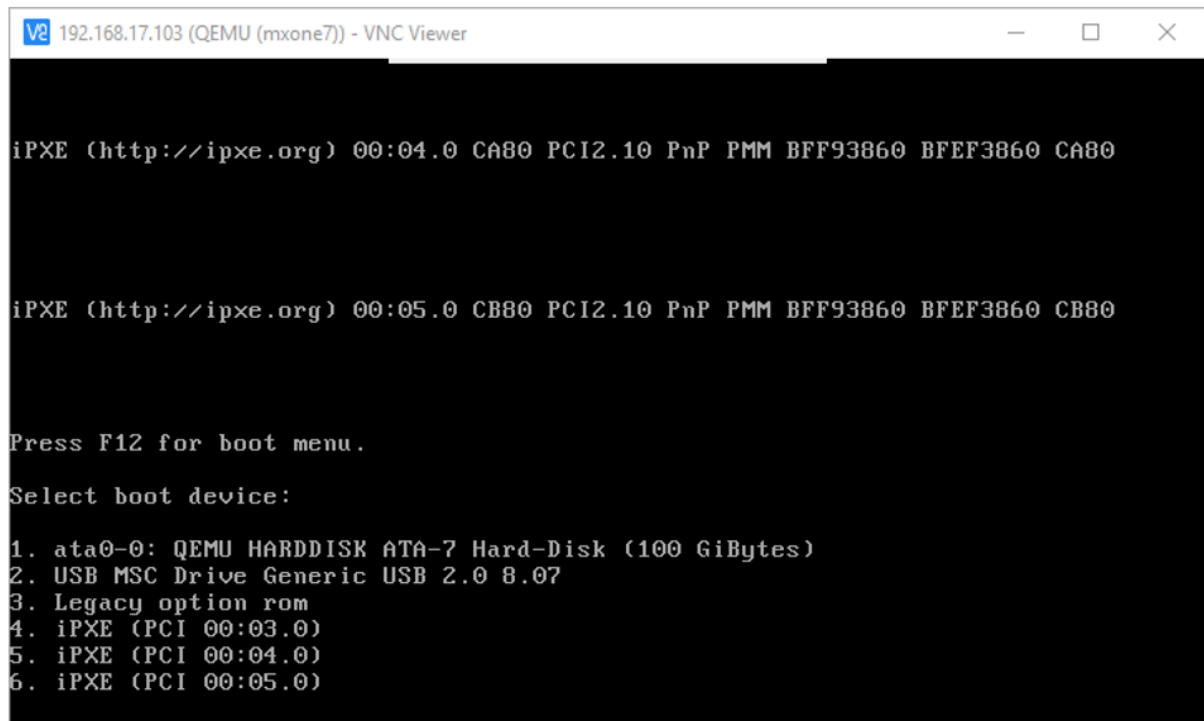
| Virtual Machine Configuration |          |                   |        |     |                 |         |   |  |
|-------------------------------|----------|-------------------|--------|-----|-----------------|---------|---|--|
| Vm Name                       | Iso Name | MAC Address       | Vnc Id | Usb | Network Adapter | Startup | Actions   |  |
| mxone7                        |          | 12:9d:0c:0b:ec:8c | 0      | All | e1000           | Auto    |      |  |

13. Click Start icon to start the VM. Open the VNC Client located on your computer network that is connected to the unit.

**Note:**

UltraVNC Viewer, TightVNC Viewer, and VNC Viewer are presently supported

14. Enter the 'IPAddressOftheUnit': 'VNCid', for example - 192.168.0.12:1.
15. From the VNC client, wait for the following message to display *Press F12 for boot menu*. If too late, restart the VM by clicking the **Start** button.
16. Press F12, then select the boot device (in this case 2).

A screenshot of a VNC Viewer window titled "192.168.17.103 (QEMU (mxone7)) - VNC Viewer". The window displays a black terminal with white text. The text shows two lines of iPXE boot information, followed by the prompt "Press F12 for boot menu.". Below this is the "Select boot device:" prompt and a numbered list of six boot options: 1. ata0-0: QEMU HARDDISK ATA-7 Hard-Disk (100 GiBytes), 2. USB MSC Drive Generic USB 2.0 8.07, 3. Legacy option rom, 4. iPXE (PCI 00:03.0), 5. iPXE (PCI 00:04.0), and 6. iPXE (PCI 00:05.0).

```
192.168.17.103 (QEMU (mxone7)) - VNC Viewer

iPXE (http://ipxe.org) 00:04.0 CA80 PCI2.10 PnP PMM BFF93860 BFEF3860 CA80

iPXE (http://ipxe.org) 00:05.0 CB80 PCI2.10 PnP PMM BFF93860 BFEF3860 CB80

Press F12 for boot menu.

Select boot device:

1. ata0-0: QEMU HARDDISK ATA-7 Hard-Disk (100 GiBytes)
2. USB MSC Drive Generic USB 2.0 8.07
3. Legacy option rom
4. iPXE (PCI 00:03.0)
5. iPXE (PCI 00:04.0)
6. iPXE (PCI 00:05.0)
```

17. At the **boot:** prompt, type **Install**. The installation continues as a normal MX-ONE installation.

# Setting up MX-ONE for Branch Node Solution

## 5

This chapter contains the following sections:

- [Number Analysis](#)
- [Extension Data](#)
- [Least Cost Routing Data](#)
- [Route Data](#)

## 5.1 Number Analysis

Number Analysis Data:

| Type of Series                | Number Series                  |
|-------------------------------|--------------------------------|
| Extension Number Series       | 10000 - 49999<br>67000 - 67999 |
| External Destination Code     | 081 – 088                      |
| LCR Access Code Number Series | 00                             |

Call Discrimination Data:

| Type of Series           | Number Series  |
|--------------------------|----------------|
| External/Internal Number | CDCAT Customer |
| Number Analysis Data     | -              |

## 5.2 Extension Data

Figure 16: Directory Number Profile

| Dir   | Cust | Lim | Csp | Feature level | Lang | Max Secretary Cost | Max Security Term | Security Exception | AMC        | Video | BluStar | Third Party Client | Party SIP | Csta | Free On Support | Hotline | Hotline Number | Backup Number  | Area Code |
|-------|------|-----|-----|---------------|------|--------------------|-------------------|--------------------|------------|-------|---------|--------------------|-----------|------|-----------------|---------|----------------|----------------|-----------|
| 11100 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08801344311100 | 013       |
| 11101 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 1               | -       | -              | 08801344311101 | 013       |
| 11102 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 1               | -       | -              | 08801344311102 | 013       |
| 11103 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08801344311103 | 013       |
| 11104 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08801344311104 | 013       |
| 22100 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803132522100 | 031       |
| 22101 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803132522101 | 031       |
| 22102 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803132522102 | 031       |
| 22103 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803132522103 | 031       |
| 22104 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803132522104 | 031       |
| 32100 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08804059832100 | 040       |
| 32101 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08804059832101 | 040       |
| 32102 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08804059832102 | 040       |
| 32103 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08804059832103 | 040       |
| 32104 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08804059832104 | 040       |
| 42100 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803661842100 | 036       |
| 42101 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803661842101 | 036       |
| 42102 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803661842102 | 036       |
| 42103 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803661842103 | 036       |
| 42104 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | 08803661842104 | 036       |
| 67000 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | -              | -         |
| 67512 | 0    | 1   | 11  |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | -              | -         |
| 67820 | 0    | 1   | 11  |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 1               | -       | -              | -              | -         |
| 67821 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | -              | -         |
| 67822 | 0    | 1   | 9   |               | -    | -                  | No                | 1                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 1               | -       | -              | -              | -         |
| 67823 | 0    | 1   | 10  |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | -              | -         |
| 67824 | 0    | 1   | 9   |               | -    | -                  | No                | 4                  | <u>Yes</u> | No    | No      | -                  | No        | 00   | 0               | -       | -              | -              | -         |

MDSH>

### Common Service Profile 9:

Cust: 0

Traf : 0103151515

Serv: 111100011001000000000100000300

Cdiv: 111000111010000

Roc: 000001

Npres: 0011000

Offered Time: 0

Forced DisconnectTime: 0

CnnLog: 0

Csp Name: Standard

**Common Service Profile 11:**

Cust: 0

Traf : 0103151515

Serv: 111130011001000000000100000300

Cdiv: 111000111010000

Roc: 000001

Npres: 0011000

Offered Time: 0

Forced DisconnectTime: 0

CnnLog: 0

Csp Name: Intrusion

## 5.3 Least Cost Routing Data

**ENT Table**

Least Cost Destination Data

**Table 1: External Number Table**

| Entry     | TRC | PRE | Conf |
|-----------|-----|-----|------|
| 00013443  | 8   |     | N    |
| 00031325  | 8   |     | N    |
| 00036618  | 7   |     | N    |
| 00040598  | 8   |     | N    |
| 000856867 | 7   |     | N    |

**NLT Table**

Least Cost Destination Data

**Table 2: Number Length Table**

| Entry | TRC | PRE | CONF | MIN | MAX | ACF |
|-------|-----|-----|------|-----|-----|-----|
| 001   | 0   | -   | N    | 6   | 18  | Y   |
| 002   | 0   | -   | N    | 6   | 18  | Y   |
| 003   | 0   | -   | N    | 6   | 18  | Y   |
| 004   | 0   | -   | N    | 6   | 18  | Y   |
| 005   | 0   | -   | N    | 6   | 18  | Y   |
| 006   | 0   | -   | N    | 6   | 18  | Y   |
| 007   | 0   | -   | N    | 6   | 18  | Y   |
| 008   | 0   | -   | N    | 6   | 18  | Y   |
| 009   | 0   | -   | N    | 6   | 18  | Y   |

**DNT2 Table**

Least Cost Destination Data

**Table 3: Number Table**

| Entry | TRC | PRE | ACCT | FRCT | TOLL             | CBCS | BTON | TNS | OSA |
|-------|-----|-----|------|------|------------------|------|------|-----|-----|
| 00013 | 5   | -   | 0    | 1    | 1111111111111111 | -    | 0    | -   | -   |
| 00031 | 5   | -   | 0    | 2    | 1111111111111111 | -    | 0    | -   | -   |
| 00036 | 5   | -   | 0    | 3    | 1111111111111111 | -    | 0    | -   | -   |
| 00040 | 5   | -   | 0    | 3    | 1111111111111111 | -    | 0    | -   | -   |



| Entry | TRC | PRE | ACCT | FRCT | TOLL             | CBCS | BTON | TNS | OSA |
|-------|-----|-----|------|------|------------------|------|------|-----|-----|
| 0008  | 4   | -   | 0    | 4    | 1111111111111111 | -    | 0    | -   | -   |

### FDT Table

Least Cost Destination Data

**Table 4: Fictitious Destination Table**

| FRCT | TZONE | PRE |
|------|-------|-----|
| 1    | 1     | 081 |
| 2    | 1     | 082 |
| 3    | 1     | 083 |
| 5    | 1     | 085 |

END

## 5.4 Route Data

### 5.4.1 ROCAP

#### 5.4.1.1 Route Category Data

Figure 17: Route Category Data

| ROU | CUST | SEL              | TRM | SERV | NODG       | DIST | DISL | TRAF | SIG      | BCAP                |
|-----|------|------------------|-----|------|------------|------|------|------|----------|---------------------|
| 81  |      | 7110000000000000 | 10  | 4    | 3100000001 | 0    | 30   | 128  | 03151515 | 0111110000A0 001100 |
| 82  |      | 7110000000000000 | 10  | 4    | 3100000001 | 0    | 30   | 128  | 03151515 | 0111110000A0 001100 |
| 83  |      | 7110000000000000 | 10  | 4    | 3100000001 | 0    | 30   | 128  | 03151515 | 0111110000A0 001100 |
| 85  |      | 7110000000000000 | 10  | 4    | 3100000001 | 0    | 30   | 128  | 03151515 | 0111110000A0 001100 |

## 5.4.2 RODAP

### 5.4.2.1 Route Data

**Table 5: Route Data**

| ROU | Type | VARC       | VARI       | VARO       | Filter |
|-----|------|------------|------------|------------|--------|
| 1   | SL60 | H'00000300 | H'00000000 | H'04410000 | NO     |
| 81  | TL66 | H'00000000 | H'00000000 | H'00000000 | NO     |
| 82  | TL66 | H'00000000 | H'00000000 | H'00000000 | NO     |
| 83  | TL66 | H'00000000 | H'00000000 | H'00000000 | NO     |
| 85  | TL66 | H'00000000 | H'00000000 | H'00000000 | NO     |

## 5.4.3 RODDP

### 5.4.3.1 External Destination Route Data

**Table 6: External Destination Route Data**

| DEST | DRN | ROU | CHO | CUST | ADC                              | TRC | SRT | NUMACK | PRE |
|------|-----|-----|-----|------|----------------------------------|-----|-----|--------|-----|
| 00   | -   | 1   | -   | -    | 122500000000025000200<br>0000000 | 0   | 3   | -      | -   |
| 081  | -   | 81  | -   | -    | 122500000000025000200<br>0000000 | 0   | 4   | -      | -   |
| 082  | -   | 82  | -   | -    | 12250000000002500020000<br>00000 | 0   | 4   | -      | -   |
| 083  | -   | 83  | -   | -    | 1225000000000250002000<br>000000 | 0   | 4   | -      | -   |

| DEST | DRN | ROU | CHO | CUST | ADC                              | TRC | SRT | NUMACK | PRE |
|------|-----|-----|-----|------|----------------------------------|-----|-----|--------|-----|
| 085  | -   | 85  | -   | -    | 122500000000025000200<br>0000000 | 0   | 4   | -      | -   |
| 088  | -   | 1   | -   | -    | 122500000000025000200<br>0000000 | 0   | 4   | -      | -   |

## 5.4.4 Number Prefixing

### 5.4.4.1 Route Number Data

**Table 7: Route Data**

| ROU | PRE | ROUDIR | EXNOPU                 | EXNOPR | TERAC |
|-----|-----|--------|------------------------|--------|-------|
| 1   | -   | -      | 1-46<br>2-08<br>4-568  | -      | -     |
| 81  | -   | -      | 1-46<br>2-013<br>4-443 | -      | -     |
| 82  | -   | -      | 1-46<br>2-036<br>4-418 | -      | -     |
| 83  | -   | -      | 1-46<br>2-031<br>4-325 | -      | -     |

| ROU | PRE | ROUDIR | EXNOPU                 | EXNOPR | TERAC |
|-----|-----|--------|------------------------|--------|-------|
| 85  | -   | -      | 1-46<br>2-040<br>4-598 | -      | -     |

## 5.4.5 SIP ROUTE

One SIP route to each branch node is specified.

Route 81 towards BO#1 (Linköping), public access is ISDN.

route : 81

protocol = udp

profile = common-gateway

service = PRIVATE

uristring0 = sip:?.@192.168.17.81

fromuri0 = sip:?.@192.168.17.44

remoteport = 5070

accept = FROM\_DOMAIN

match = 192.168.17.81

register = SET\_BY\_PROFILE

trusted = TRUST\_BY\_PROFILE

Route 82 towards BO#4 (Jönköping), public access is ISDN.

route : 82

protocol = udp

profile = common-gateway

service = PRIVATE

```
uristring0 = sip:?@192.168.17.82  
fromuri0 = sip:?@192.168.17.44  
remoteport = 5070  
accept = FROM_DOMAIN  
match = 192.168.17.82  
register = SET_BY_PROFILE  
trusted = TRUST_BY_PROFILE
```

Route 83 towards BO#2 (Göteborg), public access is SIP.

```
route : 83  
protocol = udp  
profile = common-gateway  
service = PRIVATE  
uristring0 = sip:?@192.168.17.83  
fromuri0 = sip:?@192.168.17.44  
remoteport = 5090  
accept = FROM_DOMAIN  
match = 192.168.17.83  
register = SET_BY_PROFILE  
trusted = TRUST_BY_PROFILE
```

Route 85 towards BO#3 (Malmö), public access is ISDN.

```
route : 85  
protocol = udp  
profile = common-gateway  
service = PRIVATE  
uristring0 = sip:?@192.168.17.85
```

fromuri0 = sip:?.@192.168.17.44

remoteport = 5070

accept = FROM\_DOMAIN

match = 192.168.17.85

register = SET\_BY\_PROFILE

trusted = TRUST\_BY\_PROFILE

# Setting up GX Gateway with ISDN Trunks

## 6

This chapter contains the following sections:

- [Logon](#)
- [Network Settings](#)
- [Session Board Controller \(SBC\)](#)
- [ISDN](#)
- [POTS](#)
- [SIP](#)
- [Media](#)
- [Call Router](#)
- [Management](#)

This section describes how to setup the 'Linköping' branch (BO#1) node using ISDN trunk towards PSTN.

### Note:

The setup for the gateway and SBC part for an EX-controller is identical.

## 6.1 Logon

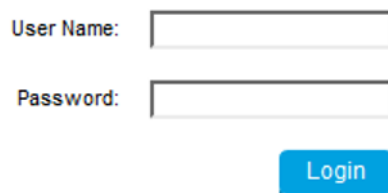
This section describes how to setup BO#1.

1. Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).

**Note:**

If DHCP is not running into the network then, plug in the network cable to the ETH2 port on EX Controller and use the default IP address of 192.168.0.10 to open the EX Controller Interface.

Figure 18: Login page



User Name:

Password:

Login

- User name/password: public /
  - User name/password: admin/administrator
- Plug in the analog phone in the FXS port 1 of the EX Controller and dial \*#\*0 to know the IP address of the EX Controller assigned by using DHCP server.
- Log into the EX Controller by using the above-mentioned IP address and navigate as described below to configure.

## 6.2 Network Settings

### 6.2.1 Host

Figure 19: Host Settings - 1





1. Select **Network > Host** and keep the default configuration interface as mentioned below.

Figure 20: Host Settings - 2

| Automatic Configuration Interface     |                     |
|---------------------------------------|---------------------|
| Automatic IPv4 config source network: | <div>Uplink</div>   |
| Automatic IPv6 config source network: | <div>UplinkV6</div> |

2. Change to **Static IP-address** and enter default Gateway (GW).

Figure 21: Changing Static IP Address

| Default Gateway Configuration |                           |
|-------------------------------|---------------------------|
| <b>IPv4</b>                   |                           |
| Configuration Source:         | <div>Static</div>         |
| Default Gateway:              | <div>192.168.17.1</div>   |
| <b>IPv6</b>                   |                           |
| Configuration Source:         | <div>Automatic IPv6</div> |
| Default Gateway:              |                           |

3. Change to static DNS server and enter IP-address or FQDN to DNS server.

Figure 22: Changing Static DNS Server

| DNS Configuration     |                        |
|-----------------------|------------------------|
| Configuration Source: | <div>Static</div>      |
| Primary DNS:          | <div>10.105.64.3</div> |
| Secondary DNS:        |                        |
| Third DNS:            |                        |
| Fourth DNS:           |                        |

#### 4. Change to static SNTP server, enter time server data.

Figure 23: Changing to Static SNTP Server

| SNTP Configuration               |              |
|----------------------------------|--------------|
| Configuration Source:            | Static       |
| <b>Static Servers:</b>           |              |
| Primary SNTP:                    | pool.ntp.org |
| Secondary SNTP:                  |              |
| Third SNTP:                      |              |
| Fourth SNTP:                     |              |
| <b>Synchronization:</b>          |              |
| Synchronization Period:          | 1440         |
| Synchronization Period On Error: | 60           |

#### 5. Set the Time Zone.

Valid options are:

- Pacific Time (Canada and US): PST8PDT7,M3.2.0/02:00:00,M11.1.0/02:00:00
- Mountain Time (Canada and US): MST7MDT6,M3.2.0/02:00:00,M11.1.0/02:00:00
- Central Time (Canada and US): CST6CDT5,M3.2.0/02:00:00,M11.1.0/02:00:00
- Eastern Time (Canada and US): EST5EDT4,M3.2.0/02:00:00,M11.1.0/02:00:00
- Atlantic Time (Canada): AST4ADT3,M3.2.0/02:00:00,M11.1.0/02:00:00
- GMT Standard Time: GMT0DMT-1,M3.5.0/01:00:00,M10.5.0/02:00:00
- W. Europe Standard Time: WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00
- China Standard Time: CST-8
- Tokyo Standard Time: TST-9
- Central Australia Standard Time:  
CAUST-9:30DCAUST-10:30,M10.5.0/02:00:00,M3.5.0/02:00:00
- Australia Eastern Standard Time:  
AUEST-10AUSDST-11,M10.5.0/02:00:00,M3.5.0/02:00:00
- UTC (Coordinated Universal Time): UTC0

Figure 24: Setting Static Time Zone

| Time Configuration |  |
|--------------------|--|
| Static Time Zone:  | WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00 |

#### 6. Leave all other items as it is and click **Apply** when finished.

## 6.2.2 Interfaces

Figure 25: Interface



1. Go to **Network > Interface**.
2. Change **Uplink** to **IpStatic (IPv4 Static)** and enter the static IP-address and Static Default Gateway.

Figure 26: Changing Uplink to IpStatic

| Network Interface Configuration |        |                         |                   |                       |            |   |  |
|---------------------------------|--------|-------------------------|-------------------|-----------------------|------------|---|--|
| Name                            | Link   | Type                    | Static IP Address | Static Default Router | Activation |   |  |
| Lan1                            | eth2-5 | IpStatic (IPv4 Static)  | 192.168.0.10/24   |                       | Enable     | – |  |
| Uplink                          | eth1   | IpStatic (IPv4 Static)  | 192.168.17.81/24  | 192.168.17.1          | Enable     | – |  |
| UplinkV6                        | eth1   | Ip6Static (IPv6 Static) |                   |                       | Disable    | – |  |
|                                 |        |                         |                   |                       |            | + |  |

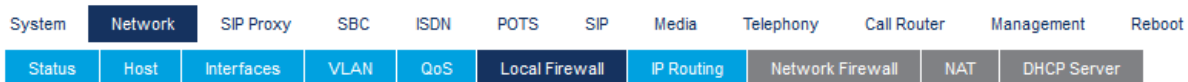
3. Leave all other items as it is and click **Apply** when ready.

### **Note:**

When the IP-address is changed, the connection is lost and a new logon must be done with the new IP-address.

## 6.2.3 Local Firewalls

Figure 27: Local firewalls



1. Go to **Network > Local Firewall**.

2. If local firewall security is needed change default policy to **Drop**.

Figure 28: Changing default policy

|                                     |      |    |
|-------------------------------------|------|----|
| Configuration Modified:             |      | No |
| <b>Local Firewall Configuration</b> |      |    |
| Default Policy:                     | Drop |    |
| Blacklist Timeout:                  | 60   |    |
| Blacklist Rate Limit Timeout:       | 60   |    |

3. Enter the networks for which traffic can enter from.

Figure 29: Enter network traffic

| Local Firewall Rules |            |                 |             |                     |                  |          |                          |        |                  |                        |         |
|----------------------|------------|-----------------|-------------|---------------------|------------------|----------|--------------------------|--------|------------------|------------------------|---------|
| #                    | Activation | Source Address  | Source Port | Destination Address | Destination Port | Protocol | Blacklist enable         | Action | Rate Limit Value | Rate Limit Time Period |         |
| 1                    | Enable     | 192.168.17.0/24 |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ^ v + - |
| 2                    | Enable     | 172.17.17.0/24  |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ^ v + - |
| 3                    | Enable     | 10.105.0.0/16   |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ^ v + - |
|                      |            |                 |             |                     |                  |          |                          |        |                  |                        | +       |

4. Click **Save** or **Save and Apply** when ready.

## 6.3 Session Board Controller (SBC)

Rulesets define one or several rules used to filter, manipulate or route inbound or outbound requests.

There are 2 types of Rulesets:

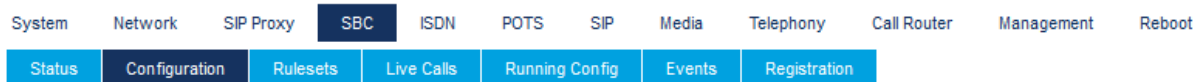
- **Call Agent Rulesets:** describe how inbound or outbound requests are handled by a specific Call Agent. These can also implement services or collect data.
- **Routing Rulesets:** used to globally route outbound requests, that is, these apply to all Call Agents.

When a request arrives at a Call Agent from a peer, the inbound rules of the Rulesets associated with the Call Agent are executed. Then, Routing Rulesets are executed until a Call Agent is selected for the destination. Lastly, the outbound rules of the Rulesets associated with the destination Call Agent are executed before sending the request to

the peer. Inbound rules of the Ruleset are executed in ascending Ruleset priority order. Outbound rules are executed in descending Ruleset priority order.

## 6.3.1 Configuration

Figure 30: Configuration



1. Go to **SBC > Configuration**. The following Call Agents are present.

Figure 31: Configuration Modified



Following Call Agents are present.

Figure 32: Call Agent Configuration

| Call Agent Configuration |                                     |                |                     |                 |                |              |  |
|--------------------------|-------------------------------------|----------------|---------------------|-----------------|----------------|--------------|--|
| Name                     | Enable                              | Gateway        | Signaling Interface | Media Interface | Peer Host      | Peer Network |  |
| local_users_ca           | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        |                | 0.0.0.0/0    |  |
| trunk_lines_ca           | <input checked="" type="checkbox"/> | trunk_lines_gw |                     | loop_m          |                |              |  |
| remote_users_ca          | <input type="checkbox"/>            |                | uplink_s            | uplink_m        |                |              |  |
| MX-One_LIM1              | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        | 192.168.17.44  |              |  |
| MX-One_LIM2              | <input type="checkbox"/>            |                | uplink_s            | uplink_m        | lim2.mitel.com |              |  |
| MX-One-trunk             | <input checked="" type="checkbox"/> |                | trunk_s             | uplink_m        | lim1.mitel.com |              |  |
| MX-One-trunk2            | <input type="checkbox"/>            |                | trunk_s             | uplink_m        | lim2.mitel.com |              |  |
| VoIP-trunk1              | <input type="checkbox"/>            |                | uplink_s            | uplink_m        | voip.provider1 |              |  |
| VoIP-trunk2              | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        | voip.provider2 |              |  |
|                          |                                     |                |                     |                 |                |              |  |

## 6.3.2 Routing Rulesets

**Routing Rulesets:** are used to globally route outbound requests, that are applied to all Call Agents.

Routing Rulesets are executed until a Call Agent is selected for the destination.

Figure 33: Routing Rulesets

| Routing Rulesets |  |  |       |
|------------------|--|--|-------|
| Priority         | Name   | Parameters   |       |
| 1                | MX-One_local_users_failover_to_trunk             | A_PRFX=013443 TRUNK_CA=trunk_lines_ca                | ⬆ ⬇ ⬅ |
| 2                | MX-One_trunk_lines_to_local_users                | TRUNK_CA=trunk_lines_ca                              | ⬆ ⬇ ⬅ |
| 3                | MX-One_routes_with_basic_local_survivability_TCP |  | ⬆ ⬇ ⬅ |
| 4                | MX-One_routes_with_basic_local_survivability_UDP |  | ⬆ ⬇ ⬅ |
| 5                | SIP_trunk_to_MX-One                              | TRUNK_CA=trunk_lines_ca MX-ONE-TRUNK_CA=MX-One-trunk | ⬆ ⬇ ⬅ |
| 6                | MX-One_to_trunk_lines                            | MX-ONE-TRUNK_CA=MX-One-trunk TRUNK_CA=trunk_lines_c  | ⬆ ⬇ ⬅ |
|                  |  |  | +     |

- **Ruleset MX-One\_local\_users\_failover\_to\_trunk**

A\_PRFX=013443

This is the prefix for the local numbers used on outgoing calls to the PSTN (in this example, you will receive a number block 013443xxxxx from the PSTN provider and add the prefix on outgoing calls, so that the calling party number sent to the PSTN is correct).

TRUNK\_CA=trunk\_lines\_ca

This is the call agent from which the call is coming from.

- **Ruleset SIP\_trunk to\_MX-One**

TRUNK\_CA=trunk\_lines\_ca

This is the call agent from which the call is coming from.

MX-ONE-TRUNK\_CA=MX-One-trunk

This is the call agent to which the call will be routed to.

- **Ruleset MX-One\_to\_trunk\_lines**

TRUNK\_CA=trunk\_lines\_ca

This is the call agent from which the call is coming from.

MX-ONE-TRUNK\_CA=MX-One-trunk

This is the call agent to which the call will be routed to.

- 1. Click **Save** and **Apply** when done.
- 2. Configure each call agent (ca).
- 3. Click **Modify** to enter specific data for each call agent.

6.3.3 local\_users\_ca

Figure 34: Configure Call Agent screen

| Configure Call Agent                          |   |
|---|---|
|   | Value                                       |
| <b>Call Agent Parameters</b>                  |   |
| Name  | <input type="text" value="local_users_ca"/> |
| Enable  | <input checked="" type="checkbox"/>         |
| Gateway                                       | <input type="text" value=""/><br>▼          |
| Signaling Interface                           | <input type="text" value="uplink_s"/><br>▼  |
| Media Interface                               | <input type="text" value="uplink_m"/><br>▼  |
| Peer Host                                     | <input type="text"/>                        |
| Peer Network                                  | <input type="text" value="0.0.0.0/0"/>      |
| Force Transport                               | <input type="text" value="None"/><br>▼      |
| <b>Monitoring and Blacklisting Parameters</b> |   |
| Keep-Alive Interval                           | <input type="text" value="0"/>              |
| Blacklisting Duration                         | <input type="text" value="0"/>              |
| Blacklisting Delay                            | <input type="text" value="0"/>              |
| Blacklisting Error Codes                      | <input type="text"/>                        |

Figure 35: Call Agent Rulesets

| Call Agent Rulesets |   |  |       |
|---------------------|---|--|-------|
| Priority            | Name                                      | Parameters   |       |
| 1                   | MX-One_build_RURI_survivability           | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=192.16 | ⬆ ⬇ ⬅ |
| 2                   | MX-One_Appearance_Prefix                  | APP_PRFX=SCA-  | ⬆ ⬇ ⬅ |
| 3                   | MX-One_Appearance_Prefix                  | APP_PRFX=EDN-  | ⬆ ⬇ ⬅ |
| 4                   | MX-One_Remove_Outbound_Appearance         | PATTERN=111[0-9][0-9]                                  | ⬆ ⬇ ⬅ |
| 5                   | MX-One_outbound_A_Number_prefix           | PATTERN=111[0-9][0-9] A_PRFX=013443 PSTN_PREFIX=00     | ⬆ ⬇ ⬅ |
| 6                   | MX-One_outbound_B_Number_prefix           | BNUMBER=67[0-9][0-9][0-9] B_PRFX=08568                 | ⬆ ⬇ ⬅ |
| 7                   | MX-One_outbound_B_Number_prefix           | BNUMBER=221[0-9][0-9][0-9] B_PRFX=031325               | ⬆ ⬇ ⬅ |
| 8                   | MX-One_outbound_B_Number_prefix           | BNUMBER=321[0-9][0-9][0-9] B_PRFX=040598               | ⬆ ⬇ ⬅ |
| 9                   | MX-One_outbound_B_Number_prefix           | BNUMBER=421[0-9][0-9][0-9] B_PRFX=036618               | ⬆ ⬇ ⬅ |
| 10                  | MX-One_outbound_B_Number_Override         | BNUMBER=^09 BOVERRIDE=0856867000                       | ⬆ ⬇ ⬅ |
| 11                  | MX-One_local_reg_users_with_survivability | EXT_DIGIT_LENGTH=5                                     | ⬆ ⬇ ⬅ |
|                     |   |  | +     |

- **Ruleset MX-One\_build\_RURI survivability (Active only in Survival Mode)**

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 11100 - 11199.

PATTERN=111[0-9][0-9]

The pattern for the internal range of numbers would be 11100 - 11199.

Calls to this number range stay always local (would not be sent to the PSTN in survival mode).

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

- **Ruleset: MX\_One\_Appearance\_Prefix (Active only in Survival Mode)**

APP\_PREFIX=SCA- and APP\_PREFIX=EDN-

This is the prefix for the user names connected with shared appearance. In this example, you have two user names: SCA- and EDN-

- **Ruleset: MX-One\_Remove\_Outbound\_Appearance (Active only in Survival Mode)**



PATTERN=111[0-9][0-9]

This rule removes any prefix used for Shared Call Appearance. The pattern for the internal range of numbers would be 11100 - 11199.

- **Ruleset: MX-One\_outbound\_A\_Number\_prefix (Active only in Survival Mode)**

PATTERN=111[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 11100 - 11199.

A\_PRFX=013443

This is the prefix for the local numbers used on outgoing calls to the PSTN. In this example, add a number block 013443 in front of the number specified in PATTERN-parameter to form a valid calling party number to be sent to the PSTN.

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will be truncated.

- **Ruleset: MX-One\_outbound\_B\_Number\_prefix (Active only in Survival Mode)**

This ruleset applies to calls to numbers defined in BNUMBER and will add B\_PRFX to the called party number.

This ruleset must be repeated for every approved destination (that is, calling the HQ and other branch offices.)

### **Calling HQ:**

BNUMBER=67[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 67000 - 67999.

B\_PRFX=08568

This is the prefix for the Called Party Number. In this case, it will be built like: National Prefix (08) + Main part of the HQ's local number: (568).

### **Calling BO#2:**

BNUMBER=221[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 22100 - 22199.

B\_PRFX=031325

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (031) + Main part of the HQ's local number: (325).

**Calling BO#3:**

BNUMBER=321[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 32100 - 32199.

B\_PRFX=040598

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (040) + Main part of the HQ's local number: (598).

**Calling BO#4:**

BNUMBER=421[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 42100 - 42199.

B\_PRFX=036618

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (036) + Main part of the HQ's local number: (618).

- **Ruleset: MX-One\_outbound\_B\_Number\_Override (Active only in Survival Mode)**

This ruleset applies to calls to numbers defined in BNUMBER and will use the BOVERRIDE as Called Party Number.

One use case could be if a user dials the internal operator (09) while in survivable mode. The dialled number (09) will be replaced with 0856867000 which could be the number to the operator in the HQ.

BNUMBER=09

The internal number to the operator.

BOVERRIDE=0856867000

Calls to extensions like BNUMBER will be sent to BOVERRIDE. In this example, it will be sent to 0856867000.

- **Ruleset: MX-One\_local\_reg\_users\_with\_survivability**

(Builds the registration cache for survivability purpose).

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 11100 - 11199.

Click **Save** when done.

### 6.3.4 trunk\_lines\_ca

Figure 36: trunk\_lines\_ca

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | trunk_lines_ca                      |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       | trunk_lines_gw                      |
| Signaling Interface                           |                                     |
| Media Interface                               | loop_m                              |
| Peer Host                                     |                                     |
| Peer Network                                  |                                     |
| Force Transport                               | Tcp                                 |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 0                                   |
| Blacklisting Duration                         | 0                                   |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      |                                     |

Figure 37: Call Agent Rulesets

| Call Agent Rulesets |   |  |   |   |
|---------------------|---|--|---|---|
| Priority            | Name  | Parameters   |   |   |
| 1                   | 200_OK_to_SIP_OPTIONS                         |  | ^ | ↓ |
| 2                   | MX-One_remove_prefix                          | PSTN_PREFIX=00   | ^ | ↓ |
| 3                   | MX-One_trunk_lines_to_reception_survivability | EXT_DIGIT_LENGTH=5 MAIN_EXT=11104 PATTERN=111[0-9][0-  | ^ | ↓ |
| 4                   | MX-One_build_RURI_survivability               | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=192.16 | ^ | ↓ |
| 5                   | MX-One_Appearance_Prefix                      | APP_PRFX=SCA-  | ^ | ↓ |
| 6                   | MX-One_Appearance_Prefix                      | APP_PRFX=EDN-  | ^ | ↓ |
| 7                   | media_relay                                   |  | ^ | ↓ |
|                     |   |  | + |   |

- **Ruleset: MX-One\_remove\_prefix**

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will truncated.

- **Ruleset: MX-One\_trunk\_lines\_to\_reception\_survivability**

An incoming call in survival mode will be sent to MAIN\_EXT destination if not reachable or not available.

MAIN\_EXT=11104

This will receive the incoming call in case the original destination is not reachable (not defined or not registered). That is, MAIN\_EXT is the default answering position.

PATTERN=321[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 11100 - 11199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

- **Ruleset: MX-One\_build\_RURI\_survivability (Active only in Survival Mode)**

Builds the RURI when in survivability mode.

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 11100 - 11199.

PATTERN=111[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 11100 - 11199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

- **Ruleset: MX\_One\_Appearance\_Prefix (Active only in Survival Mode)**

APP\_PREFIX=SCA- and APP\_PREFIX=EDN-

This is the prefix for the user names connected with shared appearance (SCA) and extra directory number (EDN). In this example, you have two user names: "SCA"- and "EDN-"

Click **Save** when done.

### 6.3.5 MX-One\_Lim1

1. Enter the IP-address of the MX-ONE in the **Peer Host** field.

Figure 38: Configure Call Agent - Peer Host

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | MX-One_LIM1                         |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       |                                     |
| Signaling Interface                           | uplink_s                            |
| Media Interface                               | uplink_m                            |
| Peer Host                                     | 192.168.17.44                       |
| Peer Network                                  |                                     |
| Force Transport                               | None                                |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 30                                  |
| Blacklisting Duration                         | 60                                  |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      |                                     |

2. Enter the IP-address of the GW in the **RURI\_HOST** parameter.

Figure 39: RURI\_HOST parameter

| Call Agent Rulesets |                   |                         |
|---------------------|-------------------|-------------------------|
| Priority            | Name              | Parameters              |
| 1                   | rewrite_RURI_host | RURI_HOST=192.168.17.81 |
| 2                   | MX-One_core_side  |                         |

- **Ruleset: rewrite\_RURI\_host**

RURI\_HOST= 192.168.17.81

This is the local IP address of the GX-gateway.

Click **Save** when done.

## 6.3.6 MX-One\_trunk

1. Enter the IP-address of the MX-ONE in the **Peer Host** field.

### **Note:**

Though the **MX-One-trunk** is not used in this configuration but you must enable it.

Figure 40: Call Agent Parameters

| Configure Call Agent                          |                                     | Value |
|---|-------------------------------------|-------|
| <b>Call Agent Parameters</b>                  |                                     |       |
| Name  | MX-One-trunk                        |       |
| Enable  | <input checked="" type="checkbox"/> |       |
| Gateway                                       |                                     |       |
| Signaling Interface                           | trunk_s                             |       |
| Media Interface                               | uplink_m                            |       |
| Peer Host                                     | 192.168.17.44                       |       |
| Peer Network                                  |                                     |       |
| Force Transport                               | None                                |       |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |       |
| Keep-Alive Interval                           | 0                                   |       |
| Blacklisting Duration                         | 0                                   |       |
| Blacklisting Delay                            | 0                                   |       |
| Blacklisting Error Codes                      |                                     |       |
| Custom Header                                 |                                     |       |

| Call Agent Rulesets |                                 |   |
|---------------------|---------------------------------|---|
| Priority            | Name                            | Parameters  |
| 1                   | media_relay                     |   |
| 2                   | face_mxone                      | SOURCE_CA=trunk_lines_ca RURI_HOST=192.168.17.81      |
| 3                   | MX-One_remove_prefix            | PSTN_PREFIX=00  |
| 5                   | MX-One_build_RURI_survivability | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=10.10 |
| 6                   | MX-One_core_side                |   |

- **Ruleset: face\_mxone**

SOURCE\_CA=trunk\_lines\_ca

This parameter indicates the call agent from which the call is coming.

RURI\_HOST=192.168.17.81

This parameter is used to set a correct value in the FROM DOMAIN in the INVITE message sent to MX-ONE. It will be the local IP-address of the GX-gateway.

- **Ruleset: MX-One\_remove\_prefix**

PSTN\_PREFIX=00

This parameter specifies the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will be truncated.

- **Ruleset: MX-One\_build\_RURI\_survivability**

Builds the RURI when in survivability mode

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 11100 - 11199.

PATTERN=111[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 11100 - 11199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

Click **Save** when done

## 6.3.7 VOIP-trunk2

Figure 41: VoIP-trunk2

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | VoIP-trunk2                         |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       | <input type="text"/>                |
| Signaling Interface                           | uplink_s                            |
| Media Interface                               | uplink_m                            |
| Peer Host                                     | voip.provider2                      |
| Peer Network                                  | <input type="text"/>                |
| Force Transport                               | None                                |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 0                                   |
| Blacklisting Duration                         | 0                                   |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      | <input type="text"/>                |

Figure 42: Call Agent Rulesets

| Call Agent Rulesets |                      |  |       |
|---------------------|----------------------|--|-------|
| Priority            | Name                 | Parameters                                       |       |
| 1                   | topology_hiding_out  |  | ^ v - |
| 2                   | MX-One_remove_prefix | PSTN_PREFIX=00                                   | ^ v - |
| 3                   | face_mxone           | SOURCE_CA=trunk_lines_ca RURI_HOST=192.168.17.81 | ^ v - |
|                     |                      |  | +     |

- **Ruleset: MX-One\_remove\_prefix**

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will truncated.

- **Ruleset: face\_mxone**

SOURCE\_CA=trunk\_lines\_ca

This parameter indicates the call agent from which the call is coming.

RURI\_HOST=192.168.17.81

This parameter is used to set a correct value in the FROM DOMAIN in the INVITE message sent to MX-ONE. It will be the local IP-address of the GX-gateway.

Click **Save** when done.



When all the changes for call agents are done, a yellow field is shown indicating that configuration has been modified.

|                         |    |
|-------------------------|----|
| Configuration Modified: | no |
|-------------------------|----|

Click **Apply** when ready.

**Note:**

Error will be shown in the configuration if the indication is not removed. Double check the changes described above and correct them.

## 6.4 ISDN

Figure 43: ISDN

|        |            |                        |         |             |          |     |       |           |             |            |        |
|--------|------------|------------------------|---------|-------------|----------|-----|-------|-----------|-------------|------------|--------|
| System | Network    | SIP Proxy              | SBC     | <b>ISDN</b> | POTS     | SIP | Media | Telephony | Call Router | Management | Reboot |
| Status | Statistics | Primary Rate Interface | Interop | Timer       | Services |     |       |           |             |            |        |

Click **Start Sensing** to start first action if ISDN trunks are used.

Figure 44: Automatic Configuration

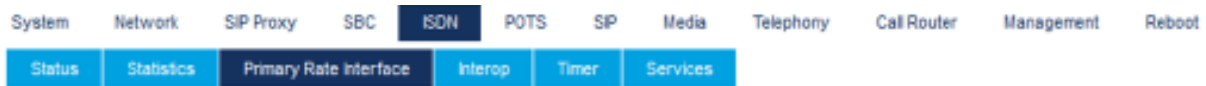
| Automatic Configuration |   |
|-------------------------|---|
| Status:                 | <div>--- All ---</div> <div>Start Sensing</div> |
| Last Result:            | None  |

The system automatically detects certain parameters; for example, number of channels.

### 6.4.1 Primary Rate Interface

#### 6.4.1.1 Settings

Figure 45: Primary Rate Interface



1. Select **ISDN > Primary Rate Interface**.
2. When sensing is done for several markets, specific parameters can be changed.

Figure 46: Interface Configuration

| Interface Configuration                  |                      |
|--|----------------------|
| Line Type: <a href="#">Configure</a>     | E1                   |
| Endpoint Type:                           | TE                   |
| Clock Mode:                              | Slave                |
| Port Pinout:                             | Auto                 |
| Monitor Link State:                      | Enable               |
| Line Coding:                             | HDB3                 |
| Line Framing:                            | CRC4                 |
| Signaling Protocol:                      | DSS1                 |
| Network Location:                        | User                 |
| Preferred Encoding Scheme:               | G.711 a-Law          |
| Fallback Encoding Scheme:                | G.711 u-Law          |
| Channel Range:                           | 1-30                 |
| Channels Reserved for Incoming Calls:    |                      |
| Channels Reserved for Outgoing Calls:    |                      |
| Channel Allocation Strategy:             | Ascending            |
| Maximum Active Calls:                    | 30                   |
| Signal Information Element:              | Disable              |
| Inband Tone Generation:                  | Enable               |
| Inband DTMF Dialing:                     | Enable               |
| Overlap Dialing:                         | Disable              |
| Calling Name Max Length:                 | 34                   |
| Exclusive B-Channel Selection:           | Disable              |
| Sending Complete:                        | Enable               |
| Send Restart On Startup:                 | Enable               |
| Link Establishment:                      | Permanent            |
| Accepted Status Causes:                  |                      |
| Accepted Progress Causes:                | 1-127                |
| Send Isdn Progress:                      | Send All             |
| Send Progress Indicator IE:              | Send All             |
| Default TON for Calling Party Number IE: | National             |
| Default NPI for Calling Party Number IE: | Isdn Telephony       |
| Default PI for Calling Party Number IE:  | Presentation Allowed |
| Default SI for Calling Party Number IE:  | Context Dependent    |
| Default TON for Called Party Number IE:  | National             |
| Default NPI for Called Party Number IE:  | Isdn Telephony       |
| Notification User Suspended:             | Ignore               |

3. Click **Apply** and restart requested service when done.

## 6.4.1.2 Interop

Figure 47: Interop



1. Select **ISDN > Interop**.

## 2. Change other parameters dependent on market.

Figure 48: Interop Configuration

| Interop Configuration                  |                      |
|--|----------------------|
| Progress Indicator In Setup:           | Enable ▾             |
| Progress Indicator In Setup Ack:       | Enable ▾             |
| Progress Indicator In Call Proceeding: | Enable ▾             |
| Progress Indicator In Progress:        | Enable ▾             |
| Progress Indicator In Alerting:        | Enable ▾             |
| Progress Indicator In Connect:         | Enable ▾             |
| Maximum Facility Waiting Delay (ms):   | 0                    |
| Use Implicit Inband Info:              | Disable ▾            |
| Call Proceeding Delay (ms):            | 0                    |
| Calling Name Delivery:                 | Signaling Protocol ▾ |

## 3. Click **Apply** and restart requested service when done.

### 6.4.1.3 Services

Figure 49: ISDN Services

|        |            |                        |         |       |          |     |       |           |             |            |        |
|--------|------------|------------------------|---------|-------|----------|-----|-------|-----------|-------------|------------|--------|
| System | Network    | SIP Proxy              | SBC     | ISDN  | POTS     | SIP | Media | Telephony | Call Router | Management | Reboot |
| Status | Statistics | Primary Rate Interface | Interop | Timer | Services |     |       |           |             |            |        |

## 1. Select **ISDN > Services**.

## 2. Change other parameters dependent on market.

Figure 50: Services Configuration

| Services Configuration                              |               |
|---|---------------|
| Facility Services:                                  | Disable ▾     |
| Calling Line Information Presentation:              | Enable ▾      |
| Calling Line Information Restriction:               | Disable ▾     |
| Calling Line Information Restriction Override:      | Disable ▾     |
| Connected Line Identification Presentation:         | Enable ▾      |
| Connected Line Identification Restriction:          | Disable ▾     |
| Connected Line Identification Restriction Override: | Disable ▾     |
| Outgoing Notify:                                    | Disable ▾     |
| Maintenance Service Call Termination:               | Graceful ▾    |
| Date/Time IE Support:                               | Disable ▾     |
| AOC-E Support:                                      | No ▾          |
| AOC-D Support:                                      | No ▾          |
| Call Rerouting Behavior:                            | Unsupported ▾ |

3. Click **Apply** and restart requested service when done.

## 6.4.2 Basic Rate Interface

### 6.4.2.1 Settings

Figure 51: Settings



1. Go to **ISDN > Basic Interface Configuration**.
2. When sensing is done several market, specific parameters can be changed.

Figure 52: Interface Configuration

| Interface Configuration                  |                                   |
|--|-----------------------------------|
| Endpoint Type:                           | TE                                |
| Clock Mode:                              | Auto                              |
| Monitor Link State:                      | Enable                            |
| Connection Type:                         | Point To Point                    |
| Signaling Protocol:                      | DSS1                              |
| Network Location:                        | User                              |
| Preferred Encoding Scheme:               | G.711 a-Law                       |
| Fallback Encoding Scheme:                | G.711 a-Law                       |
| Channel Allocation Strategy:             | Ascending                         |
| Maximum Active Calls:                    | 0                                 |
| Signal Information Element:              | Disable                           |
| Inband Tone Generation:                  | Enable                            |
| Inband DTMF Dialing:                     | Enable                            |
| Overlap Dialing:                         | Enable                            |
| Calling Name Max Length:                 | 34                                |
| Exclusive B-Channel Selection:           | Disable                           |
| Sending Complete:                        | Enable                            |
| Send Restart On Startup:                 | Enable                            |
| Link Establishment:                      | Permanent                         |
| Hook-Flash Keypad:                       |                                   |
| Accepted Status Causes:                  |                                   |
| Accepted Progress Causes:                | 1-127                             |
| Send Isdn Progress:                      | Send All                          |
| Send Progress Indicator IE:              | Send All                          |
| TEI Negotiation:                         | Power Up                          |
| Default TON for Calling Party Number IE: | National                          |
| Default NPI for Calling Party Number IE: | Isdn Telephony                    |
| Default PI for Calling Party Number IE:  | Presentation Allowed              |
| Default SI for Calling Party Number IE:  | User Provided Verified And Passed |
| Default TON for Called Party Number IE:  | National                          |
| Default NPI for Called Party Number IE:  | Isdn Telephony                    |
| Notification User Suspended:             | Ignore                            |

3. Click **Apply** and restart requested service when done.

### 6.4.2.2 Interop

Figure 53: Interop



1. Select **ISDN > interop**.

Figure 54: Interop Configuration

| Interop Configuration                  |   |
|--|---|
| Progress Indicator In Setup:           | <input type="button" value="Enable"/> ▾             |
| Progress Indicator In Setup Ack:       | <input type="button" value="Enable"/> ▾             |
| Progress Indicator In Call Proceeding: | <input type="button" value="Enable"/> ▾             |
| Progress Indicator In Progress:        | <input type="button" value="Enable"/> ▾             |
| Progress Indicator In Alerting:        | <input type="button" value="Enable"/> ▾             |
| Progress Indicator In Connect:         | <input type="button" value="Enable"/> ▾             |
| Maximum Facility Waiting Delay (ms):   | <input type="text" value="0"/>                      |
| Use Implicit Inband Info:              | <input type="button" value="Enable"/> ▾             |
| Call Proceeding Delay (ms):            | <input type="text" value="0"/>                      |
| Calling Name Delivery:                 | <input type="button" value="Signaling Protocol"/> ▾ |
| Allow TEI Broadcast in Point-to-Point: | <input type="button" value="Enable"/> ▾             |

2. Click **Apply** and restart requested service when done.

6.4.2.3 Services

Figure 55: Services



1. Select **ISDN > Services**.

Figure 56: Services Configuration

| Services Configuration                              |                        |
|---|------------------------|
| Facility Services:                                  | <div>Disable</div>     |
| Calling Line Information Presentation:              | <div>Enable</div>      |
| Calling Line Information Restriction:               | <div>Disable</div>     |
| Calling Line Information Restriction Override:      | <div>Disable</div>     |
| Connected Line Identification Presentation:         | <div>Enable</div>      |
| Connected Line Identification Restriction:          | <div>Disable</div>     |
| Connected Line Identification Restriction Override: | <div>Disable</div>     |
| Connected Name Identification Presentation:         | <div>Enable</div>      |
| Outgoing Notify:                                    | <div>Disable</div>     |
| Maintenance Service Call Termination:               | <div>Graceful</div>    |
| Date/Time IE Support:                               | <div>Disable</div>     |
| AOC-E Support:                                      | <div>No</div>          |
| AOC-D Support:                                      | <div>No</div>          |
| Call Rerouting Behavior:                            | <div>Unsupported</div> |
| Malicious Call Identification (MCID):               | <div>Disable</div>     |
| MSN:  | <div></div>            |

2. Click **Apply** and restart requested service when done.

6.5 POTS

6.5.1 Config

Figure 57: Config

System

Network

SIP Proxy

SBC

ISDN

POTS

SIP

Media

Telephony

Call Router

Management

Reboot

Status

Config

FXS Configuration

FXO Configuration

1. Select **POTS > Config**.

2. Set market specific data for Caller Id handling.

Figure 58: General Configuration

| General Configuration    |              |
|--------------------------|--------------|
| Caller ID Customisation: | EtsiDtmf ▼   |
| Caller ID Transmission:  | First Ring ▼ |
| Vocal Unit Information:  | All ▼        |

3. Click **Apply** when done and restart service.

## 6.5.2 FXS Configuration

Figure 59: FXS Configuration

| System | Network | SIP Proxy         | SBC               | ISDN | <b>POTS</b> | SIP | Media | Telephony | Call Router | Management | Reboot |
|--------|---------|-------------------|-------------------|------|-------------|-----|-------|-----------|-------------|------------|--------|
| Status | Config  | FXS Configuration | FXO Configuration |      |             |     |       |           |             |            |        |

1. Select **POTS > FXS Configuration**.
2. Set analog phone specific data according to market.

Figure 60: FXS Configuration

| FXS Configuration                  |                    |
|------------------------------------|--------------------|
| Line Supervision Mode:             | DropOnDisconnect ▼ |
| Disconnect Delay:                  | 0                  |
| Auto Cancel Timeout:               | 0                  |
| Inband Ringback:                   | Disable ▼          |
| Shutdown Behavior:                 | Disabled Tone ▼    |
| Power Drop On Disconnect Duration: | 1000               |
| Service Activation:                | Flash Hook ▼       |

Figure 61: Country Customisation

| Country Customisation                        |           |
|--|-----------|
| Override Country Configuration:              | Disable ▼ |
| Country Override Loop Current:               | 30        |
| Country Override Flash Hook Detection Range: | 100-1200  |

3. Click **Apply** when done and restart service.

## 6.5.3 FXO Configuration

Figure 62: FXO Configuration - Status



1. Select **POTS > FXO Configuration**.

This section is applicable If analogue trunks are used.

### **Note:**

Only manual incoming is supported where there is no DID functionality. Only DTMF register signalling is supported for outgoing calls.

2. Ensure that all FXO ports are up and idle.

### Status

Figure 63: Status

| Line Status |      |       |  |
|-------------|------|-------|--|
| ID          | Type | State |  |
| FXO1        | FXO  | Idle  |  |
| FXO2        | FXO  | Idle  |  |
| FXO3        | FXO  | Idle  |  |
| FXO4        | FXO  | Idle  |  |
| FXS1        | FXS  | Idle  |  |
| FXS2        | FXS  | Idle  |  |
| FXS3        | FXS  | Idle  |  |
| FXS4        | FXS  | Idle  |  |



Figure 64: FXO Line Status

| FXO Line Status |            |
|-----------------|------------|
| ID              | Link State |
| FX01            | Up         |
| FX02            | Up         |
| FX03            | Up         |
| FX04            | Up         |

1. Set specific FXO characteristics.

Figure 65: FXO Configuration



Select **POTS > FXO Configuration**.

In general, the default values are good but to speed up the answering, change the *Wait Before Answering Delay (ms)* from 8000 ms to 500 ms.

**FXO Dialing Configuration**

Figure 66: FXO Dialing Configuration

| FXO Dialing Configuration         |  |  |  |
|-----------------------------------|--|--|--|
| Pre Dial Delay (ms):              | <input type="text" value="0"/>           |  |  |
| Dial Tone Detection Mode:         | <input type="text" value="CountryTone"/> |  |  |
| Dial Tone Detection Timeout (ms): | <input type="text" value="3000"/>        |  |  |

| FXO Answering Configuration |                                  |                                     |                                     |
|-----------------------------|----------------------------------|-------------------------------------|-------------------------------------|
| ID                          | Wait Before Answering Delay (ms) | Answering On Caller Id Detection    | Wait For Callee To Answer           |
| FX01                        | <input type="text" value="500"/> | <input type="text" value="Enable"/> | <input type="text" value="Enable"/> |
| FX02                        | <input type="text" value="500"/> | <input type="text" value="Enable"/> | <input type="text" value="Enable"/> |
| FX03                        | <input type="text" value="500"/> | <input type="text" value="Enable"/> | <input type="text" value="Enable"/> |
| FX04                        | <input type="text" value="500"/> | <input type="text" value="Enable"/> | <input type="text" value="Enable"/> |

| FXO Incoming Call Behavior |   |
|----------------------------|---|
| ID                         | Not Allowed Behavior                              |
| FX01                       | <input type="text" value="Play Congestion Tone"/> |
| FX02                       | <input type="text" value="Play Congestion Tone"/> |
| FX03                       | <input type="text" value="Play Congestion Tone"/> |
| FX04                       | <input type="text" value="Play Congestion Tone"/> |

| FXO Line Verification                 |                                     |
|---------------------------------------|-------------------------------------|
| Link State Verification:              | <input type="text" value="Enable"/> |
| Link State Verification Timeout (ms): | <input type="text" value="1000"/>   |

| FXO Force End Of Call                        |   |
|--|---|
| Force End Of Call On Call Failure:           | <input type="text" value="Enable"/>       |
| Call Failure Timeout (sec):                  | <input type="text" value="30"/>           |
| Force End of Call On Silence Detection Mode: | <input type="text" value="Disable"/>      |
| Silence Detection Timeout (sec):             | <input type="text" value="300"/>          |
| Force End Of Call On Tone Detection Mode:    | <input type="text" value="Country Tone"/> |
| Tone Detection Custom Frequency:             | <input type="text" value="440"/>          |
| Tone Detection Custom Cadence:               | <input type="text" value=""/>             |
| Detection Custom Repetition:                 | <input type="text" value="3"/>            |

1. Set the answering number for each FXO ports. This number must be a valid extension number, group number or operator number in the central MX-ONE.

## Services

1. Select **Telephony** > **Services** to set a specific market.
- 2.

Figure 67: Services

| System    | Network      | SIP Proxy | SBC                | ISDN          | POTS | SIP | Media | Telephony | Call Router | Management | Reboot |
|-----------|--------------|-----------|--------------------|---------------|------|-----|-------|-----------|-------------|------------|--------|
| DTMF Maps | Call Forward | Services  | Tone Customisation | Music on Hold | Misc |     |       |           |             |            |        |

3. Set the **Automatic Call Target** field.

Select Endpoint: FX01

| Services Configuration             | Unit Defaults   | Endpoint Specific            |
|------------------------------------|-----------------|------------------------------|
| <b>General Configuration</b>       |                 |                              |
| Endpoint Specific:                 |                 | <span>No</span>              |
| Hook Flash Processing:             | Process Locally | <span>Process Locally</span> |
| <b>Automatic Call</b>              |                 |                              |
| Endpoint Specific:                 |                 | <span>Yes</span>             |
| Automatic Call Activation:         | Disable         | <span>Enable</span>          |
| Automatic Call Target:             |                 | <span>44412</span>           |
| <b>Direct IP Address Call</b>      |                 |                              |
| Direct IP Address Call Activation: | Disable         |                              |

4. Set the correct market (Country).

System Network SIP Proxy SBC ISDN POTS SIP Media Telephony Call Router Management Reboot

DTMF Maps Call Forward Services Tone Customisation Music on Hold Misc

| Country                                |
|--|
| Country Selection <span>Sweden1</span> |

6.6 SIP

6.6.1 Gateways

Figure 68: Gateways

System Network SIP Proxy SBC ISDN POTS SIP Media Telephony Call Router Management Reboot

Gateways Servers Registrations Authentication Transport Interop Misc

Select **SIP** > **Gateways**.



**Note:**

A SIP route must be defined in MX-ONE to handle traffic to and from the **trunks\_mx\_one** gateway.

| Gateway Status |                   |                |      |             |              |  |
|----------------|-------------------|----------------|------|-------------|--------------|--|
| Name           | Signaling Network | Media Networks | Port | Secure Port | State        |  |
| MX1_analog_ext | Uplink            | Uplink         | 5080 | 0           | Ready        |  |
| trunk_lines_gw | Loop              | Loop           | 5066 | 0           | Network down |  |
| trunks_mx-one  | Uplink            | Uplink         | 5070 | 0           | Ready        |  |

Following gateways and port numbers are pre-defined.

Figure 69: trunks\_mx-one

| Gateway Configuration |       |                   |                |                           |      |             |   |  |
|-----------------------|-------|-------------------|----------------|---------------------------|------|-------------|---|--|
| Name                  | Type  | Signaling Network | Media Networks | Media Networks Suggestion | Port | Secure Port |   |  |
| MX1_analog_ext        | Trunk | Uplink            |                | --- Suggestion ---        | 5080 | 0           | - |  |
| trunk_lines_gw        | Trunk | Loop              | Loop           | --- Suggestion ---        | 5066 | 0           | - |  |
| trunks_mx-one         | Trunk | Uplink            |                | --- Suggestion ---        | 5070 | 0           | - |  |
|                       |       |                   |                |                           |      |             | + |  |

## 6.6.2 Servers

Figure 70: Servers

|          |                |               |                |           |         |            |       |           |             |            |        |
|----------|----------------|---------------|----------------|-----------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network        | SIP Proxy     | SBC            | ISDN      | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | <b>Servers</b> | Registrations | Authentication | Transport | Interop | Misc       |       |           |             |            |        |

1. Select **SIP > Servers**.
2. Enter IP-address to MX-ONE in both the **Registrar Host** and **Proxy Host** fields.

Figure 71: Default Servers

| Default Servers        |               |  |
|------------------------|---------------|--|
| Registrar Host:        | 192.168.17.44 |  |
| Proxy Host:            | 192.168.17.44 |  |
| Messaging Server Host: |               |  |
| Outbound Proxy Host:   |               |  |

3. Enter IP-address of MX-ONE in the **Proxy Host** field.

4. Enter IP-address of the gateway in the **Outbound Proxy Host** field.

Figure 72: Proxy Servers

| Proxy Servers  |                  |                |                     |  |
|----------------|------------------|----------------|---------------------|--|
| Gateway        | Gateway Specific | Proxy Host     | Outbound Proxy Host |  |
| MX1_analog_ext | Yes ▾            | 192.168.17.44  | 192.168.17.81       |  |
| trunk_lines_gw | Yes ▾            | %sbc%          | %sbc%               |  |
| trunks_mx-one  | No ▾             | 192.168.0.10:0 | 0.0.0.0:0           |  |

5. Change the **Keep Alive Method** to **SIP OPTIONS** and enter **Keep Alive Destination** Gateways.

Figure 73: Keep Alive

| Keep Alive               |                         |
|--------------------------|-------------------------|
| Keep Alive Method:       | SIP OPTIONS ▾           |
| Keep Alive Interval (s): | 30                      |
| Keep Alive Destination:  | Alternate Destination ▾ |

Figure 74: Alternate Alive Destination Gateway

| Keep Alive Destination |                       |
|------------------------|-----------------------|
| Gateway                | Alternate Destination |
| MX1_analog_ext         | 192.168.17.81         |
| trunk_lines_gw         | 127.0.0.1             |
| trunks_mx-one          | 192.168.17.44         |

6. Click **Apply** when done and restart service.

## 6.6.3 Registrations

Figure 75: Registrations

|          |         |                      |                |           |         |            |       |           |             |            |        |
|----------|---------|----------------------|----------------|-----------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network | SIP Proxy            | SBC            | ISDN      | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | Servers | <b>Registrations</b> | Authentication | Transport | Interop | Misc       |       |           |             |            |        |

1. Select **SIP > Registrations**.

2. Enter the extension numbers for the analog extensions.

Figure 76: Endpoints Registration screen

| Endpoints Registration |                      |                      |  |  |   |  |
|------------------------|----------------------|----------------------|--|--|---|--|
| Endpoint               | User Name            | Friendly Name        | Register                                 | Messaging                                | Gateway Name                                    |  |
| FXO1                   | <input type="text"/> | <input type="text"/> | Disable <input type="button" value="v"/> | Disable <input type="button" value="v"/> | trunks_mx-one <input type="button" value="v"/>  |  |
| FXO2                   | <input type="text"/> | <input type="text"/> | Disable <input type="button" value="v"/> | Disable <input type="button" value="v"/> | trunks_mx-one <input type="button" value="v"/>  |  |
| FXO3                   | <input type="text"/> | <input type="text"/> | Disable <input type="button" value="v"/> | Disable <input type="button" value="v"/> | trunks_mx-one <input type="button" value="v"/>  |  |
| FXO4                   | <input type="text"/> | <input type="text"/> | Disable <input type="button" value="v"/> | Disable <input type="button" value="v"/> | trunks_mx-one <input type="button" value="v"/>  |  |
| FXS1                   | 11104                | <input type="text"/> | Enable <input type="button" value="v"/>  | Disable <input type="button" value="v"/> | MX1_analog_ext <input type="button" value="v"/> |  |
| FXS2                   | 11105                | <input type="text"/> | Enable <input type="button" value="v"/>  | Disable <input type="button" value="v"/> | MX1_analog_ext <input type="button" value="v"/> |  |
| FXS3                   | 11106                | <input type="text"/> | Enable <input type="button" value="v"/>  | Disable <input type="button" value="v"/> | MX1_analog_ext <input type="button" value="v"/> |  |
| FXS4                   | 11107                | <input type="text"/> | Enable <input type="button" value="v"/>  | Disable <input type="button" value="v"/> | MX1_analog_ext <input type="button" value="v"/> |  |
| PRI1                   | <input type="text"/> | <input type="text"/> | Disable <input type="button" value="v"/> | Disable <input type="button" value="v"/> | trunks_mx-one <input type="button" value="v"/>  |  |

3. Click **Apply** or **Apply and Refresh** when done.

## 6.6.4 Authentication

Figure 77: Authentication

|          |         |               |                |           |         |            |       |           |             |            |        |
|----------|---------|---------------|----------------|-----------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network | SIP Proxy     | SBC            | ISDN      | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | Servers | Registrations | Authentication | Transport | Interop | Misc       |       |           |             |            |        |

## 1. Select **SIP > Authentication**.

Figure 78: Authentication Screen

| Authentication  |          |          |         |                   |                |       |           |  |  |
|---|----------|----------|---------|-------------------|----------------|-------|-----------|--|--|
| Priority  | Criteria | Endpoint | Gateway | Username Criteria | Validate Realm | Realm | User Name |  |  |
| 1   | Endpoint | FXS1     |         |                   | Disable        |       | 11104     |  |  |
| 2   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 3   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 4   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 5   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 6   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 7   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 8   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 9   | Unit     |          |         |                   | Enable         |       |           |  |  |
| 10  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 11  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 12  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 13  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 14  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 15  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 16  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 17  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 18  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 19  | Unit     |          |         |                   | Enable         |       |           |  |  |
| 20  | Unit     |          |         |                   | Enable         |       |           |  |  |
| Number of rows to add: <input type="text" value="1"/> |          |          |         |                   |                |       |           |  |  |

2. If password is required click the Image icon for any item that you want to add.

3. Indicate for which **Endpoint** and **Criteria** the changes are to apply.

4. Enter the Auth Code in the **Password** field.

5. In the **Validate Realm** field, select **Disable**.

Figure 79: Validate Realm field

| Authentication |          |          |         |                   |                |       |           |          |  |
|----------------|----------|----------|---------|-------------------|----------------|-------|-----------|----------|--|
| Priority       | Criteria | Endpoint | Gateway | Username Criteria | Validate Realm | Realm | User Name | Password |  |
| 1              | Endpoint | FXS1     |         |                   | Disable        |       | 11104     | *****    |  |

6. Click **Apply** or **Apply and Refresh Registration** when done and restart service. The result after *Registration* and *Authentication* should be like as shown in the below screen.

Figure 80: Endpoints Registration Status

| Endpoints Registration Status |           |                |                 |            |
|-------------------------------|-----------|----------------|-----------------|------------|
| Endpoint                      | User Name | Gateway Name   | Registrar       | Status     |
| FXS1                          | 11104     | MX1_analog_ext | 192.168.17.44:0 | Registered |
| FXS2                          | 11105     | MX1_analog_ext | 192.168.17.44:0 | Registered |
| FXS3                          | 11106     | MX1_analog_ext | 192.168.17.44:0 | Registered |

## 6.6.5 Transport

Figure 81: Transport

|          |         |               |                |                  |         |            |       |           |             |            |        |
|----------|---------|---------------|----------------|------------------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network | SIP Proxy     | SBC            | ISDN             | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | Servers | Registrations | Authentication | <b>Transport</b> | Interop | Misc       |       |           |             |            |        |

1. Select **SIP > Transport**
2. Enable **UDP** or **TCP** dependent on configuration.

Figure 82: Protocol Configuration

| Protocol Configuration |            |          |            |           |            |  |
|------------------------|------------|----------|------------|-----------|------------|--|
| UDP                    | UDP QValue | TCP      | TCP QValue | TLS       | TLS QValue |  |
| Enable ▾               |            | Enable ▾ |            | Disable ▾ |            |  |

3. Click **Apply** when done and restart service.

## 6.6.6 Interop

Figure 83: Interop

|          |         |               |                |           |                |            |       |           |             |            |        |
|----------|---------|---------------|----------------|-----------|----------------|------------|-------|-----------|-------------|------------|--------|
| System   | Network | SIP Proxy     | SBC            | ISDN      | POTS           | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | Servers | Registrations | Authentication | Transport | <b>Interop</b> | Misc       |       |           |             |            |        |



- 1. Select **SIP > Interop**.
- 2. Select **trunk** in the **SIP URI User Parameter Value** field.
- 3. This is used in the 'match' parameter for the SIP route in MX-ONE.

Figure 84: SIP URI User Parameter Value field

| SIP Interop                             |                                      |
|---|--------------------------------------|
| Secure Header:                          | <div>Disable</div>                   |
| Default Username Value:                 | <div>Anonymous</div>                 |
| OPTIONS Method Support:                 | <div>None</div>                      |
| Ignore OPTIONS on no Usuable Endpoints: | <div>Disable</div>                   |
| SIP URI User Parameter Value:           | <div>trunk</div>                     |
| Behavior on Machine Detection:          | <div>Re-INVITE on Fax T38 Only</div> |
| Registration Contact Matching:          | <div>Strict</div>                    |
| Transmission Timeout:                   | <div>32</div>                        |

- 4. Click **Apply** or when done and restart service.

6.6.7 Misc

Figure 85: Misc

System

Network

SIP Proxy

SBC

ISDN

POTS

SIP

Media

Telephony

Call Router

Management

Reboot

Gateways

Servers

Registrations

Authentication

Transport

Interop

Misc

- 1. Select **SIP > Misc**.

2. Enter the IP-address of MX-ONE in the **SIP Domain Override** field for **trunk\_lines\_gw**.

Figure 86: Gateway Configuration field

| Gateway Configuration |  |  |
|-----------------------|--|--|
| Gateway Name          | SIP Domain Override                        |  |
| MX1_analog_ext        | <input type="text"/>                       |  |
| trunk_lines_gw        | <input type="text" value="192.168.17.44"/> |  |
| trunks_mx-one         | <input type="text"/>                       |  |

3. Click **Apply** when done and restart service.

## 6.7 Media

### 6.7.1 Codecs













Figure 87: Codecs

|        |          |                |      |      |      |     |       |           |             |            |        |
|--------|----------|----------------|------|------|------|-----|-------|-----------|-------------|------------|--------|
| System | Network  | SIP Proxy      | SBC  | ISDN | POTS | SIP | Media | Telephony | Call Router | Management | Reboot |
| Codecs | Security | RTP Statistics | Misc |      |      |     |       |           |             |            |        |

1. Select **Media > Codecs**.

2. Change **Codecs** according to preference.

Figure 88: Codecs

| Codec         | Voice                                    | Data                                     | Advanced   |  |
|---------------|--|--|--|--|
| G.711 a-Law   | <input type="button" value="Enable"/> ▾  | <input type="button" value="Enable"/> ▾  |   |  |
| G.711 u-Law   | <input type="button" value="Disable"/> ▾ | <input type="button" value="Enable"/> ▾  |   |  |
| G.723         | <input type="button" value="Disable"/> ▾ |  |   |  |
| G.726 16Kbps  | <input type="button" value="Disable"/> ▾ |  |   |  |
| G.726 24Kbps  | <input type="button" value="Disable"/> ▾ |  |   |  |
| G.726 32Kbps  | <input type="button" value="Disable"/> ▾ | <input type="button" value="Disable"/> ▾ |   |  |
| G.726 40Kbps  | <input type="button" value="Disable"/> ▾ | <input type="button" value="Disable"/> ▾ |   |  |
| G.729         | <input type="button" value="Disable"/> ▾ |  |   |  |
| T.38          |  | <input type="button" value="Enable"/> ▾  |   |  |
| Clear Mode    | <input type="button" value="Disable"/> ▾ | <input type="button" value="Disable"/> ▾ |   |  |
| Clear Channel | <input type="button" value="Disable"/> ▾ | <input type="button" value="Disable"/> ▾ |   |  |
| X CCD         | <input type="button" value="Disable"/> ▾ | <input type="button" value="Disable"/> ▾ |  |  |

3. Click **Apply** when done and restart service.

## 6.8 Call Router

### 6.8.1 Route Config

Figure 89: Route Config



1. Select **Call Router > Route Config**.

- Click for index icon (1). This is used if the received B-number contains a full number, that is, more digits than the pure DID numbers.

Figure 90: Routes

| Routes |   |                   |               |                 |                      |             |
|--------|---|-------------------|---------------|-----------------|----------------------|-------------|
| Index  | Sources   | Criteria Property | Criteria Rule | Transformations | Signaling Properties | Destination |
| 1      | isdn-PRI1, isdn-PRI2, isdn-PRI3, isdn-PRI4, isdn-BRI1, isdn-BRI2, isdn-BRI3, isdn-BRI4, r2-PRI1, r2-PRI2, r2-PRI3, r2-PRI4, e&m-PRI1, e&m-PRI2, e&m-PRI3, e&m-PRI4, fxo-FXO1, fxo-FXO2, fxo-FXO3, fxo-FXO4, fxo-FXO5, fxo-FXO6, fxo-FXO7, fxo-FXO8, fxo-FXO9, fxo-FXO10, fxo-FXO11, fxo-FXO12, fxo-FXO13, fxo-FXO14, fxo-FXO15, fxo-FXO16, fxo-FXO17, fxo-FXO18, fxo-FXO19, fxo-FXO20, fxo-FXO21, fxo-FXO22, fxo-FXO23, fxo-FXO24 | None              |               | DID_Extension   | local_host           | hunt-sip    |
| 2      | sip-trunks_mx-one, sip-trunk_lines_gw   | None              |               |                 | local_host           | hunt-Hunt1  |

- In the **Transformations** field, add a name for a transformation rule.

Figure 91: Configure Route 1

| Configure Route 1    |  |                    |
|----------------------|--|--------------------|
|                      | Value  | Suggestion         |
| Sources              | isdn-PRI1, isdn-PRI2, isdn-PRI3, isdn-PRI4, isdn-BRI1, isdn-BRI2, isdn-BRI3, isdn-BRI4, r2-PRI1, r2-PRI2, r2-PRI3, r2-PRI4, e&m-PRI1, e&m-PRI2, e&m-PRI3, e&m-PRI4, fxo-FXO1, fxo-FXO2, fxo- | --- Suggestion --- |
| Criteria Property    | None   |                    |
| Criteria Rule        |  | --- Suggestion --- |
| Transformations      | DID_Extension  | --- Suggestion --- |
| Signaling Properties | local_host   | --- Suggestion --- |
| Destination          | hunt-sip   | --- Suggestion --- |
| Config Status        |  |                    |

- Click **Save**.
- Click Plus icon in the first Call Property Transformation and enter the same name as above.
- Use **Called E164** for both **Criteria Based On** and **Transformation Applies To** fields.

Figure 92: Configure Transformation 1

| Configure Transformation 1 |               |
|----------------------------|---------------|
|                            | Value         |
| Name                       | DID_Extension |
| Criteria Based On          | Called E164   |
| Transformation Applies To  | Called E164   |
| Config Status              |               |






- 7. Click **Save** or **Save and Insert Rule**.
- 8. Click Plus icon in the second Call Property Transformation, and enter the same name as above.
- 9. The 'Criteria Rule' in this case is 443 (111..\$) and the transformation rule is ('\1). This means that if a B-number is received containing 44311104, then the 3 first digits (443) are removed before the call is sent to MX-ONE for further processing. (111..\$) means that the number can only be 5 digits starting with 111.






Figure 93: Configure Transformation Rule 1 screen

| Configure Transformation Rule 1 |  |   |
|---------------------------------|--|---|
|                                 | Value                                      | Suggestion                                      |
| Type                            | Called E164 to Called E164                 |   |
| Name                            | <input type="text" value="DID_Extension"/> | <input type="text" value="--- Suggestion ---"/> |
| Criteria Rule                   | <input type="text" value="443(111..\$)"/>  | <input type="text" value="--- Suggestion ---"/> |
| Transformation Rule             | <input type="text" value="\1"/>            | <input type="text" value="--- Suggestion ---"/> |
| Next Transformation             | <input type="text"/>                       | <input type="text" value="--- Suggestion ---"/> |
| Config Status                   |  |   |

- 10. Click **Save** or **Save and Insert Rule**. Now, the 'Call Property Transformations' looks like this as shown below.

Figure 94: Transformations

| Transformations |               |                   |                           |   |
|-----------------|---------------|-------------------|---------------------------|---|
| Index           | Name          | Criteria Based On | Transformation Applies To |   |
| 1               | DID_Extension | Called E164       | Called E164               |     |
|                 |               |                   |                           |    |

| Transformation Rules |               |               |                     |   |
|----------------------|---------------|---------------|---------------------|---|
| Index                | Name          | Criteria Rule | Transformation Rule | Next Transformation   |
| 1                    | DID_Extension | 443(111..\$)  | \1                  |   |
|                      |               |               |                     |     |
|                      |               |               |                     |    |

11. Click Plus icon for the Signaling Properties, and enter the data as shown below.







| Configure Signaling Property 1      |   |   |
|-------------------------------------|---|---|
|                                     | Value                                   | Suggestion  |
| Name                                | <input type="text" value="local_host"/> |   |
| Early Connect                       | <input type="button" value="Disable"/>  |   |
| Early Disconnect                    | <input type="button" value="Enable"/>   |   |
| Destination Host                    | <input type="text"/>                    | <input type="button" value="--- Suggestion ---"/> |
| Allow 180 with SDP                  | <input type="button" value="Enable"/>   |   |
| Allow 183 without SDP               | <input type="button" value="Enable"/>   |   |
| Privacy                             | <input type="button" value="Disable"/>  |   |
| SIP Header Translation Overrides    | <input type="text" value="local_host"/> | <input type="button" value="--- Suggestion ---"/> |
| Call Property Translation Overrides | <input type="text"/>                    | <input type="button" value="--- Suggestion ---"/> |
| Config Status                       |   |   |

12. Click Plus icon for the SIP Header Translation Overrides, and enter the data as shown below.







| Configure SIP Header Translation Override 1 |  |
|---|--|
| Name  | <input type="text" value="local_host"/>                |
| SIP Header                                  | <input type="button" value="From Header (Host Part)"/> |
| Based On                                    | <input type="button" value="Fixed Value"/>             |
| Fixed Value                                 | <input type="text" value="&lt;local_ip_port&gt;"/>     |
| Config Status                               |  |

13. Click **Save**. Now the Signaling Properties looks like this.


Signaling Properties

| Index | Name       | Early Connect | Early Disconnect | Destination Host | Allow 180 with SDP | Allow 183 without SDP | Privacy | SIP Header Translation Overrides | Call Property Translation Overrides |   |
|-------|------------|---------------|------------------|------------------|--------------------|-----------------------|---------|----------------------------------|-------------------------------------|---|
| 1     | local_host | Disable       | Enable           |                  | Enable             | Enable                | Disable | local_host                       |                                     |      |
|       |            |               |                  |                  |                    |                       |         |                                  |                                     |    |

SIP Header Translation Overrides

| Index | Name       | SIP Header              | Based On    | Fixed Value     |   |
|-------|------------|-------------------------|-------------|-----------------|---|
| 1     | local_host | From Header (Host Part) | Fixed Value | <local_ip_port> |      |
|       |            |                         |             |                 |    |

Call Property Translation Overrides

| Index | Name | Call Property | Based On | Fixed Value |   |
|-------|------|---------------|----------|-------------|---|
|       |      |               |          |             |  |

14. If the yellow indication on top of the page is on, click **Save**.

## 6.9 Management

### 6.9.1 Backup/Restore

- 1. Click **Activate unsecure script transfers through web browser**

Figure 95: Image Configuration screen

| Image Configuration        |   |
|----------------------------|---|
| <b>Transfer Parameters</b> |   |
| File Name:                 | <input type="text" value="20180503_final.xml"/> <input type="text" value="--- Suggestion ---"/> |
| Transfer Protocol:         | <input type="text" value="File"/>   |
| Host Name:                 | <input type="text" value="0.0.0.0:0"/>  |
| Location:                  | <input type="text"/>  |
| User Name:                 | <input type="text"/>  |
| Password:                  | <input type="text"/>  |
| <b>Backup Parameters</b>   |   |
| Content:                   | <input type="text" value="Config And Certificates"/>  |
| <b>Privacy Parameters</b>  |   |
| Privacy Algorithm:         | <input type="text" value="None"/>   |
| Privacy Key:               | <input type="text"/>  |

- 2. Click **Apply and Backup Now.**

### 6.9.2 File

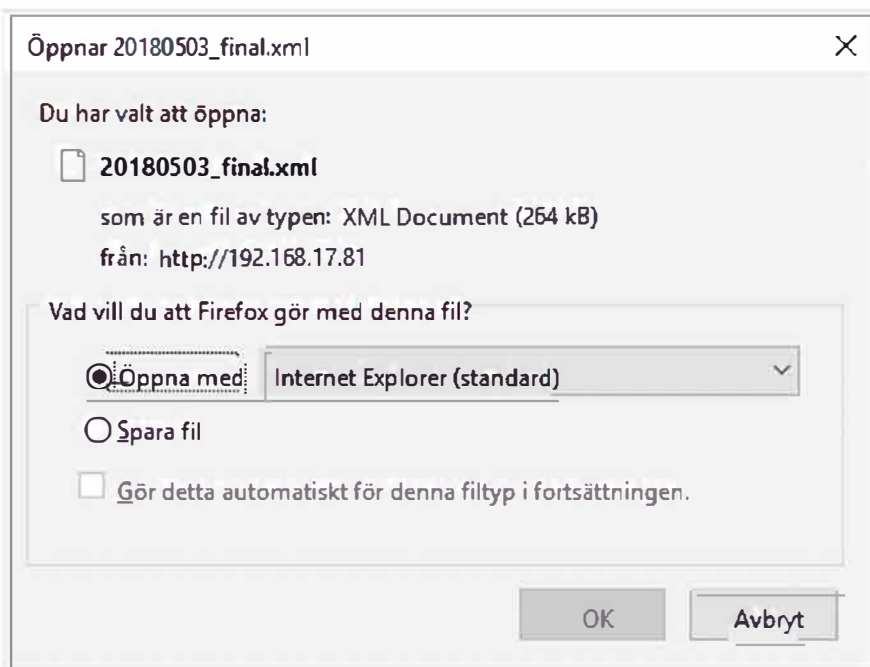


Figure 96: Internal files screen

| Internal files  |  |        |   |
|---|--|--------|---|
| Name  | Description  | Size   |   |
| <a href="#">conf/20180503_final.xml</a>   | Automatically generated on 03/05/2018 15:50:11.                                  | 264 KB | — |
| <a href="#">conf/FXO_Country_Defaults.cfg</a>                                     | FXO Country Defaults   | 1 KB   | — |
| <a href="#">conf/FXO_North-America_3km.cfg</a>                                    | FXO North-America 3km  | 1 KB   | — |
| <a href="#">conf/PRI_China-DSS1.cfg</a>   | China DSS1   | 3 KB   | — |
| <a href="#">conf/PRI_Default.cfg</a>  | PRI default configuration  | 3 KB   | — |
| <a href="#">conf/PRI_NorthAmerica-NI1.cfg</a>                                     | North America NI1  | 3 KB   | — |
| <a href="#">conf/PRI_NorthAmerica-NI2.cfg</a>                                     | North America NI2  | 3 KB   | — |
| <a href="#">conf/Survivability.cfg</a>  | Configures the unit to use the SipProxy service for basic use cases.             | 1 KB   | — |
| <a href="#">sbc/rulesets/200_OK_to_SIP_OPTIONS.crs</a>                            | Answer 200 OK to inbound SIP OPTIONS message                                     | 1 KB   | — |
| <a href="#">sbc/rulesets/MX-One_build_RURI_survivability.crs</a>                  | Builds the RURI when in survivability mode                                       | 6 KB   | — |
| <a href="#">sbc/rulesets/MX-One_core_side.crs</a>                                 | Generic ruleset facing MX-One core   | 5 KB   | — |
| <a href="#">sbc/rulesets/MX-One_local_reg_users_with_survivability.crs</a>        | local registered users ruleset for MX-One with basic local calling survivability | 11 KB  | — |
| <a href="#">sbc/rulesets/MX-One_local_users_failover_to_trunk.rrs</a>             | Failover route from local_users_ca to trunk_lines_ca                             | 6 KB   | — |
| <a href="#">sbc/rulesets/MX-One_outbound_survivability_prefix.crs</a>             | ANumber and BNumber prefix   | 2 KB   | — |
| <a href="#">sbc/rulesets/MX-One_remove_prefix.crs</a>                             | Removes prefix from RURI for outbound calls                                      | 1 KB   | — |
| <a href="#">sbc/rulesets/MX-One_routes_with_basic_local_survivability_TCP.rrs</a> | MX-One - Basic Routes with Survivability   | 23 KB  | — |
| <a href="#">sbc/rulesets/MX-One_routes_with_basic_local_survivability_UDP.rrs</a> | MX-One - Basic Routes with Survivability   | 21 KB  | — |
| <a href="#">sbc/rulesets/MX-One_to_trunk_lines.rrs</a>                            | Route from MX-One servers to trunk lines   | 5 KB   | — |
| <a href="#">sbc/rulesets/MX-One_trunk_lines_to_local_users.rrs</a>                | Route from trunk_lines_ca to local_users_ca                                      | 3 KB   | — |
| <a href="#">sbc/rulesets/MX-One_trunk_lines_to_reception_survivability.crs</a>    | Forwards trunk calls to reception number in survivability                        | 2 KB   | — |
| <a href="#">sbc/rulesets/rewrite_RURI_host.crs</a>                                | Customize RURI host  | 1 KB   | — |
| <b>21 file(s)</b>   | Total: 366 KB / Available: 6 GB  |        |   |

Find the previously made backup image.

Figure 97: Backup image



# Setting up GX-GATEWAY with SIP Trunks

## 7

This chapter contains the following sections:

- [Logon](#)
- [Network Settings](#)
- [Session Board Controller \(SBC\)](#)
- [SIP](#)
- [Media](#)
- [Call Router](#)
- [Management](#)

This section describes how to setup the 'Göteborg' branch node using SIP trunks towards a SIP provider.

### Note:

The setup for the gateway and SBC part for an EX-controller is identical.

## 7.1 Logon

This section describes how to setup BO#2.

1. Factory Reset the EX Controller and plug in the network cable to the ETH1 port on EX Controller (If DHCP is running in the network).

### Note:

If DHCP is not running into the network then, plug in the network cable to the ETH2 port on EX Controller and use the default IP address of 192.168.0.10 to open the EX Controller Interface.

Figure 98: Login page

User Name:

Password:

Login

- User name/password: public /
  - User name/password: admin/administrator
- Plug in the analog phone in the FXS port 1 of the EX Controller and dial `*#*0` to know the IP address of the EX Controller assigned by using DHCP server.
- Log into the EX Controller by using the above-mentioned IP address and navigate as described below to configure.

## 7.2 Network Settings

### 7.2.1 Host

Figure 99: Host Settings - 1

System   **Network**   SIP Proxy   SBC   ISDN   POTS   SIP   Media   Telephony   Call Router   Management   Reboot

Status   **Host**   Interfaces   VLAN   QoS   Local Firewall   IP Routing   Network Firewall   NAT   DHCP Server

- Select **Network > Host**.

Figure 100: Host Settings - 2

| Automatic Configuration Interface     |                     |
|---------------------------------------|---------------------|
| Automatic IPv4 config source network: | <div>Uplink</div>   |
| Automatic IPv6 config source network: | <div>UplinkV6</div> |

2. Change to **Static IP-address** and enter default Gateway (GW).

Figure 101: Changing Static IP Address

| Default Gateway Configuration |                |
|-------------------------------|----------------|
| <b>IPv4</b>                   |                |
| Configuration Source:         | Static         |
| Default Gateway:              | 192.168.17.1   |
| <b>IPv6</b>                   |                |
| Configuration Source:         | Automatic IPv6 |
| Default Gateway:              |                |

3. Change to static DNS server and enter IP-address or FQDN to DNS server.

Figure 102: Changing Static DNS Server

| DNS Configuration     |             |
|-----------------------|-------------|
| Configuration Source: | Static      |
| Primary DNS:          | 10.105.64.3 |
| Secondary DNS:        |             |
| Third DNS:            |             |
| Fourth DNS:           |             |

4. Change to static SNTP server, enter time server data as required.

Figure 103: Changing to Static SNTP Server

| SNTP Configuration               |              |
|----------------------------------|--------------|
| Configuration Source:            | Static       |
| <b>Static Servers:</b>           |              |
| Primary SNTP:                    | pool.ntp.org |
| Secondary SNTP:                  |              |
| Third SNTP:                      |              |
| Fourth SNTP:                     |              |
| <b>Synchronization:</b>          |              |
| Synchronization Period:          | 1440         |
| Synchronization Period On Error: | 60           |

## 5. Set the **Time Zone**.

Valid options are:

- Pacific Time (Canada and US): PST8PDT7,M3.2.0/02:00:00,M11.1.0/02:00:00
- Mountain Time (Canada and US): MST7MDT6,M3.2.0/02:00:00,M11.1.0/02:00:00
- Central Time (Canada and US): CST6CDT5,M3.2.0/02:00:00,M11.1.0/02:00:00
- Eastern Time (Canada and US): EST5EDT4,M3.2.0/02:00:00,M11.1.0/02:00:00
- Atlantic Time (Canada): AST4ADT3,M3.2.0/02:00:00,M11.1.0/02:00:00
- GMT Standard Time: GMT0DMT-1,M3.5.0/01:00:00,M10.5.0/02:00:00
- W. Europe Standard Time: WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00
- China Standard Time: CST-8
- Tokyo Standard Time: TST-9
- Central Australia Standard Time:  
CAUST-9:30DCAUST-10:30,M10.5.0/02:00:00,M3.5.0/02:00:00
- Australia Eastern Standard Time:  
AUEST-10AUDST-11,M10.5.0/02:00:00,M3.5.0/02:00:00
- UTC (Coordinated Universal Time): UTC0

Figure 104: Setting Static Time Zone

| Time Configuration |  |
|--------------------|--|
| Static Time Zone:  | WEST-1DWEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00 |

6. Leave all other items as it is, and click **Apply** when finished.

## 7.2.2 Interfaces

Figure 105: Interface

|        |         |            |      |      |                |            |                  |           |             |            |        |
|--------|---------|------------|------|------|----------------|------------|------------------|-----------|-------------|------------|--------|
| System | Network | SIP Proxy  | SBC  | ISDN | POTS           | SIP        | Media            | Telephony | Call Router | Management | Reboot |
| Status | Host    | Interfaces | VLAN | QoS  | Local Firewall | IP Routing | Network Firewall | NAT       | DHCP Server |            |        |

1. Go to **Network > Interface**.

- 2. Change **Uplink** to **IpStatic (IPv4 Static)** and enter the static IP-address and Static Default Gateway.

Figure 106: Changing Uplink to IpStatic

| Network Interface Configuration |        |                         |                   |                       |            |   |  |
|---------------------------------|--------|-------------------------|-------------------|-----------------------|------------|---|--|
| Name                            | Link   | Type                    | Static IP Address | Static Default Router | Activation |   |  |
| Lan1                            | eth2-5 | IpStatic (IPv4 Static)  | 192.168.0.10/24   |                       | Enable     | - |  |
| Uplink                          | eth1   | IpStatic (IPv4 Static)  | 192.168.17.81/24  | 192.168.17.1          | Enable     | - |  |
| UplinkV6                        | eth1   | Ip6Static (IPv6 Static) |                   |                       | Disable    | - |  |
|                                 |        |                         |                   |                       |            | + |  |

- 3. Leave all other items as it is and click **Apply** when ready.

7.2.3 Local Firewalls

Figure 107: Local firewalls

|        |         |            |      |      |                |            |                  |           |             |            |        |
|--------|---------|------------|------|------|----------------|------------|------------------|-----------|-------------|------------|--------|
| System | Network | SIP Proxy  | SBC  | ISDN | POTS           | SIP        | Media            | Telephony | Call Router | Management | Reboot |
| Status | Host    | Interfaces | VLAN | QoS  | Local Firewall | IP Routing | Network Firewall | NAT       | DHCP Server |            |        |

- 1. Go to **Network > Local Firewall**.
- 2. If local firewall security is needed change default policy to **Drop**.

Figure 108: Changing default policy

Configuration Modified: No

| Local Firewall Configuration  |      |
|-------------------------------|------|
| Default Policy:               | Drop |
| Blacklist Timeout:            | 60   |
| Blacklist Rate Limit Timeout: | 60   |

3. Enter the networks for which traffic can enter from.

Figure 109: Enter network traffic

| Local Firewall Rules |            |                 |             |                     |                  |          |                          |        |                  |                        |   |   |
|----------------------|------------|-----------------|-------------|---------------------|------------------|----------|--------------------------|--------|------------------|------------------------|---|---|
| #                    | Activation | Source Address  | Source Port | Destination Address | Destination Port | Protocol | Blacklist enable         | Action | Rate Limit Value | Rate Limit Time Period |   |   |
| 1                    | Enable     | 192.168.17.0/24 |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ↑ | ↓ |
| 2                    | Enable     | 172.17.17.0/24  |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ↑ | ↓ |
| 3                    | Enable     | 10.105.0.0/16   |             | Uplink              |                  | All      | <input type="checkbox"/> | Accept | 10               | 60                     | ↑ | ↓ |
|                      |            |                 |             |                     |                  |          |                          |        |                  |                        | + |   |

4. Click **Save** or **Save and Apply** when ready.

## 7.3 Session Board Controller (SBC)

Rulesets define one or several rules used to filter, manipulate or route inbound or outbound requests.

There are 2 types of Rulesets:

- **Call Agent Rulesets:** describe how inbound or outbound requests are handled by a specific Call Agent. These can also implement services or collect data.
- **Routing Rulesets:** used to globally route outbound requests, that is, these apply to all Call Agents.

When a request arrives at a Call Agent from a peer, the inbound rules of the Rulesets associated with the Call Agent are executed. Then, Routing Rulesets are executed until a Call Agent is selected for the destination. Lastly, the outbound rules of the Rulesets associated with the destination Call Agent are executed before sending the request to the peer. Inbound rules of the Ruleset are executed in ascending Ruleset priority order. Outbound rules are executed in descending Ruleset priority order.



## 7.3.1 Configuration

1. Go to **SBC > Configuration**. The following Call Agents are present.

Figure 110: Configuration






















Figure 111: Configuration Modified



Following Call Agents are present.

Figure 112: Call Agent Configuration

| Call Agent Configuration |                                     |                |                     |                 |                |              |   |  |
|--------------------------|-------------------------------------|----------------|---------------------|-----------------|----------------|--------------|---|--|
| Name                     | Enable                              | Gateway        | Signaling Interface | Media Interface | Peer Host      | Peer Network |   |  |
| local_users_ca           | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        |                | 0.0.0.0/0    |   |  |
| trunk_lines_ca           | <input checked="" type="checkbox"/> | trunk_lines_gw |                     | loop_m          |                |              |   |  |
| remote_users_ca          | <input type="checkbox"/>            |                | uplink_s            | uplink_m        |                |              |   |  |
| MX-One_LIM1              | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        | 192.168.17.44  |              |   |  |
| MX-One_LIM2              | <input type="checkbox"/>            |                | uplink_s            | uplink_m        | lim2.mitel.com |              |   |  |
| MX-One-trunk             | <input checked="" type="checkbox"/> |                | trunk_s             | uplink_m        | lim1.mitel.com |              |   |  |
| MX-One-trunk2            | <input type="checkbox"/>            |                | trunk_s             | uplink_m        | lim2.mitel.com |              |   |  |
| VoIP-trunk1              | <input type="checkbox"/>            |                | uplink_s            | uplink_m        | voip.provider1 |              |   |  |
| VoIP-trunk2              | <input checked="" type="checkbox"/> |                | uplink_s            | uplink_m        | voip.provider2 |              |   |  |
|                          |                                     |                |                     |                 |                |              |    |  |

## 7.3.2 Routing Rulesets

**Routing Rulesets:** are used to globally route outbound requests, that are applied to all Call Agents.

Routing Rulesets are executed until a Call Agent is selected for the destination.

Figure 113: Routing Rulesets

| Routing Rulesets |  |  |       |
|------------------|--|--|-------|
| Priority         | Name   | Parameters   |       |
| 1                | MX-One_local_users_failover_to_trunk             | A_PRFX=013443 TRUNK_CA=trunk_lines_ca                | ^ v - |
| 2                | MX-One_trunk_lines_to_local_users                | TRUNK_CA=trunk_lines_ca                              | ^ v - |
| 3                | MX-One_routes_with_basic_local_survivability_TCP |  | ^ v - |
| 4                | MX-One_routes_with_basic_local_survivability_UDP |  | ^ v - |
| 5                | SIP_trunk_to_MX-One                              | TRUNK_CA=trunk_lines_ca MX-ONE-TRUNK_CA=MX-One-trunk | ^ v - |
| 6                | MX-One_to_trunk_lines                            | MX-ONE-TRUNK_CA=MX-One-trunk TRUNK_CA=trunk_lines_c  | ^ v - |
|                  |  |  | +     |

- **Ruleset MX-One\_local\_users\_failover\_to\_trunk**

A\_PRFX=031325

This is the prefix for the local numbers used on outgoing calls to the PSTN (in this example, you will receive a number block 031325xxxxx from the PSTN provider and add the prefix on outgoing calls, so that the calling party number sent to the PSTN is correct).

TRUNK\_CA=VoIP-trunk2

This is the call agent from which the call is coming from.

- **Ruleset MX-One\_trunk\_lines\_to\_local\_users**

TRUNK\_CA=VoIP-trunk2

This is the call agent from which the call is coming.

- **Ruleset SIP\_trunk to\_MX-One**

TRUNK\_CA=VoIP-trunk2

This is the call agent from which the call is coming.

MX-ONE-TRUNK=MX-One-trunk\_CA

This is the call agent to which the call will be routed to.

**Ruleset MX-One\_to\_trunk\_lines**

TRUNK\_CA=VoIP-trunk2

This is the call agent from which the call is coming.

TRUNK2\_CA=VoIP-trunk2 (Not used at the moment, this is a placeholder for future use).

This is the call agent from which the call is coming.

MX-ONE-TRUNK\_CA=MX-One-trunk\_CA

This is the call agent to which the call will be routed to.

- 1. Click **Save** and **Apply** when done.
- 2. Configure each call agent (ca).
- 3. Click **Modify** to enter specific data for each call agent.

7.3.3 local\_users\_ca

Figure 114: Configure Call Agent screen

| Configure Call Agent                          |   |
|---|---|
|   | Value                                       |
| <b>Call Agent Parameters</b>                  |   |
| Name  | <input type="text" value="local_users_ca"/> |
| Enable  | <input checked="" type="checkbox"/>         |
| Gateway                                       | <input type="text" value=""/><br>▼          |
| Signaling Interface                           | <input type="text" value="uplink_s"/><br>▼  |
| Media Interface                               | <input type="text" value="uplink_m"/><br>▼  |
| Peer Host                                     | <input type="text"/>                        |
| Peer Network                                  | <input type="text" value="0.0.0.0/0"/>      |
| Force Transport                               | <input type="text" value="None"/><br>▼      |
| <b>Monitoring and Blacklisting Parameters</b> |   |
| Keep-Alive Interval                           | <input type="text" value="0"/>              |
| Blacklisting Duration                         | <input type="text" value="0"/>              |
| Blacklisting Delay                            | <input type="text" value="0"/>              |
| Blacklisting Error Codes                      | <input type="text"/>                        |

Figure 115: Call Agent Rulesets

| Call Agent Rulesets |   |   |       |
|---------------------|---|---|-------|
| Priority            | Name                                      | Parameters  |       |
| 1                   | MX-One_build_RURI_survivability           | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9[0-9] DOMAIN=192.16 | ⬆ ⬇ ⬇ |
| 2                   | MX-One_Appearance_Prefix                  | APP_PRFX=SCA-   | ⬆ ⬇ ⬇ |
| 3                   | MX-One_Appearance_Prefix                  | APP_PRFX=EDN-   | ⬆ ⬇ ⬇ |
| 4                   | MX-One_Remove_Outbound_Appearance         | PATTERN=111[0-9[0-9]                                  | ⬆ ⬇ ⬇ |
| 5                   | MX-One_outbound_A_Number_prefix           | PATTERN=111[0-9[0-9] A_PRFX=013443 PSTN_PREFIX=00     | ⬆ ⬇ ⬇ |
| 6                   | MX-One_outbound_B_Number_prefix           | BNUMBER=67[0-9][0-9] B_PRFX=08568                     | ⬆ ⬇ ⬇ |
| 7                   | MX-One_outbound_B_Number_prefix           | BNUMBER=221[0-9][0-9] B_PRFX=031325                   | ⬆ ⬇ ⬇ |
| 8                   | MX-One_outbound_B_Number_prefix           | BNUMBER=321[0-9][0-9] B_PRFX=040598                   | ⬆ ⬇ ⬇ |
| 9                   | MX-One_outbound_B_Number_prefix           | BNUMBER=421[0-9][0-9] B_PRFX=036618                   | ⬆ ⬇ ⬇ |
| 10                  | MX-One_outbound_B_Number_Override         | BNUMBER=^09 BOVERRIDE=0856867000                      | ⬆ ⬇ ⬇ |
| 11                  | MX-One_local_reg_users_with_survivability | EXT_DIGIT_LENGTH=5                                    | ⬆ ⬇ ⬇ |
|                     |   |   | +     |

- **Ruleset MX-One\_build\_RURI survivability (Active only in Survival Mode)**

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 22100 - 22199.

PATTERN=221[0-9][0-9]

The pattern for the internal range of numbers would be 22100 - 22199.

Calls to this number range stay always local (would not be sent to the PSTN in survival mode).

DOMAIN=192.168.17.44

The IP-address of the MX-ONE in this case 192.168.17.44.

- **Ruleset: MX\_One\_Appearance\_Prefix (Active only in Survival Mode)**

APP\_PREFIX=SCA- and APP\_PREFIX=EDN-

This is the prefix for the usernames connected with shared appearance and extra directory number (EDN). In this example, you have two user names: SCA- and EDN-

- **Ruleset: MX-One\_Remove\_Outbound\_Appearance (Active only in Survival Mode)**

PATTERN=221[0-9][0-9]

This defines the local numbers, in this example the internal range would be 22100 - 22199.

A\_PRFX=031325

This is the prefix for the local numbers used on outgoing calls to the PSTN. In this example, you can add a number block 031325 in front of the number specified in PATTERN-parameter to form a valid calling party number to be sent to the PSTN.

PSTN\_PREFIX=00

This parameter specifies the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will be truncated.

- **Ruleset: MX-One\_outbound\_B\_Number\_prefix (Active only in Survival Mode)**

This ruleset applies to calls to numbers defined in BNUMBER and will add B\_PRFX to the called party number.

This ruleset must be repeated for every approved destination (that is, calling the HQ and other branch offices).

#### **Calling HQ:**

BNUMBER=67[0-9][0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 67000 - 67999.

B\_PRFX=08568

This is the prefix for the Called Party Number. In this case, it will be built like: National Prefix (08) + Main part of the HQ's local number: (568).

#### **Calling BO#1:**

BNUMBER=111[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers would be 11100 - 11199.

B\_PRFX=013443

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (013) + Main part of the HQ's local number: (443).

#### **Calling BO#3:**

BNUMBER=321[0-9][0-9] Applies to calls to the specific range of extensions. The pattern for the internal range of numbers, in this example the internal range would be 32100 - 32199.

B\_PRFX=040598

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (040) + Main part of the HQ's local number: (598).

#### **Calling BO#4:**

BNUMBER=421[0-9][0-9]

Applies to calls to the specific range of extensions. The pattern for the internal range of numbers, in this example the internal range would be 42100 - 42199.

B\_PRFX=036618

This is the prefix for the Called Party Number. In this case it will be built like: National Prefix (036) + Main part of the HQ's local number: (618).

- **Ruleset: MX-One\_outbound\_B\_Number\_Override (Active only in Survival Mode)**

This ruleset applies to calls to numbers defined in BNUMBER and will use the BOVERRIDE as Called Party Number.

One use case could be if a user dials the internal operator (09) while in survivable mode. The dialled number (09) will be replaced with 0856867000 which could be the number to the operator in the HQ.

BNUMBER=09

The internal number to the operator.

BOVERRIDE=0856867000

Calls to extensions like BNUMBER will be sent to BOVERRIDE. In this example, it will be sent to 0856867000.

- **Ruleset: MX-One\_local\_reg\_users\_with\_survivability**

(Builds the registration cache for survivability purpose).

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 22100 - 22199.

Click **Save** when done.

7.3.4 trunk\_lines\_ca

Figure 116: trunk\_lines\_ca

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | trunk_lines_ca                      |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       | trunk_lines_gw                      |
| Signaling Interface                           |                                     |
| Media Interface                               | loop_m                              |
| Peer Host                                     |                                     |
| Peer Network                                  |                                     |
| Force Transport                               | Tcp                                 |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 0                                   |
| Blacklisting Duration                         | 0                                   |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      |                                     |

Figure 117: Call Agent Rulesets

| Call Agent Rulesets |   |  |   |     |
|---------------------|---|--|---|-----|
| Priority            | Name  | Parameters   |   |     |
| 1                   | 200_OK_to_SIP_OPTIONS                         |  | ^ | v - |
| 2                   | MX-One_remove_prefix                          | PSTN_PREFIX=00   | ^ | v - |
| 3                   | MX-One_trunk_lines_to_reception_survivability | EXT_DIGIT_LENGTH=5 MAIN_EXT=11104 PATTERN=111[0-9][0-  | ^ | v - |
| 4                   | MX-One_build_RURI_survivability               | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=192.16 | ^ | v - |
| 5                   | MX-One_Appearance_Prefix                      | APP_PRFX=SCA-  | ^ | v - |
| 6                   | MX-One_Appearance_Prefix                      | APP_PRFX=EDN-  | ^ | v - |
| 7                   | media_relay                                   |  | ^ | v - |
|                     |   |  | + |     |

- Ruleset: MX-One\_remove\_prefix

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will be truncated.

- Ruleset: MX-One\_trunk\_lines\_to\_reception\_survivability

An incoming call in survival mode will be sent to MAIN\_EXT destination if not reachable or not available.

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers, in this case set to 5, for numbers like 11100 - 11199.

MAIN\_EXT=22104

This is the extension number (22104) and the call will be routed to when an incoming call's destination is not reachable (not defined or not registered). Where, MAIN\_EXT is the default answering position.

PATTERN=221[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 22100 - 22199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

- **Ruleset: MX-One\_build\_RURI\_survivability (Active only in Survival Mode)**

Builds the RURI when in survivability mode.

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 22100 - 22199.

PATTERN=221[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 22100 - 22199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

- **Ruleset: MX\_One\_Appearance\_Prefix (Active only in Survival Mode)**

APP\_PREFIX=SCA- and APP\_PREFIX=EDN-

This is the prefix for the user names connected with shared appearance (SCA) and extra directory number (EDN). In this example, you have two user names: "SCA"- and "EDN-"

Click **Save** when done.



## 7.3.5 MX-One\_Lim1

1. Enter the IP-address of the MX-ONE in the **Peer Host** field.

Figure 118: Configure Call Agent - Peer Host

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | MX-One_LIM1                         |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       | <input type="text"/>                |
| Signaling Interface                           | uplink_s                            |
| Media Interface                               | uplink_m                            |
| Peer Host                                     | 192.168.17.44                       |
| Peer Network                                  | <input type="text"/>                |
| Force Transport                               | None                                |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 30                                  |
| Blacklisting Duration                         | 60                                  |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      | <input type="text"/>                |

2. Enter the IP-address of the GW in the **RURI\_HOST** parameter.

Figure 119: RURI\_HOST parameter

| Call Agent Rulesets |                   |                         |       |
|---------------------|-------------------|-------------------------|-------|
| Priority            | Name              | Parameters              |       |
| 1                   | rewrite_RURI_host | RURI_HOST=192.168.17.83 | ↑ ↓ - |
| 2                   | MX-One_core_side  |                         | ↑ ↓ - |
|                     |                   |                         | +     |

- **Ruleset: rewrite\_RURI\_host**

RURI\_HOST= 192.168.17.83

This is the local IP address of the GX-gateway.

Click **Save** when done.

## 7.3.6 MX-One\_trunk

1. Enter the IP-address of the MX-ONE in the **Peer Host** field.

### **Note:**

Though the **MX-One-trunk** is not used in this configuration but you must enable it.

Figure 120: Call Agent Parameters

| Configure Call Agent                          |                                     | Value |
|---|-------------------------------------|-------|
| <b>Call Agent Parameters</b>                  |                                     |       |
| Name  | MX-One-trunk                        |       |
| Enable  | <input checked="" type="checkbox"/> |       |
| Gateway                                       | <input type="text"/>                |       |
| Signaling Interface                           | trunk_s                             |       |
| Media Interface                               | uplink_m                            |       |
| Peer Host                                     | 192.168.17.44                       |       |
| Peer Network                                  | <input type="text"/>                |       |
| Force Transport                               | None                                |       |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |       |
| Keep-Alive Interval                           | 0                                   |       |
| Blacklisting Duration                         | 0                                   |       |
| Blacklisting Delay                            | 0                                   |       |
| Blacklisting Error Codes                      | <input type="text"/>                |       |
| Custom Header                                 | <input type="text"/>                |       |

| Call Agent Rulesets |                                 |   |
|---------------------|---------------------------------|---|
| Priority            | Name                            | Parameters  |
| 1                   | media_relay                     | <input type="text"/>  |
| 2                   | face_mxone                      | SOURCE_CA=trunk_lines_ca RURI_HOST=192.168.17.81            |
| 3                   | MX-One_remove_prefix            | PSTN_PREFIX=00  |
| 5                   | MX-One_build_RURI_survivability | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=10.10.10.10 |
| 6                   | MX-One_core_side                | <input type="text"/>  |

- **Ruleset: face\_mxone**

SOURCE\_CA=VoIP-trunk2

This parameter indicates the call agent from which the call is coming from.

RURI\_HOST=192.168.17.83

This parameter is used to set a correct value in the FROM DOMAIN in the INVITE message sent to MX-ONE. It shall be the local IP-address of the GX-gateway.

- **Ruleset: MX-One\_remove\_prefix**

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will be truncated.

- **Ruleset: MX-One\_build\_RURI\_survivability**

Builds the RURI when in survivability mode

EXT\_DIGIT\_LENGTH=5

The length of the internal numbers is set to 5, for numbers like 22100 - 22199.

PATTERN=221[0-9][0-9]

This defines the local numbers. The pattern for the internal range of numbers would be 22100 - 22199.

DOMAIN=192.168.17.44

The IP-address of the headquarter (the main PBX) is 192.168.17.44.

Click **Save** when done.

## 7.3.7 VOIP-trunk2

| Configure Call Agent                          |  | Value |
|---|--|-------|
| <b>Call Agent Parameters</b>                  |  |       |
| Name  | <input type="text" value="VoIP-trunk2"/>   |       |
| Enable  | <input checked="" type="checkbox"/>        |       |
| Gateway                                       | <input type="text" value=""/>              |       |
| Signaling Interface                           | <input type="text" value="uplink_s"/>      |       |
| Media Interface                               | <input type="text" value="uplink_m"/>      |       |
| Peer Host                                     | <input type="text" value="192.168.17.54"/> |       |
| Peer Network                                  | <input type="text" value=""/>              |       |
| Force Transport                               | <input type="text" value="None"/>          |       |
| <b>Monitoring and Blacklisting Parameters</b> |  |       |
| Keep-Alive Interval                           | <input type="text" value="0"/>             |       |
| Blacklisting Duration                         | <input type="text" value="0"/>             |       |
| Blacklisting Delay                            | <input type="text" value="0"/>             |       |
| Blacklisting Error Codes                      | <input type="text" value=""/>              |       |

Figure 121: VoIP-trunk2

Figure 122: Call Agent Rulesets

| Call Agent Rulesets |   |  |  |
|---------------------|---|--|--|
| Priority            | Name  | Parameters   |  |
| 1                   | <input type="text" value="topology_hiding_out"/>  | <input type="text" value=""/>  | <input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/> |
| 2                   | <input type="text" value="MX-One_remove_prefix"/> | <input type="text" value="PSTN_PREFIX=00"/>                                | <input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/> |
| 3                   | <input type="text" value="face_mxone"/>           | <input type="text" value="SOURCE_CA=VoIP-trunk2 RURI_HOST=192.168.17.83"/> | <input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="−"/> |
|                     |   |  | <input type="button" value="+"/> <input type="button" value="−"/>                                  |

- **Ruleset: MX-One\_remove\_prefix**

PSTN\_PREFIX=00

This parameter specified the prefix to break out to the PSTN. When a user dials this number (in survivable mode) it will truncated.

- **Ruleset: face\_mxone**

SOURCE\_CA=VoIP-trunk2

This parameter indicates the call agent from which the call is coming.

RURI\_HOST=192.168.17.81

This parameter is used to set a correct value in the FROM DOMAIN in the INVITE message sent to MX-ONE. It will be the local IP-address of the GX-gateway.

Click **Save** when done.

When all the changes for call agents are done, a yellow field is shown indicating that configuration has been modified.



Click **Apply** when ready.

**Note:**

Error will be shown in the configuration if the indication is not removed. Double check the changes described above and correct them.

## 7.4 SIP

### 7.4.1 Gateways

Figure 123: Gateways



Following gateways are predefined and port numbers.

**Note:**

The SIP route must be defined in MX-ONE to handle traffic to and from the **trunks\_mx-one** gateway.

Figure 124: Gateway Configuration

| Gateway Configuration |       |                   |                |                           |      |             |   |
|-----------------------|-------|-------------------|----------------|---------------------------|------|-------------|---|
| Name                  | Type  | Signaling Network | Media Networks | Media Networks Suggestion | Port | Secure Port |   |
| MX1_analog_ext        | Trunk | Uplink            |                | --- Suggestion ---        | 5080 | 0           | - |
| trunk_lines_gw        | Trunk | Loop              | Loop           | --- Suggestion ---        | 5066 | 0           | - |
| trunks_mx-one         | Trunk | Uplink            |                | --- Suggestion ---        | 5070 | 0           | - |
|                       |       |                   |                |                           |      |             | + |

## 7.4.2 Servers

Figure 125: Servers

|          |                |               |                |           |         |            |       |           |             |            |        |
|----------|----------------|---------------|----------------|-----------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network        | SIP Proxy     | SBC            | ISDN      | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | <b>Servers</b> | Registrations | Authentication | Transport | Interop | Misc       |       |           |             |            |        |

1. Select **SIP > Servers**.
2. Enter IP-address to MX-ONE in both the **Registrar Host** and **Proxy Host** fields.

Figure 126: Default Servers

| Default Servers        |               |
|------------------------|---------------|
| Registrar Host:        | 192.168.17.94 |
| Proxy Host:            | 192.168.17.94 |
| Messaging Server Host: |               |
| Outbound Proxy Host:   |               |

3. Enter IP-address of MX-ONE in the **Proxy Host** field.
4. Enter IP-address of the gateway in the **Outbound Proxy Host** field.

Figure 127: Proxy Servers

| Proxy Servers  |                  |                |                     |
|----------------|------------------|----------------|---------------------|
| Gateway        | Gateway Specific | Proxy Host     | Outbound Proxy Host |
| MX1_analog_ext | Yes              | 192.168.17.94  | 192.168.17.85       |
| trunk_lines_gw | Yes              | 192.168.17.94  | %sbc%               |
| trunks_mx-one  | No               | 192.168.0.10:0 | 0.0.0.0:0           |

5. Click **Apply** when done and restart service.

## 7.4.3 Registrations

Figure 128: Registrations



1. Select **SIP > Registrations**.
2. Enter the extension numbers for the analog extensions.

Figure 129: Endpoints Registration screen

| Endpoints Registration |                                    |                      |           |           |                  |  |
|------------------------|------------------------------------|----------------------|-----------|-----------|------------------|--|
| Endpoint               | User Name                          | Friendly Name        | Register  | Messaging | Gateway Name     |  |
| Slot1/E1T1             | <input type="text"/>               | <input type="text"/> | Disable ▾ | Disable ▾ | trunks_mx-one ▾  |  |
| Slot2/E1T1             | <input type="text"/>               | <input type="text"/> | Disable ▾ | Disable ▾ | trunks_mx-one ▾  |  |
| Slot3/FXS1             | <input type="text" value="32104"/> | <input type="text"/> | Enable ▾  | Disable ▾ | MX1_analog_ext ▾ |  |
| Slot3/FXS2             | <input type="text" value="32105"/> | <input type="text"/> | Enable ▾  | Disable ▾ | MX1_analog_ext ▾ |  |
| Slot3/FXS3             | <input type="text" value="32106"/> | <input type="text"/> | Enable ▾  | Disable ▾ | MX1_analog_ext ▾ |  |
| Slot3/FXS4             | <input type="text" value="32107"/> | <input type="text"/> | Disable ▾ | Disable ▾ | MX1_analog_ext ▾ |  |
| Slot4/E1T1             | <input type="text"/>               | <input type="text"/> | Disable ▾ | Disable ▾ | trunks_mx-one ▾  |  |
| Slot5/E1T1             | <input type="text"/>               | <input type="text"/> | Disable ▾ | Disable ▾ | trunks_mx-one ▾  |  |

3. Click **Apply** or **Apply and Refresh** when done.

## 7.4.4 Authentication

Figure 130: Authentication



## 1. Select **SIP > Authentication**.

Figure 131: Authentication Screen

| Endpoints Registration Status |           |                |                 |            |
|-------------------------------|-----------|----------------|-----------------|------------|
| Endpoint                      | User Name | Gateway Name   | Registrar       | Status     |
| Slot3/FXS1                    | 32104     | MX1_analog_ext | 192.168.17.93:0 | Registered |
| Slot3/FXS2                    | 32105     | MX1_analog_ext | 192.168.17.93:0 | Registered |
| Slot3/FXS3                    | 32106     | MX1_analog_ext | 192.168.17.93:0 | Registered |

- If password is required click the Modify icon for any item that you want to add.
- Indicate for which **Endpoint** and **Criteria** the changes are to be applied.
- Enter the Auth Code in the **Password** field.
- In the **Validate Realm** field, select **Disable**.

Figure 132: Validate Realm field

| Authentication |          |            |         |                   |                |       |           |          |
|----------------|----------|------------|---------|-------------------|----------------|-------|-----------|----------|
| Priority       | Criteria | Endpoint   | Gateway | Username Criteria | Validate Realm | Realm | User Name | Password |
| 1              | Endpoint | Slot3/FXS1 |         |                   | Disable        |       | 32104     | *****    |

- Click **Apply** or **Apply and Refresh Registration** when done, restart service. The result after *Registration* and *Authentication* should be like as shown in the below screen.

Figure 133: Endpoints Registration Status

| Endpoints Registration Status |           |                |                 |            |
|-------------------------------|-----------|----------------|-----------------|------------|
| Endpoint                      | User Name | Gateway Name   | Registrar       | Status     |
| FXS1                          | 11104     | MX1_analog_ext | 192.168.17.44:0 | Registered |
| FXS2                          | 11105     | MX1_analog_ext | 192.168.17.44:0 | Registered |
| FXS3                          | 11106     | MX1_analog_ext | 192.168.17.44:0 | Registered |

## 7.4.5 Transport

Figure 134: Transport

|          |         |               |                |                  |         |            |       |           |             |            |        |
|----------|---------|---------------|----------------|------------------|---------|------------|-------|-----------|-------------|------------|--------|
| System   | Network | SIP Proxy     | SBC            | ISDN             | POTS    | <b>SIP</b> | Media | Telephony | Call Router | Management | Reboot |
| Gateways | Servers | Registrations | Authentication | <b>Transport</b> | Interop | Misc       |       |           |             |            |        |

## 1. Select **SIP > Transport**



- 2. Enable **UDP** or **TCP** dependent on configuration.

Figure 135: Protocol Configuration

| Protocol Configuration |            |          |            |           |            |
|------------------------|------------|----------|------------|-----------|------------|
| UDP                    | UDP QValue | TCP      | TCP QValue | TLS       | TLS QValue |
| Enable ▾               |            | Enable ▾ |            | Disable ▾ |            |

**Note:**

Only 1 transport mechanism can be **Enabled** if both enabled survivability will not work.

- 3. Click **Apply** when done and restart service.

7.4.6 Misc

Figure 136: Misc

System   Network   SIP Proxy   SBC   ISDN   POTS   **SIP**   Media   Telephony   Call Router   Management   Reboot

Gateways   Servers   Registrations   Authentication   Transport   Interop   **Misc**

- 1. Select **SIP > Misc**.
- 2. Enter the IP-address of MX-ONE in the **SIP Domain Override** field for **trunk\_lines\_gw**.

Figure 137: Gateway Configuration field

| Gateway Configuration |                     |
|-----------------------|---------------------|
| Gateway Name          | SIP Domain Override |
| MX1_analog_ext        |                     |
| trunk_lines_gw        | 192.168.17.44       |
| trunks_mx-one         |                     |

- 3. Click **Apply** when done and restart service.

## 7.5 Media

### 7.5.1 Codecs

Figure 138: Codecs



1. Select **Media** > **Codecs**.
2. Change **Codecs** according to preference.

Figure 139: Codecs

| Codec         | Voice     | Data      | Advanced |  |
|---------------|-----------|-----------|----------|--|
| G.711 a-Law   | Enable ▾  | Enable ▾  |          |  |
| G.711 u-Law   | Disable ▾ | Disable ▾ |          |  |
| G.723         | Disable ▾ |           |          |  |
| G.726 16Kbps  | Disable ▾ |           |          |  |
| G.726 24Kbps  | Disable ▾ |           |          |  |
| G.726 32Kbps  | Disable ▾ | Disable ▾ |          |  |
| G.726 40Kbps  | Disable ▾ | Disable ▾ |          |  |
| G.729         | Enable ▾  |           |          |  |
| T.38          |           | Enable ▾  |          |  |
| Clear Mode    | Disable ▾ | Disable ▾ |          |  |
| Clear Channel | Disable ▾ | Disable ▾ |          |  |
| X CCD         | Disable ▾ | Disable ▾ |          |  |

3. Click **Apply** when done and restart service.

## 7.6 Call Router

### 7.6.1 Route Config

Figure 140: Route Config screen



1. Click Modify icon for index 1. This is used if the received B-number contains a full number. That is, more digits than the pure DID numbers.

Figure 141: Routes

| Routes |  |                   |               |                 |                      |                    |
|--------|--|-------------------|---------------|-----------------|----------------------|--------------------|
| Index  | Sources  | Criteria Property | Criteria Rule | Transformations | Signaling Properties | Destination        |
| 1      | isdn-Slot1/E1T1, isdn-Slot2/E1T1, isdn-Slot3/E1T1, isdn-Slot4/E1T1, isdn-Slot5/E1T1, isdn-Slot6/E1T1, isdn-Slot7/E1T1, isdn-Slot8/E1T1, r2-Slot1/E1T1, r2-Slot2/E1T1, r2-Slot3/E1T1, r2-Slot4/E1T1, r2-Slot5/E1T1, r2-Slot6/E1T1, r2-Slot7/E1T1, r2-Slot8/E1T1, e&m-Slot1/E1T1, e&m-Slot2/E1T1, e&m-Slot3/E1T1, e&m-Slot4/E1T1, e&m-Slot5/E1T1, e&m-Slot6/E1T1, e&m-Slot7/E1T1, e&m-Slot8/E1T1, fxo-Slot2/FXO1, fxo-Slot2/FXO2, fxo-Slot2/FXO3, fxo-Slot2/FXO4, fxo-Slot3/FXO1, fxo-Slot3/FXO2, fxo-Slot3/FXO3, fxo-Slot3/FXO4, fxo-Slot4/FXO1, fxo-Slot4/FXO2, fxo-Slot4/FXO3, fxo-Slot4/FXO4, fxo-Slot5/FXO1, fxo-Slot5/FXO2, fxo-Slot5/FXO3, fxo-Slot5/FXO4, fxo-Slot6/FXO1, fxo-Slot6/FXO2, fxo-Slot6/FXO3, fxo-Slot6/FXO4, fxo-Slot7/FXO1, fxo-Slot7/FXO2, fxo-Slot7/FXO3, fxo-Slot7/FXO4, fxo-Slot8/FXO1, fxo-Slot8/FXO2, fxo-Slot8/FXO3, fxo-Slot8/FXO4 | None              |               | DID_Extension   |                      | sip-trunk_lines_gw |
| 2      | sip-trunks_mx-one, sip-trunk_lines_gw  | None              |               |                 |                      | hunt-Hunt1         |

2. In the Transformations field, add a name for a transformation rule.

Figure 142: Configure Route

| Configure Route 1    |   |                    |
|----------------------|---|--------------------|
|                      | Value   | Suggestion         |
| Sources              | isdn-Slot1/E1T1, isdn-Slot2/E1T1, isdn-Slot3/E1T1, isdn-Slot4/E1T1, isdn-Slot5/E1T1, isdn-Slot6/E1T1, isdn-Slot7/E1T1, isdn-Slot8/E1T1, r2-Slot1/E1T1, r2-Slot2/E1T1, r2- | --- Suggestion --- |
| Criteria Property    | None  |                    |
| Criteria Rule        |   | --- Suggestion --- |
| Transformations      | DID_Extension   | --- Suggestion --- |
| Signaling Properties |   | --- Suggestion --- |
| Destination          | sip-trunk_lines_gw  | --- Suggestion --- |
| Config Status        |   |                    |

3. Click **Save**.

- Click Plus icon in the first Call Property Transformation and enter the same name as above.
- Use Called E164 for both **Criteria Based On** and **Transformation Applies To** fields.

### Figure 143: Configure Transformation

| Configure Transformation 1 |  |  |
|----------------------------|--|--|
|                            | Value                                      |  |
| Name                       | <input type="text" value="DID_Extension"/> |  |
| Criteria Based On          | <input type="text" value="Called E164"/> ▼ |  |
| Transformation Applies To  | <input type="text" value="Called E164"/> ▼ |  |
| Config Status              |  |  |






6. Click Plus icon in the second Call Property Transformation, and enter the same name as above.
7. The Criteria Rule in this case is 443(111..)\$ and the transformation rule is '\1.
8. This means that if a B-number is received containing 59832104, then the 3 first digits (443) are removed before the call is sent to MX-ONE for further processing. (111..)\$ means that the number can only be 5 digits starting with 111.






Figure 144: Configure Transformation Rule 1

| Configure Transformation Rule 1 |  |   |
|---------------------------------|--|---|
|                                 | Value                                      | Suggestion                                      |
| Type                            | Called E164 to Called E164                 |   |
| Name                            | <input type="text" value="DID_Extension"/> | <input type="text" value="--- Suggestion ---"/> |
| Criteria Rule                   | <input type="text" value="598(321.\$)"/>   | <input type="text" value="--- Suggestion ---"/> |
| Transformation Rule             | <input type="text" value="v1"/>            | <input type="text" value="--- Suggestion ---"/> |
| Next Transformation             | <input type="text"/>                       | <input type="text" value="--- Suggestion ---"/> |
| Config Status                   |  |   |

9. Click **Save** or **Save and Insert Rule**. Now, the Call Property Transformations looks like this as shown below.

### Figure 145: Transformations

| Transformations   |               |                   |                           |   |
|---|---------------|-------------------|---------------------------|---|
| Index   | Name          | Criteria Based On | Transformation Applies To |   |
| 1   | DID_Extension | Called E164       | Called E164               |     |
|  |               |                   |                           |   |

| Transformation Rules  |               |               |                     |   |
|---|---------------|---------------|---------------------|---|
| Index   | Name          | Criteria Rule | Transformation Rule | Next Transformation   |
| 1   | DID_Extension | 598(321.\$)   | \1                  |     |
|  |               |               |                     |   |

10. Click Plus icon for the Signalling Properties, and enter the data shown below.

Figure 146: Configure Signaling Property 1

| Configure Signaling Property 1      |  |   |
|-------------------------------------|--|---|
|                                     | Value                                    | Suggestion  |
| Name                                | <input type="text" value="local_host"/>  |   |
| Early Connect                       | <input type="button" value="Disable"/> ▾ |   |
| Early Disconnect                    | <input type="button" value="Enable"/> ▾  |   |
| Destination Host                    | <input type="text"/>                     | <input type="button" value="--- Suggestion ---"/> ▾ |
| Allow 180 with SDP                  | <input type="button" value="Enable"/> ▾  |   |
| Allow 183 without SDP               | <input type="button" value="Enable"/> ▾  |   |
| Privacy                             | <input type="button" value="Disable"/> ▾ |   |
| SIP Header Translation Overrides    | <input type="text" value="local_host"/>  | <input type="button" value="--- Suggestion ---"/> ▾ |
| Call Property Translation Overrides | <input type="text"/>                     | <input type="button" value="--- Suggestion ---"/> ▾ |
| Config Status                       |  |   |

11. Click Plus icon for the **SIP Header Translation Overrides**, and enter the following data as shown below.

Figure 147: Configure SIP Header Translation Override 1

| Configure SIP Header Translation Override 1 |  |
|---|--|
| Name  | <input type="text" value="local_host"/>                  |
| SIP Header                                  | <input type="button" value="From Header (Host Part)"/> ▾ |
| Based On                                    | <input type="button" value="Fixed Value"/> ▾             |
| Fixed Value                                 | <input type="text" value="&lt;local_ip_port&gt;"/>       |
| Config Status                               |  |

12. Click **Save** Now the Signalling Properties looks like this as shown below.

| Signaling Properties |            |               |                  |                  |                    |                       |         |                                  |                                     |  |
|----------------------|------------|---------------|------------------|------------------|--------------------|-----------------------|---------|----------------------------------|-------------------------------------|--|
| Index                | Name       | Early Connect | Early Disconnect | Destination Host | Allow 180 with SDP | Allow 183 without SDP | Privacy | SIP Header Translation Overrides | Call Property Translation Overrides |  |
| 1                    | local_host | Disable       | Enable           |                  | Enable             | Enable                | Disable | local_host                       |                                     |  |
| +                    |            |               |                  |                  |                    |                       |         |                                  |                                     |  |

| SIP Header Translation Overrides |            |                         |             |                 |
|----------------------------------|------------|-------------------------|-------------|-----------------|
| Index                            | Name       | SIP Header              | Based On    | Fixed Value     |
| 1                                | local_host | From Header (Host Part) | Fixed Value | <local_ip_port> |
|                                  |            |                         |             |                 |
| +                                |            |                         |             |                 |

| Call Property Translation Overrides |      |               |          |             |
|-------------------------------------|------|---------------|----------|-------------|
| Index                               | Name | Call Property | Based On | Fixed Value |
| +                                   |      |               |          |             |

13. Click **Save** if the yellow indication on top of the page is on.

## 7.7 Management

### 7.7.1 Backup/Restore

|                       |                  |                  |              |      |      |                |       |           |             |                   |        |
|-----------------------|------------------|------------------|--------------|------|------|----------------|-------|-----------|-------------|-------------------|--------|
| System                | Network          | SIP Proxy        | SBC          | ISDN | POTS | SIP            | Media | Telephony | Call Router | <b>Management</b> | Reboot |
| Configuration Scripts | Backup / Restore | Firmware Upgrade | Certificates | SNMP | CWMP | Access Control | File  | Misc      |             |                   |        |

1. Select **Management > Backup/Restore**.
2. Click the [Activate unsecure script transfers through web browser](#) link.

Figure 148: Image Configuration

| Image Configuration        |  |
|----------------------------|--|
| <b>Transfer Parameters</b> |  |
| File Name:                 | Backup_2018-07-30_85.xml <span>--- Suggestion ---</span> |
| Transfer Protocol:         | File   |
| Host Name:                 | 0.0.0.0:0  |
| Location:                  |  |
| User Name:                 |  |
| Password:                  |  |
| <b>Backup Parameters</b>   |  |
| Content:                   | Config And Certificates                                  |
| <b>Privacy Parameters</b>  |  |
| Privacy Algorithm:         | None   |
| Privacy Key:               |  |

3. Click **Apply and Backup Now**.

## 7.7.2 File

Figure 149: File screen



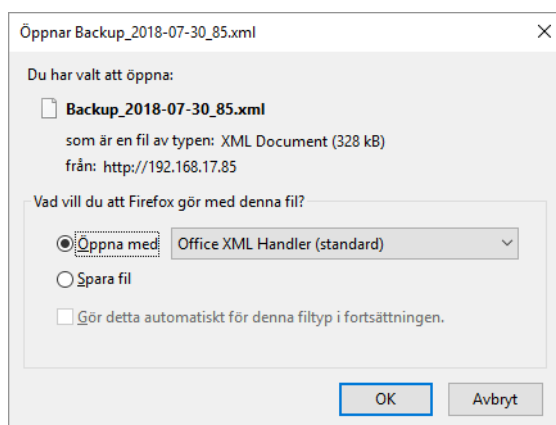
### 1. Select **Management > File**.

Figure 150: Internal files

| Internal files                                 |  |                                   |
|--|--|-----------------------------------|
| Name   | Description  | Size                              |
| <a href="#">conf/Backup_2018-07-30_85.xml</a>  | Automatically generated on 24/08/2018 08:29:46.                      | 149 KB                            |
| <a href="#">conf/FXO_Country_Defaults.cfg</a>  | FXO Country Defaults   | 1 KB                              |
| <a href="#">conf/FXO_North-America_3km.cfg</a> | FXO North-America 3km  | 1 KB                              |
| <a href="#">conf/PRI_China-DSS1.cfg</a>        | China DSS1   | 3 KB                              |
| <a href="#">conf/PRI_Default.cfg</a>           | PRI default configuration  | 3 KB                              |
| <a href="#">conf/PRI_NorthAmerica-NI1.cfg</a>  | North America NI1  | 3 KB                              |
| <a href="#">conf/PRI_NorthAmerica-NI2.cfg</a>  | North America NI2  | 3 KB                              |
| <a href="#">conf/Survivability_Enable.cfg</a>  | Configures the EX Controller for MX-ONE survivability environment.   | 29 KB                             |
| <a href="#">conf/Survivability.cfg</a>         | Configures the unit to use the SipProxy service for basic use cases. | 1 KB                              |
| <a href="#">vm/drives/mxone7.iso</a>           | Bootable disc file   | 6.2 GB                            |
| 10 file(s)                                     |  | Total: 6.2 GB / Available: 2.4 GB |

### 1. Find the previously made backup image.

Figure 151: Backup image



### 2. Download and store on a secure place.

# Setup for Redundant MX-ONE Registration using EX Controller/GX Gateway

8

This chapter contains the following sections:

- [Introduction](#)
- [Prerequisites](#)
- [Setup for Redundant MX-ONE Registration using EX Controller/GX Gateway](#)

## 8.1 Introduction

This section describes how to setup an EX-Controller / GX-Gateway when a distribution of registrations between servers (LIMs) can be achieved.

The following diagram is of a standard survivable branch office setup.

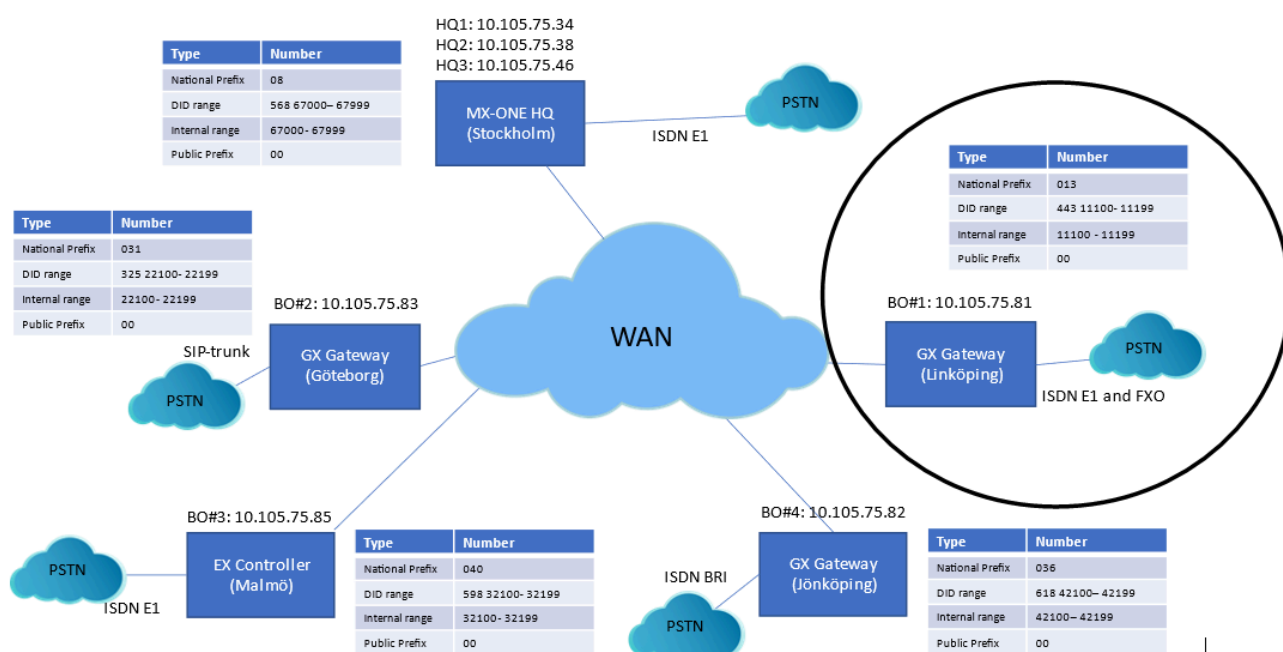


Figure 152: Standard Survivable Branch Office Setup

This solution is based on the standard EX-Controller / GX-gateway branch office solution.

The standard setup is based on that only 1 server can be used to register branch office extension and determine if the branch office is in a blacklist mode. This section describes



how to setup a survivable branch node with multiple MX-ONE servers to gain better redundancy.

Here it is described what needs to be done in branch office #1 (Linköping).

In this example scenario:

- The head office consists of 3 servers, server 1 (10.105.75.34), server 2 (10.105.75.38) and server 3 (10.105.75.46).
- Domain to be used is *sip.gx.com*

For a complete description on how to setup the branch node scenario, please see the *Chapter 6 and Chapter 7* of this document.

## 8.2 Prerequisites

Following conditions must be fulfilled to get this setup to work:

- Maximum 20 systems can be defined in the static host table in EX-Controller / GX-Gateway.
- SIP trunks to the EX-Controller / GX-Gateway must be defined in all existing servers. This is used for local presence.
- The *extension\_registration\_distribution* feature must not be activated in MX-ONE.

## 8.3 Setup for Redundant MX-ONE Registration using EX Controller/GX Gateway

### 8.3.1 DNS Server

A domain containing the servers included must be defined in network. How to setup this is outside the scope this AN. Please refer to your local IT administrators.

### 8.3.2 Configuration Files for SIP Extensions

#### 8.3.2.1 Changes in 'startup.cfg'

The configuration file for the affected SIP phones must be updated,

At a bare minimum, the following parameter must be set in *startup.cfg* file

- `sip proxy ip: sip.gx.com`
- `sip registrar ip: sip.gx.com`

- user config url:http://sip.gx.com:22225/vdp
- sip outbound proxy:<ip-address of EX/GX>

If the DNS server is not received by the SIP phone at DHCP request following line must be added.

- dns1: <ip-address of DNS server>

### 8.3.3 Changes in MX-ONE

Domain name must be added to match the domain in an inbound REQUEST URI.

- *sip\_domain -i -local-domain-name sip.gx.com*

### 8.3.4 Changes in EX Controller/ GX Gateway

#### 8.3.4.1 Static Host List

A static host list must be defined in the EX / GX system.

1. Navigate to the **Management** tab.
2. Click the line stating **Activate unsecure script transfers and execution through web browser**.
3. In the **Execute InLine Script** frame type the name of the domain and its corresponding IP-addresses. The order of IP addresses is in a priority list, the first address is the main, the second is the secondary, and so on.

```
Hoc.StaticHosts.DeleteAllRows
```

```
Hoc.InsertStaticHost Name="sip.gx.com"
```

```
IpAddresses="10.105.75.34,10.105.75.38,10.105.75.46"
```

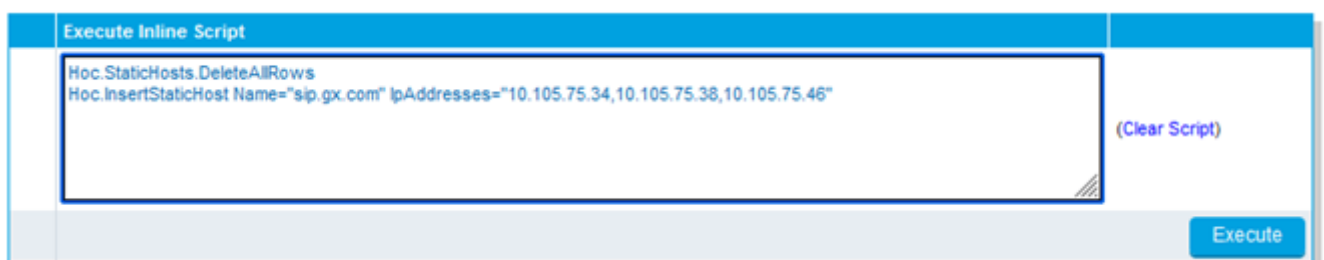


Figure 153: Execute InLine Script Frame

4. 4. Click **Execute** and look for the status in the **Scripts Status Execute** frame above.

## 8.3.4.2 SIP Server Changes

In the **SIP > Server** tab change following items:



- Change **Registrar Host** and **Proxy Host** to the defined domain name.

| Default Servers        |   |
|------------------------|---|
| Registrar Host:        | <input type="text" value="sip.gx.com"/> |
| Proxy Host:            | <input type="text" value="sip.gx.com"/> |
| Messaging Server Host: | <input type="text"/>                    |
| Outbound Proxy Host:   | <input type="text"/>                    |

- Change **Proxy Servers Gateway** for *MX1\_analog\_ext* and *trunk\_lines\_gw* to the defined domain name.

| Proxy Servers  |                                  |   |   |
|----------------|----------------------------------|---|---|
| Gateway        | Gateway Specific                 | Proxy Host                                  | Outbound Proxy Host                       |
| MX1_analog_ext | <input type="text" value="Yes"/> | <input type="text" value="sip.gx.com"/>     | <input type="text" value="10.105.75.81"/> |
| trunk_lines_gw | <input type="text" value="Yes"/> | <input type="text" value="sip.gx.com"/>     | <input type="text" value="%sbc%"/>        |
| trunks_mx-one  | <input type="text" value="No"/>  | <input type="text" value="192.168.0.10.0"/> | <input type="text" value="0.0.0.0"/>      |

- Change **Keep-Alive Destination Gateway** for *trunks\_mx-one* to the defined domain name.

| Keep-Alive Destination |   |
|------------------------|---|
| Gateway                | Alternate Destination                     |
| MX1_analog_ext         | <input type="text" value="10.105.75.81"/> |
| trunk_lines_gw         | <input type="text" value="127.0.0.1"/>    |
| trunks_mx-one          | <input type="text" value="sip.gx.com"/>   |

## 8.3.4.3 SIP Miscellaneous Changes

In the **SIP > Misc** tab change following item.



- Change **Gateway Configuration Gateway Name** for *trunk\_lines\_gw* to the defined domain name.

| Gateway Configuration |   |  |
|-----------------------|---|--|
| Gateway Name          | SIP Domain Override                     |  |
| MX1_analog_ext        | <input type="text"/>                    |  |
| trunk_lines_gw        | <input type="text" value="sip.gx.com"/> |  |
| trunks_mx-one         | <input type="text"/>                    |  |

### 8.3.4.4 SBC Changes

In the **SBC > Configuration** tab change following items:



#### Changes in 'local\_users\_ca'

Change **Domain** parameter for ruleset *MX-One\_build\_RURI\_survivability* to the defined domain name.

| Call Agent Rulesets |   |  |       |
|---------------------|---|--|-------|
| Priority            | Name                                      | Parameters   |       |
| 1                   | MX-One_build_RURI_survivability           | <input type="text" value="_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=sip.gx.com"/> | ⬆ ⬇ ⬇ |
| 2                   | MX-One_Appearance_Prefix                  | <input type="text" value="APP_PRFX=SCA-"/>   | ⬆ ⬇ ⬇ |
| 3                   | MX-One_Appearance_Prefix                  | <input type="text" value="APP_PRFX=EDN-"/>   | ⬆ ⬇ ⬇ |
| 4                   | MX-One_Remove_Outbound_Appearance         | <input type="text" value="PATTERN=111[0-9][0-9]"/>                                   | ⬆ ⬇ ⬇ |
| 5                   | MX-One_outbound_A_Number_prefix           | <input type="text" value="PATTERN=111[0-9][0-9] A_PRFX=013443 PSTN_PREFIX=00"/>      | ⬆ ⬇ ⬇ |
| 6                   | MX-One_outbound_B_Number_prefix           | <input type="text" value="BNUMBER=221[0-9][0-9] B_PRFX=031325"/>                     | ⬆ ⬇ ⬇ |
| 7                   | MX-One_outbound_B_Number_prefix           | <input type="text" value="BNUMBER=678[0-9][0-9] B_PRFX=08568"/>                      | ⬆ ⬇ ⬇ |
| 8                   | MX-One_outbound_B_Number_Override         | <input type="text" value="BNUMBER=*09 BOVERRIDE=0856867820"/>                        | ⬆ ⬇ ⬇ |
| 9                   | MX-One_local_reg_users_with_survivability | <input type="text" value="EXT_DIGIT_LENGTH=5 MX-ONE_REG_TIMER=300"/>                 | ⬆ ⬇ ⬇ |
|                     |   |  | +     |

## Changes in 'trunk\_lines\_ca' Call Agent

Change **Domain** parameter for ruleset *MX-One\_build\_trunk\_lines\_to\_reception\_survivability* to the defined domain name.

Change **Domain** parameter for ruleset *MX-One\_build\_RURI\_survivability* to the defined domain name.

| Call Agent Rulesets |   |   |       |
|---------------------|---|---|-------|
| Priority            | Name  | Parameters  |       |
| 1                   | 200_OK_to_SIP_OPTIONS                         |   | ⬆ ⬇ ⬇ |
| 2                   | MX-One_remove_prefix                          | PSTN_PREFIX=00  | ⬆ ⬇ ⬇ |
| 3                   | MX-One_trunk_lines_to_reception_survivability | MAIN_EXT=11104 PATTERN=111[0-9][0-9] DOMAIN=sip.gx.com  | ⬆ ⬇ ⬇ |
| 4                   | MX-One_build_RURI_survivability               | _DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=sip.gx.com | ⬆ ⬇ ⬇ |
| 5                   | MX-One_Appearance_Prefix                      | APP_PRFX=SCA-   | ⬆ ⬇ ⬇ |
| 6                   | MX-One_Appearance_Prefix                      | APP_PRFX=EDN-   | ⬆ ⬇ ⬇ |
| 7                   | media_relay                                   |   | ⬆ ⬇ ⬇ |
|                     |   |   | +     |

## Changes in 'MX-One\_LIM 1' Call Agent

Change **Peer Host** parameter for call agent *MX-One\_LIM1* to the defined domain name.

| Configure Call Agent                          |  | Value                               |
|---|--|-------------------------------------|
| <b>Call Agent Parameters</b>                  |  |                                     |
| Name  |  | MX-One_LIM1                         |
| Enable  |  | <input checked="" type="checkbox"/> |
| Gateway                                       |  |                                     |
| Signaling Interface                           |  | uplink_s                            |
| Media Interface                               |  | uplink_m                            |
| Peer Host                                     |  | sip.gx.com                          |
| Peer Network                                  |  |                                     |
| Force Transport                               |  | None                                |
| <b>Monitoring and Blacklisting Parameters</b> |  |                                     |
| Keep-Alive Interval                           |  | 15                                  |
| Blacklisting Duration                         |  | 60                                  |
| Blacklisting Delay                            |  | 0                                   |
| Blacklisting Error Codes                      |  |                                     |
| Custom Header                                 |  |                                     |

## Changes in 'MX-One\_trunk' Call Agent

Change **Peer Host** parameter for call agent *MX-One\_trunk* to the defined domain name.

| Configure Call Agent                          |                                     |
|---|-------------------------------------|
|   | Value                               |
| <b>Call Agent Parameters</b>                  |                                     |
| Name  | MX-One-trunk                        |
| Enable  | <input checked="" type="checkbox"/> |
| Gateway                                       | <input type="text"/>                |
| Signaling Interface                           | trunk_s                             |
| Media Interface                               | uplink_m                            |
| Peer Host                                     | sip.gx.com                          |
| Peer Network                                  | <input type="text"/>                |
| Force Transport                               | None                                |
| <b>Monitoring and Blacklisting Parameters</b> |                                     |
| Keep-Alive Interval                           | 30                                  |
| Blacklisting Duration                         | 60                                  |
| Blacklisting Delay                            | 0                                   |
| Blacklisting Error Codes                      | <input type="text"/>                |
| Custom Header                                 | <input type="text"/>                |

Change **Domain** parameter for ruleset *MX-One\_build\_RURI\_survivability* to the defined domain name.

| Call Agent Rulesets |                                 |   |       |
|---------------------|---------------------------------|---|-------|
| Priority            | Name                            | Parameters  |       |
| 1                   | media_relay                     |   | ⬆ ⬇ ⬇ |
| 2                   | face_mxone                      | SOURCE_CA=trunk_lines_ca RURI_HOST=10.105.75.81               | ⬆ ⬇ ⬇ |
| 3                   | MX-One_remove_prefix            | PSTN_PREFIX=00  | ⬆ ⬇ ⬇ |
| 4                   | MX-One_build_RURI_survivability | <u>DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=sip.gx.com</u> | ⬆ ⬇ ⬇ |
| 5                   | MX-One_core_side                |   | ⬆ ⬇ ⬇ |
|                     |                                 |   | +     |

## 8.3.5 Changes in Call Agent Settings

### 8.3.5.1 Changes in 'trunk\_lines\_ca' Call Agent

The time it takes to re-register to a secondary, third extension is dependent on SIP registration timeouts.

The max time is normally 600 seconds (10 minutes) meaning in worst case it will take 10 minutes to re-register an extension.

It is possible to reduce that time to 300 seconds (5 minutes) by adding the parameter ***MX-ONE\_REG\_TIMER*** to 300. This is done in the **local\_users\_ca** and the ruleset ***MX-One\_local\_reg\_users\_with\_survivability***

| Call Agent Rulesets |   |  |       |
|---------------------|---|--|-------|
| Priority            | Name                                      | Parameters   |       |
| 1                   | MX-One_build_RURI_survivability           | EXT_DIGIT_LENGTH=5 PATTERN=111[0-9][0-9] DOMAIN=sip.gx | ^ v - |
| 2                   | MX-One_Appearance_Prefix                  | APP_PRFX=SCA-  | ^ v - |
| 3                   | MX-One_Appearance_Prefix                  | APP_PRFX=EDN-  | ^ v - |
| 4                   | MX-One_Remove_Outbound_Appearance         | PATTERN=111[0-9][0-9]                                  | ^ v - |
| 5                   | MX-One_outbound_A_Number_prefix           | PATTERN=111[0-9][0-9] A_PRFX=013443 PSTN_PREFIX=00     | ^ v - |
| 6                   | MX-One_outbound_B_Number_prefix           | BNUMBER=221[0-9][0-9] B_PRFX=031325                    | ^ v - |
| 7                   | MX-One_outbound_B_Number_prefix           | BNUMBER=678[0-9][0-9] B_PRFX=08568                     | ^ v - |
| 8                   | MX-One_outbound_B_Number_Override         | BNUMBER=*09 BOVERRIDE=0856867820                       | ^ v - |
| 9                   | MX-One_local_reg_users_with_survivability | EXT_DIGIT_LENGTH=5 MX-ONE_REG_TIMER=300                | ^ v - |
|                     |   |  | +     |

Below are some known limitations when using the EX-Controller or GX-Gateway:

- When MX-ONE is installed as a virtual machine in the EX-Controller, Provisioning Manager is not allowed to be installed.
- When EX-Controller is used in a multi-server configuration the EX-controller can never be the master server.
- Maximum 5 servers can exist in a multi-server configuration, where at least one of the servers is an EX-controller.
- When deploying a MX-ONE as a virtual machine, the maximum amount of RAM is 7168 Mbytes.



# Installing the MiVoice MX-ONE 7.x Telephony software on the EX Gateway 10

To install the Mivoice MX-ONE 7.x Telephony software on EX Gateway, do the following:

1. Add a new virtual server in the EX web GUI.
2. Point to the Recovery image file (.iso) for installing the MiVoice MX-ONE 7.x.
3. Start the virtual server and you will see the turnkey interface as the MX-ONE installation starts.

## Note:

Follow these useful steps to save time.

- Add a slash (/) before the file name of the Recovery Image when specifying it in the EX web GUI or else it will not find the file.
- Do not select the USB toggle box because you have not placed the Recovery image files on a connected USB stick.

Note that the .qcow kvm hypervisor image file that is available for download in the MiVoice MX-ONE Release document cannot be used on the EX Gateway. Reason for clarifying this is that the .qcow files are indeed kvm hypervisor files and the EX Gateway is truly running a kvm hypervisor but still this does not mean that the .qcow files that Mitel release can be used on the EX Gateway.

