Configure MX-ONE 6.1.1.2.2 for use with Intermedia SIP Trunking

OCTOBER 2016
SIP COE 16-4940-00473
TECHNICAL CONFIGURATION NOTES
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Mitel Technical Configuration Notes:

Configure MX-ONE 6.1.1.2.2 for use with Intermedia SIP Trunking
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Overview

This document provides a reference to Mitel Authorized Solutions providers for configuring the MiVoice MX-ONE 6.1 SP1 HF2 to connect to the Intermedia SIP trunk. Different components can be configured in various configurations depending on your VoIP solution. This document covers a basic setup with required option setup.

Interop History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>September, 2016</td>
<td>Initial Interop with MiVoice MX-ONE 6.1 SP1 HF2 and Intermedia SIP Service Provider v16.14.3</td>
</tr>
</tbody>
</table>

Interop Status

This Interop of Intermedia with MiVoice MX-ONE 6.1 SP1 HF2 has been given a Compatible Certification status. This SIP trunk will be included in the SIP CoE Reference Guide.

![COMPATIBLE]

The most common certification which means MiVoice MX-ONE has been tested and/or validated by the Mitel SIP CoE team. Product support will provide all necessary support related to the interop, but issues unique or specific to the 3rd party will be referred to the 3rd party as appropriate.

Software & Hardware Setup

The table below provides the hardware and software specifications used to generate basic calls, using Intermedia SIP trunk connected to MiVoice MX-ONE 6.1 SP1 HF2.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Variant</th>
<th>Software Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermedia</td>
<td>Session Border Controller</td>
<td>16.14.3</td>
</tr>
<tr>
<td>Mitel</td>
<td>MiVoice MX-ONE</td>
<td>6.1 SP1 HF2 (MP: 6.1.1.2.2.456.3, SNM: 6.1.1.2.9.458.3)</td>
</tr>
<tr>
<td>Mitel</td>
<td>MiCollab – Audio, Web and Video Conferencing</td>
<td>MSL: 10.3.34, MiCollab 7.9.9.98</td>
</tr>
<tr>
<td>Mitel</td>
<td>MX-ONE Lite (aka A700) - MGU</td>
<td></td>
</tr>
<tr>
<td>Mitel</td>
<td>MBG SIP Trunk</td>
<td>MSL: 10.5.9.0, MBG: 9.3.1.5</td>
</tr>
<tr>
<td>Mitel</td>
<td>68xxi SIP set</td>
<td>4.1.0.128 or 4.2.0.181</td>
</tr>
</tbody>
</table>
Tested Features

Below table provides an overview of the features tested during the Interoperability test cycle and not a detailed view of the test cases. Please see the SIP Trunk Side Interoperability Test Plan for detailed test cases.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Feature Description</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Call</td>
<td>Making and receiving a call through SIP service provider and their PSTN gateway,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>call holding, transferring, conferencing, busy calls, long calls durations, variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>codec.</td>
<td>👍</td>
</tr>
<tr>
<td>Automatic Call</td>
<td>Making calls to an ACD environment with RAD treatments, Interflow and Overflow call</td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td>scenarios and DTMF detection.</td>
<td>❌</td>
</tr>
<tr>
<td>NuPoint Voicemail</td>
<td>Terminating calls to a NuPoint voicemail boxes and DTMF detection.</td>
<td>❌</td>
</tr>
<tr>
<td>Packetization</td>
<td>Forcing the Mitel MIVB to stream RTP packets through its E2T card at different</td>
<td>👍</td>
</tr>
<tr>
<td></td>
<td>intervals, from 10ms to 60ms.</td>
<td></td>
</tr>
<tr>
<td>Personal Ring</td>
<td>Receiving calls through MiVoice MX-ONE and their PSTN gateway to a personal ring</td>
<td></td>
</tr>
<tr>
<td>Groups (PRG)</td>
<td>group. Also moving calls to/from the prime member and group members.</td>
<td>👍</td>
</tr>
<tr>
<td>Teleworker</td>
<td>Making and receiving a call through MiVoice MX-ONE and their PSTN gateway to and</td>
<td>❌</td>
</tr>
<tr>
<td></td>
<td>from Teleworker extensions.</td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td>Making and receiving a call through MiVoice MX-ONE with video capable devices.</td>
<td>❌</td>
</tr>
<tr>
<td>Fax</td>
<td>G.711 Fax calls.</td>
<td>👍</td>
</tr>
</tbody>
</table>

- No issues found ☑ - Issues found, cannot recommend to use ☒ - Issues found ☐ Not tested/applicable
Device Limitations and Known Issues

This is a list of problems or not supported features when Intermedia SIP trunk is connected to the MiVoice MX-ONE 6.1 SP1 HF2

<table>
<thead>
<tr>
<th>Feature</th>
<th>Problem Description</th>
</tr>
</thead>
</table>
| FAX     | Intermedia does not support FAX using T.38.  
**Recommendation:** Consult with Intermedia for further information and updates. |
| PRACK   | Intermedia does not support PRACK correctly in the following call scenario,  
- A call from Mitel to PSTN service such as conferencing or IVR system  
- The PSTN sends alerting 183 and immediately connecting the call with 200 OK  
**Recommendation:** Mitel recommends to disable PRACK when SIP Trunking with Intermedia. Consult with Intermedia for further information and updates should PRACK be needed. |
| Video   | Intermedia does not support Video.  
**Recommendation:** Consult with Intermedia for further information and updates. |
Network Topology

This diagram shows how the testing network is configured for reference.

**Figure 1 – Network Topology**
Configuration Notes

This section is a description of how the SIP Interop network was configured. These notes provide a guideline as how a device can be configured in a customer environment and how the Intermedia and MiVoice MX-ONE programming were configured in our test environment.

Disclaimer: Although Mitel has attempted to setup the interop testing facility as closely as possible to a customer premise environment, implementation setup could be different onsite. YOU MUST EXERCISE YOUR OWN DUE DILIGENCE IN REVIEWING, planning, implementing, and testing a customer configuration.

MiVoice MX-ONE Configuration Notes

The following information shows how to configure a MX-ONE 6.1 SP1 HF2 to interconnect with Intermedia.

Network Requirements

- There must be adequate bandwidth to support the VoIP network. As a guide, the Ethernet bandwidth is approx 85 Kb/s per G.711 voice session and 29 Kb/s per G.729 voice session (assumes 20 ms packetization). As an example, for 20 simultaneous SIP sessions, the Ethernet bandwidth consumption will be approx 1.7 Mb/s for G.711 and 0.6Mb/s. Almost all Enterprise LAN networks can support this level of traffic without any special engineering. Please refer to the MiVoice MX-ONE Engineering guidelines on the Mitel eDocs Website (http://edocs.mitel.com) for further information.
- For high quality voice, the network connectivity must support a voice-quality grade of service (packet loss <1%, jitter < 30ms, one-way delay < 80ms).

Assumptions for MiVoice MX-ONE Programming

- The SIP signaling connection uses UDP on Port 6060
Licensing – SIP Trunk Licensing

Ensure that the MiVoice MX-ONE is equipped with enough SIP trunking licenses for the connection to the Intermedia. This can be verified using `license_status` CLI command.

The MiVoice MX-ONE Service Node Manager (SNM) web interface provides CLI capabilities using **Tools > Command Line**. Please note that only an administrator user with System Setup Admin security profile has access to Tools menu.

![Figure 2 – SIP Trunk Licensing](image-url)
Route – Adding the SIP Route

The Route form is used to create and configure MiVoice MX-ONE SIP trunks.

In SNM web interface, navigate to Telephony > External Lines > Route and click on Add button.

![Figure 3 – View SIP Routes](image)

Select SIP as the Type of Signaling, and Default as the Profile Name and click Next.

![Figure 4 – Add SIP Route](image)

Note that it is recommended to create your own profile using Default profile as template. All profiles are in following directory on MiVoice MX-ONE: /etc/opt/eri_sn/sip_trunk_profiles. Please note that after creating a new profile should issue start --system command so that the newly created profile appears in the drop-down list.
Provide Route name and select an available Route Number from the drop-down list, and click Next.

Figure 5 – Add SIP Route – General
On SIP page of **Adding SIP Route**, provide below SIP related information

- **Trusted Privacy Domain**: User
- **Proxy Address**: Internal IP address of MBG
- **Proxy Port Number**: 5060
- **Unknown Public Number**: sip:?@<Provider’s IP Address> (ex, sip:?@64.28.122.44)
- **Type of Accepted Calls**: Remote IP
- **Address of Numbers to Match Incoming Call**: Internal IP address of the MBG

![Mitel Service Node Manager](image)

**Figure 6 – Add SIP Route – SIP**

Click the **Next** button.
Select **Server** and add a **Trunk Index**.

![Figure 7 – Add SIP Route – Hardware](image)

Click the **Next** button.

In our test environment **Services** options were left at their defaults. Click **Next** button.

![Figure 8 – Add SIP Route – Services](image)
In our test environment the **Number Data** options are left at their defaults. Click the **Next** button.

![Figure 9 – Add SIP Route – Number Data](image1)

In our test environment the **Name Identity** options were left at their defaults. Click the **Apply** button.

![Figure 10 – Add SIP Route – Name Identity](image2)
Review the configuration and click the **Done** button.

![Service Node Manager](image)

**Figure 11 – Add SIP Route – Result**
Intermedia requires SIP trunk to be registered and authorized. It also requires a non-default remote and register port. All these provisioning could only be done via MiVoice MX-ONE command line.

Using SSH login to MiVoice MX-ONE with mxone_admin account and use sip_route command to configure the SIP trunks to register with Intermedia

```
sip_route -set -route 2 -register SIP_EBT -registerstring sip:2066863771@64.28.122.44 -registerport 6060 -remoteport 6060 -authname "dgwsid28857" -password "UzXdex5T" -realm 192.168.101.31 -numbers "1...5"
```

**Figure 12 – SIP Route Command Line**
Number Series

A number series is required to be created prior to adding a destination for the previously configured route.

In the SNM web interface, navigate to Number Analysis > Number Plan > Number Series and click Add button.

![Figure 13 – Number Series](image)

Select the Number Series Type to be **External numbers**, and click Next.

![Figure 14 – Add Number Series – Step 1](image)
In the **External Destination** field enter the numbers according to your dial plan. This number will be used to dial over the SIP trunks. In our test environment **944** is used. Click **Apply** button.

![Figure 15 – Add Number Series – Step 2](image)

---

**In the External Destination field enter the numbers according to your dial plan. This number will be used to dial over the SIP trunks. In our test environment 944 is used. Click Apply button.**

---

![Figure 15 – Add Number Series – Step 2](image)
**Destination**

In the SNM web interface, navigate to **Telephony > External Lines > Destination** and click on **Add** button.

![Figure 16 – Destination](image)

For the **Type of Destination** select **Destination**, and click **Next**.

![Figure 17 – Add Destination – Type of Destination](image)
From the Destination drop-down list, select the number series that was created above, which in our test environment **944** was used.

In the Route Name drop-down list select previously created SIP route (ex: Intermedia) and click **Next**.

![Figure 18 – Add Destination – Route Details](image)

In the test environment the leading digits **944** were used, so the Start Position for Digit Transmission was set to **4**. Click the **Next** button.

![Figure 19 – Add Destination – ADC Details](image)
Review the configuration and click the **Done** button.
MiVoice Border Gateway Configuration Notes

MBG SIP Options

To enable SIP on the MiVoice Border Gateway (MBG),

- Login to Service Manager of MBG.
- Select Mitel Border Gateway under Applications
- Select System Configuration tab
- Click on Settings
- Scroll down to the SIP Options section
- Select required transport protocol. Intermedia uses UDP

![MBG SIP Settings](image)

Figure 21 – MBG – SIP Settings
Adding MiVoice MX-ONE to MBG

To configure MiVoice MX-ONE into Mitel Border Gateway (MBG),

- Login to Server Manager of MBG
- Select Mitel Border Gateway under Applications
- Select Service Configuration tab
- Click on ICPs
- Add ICP by selecting the + symbol under ICP Information
- Enter a name for the MiVoice MX-ONE (ex: MXONE_31)
- Enter the IP address of MiVoice MX-ONE
- Select Type to as MiVoice MX-ONE

![Configuration - ICP Setup](image)

Figure 22 – Configuration – ICP Setup
SIP Trunk Configuration

To configure Intermedia trunking into the Mitel Border Gateway (MBG),

- Under the Service Configuration tab of MBG, click on SIP Trunking
- Add a SIP Trunk by clicking on the + under SIP Trunking Information. Enter the SIP trunk’s details as shown.

Name: Enter the trunk name (ex, Intermedia)

Remote trunk endpoint address: Enter the public IP address or FQDN of the provider’s switch or gateway. This address will be provided to you by service provider (ex: Intermedia)

Local/Remote RTP framesize (ms): Enter the packetization rate you want to set the SIP trunks can leave at the default of Auto

PRACK: Use master setting which for our test environment was set to Enabled

Routing rule one: Allows routing of any digits to the selected MiVoice MX-ONE.

The rest of the settings are optional and could be configured if required.

- Click Save

![SIP Trunk Configuration](image)

Figure 23 – Configuration – SIP Trunk
Appendix A

This section contains some useful CLI Commands

System software Release
> ts_about;
====== MiVoice MX-ONE ======
Version: 6.1.1.2.2
RPM Packages
==============
MX-ONE Service Node 16.1.1.2.2 :
  eri_sn_opt-16.1.1.2.2-201608011509
  eri_sn_dbg-16.1.1.2.2-201608011509
Media Server 3.0.59 :
  mgw-3.0.59-1
Media Gateway Classic :
 -
MX-ONE Service Node Manager 6.1.1.2.9.458.3 :
  eri_om-6.1.1.2.9.458.3-201608011340
MX-ONE Provisioning Manager 6.1.1.2.2.456.3 :
  eri_mp-6.1.1.2.2.456.3-201608011340

Route Provisioning
sip_route:
> sip_route -set -route 2 -uristring0 sip:?@64.28.122.44 -remoteport 6060 -proxyip 192.168.101.205 -proxyport 5060 -accept REMOTE_IP -match 192.168.101.205 -register SIP_EBT -registerstring sip:2066863771@64.28.122.44 -numbers 1...5 -registerport 6060 -timer 3600 -authname dgwid28857 -password UzXdex5T -realm 192.168.101.31 -trusted USER -codecs PCMU,PCMA,G729A
Changing data
route : 2
  protocol    = udp
  profile     = Default
  service     = PUBLIC
  uristring0  = sip:?@64.28.122.44
  remoteport  = 6060
  proxyip     = 192.168.101.205
  proxyport   = 5060
  accept      = REMOTE_IP
  match       = 192.168.101.205
register = SIP_EBT
registerstring = sip:2066863771@64.28.122.44
numbers = 1...5
registerport = 6060
timer = 3600
authname = dgwid28857
password = UzXdex5T
realm = 192.168.101.31
trusted = USER
codecs = PCMU, PCMA, G729A

Are you sure? (Y/N): y

> sip_route -print -route 2 -short
Route data for SIP destination

route : 2
  protocol = udp
  profile = Default
  service = PUBLIC
  uristring0 = sip:?@64.28.122.44
  remoteport = 6060
  remotetelip = 64.28.122.44
  proxyip = 192.168.101.205
  proxyport = 5060
  accept = REMOTE_IP
  match = 192.168.101.205
  register = SIP_EBT
  registerstring = sip:2066863771@64.28.122.44
  numbers = 1...5
  registerport = 6060
timer = 3600
authname = dgwsid28857
password = UzXdex5T
realm = 192.168.101.31
trusted = USER
codecs = PCMU, PCMA, G729A
Appendix B

This section contains useful MML commands for configuring MiVoice MX-ONE.

Route Setup

1. ROCAP | ROCAI
2. RODAP | RODAI
3. ROEDP | ROEQI
4. RODDP | RODDI

*Where:*

\( RO = \text{Route} \quad CA = \text{Category} \quad DA = \text{Data} \quad DD = \text{Destination Data} \quad P = \text{Print} \quad I = \text{Initiate} \)

**ROCAP:** Route category data print

MDSH> ROCAP:ROU=ALL;

ROUTE CATEGORY DATA

```
ROU CUST SEL TRM SERV NODG DIST DISL TRAF SIG BCAP
1 7110000000000010 5 3100000007 0 30 128 0315 1515111100000A0 001100
2 7110000000000010 5 3100000007 0 30 128 0315 1515111100000A0 001100
3 7110000000000010 5 3100300007 0 30 128 0315 1515111100000A0 001100
END
```

**ROCAI:** Route category initiate

The command is used to initiate a route and a subset of its categories. Complete categorization of the route also requires entering of the RODAI command.

**RODAP:** Route data print

MDSH> RODAP:ROU=ALL;

ROUTE DATA

```
ROU TYPE VARC VARI VARO FILTER
1 TL66 H'00000002 H'00000000 H'00000000 NO
2 TL66 H'00000002 H'00000000 H'00000000 NO
3 TL66 H'00000000 H'00000000 H'00000104 NO
END
```
RODAI: Route data initiate

Set up internal characteristics for the route; for example, traffic direction, services, or bearer capabilities.

ROEDP: Route equipment data print

MDSH> ROEDP:ROU=2,TRU=ALL;

ROUTE EQUIPMENT DATA

<table>
<thead>
<tr>
<th>ROU</th>
<th>TRU</th>
<th>EQU</th>
<th>IP ADDRESS</th>
<th>SQU</th>
<th>INDDAT</th>
<th>CNTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>001-1</td>
<td></td>
<td>H'000000000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001-2</td>
<td></td>
<td>H'000000000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001-3</td>
<td></td>
<td>H'000000000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001-4</td>
<td></td>
<td>H'000000000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001-5</td>
<td></td>
<td>H'000000000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where:

ROU = Route number
TRU = Trunk Line number. LIM number and sequence number for the external line.
INDDAT = Individual trunk data for the external line.

ROEQI: Route equipment initiate

RODDP: Route external destination data print

MDSH> RODDP:DEST=ALL;

EXTERNAL DESTINATION ROUTE DATA

<table>
<thead>
<tr>
<th>DEST</th>
<th>DRN</th>
<th>ROU</th>
<th>CHO</th>
<th>CUST</th>
<th>ADC</th>
<th>TRC</th>
<th>SRT</th>
<th>NUMACK</th>
<th>PRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8000</td>
<td>4</td>
<td>0005000000002500000000000000000000</td>
<td></td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>910</td>
<td>7</td>
<td>0005000000002500000000000000000000</td>
<td></td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>940</td>
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<td>944</td>
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<td>950</td>
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<td>0</td>
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<td>980</td>
<td>8</td>
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<td>0</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END

Where:

DEST = External Destination
DRN = Direction
ROU = Route number
CHO = Choice. Sequence number for alternative route

RODDI: Route external destination date initiate
References

1. Technical Reference Guide, Unix Commands, 201/190 82-ANF 901 14 Uen E2 2016-02-12
4. MX-ONE System Description, 21/1551-ASP 113 01 Uen PN10 2014-01-20
5. Aastra 700 Getting Started Guide.pdf