Integration of MiVoice MX-ONE and Microsoft[®] Lync Server[™] 2013

QUICK SETUP GUIDE



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1 INTRODUCTION

The MiVoice MX-ONE communication system is based on an open software and hardware environment, using standard servers with a Linux SUSE operating system. This open standards approach enables Mitel to offer our customers a choice and with this in mind we have worked together with Microsoft to ensure that MiVoice MX-ONE can be integrated with the latest Microsoft UC products.

MiVoice MX-ONE 5.0 was the first communications system (IP-PBX) to be fully UCOIP qualified with Microsoft Lync Server 2013. This is a complete direct SIP integration, including security and media bypass, enabling customers to have both MX-ONE 5.0/6.x and MS Lync 2013 co-exist side by side in the same infrastructure and benefit from the best of both worlds. MX-ONE integrates with Microsoft UC solutions directly via a SIP connection to reduce the overall cost and complexity of the combined solution.

Please refer to Microsoft's TechNet site for "Infrastructure Qualified for MS Lync" for more information on the Microsoft Unified Communications Open Interoperability Program (UCOIP). http://technet.microsoft.com/en-us/lync/gg131938

1.1 GENERAL

Integration of MiVoice MX-ONE with Microsoft Lync Server 2013 is supported as a complementary solution providing end user services, like instant messaging, conferencing etc.

Microsoft Partner Program has certified the integration between MX-ONE communications system running the MX-ONE Service Node software 5.0 SP4 and Microsoft Lync Server 2013 via a Direct SIP connection. Also later versions of MX-ONE can be integrated with Microsoft Lync Server 2013.

1.2 SCOPE OF THIS DOCUMENT

The intent of this guide is to describe the basic integration between MiVoice MX-ONE and Microsoft Lync Server 2013. The following sections describe the solution integration that has been certified through the Microsoft Partner Program and covers only the Direct SIP integration. For more information on how this integration is set-up and functions, please refer to the relevant CPI documentation for MX-ONE or go to the Microsoft UC product websites.

As a general rule, it is always recommended to check the latest products documentation.

2 INTEGRATION DESCRIPTION

The integration of MiVoice MX-ONE and Microsoft Lync Server 2013 described in this guide is achieved via Direct SIP. Direct SIP that is specified by Microsoft means that a SIP trunk is used to connect MX-ONE and Microsoft Lync Server 2013 (Mediation Server). The SIP trunk connection between the systems can be deployed with or without encryption. MX-ONE supports TLS for signaling and SRTP for media encryption when connected with Mediation Server.



This guide covers only the components that are required in the integration between MX-ONE 5.0 SP4 or later versions, and Lync Server 2013 via Direct SIP to offer the functionality required by the Microsoft UC Open Interoperability Program for enterprise telephony services and infrastructure.

At least the following Microsoft Lync Server 2013 components are required in order to support this integration:

- Server Infrastructure
 - Microsoft infrastructure (Domain Controller, Active Directory, DNS, etc.)
 - Microsoft Lync Server 2013 Standard or Enterprise Edition
 - Microsoft Mediation Server
- Client
 - Lync 2013

2.1 DIRECT SIP

In Direct SIP integration, referred to as Enterprise Voice by Microsoft Lync 2013 users will have dedicated phone numbers that differs from those used in the MX-ONE.



This enables the Lync 2013 client to make and receive external calls through a PC. The calls are routed from the Lync Server 2013 by the SIP trunk to the MX-ONE and further to the PSTN and vice-versa. MX-ONE and Microsoft Lync Server 2013 will behave as networked PBX's, as typically is the case with all external trunks in the MX-ONE.

2.2 DIRECT SIP SIGNALING OVERVIEW

MiVoice MX-ONE supports SIP/TCP or SIP/TLS as the SIP transport mechanism when connected with Mediation Server.

The MX-ONE ports used for such connections are:

- SIP/TCP: 5060
- SIP/TLS: 5061

In additional, MX-ONE also supports media encryption (SRTP) when connected with Microsoft Lync 2013 Server when TLS is used. The media encryption will be done between MX-ONE media gateway unit (MGU) and Microsoft Mediation Server or between MX-ONE media gateway unit (MGU) and Lync client when Media Bypass is configured in Lync 2013 Server.



2.3 DIRECT SIP SUPPORTED FEATURES

During the certification process the following Lync features were validated with MX-ONE Service Node software 5.0 SP4.

- Basic Call services between MX-ONE and Lync end-points over SIP trunks
 - Anonymous user calls
 - Caller ID on both ends
 - Decline call
 - Call forwarding and simultaneously ring feature
 - Inbound and outbound calls
- Media bypass (a.k.a. direct media between MX-ONE and Lync clients). Encryption (TLS and SRTP) is required for this functionality.
 - Inbound call from MX-ONE user device to Lync client
 - Outbound call from Lync client to MX-ONE user device
 - Outbound call: Call Forward All (CFA) to another Lync client
 - Outbound call from Lync with by-pass enabled and CFA enabled to another Lync user
- Outbound call: PBX CFB (Call Forward on Busy) to another Lync user
 - Outbound call from Lync with by-pass enabled and CFB enabled to another Lync user
- Conference
- Failover (to secondary Mediation Server Lync gateway)
- Security (support for TLS/SRTP encryption)

3 PREREQUISITES

In order to have the proper integration between MiVoice MX-ONE and Microsoft Lync Server using Direct SIP, there are some prerequisites on both sides that must be fulfilled.

3.1 MIVOICE MX-ONE REQUIREMENTS

On the MiVoice MX-ONE side, at least one MX-ONE Service Node and one Media Gateway are required to interwork with Microsoft Lync Server 2013.

3.1.1 MAIN COMPONENTS:

At least the following MX-ONE components are required:

- MX-ONE communications system
 - MX-ONE Service Node
 - MX-ONE Service Node 5.0 SP4 or later versions
- Supported media gateways with the latest compatible firmware with 5.0 SP4 (or later versions)
 - MX-ONE Classic 7U 19-inch chassis, MGU boards or
 - MX-ONE Lite 3U 19-inch chassis, using MGU board
 - MX-ONE Slim 1U 19-inch chassis, using MGU board
- Terminals
 - All current MX-ONE terminal types are supported with this integration: SIP, H.323, analog, digital, DECT and mobile extension

3.1.2 LICENSES

The MX-ONE licenses needed for this integration are:

- SIP trunk licenses, please note that the quantity of licenses depend on how the system is deployed.
- Encryption licenses are required if encryption (TLS/SRTP) is used.

Please always check with your Mitel partner that your system has the correct licenses, before beginning the integration deployment.

3.2 MICROSOFT LYNC SERVER 2013

A Microsoft environment needs to be in place in the customer site. Note that the Microsoft Lync is not part of the MX-ONE offering. It is important that Microsoft competent engineers are used for installation and integration according to the MX-ONE configuration guidelines for the interface between the systems.

3.2.1 MAIN COMPONENTS

The main Microsoft components that are required to interconnect with MiVoice MX-ONE are Microsoft Lync Server, Mediation Server and Lync clients. The Lync requirements are found in the Microsoft Lync Server documentation, see the chapter References at the end of this guide.

Note! In Mitel's lab validation a single Lync Server Standard Edition with a co-located Mediation Server was used. When testing load balancing and failover two stand-alone Mediation Servers were added to the topology.

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3.2.2 LICENSES

Microsoft licenses needed for this integration are not included as part of the scope of this guide.

Please contact Microsoft or a qualified Microsoft partner to obtain the proper license requirements for each component of the Microsoft Lync Server solution.

4 INSTALLATION AND CONFIGURATION

4.1 INSTALLATION

4.1.1 MIVOICE MX-ONE INSTALLATION

It is assumed that MX-ONE Service Node software 5.0 SP4 or later versions is installed in the customer environment. The system installation is not covered in this guide and should be performed by a qualified Mitel certified partner prior to the start of the integration work.

For Mitel MX-ONE installation, please check the appropriate CPI documentation.

4.1.2 MICROSOFT INFRASTRUCTURE

It is assumed that Microsoft infrastructure and Microsoft Lync Server are installed in the customer environment by a qualified engineer.

For Microsoft infrastructure and Microsoft Lync Server requirements please check the appropriate Microsoft documentation.

4.2 CONFIGURATION

The following information was used in Mitel's laboratory setup during the validation of the solution. The setup may change depending of the customer specific needs.

Note! Fully Qualified Domain Name (FQDN) needs to be properly specified in the Domain Name System (DNS).

- MX-ONE 5.0 SP4 (or later version)
 - Domain: lab.moon.galaxy Note that MX-ONE is part of a sub-domain.
 - IP address: 192.168.222.10
 FQDN: mx-one-lync.lab.moon.galaxy.
- Microsoft Domain Controller, Active Directory, Certification Authority and DNS Server
 - Domain: moon.galaxy
 - IP address: 192.168.222.2 FQDN: lync-infra.moon.galaxy
- Lync Server Standard Edition and Mediation pool
 - Domain: moon.galaxy
 - IP address: 192.168.222.3 FQDN: lync-2013-se.moon.galaxy



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Note! Mitel recommends that complex scenarios shall be validated in the partner labs prior to customer deployment.

4.2.1 DIRECT SIP SETUP

A SIP trunk has to be configured in MX-ONE as well as the access code for this route.

MX-ONE uses ports TCP 5060 and TLS 5061 to be interconnected with Microsoft Lync 2013.

Note! MX-ONE 5.0 SP4 (or later version) works with pre-defined SIP profiles for certain SIP service providers, if used; the profile file will help you configure the right data for the type selected. Each profile file may contain a number of profiles. The profile will pre-configure settings like "-register", "-

trusted" etc. according to the telephony provider requirements.

MX-ONE 5.0 SP4 (or later version) has pre-defined SIP trunk profiles to be used with Lync 2013. One of the following trunk profiles needs to be selected during the MX-ONE SIP trunk configuration.

- Lync_TCP TCP is used as transport protocol and the listening port is 5068.
- Lync_TLS_SRTP. TCP is used as transport protocol and the listening port is 5067. SRTP is used to encrypt the media, it uses RTP/SAVP.

The setup presented below uses Lync_TCP where TCP is the transport protocol, in this case the remote port is expected to listening on port 5068.

In order to secure a good interoperability between MiVoice MX-ONE and Microsoft Lync Server 2013, the SIP trunk profiles defined to Lync are "Forced Gateway", because it will guarantee the same behavior for all type of calls passing through MX-ONE and going to Lync Server 2013.

4.2.1.1 MiVoice MX-ONE Direct SIP setup - TCP

The figure below shows the Direct SIP configuration used in this guide:



The following setup needs to be done in MX-ONE in order to configure Direct SIP, please note that only SIP Route definitions are showed.

1. Use the following command to check more details regarding SIP Profile Lync_TCP

sip_route -print -profile Lync_TCP

2. Define SIP route category:

ROCAI:ROU=99,SEL=711000000000010,SIG=0111110000A0,TRAF=03151515,TRM=4, SERV=3100000001,BCAP=001100;

3. Define SIP route data

RODAI:ROU=99,TYPE=TL66,VARC=0000000,VARI=0000000,VARO=00000000;

4. Define SIP trunk data specific:

sip_route -set -route 99 -profile Lync_TCP -uristring0=sip:?@ lync-2013-se.moon.galaxy (or 192.168.222.3) -remoteport 5068 -accept REMOTE_IP -match 192.168.222.3 -codecs PCMA,PCMU

5. Verify your configuration:

sip_route -print -route 99 -short

6. Define the SIP Route equipment initiate, for example:

ROEQI:ROU=99,TRU=1-1&&1-30;

7. Define external destination SIP route data

RODDI:ROU=99,DEST=99,ADC=000500000000250000001010000,SRT=3;

4.2.1.2 Lync Server 2013 configuration - TCP

In order to finalize the configuration between MX-ONE and Microsoft Lync Server 2013 the following needs to be done:

Edit Properties		
General Next hop PSTN gateway	General FQDN: * meds.moon.galaxy	_ ^
	Associations Associate Edge pool (for media components) New Note: To view or change the federation route, use the site property page.	
	Next hop selection Next hop pool: Iync-2013-se2 RND_Site1	-
	Mediation Server PSTN gateway Listening ports: * TLS: 5067 - 5067 5068 - 5068	<u> </u>
	Enable TCP port The following trunks are associated with this Mediation Server. Click Make Default to mark a trunk as default default trunk is required only when your topology contains Office Communications Server 2007 R2.	. A
Help	Gateway Site	Cancel

Enable TCP support for the Mediation pool, because it is disabled by default.

- 4.2.1.3 Define PSTN Gateway in the Lync Server 2013 Topology Builder
 - 1. Open Lync Server 2013, Topology Builder and define a PSTN gateway to be used between Lync and MX-ONE.
 - 2. To define the PSTN gateway, expand Shared Components, right click in the PSTN gateways.

🖃 🚞 Shared Components								
🕀 🛅 SQL Server stores								
🛨 🚞 File stores								
🖃 🚞 PSTN gateways	🖃 🛅 PSTN gateways							
🖏 mxone-lyn	New IP/PSTN Gateway							
MX-ONE-S	Top Define a new IP/PSTN gateway.							
🧠 mx-one-sa	Topletine a new 177 STR gateway.							
🕀 🧰 Trunks	Help							
Contract Contrac								
🚞 Branch sites								

3. Click in New IP/PSTN Gateway, the Define New IP/PSTN Gateway dialog box appears, type the following:

Gateway FQDN or IP Address: specify the MX-ONE IP Address or FQDN, click Next

befine New IP/PSTN Gateway
Define the PSTN Gateway FQDN
Define the fully qualified domain name (FQDN) for the PSTN gateway.
mx-one-lync.lab.moon.galaxy
Help Cancel

4. Define the IP address: in this example the default is kept. Click Next.

Define New IP/PSTN Gateway	×
Define the IP address	
Enable IPv4	
Use all configured IP addresses.	
C Limit service usage to selected IP addresses.	
PSTN IP address:	
O Enable IPv <u>6</u>	
Use all configured IP addresses.	
Limit service usage to selected IP addresses.	
PSTN <u>I</u> P address:	
Help	<u>B</u> ack <u>N</u> ext Cancel

- 5. Define the root trunk
 - Trunk name: FQDN (MX-ONE FQDN)
 - Listening port for IP/PSTN gateway: 5060 (MX-ONE SIP TCP port)
 - SIP Transport Protocol: TCP
 - Associated Mediation Server: lync-2013-se.moon.galaxy
 - Associated Mediation Server Port: 5068 (default)
- 6. Click Next

La Define New IP/PSTN Gateway
Solution Define the root trunk
Irunk name: *
mx-one-lync.lab.moon.galaxy
Listening port for IP/PSTN gateway: *
5060
SIP T <u>r</u> ansport Protocol:
ТСР
Associated Mediation Server:
Lync-2013-se.moon.galaxy RND_Site1
Associated Mediation Server port: *
5068
Help <u>B</u> ack <u>Finish</u> Cancel

7. Publish the topology

PSTN gatew New IP/PSTN G	Sateway
MX-ONE Topology	New
mx-one Help	Open
	Download Current Topology
Trunks Office Web Area Convert	Court & Court
Office Web Apps Servers	Save A Copy
Branch sites	Publish
	Install Database
	Install Database OPublish topology to the Central Management store. Merge Office Communications Server 2007 N2
	Remove Deployment

4.2.1.4 Define a Dial Plan

The Dial Plan configuration is required to allow Lync users to dial to MX-ONE terminals as well as PSTN. To define it, execute the following:

- 1. Open the Lync Server Control Panel
- 2. Click Voice Routing and choose Dial Plan
- Define Normalization rules that fits your organization needs, at least a rule for Lync users to dial to MX-ONE terminals and another for PSTN (assuming that MX-ONE is connected with the PSTN) is required. Please contact Microsoft for the appropriate setup for your company as needed

Microsoft Lync Server 2013		
ync Server 2013	Administrator 5.0.8308.420 Privac	
	Dial Plan Voice Policy Route PSTN Usage Trunk Configuration Test Voice Routing	stat
Home		
S Users	Create voice routing test case information	
Topology		
IM and Presence	New Dial Plan New Normalization Rule	
Persistent Chat	V OK X Cancel	0
Voice Routing	Build a Normalization Rule	1
 Voice Features 	Fill in the fields that you want to use, or create the rule manually by clicking Edit.	
Response Groups	Starting digits:	
D Conferencing	37	
Clients	Length: Exactly V 5 (m)	
10 A 10 A 10		
External Access	Digits to remove:	
Monitoring	Digits to add:	
and Archiving		
Security	Pattern to match: *	
Network Configuration	^(37\d(3))\$	
	Translation rule: *	
	51	
	Edit Reset ?	
	Internal extension (2)	
	Dialed number to test:	
	Go	
		•

Figure 1 - - New Normalization Rule, five digits example

4. Commit the changes

4.2.1.5 Define Voice Policy

A voice policy is required to make possible Lync users to dial out via the Direct SIP connection using MX-ONE. Lync client users need to be assigned for this policy afterwards.

Create the Voice Policy

- 1. Click Voice Routing and choose Voice Policy
- 2. Click in New and choose the type of policy that is applicable for your company setup, site policy or user policy
- 3. Define a name and description for this voice policy

Ho B Ho B Us To F IM	Server 2013	Dial Plan Voice Policy Route PSTN Usage Create voice routing test case information	Administra 5.0.8306.420 Prive Trunk Configuration Test Voice Routing	
Ha B Us To IM	ome sers opology			
K Us	sers opology		Trunk Configuration Test Voice Routing	
To	opology	Create voice routing test case information		
P IM				
	A and Presence			
		New Voice Policy		
Y Pe	ersistent Chat	✓ OK X Cancel		0
🥴 Vo	oice Routing	Scope: User		ń
ι Vo	oice Features	Name: *		
🔏 Re	esponse Groups	Description:		
D Co	onferencing			
🔒 Cli	lients	^ Calling Features		
	ederation and	C Enable call forwarding	✓ Enable team call	
EX	cternal Access	Enable delegation	✓ Enable PSTN reroute	
	Ionitoring nd Archiving	Enable call transfer Enable call park	Enable bandwidth policy override Enable malicious call tracing	
-	ecurity	Enable call park Enable simultaneous ringing of phone		
	etwork	Associated PSTN Usages		
Co	onfiguration	+ New Select / Show details.		
			ed routes	

- 4. Associate a new PSTN for this policy, click New
- 5. Define a name and description for this new PSTN usage record.

🌄 Mi	💀 Hicrosoft Lync Server 2013 Control Panel								
	Lync Server 2013 Administrator Sign out								
-y	The Server 2015								5.0.8308.420 Privacy statement
	Home		Dial Plan	/oice Policy	Route	PSTN Usage	Trunk Configuration	Test Voice Routing	
33	Users		Create voice	routing tes	t case info	ormation			~
×	Topology		_						
Ģ	IM and Presence		New Vo	ce Policy 🕨	New PS	TN Usage Reco	ord		
2	Persistent Chat		🗸 OF	X Can	cel				0
G	Voice Routing		Name:						
S	% Voice Features								
23	Response Groups		Associa	ted Routes					
Q	Conferencing				lect	Show details.			
	01 J			Name		Pat	ttern to match		

- 6. Click New to associate a Route with this PSTN usage record.
- 7. Define a name and description for this New Route.
- 8. Associate the MX-ONE gateway created previously with this New Route, to do it click Add in Associated Gateways.

Microsoft Lync Server 2013 C	ontrol Panel	
ync Server 2013		Administrator Sign o
June Server 2015	5.0.8:	308.420 Privacy stateme
Home	Dial Plan Voice Policy Route PSTN Usage Trunk Configuration Test Voice Routing	
3 Users	Create voice routing test case information	~
Topology		
IM and Presence	New Voice Route	
Persistent Chat	✓ OK X Cancel	0
Voice Routing	Scope:	Â
Voice Features	Name: * Route to MX-ONE	
Response Groups	Description:	
Conferencing		
Clients	Build a Pattern to Match	
Federation and External Access	Add the starting digits that you want this route to handle, or create the expression manually by clicking Edit. Starting digits for numbers that you want to allow:	
Monitoring and Archiving	Type a valid number and then click Add. Add	
Security	Exceptions	
Network Configuration	Remove	
	Match this pattern: *	
	Edit Reset 🕐	
	Suppress caller ID Alternate caller ID:	
		•

- 9. In the Select Gateway select the MX-ONE gateway created previously.
- 10. Click OK for all questions in order to keep the configurations.
- 11. Commit all changes.

Select Trunk	x 🕥
	٩
Service	Site
PstnGateway:	RND_Site1
PstnGateway:	RND_Site1
PstnGateway:	RND_Site1
PstnGateway:mx-one-lync.lab.moon.galaxy	RND_Site1
	OK Cancel

4.2.1.6 Define Trunk Configuration

In order to assign the MX-ONE gateway to a site or pool trunk execute the following:

- 1. Click in Voice Routing and then click in Trunk Configuration.
- 2. Click in New and choose the type of trunk that is applicable for your company setup, site trunk or pool trunk.

Microsoft Lync Server 2013 G	pilitor Pallet	
ync Server 2013		Administrator Sign
		5.0.8308.420 Privacy stater
Home	Dial Plan Voice Policy Route PSTN Usage Trunk Configuration Test Voice Routing	
Users	Create voice routing test case information	~
Topology		
IM and Presence	New Trunk Configuration - RND_Site1	
Persistent Chat	✓ OK X Cancel	0
Voice Routing	Scope: Site	Â
Voice Features	Name: * RND Site1	
Response Groups	Description:	
Conferencing		
Clients	Maximum early dialogs supported:	
Clients Federation and	20	
External Access	Encryption support level:	
Monitoring	Not supported	
and Archiving	Refer support:	
Security	Enable sending refer to the gateway	
Network Configuration	Enable media bypass	
	Centralized media processing Enable RTP latching	
	Enable forward call history	
	Enable forward P-Asserted-Identity data	
	✓ Enable outbound routing failover timer	
	^ Associated PSTN Usages	
	Select Remove 🎓 🦊	
	PSTN usage record Associated routes	

3. Select the Encryption support level, in this case, Not supported.

Required	
Optional	
Not supported	

4. Commit all changes

4.2.1.7 Conclusion

Now the setup is concluded, assign users with the Policy created previously and test the integration making calls between the systems.

Please check Enable Users for Enterprise Voice setup in the link below:

http://technet.microsoft.com/en-us/library/gg413011.aspx

4.2.2 DIRECT SIP WITH SECURITY AND MEDIA BYPASS SETUP

The figure below shows the Direct SIP with security and Media Bypass configuration used in this guide.



4.2.2.1 MiVoice MX-ONE Direct SIP with security and Media Bypass setup

The following setup needs to be done in MX-ONE in order to configure Direct SIP with security (encryption), please note that only Route definitions are showed.

Note! MX-ONE FQDN needs to be properly defined in the DNS Server.

When using security an appropriate certificate needs to be installed in MX-ONE as well as the encryption licenses. Please check Certificate Management on MX-ONE CPI documentation in case you need more details regarding certificates.

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Note! TLS/SRTP security is required for Media bypass functionality. It means that the proper encryptions licenses shall be loaded in the MX-ONE system.

1. Use the following command to check more details regarding SIP Profile Lync_TLS_SRTP

sip_route -print -profile Lync_TLS_SRTP

2. Define SIP route category:

ROCAI:ROU=98,SEL=711000000000010,SIG=0111110000A0,TRAF=03151515,TRM=4, SERV=3100000001,BCAP=001100;

3. Define SIP route data

RODA I:ROU=98,TYPE=TL66,VARC=0000000,VARI=00000000, VARO=00000000;

4. Define SIP trunk data specific:

sip_route -set -route 98 -profile Lync_TLS_SRTP –uristring0 sip:?@ lync-2013-se.moon.galaxy -remoteport 5067 -accept REMOTE_IP -match 192.168.222.3 -codecs PCMA,PCMU

5. Verify your configuration:

- sip_route -print -route 98 -short
- Define the SIP Route equipment initiate ROEQI:ROU=98,TRU=1-1;
- Define external destination SIP route data RODDI:ROU=98,DEST=98,ADC=00050000000250000001010000,SRT=3;

4.2.2.2 Import the certificate to MX-ONE Service Node

Import the server certificate mx-one-certificate.pfx to MX-ONE Service Node. On the access Server, for example, MX-ONE Service Node 1 runs the following command

1. Install the certificate in the MX-ONE Service Node 1:

cert_install_local mx-one-certificate.pfx

2. Enable Media Encryption in the route:

media_encryption_enable -type route

4.2.2.3 Lync configuration with security and Media Bypass setup

In order to finalize the configuration between Mitel MX-ONE and Microsoft Lync Server 2013 the following needs to be done:

Define PSTN Gateway in the Lync Server 2013 Topology Builder

- 1. Open Lync Server 2013, Topology Builder and define a PSTN gateway be used between Lync and MX-ONE.
- 2. To define the PSTN gateway, expand Shared Components, right click in the PSTN gateways.



- 3. Click in New IP/PSTN Gateway, the Define New IP/PSTN Gateway dialog box appears, type the following:
- 4. Gateway FQDN or IP Address: specify the MX-ONE IP Address or FQDN, click Next

🔀 Define New IP/P5TN Gateway 🔀
Define the PSTN Gateway FQDN
Define the fully qualified domain name (FQDN) for the PSTN gateway.
FQDN: *
mx-one-lync.lab.moon.galaxy
Help Back Next Cancel

5. Define the IP address: in this example the default is kept. Click Next.

🌄 Defin	e New IP/PSTN Gateway 🛛 🗙
5	Define the IP address
• En	able IPv4
c	<u>U</u> se all configured IP addresses.
0	Limit service usage to selected IP addresses.
	PSTN <u>I</u> P address:
O En	able IPv <u>6</u>
C	Use all configured IP addresses.
0	Limit service usage to selected IP addresses.
	PSTN IP address:
He	lp <u>B</u> ack <u>N</u> ext Cancel

- 6. Define the root trunk
 - Trunk name: FQDN (MX-ONE FQDN)
 - Listening port for IP/PSTN gateway: 5061 (MX-ONE SIP TLS port)
 - SIP Transport Protocol: TLS
 - Associated Mediation Server: Lync-2013-se.moon.galaxy
 - Associated Mediation Server Port: 5067 (default)
- 7. Click Next

🎼 Define New IP/P5TN Gateway	×
Define the root trunk	
<u>I</u> runk name: *	
mx-one-lync.lab.moon.galaxy	
Listening port for IP/PSTN gateway: *	
5061	
SIP T <u>r</u> ansport Protocol:	
TLS	•
Associated Mediation Server:	
Lync-2013-se.moon.galaxy RND_Site1	•
Associated Mediation Server port: *	
5067	
Help Back Finish	Cancel

8. Publish the topology

PSTN gatew New IP/PSTN Gateway		
MX-ONE Topology	New	
mx-one mx-one Help	Open	
Trunks	Download Current Topology	
Gifice Web Apps Servers	Save A Copy	
in Branch sites	Publish	
	Install Databas Publish topology to the Central Manag Merge Office Communications Server 2007 Kz	gement store.
	Remove Deployment	

4.2.2.4 Define Dial Plan, Voice Policy

Define Dial Plan, Voice Policy as explained previously in this guide.

4.2.2.5 Define Trunk Configuration

In order to assign the MX-ONE gateway to a site or pool trunk execute the following:

- 1. Click in Voice Routing and then click in Trunk Configuration
- 2. Click in New and choose the type of trunk that is applicable for your company setup, site trunk or pool trunk
- 3. Click in Enable media bypass

nc Server 2013		Administrator 5
		5.0.8308.420 Privacy sta
Home	Dial Plan Voice Policy Route PSTN Usage Trunk Configuration Test Voice Routing	
Users	Create voice routing test case information	
Topology		
IM and Presence	Edit Trunk Configuration - Global	
Persistent Chat	✓ OK × Cancel	0
Voice Routing	Scope: Global	-
Voice Features	Name: * Global	
Response Groups	Description:	
Conferencing		
Clients	Maximum early dialogs supported:	
Federation and	20	
External Access	Encryption support level:	
Monitoring and Archiving	Required	
	Refer support:	
Security	None 🔻	
Network Configuration	✓ Enable media bypass ✓ Centralized media processing	
	Centralized media processing Enable RTP latching	
	Enable forward call history	
	Enable forward P-Asserted-Identity data	
	✓ Enable outbound routing failover timer	
	^ Associated PSTN Usages	
	Select Remove ↑ ↓	
	PSTN usage record Associated routes	

4. Keep the default Encryption support level, in this case, Required

Now the setup is concluded, assign users with the Policy created previously and test the integration making calls between the systems.

4.2.3 LOAD BALANCING AND FAILOVER SETUP

4.2.3.1 Load balancing

Mitel MX-ONE 5.0 and later versions support load balancing setup when connected with more than one Mediation Server. To be able to use such a scenario the Microsoft DNS Load Balancing functionality is used.

MX-ONE 5.0 and later versions support DNS SRV and multiple A-record query where a list with multiple entries can be used. When properly configured, MX-ONE will attempt to send INVITE to the entries in the list until the call is successful. No answer or 503 Service Unavailable will trigger MX-ONE to try the next entry.

For more details, check MX-ONE SIP Route command description in CPI or sip_route –help, parameter remote port.

4.2.3.2 Failover

The failover functionality also uses the Microsoft DNS Load Balancing functionality. When integrating MX-ONE and Mediation Server the same configuration is valid for both failover and load balancing.

In a scenario where 2 Mediations Server are used and one of the servers is unavailable, a first call will be attempted to set up to the first server, but it will be redirected after a few seconds and answered, subsequent calls will be redirected and answered in the second Mediation Server.

The reason it takes some seconds before getting answer is that the INVITE is sent to the first server, then the system waits 4 seconds for an answer, if no answer is received, the host is grey listed for 32 seconds and an INVITE is sent to the second server.

For more details, check MX-ONE SIP Route command description in CPI or sip_route –help, parameter remote port.

The following scenario shows the setup that was verified in Mitel's lab.



For this scenario, two stand alone Mediations Servers were used. In the MX-ONE side only one MX-ONE Service Node was used and it was configured with the Mediation Pool entry.

4.2.3.3 DNS setup

Microsoft DNS needs to be configured to support Round Robin as described in the TechNet article "Configure DNS for Load Balancing", please see the link below, item "To enable round robin for Windows Server".

http://technet.microsoft.com/en-us/library/gg398251.aspx

The figure below shows the Round Robin option enabled.

LINC-DEED-BELPI	operties					? ×
Debug Logging Interfaces	Event Logging Forwarders		t Anchors Advance		-	Security ot Hints
Server version n 6.1 7601 (0x1db						
Server options:						
BIND second	sion (also disable laries bad zone data	es forwar	dersj			
✓Enable round ✓Enable netma ✓Secure cache		n				
	3					
<u>N</u> ame checking:		Multib	vte (UTF8)			-
Load zone data	on startup:	From A	Active Dire	ctory a	nd regis	try 💌
Enable autor	natic scavenging	g of stale	records			
Scavenging	period:	0		days		Ψ.
				<u>B</u> e	set to D	efault
	ОК	Cancel		Spply		Help

DNS Multiple A record setup – Mediation Servers

In order to setup DNS Host (A) records to the two Mediation Servers the following shall be configured. Go to DNS Manager Tool and create the entries as shown in the table.

Note! For more information on how to create the DNS Host A records, please check

http://technet.microsoft.c	.com/en-us/library/gg398593		
FQDN	TYPE	IP ADDRESS	
med.moon.galaxy	Host (A)	192.168.222.7	
med.moon.galaxy	Host (A)	192.168.222.8	

Test your configuration. Use the command ping to check the setup.

Administrator: C:\Windows\system32\cmd.exe	_ 🗆 ×
C:\Users\Administrator.AAS>ping meds	-
Pinging meds. Reply from .?: bytes=32 time=35ms TIL=128 Reply from .?: bytes=32 time=21ms TIL=128 Reply from .?: bytes=32 time<1ns TIL=128 Reply from .?: bytes=32 time<1ns TIL=128 Hender from .?: bytes=32 time<1ns TIL=128 Reply from .?: bytes=32 time<1ns TIL=128	
Ping statistics for 4. Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 35ms, Average = 14ms	
C:\Users\Administrator.AAS>ping meds	
Pinging meds	
Ping statistics for 4. Received = 4, Lost = 0 (0% loss), Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms	
C:\Users\Administrator.AAS>ping meds	
Pinging meds. 81 with 32 bytes of data: Reply from .8: bytes=32 time=ins TIL=128	
Ping statistics for the second at the second second second second second second second at the second second second at the second second at the second	
C:\Users\Administrator.AAS>ping meds	
Pinging meds. Pinging meds. Reply from .7: bytes=32 time<1ms TTL-128 Reply from .7: bytes=32 time<1ms TTL-128 Reply from .7: bytes=32 time<1ms TTL-128 Reply from .7: bytes=32 time=10ms TTL=128	
Ping statistics for the second of the second s	
C:\Users\Administrator.AAS>	-

4.2.3.4 MX-ONE Direct SIP with Load balancing and failover setup - TCP

The following setup needs to be done in MX-ONE in order to configure Direct SIP with load balancing and failover setup, please note that only Route definitions are showed.



Note! MX-ONE FQDN needs to be properly defined in the DNS Server.

1. Use Use the following command to check more details regarding SIP Profile Lync_TCP

sip_route -print -profile Lync_TCP

2. Define SIP route category:

ROCAI:ROU=97,SEL=711000000000010,SIG=0111110000A0,TRAF=03151515,TRM=4,SERV=31000000 01,BCAP=00110;

3. Define SIP route data

RODAI:ROU=97,TYPE=TL66,VARC=0000000,VARI=00000000, VARO=00000000;

4. Define SIP trunk data specific:

sip_route -set -route 97 -profile Lync_TCP –uristring0 sip:?@meds.moon.galaxy -remoteport 5068 -accept REMOTE_IP -match 192.168.222.7,192.168.222.8 -codecs PCMA,PCMU

5. Verify your configuration:

- sip_route -print -route 97 -short
- Define the SIP Route equipment initiate ROEQI:ROU=97,TRU=1-1;
- Define external destination SIP route data RODDI:ROU=97,DEST=97,ADC=00050000000250000001010000,SRT=3;
- 4.2.3.5 Lync configuration with Load balancing and failover setup TCP

Define a Mediation poll in the Lync Server 2013 Topology Builder.

In the test validation a Mediation poll called meds.moon.galaxy was created with two standalone Mediation servers.

Mediation Pool FQDN=meds.moon.galaxy

Mediation Server 1	FQDN= med-1	l.moon.galaxy
--------------------	-------------	---------------

Mediation Server 2 FQDN= med-2.moon.galaxy

Kultur Server 2013, Topology Builder			
<u>File Action Help</u>			
E Lync Server	General		
Image: RND_Site1 Image: The server 2010			
🖃 🚞 Lync Server 2013	FQDN:	meds.moon.galaxy	
E Standard Edition Front End Servers		incosingulary	
Enterprise Edition Front End pools	Associations		
Mediation pools	Edge pool (for media):	Not associated	
a lync-2013-se1.	Note: To view the federati	on route, use the site property page.	
e lync-2013-se2. □			
med1.moon.galaxy	Next hop selection		
🙀 med2.moon.galaxy	Next nop selection		
Persistent Chat pools	1	lync-2013-se2. (RND Site1)	
Trusted application servers	Next hop pool:	lync-2013-se2.; (RND_Site1)	
🖃 🚞 Shared Components			
⊞ SQL Server stores ☐ File stores ☐ File stores	Mediation Server PSTN g	Iteway	
PSTN gateways			
🕀 🧰 Trunks	TLS listening port:	5067 - 5067	
Grice Web Apps Servers Branch sites	TCP listening port:	5068 - 5068	
branch area	Trunks:	Default Trunk	Gateway Si
	4		

To setup the PSTN gateways please follow the item 4.2.1, 2) Lync Server 2013 configuration - TCP.

Execute calls between MX-ONE and Lync and check that the calls are distribute between the systems.

4.2.3.6 MX-ONE Direct SIP with Load balancing and failover setup - TLS

The following setup needs to be done in MX-ONE in order to configure Direct SIP with load balancing and failover setup, please note that only Route definitions are showed.

Note! MX-ONE FQDN needs to be properly defined in the DNS Server.

- Use Use the following command to check more details regarding SIP Profile Lync_TLS sip_route -print -profile Lync_TLS
- 2. Define SIP route category:

ROCAI:ROU=96,SEL=711000000000010,SIG=0111110000A0,TRAF=03151515,TRM=4, SERV=3100000001,BCAP=00110;

3. Define SIP route data

RODAI: ROU=96,TYPE=TL66,VARC=0000000,VARI=00000000, VARO=00000000;

4. Define SIP trunk data specific:

1

sip_route sip_route -set -route 96 -profile Lync_TLS –uristring0 sip:?@meds.moon.galaxy -remoteport 5067 -accept REMOTE_IP -match 192.168.222.7,192.168.222.8 -codecs PCMA,PCMU

5. Verify your configuration:

sip_route -print -route 96 -short

- Define the SIP Route equipment initiate ROEQI:ROU=96,TRU=1-1;
- 7. Define external destination SIP route data

RODDI: ROU=96,DEST=96,ADC=000500000000250000001010000,SRT=3;

4.2.3.7 Import the certificate to MX-ONE Service Node

Import the server certificate mx-one-certificate.pfx to MX-ONE Service Node. On the access Server, for example, MX-ONE Service Node 1 runs the following command:

1. Install the certificate in the MX-ONE Service Node 1:

mxone_certificate, and select the certificate mx-one-certificate.pfx

 Enable Media Encryption in the route: media_encryption_enable –type route

4.2.3.8 Lync configuration with Load balancing and failover setup - TLS

Define a Mediation poll in the Lync Server 2013 Topology Builder.

In the test validation a Mediation poll called meds.moon.galaxy was created with two standalone Mediation servers.

Mediation Pool FQDN=meds.moon.galaxy

Mediation Server 1 FQDN= med-1.moon.galaxy

Mediation Server 2 FQDN= med-2.moon.galaxy

To setup the PSTN gateways please follow the item 4.2.2, 2) Lync configuration with security and Media Bypass setup

Execute calls between MX-ONE and Lync and check that the calls are distribute between the systems

5 INTEGRATION NOTES

The latest software and firmware version of MX-ONE components shall be used.

1

Note! Mitel recommends that complex scenarios shall be validated in the partner labs prior to customer deployment.

6 REFERENCES

Please always check the latest documentation. The links below are the ones available at the time of this guide was written.

Mitel CPI Documentation - Mitel MX-ONE 5.0 SP4 or later version.

Lync Server

Deploying Enterprise Voice

Enable Users for Enterprise Voice

7 REVISION HISTORY

DOCUMENT VERSION	COMMENTT	DATE
A	First release	2013-11-19
В	Minor corrections	2014-03-28
С	Updated with Mitel template	2015-06-08
D	Updated in 4.2.3.7, cert_install_local replaced by mxone_certificate. MX-ONE version information also corrected.	2015-10-27
D3	Spelling correction.	2017-04-05