

Integration of MiVoice MX-ONE with Microsoft® Lync Server™ 2013 – Remote Call Control

QUICK SETUP GUIDE



NOTICE

The information contained in this document is believed to be accurate in all respects but is not warranted by Mitel Networks™ Corporation (MITEL®). Mitel makes no warranty of any kind with regards to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. 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 for additional information. For a list of the worldwide Mitel Networks Corporation registered trademarks, please refer to the website: <http://www.mitel.com/trademarks>.

© Copyright 2016, Mitel Networks Corporation

All rights reserved

CONTENTS

1	INTRODUCTION	1
1.1	SCOPE	1
2	SOLUTION DESCRIPTION	2
2.1	MIVOICE MX-ONE	2
2.2	MICROSOFT LYNC SERVER 2013	2
2.3	INTEGRATION	2
3	REQUIREMENTS AND SETUP	4
3.1	MIVOICE MX-ONE REQUIREMENTS	4
3.2	MICROSOFT LYNC SERVER 2013 REQUIREMENTS	4
3.3	INTEGRATION SETUP - TCP	4
3.3.1	MIVOICE MX-ONE SETUP - TCP	5
3.3.2	MICROSOFT LYNC SERVER 2013 SETUP – TCP	5
3.4	ENABLE LYNC USERS FOR REMOTE CALL CONTROL	7
4	HOW TO VERIFY THE SETUP.....	8
4.1	LYNC 2013 CLIENT FEATURES	8
4.2	MAKE AN OUTGOING CALL USING THE LYNC 2013 CLIENT	10
4.3	ANSWER AN INCOMING CALL	10
4.4	TRANSFER A CALL BETWEEN CURRENT CONVERSATIONS (MONITORED TRANSFER)	11
4.5	SINGLE STEP TRANSFER	13
4.6	FORWARD AN INCOMING CALL	14
4.7	PLACE CALLS ON HOLD	15
4.8	ALTERNATE BETWEEN MULTIPLE CONCURRENT CALLS	15
4.9	ANSWER A SECOND CALL WHILE ALREADY IN A CALL (CALL WAITING)	16
4.10	DIAL DUAL-TONE MULTI-FREQUENCY (DTMF) DIGITS	16
4.11	PRESENCE	17
5	LIMITATIONS.....	19
6	GOOD TO KNOW	20
7	REVISION HISTORY	21

1 INTRODUCTION

MiVoice MX-ONE, a complete IP-based communications system, has evolved from a voice centric system into a true multimedia communication system that can route and provide services to media sessions like video, instant messaging etc. It is the core component of the MX-ONE solution, which provides the necessary applications to offer true mobility and Unified Communications and Collaboration (UCC). MX-ONE (TS) is based on an open software and hardware environment, using standard servers with a LINUX SUSE operating system. MX-ONE Service Node focuses on enhanced SIP implementations to target our strategy regarding openness, cloud computing and video support. An example of MX-ONE openness is the fact that it can interwork with third party UC products using standards-based protocols, such as SIP and CSTA III (XML).

As part of this standards-based approach and in order to offer our customers a choice, we have worked together with Microsoft to ensure that MX-ONE can be integrated with the latest Microsoft Unified Communications products. MX-ONE is fully certified by the Microsoft Partner Program since Version 4.1 with Lync Server 2010 (Direct SIP integration) as well as MX-ONE 5.0 SP3 HF2 with Lync 2013 (Direct SIP integration) in order to ensure that customers have seamless experiences with setup, support, and use of MX-ONE with Microsoft Unified Communications software.

In MX-ONE 5.0 SP1, TR-87 support for CSTA III (Computer Supported Telecommunications Applications Version 3) was added to allow a third party application to control an MX-ONE device via CSTA and SIP messages. This service can be used, for example, to connect MX-ONE and Microsoft Lync Server via a function called Remote Call Control.

Mitel has performed an internal integration validation between MX-ONE 6.0 and Lync Server 2013 via Remote Call Control, where several tests were executed to assure the compatibility between the products.

1.1 SCOPE

The intent of this guide is to describe the setup tasks to integrate MiVoice MX-ONE and Microsoft Lync Server 2013 for Remote Call Control.

For more details regarding components of this integration, we refer to the relevant MX-ONE CPI documentation or, please, go to the Microsoft Lync Server 2013 product website.



Note! Always check the latest products documentation.

2 SOLUTION DESCRIPTION

Integration of MX-ONE 6.0 with Microsoft Lync Server 2013 for Remote Call Control as a complementary solution, provides users enabled for remote call control to use Lync 2013 client to control calls on their MX-ONE phones.

2.1 MIVOICE MX-ONE

MiVoice MX-ONE has a built-in CSTA III server that is an interface that other applications can use to remotely control a phone. Examples of operations that can be performed with CSTA Phase III are: make call, answer call, dial a number and terminate a call.

MX-ONE 6.0 supports CSTA method that is based on European Computer Manufacturers Association (ECMA) Technical Report-87 (TR-87), called Using CSTA for SIP Phone User Agents (uaCSTA). MX-ONE implements a subset of the capabilities and methods proposed in TR-87 specification.

In TR-87 (Using CSTA for SIP Phone User Agents (uaCSTA)):

- SIP is used to establish a CSTA application session
- CSTA service request and response messages are transported over SIP
- CSTA monitor is started and CSTA events are transported over SIP

2.2 MICROSOFT LYNC SERVER 2013

Microsoft Lync Server 2013 offers Remote Call Control (RCC) support that allows users to remotely control phones connected to a call manager, such as MX-ONE. It gives Lync 2013 client users the ability to make or receive calls on their fixed or mobile phone instead of a computer.

2.3 INTEGRATION

CSTA III (XML) is required to provide the integration between MX-ONE and Lync Server for Remote Call Control as shown in the figure below.

The telephony feature commands are sent from the Lync 2013 client through the Microsoft Lync Server 2013 to the internal MX-ONE CSTA server as CSTA III messages over SIP, so called user agent CSTA (uaCSTA). The internal MX-ONE CSTA server analyzes the requests and maps them to the corresponding CSTA commands towards MX-ONE, which will then carry out the requests.

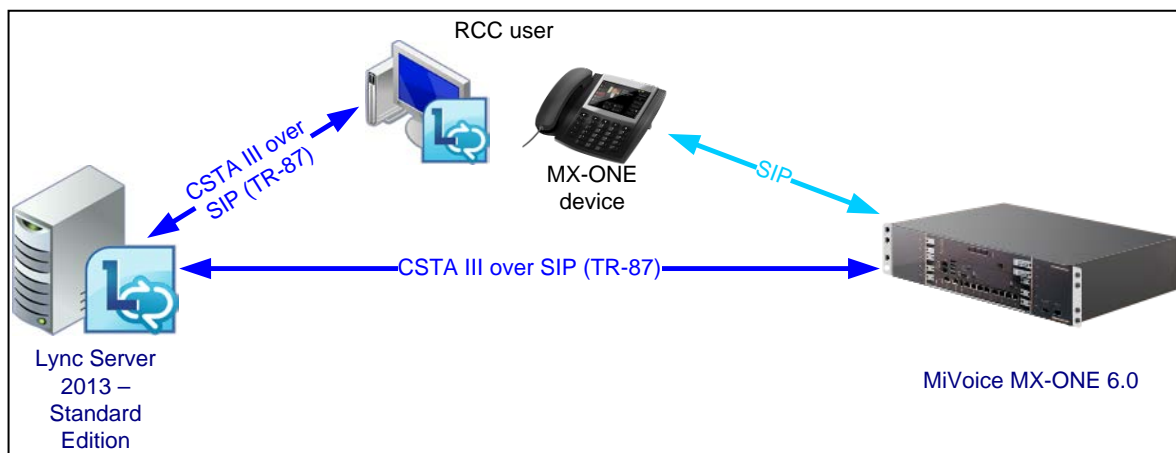


Figure 1 - Integration via Remote Call Control (RCC) between MX-ONE and Lync Server 2013

With Microsoft Lync Server 2013 integration, it is possible from Lync 2013 client (**Remote Call Control Only**) to manage calls and talk using any fixed and remote extensions within the MX-ONE.

The features that a Lync 2013 client can manage when integrate with MX-ONE using RCC are:

- Make an outgoing call
- Answer an incoming call
- Transfer a call to another user (monitored transfer with current conversations)
- Single step transfer
- Forward an incoming call to an internal number (internal and private network extensions)
- Forward an incoming call to an external number
- Redirect an incoming call
- Place calls on hold
- Alternate (toggle) between multiple concurrent calls
- Answer a second call while already in a call.
- Dial dual-tone multi-frequency (DTMF) digits

3 REQUIREMENTS AND SETUP

MX-ONE and Microsoft Lync needs to be configured in different sip domains. Mitel recommendation is that MX-ONE is a sub-domain of the Lync domain.

For example, Lync runs on the domain: domain.com and MX-ONE runs on the domain: mx-one.domain.com.

3.1 MIVOICE MX-ONE REQUIREMENTS

Software and licenses required for Microsoft Remote Call Control integration:

- MiVoice MX-ONE Service Node 6.0 or later
- MX-ONE licenses for:
 - CSTA III



Note! Multi terminal extensions cannot be monitored via CSTA and therefore it does not work in the Remote Call Control scenario.

3.2 MICROSOFT LYNC SERVER 2013 REQUIREMENTS

The Microsoft infrastructure (AD, DNS, CA, etc) needs to be in place, including all licenses required.

This guide does not cover the Lync Server 2013 installation. Our recommendation is that the Microsoft infrastructure shall be installed by a trained Microsoft engineer.

Before to start Microsoft Lync Server 2013 for RCC setup, read the following document:

Microsoft Lync Server 2013, Deploying Remote Call Control

<http://technet.microsoft.com/en-us/library/gg558664.aspx>



Note! This Microsoft documentation is used in conjunction with this guide.

MX-ONE was validated with Microsoft Lync 2013 Remote Call Control with only one Lync Front End server.

Microsoft Lync 2013 requires load balancer when more than one Front End is used. Please note that this setup was not validated with MX-ONE.



Note! The latest Lync Client (Lync 2013 update: April 2014) needs to be installed in the end user computers, please see that article below.

<http://support.microsoft.com/kb/2880474>

3.3 INTEGRATION SETUP - TCP

The setup used in this guide is based on the following scenario:

One Microsoft Lync Server - Standard Edition connected with one MiVoice MX-ONE 6.0.

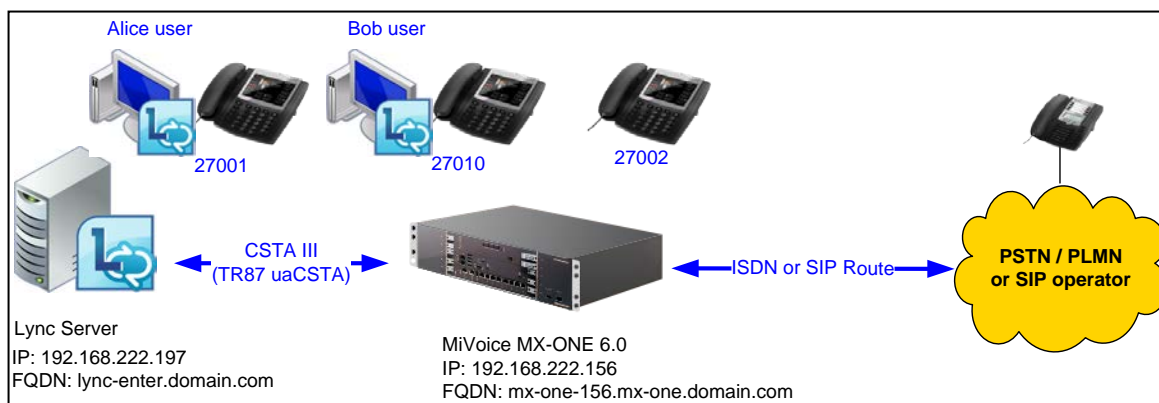


Figure 2 - Integration setup



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

3.3.1 MIVOICE MX-ONE SETUP - TCP

The following shall be configured:

- CSTA server needs to be initiated

Creating CSTA Server

CSTA III Setting:

```
csta --initiate --lim 1 --csta-serv 00000010
```

For more about CSTA III, see MX-ONE CPI documentation.

3.3.2 MICROSOFT LYNC SERVER 2013 SETUP – TCP

The following setup is based in the Microsoft Lync Server 2013 documentation, **Deploying Remote Call Control**, for more about commands syntaxes check:

<http://technet.microsoft.com/en-us/library/gg558664.aspx>

The following shall be configured:

- Configure a Static Route for Remote Call Control
- Configure a Trusted Application Entry for Remote Call Control

Configure Static Route for Remote Call Control

The following commands shall be executed in the Lync Server Management Shell to configure Remote Call Control.

Route for Remote Call Control Setup, port 5060 (TCP):

```
$TCPRoute = New-CsStaticRoute -TCPRoute -Destination 192.168.222.156 -Port 5062 -MatchUri mx-one.domain.com
```

```
Set-CsStaticRoutingConfiguration -Route @{Add=$TCPRoute} -Identity Global
```

To verify the setup use the command:

```
Get-CsStaticRoutingConfiguration
```


Configure a Trusted Application Pool Entry for Remote Call Control

To create a Trusted Application Pool use the command:

```
New-CsTrustedApplicationpool -Identity 192.168.222.156 -Registrar lync-enter.domain.com -Site 1 -TreatAsAuthenticated $True -ThrottleAsServer $True
```

To verify the setup use the command:

```
Get-CsTrustedApplicationpool
```

Configure a Trusted Application Entry for Remote Call Control

To setup the trusted application use the command::

```
New-CsTrustedApplication -ApplicationID RCC -TrustedApplicationPoolFqdn 192.168.222.156 -Port 5062 -EnableTcp
```

To verify the setup use the command:

```
Get-CsTrustedApplication
```

Publish the topology

To implement the changes in the Lync , publish the topology

```
Enable-CsTopology
```

Define a SIP/CSTA Gateway IP Address

In this example TCP is used, then the SIP/CSTA gateway IP address needs to be defined. Follow the instruction in the session “Define a SIP/CSTA Gateway IP Address” from Microsoft documentation: <http://technet.microsoft.com/en-us/library/gg602125.aspx>.

When the setup is done, the Topology Builder screen should be similar to figure below.

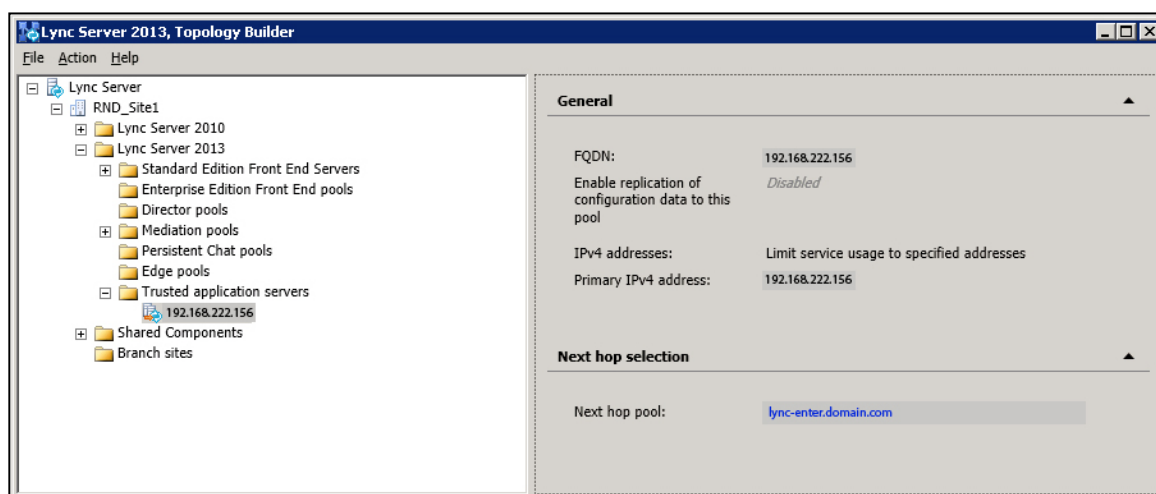


Figure 3 - Lync Server 2013 Topology Builder

3.4 ENABLE LYNC USERS FOR REMOTE CALL CONTROL

Configure a user for remote call control by using Lync Server Control Panel.

Under Telephony, select **Remote Call Control Only**. Please, note that the option “**Remote Call Control**” is not supported by MX-ONE.

The following needs to be configured under Line URI and Line Server URI.

Enable Lync Users for Remote Call Control:

Line URI: tel:phone number, example tel:27000

Line Server URI: sip:tel@ MatchUri, for example: sip:27000@mx-one.domain.com

New Lync Server User

Enable Cancel

Display name	Status
Alice RCC	

Add... Remove

Assign users to a pool: *

Lync-enter.domain.com

Generate user's SIP URI:

☐ Use user's email address

☐ Use the user principal name (UPN)

☒ Use the following format:

<FirstName>,<LastName> @ domain.com

☐ Use the following format:

<SAMAccountName> @ domain.com

☐ Specify a SIP URI:

Telephony:

Remote call control only

Line URI: *

tel:27000

Line Server URI: *

sip:27000@mx-one.domain.com

Conferencing policy:

Figure 4 - RCC only new user configuration example

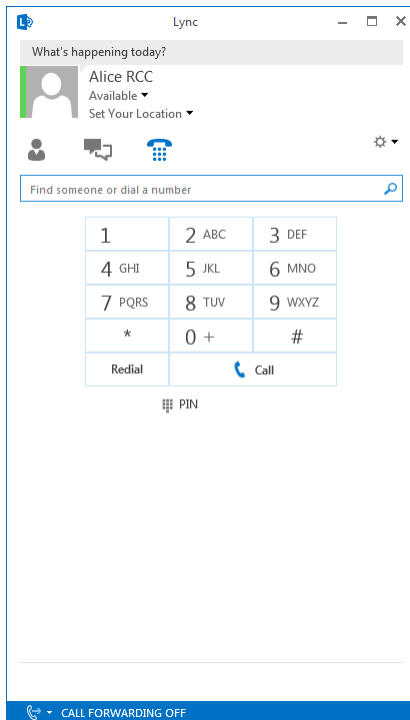
4 HOW TO VERIFY THE SETUP

After completing the setup, the integration can be verified in the following way:

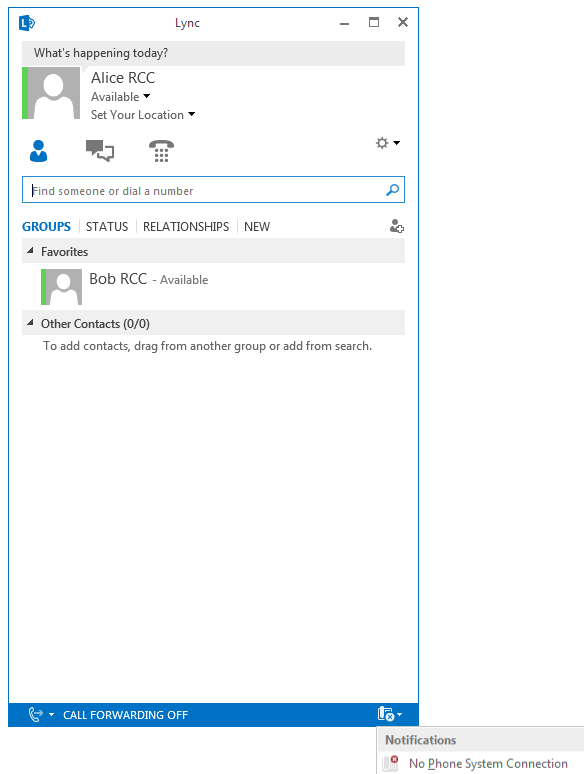
4.1 LYNC 2013 CLIENT FEATURES

Using a Lync 2013 client sign-in a RCC user.

If the configuration was done properly the user will be signed in without any error, see the figure below.



If there is small icon in the lower right side of the Lync 2013 client, showing a phone with an error, check the setup, because the CSTA monitoring could not be established.



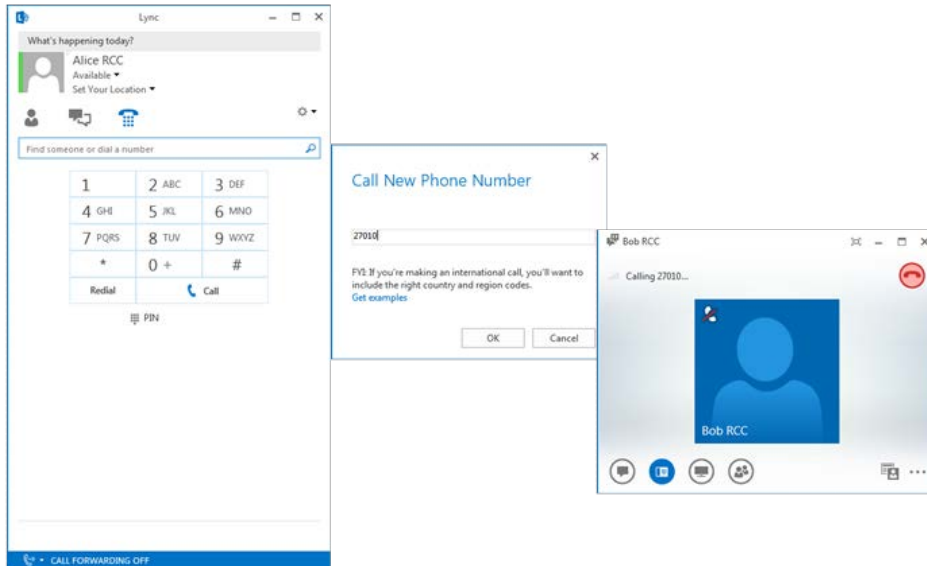
Use the MiVoice MX-ONE command “csta -p --lim all --devices” to check the devices that are monitored.

In the use cases below two Lync clients were used and three MX-ONE extensions.

- Alice.RCC controls the extension 27001, which is a SIP extension in MX-ONE.
- Bob.RCC controls the extension 27010, which is a SIP extension in MX-ONE.
- 27000 and 27002 are SIP extensions in MX-ONE.
- 33350202 and 33350102 are the PSTN phones.

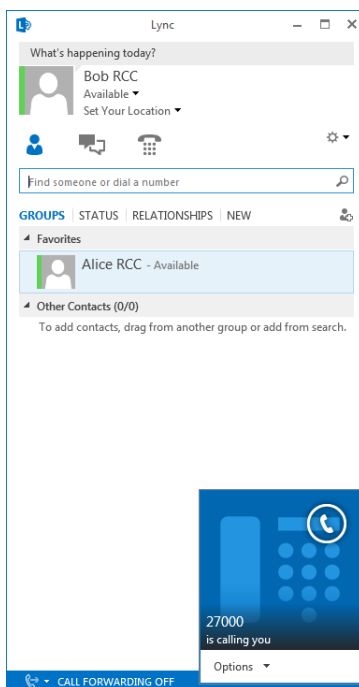
4.2 MAKE AN OUTGOING CALL USING THE LYNC 2013 CLIENT

From extension A use the Lync client (RCC) to dial extension B, pick up your handset as soon as you hear the ring back tone, wait the extension B answer, check if there is speech.



4.3 ANSWER AN INCOMING CALL

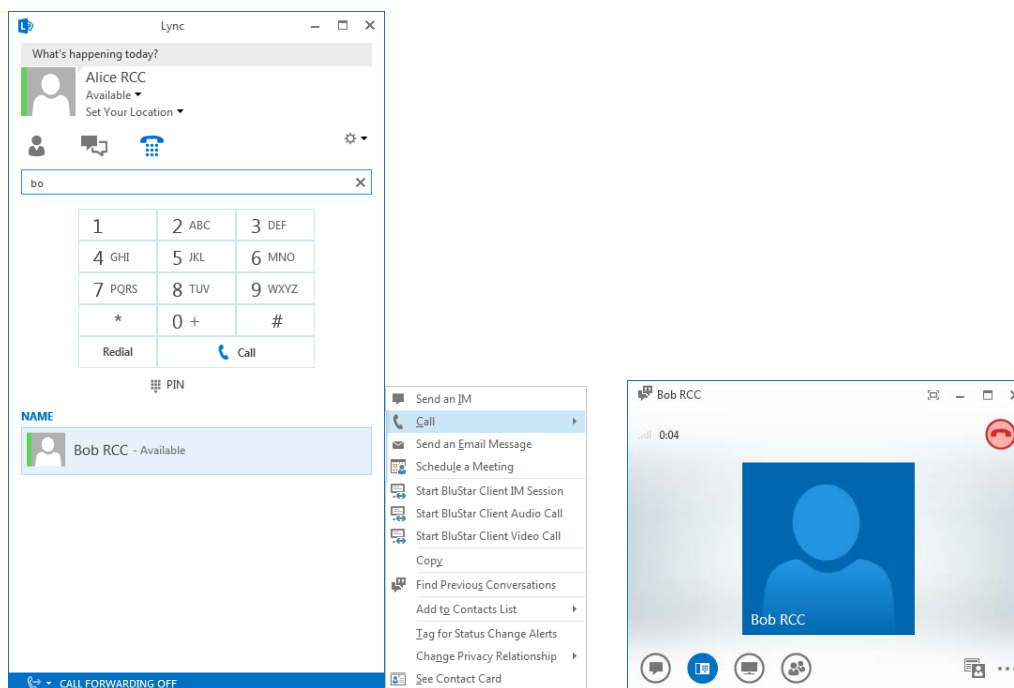
From another extension dial to RCC user, answer it and check if there is speech.



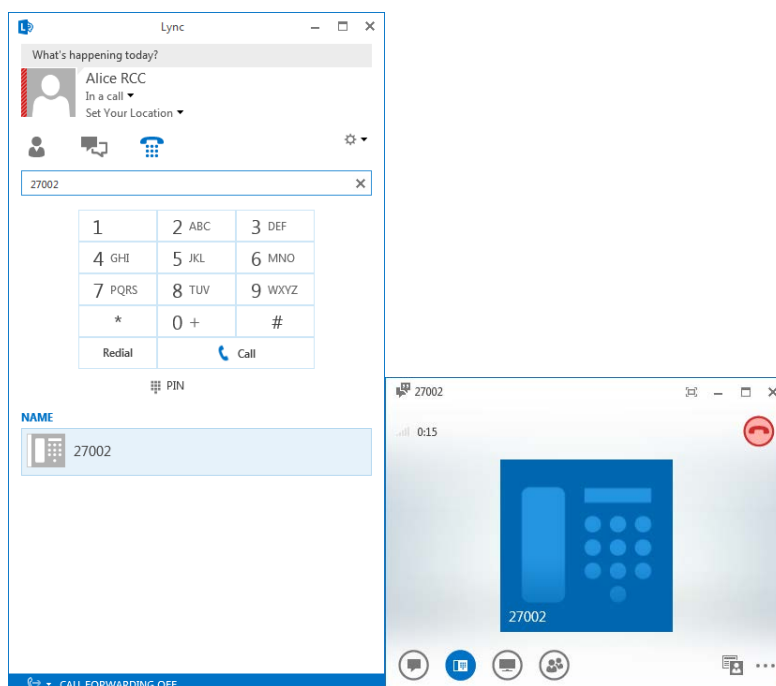
4.4 TRANSFER A CALL BETWEEN CURRENT CONVERSATIONS (MONITORED TRANSFER)

In this scenario A (Alice.RCC - extension 27001) calls B (Bob.RCC - extension 27010), A puts B on hold and then calls extension C (27002). After C answers, A transfers the call between B and C.

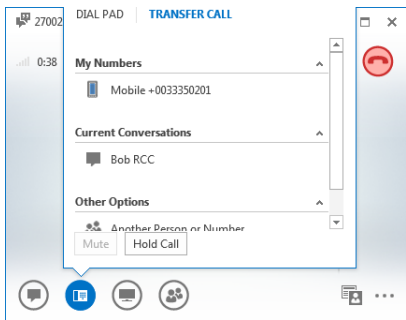
We assume you have answered a call with extension B (27010) from the Lync client (RCC)



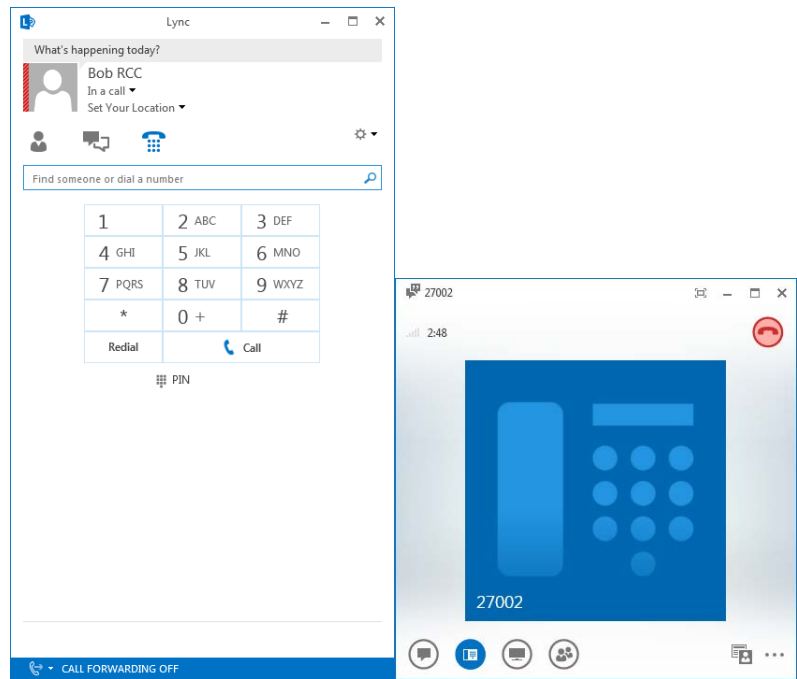
Using the client, put extension B on hold and make a second call to extension C (27002), and wait until the extension C answers.



Once speech is established, initiate the transfer of extension B (Bob RCC) using the Current Conversations option as shown below.



Then, check if the call is correctly transferred.

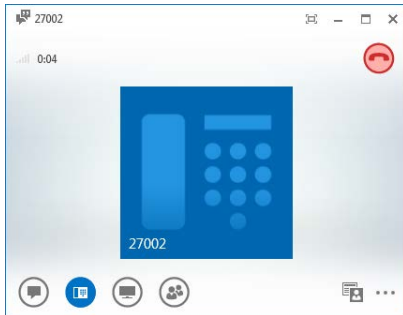


Then, check if the call is correctly transferred.

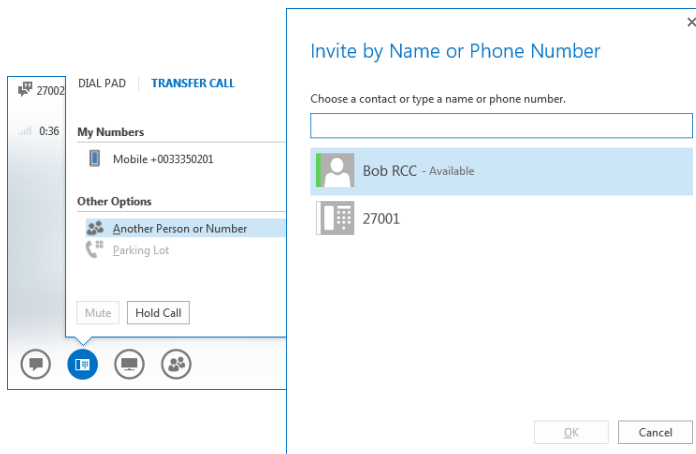
4.5 SINGLE STEP TRANSFER

In this scenario A (Alice.RCC - extension 27001) is talking with C (extension 27002), A transfer C directly to extension B (Bob.RCC - extension 27010).

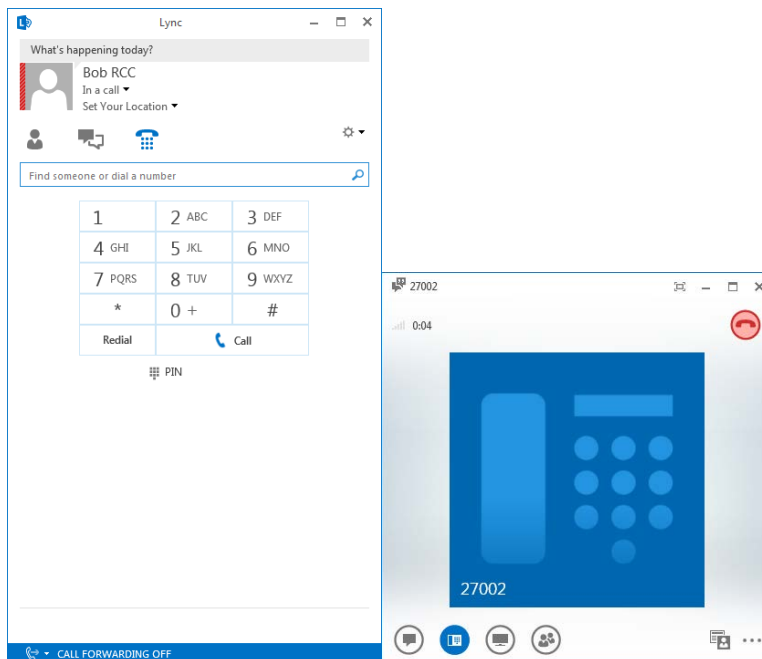
We assume **you** have answered a call with extension C (27002).



A does single-step transfer from extension C (27002) to B (Bob.RCC - extension 27010).

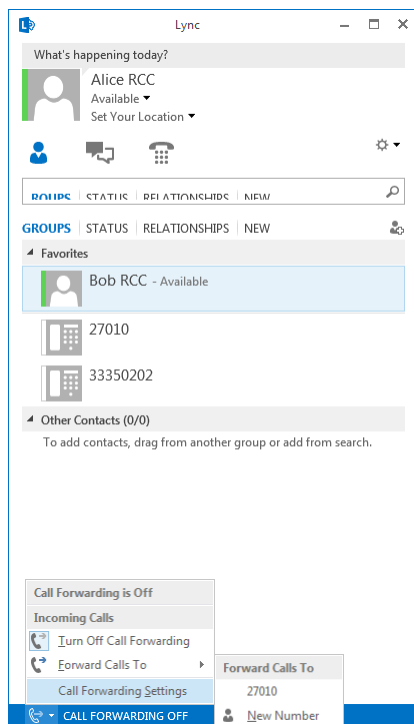


Then, check if the call is correctly transferred.

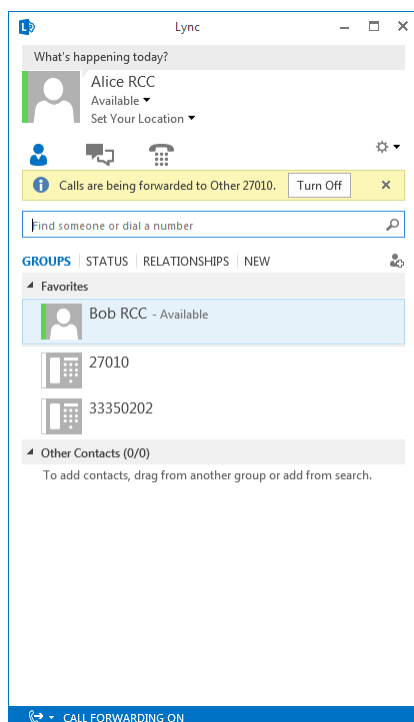


4.6 FORWARD AN INCOMING CALL

Select a predefined or a new number (internal, network extension or external) and click ok.

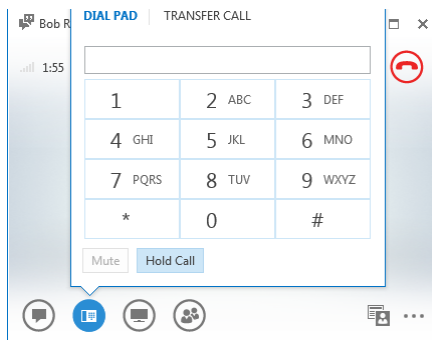


Check if Lync client is showing that the forwarding is on.

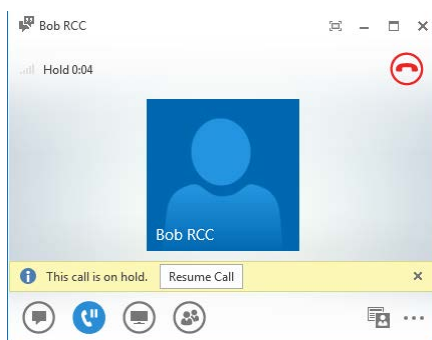


4.7 PLACE CALLS ON HOLD

When in speech, press the hold button to hold a call.

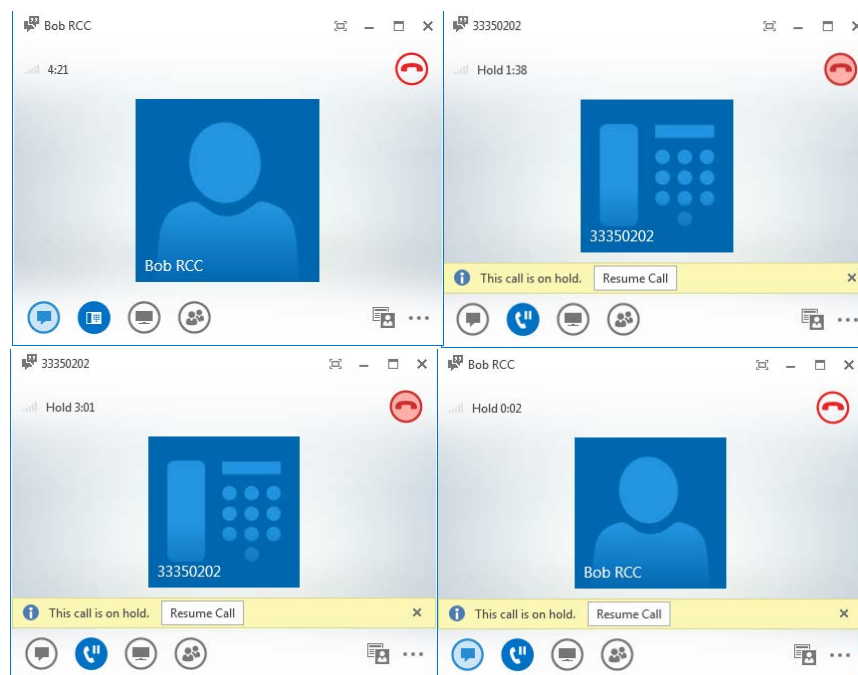


Click on Resume Call to return to the call.



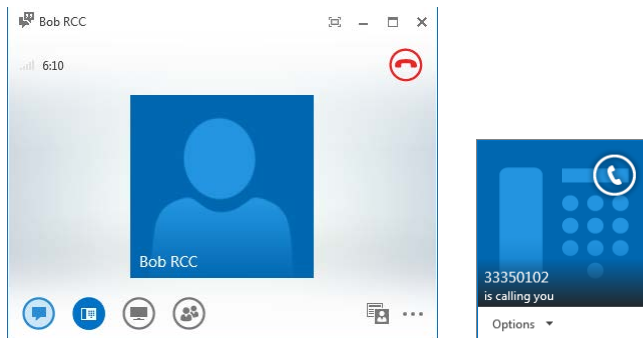
4.8 ALTERNATE BETWEEN MULTIPLE CONCURRENT CALLS

When connected with two calls, press the hold button to hold a call and click on *Resume Call* to return to the first one.



4.9 ANSWER A SECOND CALL WHILE ALREADY IN A CALL (CALL WAITING)

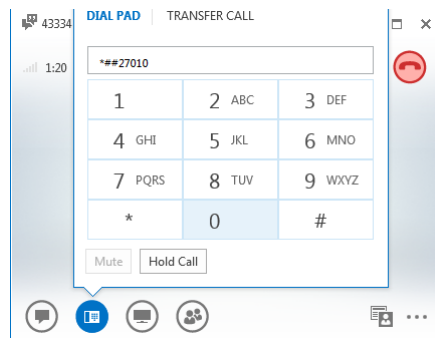
When a second call is alerting, click on *Accept Call* to answer it.



You can alternate between the calls.

4.10 DIAL DUAL-TONE MULTI-FREQUENCY (DTMF) DIGITS

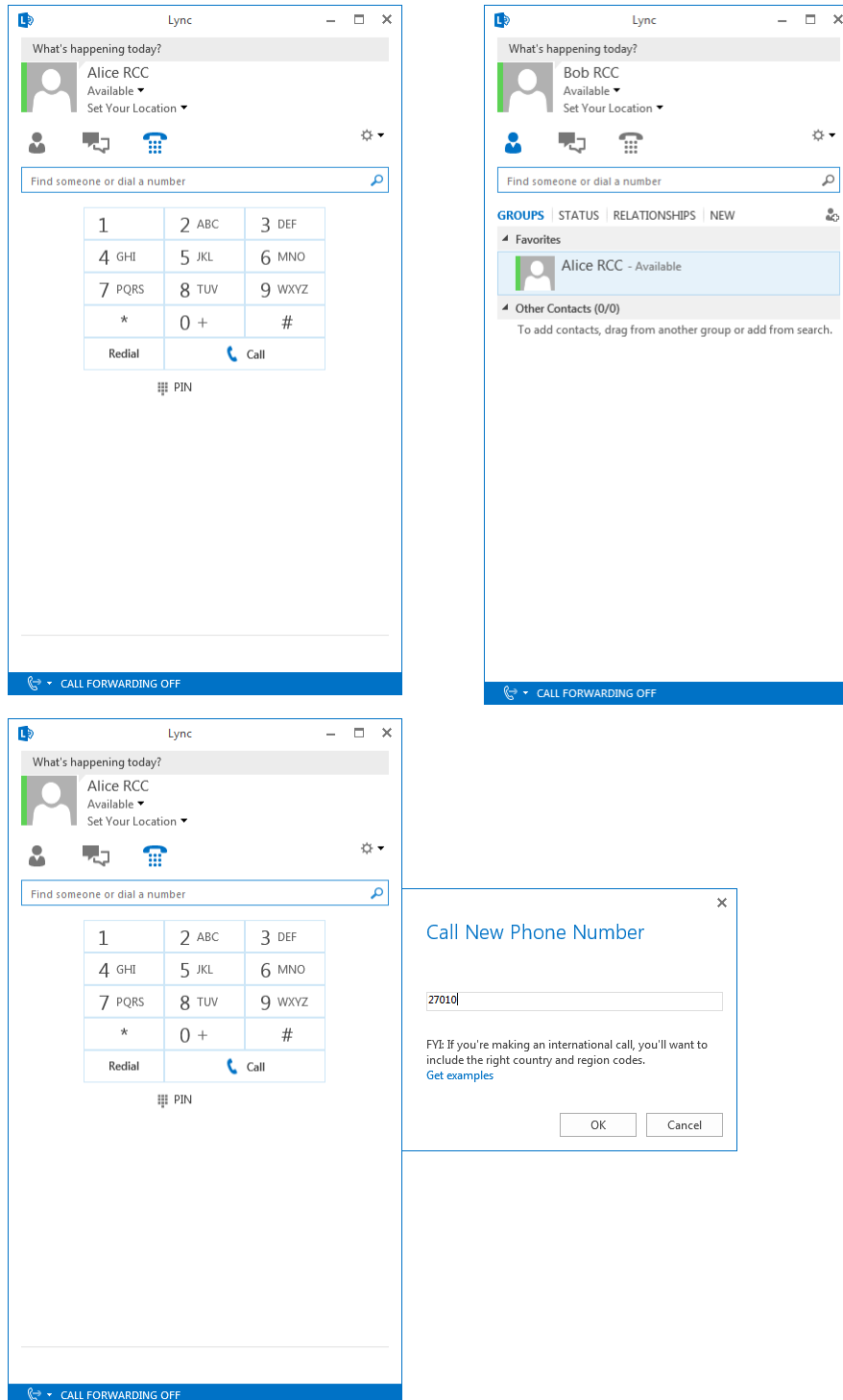
In an established call, click on the keypad and enter DTMF digits.



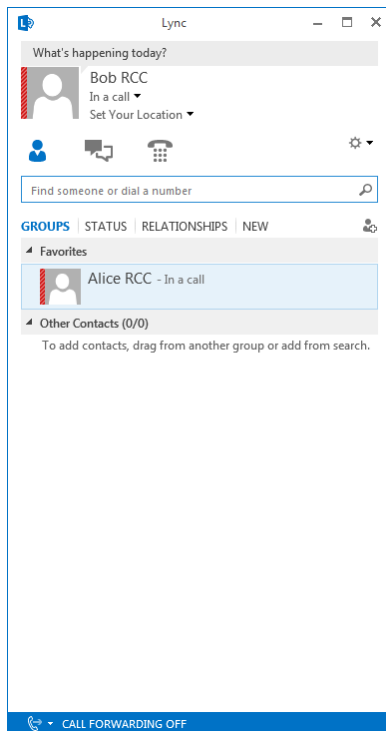
4.11 PRESENCE

In order to verify presence, establish a call using Lync client (RCC) as below.

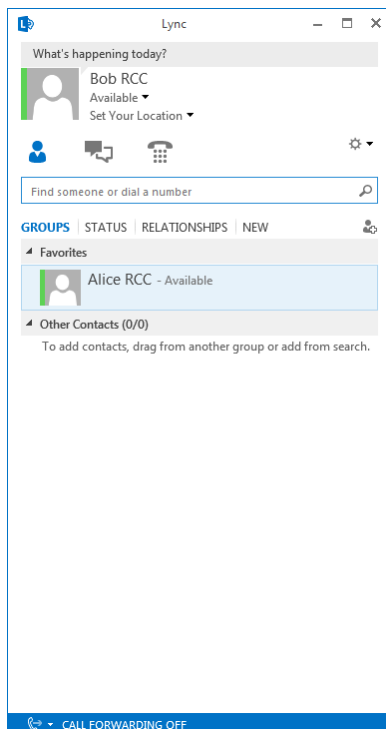
From extension A use the Lync client (RCC) to dial extension B, pick up your handset as soon as you hear the ring back tone, wait until the extension B answers, check if there is speech.



From another Lync client, for example Bob, RCC that is monitoring Alice RCC, check if the presence status is now “In a Call”.



Disconnect the call from extension A (Alice RCC) and check if the Alice RCC presence status goes to Available in the Bob RCC.



5 LIMITATIONS

The integration supports Lync 2013 clients configured with “**Remote Call Control only**” option. The option “**Remote Call Control**” is not supported.

The secure transport mechanism using TLS is not supported in MX-ONE 6.x.

The features listed below are not supported in this integration, when initiated by the Lync client:

- Do not disturb (it is not supported by Lync client)



Note! Although these features may not be possible from the client, they may be invoked directly on the terminal instead.

6 GOOD TO KNOW

MX-ONE and Lync Server cannot be part of the same domain.

Latest Lync client needs to be installed.

DNS needs to be properly configured.

Conference can be invoked via Lync client using MX-ONE procedure (normally dialing 3). However, the Lync client will merge all other screens with the first one and that will be presented until the last member disconnects.

7 REVISION HISTORY

Document Version	Comment	Date
Rev. A	First release	2014-05-09
Rev. B	Rebranding	2015-05-10
Rev. B1	Some further rebranding corrections done.	2016-03-17
Rev. B2	Minor changes done.	2016-10-10