SWYX

Interconnection of SwyxWare 6.20 (QF2)

and Microsoft Exchange 2007

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Status: Complete

*If you discover mistakes
please report them to*

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History

Nr	Date	Comment
1	2007-12-10	First release
2	2008-01-15	Modified chapter 2.1 regarding the usage: - of the UM service on a separate machine - of an ISDN trunk for incoming calls to an exchange user or operator
3	2009-04-06	*Added:* Chapter 2.3.1 "Registry Modifications" Chapter 3.3 "UM Mailbox Policies" Chapter 3.6 "Play at the phone" feature notes Chapter 4 "Special Thanks" *Removed:* "Auto Attendant" chapter (not needed any more) *Changes:* Chapter 1 - reworked requirements, scenario descriptions (new picture) and the list of the supported features Chapter 2.1 - new Exchange SIP profile Chapter 2.3 - new Screenshots Chapter 2.5 - changed forwarding settings Chapter 3.1 - added dialing rules for outgoing calls to SwyxWare *New Features:* - Now incoming calls can directly be deliverted to the users voice mailbox - Play on the Phone (OWA feature)

1. Overview and Scenarios

With SwyxWare it is possible to interconnect with Microsoft Exchange 2007.
For this purpose the Swyx LinkManager is used to establish a TCP SIP connection
(without registration) to Exchange 2007 by using a special provider configuration (see step 2.1).

Requirements:
- Microsoft Exchange 2007 (incl. Service Pack 1 and Rollup 4)
- SwyxWare 6.20.0240 (incl. Quickfix 2) or later

Scenarios:

1) Leaving a voice message
An external party calls the SwyxWare user "Dreier, Sebastian" (This call is represented by
the red line in the picture below). If Sebastian is not reachable or busy, the call will be routed
through the SIP trunk to the Exchange server. There, the call will be routed to the relevant
Exchange voice mailbox and the caller can leave a message for Sebastian.

2) Outlook Voice Access (Remote Inquiry)
The SwyxWare user "Dreier, Sebastian" is on a business trip and wants to check if he has
new voicemails. Therefore, Sebastian calls the SwyxWare user "Exchange Operator" from his
e.g. mobile phone (blue line). The SwyxWare user will redirect the call to the operator at the
Exchange server. This automatic operator asks for the extension and the PIN of the user to
validate the access. Now Sebastian has access to the Outlook Voice Acces menu and can
check his voicemails stored at the Exchange server.

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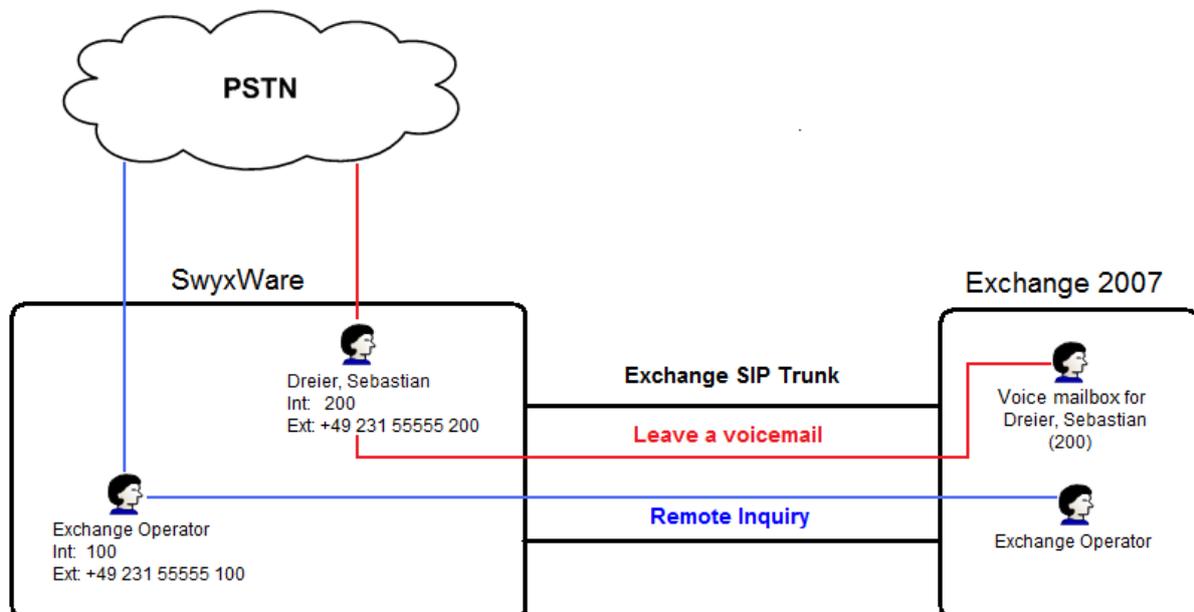
3) Playing a voice message at the phone (via Outlook Web Access)
Sebastian is on another business trip and wants to check his voicemails but this time he uses Outlook Web Access. He logs on and sees that he has two new voicemails but he cannot listen to them because the computer has no audio devices. So he decides to use the "Play at the phone" feature. Therefore he clicks on the "Play on Phone" button (see chapter 3.6) and enters the number of his mobile phone. Now the Exchange server initiates an outgoing call through the SwyxWare to Sebastian`s mobile phone.
When Sebastian accepts the call he will hear the voicemail.

The following Exchange 2007 UM features should work in the described scenario:

- Voice Messaging System (leave a voicemail)
- Outlook Voice Access (like SwyxWare Remote Inquiry)
- Speech-Enabled Remote Inquiry (navigate with your voice)
- Play on the Phone (OWA feature)
- Self-Service Voice Mail Support

The following features do not or only partially work:

- Dialing from contacts within Outlook Voice Access
- Fax Messaging System (incoming faxes via T.38)
- New Voice Mail Alerts (Microsoft Office Communication Server 2007 required)
- Direct Dial into Outlook Voice Access (Microsoft Office Communicator 2007 required)
- Message Waiting Indication (not supported by Exchange 2007 - third party add-on available)

Read more about the Exchange 2007 Unified Messaging features here:

Features of Microsoft Exchange Server 2007 (English)
Exchange 2007 Unified Messaging (German)
Frank's Exchange FAQ - Exchange 2007 Unified Messaging (German)

2. SwyxWare Configuration

2.1 Exchange SIP Profile

For the interconnection of SwyxWare and Exchange the LinkManager is used. This service uses UDP as default transport type for SIP messages but Exchange 2007 only supports TCP as SIP transport type and so a special SwyxWare SIP profile is required. Therefore create a file called "CustomProviderProfiles.config" in your SwyxWare installation directory and paste the following XML data into the file.

```
<?xml version="1.0" encoding="utf-8"?>
<sp:ProviderProfiles xmlns:sp="http://www.lanphone.de/ProviderProfiles" allowcustom="false">
<sp:SIPProviderProfile id="ex2007" name="Exchange 2007" proxy="<ExUnifiedMessagingServiceIP>:5065"
DtmfMode="Rfc2833_Event" CallingPartyNumberPosition="FromHeaderSIPURI" TransportType="TCP"
UseRegistration="False">
   <sp:NumberFormats outbound_called="Transparent" outbound_calling="CanonicalWithoutPlus" inbound_called="PbxUser"
inbound_calling="Transparent" />
</sp:SIPProviderProfile>
</sp:ProviderProfiles>
```

The value for the "Proxy" attribute must be the IP address (the port must be 5065) of the server where the Exchange Unified Messaging Service is running.
The value of the attribute "TransportType" indicates that TCP is used for this SIP profile.
A restart of the SwyxWare Administration is required before you can continue!
In some special cases it could be necessary to restart the LinkMgr service.

Please note:
Since SP1 Microsoft recommends to install the UM service on a separate machine.

Important:
If you want to use an ISDN trunk in this scenario (for incoming calls to e.g. the Exchange Operator)
you have to set the following registry key to enable DTMF tones on the Exchange SIP trunk:

Path: HKLM\Software\Swyx\LinkMgr\CurrentVersion\Options
Key: SignalDTMFWithDuration1
Type: DWORD
Value: 1

2.2 Exchange Trunk Group

Open the SwyxWare Administration and create a new Trunk Group called e.g. "Exchange 2007".

Choose "SIP" as "Trunk Group Type" and select the SIP profile you
just created from the drop down box (e.g. Exchange 2007).

As "Definition of Routing" you can choose whatever you want because the routing record is not needed and will be deleted in one of the next steps.
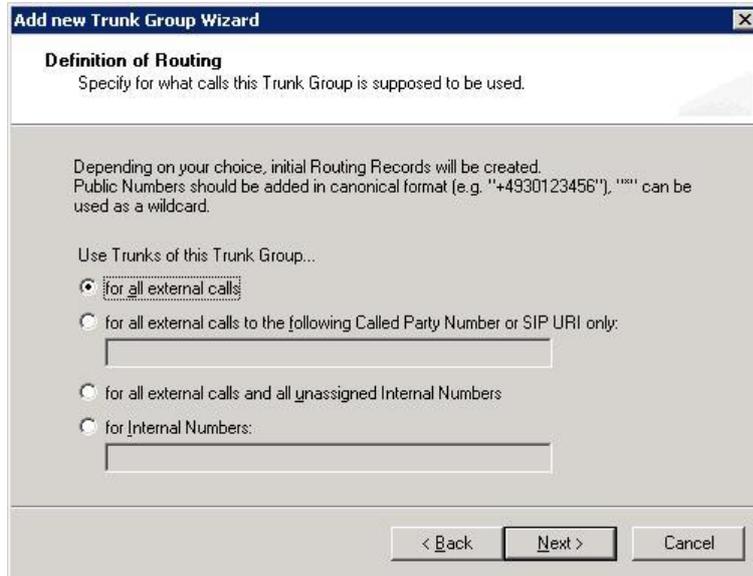
If you want to use the Exchange "Play at the phone" feature you must set the "Calling Right" to "No call restrictions", otherwise "Internal destinations" is the correct choice.

Choose the location profile you want to use for the connection! Please note that these location settings must be the same as in the Exchange configuration (see 3.1 Dial Plan Properties).
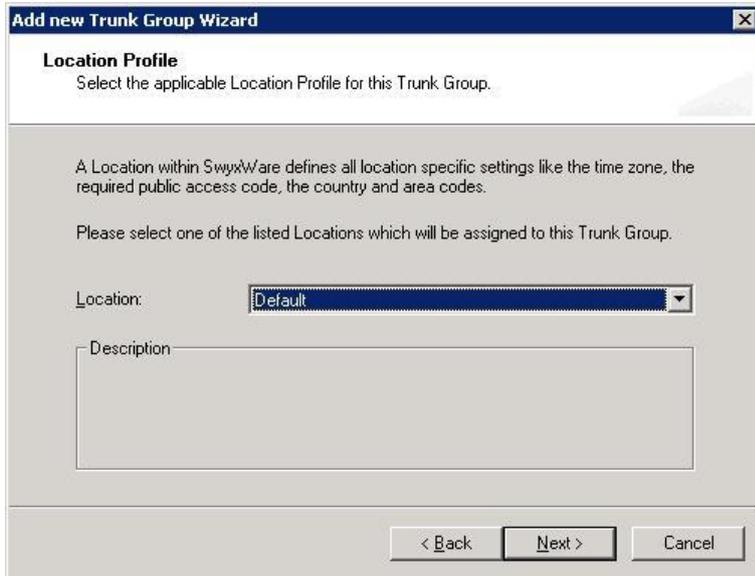
Finish the "Trunk Group Wizard" and go to the "Routing Table".
Select the record for the Exchange trunk group and delete it.
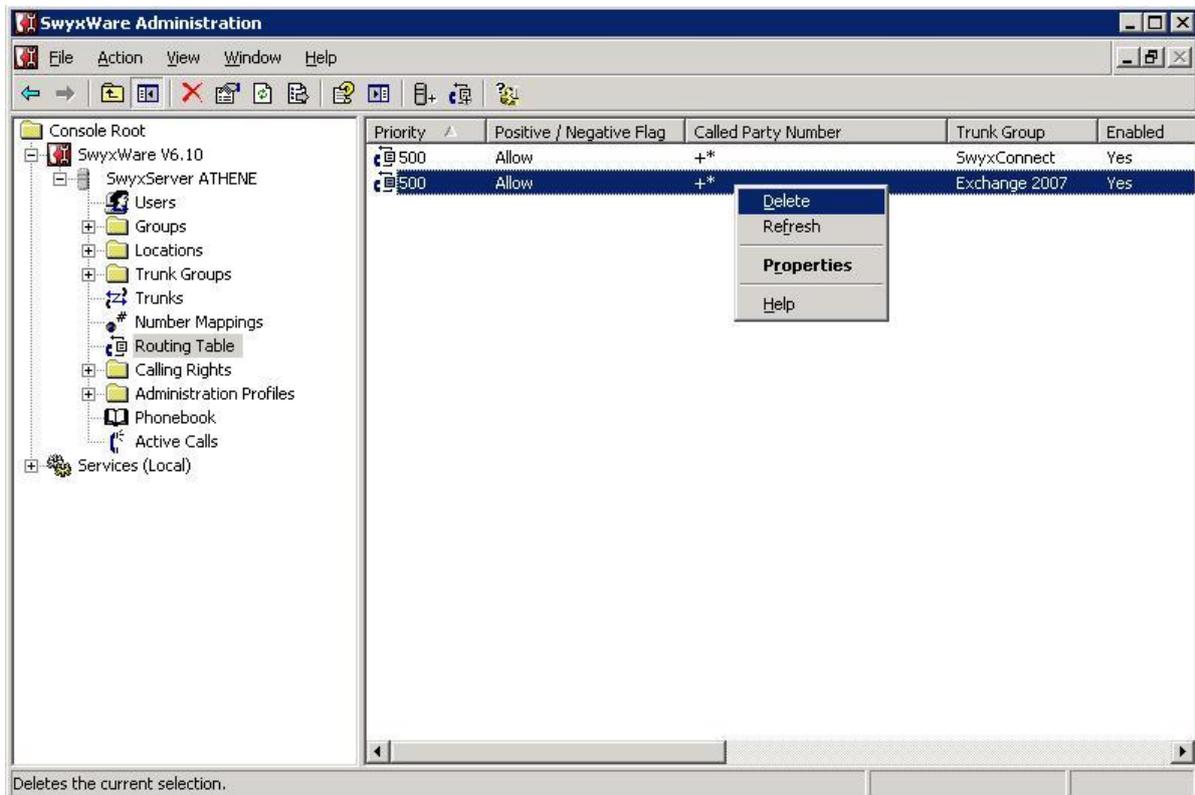
Go back to the trunk groups and open the properties of the Exchange trunk group.
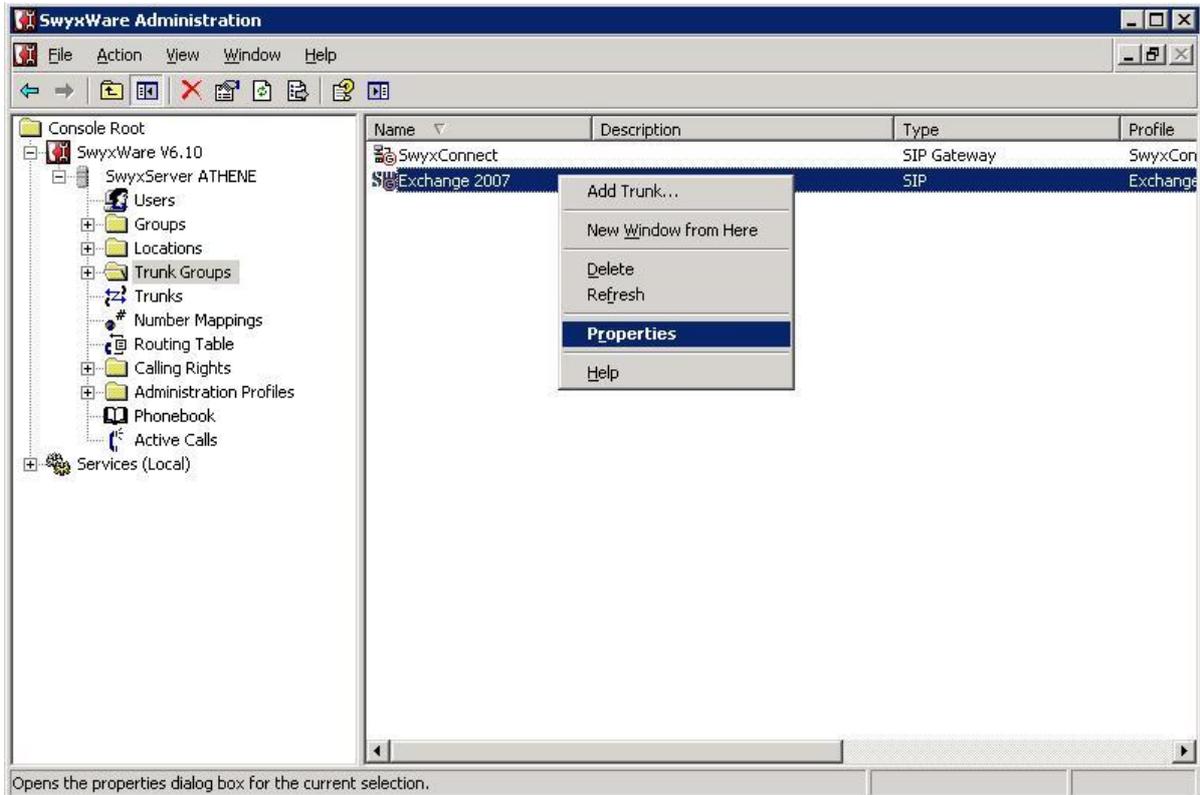
Set a "Trunk Group Selection Prefix" on the "General" tab (e.g. #9). This prefix is used instead of a routing record to prevent accidental call deliveries to the Exchange Server.
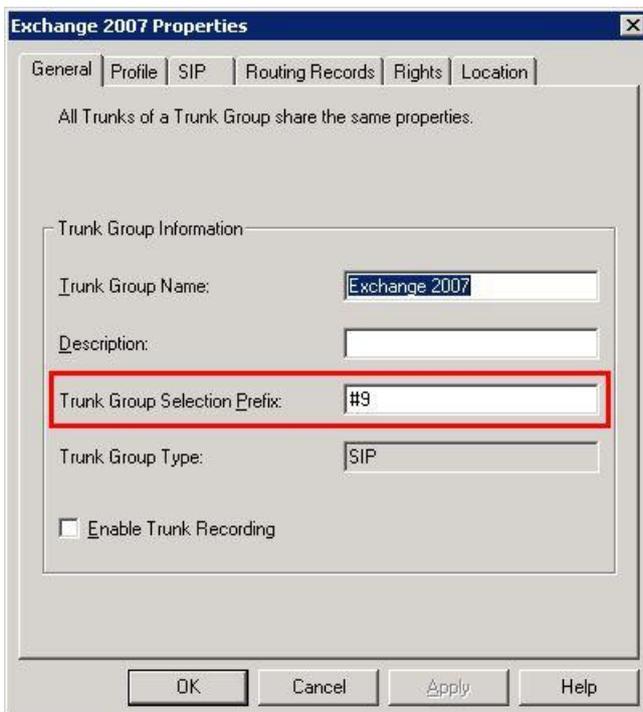
Close the trunk group properties and go to the next step.

2.3 Exchange Trunk

Create a new trunk called e.g. "exchange".
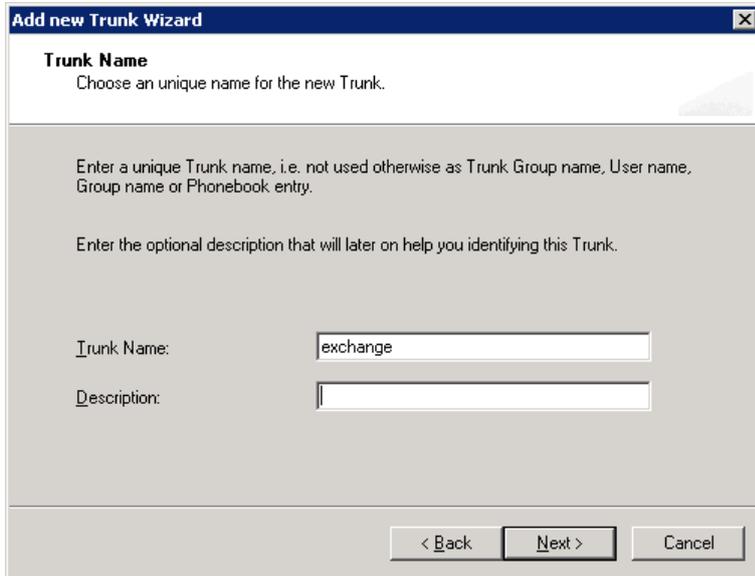
Add new Trunk Wizard

Trunk Name
Choose an unique name for the new Trunk.

Enter a unique Trunk name, i.e. not used otherwise as Trunk Group name, User name, Group name or Phonebook entry.

Enter the optional description that will later on help you identifying this Trunk.

Trunk Name: exchange

Description:

< Back   Next >   Cancel

The SIP connection between SwyxWare and Exchange 2007 works without a registration - so no user id, no user name and no password is required. Just skip this step.
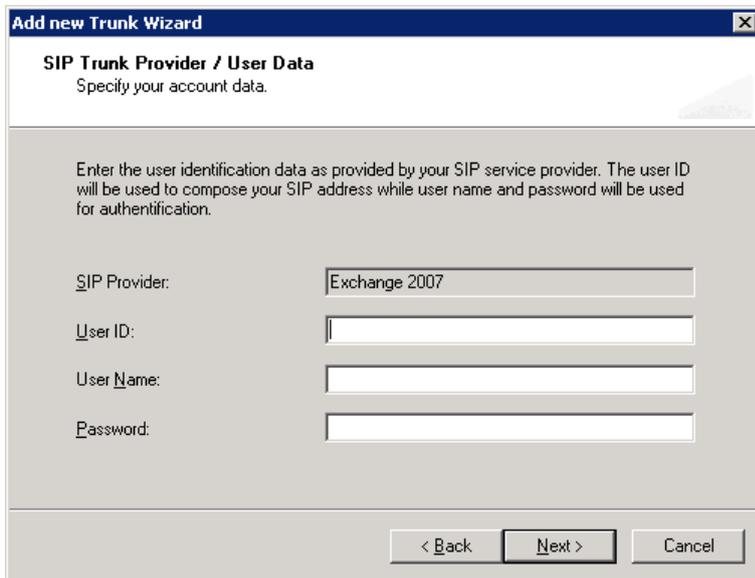
Add new Trunk Wizard

SIP Trunk Provider / User Data
Specify your account data.

Enter the user identification data as provided by your SIP service provider. The user ID will be used to compose your SIP address while user name and password will be used for authentification.

SIP Provider: Exchange 2007

User ID:

User Name:

Password:

< Back   Next >   Cancel

Public numbers are not needed for this trunk. This can also be skipped!

In our scenario we only need the G.711 compression codec.
However, if you want to test the Exchange fax implementation you have
to activate the T.38 codec ("Fax over IP") on the codec selection page.
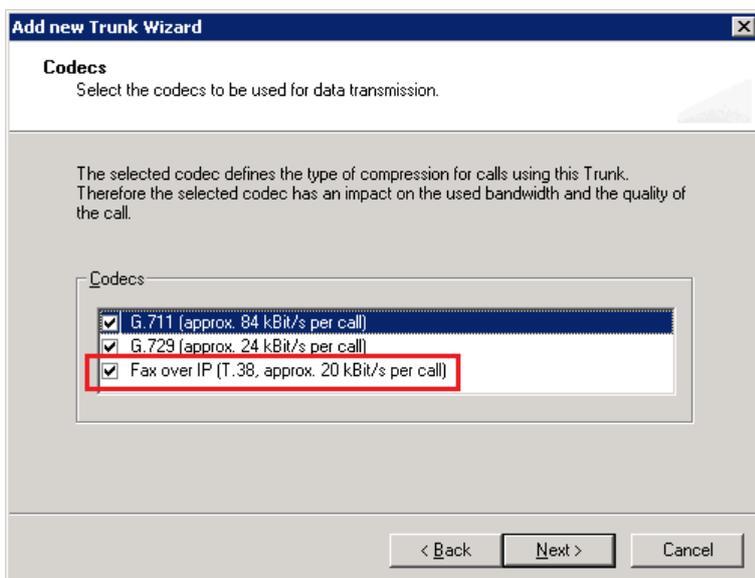
The "Number of Channels" depends on your SwyxWare voice channel licenses
and on the amount of users who should be able to use Exchange features.
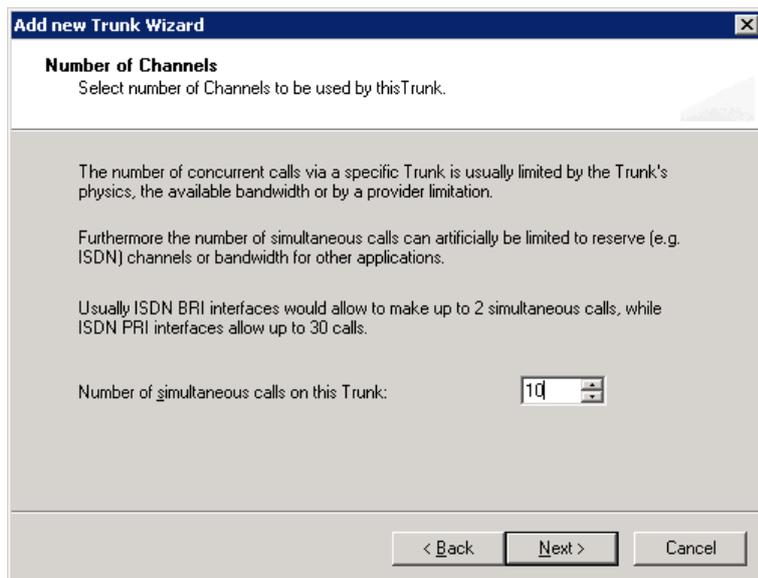
Finish the Wizard and go to the next step.

2.3.1 Registry Modifications

To ensure that all calls which will be routed to the Exchange Server can be assigned to the correct voicemailbox the following registry key has to be added:

x86 Operating Systems:

Path: HKLM\Software\Swyx\LinkMgr\CurrentVersion\Options\<TrunkName>
Key: AddExchangeHistoryInfo
Type: DWORD
Value: 1

x64 Operating Systems:

Path: HKLM\Software\Wow6432Node\Swyx\LinkMgr\CurrentVersion\Options\<TrunkName>
Key: AddExchangeHistoryInfo
Type: DWORD
Value: 1

The corresponding trunk name in this manual is "exchange" (see first screenshot in chapter 2.3) and therefore the registry path should look like this (x86 OS):

HKLM\Software\Swyx\LinkMgr\CurrentVersion\Options\exchange

2.4 Exchange Operator

To use the Exchange "Outlook Voice Access" feature (like Remote Inquiry) you must create a SwyxWare "dummy" user who will only be used for call routing. All incoming PSTN calls to this user will be redirected to the Exchange Server. In our scenario we call this user "Exchange Operator".
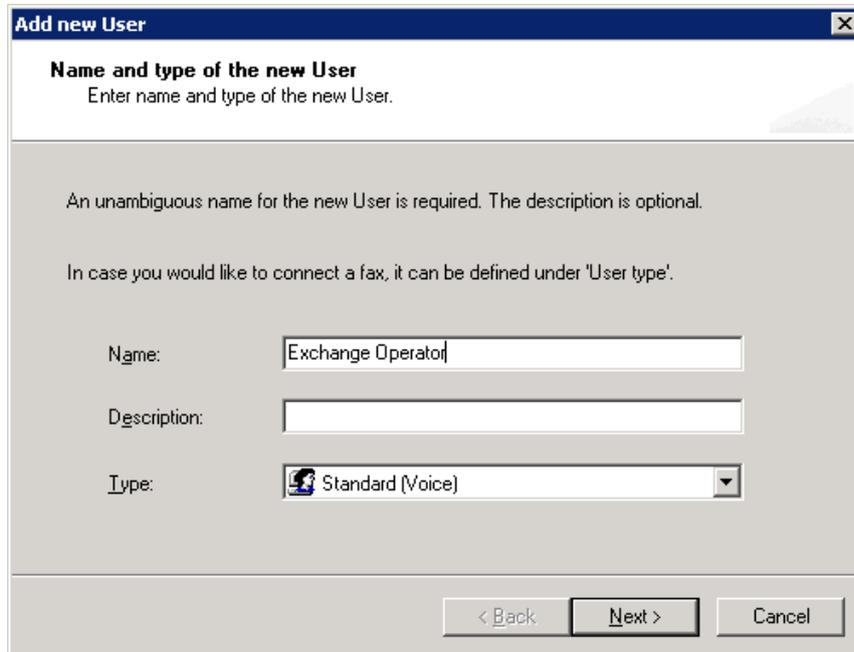
Add new User

Name and type of the new User
Enter name and type of the new User.

An unambiguous name for the new User is required. The description is optional.

In case you would like to connect a fax, it can be defined under 'User type'.

Name: Exchange Operator

Description:

Type: Standard (Voice)

< Back   Next >   Cancel

This dummy user should use the same location as the Exchange trunk group.
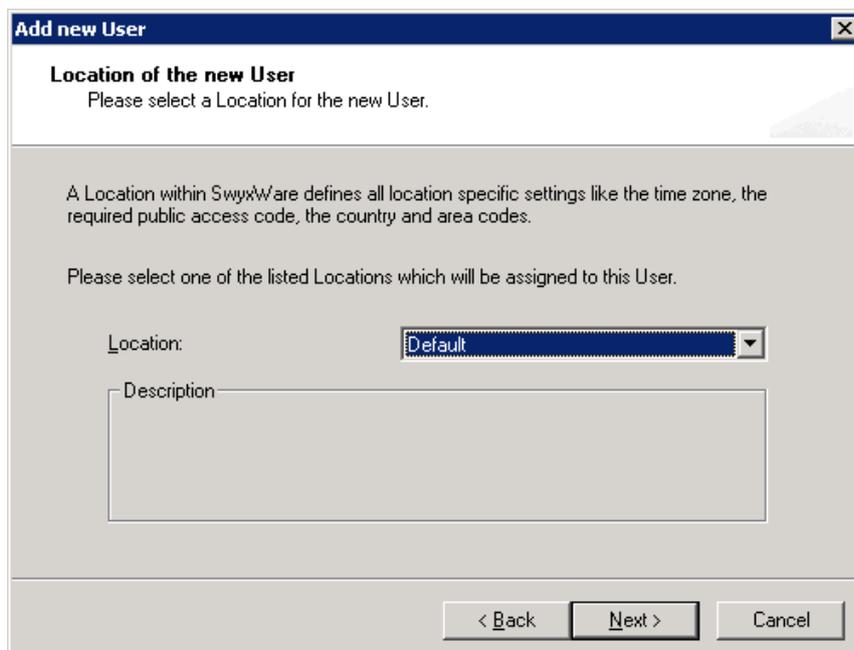
Add new User

Location of the new User
Please select a Location for the new User.

A Location within SwyxWare defines all location specific settings like the time zone, the required public access code, the country and area codes.

Please select one of the listed Locations which will be assigned to this User.

Location: Default

Description

< Back   Next >   Cancel

Assign an internal and an external number to this user.
In our case we use 100 and +49 231 55555 100.
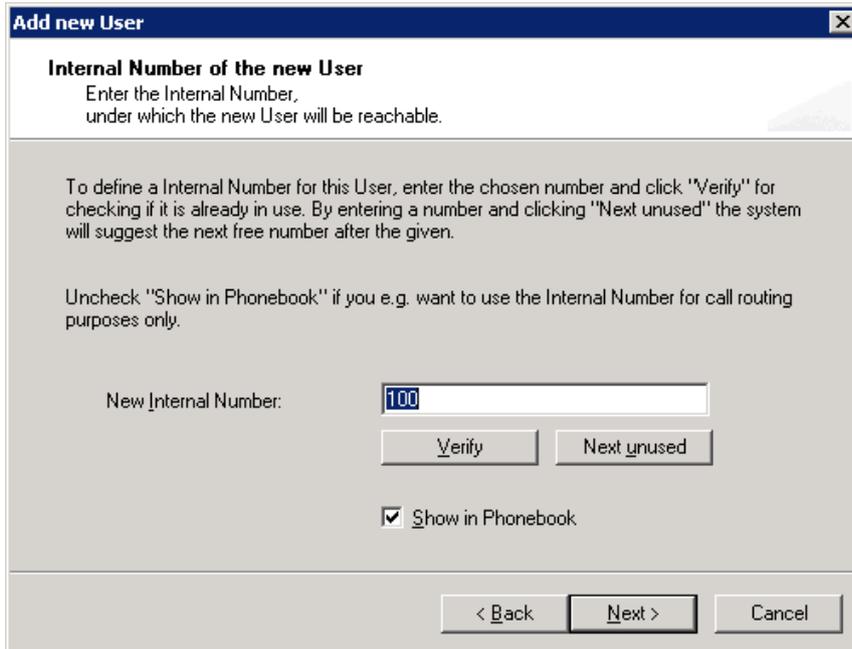
Add new User

Internal Number of the new User
Enter the Internal Number,
under which the new User will be reachable.

To define a Internal Number for this User, enter the chosen number and click "Verify" for checking if it is already in use. By entering a number and clicking "Next unused" the system will suggest the next free number after the given.

Uncheck "Show in Phonebook" if you e.g. want to use the Internal Number for call routing purposes only.

New Internal Number: 100

[Verify]   [Next unused]

☑ Show in Phonebook

[< Back]   [Next >]   [Cancel]

As "Terminal" you should select "Simple user account for call routing…"
so no additional user license is needed.
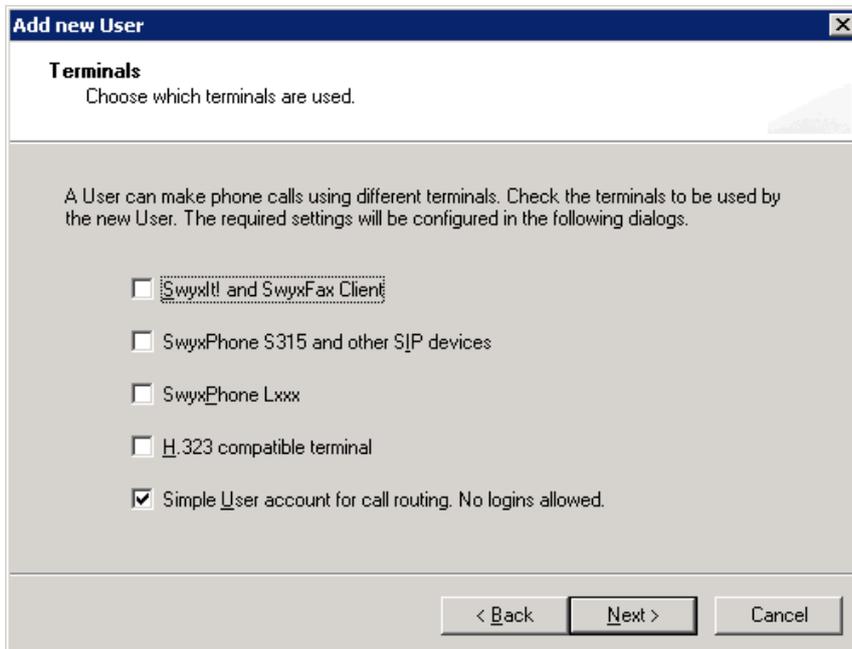
Add new User

Terminals
Choose which terminals are used.

A User can make phone calls using different terminals. Check the terminals to be used by the new User. The required settings will be configured in the following dialogs.

☐ SwyxIt! and SwyxFax Client

☐ SwyxPhone S315 and other SIP devices

☐ SwyxPhone Lxxx

☐ H.323 compatible terminal

☑ Simple User account for call routing. No logins allowed.

[< Back]   [Next >]   [Cancel]

Finish the user wizard and open the "Call Forwarding" of the "dummy" user.
Activate the unconditional call forwarding and route all calls to the number #9100.
#9 is the trunk selection prefix for the Exchange trunk group and 100 is a number
which is not assigned to an Exchange user. Calls to unassigned numbers will be
redirected to the hidden built-in "Exchange Operator" automatically.
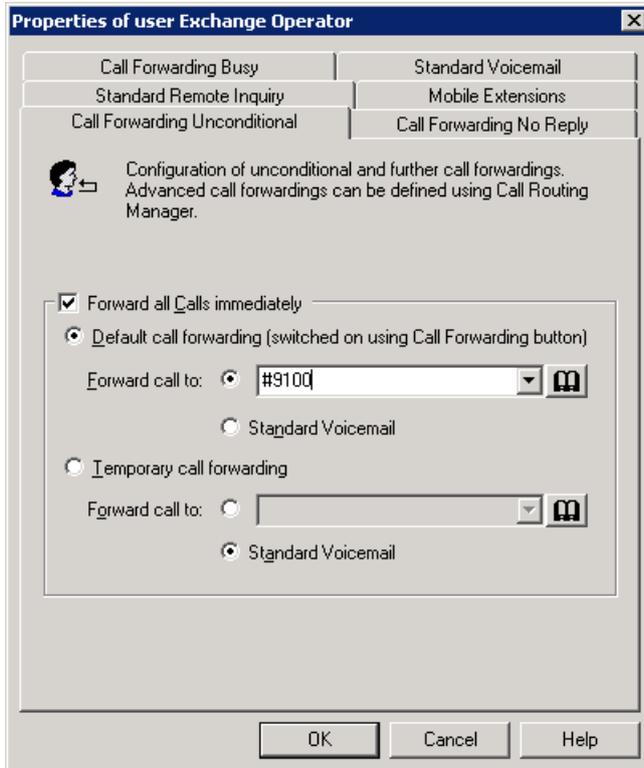
2.5 SwyxWare User Configuration

Every user who should use the Exchange Server for voicemails must have a special (very easy) call
routing. Therefore, select a user and open the "Call Forwarding" settings.
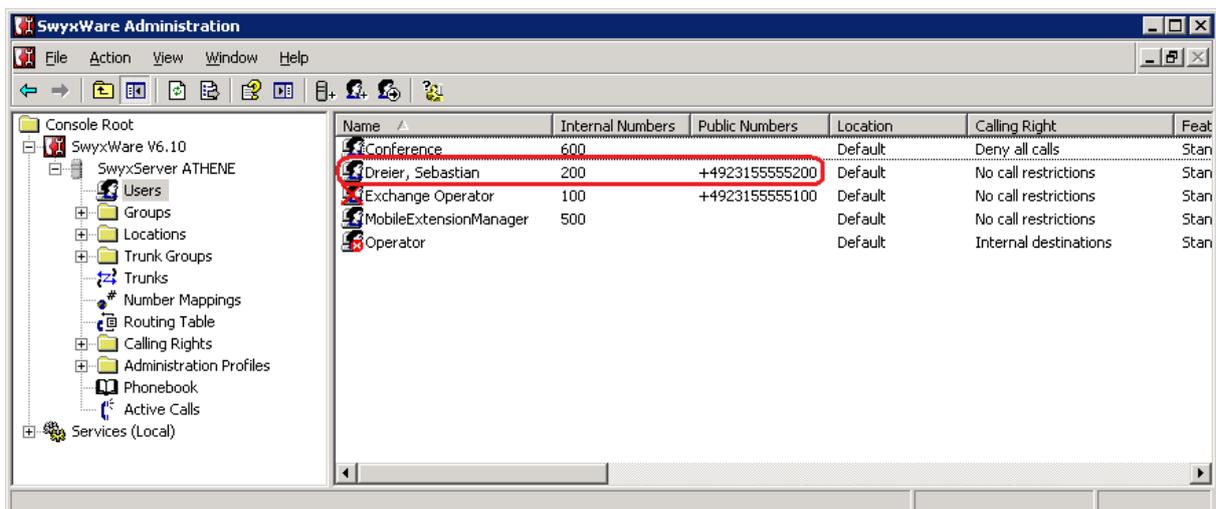
Activate the "Call Forwarding No Reply" and route such calls to #9200.
#9 is the trunk selection prefix for the Exchange trunk group and 200 is the internal phone number
of the SwyxWare user. Please note that the Exchange UM number and the SwyxWare internal phone
number of a user have to be the same (see chapter 3.4 "Enable user for Unified Messaging").
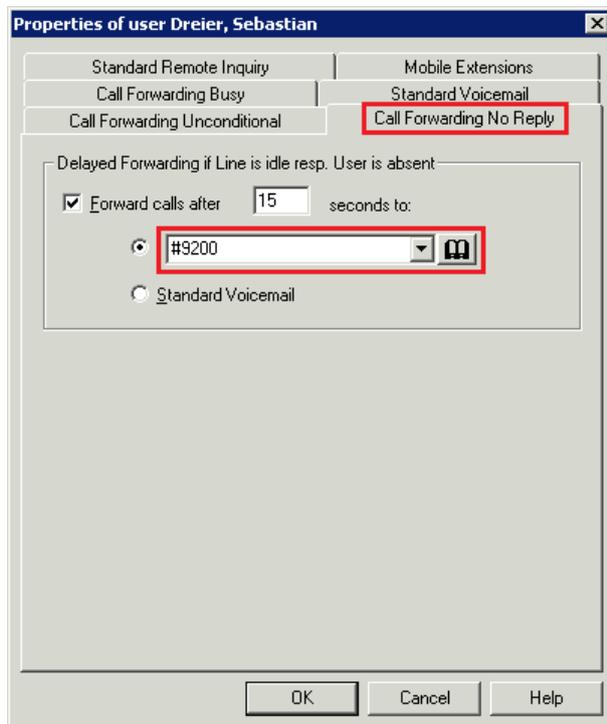
You can also activate the "Call Forwarding Busy" if you wish to route
every additional incoming call to your Exchange voice mailbox.
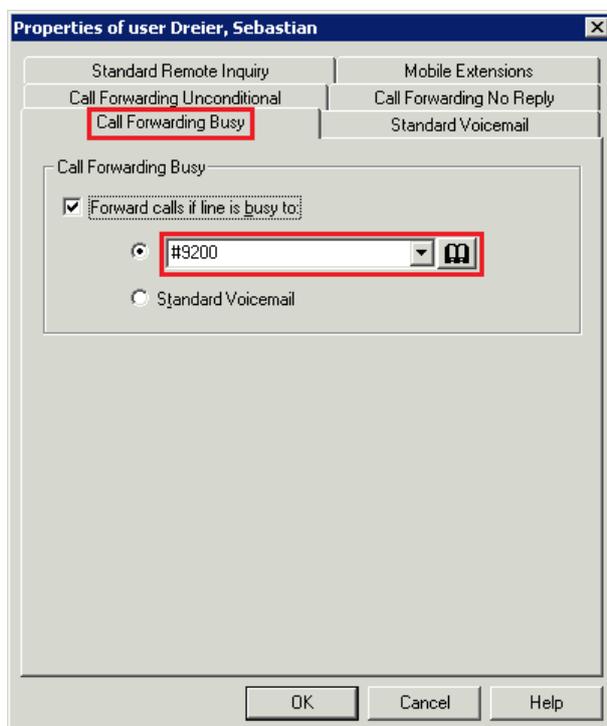
Click OK to save these settings.
At this point the SwyxWare configuration is complete.

3. Exchange Configuration

The first step of the Exchange configuration is the creation of a default "UM Dial Plan". This plan includes the location information (dial codes), the operator extension, compression codec selection for voicemails and much more. Before this dial plan can be used it has to be assigned to an Exchange server.

The second step describes the configuration of an "UM IP Gateway" which is the counterpart to the SwyxWare SIP trunk. Therefore the Exchange Management Shell is needed because not all settings can be changed through the management console.

The next step is the modification of the default "UM Mailbox Policy" which contains some rules and restrictions for the UM usage.

At the end the relevant active directory users has to be enabled for unified messaging.

Please note:
The "Auto Attendant" chapter is not needed any more, so the most parts has been deleted. Actually it only contains notes and hints for everybody who still wants to use an "Auto Attendant".

3.1 UM Dialplan

Open the Exchange Management Console and expand the complete menu tree on the left.
Go to "Unified Messaging" (under "Organization Configuration") and choose the "UM Dial Plans" tab in the middle. Open the mouse context menu and select "New UM Dial Plan".
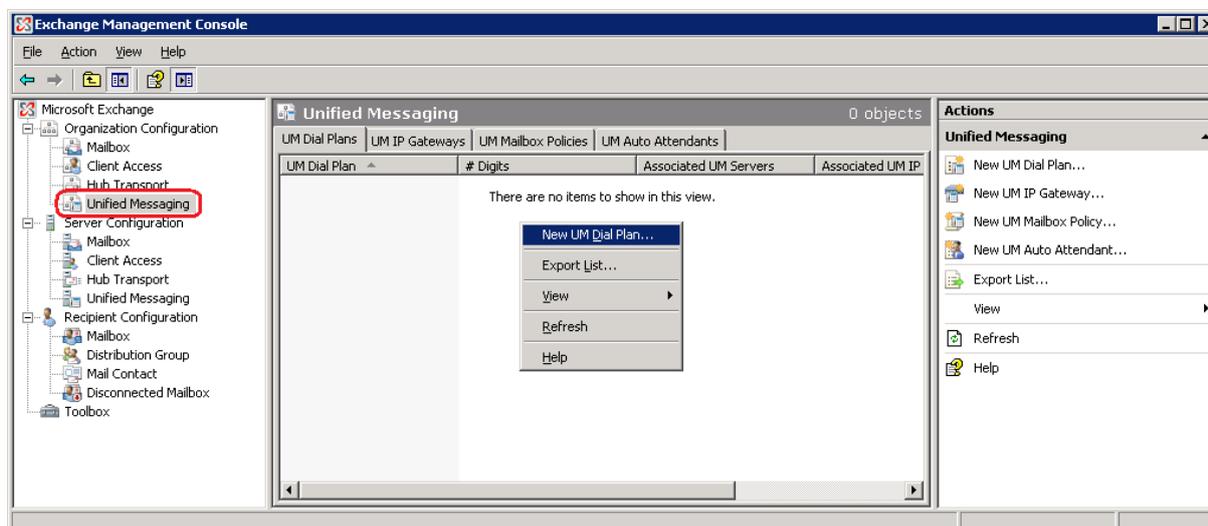
Choose a suggestive name for the new "UM Dial Plan" e.g. "Swyx Dial Plan".
The "number of digits in extension numbers" must correspond the SwyxWare configuration.
The "URI type" must be set to "Telephone Extension" and "VoIP Security" to "Unsecured".
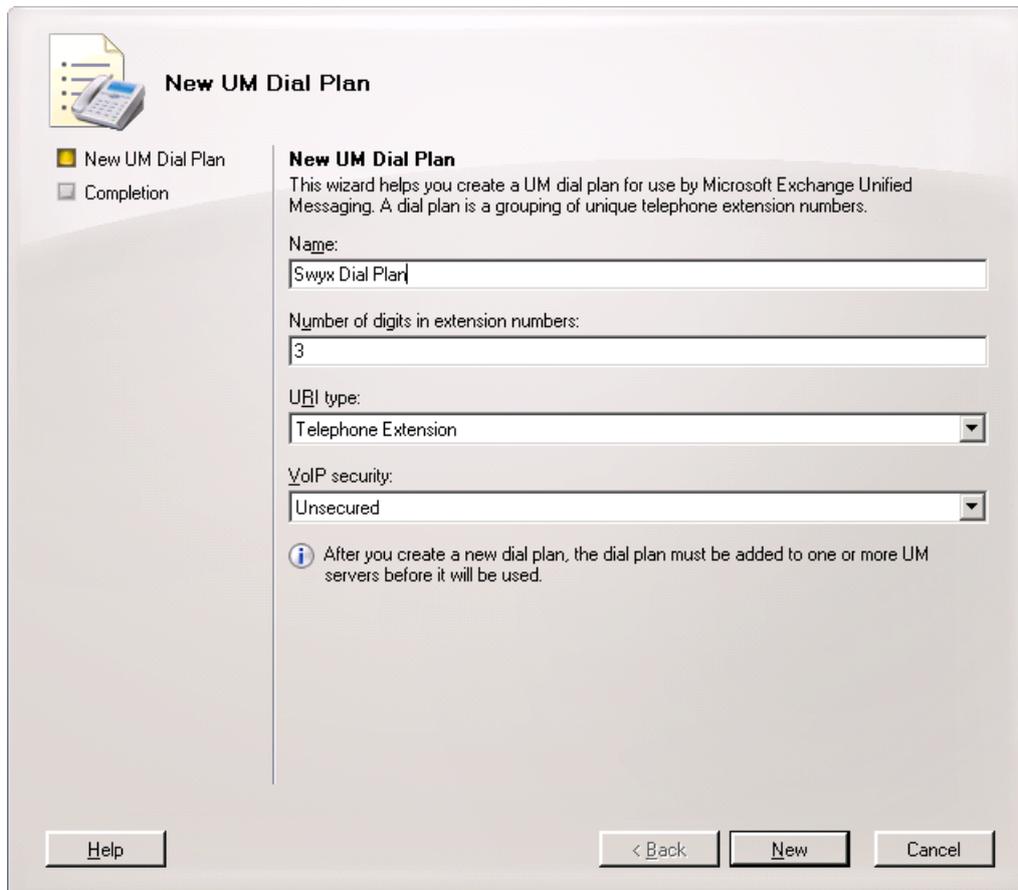
Finish the wizard and open the properties of the new dial plan.
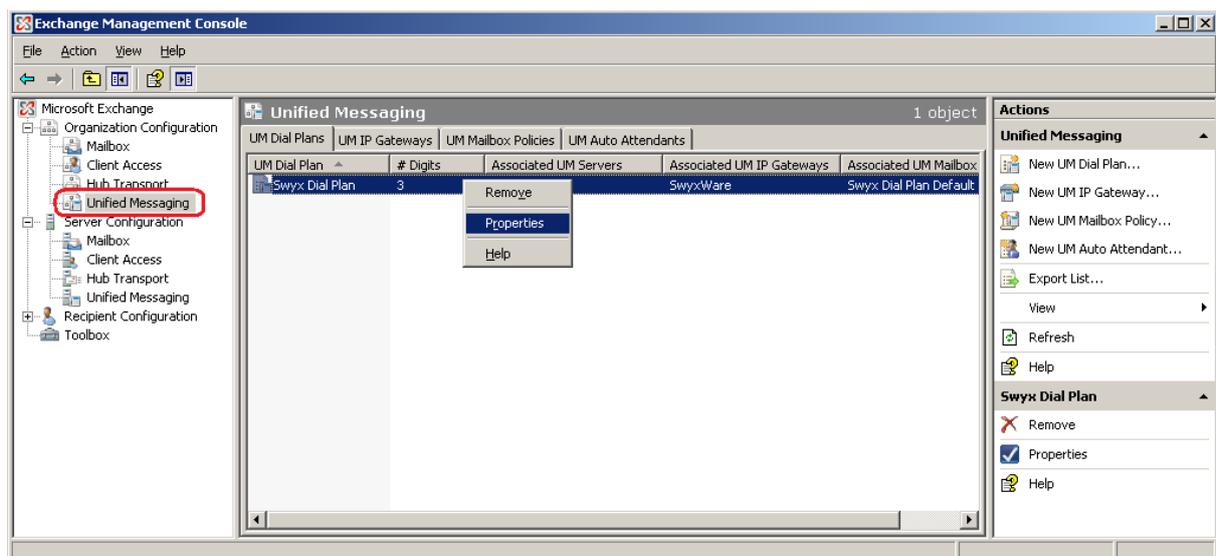
SWYX®

Go to the "Dial Codes" tab and fill in all fields (except the public line access prefix)
corresponding to the SwyxWare location which the Exchange trunk group is associated with.
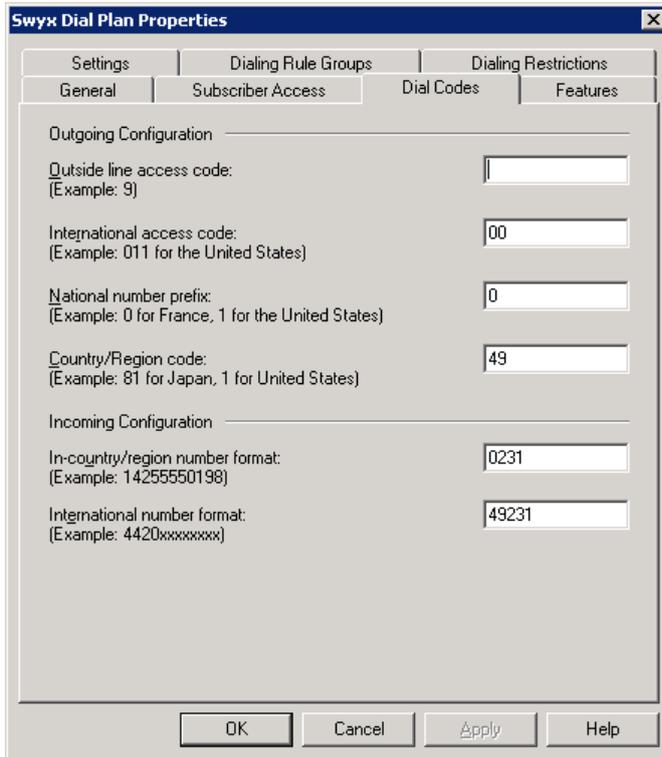
Swyx Dial Plan Properties ☒

| Settings | Dialing Rule Groups | Dialing Restrictions |
| General | Subscriber Access | Dial Codes | Features |

Outgoing Configuration

Outside line access code:
(Example: 9)

International access code: `00`
(Example: 011 for the United States)

National number prefix: `0`
(Example: 0 for France, 1 for the United States)

Country/Region code: `49`
(Example: 81 for Japan, 1 for United States)

Incoming Configuration

In-country/region number format: `0231`
(Example: 14255550198)

International number format: `49231`
(Example: 4420xxxxxxxx)

[OK]   [Cancel]   [Apply]   [Help]

Go to the "Features" tab and ensure that "Allow callers to transfer to users" is deactivated.
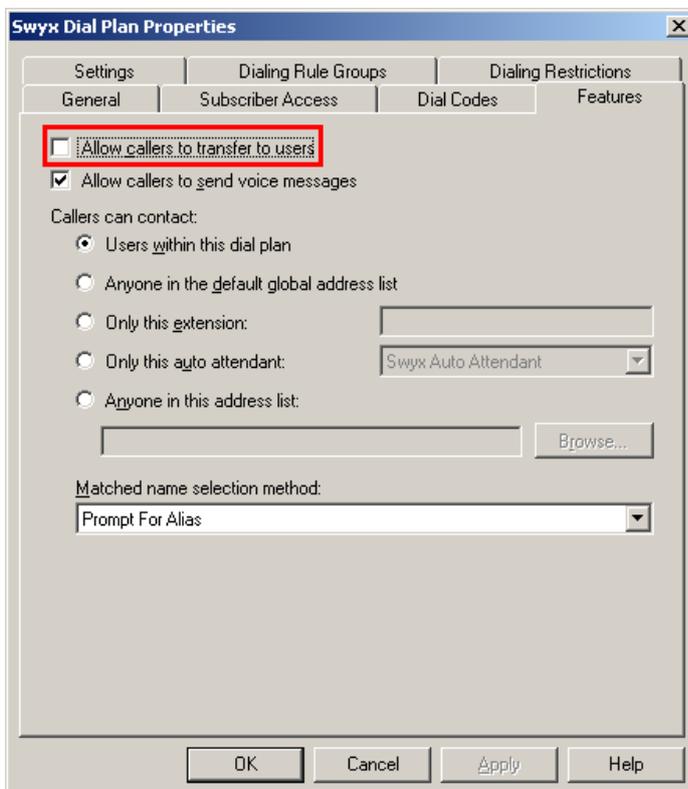
Swyx Dial Plan Properties ☒

| Settings | Dialing Rule Groups | Dialing Restrictions |
| General | Subscriber Access | Dial Codes | Features |

☐ Allow callers to transfer to users
☑ Allow callers to send voice messages

Callers can contact:
- ⦿ Users within this dial plan
- ○ Anyone in the default global address list
- ○ Only this extension:
- ○ Only this auto attendant: `Swyx Auto Attendant` ▾
- ○ Anyone in this address list:

    [Browse...]

Matched name selection method:
`Prompt For Alias` ▾

[OK]   [Cancel]   [Apply]   [Help]

Select the "Dialing Rule Groups" tab and click on the "Add" button for the "In-Country/Region Rule Groups". "Dialing Rule Groups" are used for the "Dialing restrictions" of outgoing calls.
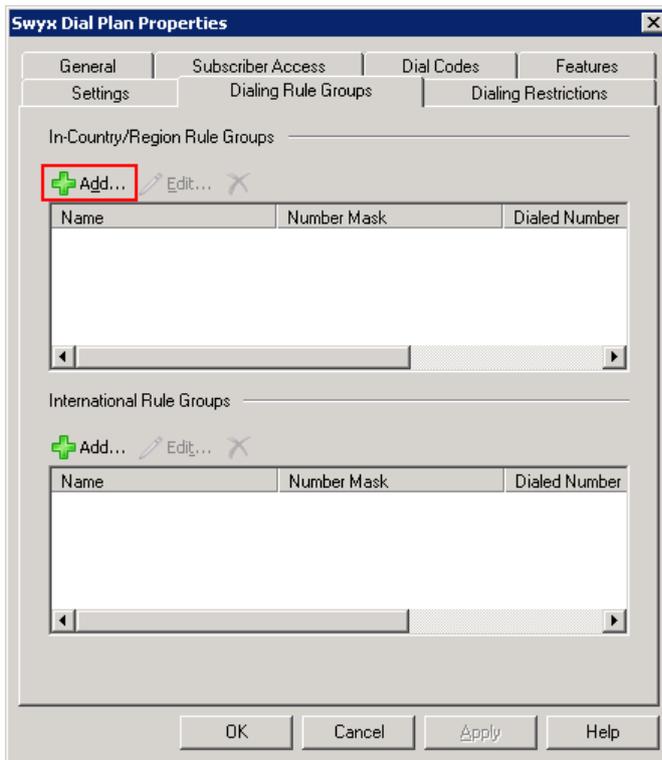
To allow outgoing calls you must add "Dialing Rule Entries".
These entries can also be used for number replacement.

The "Number mask" is the number which is dialed by the user.
Before this number is used for an outgoing call it can be modified
through the "Dialed number" field (e.g. add a Public Line Access Prefix).

The following rule allows outgoing calls to SwyxWare users.
The "x" parameter stands for one digit from 0 to 9.
The number mask must be as long as your internal numbers
(e.g. 100 -> xxx / 1000 -> xxxx).
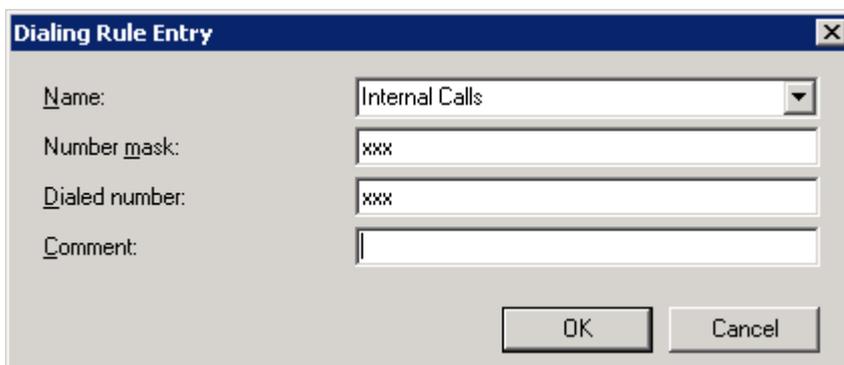
The second rule allows local area calls and adds a public line access prefix. In this case our PLAP is a 0.
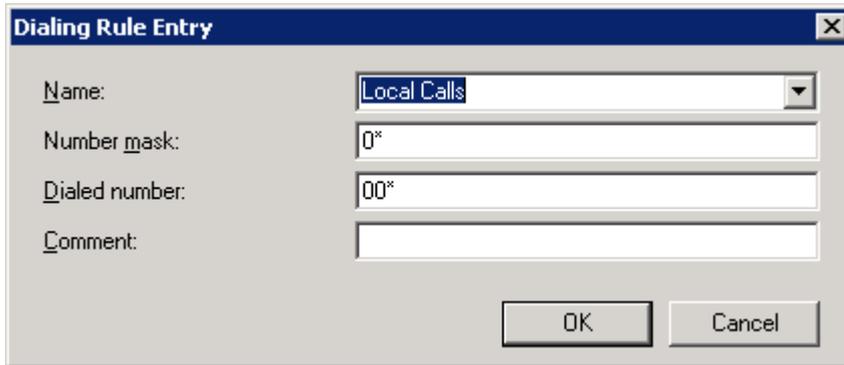
The last rule allows international calls and so it belongs to the "International Rule Groups".
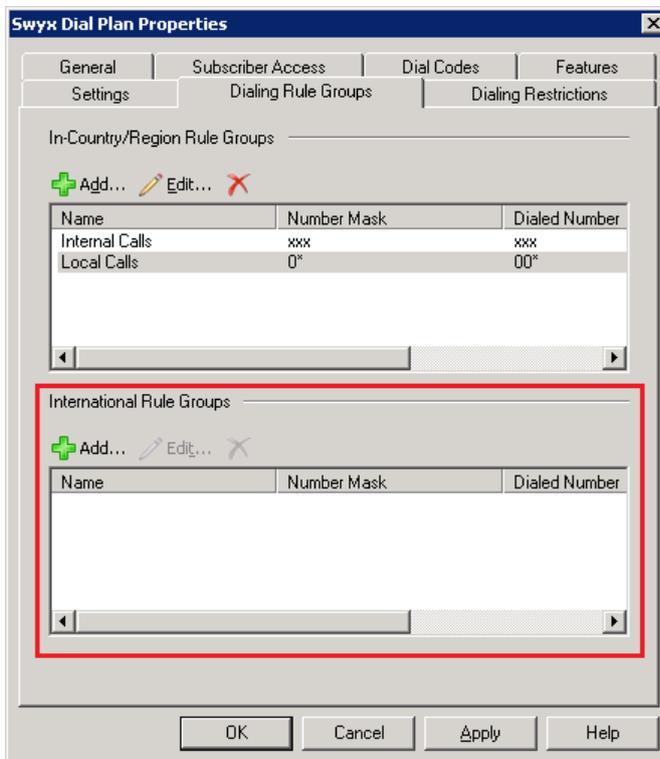
Click on the "Add" button and add your rule for international calls.
The public line access must be applied here too!
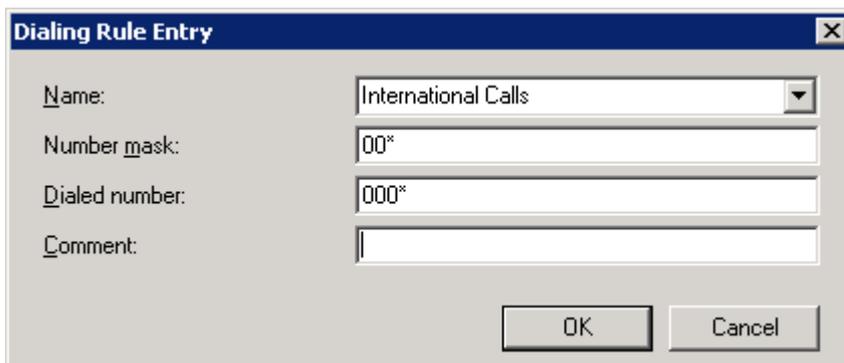
The final result should look like this:
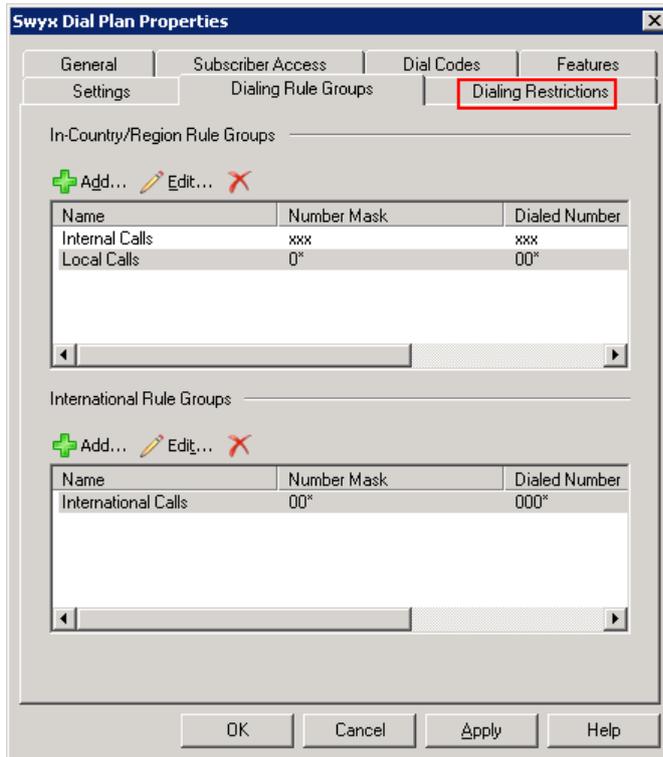
Now the "Dialing Rule Groups" must be added to the "Dialing Restrictions"
to become effective. Therefore select the "Dialing Restrictions" tab and click
on the "Add" button for the "In-Country/Region Rule Groups".
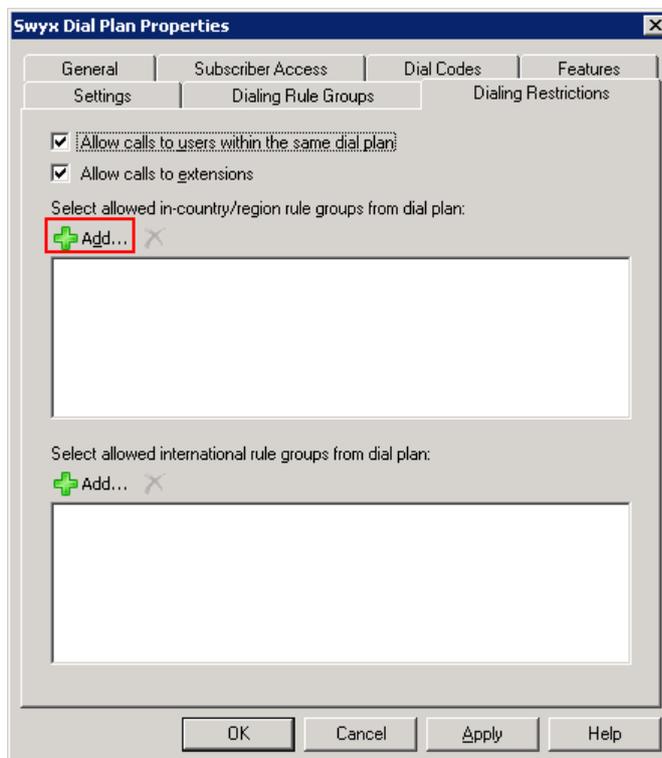
Select the Rule Groups you wish use with this dial plan and click on the "OK" button.
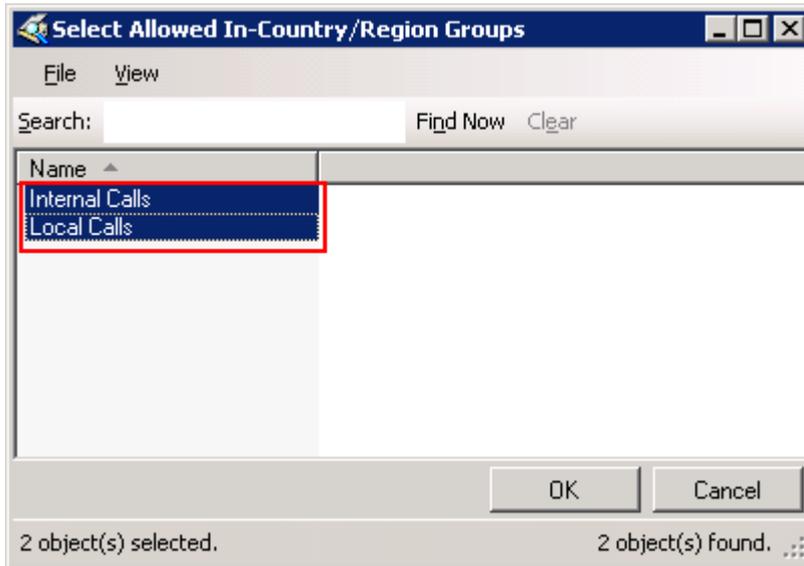
Now do the same for the "International Rule Groups".
The result should look like this:
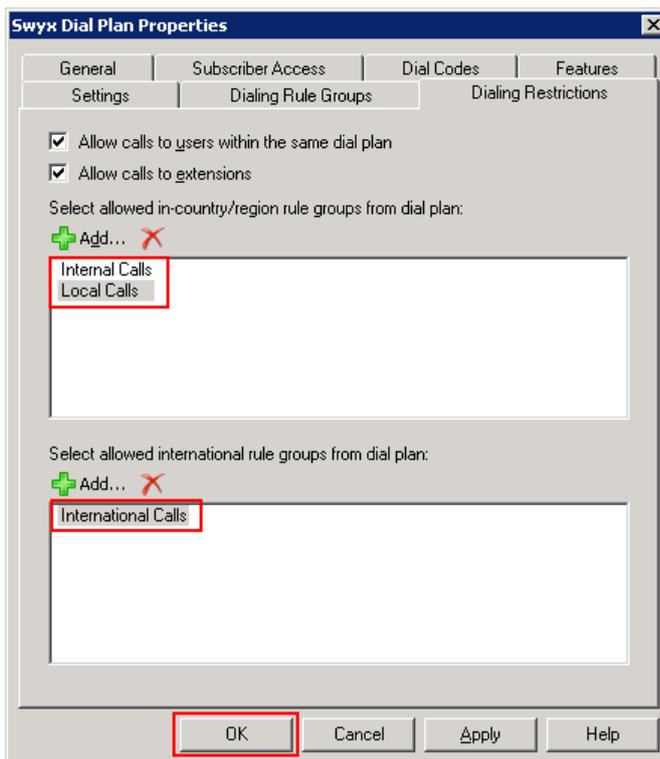
Click on OK and go to "Unified Messaging" (under "Server Configuration").

Select your Exchange Server (in the middle) and open the "Properties".
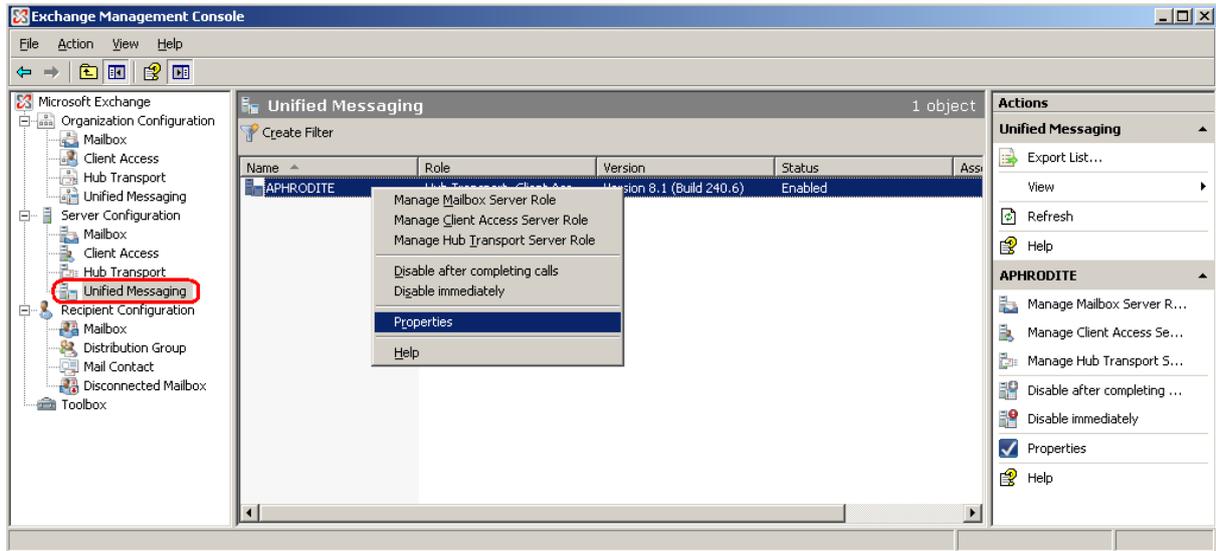
Go to the "UM Settings" and add your new dial plan to the list of "Associated Dial Plans".
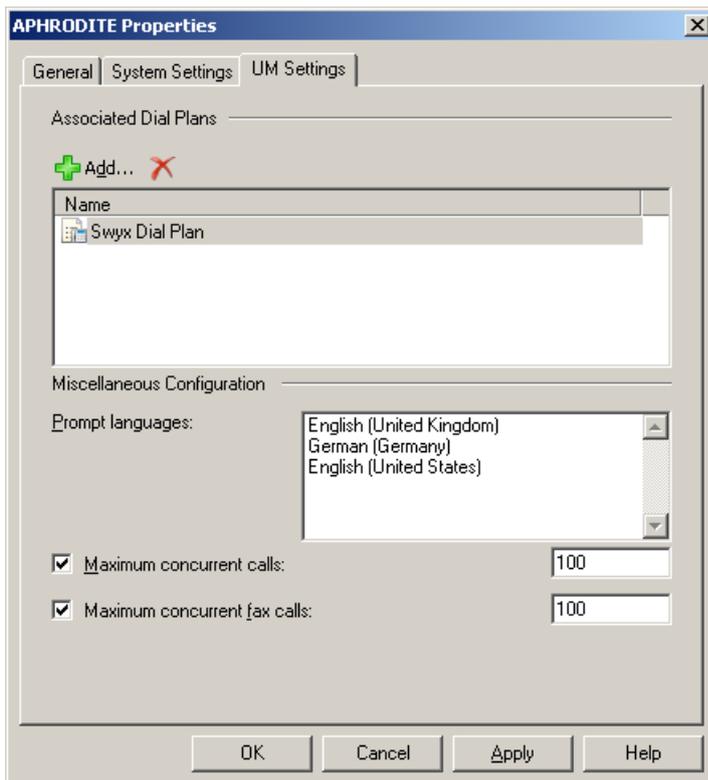
Click on the "OK" button to save the changes and go to the next step.

3.2 UM IP Gateway

Go to "Unified Messaging" (under "Organization Configuration") and choose the "UM IP Gateways" tab in the middle. Open the mouse context menu and select "New UM IP Gateway".
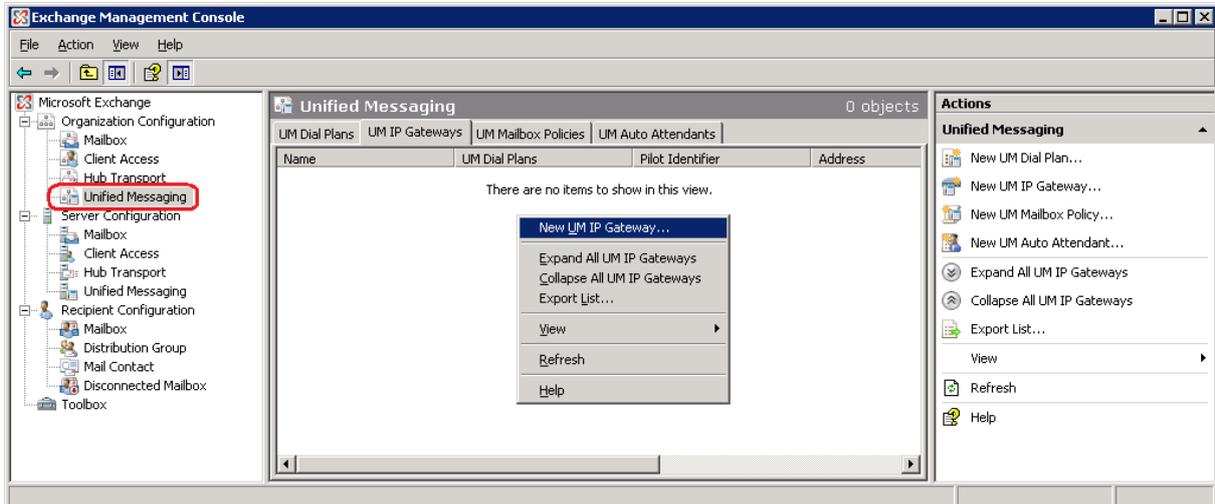
Choose a name for the UM IP Gateway and enter the IP address or the FQDN of the SwyxWare Server. Click on the "Browse" button to assign your dial plan to this gateway.
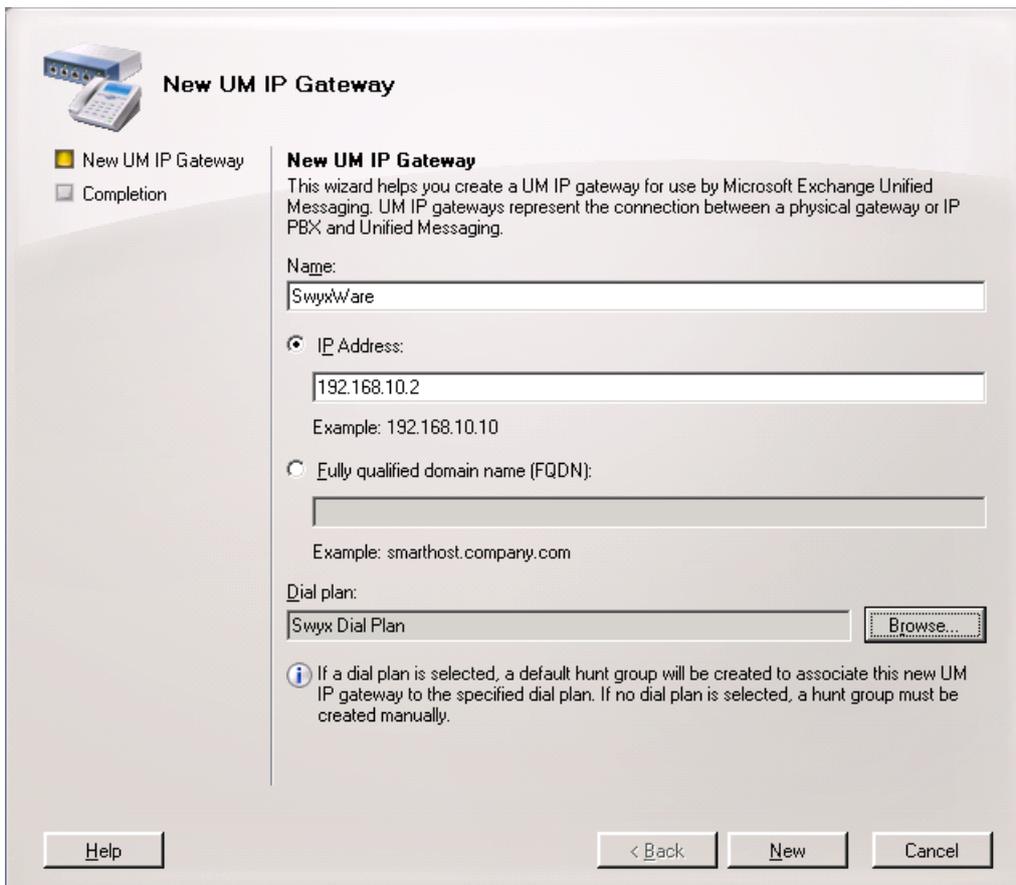
By default every "UM IP Gateway" connection uses port 5060. In our scenario this has to be changed because the SwyxWare LinkMgr uses port 65002. The Exchange Management Console does not offer a possibility to change this value, therefore the "Exchange Management Shell" (Windows Powershell) must be used. Open the shell and execute the following command:

Set-UMIPGateway -Identity <Name of your UM IP Gateway> -Port 65002
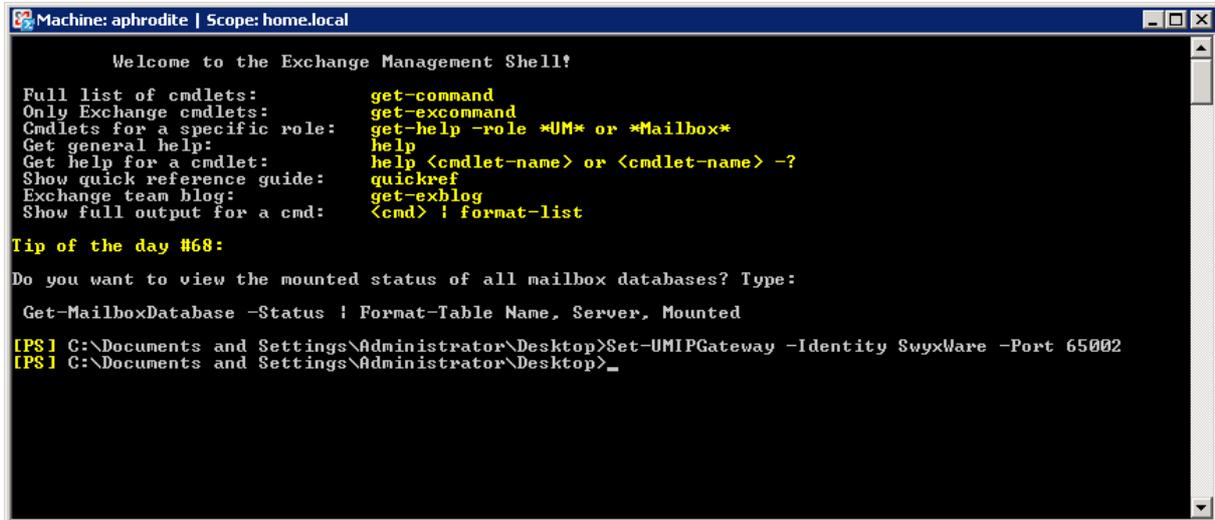

3.3 UM Mailbox Policies

Go to "Unified Messaging" (under "Organization Configuration") and choose the
"UM Mailbox Policies" tab. Open the properties of the "Swyx Dial Plan Default Policy".
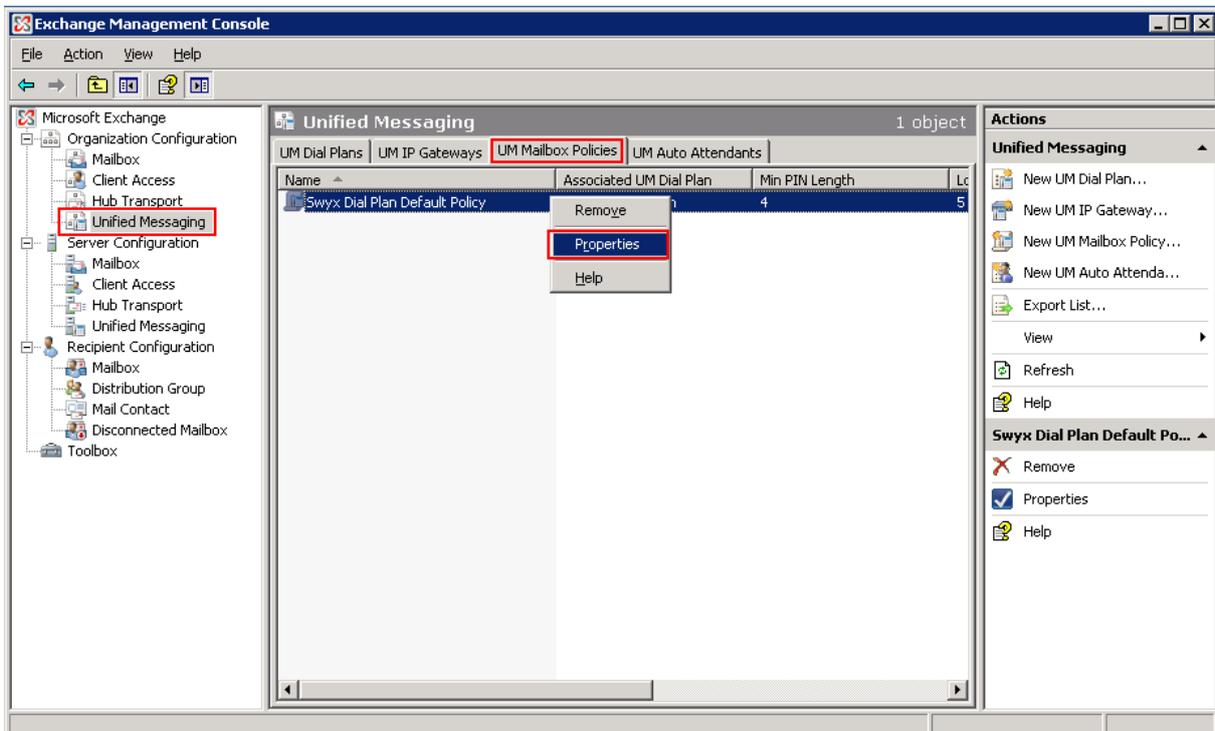
Just as in the "Dial Plan" configuration the "Dialing Rule Groups" must be added to the "Dialing Restrictions" here. Therefore select the "Dialing Restrictions" tab and click on the "Add" button for the "In-Country/Region Rule Groups".
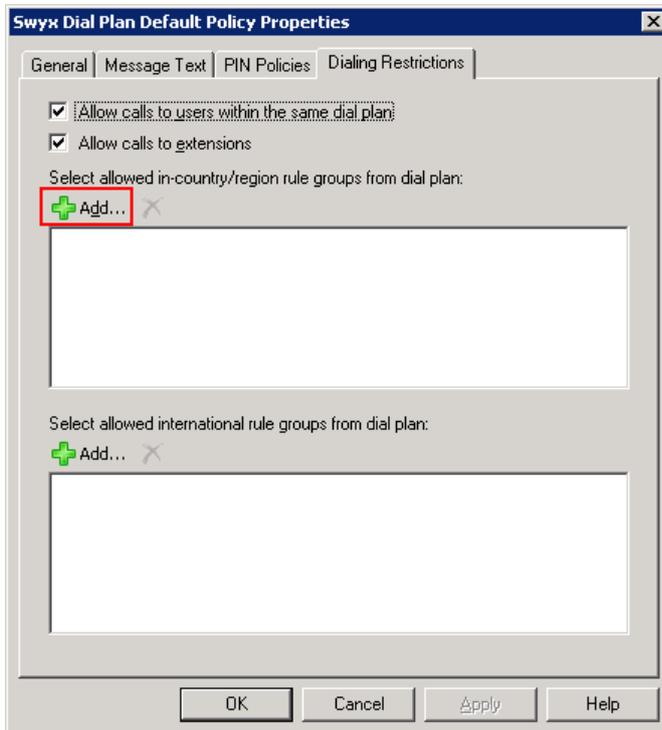
Select the Rule Groups you wish use with this dial plan policy and click on the "OK" button.
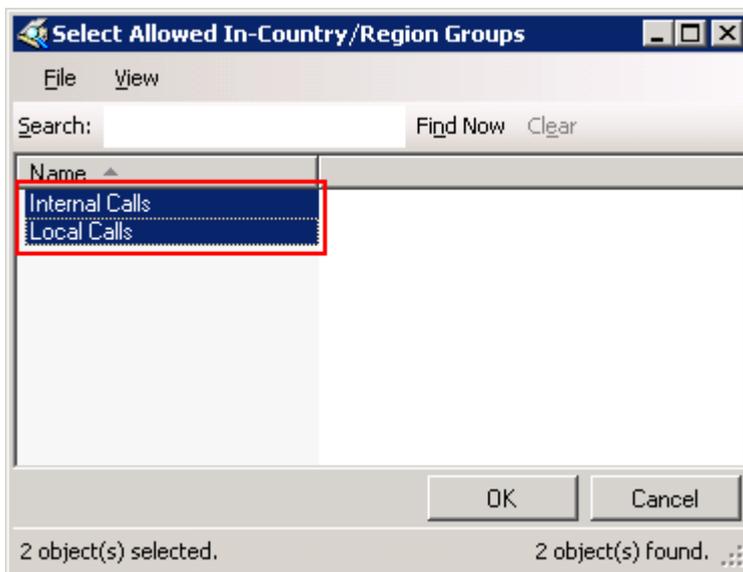
Now do the same for the "International Rule Groups".
The result should look like this:
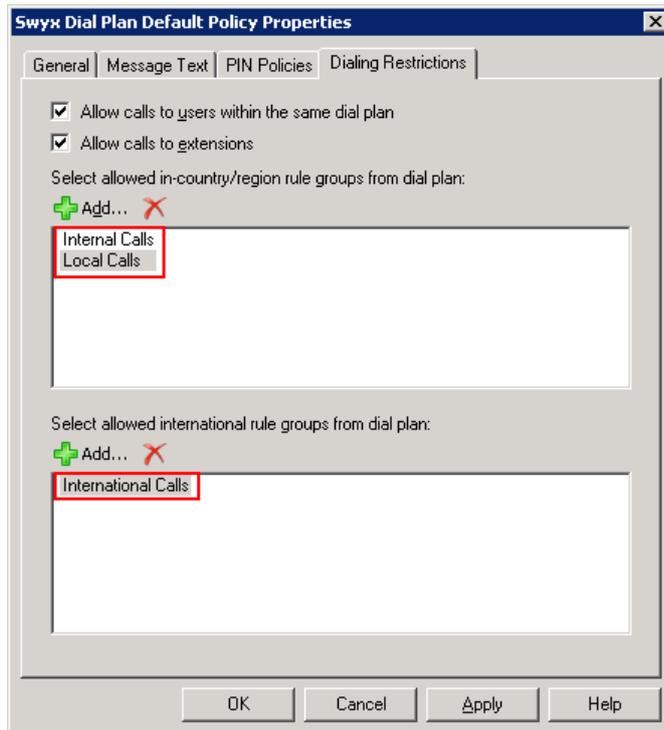
Click on the "OK" button to save the changes and go to the next step.

3.4 Enable user for Unified Messaging

Last but not least you have to enable the active directory users for Unified Messaging.
Select "Mailbox" under "Recipient" in the left menu tree. Select a user in the middle of
the window and choose "Enable Unified Messaging" in the right menu.
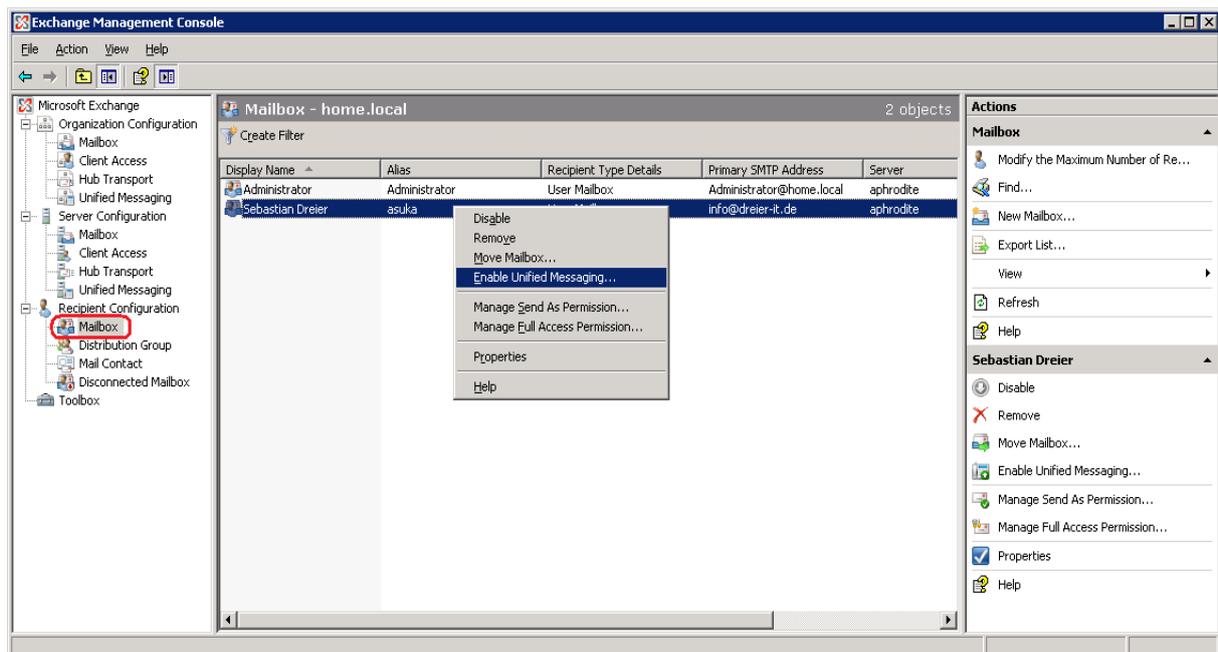
On the first wizard page you can choose if the user PIN will be generated automatically or not.
Please note the PIN length and the complexity depends on the Mailbox Policy you can select above.
.
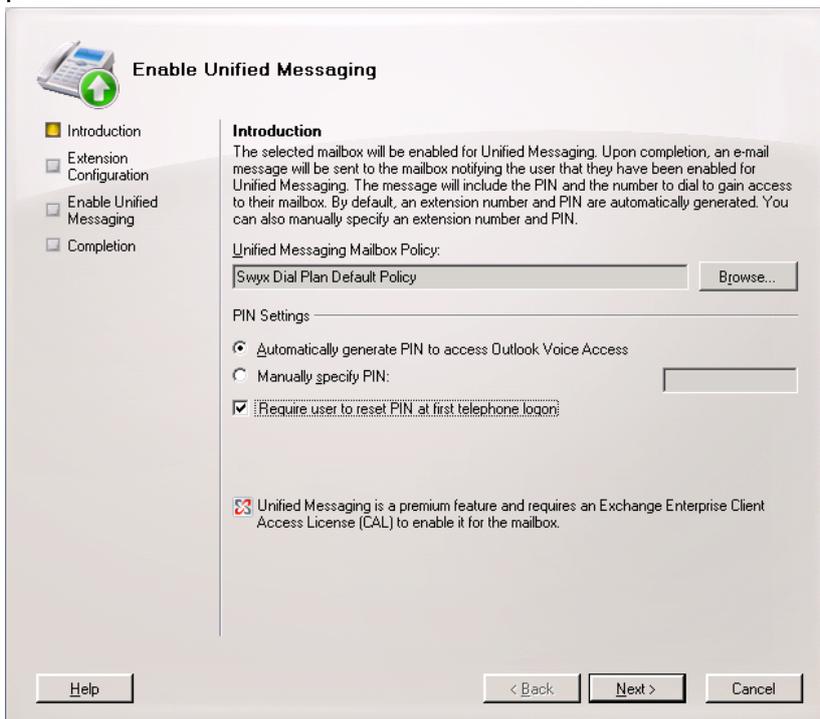
On the next page you have to enter the extension of the user (in our case we use 200).
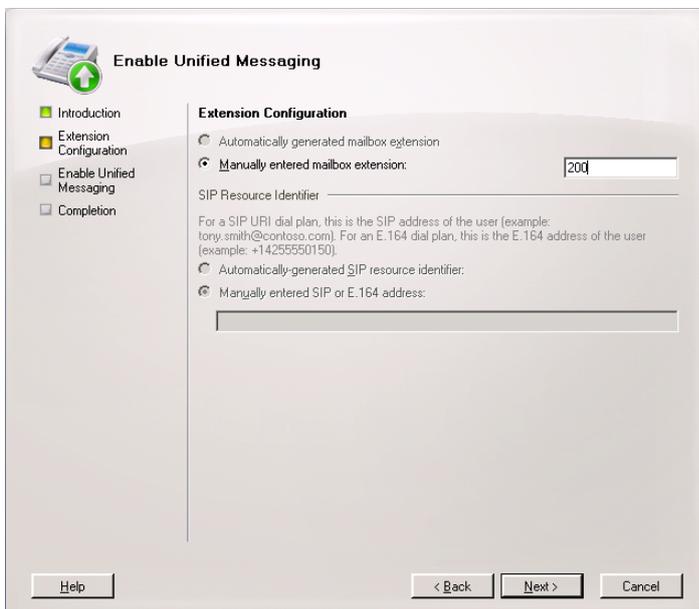
After the wizard is finished the user will receive a mail with all required
information about his unified messaging account (PIN, extension etc.).

3.5 "Play at the phone" feature notes

As already described in chapter 1 scenario 3 the main use case for this feature is
the possibility to listen to your voicemails even if no audio device is available.
This can be initiated through the "Outlook Web Access" as shown on the screenshot below.
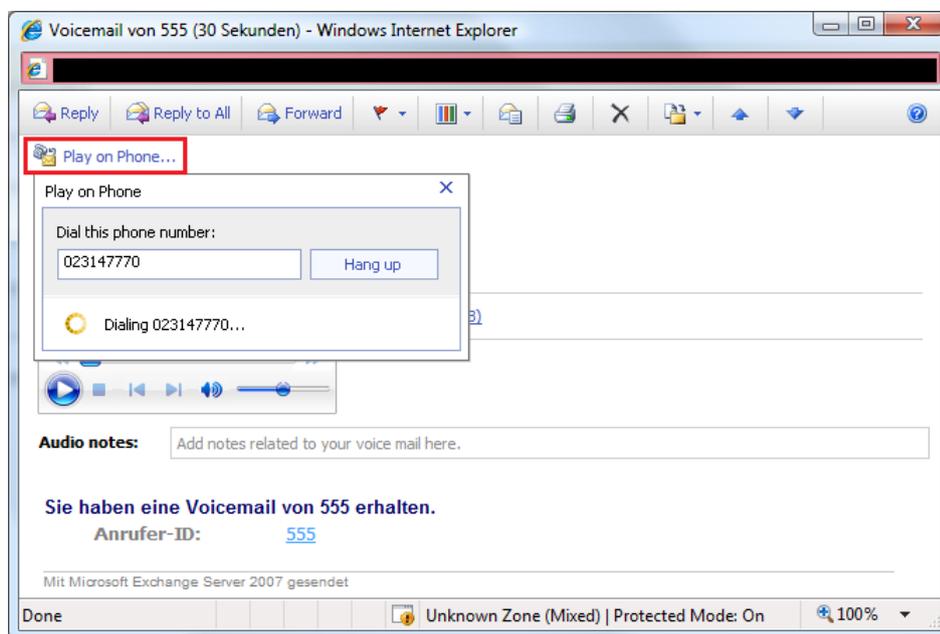
Important:
The "Dialing Rule Groups" configuration of your UM Dial Plan
(see chapter 3.1) only allows the following number formats for dialing:

- Internal (e.g. 200)
- National (e.g. 0231 47770)
- International (e.g. 0049 231 47770)

Do not use the "Public Line Access Prefix" for dialing here!

3.6 Auto Attendant notes

Within this new version of the SwyxWare Exchange 2007 Interconnection Tutorial
the configuration of an "Auto Attendant" is not required anymore! It is not needed
for the user's voice mailboxes; it only works as an operator who can redirect calls.

If you still want to use an "Auto Attendant", please note the following:

An incoming call to a user who is assigned to an "Auto Attendant" cannot be delivert
directly to the users voice mailbox! The "Auto Attendant" will catch up every incoming
call for users who are associated with it.

4. Special Thanks

Frank Carius
(Microsoft Exchange MVP)
www.msexchangefaq.de

Without your excellent website this manual has not been possible so far! Big Thanks!

Paul Scholda
(eHouse Informationstechnologie GmbH)
www.ehouse.at

Your contacts within Microsoft and your feedback really helped to address the outstanding problems. Sorry that we could not address them all in previous versions before.

Peter Meuser
(iTlab Consulting / LANline-Lab)
www.lanline.de

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