EdgeMarc 2900 POE Interop with Swyx PBX - Use Case 1

Table of Contents

Interoperable Vendors

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Document Overview

This document outlines the configuration best practices for Vodafone involving EdgeMarc 2900 when deployed with SwyxPBX. This document also provides the configuration snapshot of the interoperability performed between Ribbon's EdgeMarc 2900 and SwyxPBX, SwyxIt and Swyx Phone. SwyxPBX is a fully **"Hosted PBX Service**" with cloud telephony. In cases when you no longer have a PBX in your company, you obtain all functions and features of a PBX as a service from the cloud.

Scope

This document provides configuration best practices for deploying Ribbon's EdgeMarc 2900 with SwyxPBX and associated users. Note that these are configuration best practices and each customer may have unique needs and networks. Ribbon recommends that customers work with network design and deployment engineers to establish the network design which best meets their requirements.

Non-Goals

It is not the goal of this document to provide detailed configurations that will meet the requirements of every customer. Use this document as a starting point and build the SBC configurations in consultation with network design and deployment engineers.

Audience

This technical document is intended for telecommunications engineers with the purpose of configuring both the Ribbon EdgeMarc 2900 and the SwyxPBX and associated users.

Steps will require navigating the third-party product as well as the Ribbon product using graphical user interface (GUI) or command line interface (CLI). An understanding of the basic concepts of TCP/UDP/TLS, IP/Routing, and SIP/RTP/SRTP is needed to complete the configuration and any necessary troubleshooting.

Pre-Requisites

The following aspects are required before proceeding with Ribbon EM 2900 POE and SwyxWare 12.10:

- SwyxWare 12.10 is installed in a Windows Server Platform and connected to the network.
- A 190 trial license is available and obtained from Swyx.
- Remote Desktop access to a Windows host is available for remote access and configuration.
- A valid 6 months trial License is running on the Server.
- HFA firmware is loaded and installed on a Unify CP205 Phone Unit.

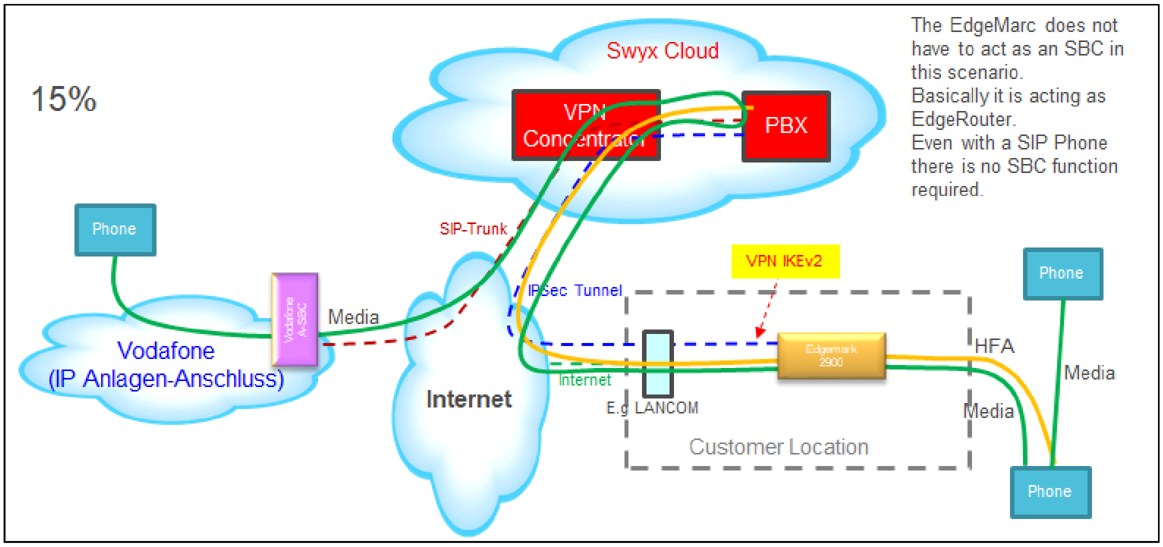
Product and Device Details

	Equipment/Product	Software Version
Ribbon Communications	EdgeMarc 2900 POE	Version 15.8.3
Third-Party Products	SwyxWare	V12.10.16296.0
	SwyxIt	V12.10.16296
	Windows Server	2019
	Unify CP205	V1 R3.9.0 HFA 190516

Network Topology Diagram

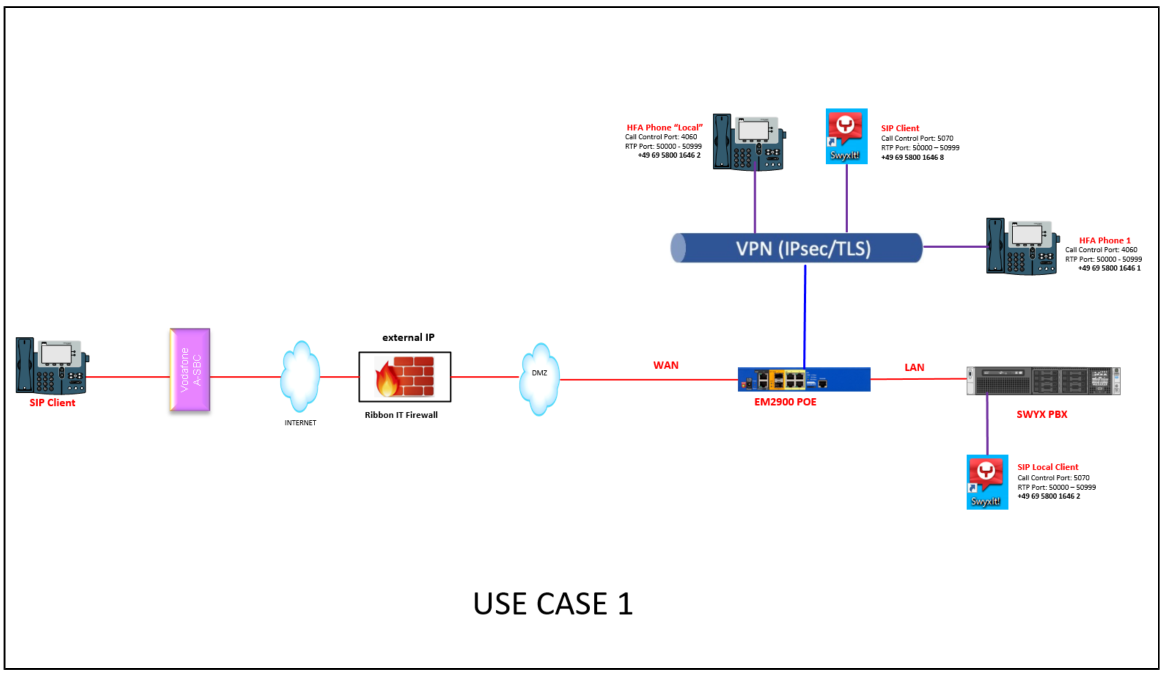
Use Case 1 Deployment Topology

The deployment topology diagram is depicted below.



Interoperability Test Lab Topology (or Call Flow Diagram)

IOT high-level architecture covering call flows and overall topology is depicted below.

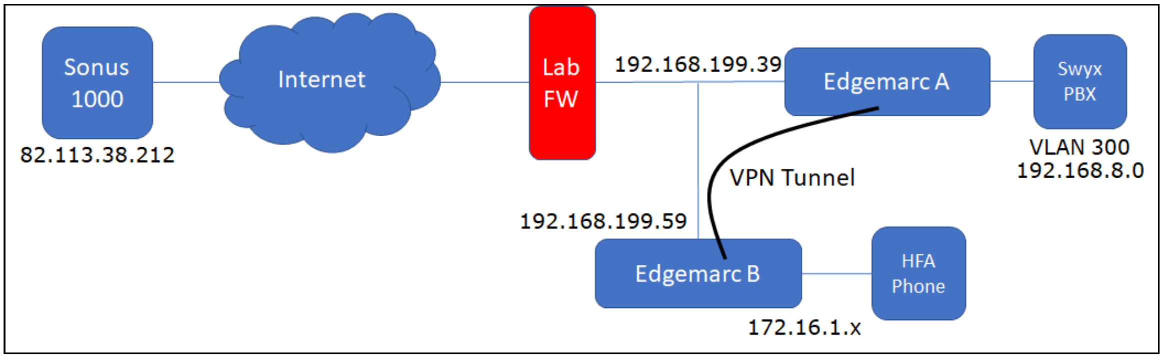


Section-A: EdgeMarc Configuration

Connectivity

Two EdgeMarcs were employed in the lab in order to achieve the desired topology:

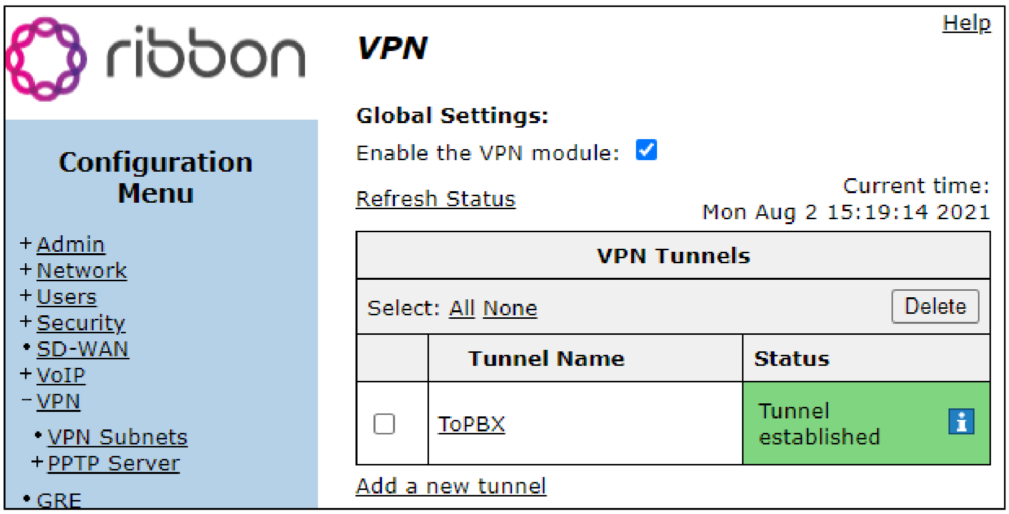
- EdgeMarc A terminates a VPN tunnel and has its SIP ALG function enabled to support connectivity to the SIP Service Provider.
- EdgeMarc B is serving the role of a remote office with phones only. EdgeMarc B has a VPN tunnel configured, but no SIP functionality.



Configuring EdgeMarc A

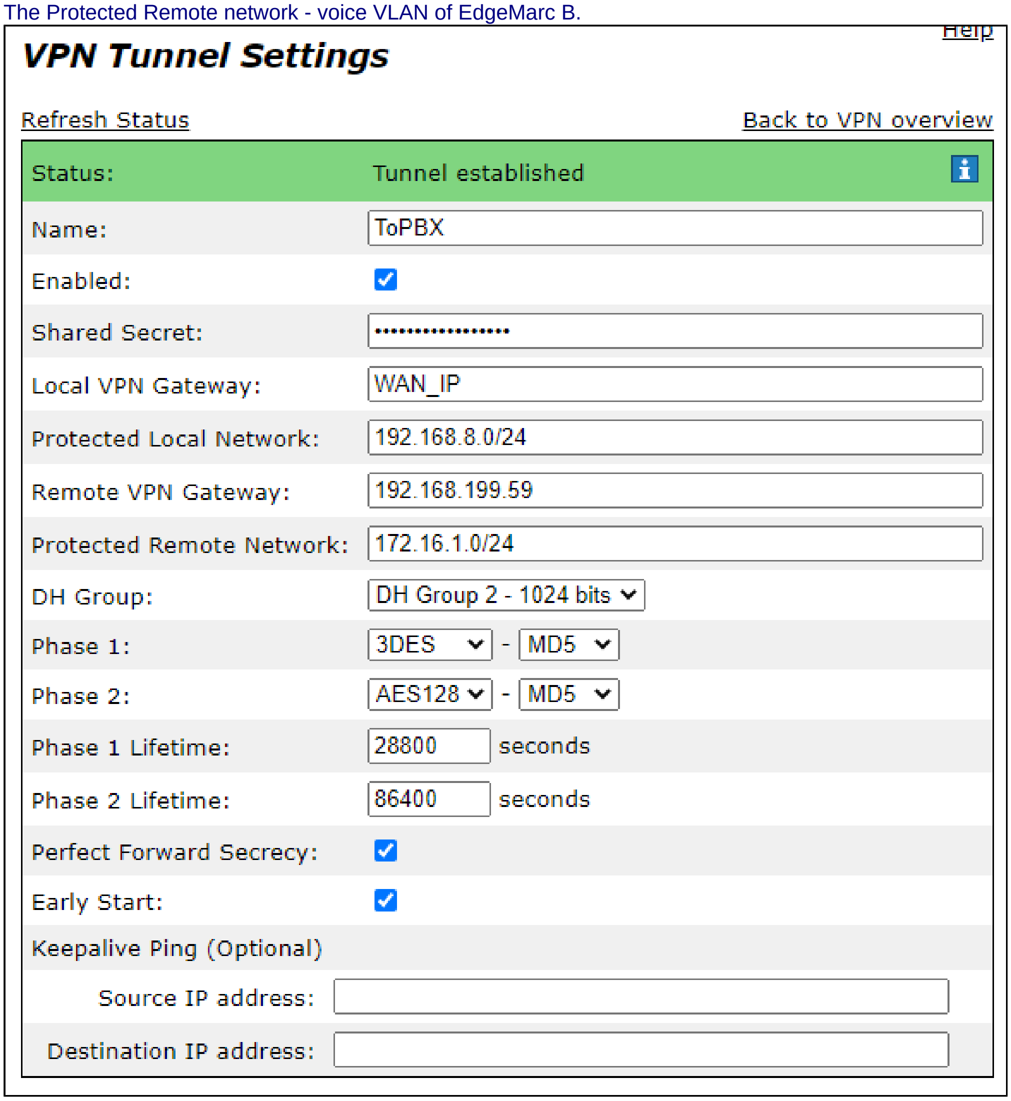
In this use case, EdgeMarc A serves as a VPN termination device in addition to supporting SIP. An IPSec tunnel was configured:

1. Enable the VPN module on the main VPN page, then click Add a new tunnel.



2. Configure the following:
   - The Protected Local Network - voice VLAN of the EdgeMarc.
   - The Remote VPN Gateway - WAN IP of EdgeMarc B

- The Protected Remote network - voice VLAN of EdgeMarc B.



3. Since EdgeMarc A is responsible for communication to the SAP provider, its ALG must be configured starting with the main VoIP page:
    - The ALG VLAN is set to the voice VLAN of the EdgeMarc.
    - Route all signaling through B2BUA is configured to provide for any needed SIP header manipulation.

Help

VoIP

VoIP ALG allows the system to recognize and register network devices.

Enable ALG Multi-VLAN support:	☐

Since VLAN support is enabled, you must select a VLAN for the ALG to support. The ALG can only support one VLAN.

ALG LAN using VLAN ID	300
Enable LLDP:	☑
LLDP Broadcast Interval (sec):	30

IPv4 only.

TFTP Server IP address:	

In some cases, the ALG addresses will not correspond to the addresses of the LAN or the WAN ports. The addresses will be alias addresses that have been configured on the ports. In general, the user should leave this feature disabled.

Use ALG Alias IP Addresses:	☐
ALG LAN Interface IP Address:	192.168.8.1
ALG LAN Interface IPv6 Address:	
ALG WAN Interface IP Address:	192.168.199.39
ALG WAN Interface IPv6 Address:	

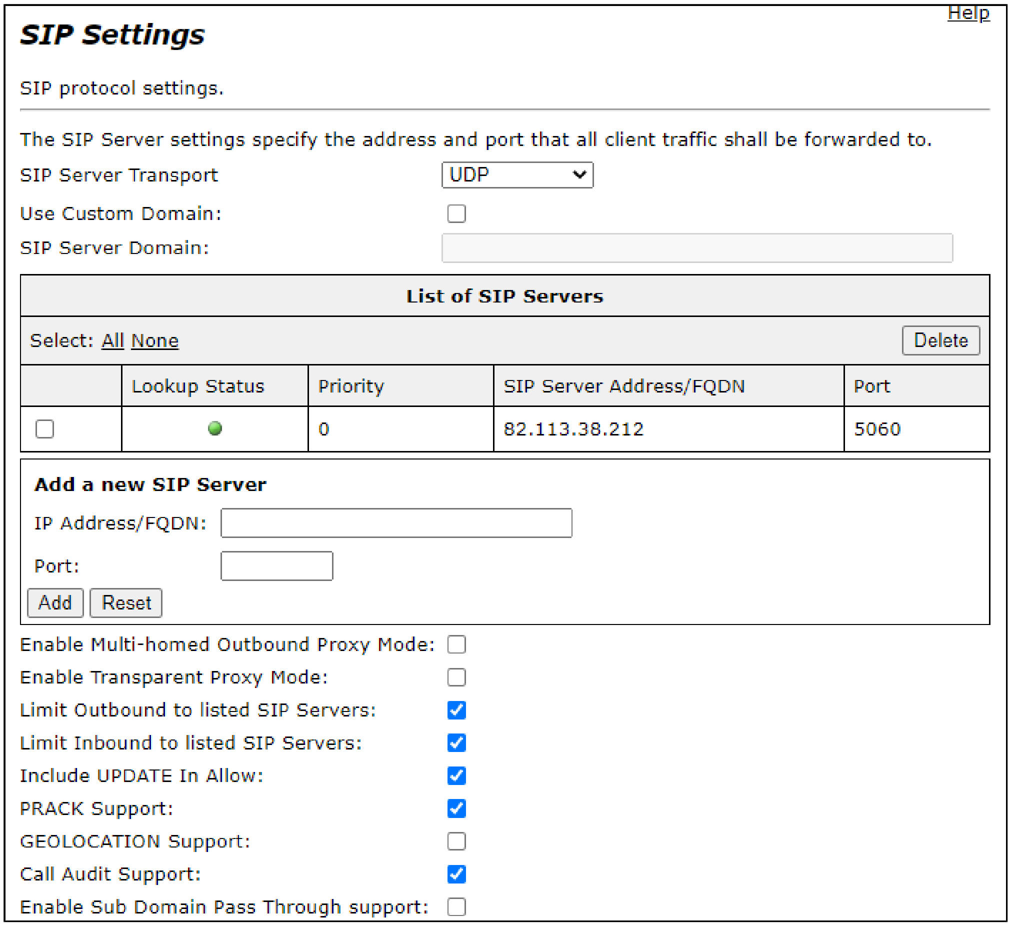
Public NAT WAN IP address:	
Private NAT LAN IP address:	

Do strict RTP source check:	☐
Enable Client List lockdown:	☐
Allow Shared Usernames:	☐
Strip G.729 from calls:	☐

B2BUA Options:

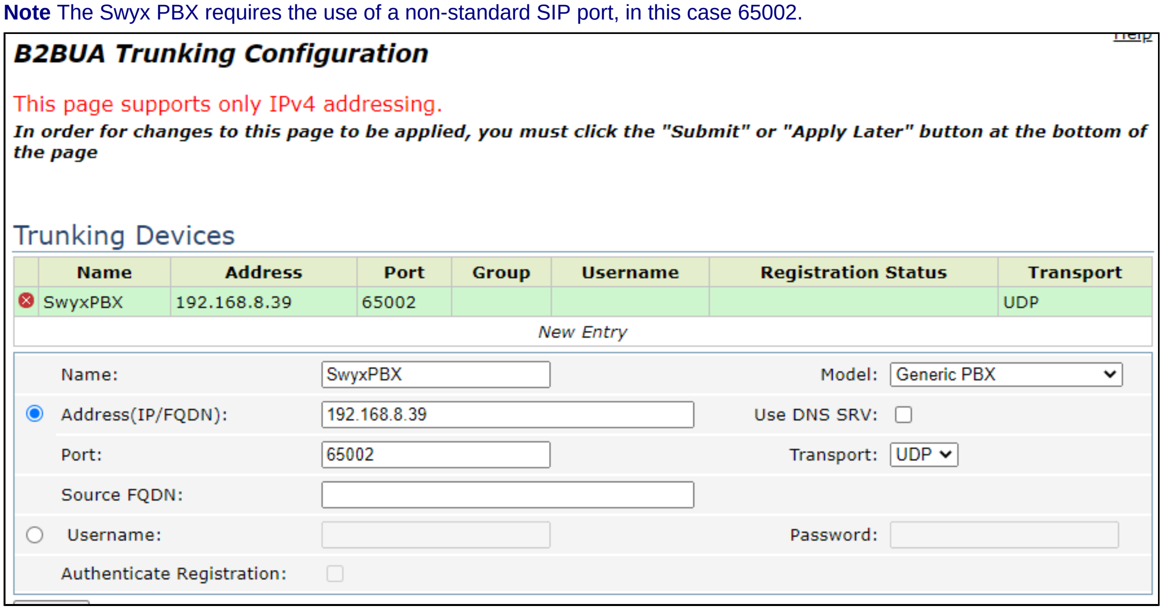
Route all SIP signalling through B2BUA:	☑

4. On the SIP Settings page The SIP server is configured under List of SIP Servers to facilitate the use of the EdgeMarc Survivable Gateway function. The IP address configured is that of the Sonus 1000 acting as the Service Provider SBC in this lab. Other settings on the page are left at their default values.



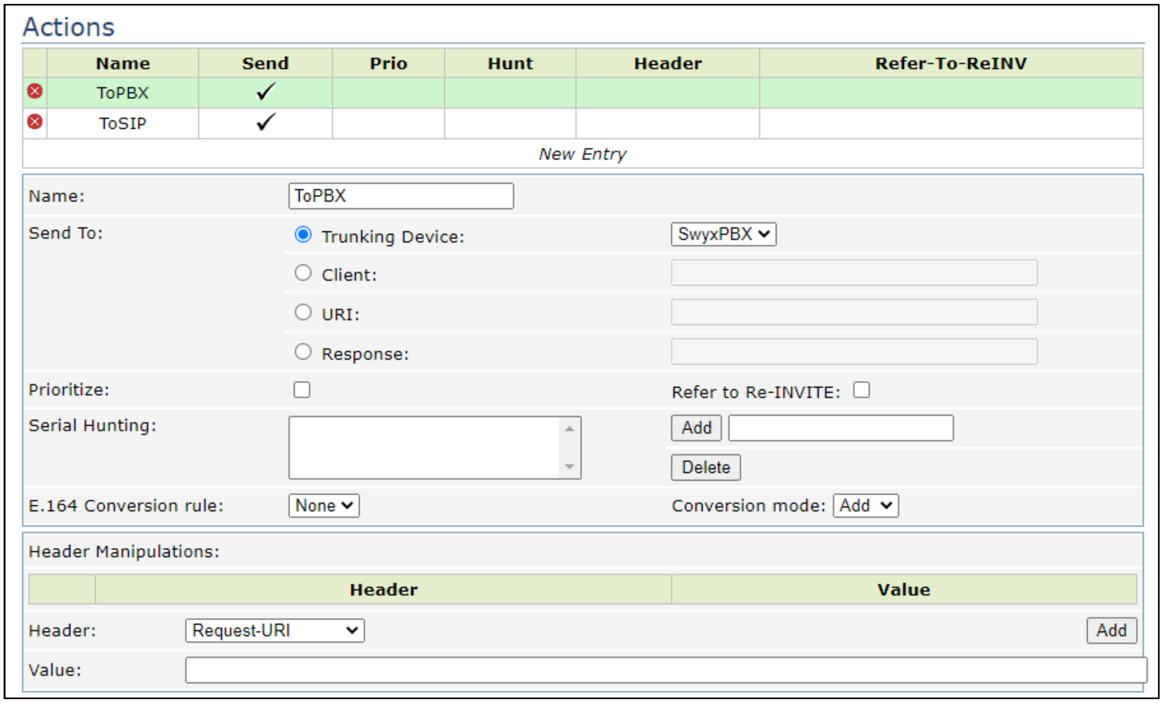
5. Finally, configure the SIP endpoint for the Swyx PBX and dial rules under the SIP B2BUA settings beginning with the Trunking Devices section:

   Note The Swyx PBX requires the use of a non-standard SIP port, in this case 65002.

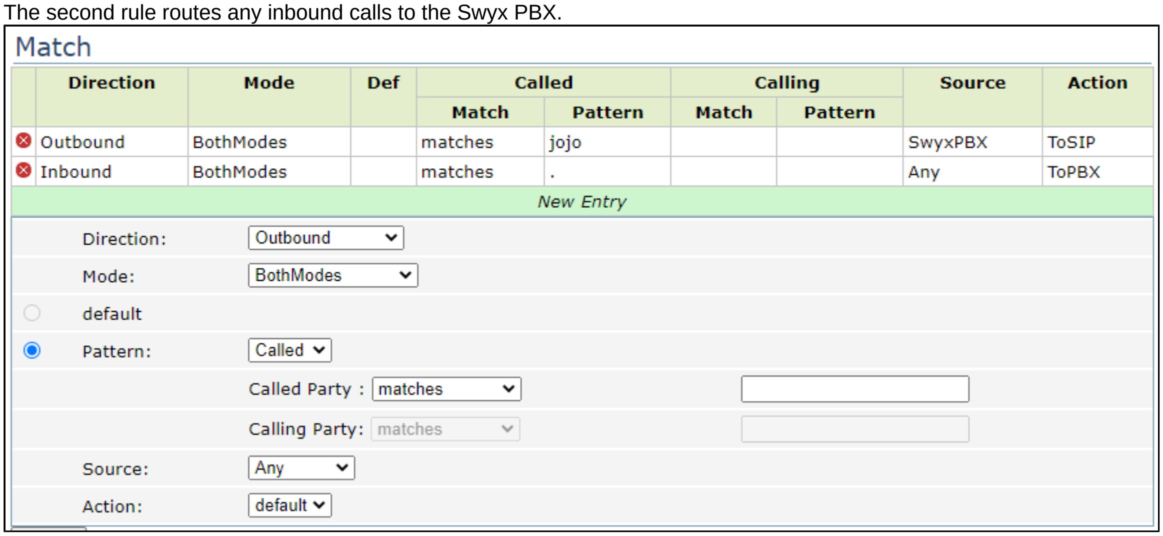


6. The B2BUA Actions are configured next:
   - The ToPBX action sends calls to the previously configured Trunking Device SwyxPBX.

- The ToSIP action handles calls destined for the SIP Provider. Although no header manipulation was used in the lab, it may be configured here as needed. Refer to EdgeMarc documentation for syntax and capabilities.



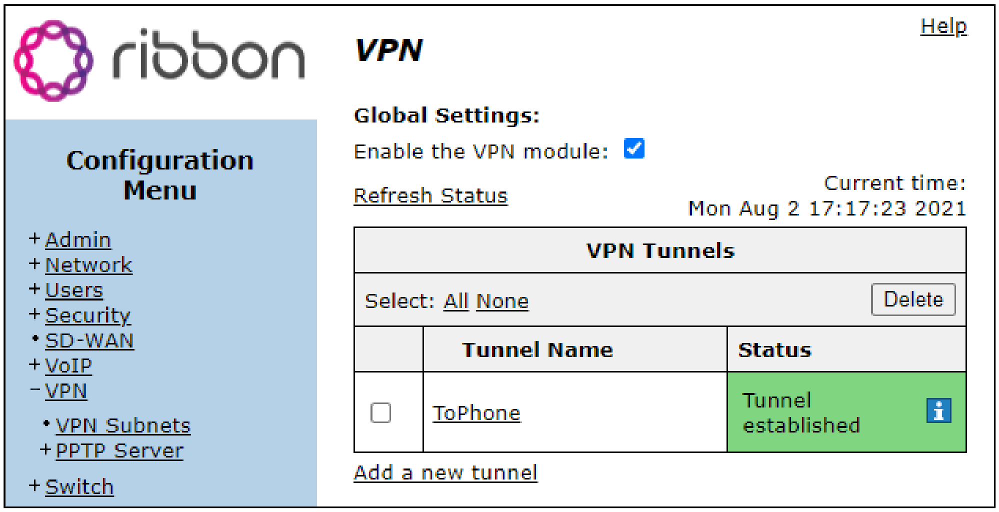
7. Lastly, configure any required dial rules:
   - The first rule is created to send calls to the soft client registered with the Provider SBC for testing.
   - The second rule routes any inbound calls to the Swyx PBX.



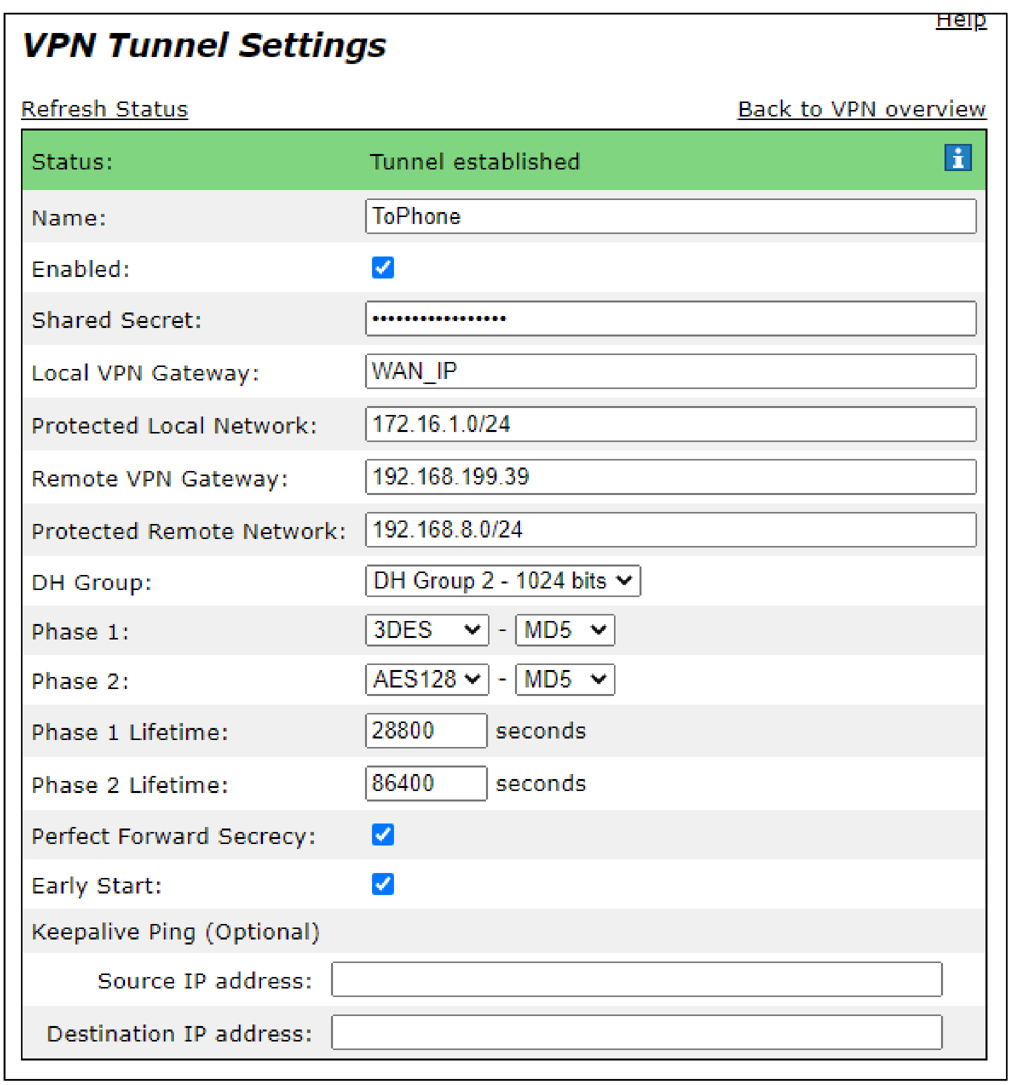
Configuring EdgeMarc B

EdgeMarc B serves as the remote site in this use case. As such, EdgeMarc B has a simple configuration consisting only of a standard networking configuration and an IPSec VPN tunnel.

1. Enable the VPN module, then Add a new tunnel.



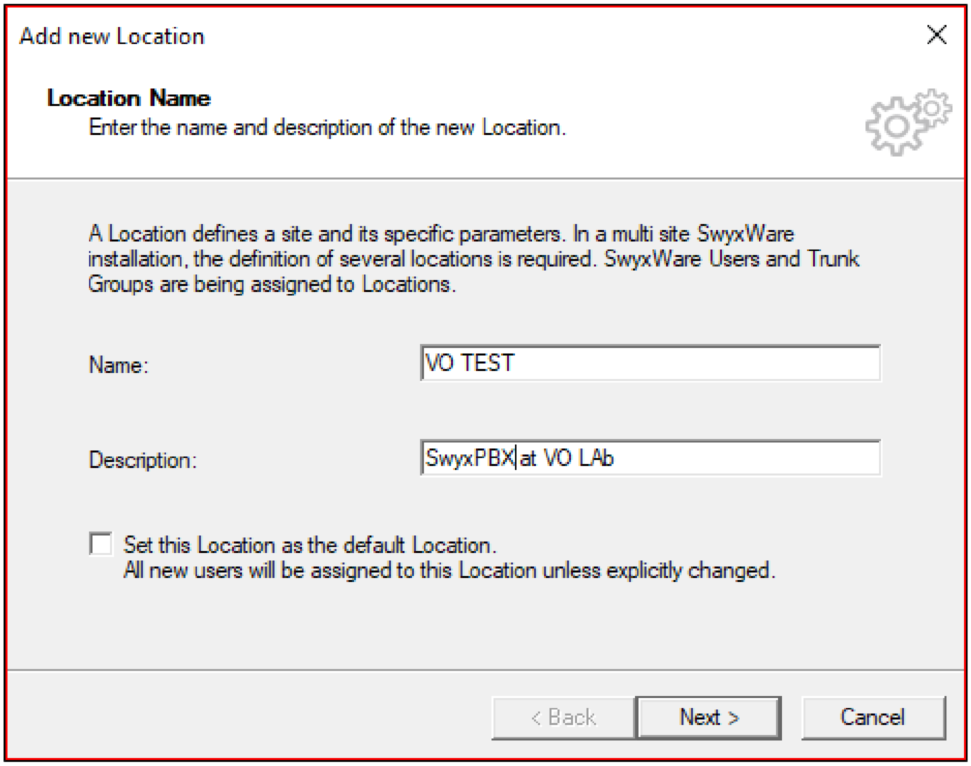
2. Configure the following:
   - Protected Network - Voice VLAN of EdgeMarc B
   - Remote VPN Gateway - WAN IP of EdgeMarc A
   - Protected Remote Network - Voice VLAN of EdgeMarc A

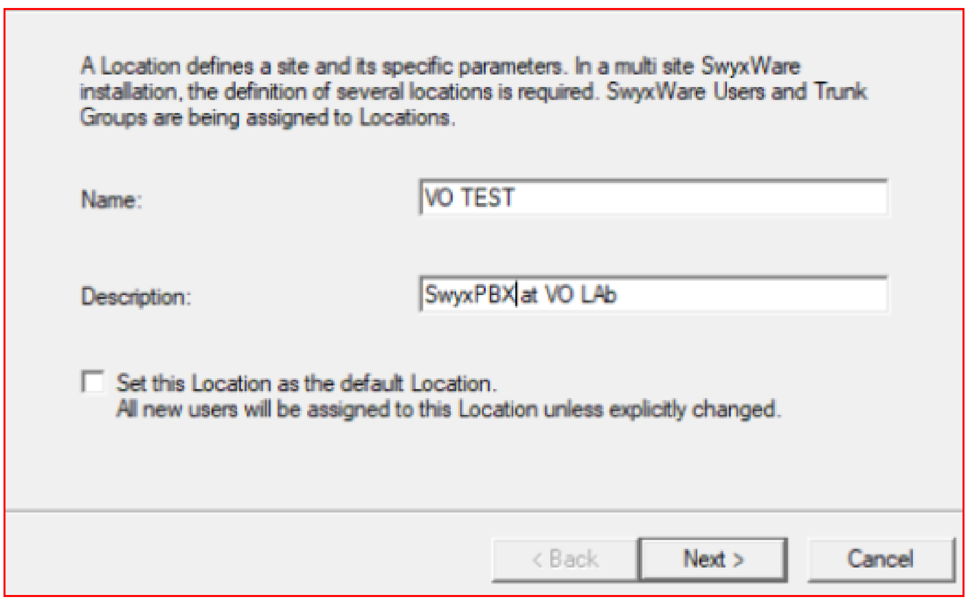


Section-B: SwyxWare, SwyxIt and HFA Phone Configuration

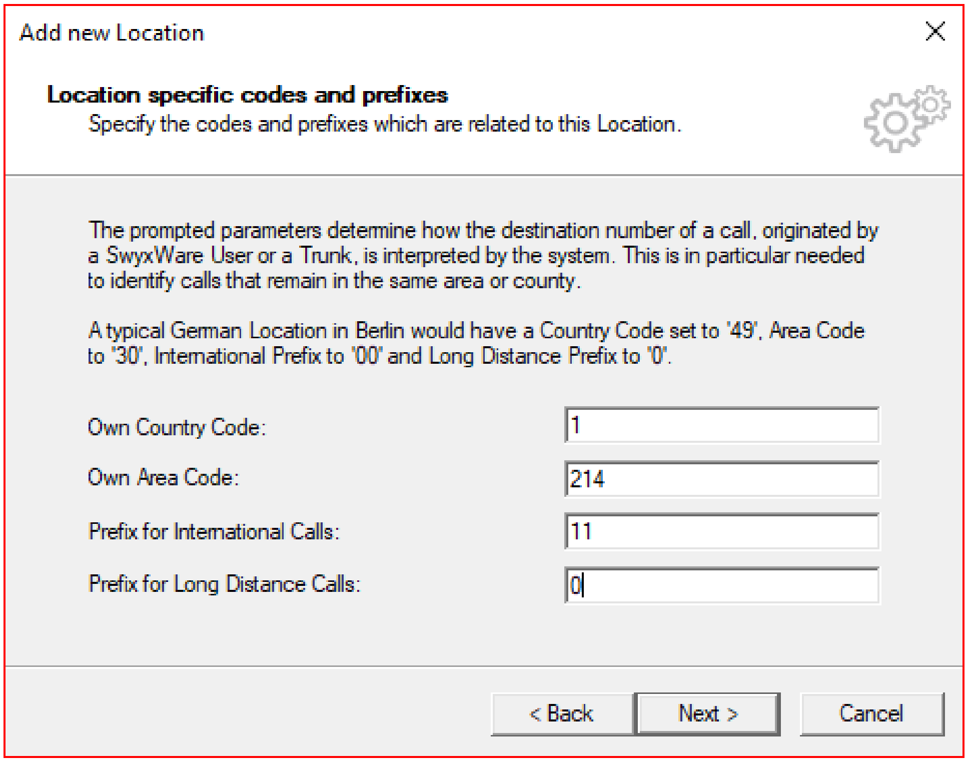
Configuring SwyxPBX

1. Right Click on Location > Add Location.

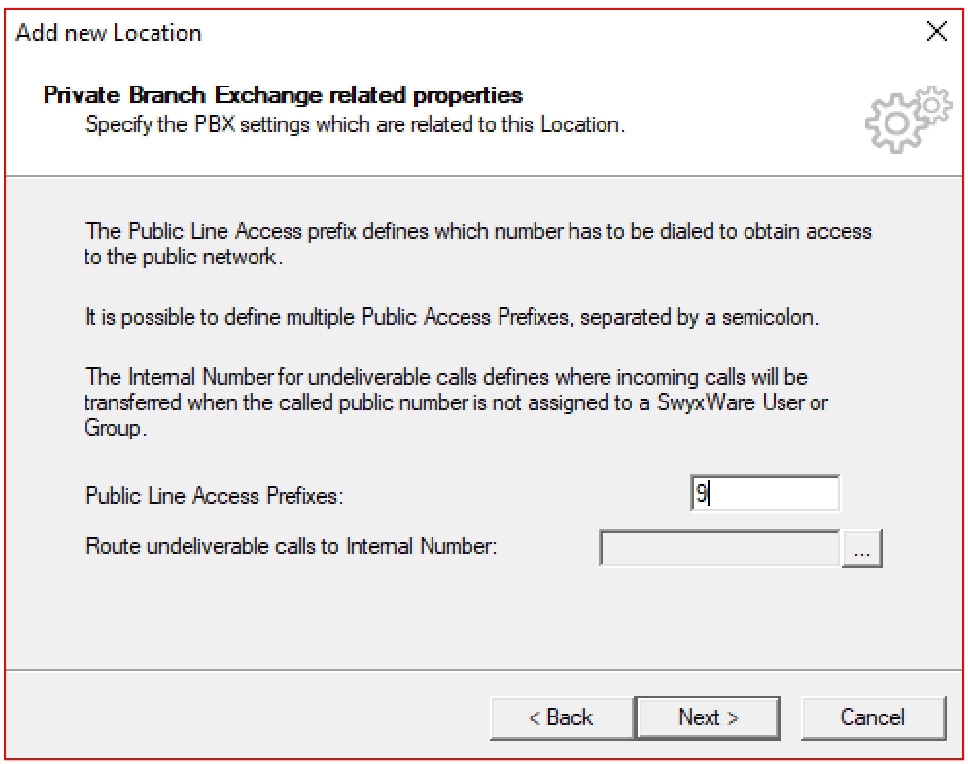




2. Add codes and prefixes then click Next.

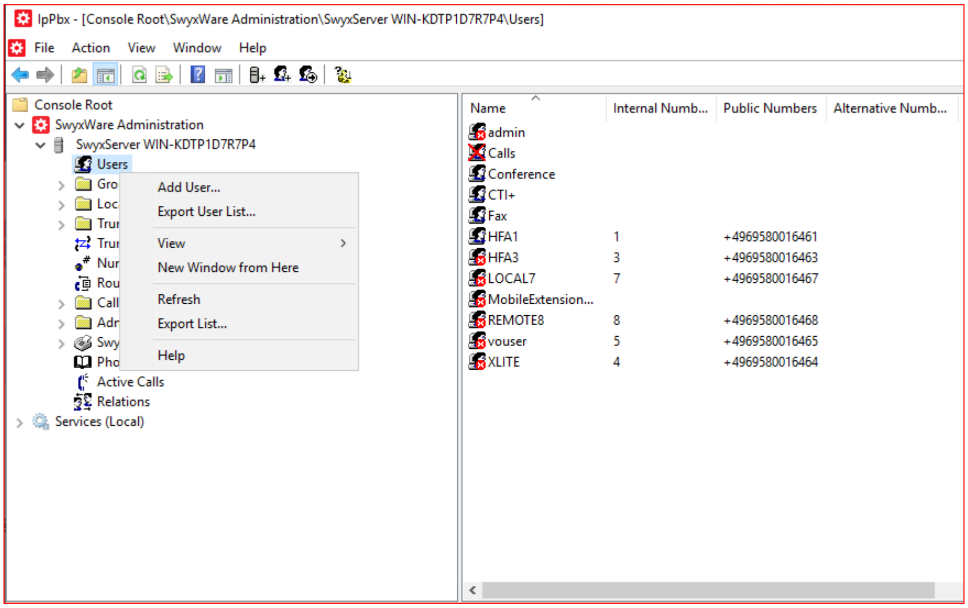


3. Add access to Dial out and click Next.

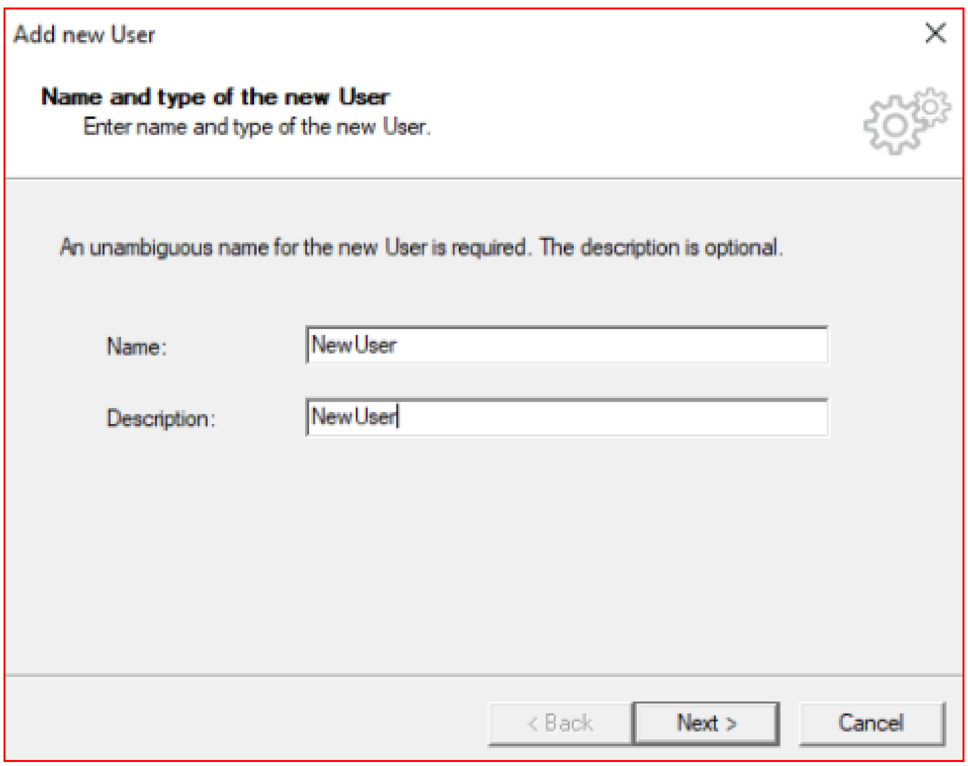


Adding a User

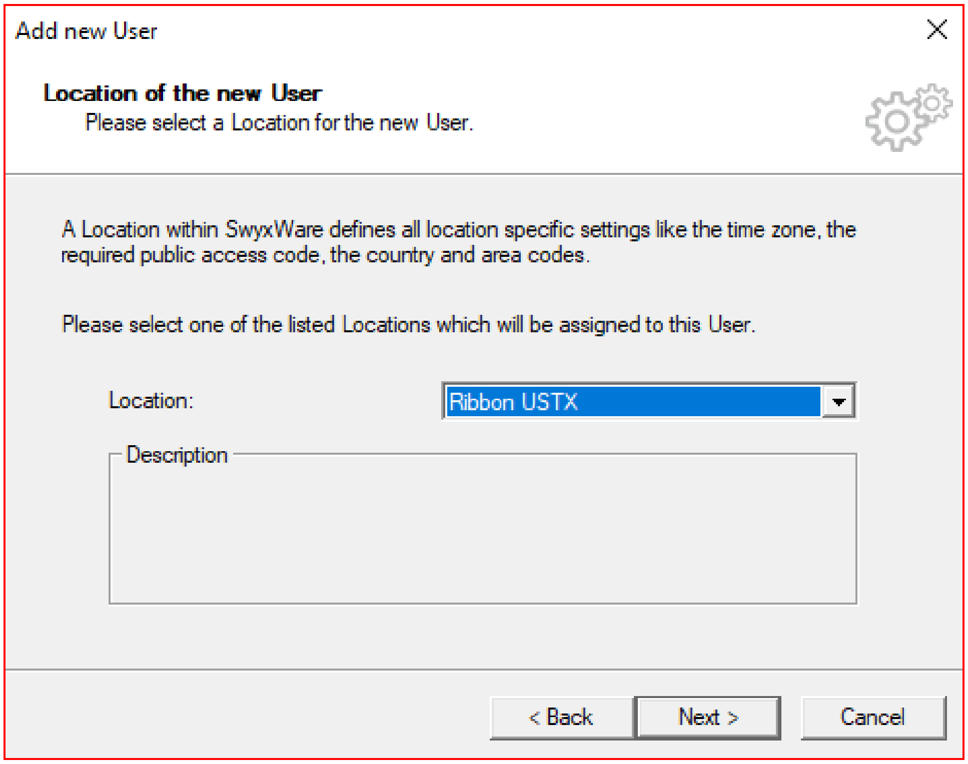
1. Click on Server > right click on User > click Add User.



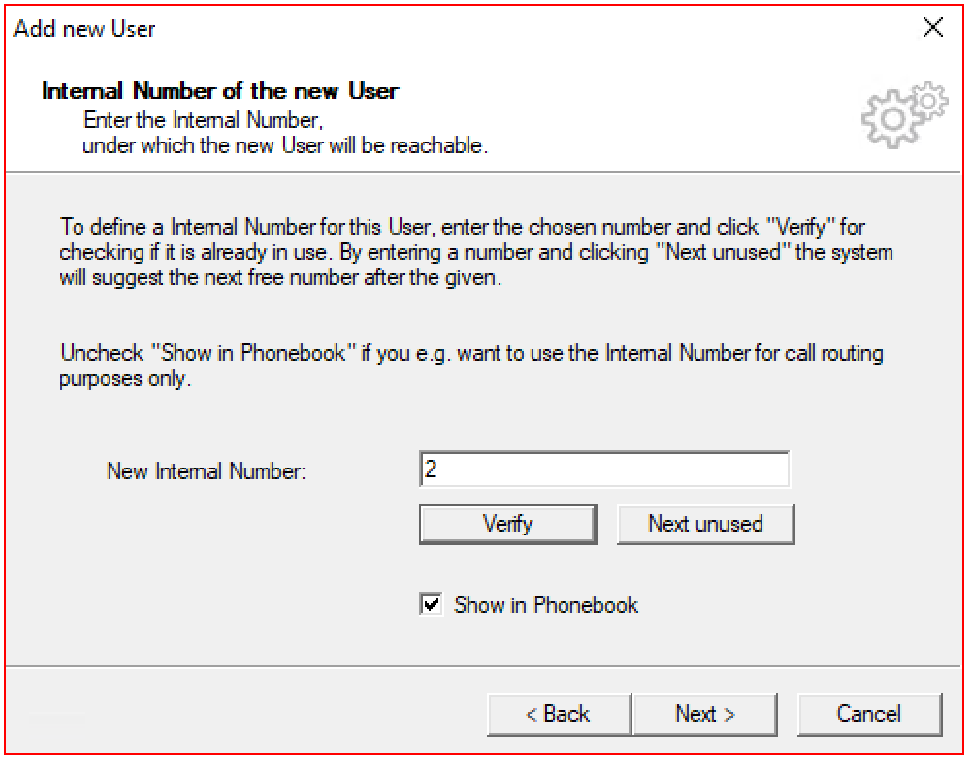
2. Add Name and Description then Click Next.

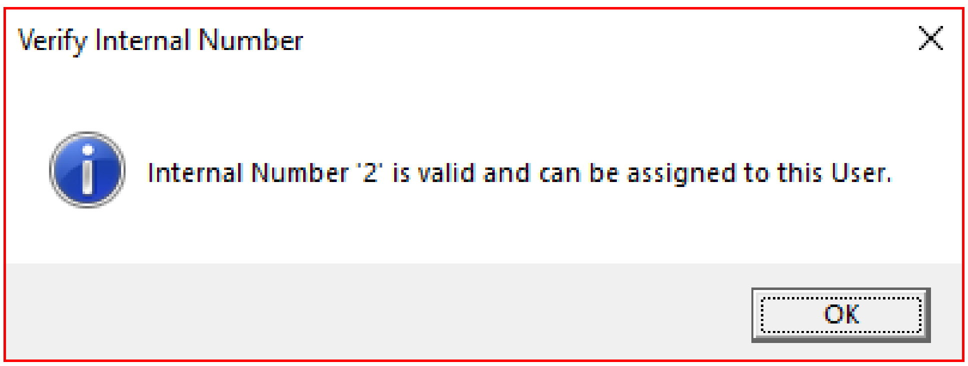


3. Select the Location and click Next.

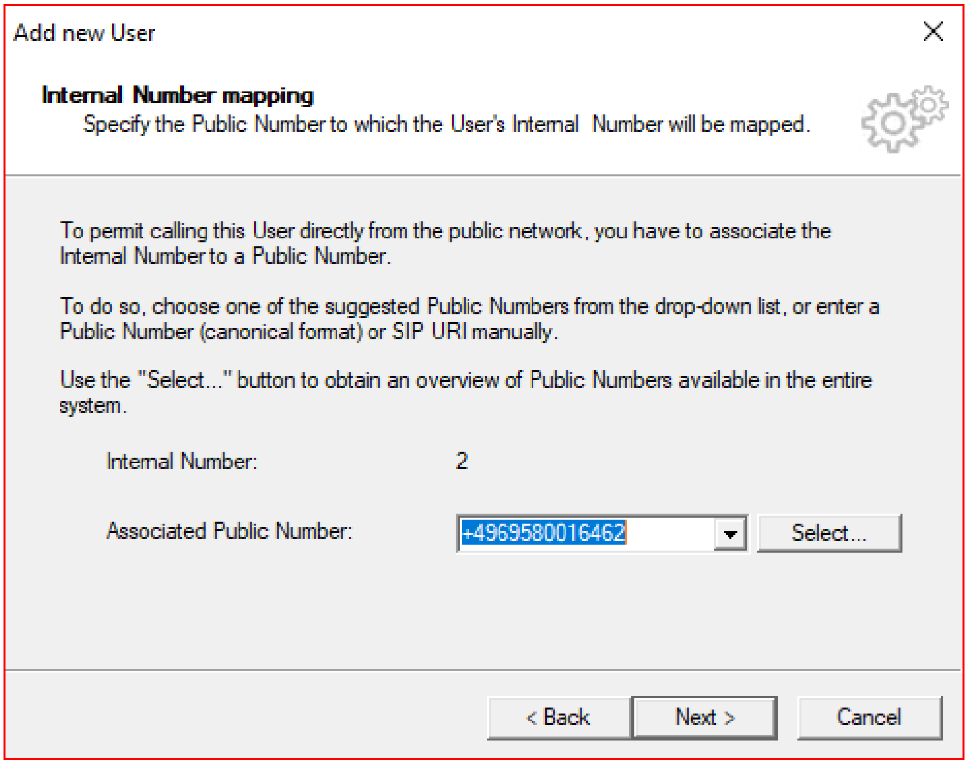


4. Select a new internal number and click Verify to check if available. Click OK and then click Next.

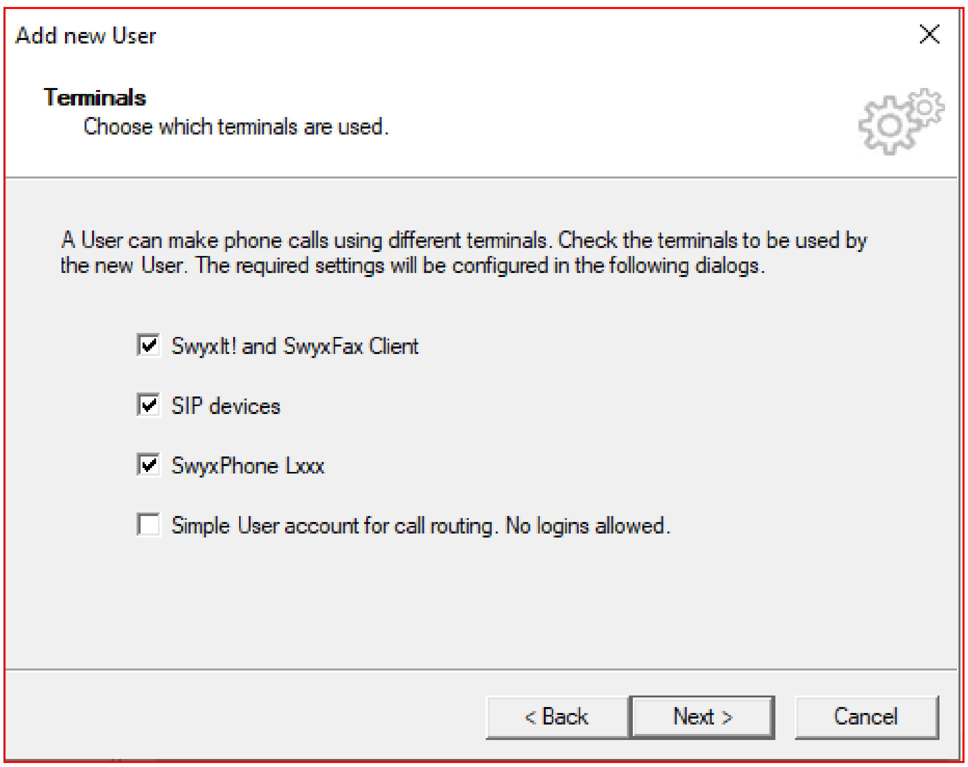

Add new User
Internal Number of the new User
Enter the Internal Number,
under which the new User will be reachable.
To define a Internal Number for this User, enter the chosen number and click "Verify" for checking if it is already in use. By entering a number and clicking "Next unused" the system will 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:
2
Verify
Next unused
Show in Phonebook
< Back
Next >
Cancel


Verify Internal Number
Internal Number '2' is valid and can be assigned to this User.
OK

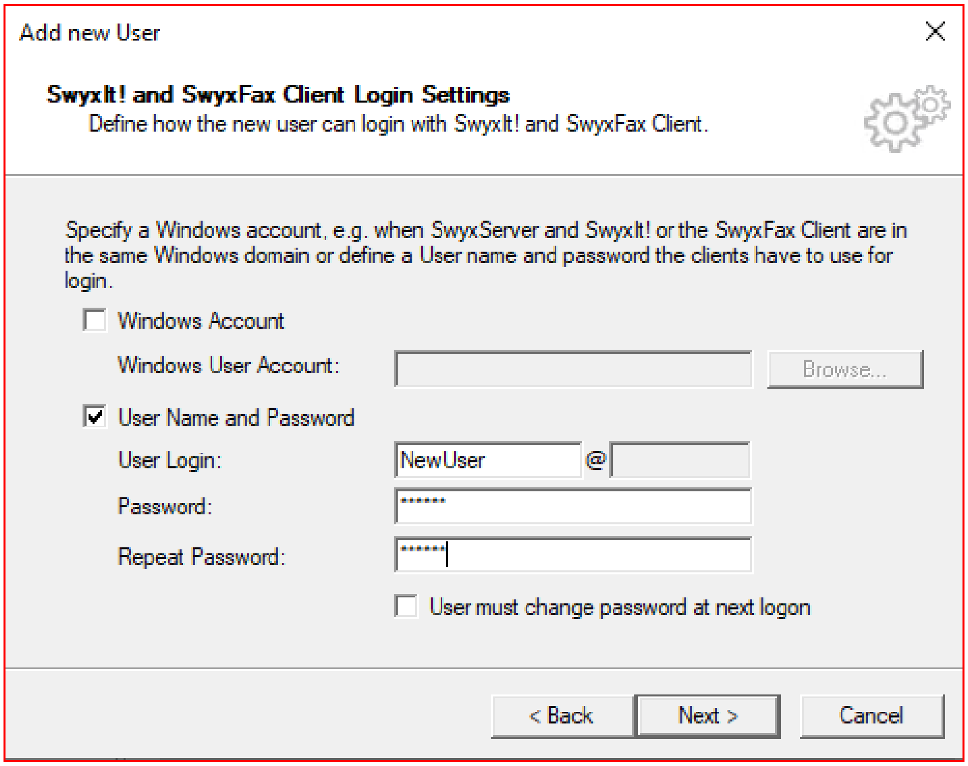
5. The Internal Number selected will be mapped to a public number, then click Next.



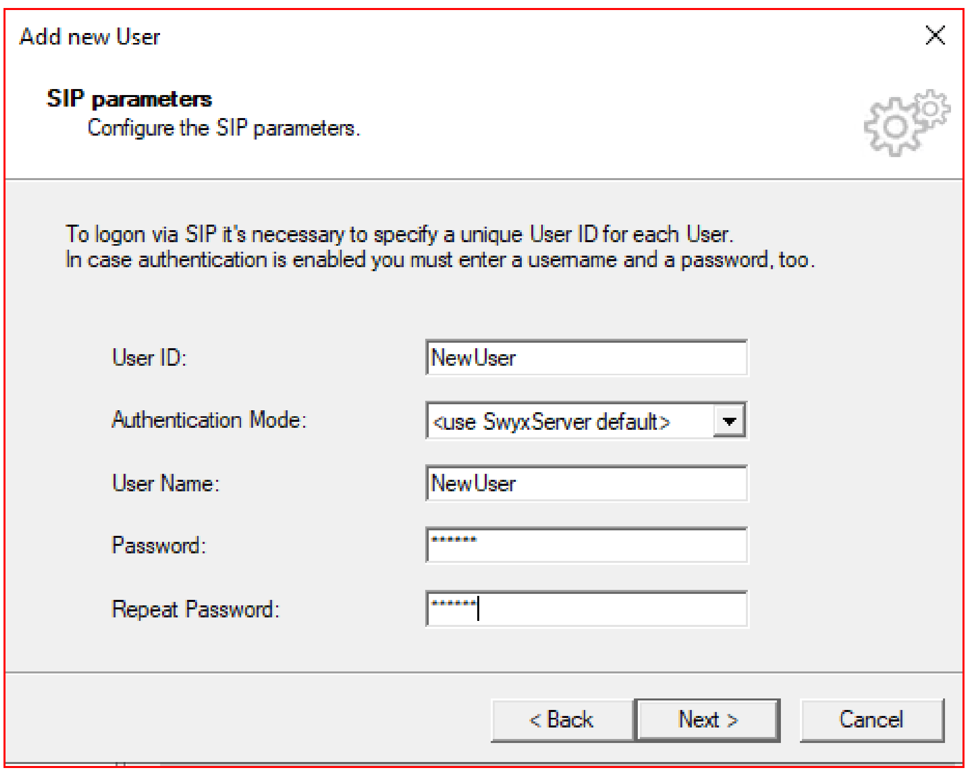
6. Select the Terminals by checking the boxes and then click Next.



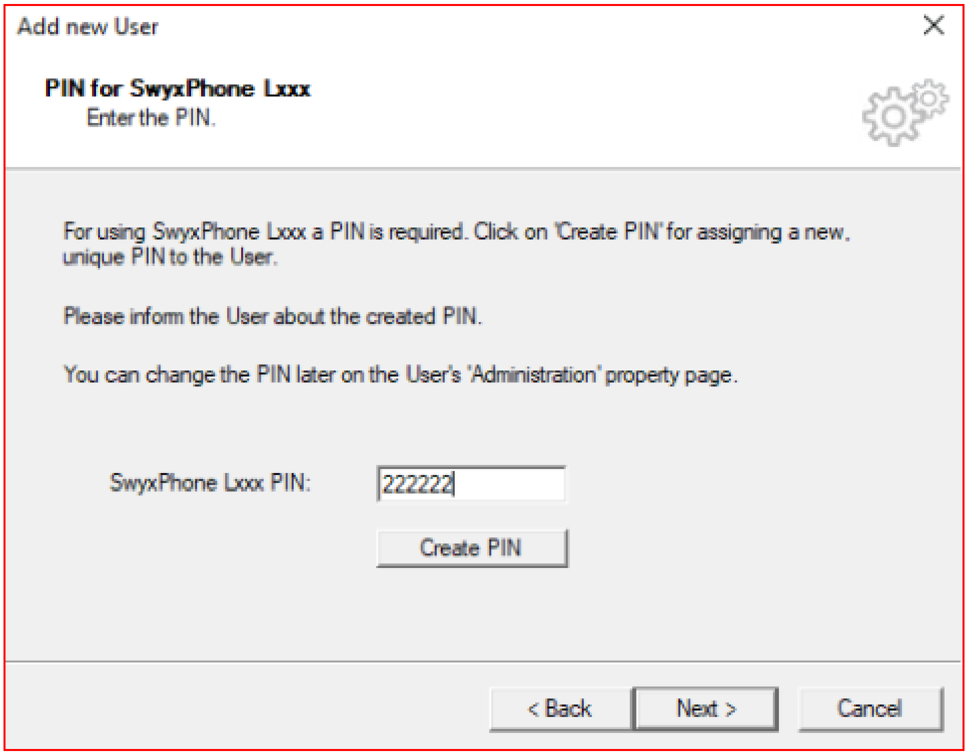
7. Create a Password for the user login then click Next.



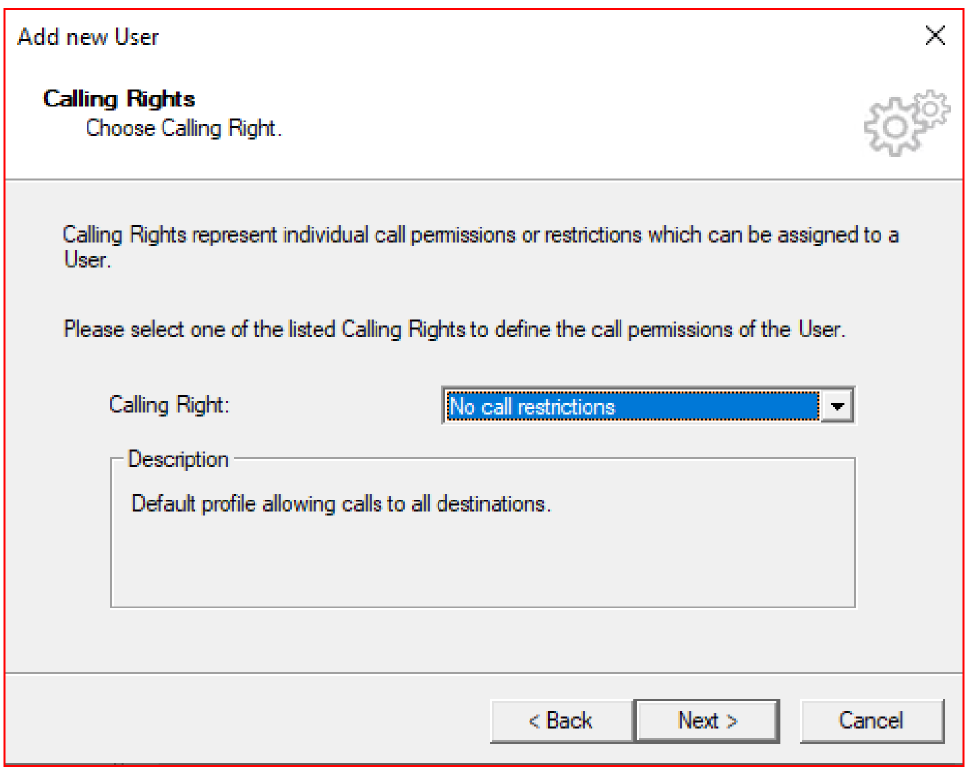
8. Create a SIP user ID and password and then click Next.



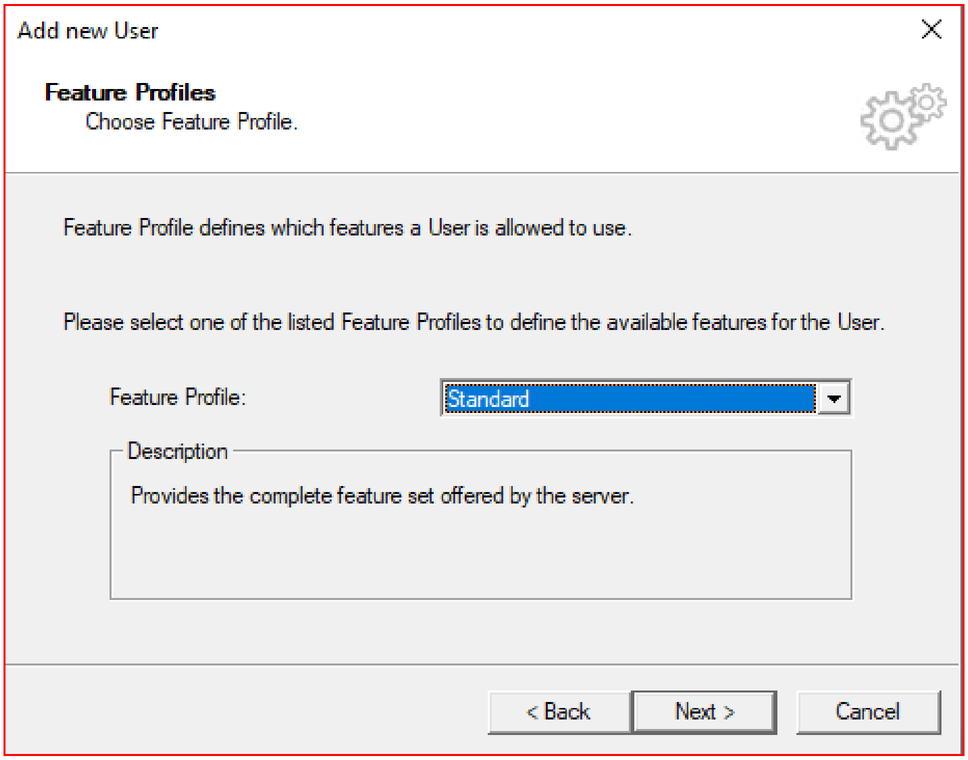
9. Create a Swyx Phone Pin and then click Next.



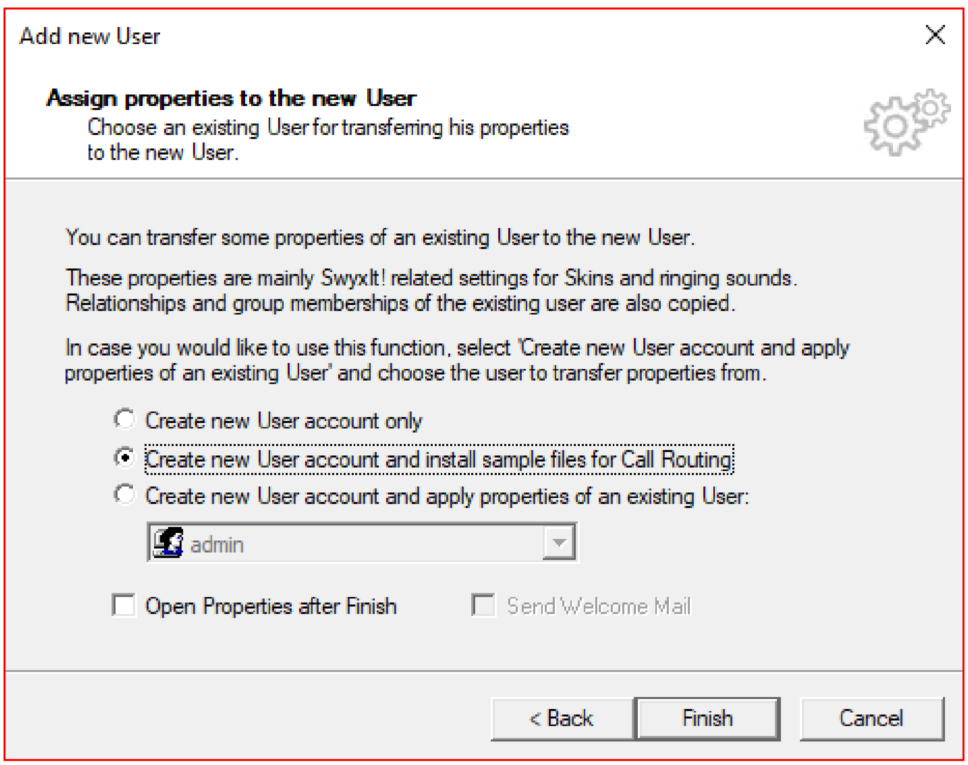
10. Select a Calling Right and then click Next.



11. Select a Feature Profile and click Next.

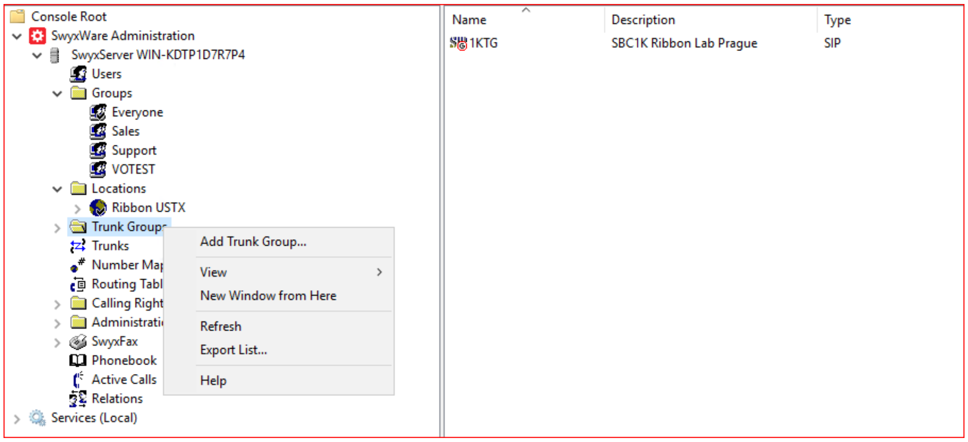


12. Assign properties to the new user and click Finish.



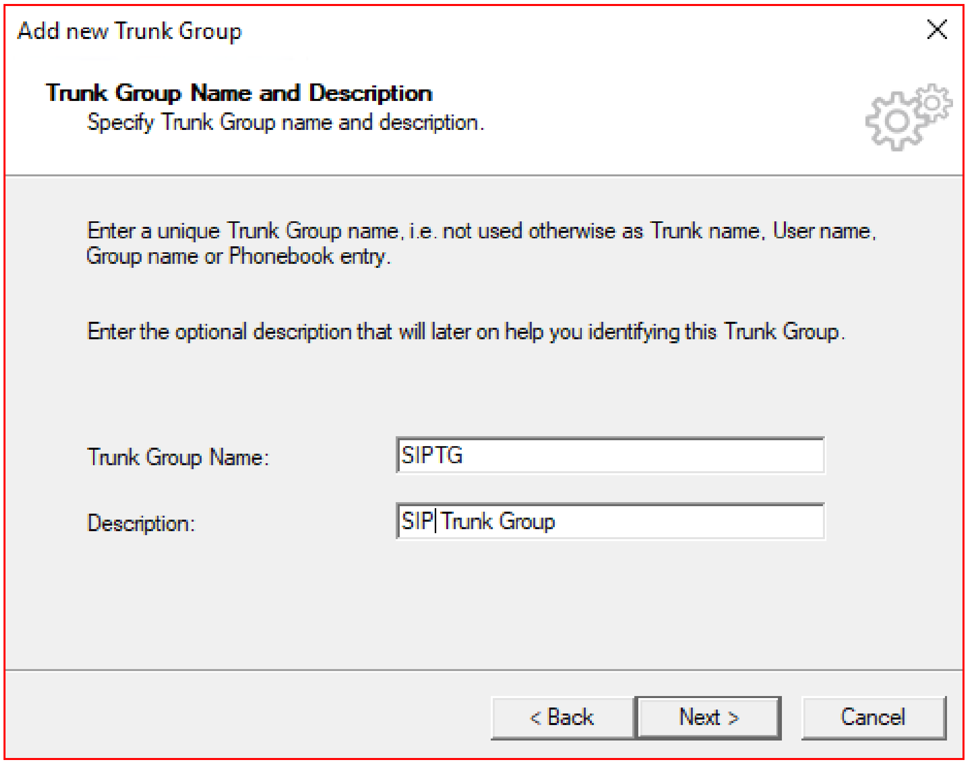
Configuring a SIP Trunk

1. Right click on Trunk Group and select Add Trunk Group. The Add Trunk Group Wizard pops up then click Next.

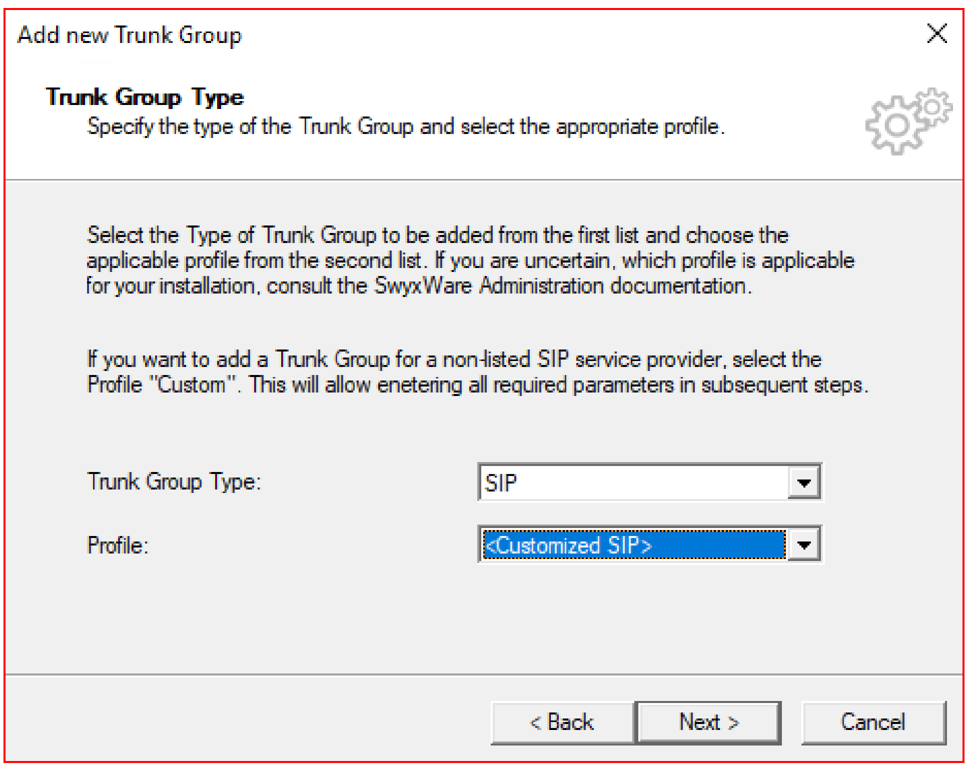

Console Root
SwyxWare Administration
SwyxServer WIN-KDTP1D7R7P4
Users
Groups
Everyone
Sales
Support
VOTEST
Locations
Ribbon USTX
Trunk Groups
Trunks
Number Map
Routing Tabl
Calling Right
Administrati
SwyxFax
Phonebook
Active Calls
Relations
Services (Local)
Add Trunk Group...
View
New Window from Here
Refresh
Export List...
Help
Name
Description
Type
1KTG
SBC1K Ribbon Lab Prague
SIP


Add new Trunk Group
Welcome to the Add Trunk Group Wizard
This wizard will guide you through the process of adding a new Trunk Group.
Trunk Groups consist of one or more Trunks sharing most of the Trunk properties.
From a users point of view, there is no need to differentiate between individual Trunks of a Trunk Group: One more Trunk within the same Trunk Group is nothing more than a capacity enhancement with all Trunks offering the same properties for use.
< Back
Next >
Cancel

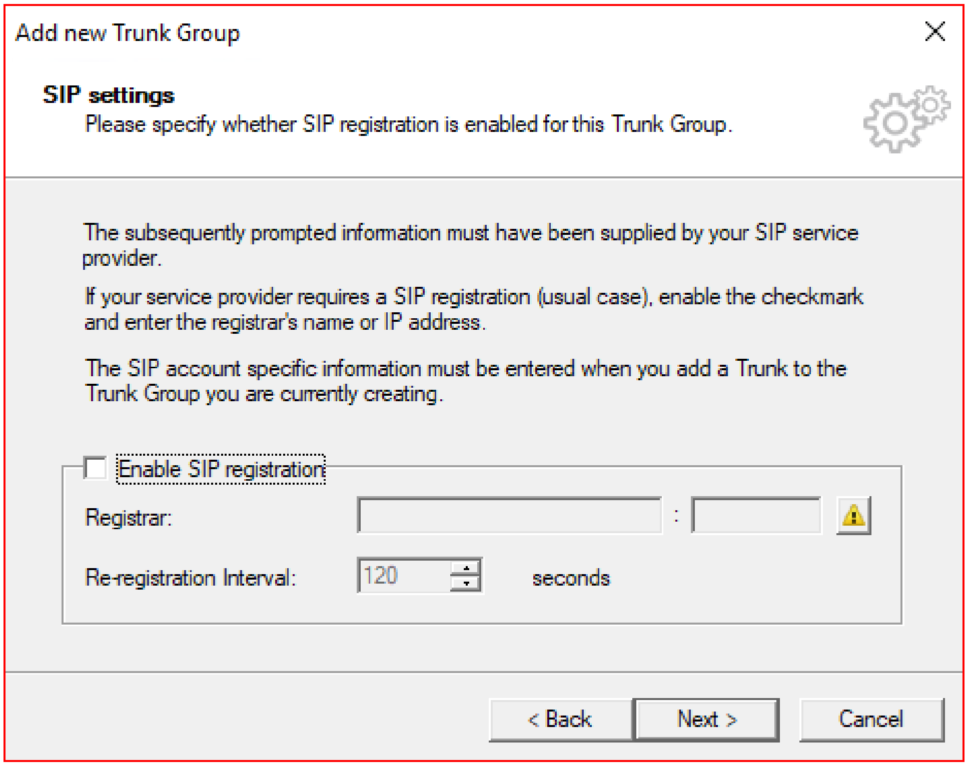
2. Add the Trunk Group Name and Description and click Next.



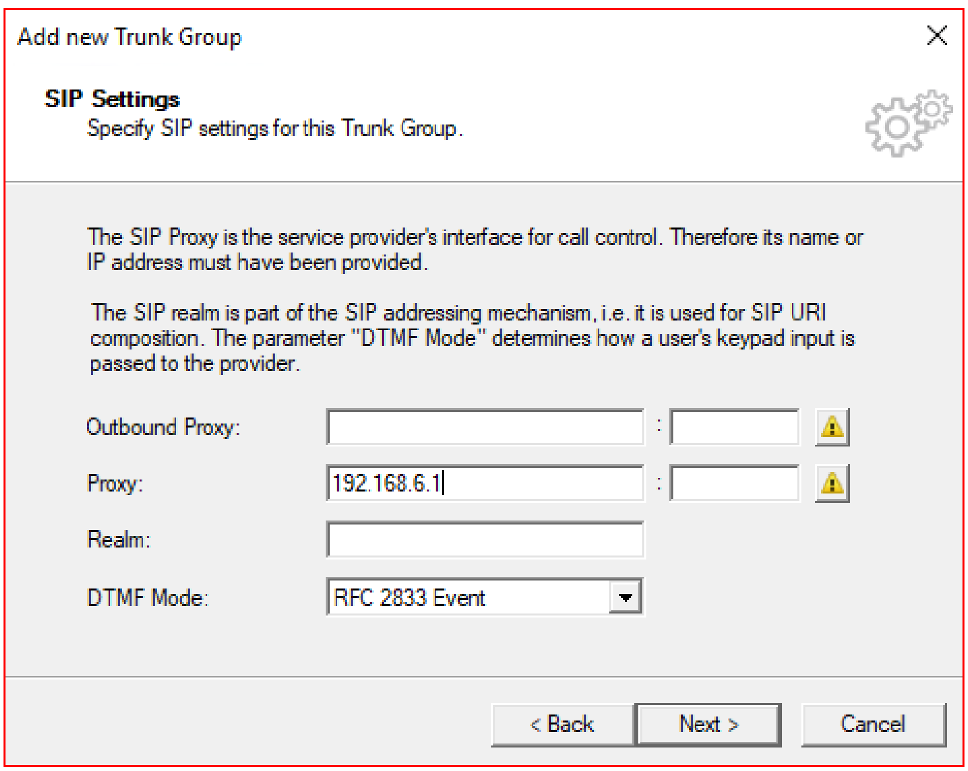
3. Select the Trunk Group Type and click Next.



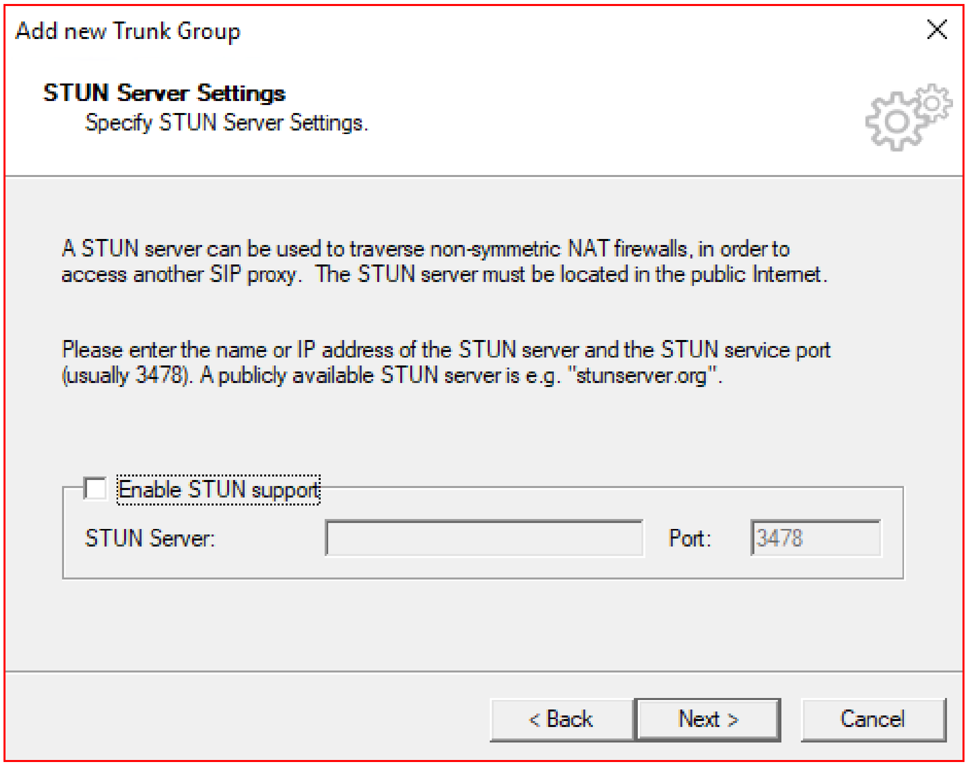
4. Add SIP settings and click Next.



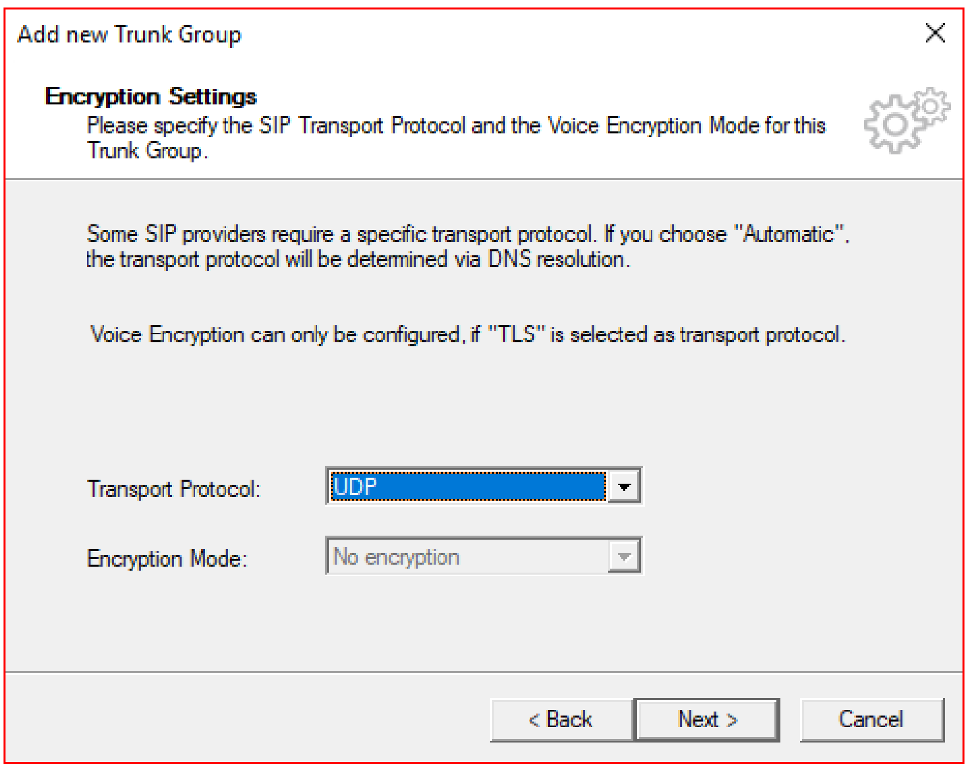
5. Add the SIP Proxy but leave the SIP port blank (auto-resolves) and click Next.



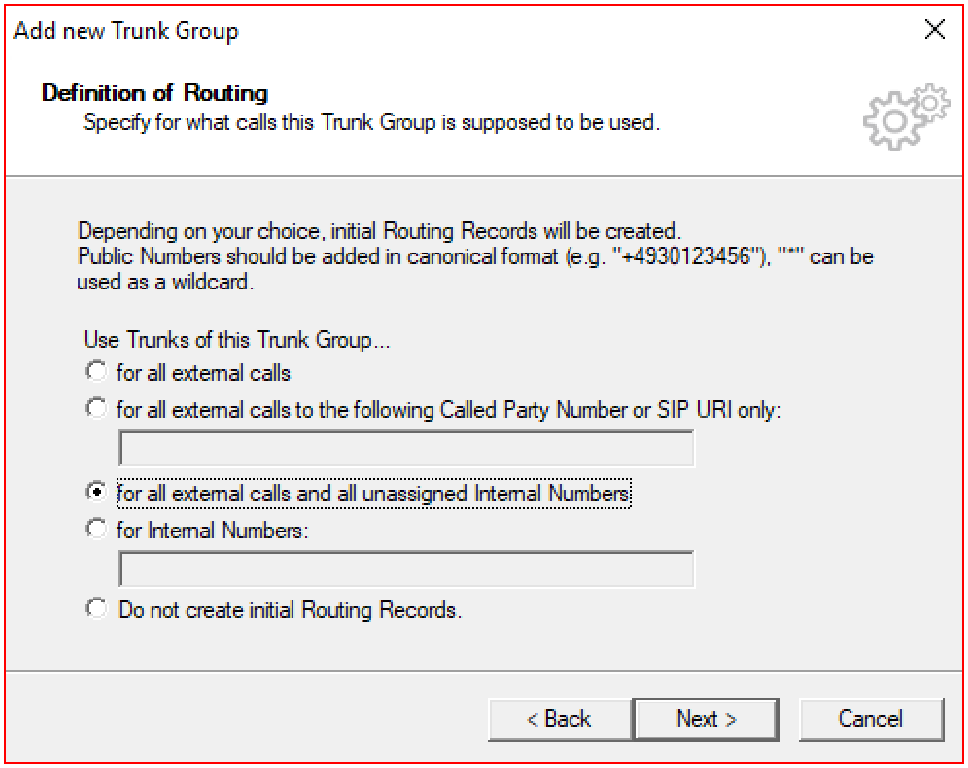
6. If a STUN server is supported, check the box and add the IP for the STUN server and click Next.



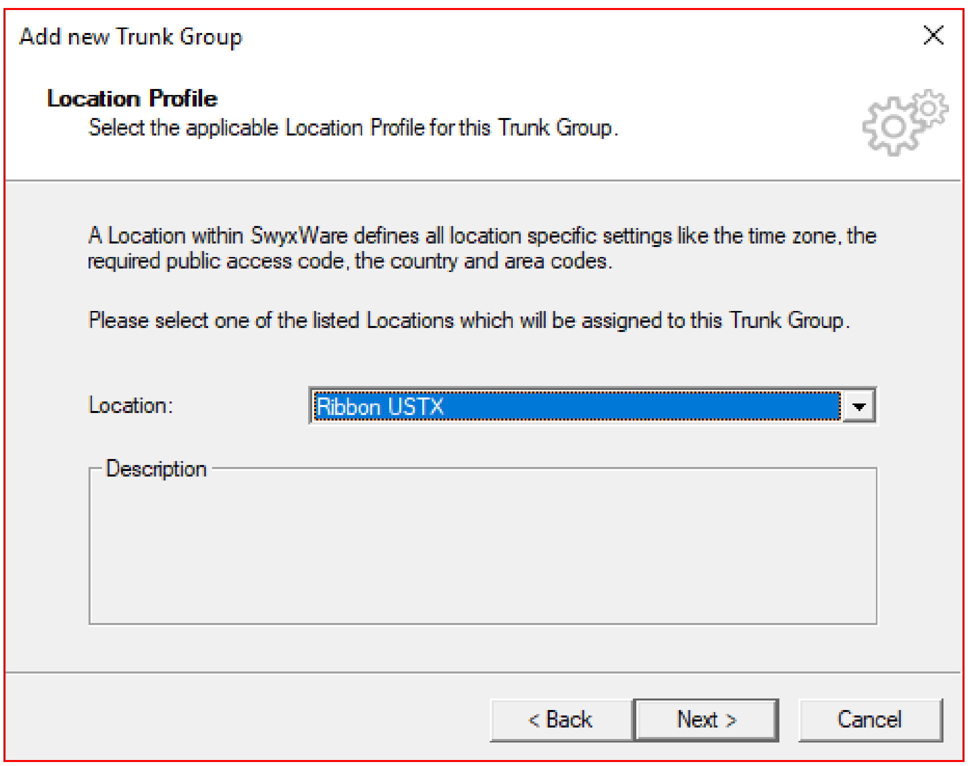
7. Select the Transport Protocol and click Next.



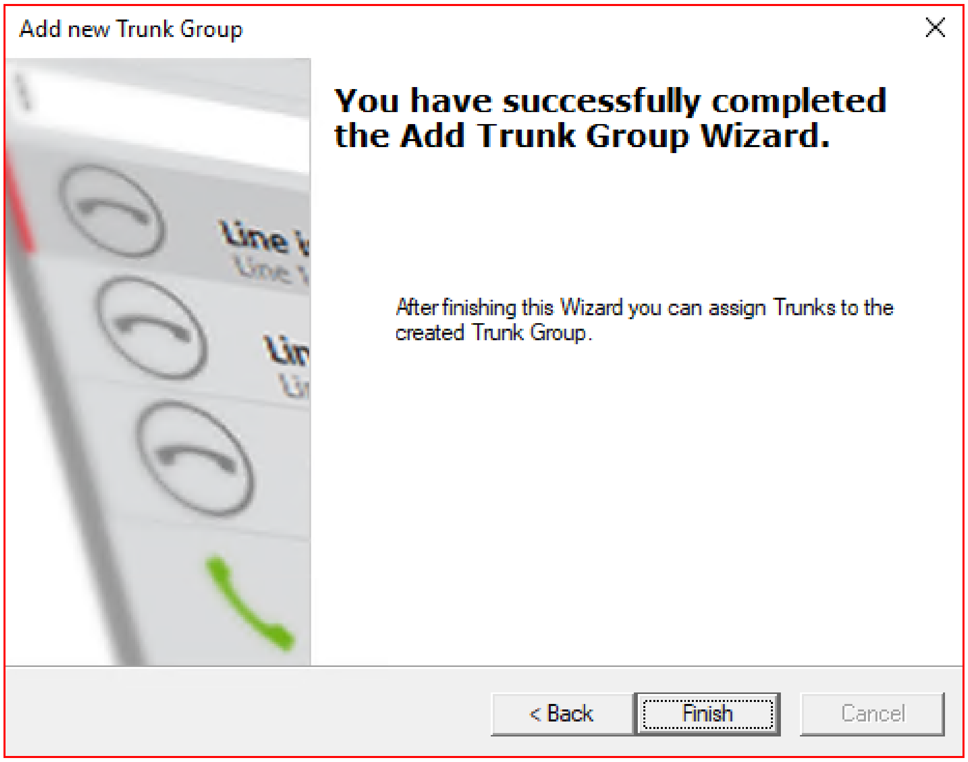
8. Select the Routing Definition and click Next.



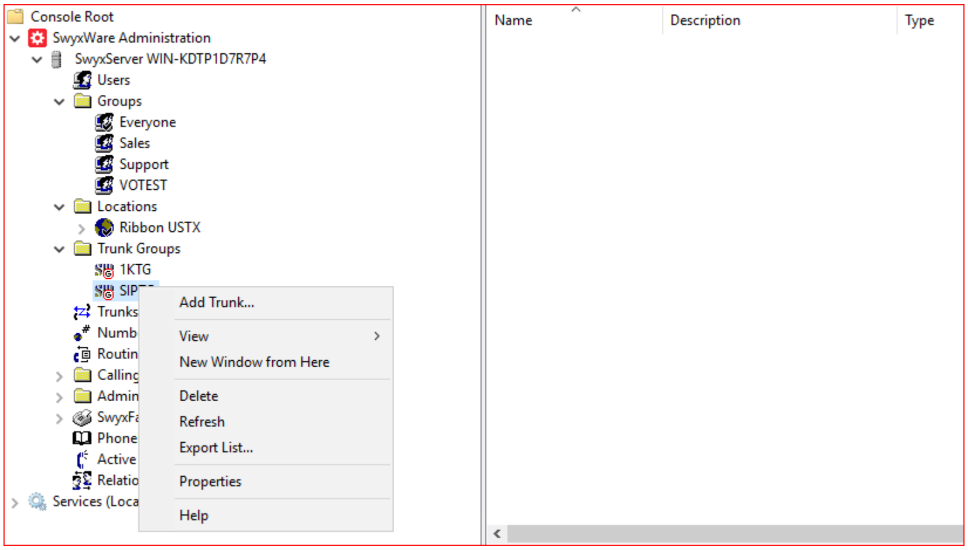
9. Select the Location Profile and click Next.



10. Click Finish.

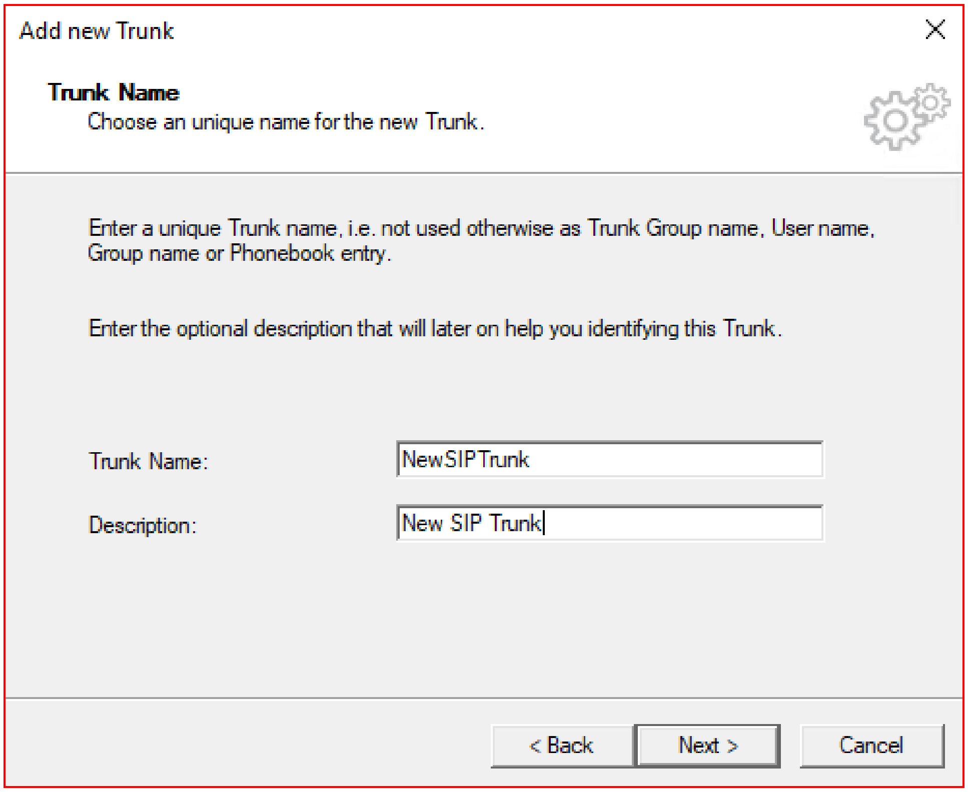


11. Right click on the newly created Trunk Group and click Add Trunk. The Add Trunk Wizard pops up, then click Next.

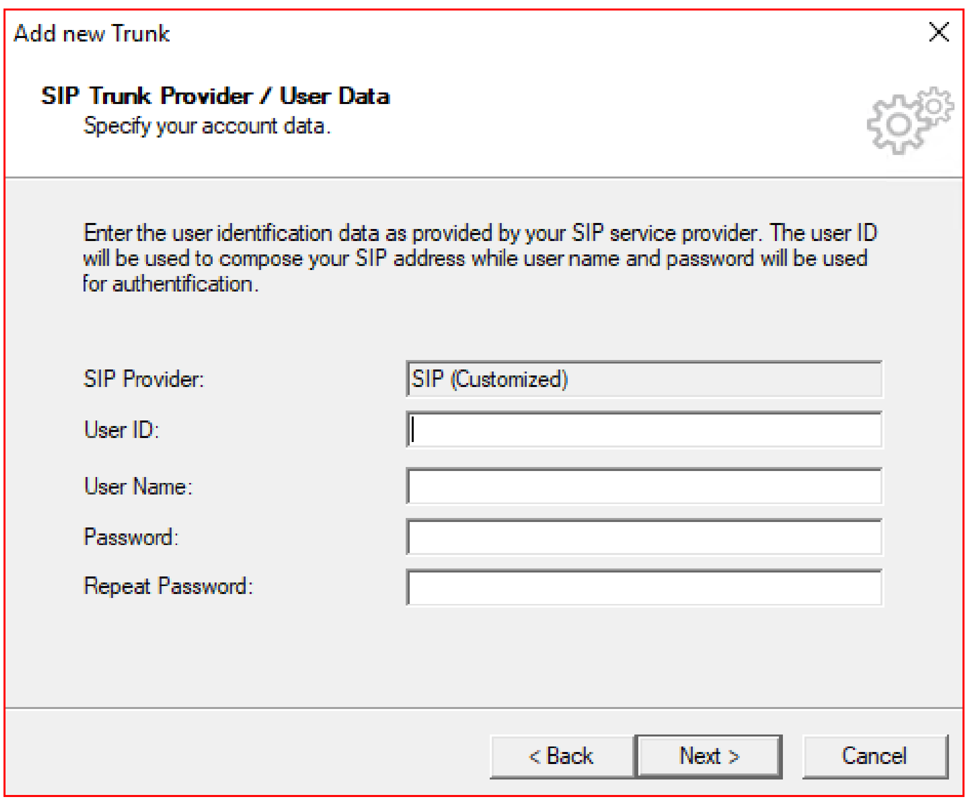

Console Root
SwyxWare Administration
SwyxServer WIN-KDTP1D7R7P4
Users
Groups
Everyone
Sales
Support
VOTEST
Locations
Ribbon USTX
Trunk Groups
1KTG
Add Trunk...
View
New Window from Here
Delete
Refresh
Export List...
Properties
Help
Name
Description
Type


Add new Trunk
Welcome to the Add Trunk Wizard
This wizard will guide you through the process of adding a new Trunk to the SwyxServer configuration.
Before you start creating a new Trunk for SwyxWare make sure that you have done the necessary physical installation and connection work required for the specific Trunk type.
ISDN or analogue Trunks typically require installation of respective adapter boards in the system hosting that Trunk interface. Other Trunk types may require other additional configuration work.
< Back
Next >
Cancel

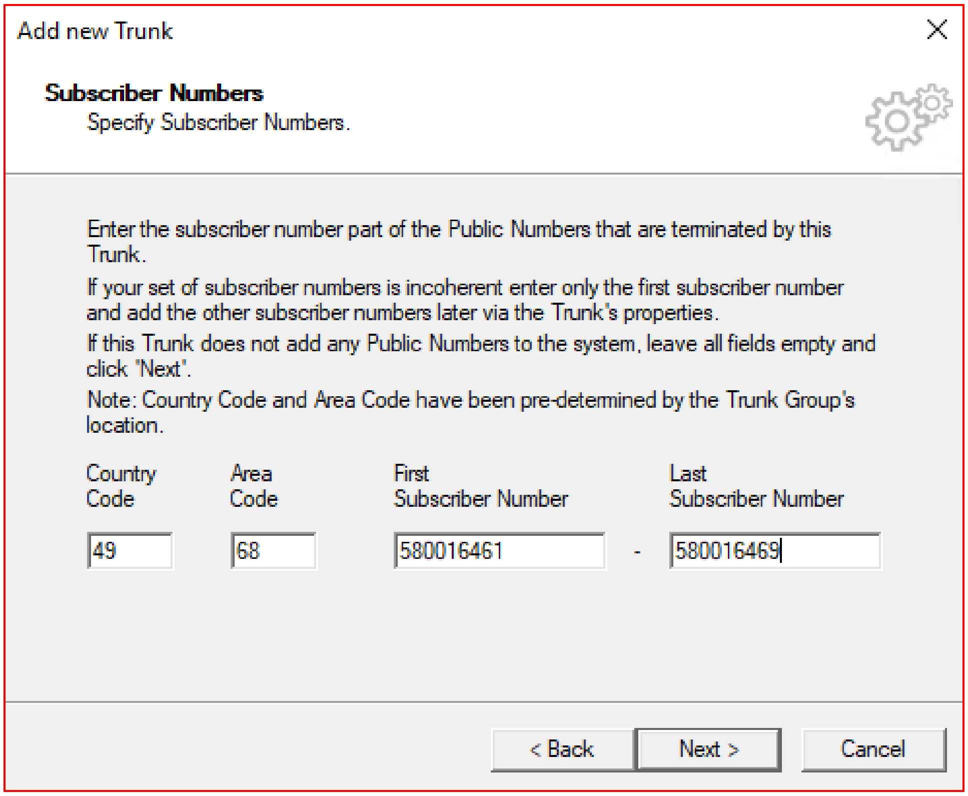
12. Add a Trunk Name and Description.



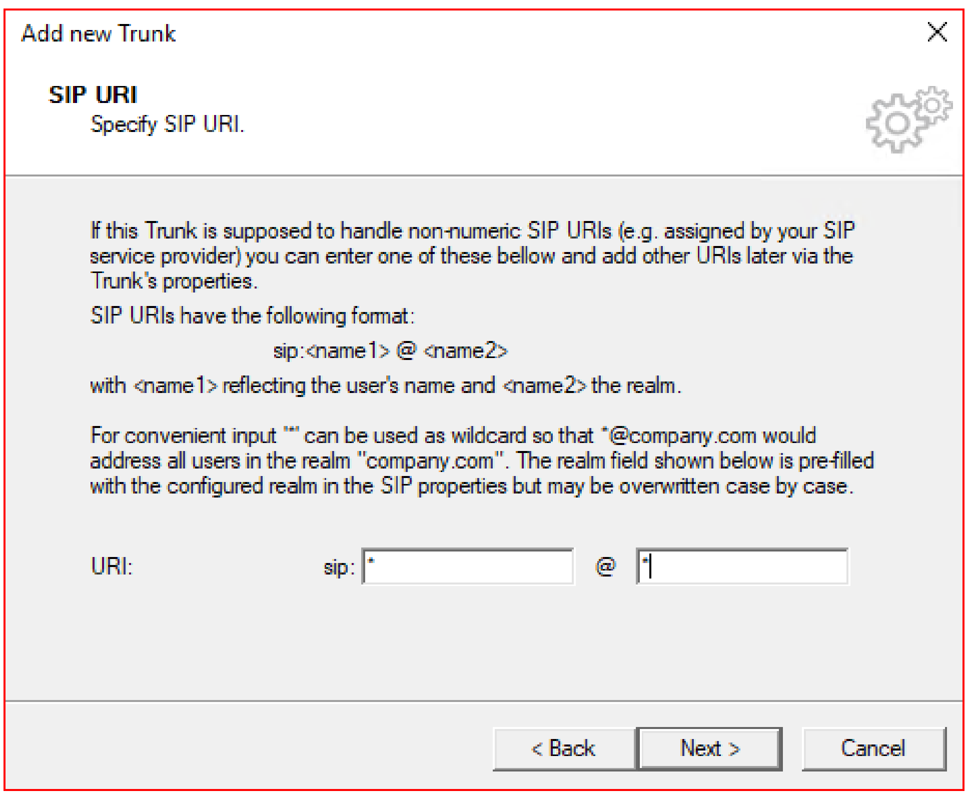
13. Add the SIP trunk Provider and User Data then click Next.



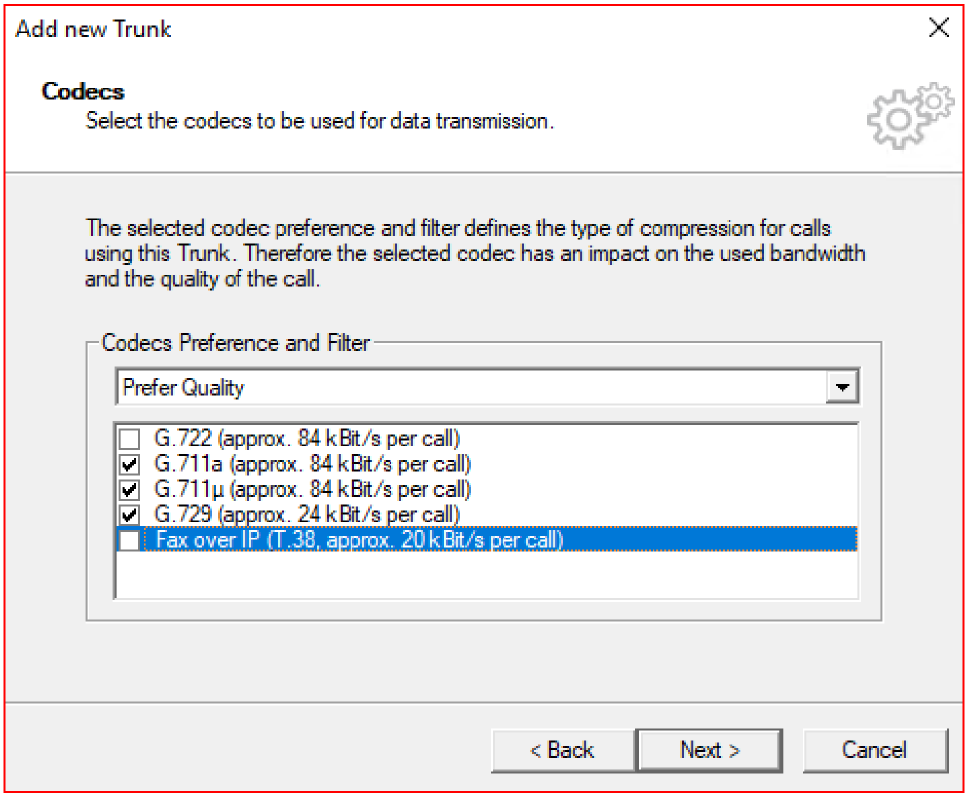
14. Select the Subscriber Number using the SIP Trunk and click Next.



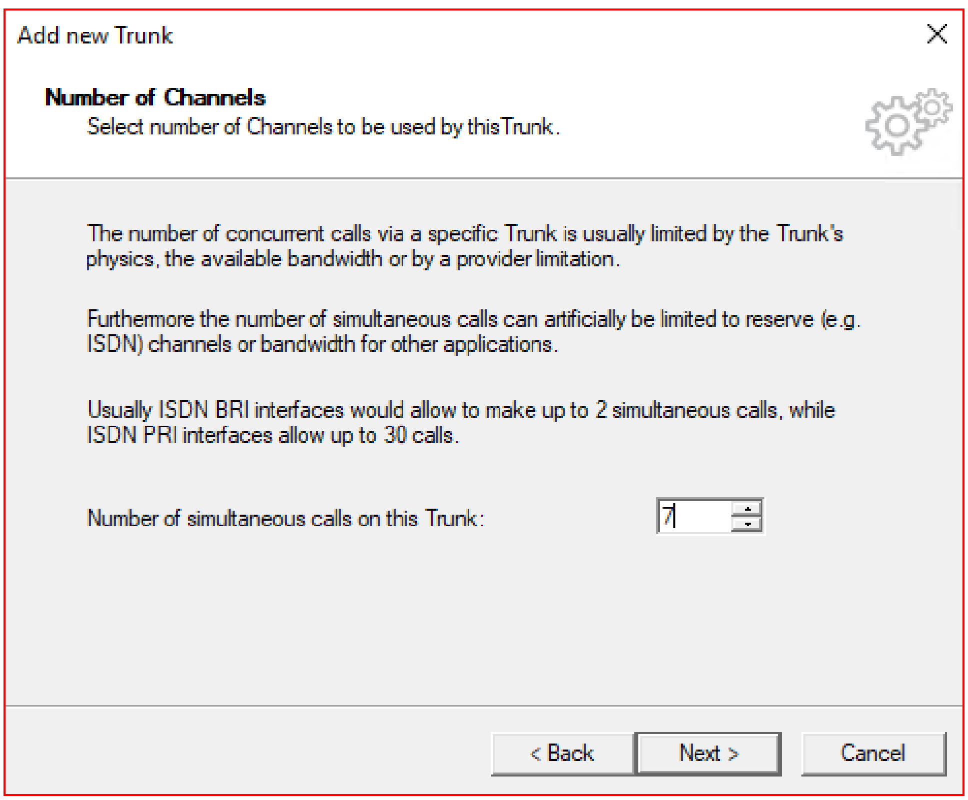
15. Add a SIP URI (wild card "*" for any) and then click Next.



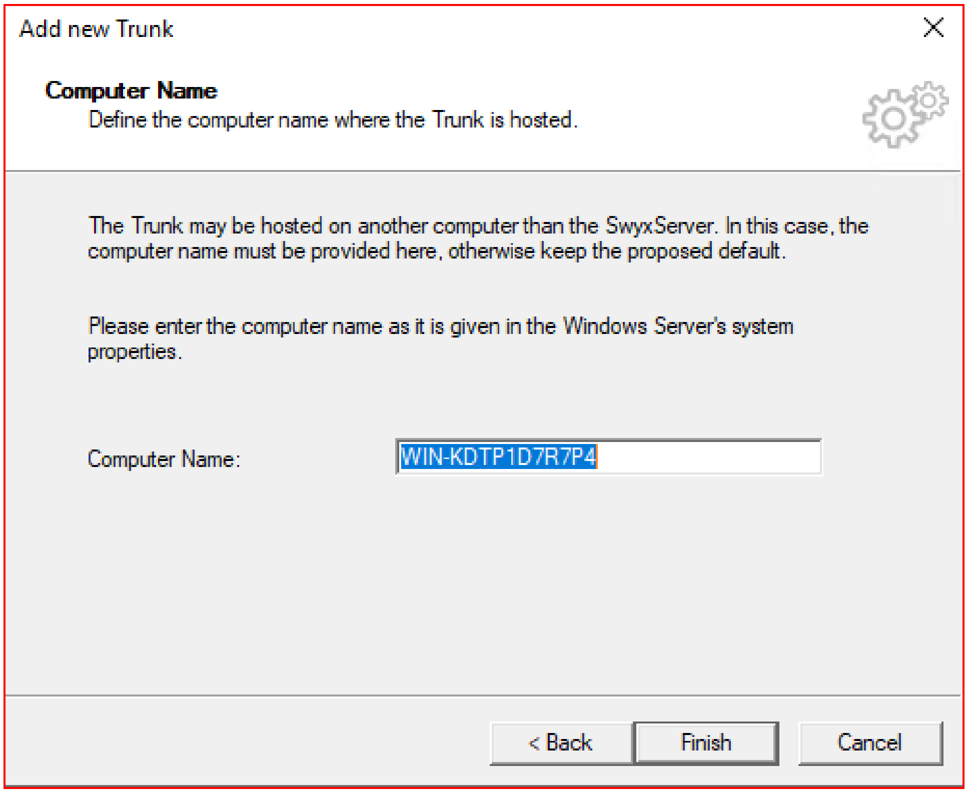
16. Select the Codecs supported by the SIP trunk and click Next.



17. Select the Number of simultaneous calls possible in the SIP trunk and click Next.

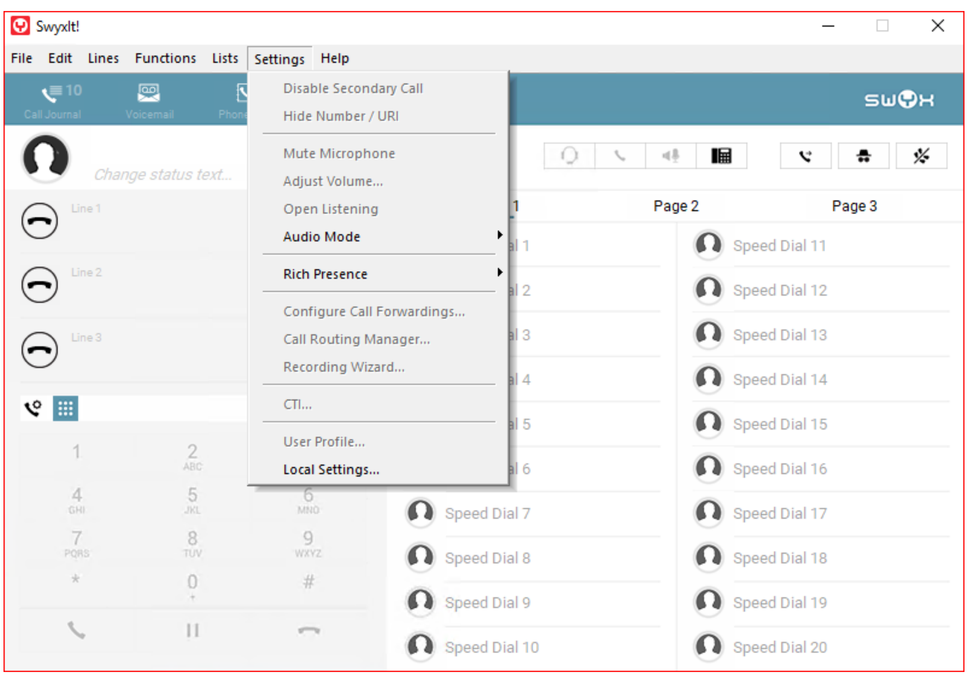


18. Choose PSX server or Computer Name and click Finish.

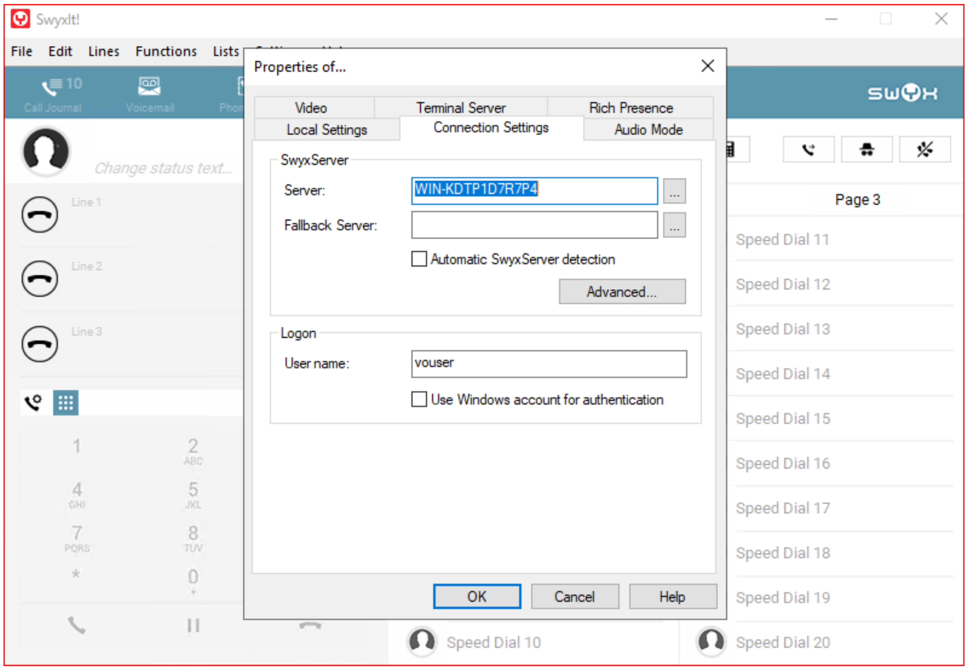


Configuring the SwyxIt Client

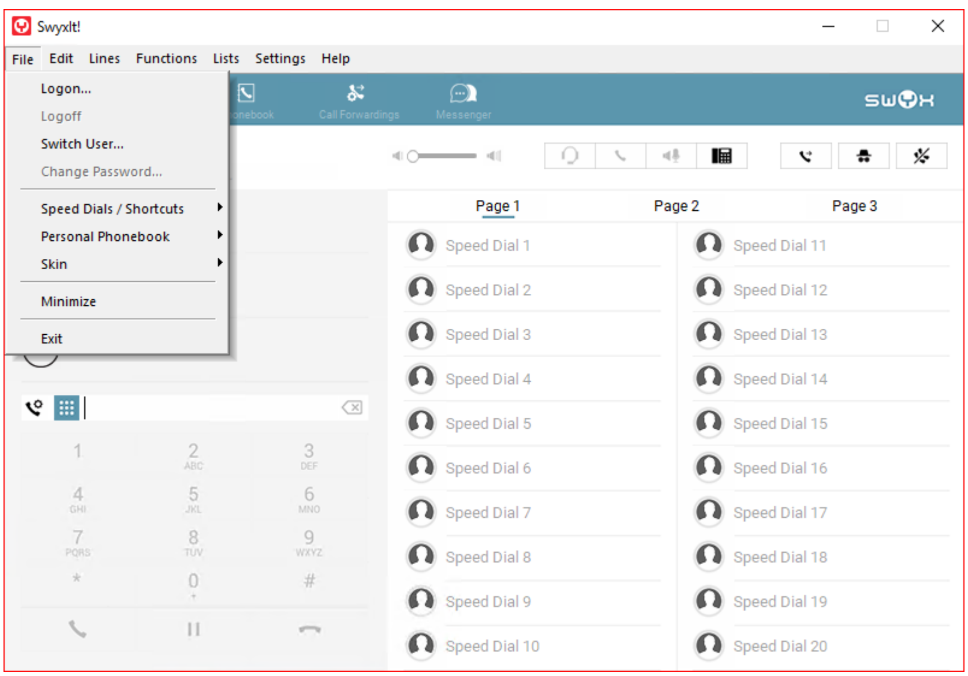
1. Click On Settings and select Local Settings.



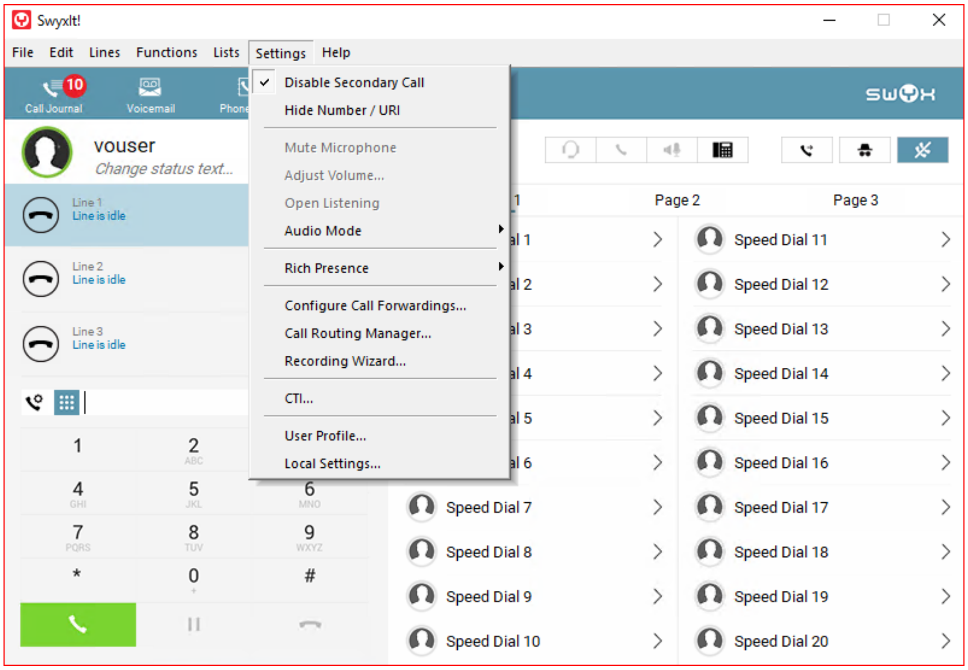
2. Click the Connections Settings Tab and add the Server name or IP address and the User Name, then click OK.



3. From the File Menu select Logon.



4. Once Logged in more choices are available in the Settings Menu. Some configuration capability is also available from the User Properties on the PBX server.



Configuring the HFA Phone

The Unify CP 205 comes out of the box as a SIP Phone. You must upgrade the firmware before configuring the HFA Phone. Upgrade the firmware using FTP/HTTPS Access Data.

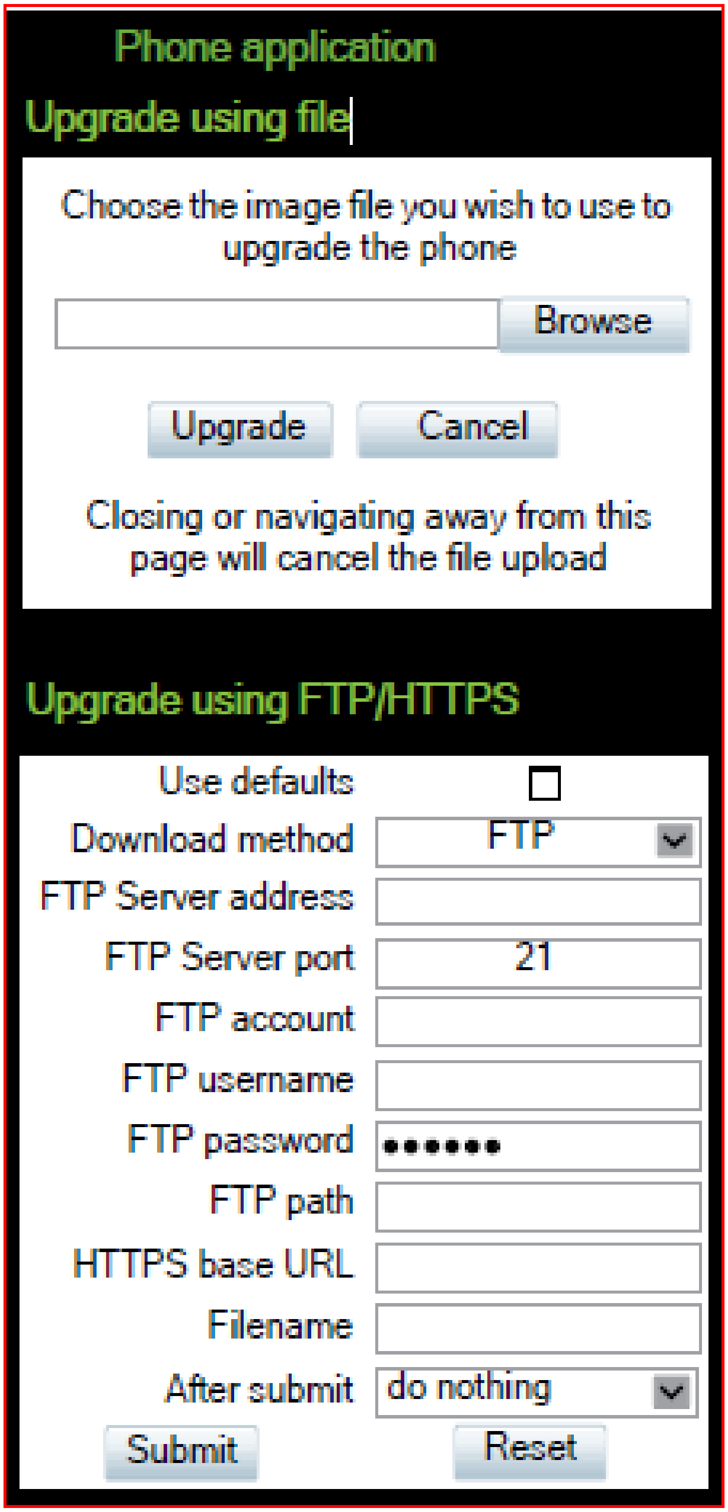
By default, the phone has DHCP enabled. Look on the EdgeMarc 2900 for the IP leased to the CP205 unit.

1. Open your web browser and enter the appropriate URL. Example: https://192.168.1.15.

Note: the default password is 123456.

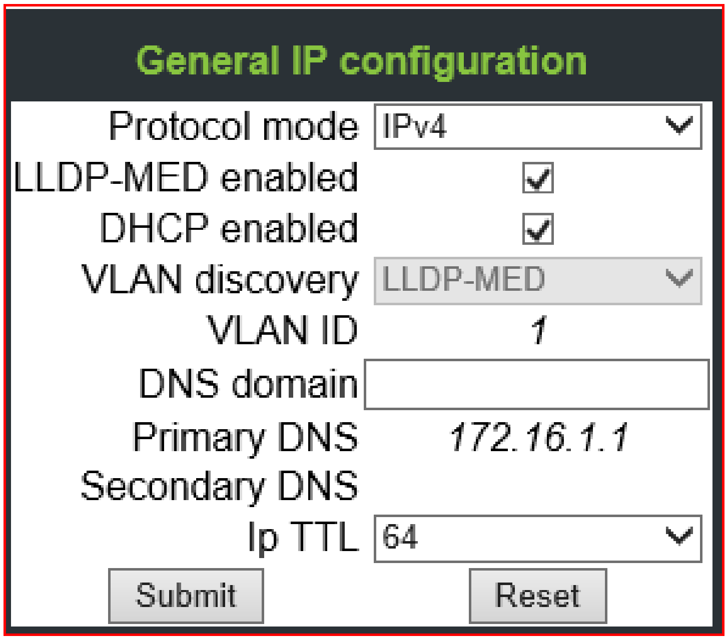
2. From the Administration via Web-Based Management (WBM), select File transfer > Phone application.

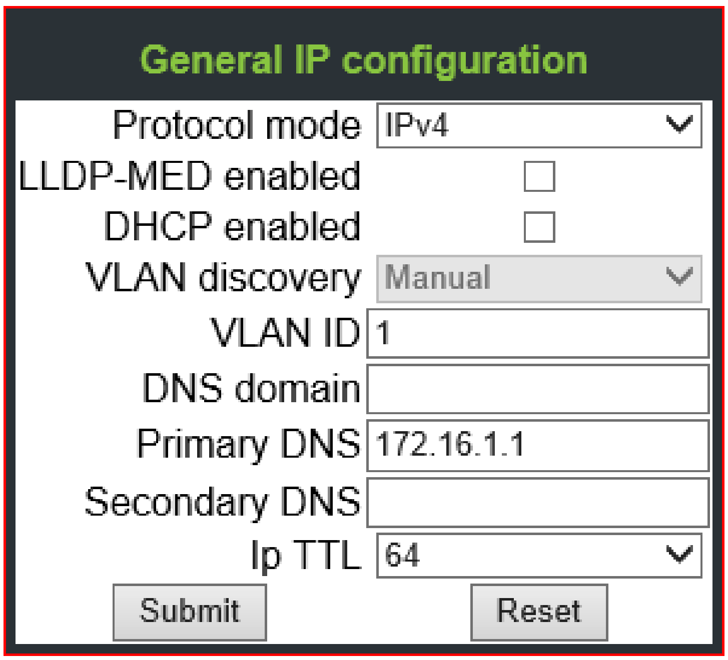
   Click Browse to find the corresponding L62.iso file to upload to the Unify CP205 Phones. Then, click Submit.

3. Once the firmware has been upgraded, login to Web-Based Management to configure the network settings by selecting Network > General IP configuration, then click Submit.

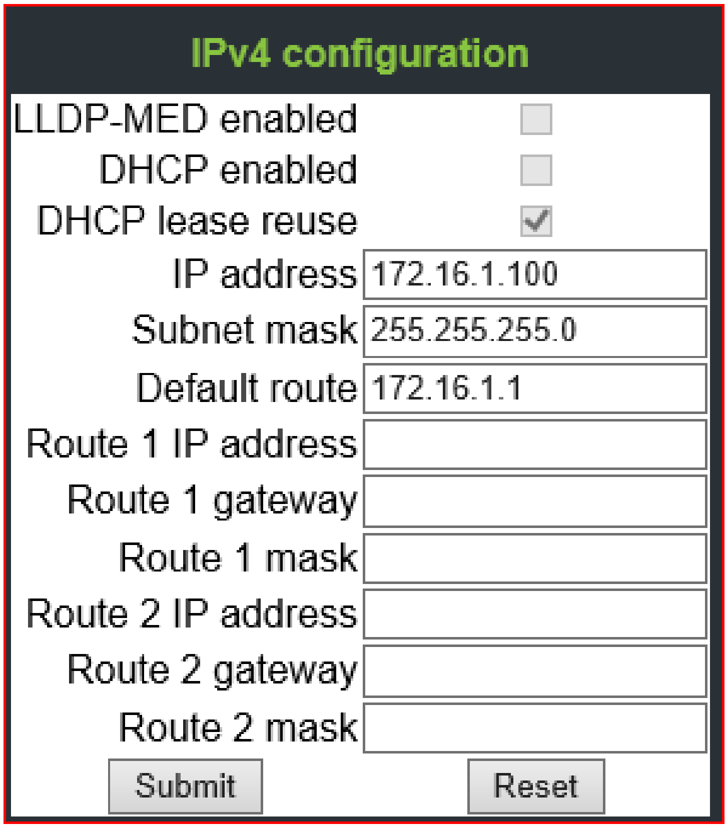
   Choose between DHCP or Static IP assignment.


General IP configuration
Protocol mode
IPv4
LLDP-MED enabled
DHCP enabled
VLAN discovery
LLDP-MED
VLAN ID
1
DNS domain
Primary DNS
172.16.1.1
Secondary DNS
Ip TTL
64
Submit
Reset

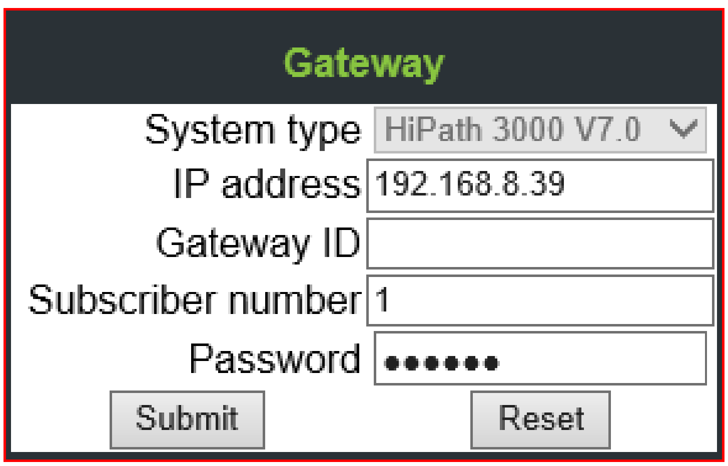

General IP configuration
Protocol mode
IPv4
LLDP-MED enabled
DHCP enabled
VLAN discovery
Manual
VLAN ID
1
DNS domain
Primary DNS
172.16.1.1
Secondary DNS
Ip TTL
64
Submit
Reset

4. Select Network > IPV4 configuration, then click Submit. Add IP address, Subnet Mask, and Default Route.

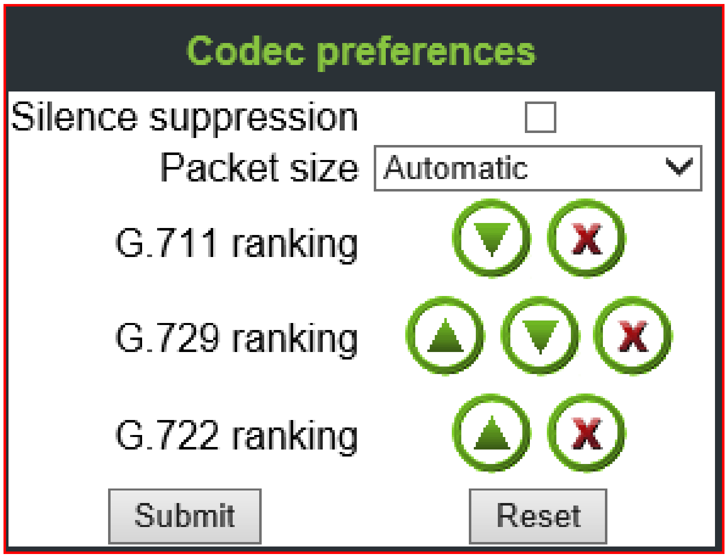
   Note: If DHCP is enabled the values will be fetched automatically.



5. Add Gateway information by selecting System > Gateway, then click Submit.



6. Choose Codecs by selecting Speech > Codec preferences, then click Submit.



7. Go to the Phone and login to SwyxPBX using the user created in section Adding a User.

Supplementary Services and Features Coverage

The following checklist identifies the set of supplementary services/features covered through the configuration defined in this Interop document.

Sr. No.	Supplementary Services/Features	Coverage
1	Registration over UDP/TCP/TLS	✓
2	Basic Call Setup & Termination	✓
3	Ringing & Local Ringback Tone	✓
4	Remote Ringback Tone Handling	✓
5	Cancel Call & Call Rejection	✓

6	Call Forwarding Busy	✔
7	Call Forward No Answer	✔
8	Call Transfer (Attended)	✔
9	Call Transfer (Blind/ Unattended)	✔
10	Call Conference	✔

Legend

Supported	✔
Not Supported	✘

Caveats

The following items should be noted in relation to this Interop document. These are either limitations, untested elements, or useful information pertaining to the Interoperability.

- Fax calls and other tests were not performed due to unavailability of required devices at the Ribbon Lab.

Support

For any support related queries about this guide, please contact your local Ribbon representative, or use the details below:

- Sales and Support: 1-833-742-2661
- Other Queries: 1-877-412-8867
- Website: https://ribboncommunications.com/about-us

References

For detailed information about Ribbon products & solutions, please visit:

https://ribboncommunications.com/products

Conclusion

This Interoperability document describes a successful configuration and interop involving EdgeMarc 2900 and SwyxWare PBX.

All features and capabilities tested are detailed within this document. Any limitations, notes or observations are also recorded to provide the reader with an accurate understanding of what has been covered, and what has not.

Configuration guidance is provided to enable the reader to replicate the same base setup - there may be additional configuration changes required to suit the exact deployment environment.