Unify – OpenScape Business – V3 R3.x

SIP Trunk PBX Configuration Guide for Swisscom Smart Business Connect

From	Unify / UMB Communication	**To**	IP PBX and Communication System Integrators
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1.0	05.09.2018	Daniele Varone	New Document
1.1	20.01.2019	Daniele Varone	New Release V2 R6.x / "Support Prack"
1.2	24.05.2021	Daniele Varone	New Release V3 R1.x
1.3	06.05.2024	Daniele Varone	New Release V3 R3.x
1.4	04.07.2024	Daniele Varone	New Printscreens

Review

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1.0	20.09.2018	Roger Zgraggen	Review
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1.4	13.06.2024	Markus Beat Giger Manuel Imhof	Review

Contents

1 Introduction

1.1 Objective and purpose

This Guide describes the SIP Trunk configuration for the IP PBX / communication system, in order to interoperate with the Smart Business Connect Service. This Guide is based on a standard homologated Configuration with an eSBC or IMG, which is the demarcation to the Swisscom Network.

1.2 Target audience

IP PBX and Communication System Integrators, who have joined the Swisscom Partner Training for Smart Business Connect Trunk.

1.3 Terms, abbreviations

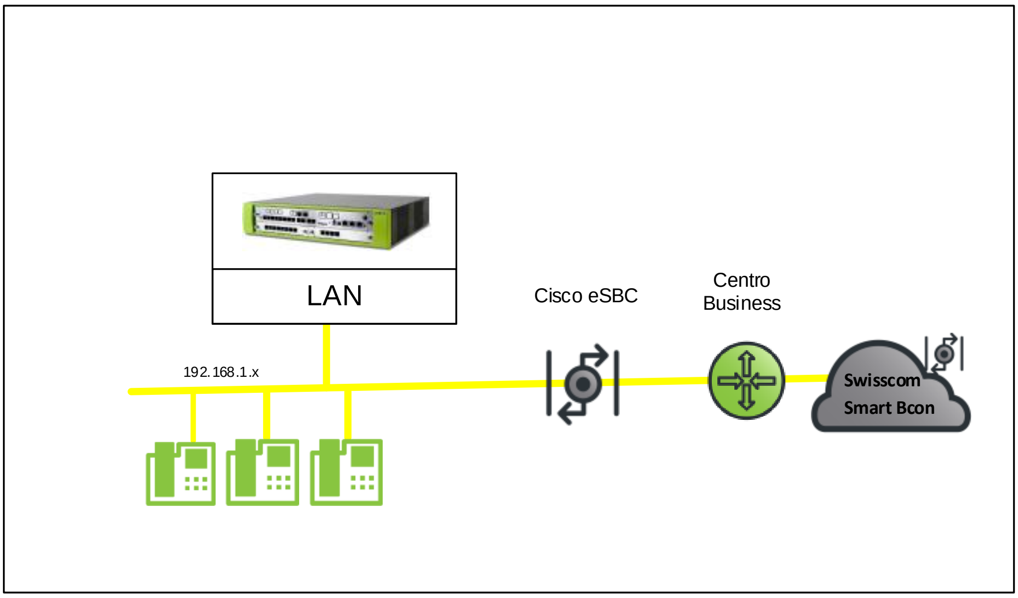
Terms	Abbreviations
SIP	Session Initiation Protocol
IP	Internet Protocol
PBX	Private Branch Exchange
eSBC	Enterprise Session Border Controller
IMG	ISDN Media Gateway

2 Overview PBX

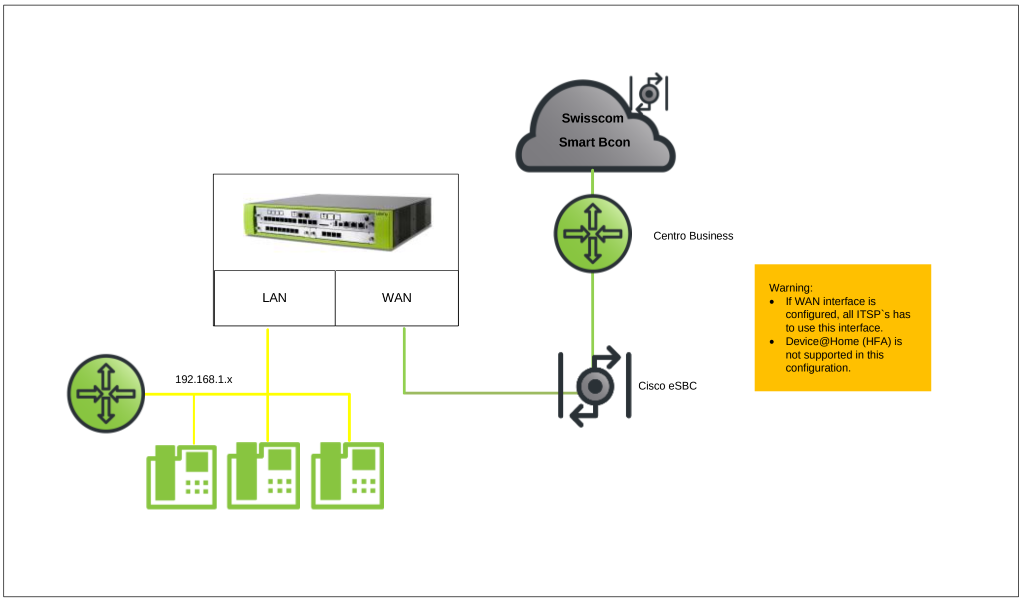
2.1 SIP Trunk network architecture customer side

Schema PBX eSBC Centro Business

Connection over LAN



Connection over WAN



Different configurations are possible, follow the hints in the linked Configuration guides below: http://wiki.unify.com/index.php/Collaboration_with_VoIP_Providers#General_Configuration_guides

2.2 Hardware requirements

OpenScape Business X / OpenScape Business S

2.3 Software requirements

OpenScape Business

- This document is valid for current OpenScape Business V3 R3

2.4 Support Contacts

Your local PBX Distributor.

3 SIP Trunk features

3.1 Features supported and tested

- National calls
- International calls
- National calls with international prefix
- Toll free numbers (0800)
- DTMF (RFC 2833)
- Call cancellation
- Call rejection
- Calls with early media
- Calls to special/short numbers
- Calling line indication presentation (CLIP)
- Calling line indication restriction (CLIR)
- Special Arrangement
- Call hold / resume
- Music on hold
- Call forwarding unconditional *(2nd SIP INVITE or 302)*
- Call forwarding busy *(2nd SIP INVITE or 302)*
- Call forwarding no answer *(2nd SIP INVITE or 302)*
- Attended call transfer
- Blind call transfer
- 3-party conference

3.2 Caveats and known restrictions

- For optimum FAX transmission on the PBX a/b port, at least software version V3 R3.1.1_008 (HF5) must be used and T.38 must be deactivated.
- Billing with Special Arrangement: the billing will be done on the trunk main number instead of the user number.
- Modem not tested.

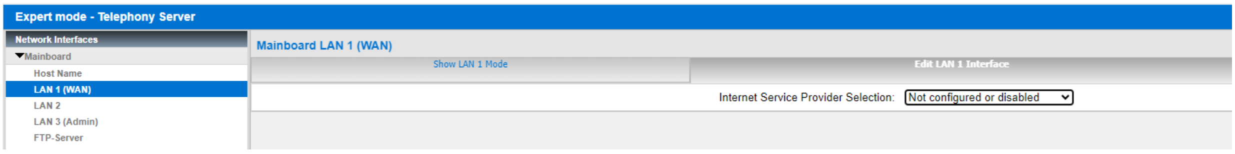
4 SIP Trunk configuration PBX side

Manual configuration in expert mode

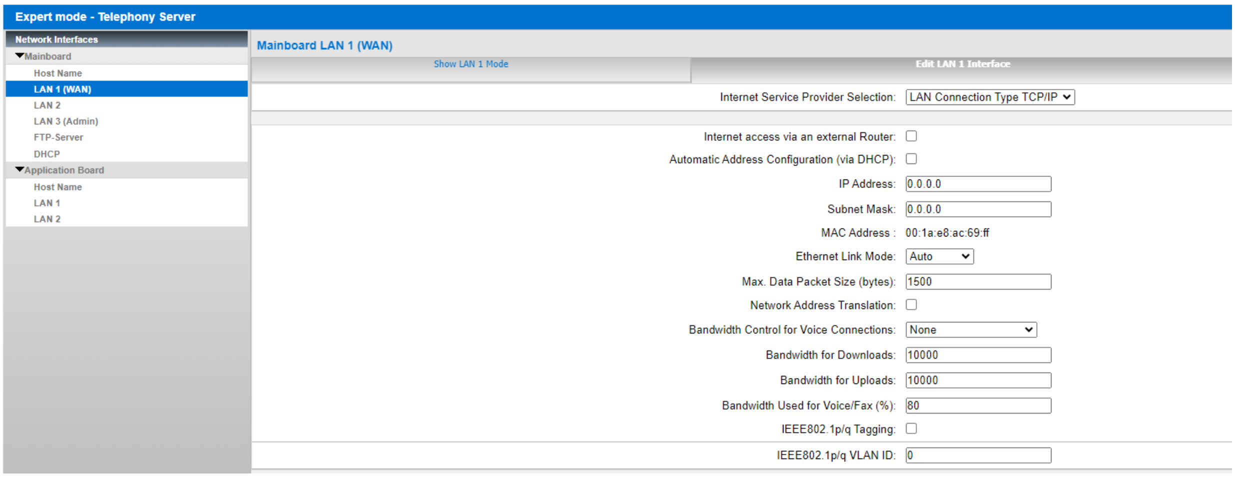
4.1 Configuration of the WAN Address

No static route is needed!

Open "Expert mode> Telephony Server > Network Interfaces > Mainboard > LAN 1 (WAN)" => Edit LAN 1 Interfaces



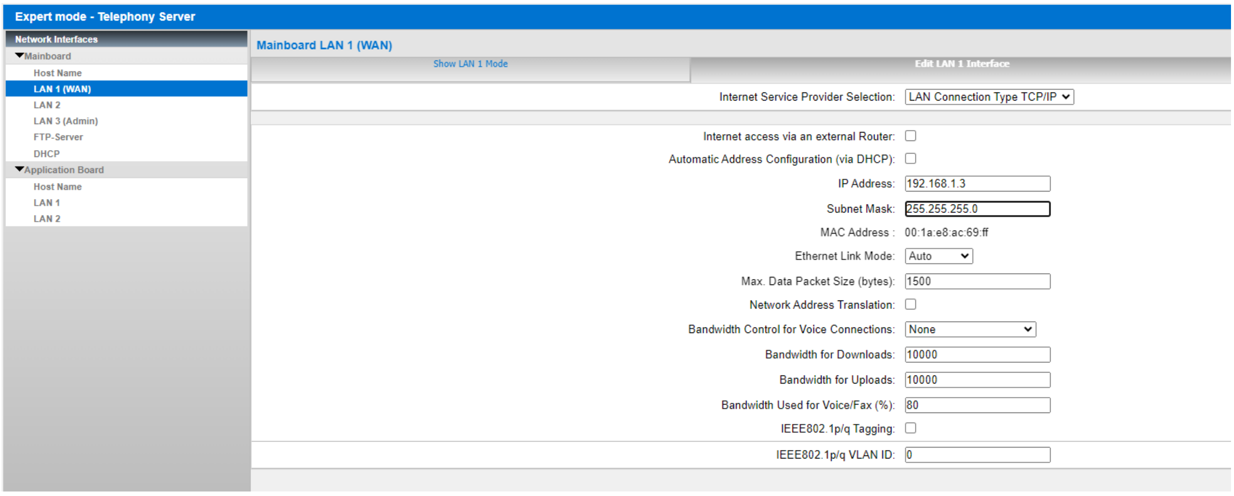
Open "Expert mode> Telephony Server > Network Interfaces > Mainboard > LAN 1 (WAN)" edit "LAN 1-Interface"



Configure the WAN/LAN Interface with the same IP Adress which is configured in the Swisscom Smart BCon Portal.

- „Internet Service Provider-Selection", choose „LAN-Connection Type TCP/IP“
- Deactivate „Internet access via an external Router"
- Deactivate „Automatic Address Configuration (via DHCP)"
- Fill in the fix IP Address & Subnet Mask
- Deactivate "NAT" (internal firewall is switched off)

After this change open "Experte mode > Telephony Server > Mainboard > LAN 1 (WAN)" > Show LAN1 Mode, "The WAN is Use as LAN Connection Type TCP/IP" Should be displayed.



Now the WAN Network-Configuration is done.

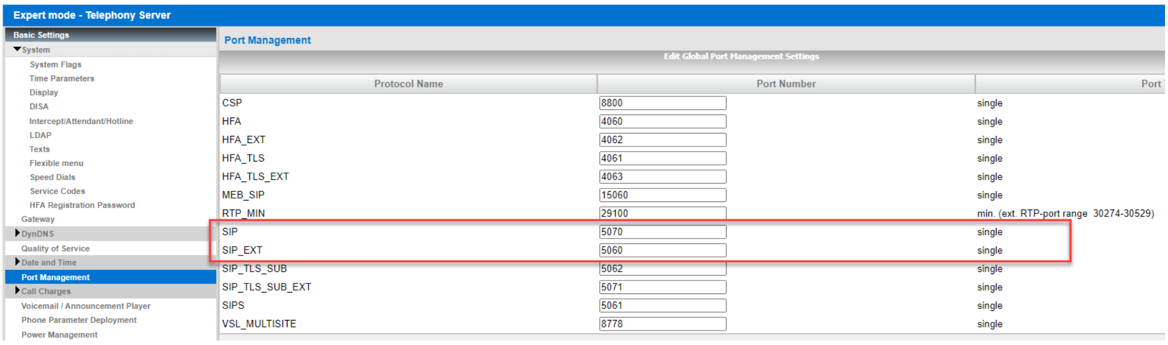
4.2 Default SIP-Port

From V2R3 the default SIP Port for ITSPs (SIP_EXT) is configured to "5070".

Under Expert mode> Telephony Server > Basic Settings > Port Management

The SIP_EXT Port in WBM must be set to 5060 for Swisscom Smart BCon. Reboot of the system is needed.

For Security Reason SIP and SIP_EXT must be set to different Values (see Printscreen).

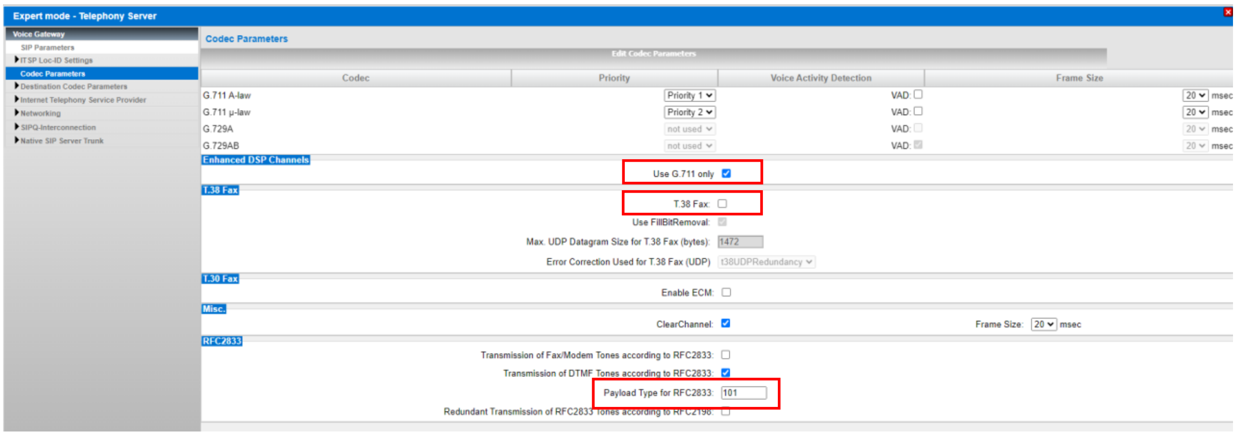


If the Customer is using SIP Clients, they must register with SIP Port 5070!

4.3 Set Codec Parameters and Payload Type

Open "Expert mode > Voice Gateway > Codec Parameters"

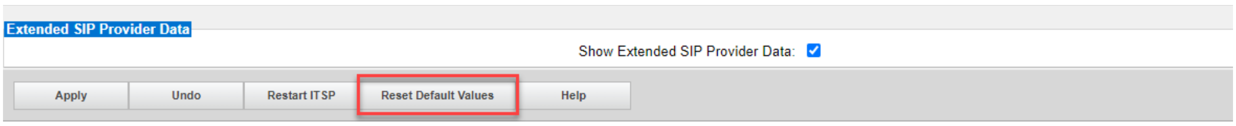
Change "Payload Type for RFC2833" from 98 to 101
Deactivate "T.38 FAX"



After that the System need a Restart!

4.3.1 «Prack» Support

Since OpenScape Business V2 R7 Prack Support is enabled in the Profile «Swisscom Smart Business Communication» PRACK (Provisional Response Acknowledgement). If your PBX is configured with this Profile already, this change will not be active automatically. In this Case following Procedure "Reset Default Values" should be applied in Expertmode.

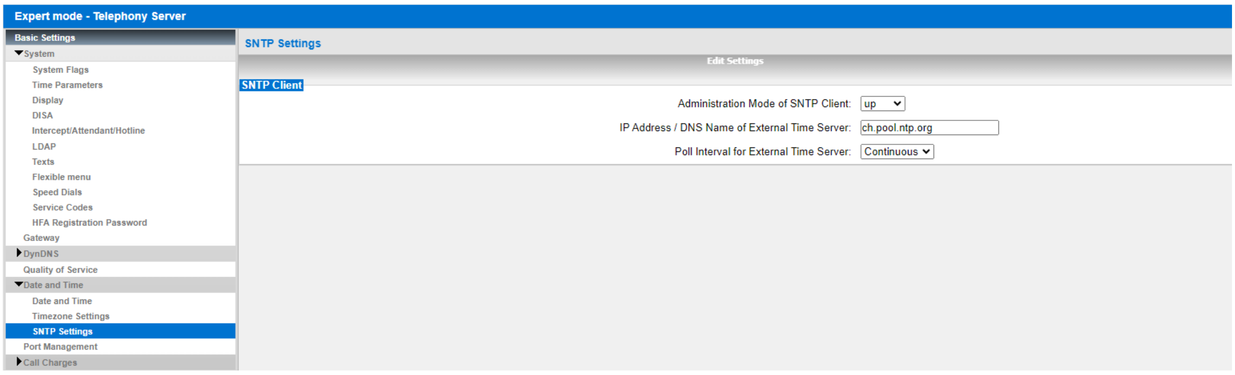


4.4 SNTP configuration

Due to the All IP Migration, there is no more longer time delivered to the PBX, from public Network. Therefore, it is needed to configure a SNTP Server.

Open "Expert mode > Basic Settings > Date and Time > SNTP Settings":

Administration Mode of SNTP Client = up
IP Address / DNS Name of External Time Server = IP Address / DNS name of costumer Time Server (alternative=ch.pool.ntp.org)
Poll Interval for External Time Server = Continuous



4.5 Gateway Location (just to check)

Open the Expert mode > Telephony Server > Basic Settings > System > Gateway

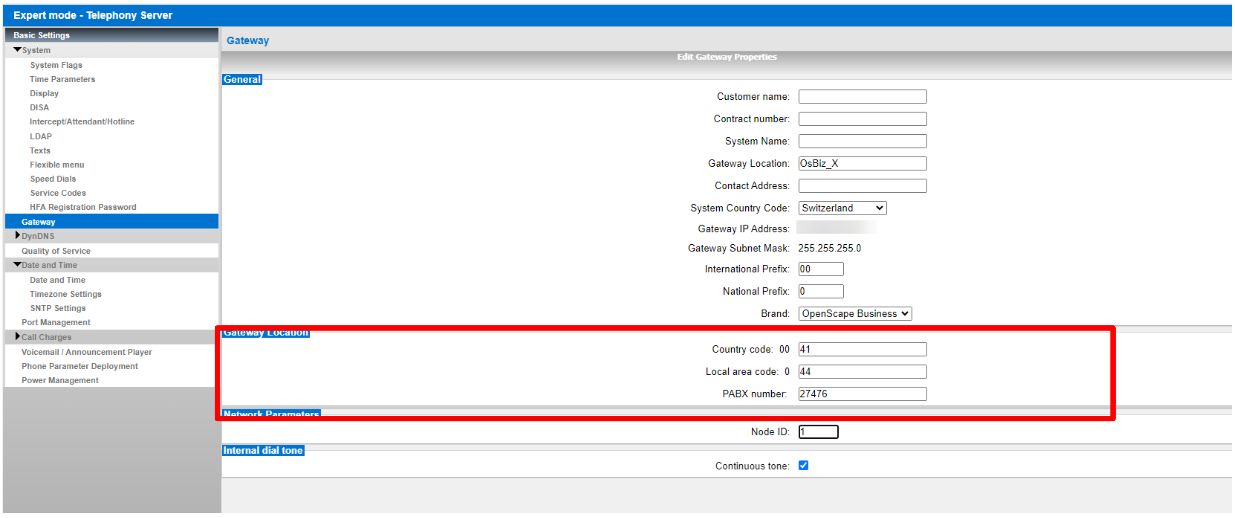
Open Gateway-Location, and enter the follow Parameters

Country Code = 41

Loca area code = 44

PABX Number = 27476 (Systemnumber without DDI Range)

Without this Setting, it could be, that some Number ranges are not dialable!



4.6 Seizure code setting

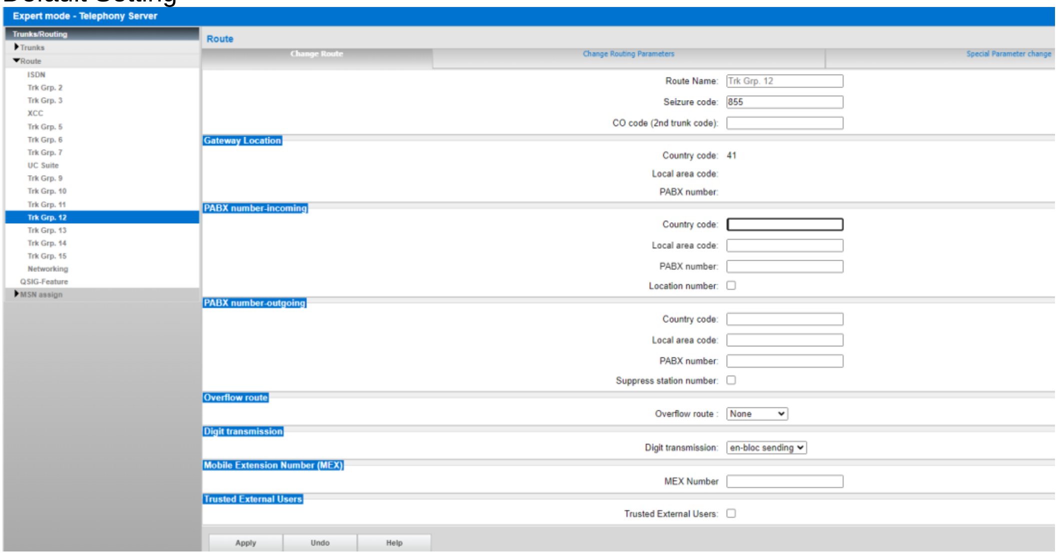
Open the Expert mode > Telephony Server > Trunks/Routing > Route Trk. (Default 1.ITSP = Trk.12)

Per default in Trk.Grp. 1, Seizure Code „0“ is configured, change this with another Seizure Code eg. “855”, after that, you can add the Seizure Code “0” in Trk Grp. 12.

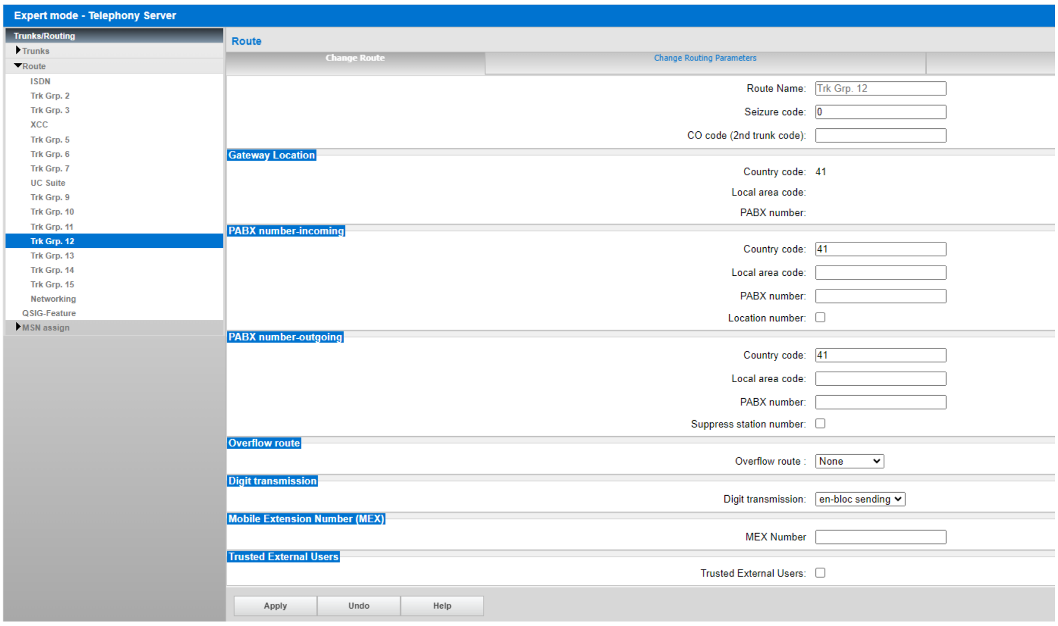
This is important for the correct presenting of the number in the display like:

- Number incoming / outgoing
- Caller list
- Redial

Default Setting



Changed Setting



4.7 Station creating

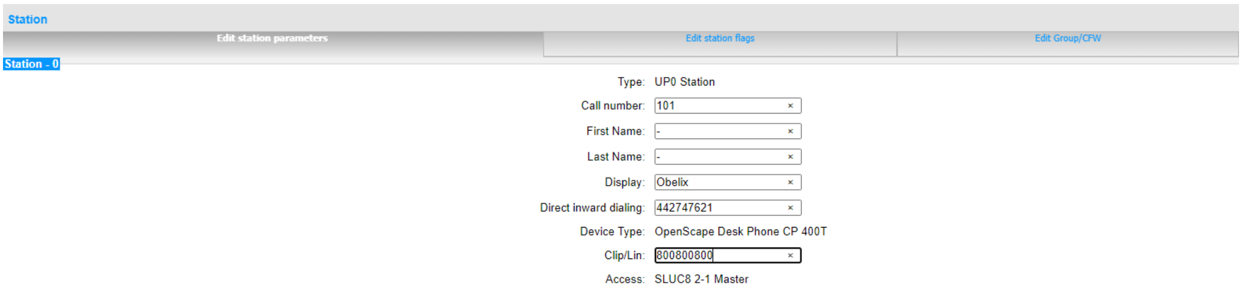
Open the Expert mode > Telephony Server > Station

Call number	=	internal Number of the station
DID	=	Public Number over which the user can be reached from Public Network

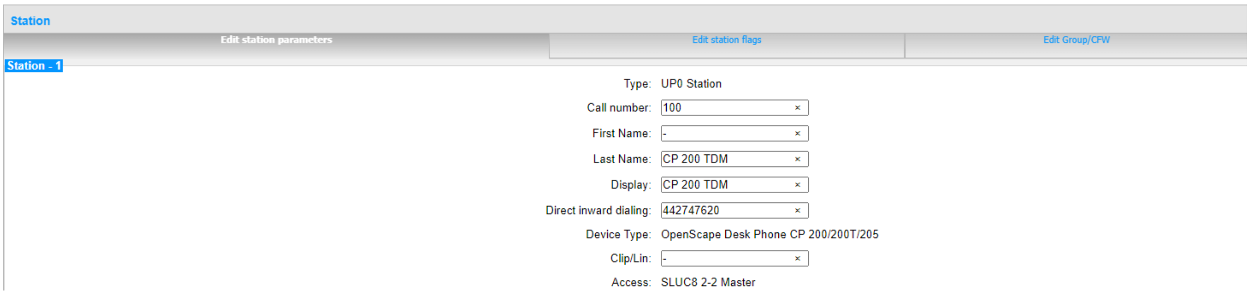
It's recommended to add DID with 9 digits.

Clip/Lin:
Here you can set a 9 digit DID for each station. If no Number is entered, the configured incoming DID will be sent in outgoing direction.

User with Clip No Screening => Clip Setting



User without Clip No Screening => Clip Setting

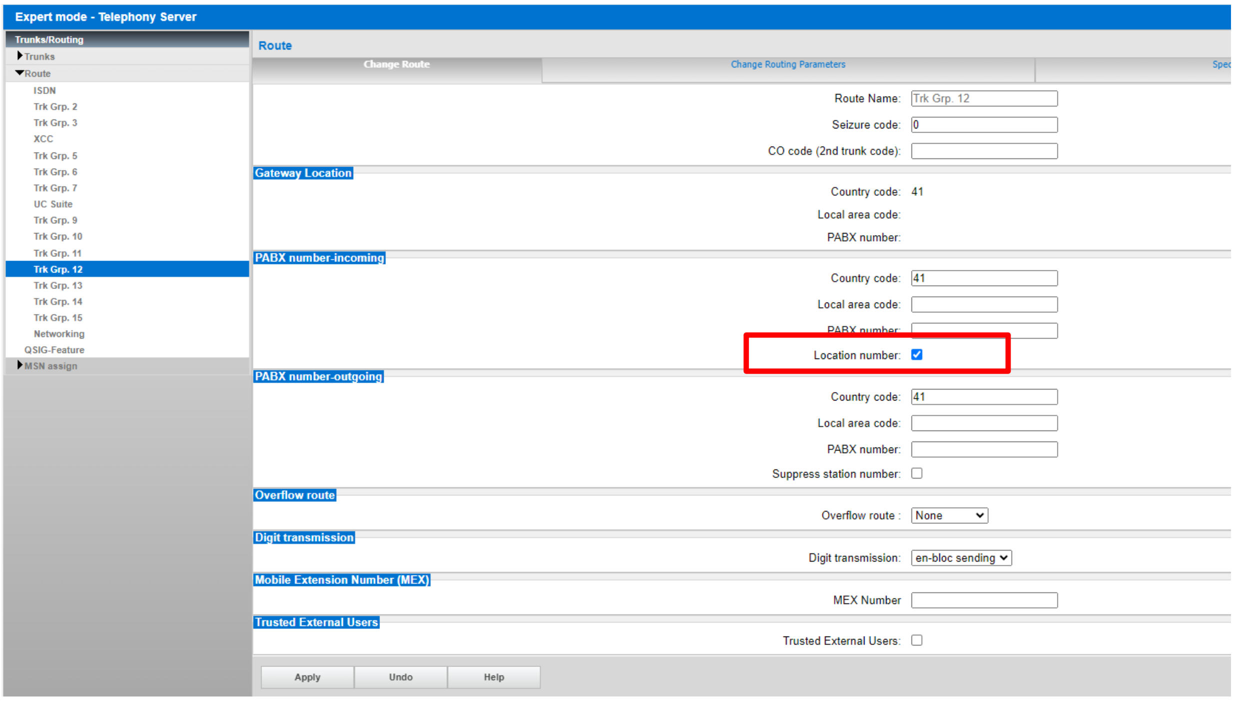


4.8 PABX Number

Open the Expert Mode –Telephony Server – Trunks/Routing – Route

We recommend to keep "Local area code" and "PABX number" empty. (Incoming and outgoing)

Activate only Location number



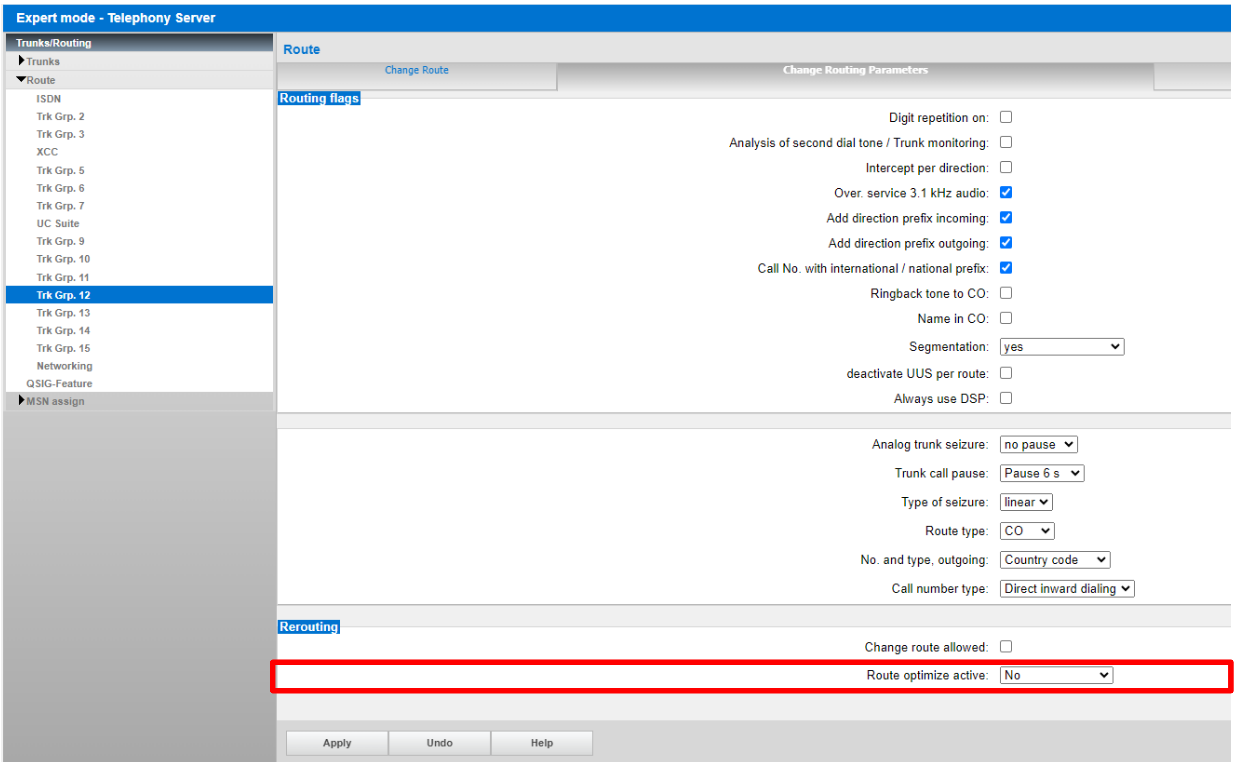
4.9 Routings Parameters (just to check after Wizard is completed)

Open Expert mode –Telephony Server – Trunks/Routing – Change Routing Parameters

Routing flags:

Over. service 3.1KHz audio	= activated
Add direction prefix incoming	= activated
Add direction prefix outgoing	= activated
Call No. with international /national prefix	= activated
Segmentation	= yes
No. and type, outgoing	= Country code

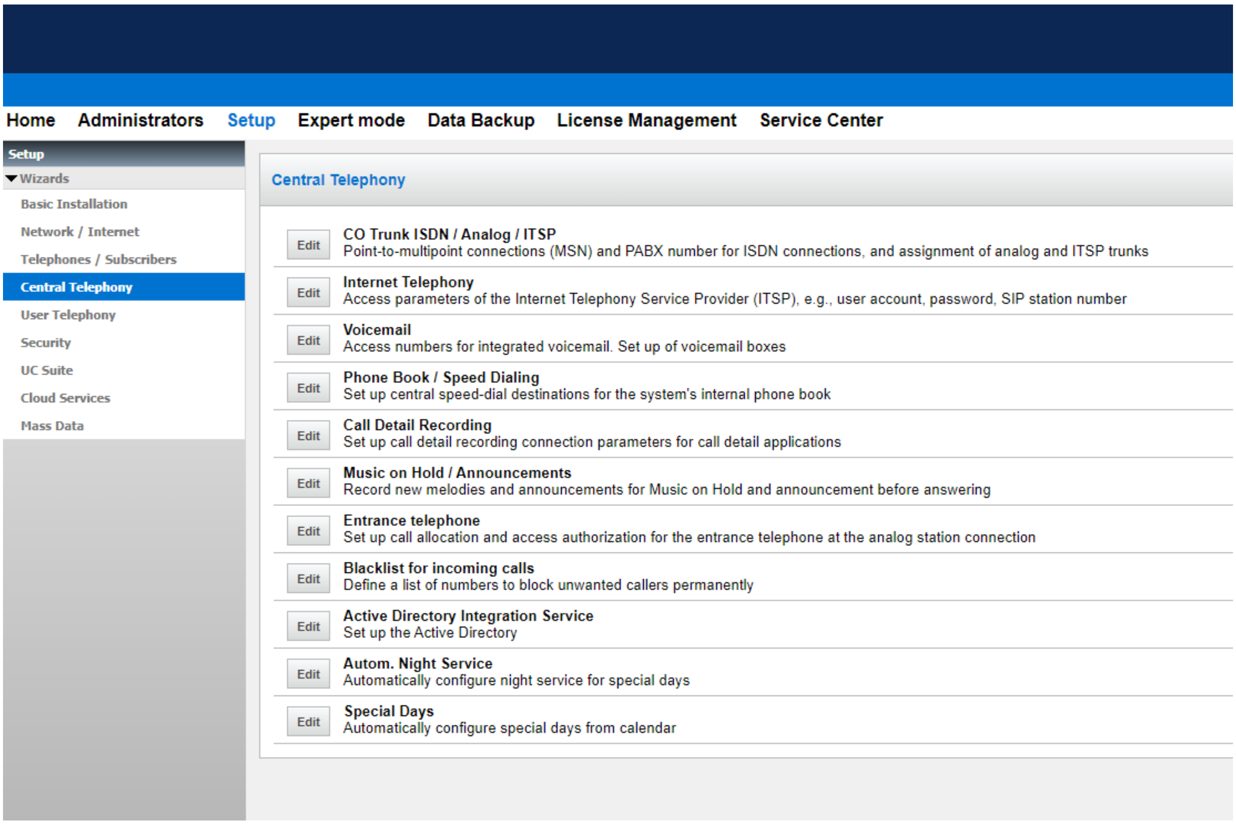
Rerouting > "Route optimize active" allows you to activate "Call deflection" for Callforwarding/Rerouting



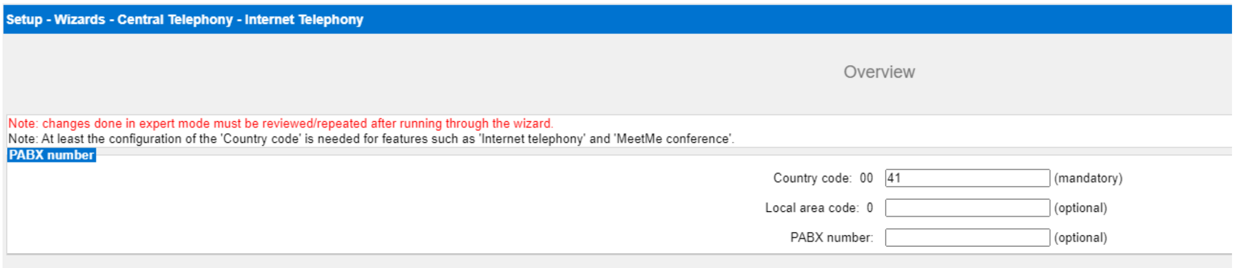
For details see page 21

5 Establishmend of the ITSP Smart Business Communication Trunk

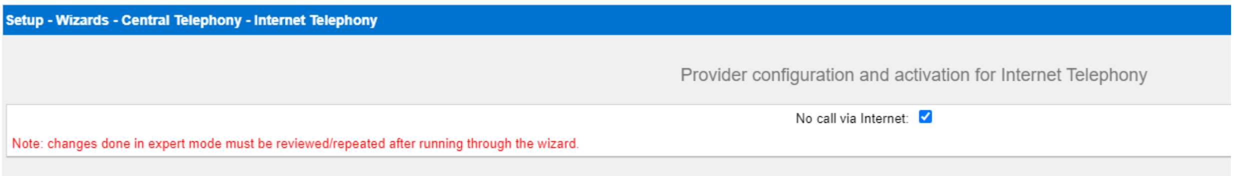
Setup (Wizards) > Central Telephony > Internet Telephony



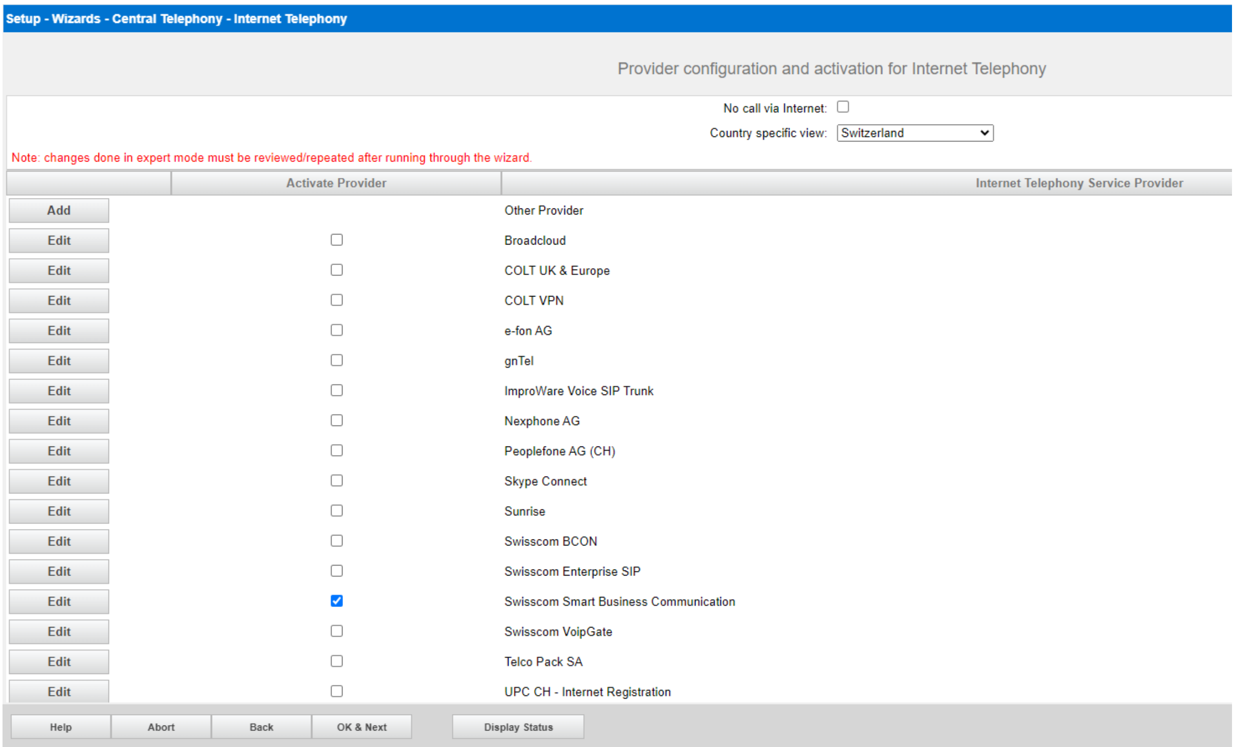
Internet Telephony «Edit»



Deactivate the Flag «No call via Internet»



Activate the Provider «Swisscom Smart Business Communication»

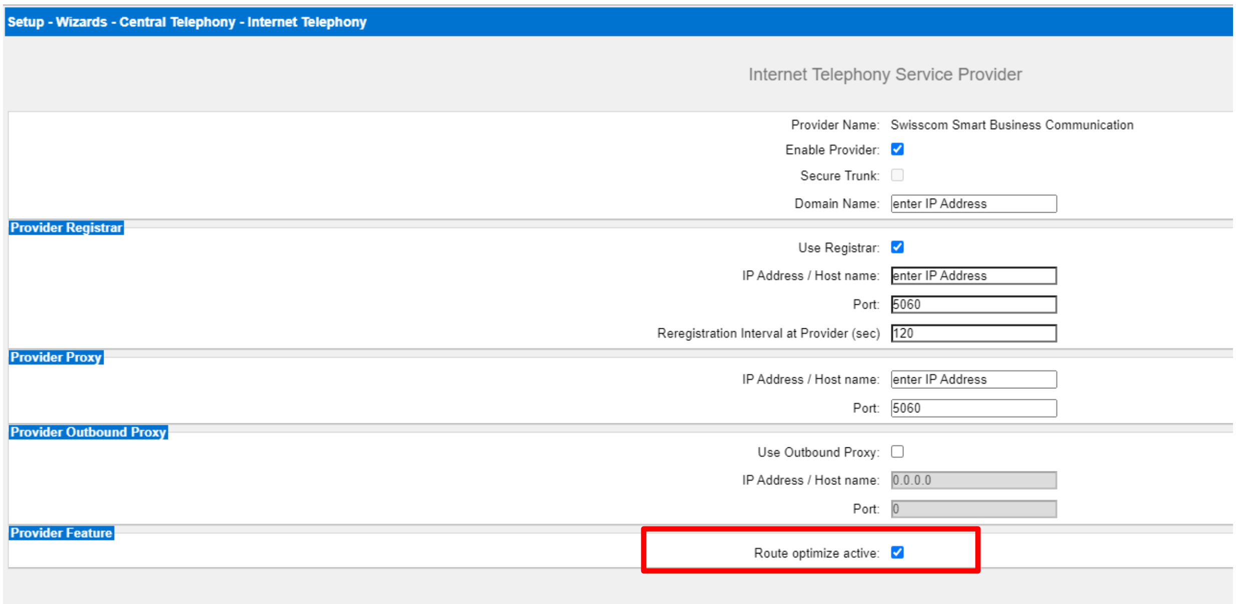


Configure the Profil «Swisscom Smart Business Communication»

5.1 Internet Telephony Service Provider

Enter the Data from Swisscom Smart BCon Portal.

Enable Provider	= YES
Domain Name	**= IP Address Cisco eSBC (Cisco 88x)**
Provider Registrar IP Adresse /Host Name	**= IP Address Cisco eSBC (Cisco 88x)**
Port	= SIP Port (5060)
Reregistrtion-interval am Provider (s)	= 120
Provider Proxy	**= IP Address Cisco eSBC (Cisco 88x)**
Port	= SIP Port (5060)



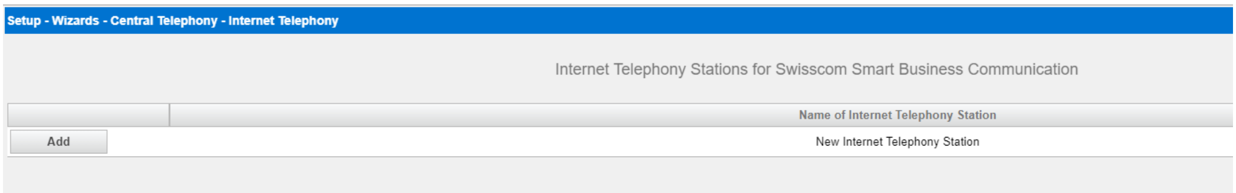
Call forwarding/redirection by means of "Call deflection" can be activated here!
(If call forwarding is activated, incoming calls are triggered with a SIP 302 response and the call forwarding is carried out by the provider).

Call forwarding via rerouting

"Rerouting active" deactivated (default) -> in case of call forwarding a second connection is established and the control of the call remains in the system.

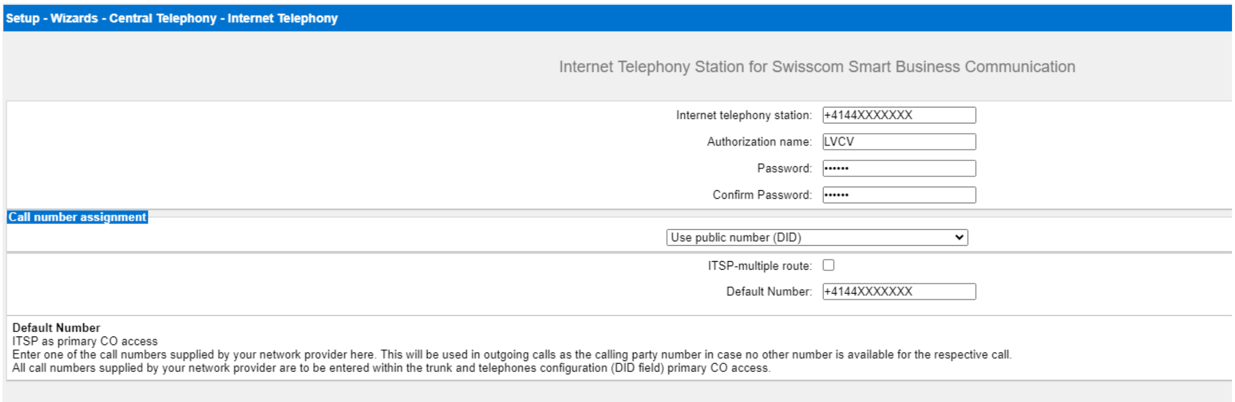
"Rerouting active" activated -> in case of call forwarding, rerouting is performed in the Smart BCon Network. The system loses further control of the call.

5.2 Internet Telephony Station for Swisscom Smart Business Communication

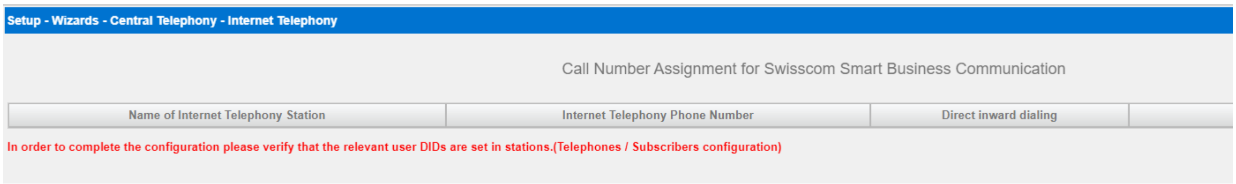


Click the Button "Add"
Enter the Registration Data from Swisscom Smart Bcon Portal.

Internet -telephony station	= +4144XXXXXXX
Authorization name	= LVCV
Password	= SIP-Password
Call number assignment	= Use public number (DID)
Default Number	= Main number of the customer in international Format

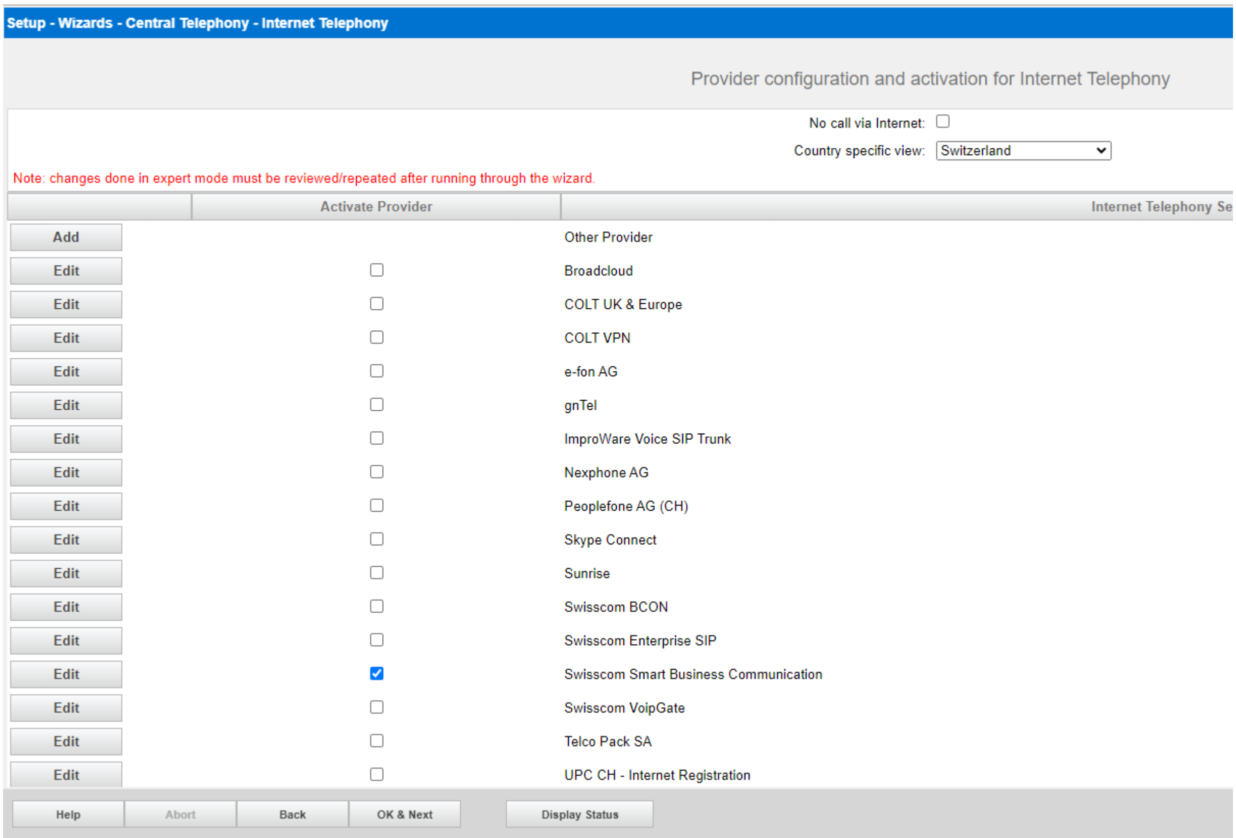


Click «OK & Next»



Click «OK & Next»

Now Wizard is finished and you are back on page Internet Telephony



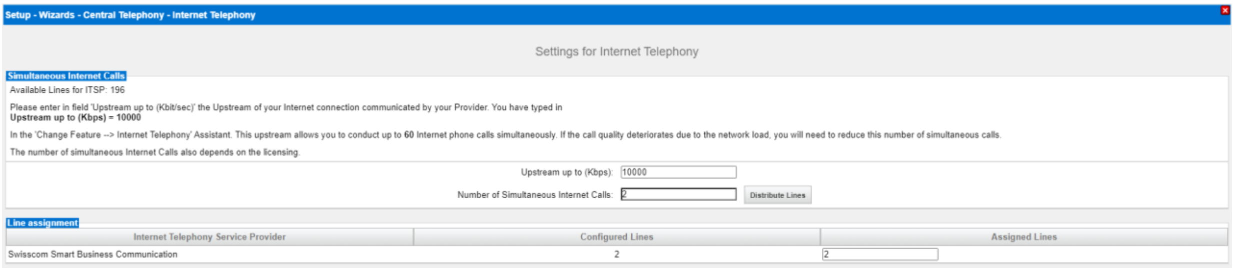
Click «OK & Next»

6 Settings for Internet Telephony (simultaneous Calls to the Provider)

In the next step you can set the number of simultaneous Calls to the Provider.

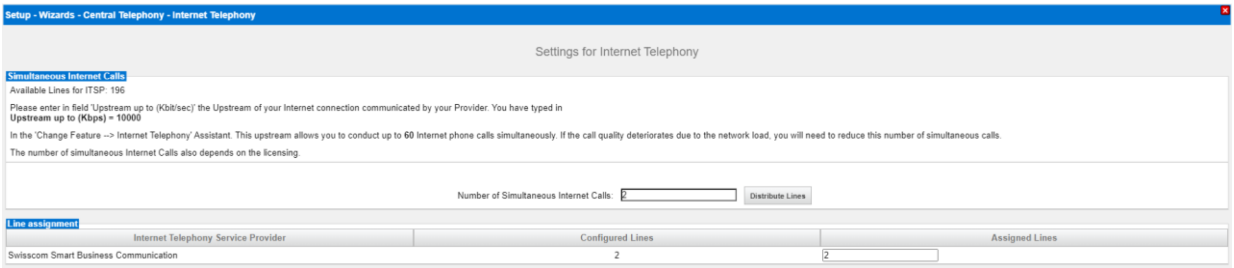
6.1.1 Connection over LAN:

Here you can define the Upstream, enter the Number of Calls.



6.1.2 Connection over WAN:

In this case Upstream is configured in the WAN Interface. (See Printscreen: WAN Interface)



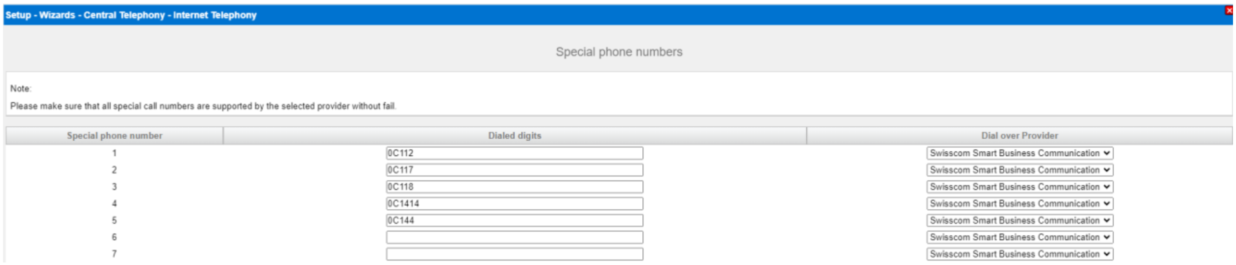
Click "OK & Next"

Now the numbers of simultaneous Calls will be assigned to 1st ITSP for (Direction Trunk Grp. 12)

6.2 Special phone numbers

Enter the Special phone numbers. Choose the Provider for outgoing Calls. If Special phone numbers are not routed over ITSP-Trunk change it to dial over Provider ISDN.

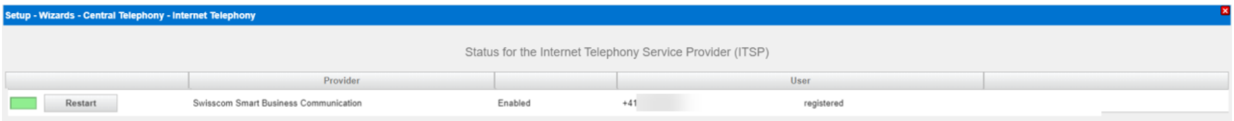
- international emergency number
- Police
- Fire Department
- Rega
- emergency number
- etc.



Click "OK & Next"

6.3 Status for the Internet Telephony Service Provider (ITSP)

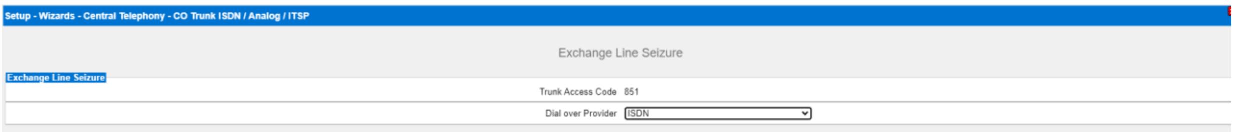
Open Service Center > Diagnostic Status > ITSP Status



If the Provider is not active (registered) you can start first analyzing by click on the Button "Diagnose". (Summary of the config and status messages are shown)

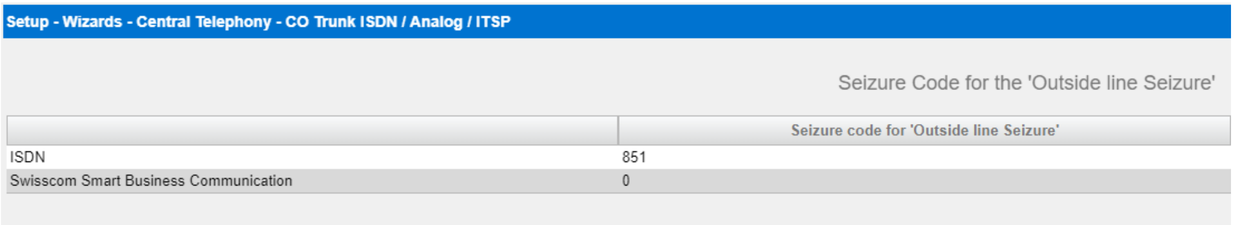
Click "OK & Next"

Following configuration define direction of Public Network.

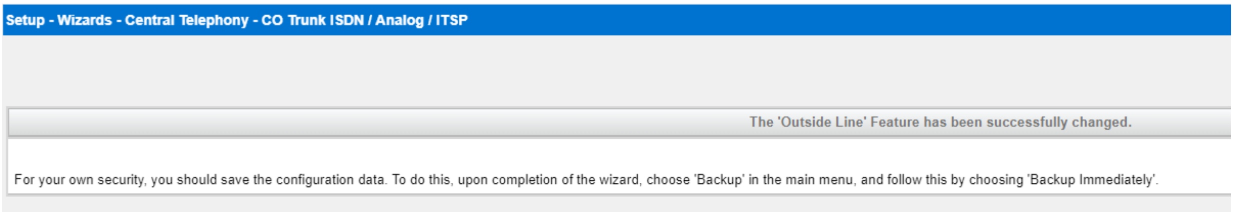


Click "OK & Next"

Overview of the Seizure Code fort the «Outside line Seizure»



Click "OK & Next"



Click "Finish", then the Configuration with Internet Telephony (Wizard) are completed
The following Setting must be done in Expert mode.

7 LCR Least Cost Routing

With the Internet Telephony Wizard LCR is configured as well and can be used for outgoing Dialing immediately.

You can check the Dialplan afterwards:

Expert mode – Telephony Server > LCR > Dialplan

Emergency number must be marked as Emergency

(If a number that was configured as an emergency number (emergency column checkbox selected) is dialed, and no free line is available, then a line that is being used for a non-emergency number (emergency column checkbox cleared) is disconnected and then made available automatically for the emergency number.)

Dial Plan

Change Dial Plan | Display Dial Plan

Dial Plan	Name	Dialed digits	Routing Table	Acc. code	Classes of service	Emergency
1	Emergency call	0C112	4	☐	☑	☑
2	Police	0C117	4	☐	☑	☑
3	Fire brigade	0C118	4	☐	☑	☑
4	Emergency call	0C1414	4	☐	☑	☑
5	Rega	0C144	4	☐	☑	☑
6			4	☐	☑	☐

Hint:

Be carefull that Entries with 0Cz, 0C0Z, 0CNZ… can not be marked as Emergency, otherwise no Call Forwarding is possible.

After the Wizard is completed, the Entries 0C1Z and 0CNZ, in the Dialplan have to be changed from Routing table 5 to Routing table 4. Otherwise no Shortnumber can be dialed.

Dial Plan

Change Dial Plan | Display Dial Plan

Dial Plan	Name	Dialed digits	Routing Table	Acc. code	Classes of service	Emergency
19	Local	81CNZ	1	☐	☑	☐
20	International	81C00-Z	1	☐	☑	☐
21	Swisscom Smart B	0CZ	4	☐	☑	☐
22	Swisscom Smart B	0C0-Z	4	☐	☑	☐
23	Swisscom Smart B	0C1Z	4	☐	☑	☐
24	Swisscom Smart B	0CNZ	4	☐	☑	☐
25	Swisscom Smart B	0C00-Z	4	☐	☑	☐
26	Standard	850CZ	6	☐	☑	☐

Dialplan 4

Expert mode - Telephony Server

LCR: LCR Flags, Classes Of Service, Dial Plan, Routing table (1 - Table, 2 - Table, 3 - Table, 4 - Table, 5 - Table)

Routing Table

Change Routing Table

Routing Table: 4 — en-bloc sending

Index	Dedicated Route	Route	Dial Rule	min. COS	Warning	Dedicated Gateway
1	☐	Swisscom S	SIP	15	None	No
2	☐	None	None	15	None	No

Dialrule «SIP»

Expert mode - Telephony Server

LCR: LCR Flags, Classes Of Service, Dial Plan, Routing table (1 - Table, 2 - Table)

Dial Rule

Change Dial Rule

	Rule Name	Dial rule format	Network access	Type
2	SIP	A	Main network supplie	Unknown

8 SIP Trunk recommendations

8.1 DTMF

8.1.1 Sending (to Swisscom)

DTMF Signals SHALL be sent according to the IETF RFC's 2833/4733. SIP INFO is currently NOT supported. In cases where DTMF Tones are sent in-band in a G.711 RTP Stream, it is transparent to the Network and proper DTMF transmission across the Network can therefore not cannot guarantee by either side.

In case of DTMF transmission the SDP MUST contain the *rtpmap* and *fmtp* attributes associated with the DTMF payload.

Swisscom recommendation:

DTMF Signals sent according to the IETF RFC's 2833/4733 offer the best compatibility with most systems.

8.1.2 Receiving (from Swisscom)

To insure (backward) compatibility with system who do not support/send out-of-band DTMF (RFC 2833), a system MUST be capable to accept both, in-band DTMF (G.711 payload) and out-of-band DTMF (RFC's 2833/4733)

Swisscom recommendation:

In cases the system is depending on DTMF Signals (e.g. Contact Center, Voicemail, etc.) and is not capable to handle both DTMF methods, it is in the responsibility of the solution provider to install appropriate equipment to convert between the two signaling methods.

8.2 Best Practices

8.2.1 Fax over IP Recommendations & Settings

For Fax Transmissions please read our published recommendation and white papers:

Swisscom Recommendation:
Fax over Smart BCon