

Example on How to Configure
SIP Trunk for your ITSP
TDC Denmark

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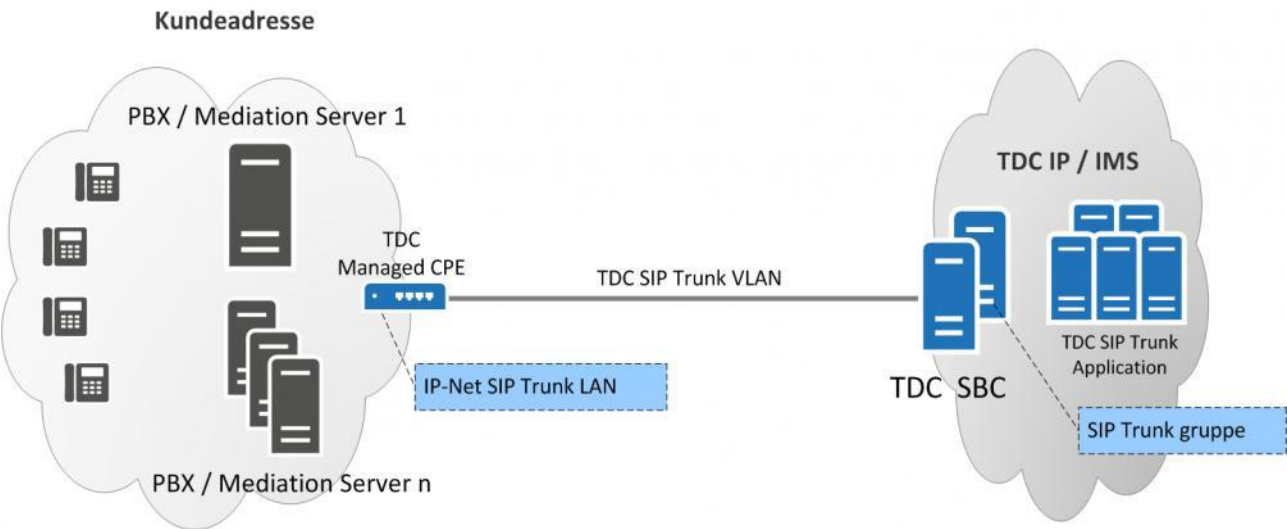
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Date	Version	Changes
2016-07-18	1.0	First version
2016-09-28	1.1	Page 3 and 4 marked with yellow
2016-10-13	1.2	Re-formatting of document

Configuration Data

Information from ITSP TDC Denmark:



Note: That the following information be used by the technical person responsible for your solution.

Please check that the specified PBX type is correct:

SIP Trunk LAN : 195.249.145.XX/29	TDC SBC SIP/RTP : 195.249.145.X
PBX/Server IP : SIP port, RTP porte 195.249.145.XX : 5060 UDP, 50000-60001	PBX type : SBC Peering
	SIP trunk gruppe ID : 12345678
	Password : Not Applicable
	SIP url Domæne : vk123456.hvoip.dk
	SIP Trunk VPN : VRF12345

Configuration Wizard

Setup of correct settings in Expert Mode

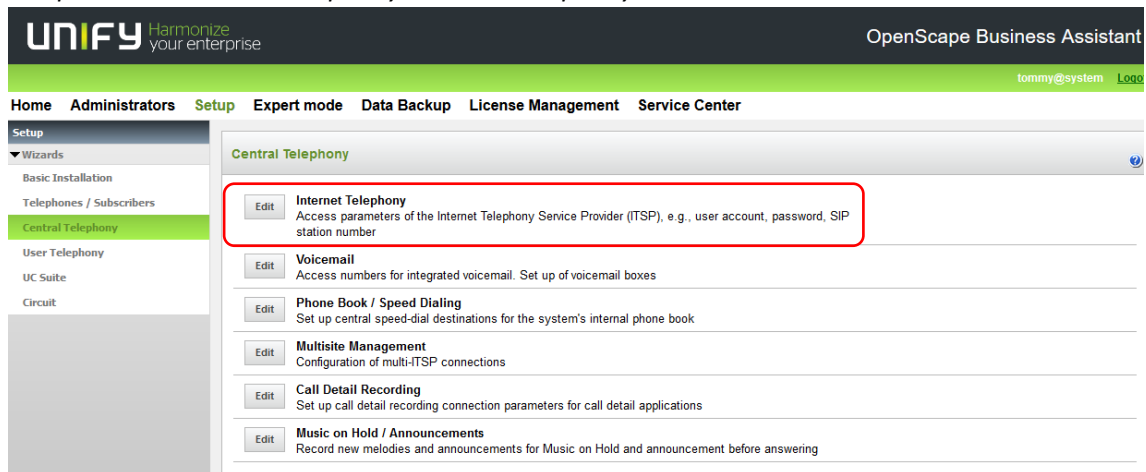
Before you go through the Internet Telephony Wizard, you should go to Expert Mode-VoiceGateway-Internet Telephony Service Provider. Then find provider TDC DK and edit the basic SIP data

Use the **SIP url Domæne** (e.g: vk123456.hvoip.dk) for both Domain Name and IP Address(or Host name) for Provider Proxy. Save the changes

The screenshot shows the 'Expert mode - Telephony Server' window. On the left is a tree view of providers, with 'TDC DK' selected. The main area is titled 'Internet Telephony Service Provider' and contains several sections:

- Provider Name:** TDC DK
- Enable Provider:** ☐
- Provider Identifier in System:** -
- Domain Name:** vk123456.hvoip.dk (highlighted with an orange box)
- Transport protocol:** udp
- Transport security:** traditional (udp or tcp)
- Provider Registrar:**
 - Use Registrar:** ☐
 - IP Address / Host name:**
 - Port:** 5060
 - Reregistration Interval at Provider (sec):** 600
- Provider Proxy:**
 - IP Address / Host name:** vk123456.hvoip.dk (highlighted with an orange box)
 - Port:** 5060
- Provider Outbound Proxy:**
 - Use Outbound Proxy:** ☐
 - IP Address / Host name:** 0.0.0.0
 - Port:** 0
- Provider Inbound Proxy:**
 - Use Inbound Proxy:** ☐
 - IP Address / Host name:** 0.0.0.0

Then it's easier to use the Internet Telephony Wizard
Go to *Setup-Wizards-Central Telephony-Internet Telephony*



The overview page appears for entering the location data. The most flexible type of configuration is to enter the *Country code* only.

The screenshot shows the 'Setup - Wizards - Central Telephony - Internet Telephony' wizard overview page. The page title is 'Overview'. A note states: 'Note: changes done in expert mode must be reviewed/repeated after running through the wizard.' Another note states: 'Note: At least the configuration of the 'Country code' is needed for features such as 'Internet telephony' and 'MeetMe conference'.' The 'PABX number' section is highlighted with a green box. Below this, there are three input fields: 'Country code: 45 (mandatory)', 'Local area code: (optional)', and 'PABX number: (optional)'. The 'Country code' field is highlighted with a red box. At the bottom of the page, there are four buttons: 'Help', 'Abort', 'Back', and 'OK & Next'. The 'OK & Next' button is highlighted with a red box.

Chose *Denmark* and activate provider TDC. Then click Edit

Setup - Wizards - Central Telephony - Internet Telephony

Provider configuration and activation for Internet Telephony

No call via Internet: ☐

Country specific view: Denmark

Note: changes done in expert mode must be reviewed/repeated after running through the wizard.

	Activate Provider	Internet Telephony Service Provider
Add		Other Provider
Edit	<input type="checkbox"/>	COLT UK & Europe
Edit	<input type="checkbox"/>	COLT VPN
Edit	<input type="checkbox"/>	Global Connect
Edit	<input type="checkbox"/>	Skype Connect
Edit	<input checked="" type="checkbox"/>	TDC DK
Edit	<input checked="" type="checkbox"/>	Uni-tel A/S
Edit	<input type="checkbox"/>	Verizon
Edit	<input type="checkbox"/>	Vodafone Anlagenanschluss R3

Help Abort Back OK & Next Display Status

Click Add

Setup - Wizards - Central Telephony - Internet Telephony

Internet Telephony Stations for TDC DK

	Name of Internet Telephony Station
Add	New Internet Telephony Station

Help Abort Back OK & Next

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Authorization name, Password (and Confirm Password) are not used with this provider. So leave them empty.

For Internet Telephony Station, use any number from the DID range provided by ITSP (e.g:88776655)

For Default Number, you can use any number from the DID range provided by ITSP. (e.g:88776655).

MEX Number is not used.

Setup - Wizards - Central Telephony - Internet Telephony

Internet Telephony Station for TDC DK

Internet telephony station: 88776655

Authorization name:

Password:

Confirm Password:

Call number assignment

Use public number (DID) ☒

Use internal number (Callno) / Single entries ☐

Use internal number (Callno) / Range entry ☐

If using 'configurable clip' you have to change the configuration to 'Use public number (DID)' here!
Changing trunk parameters in case of internal subscriber no. is not allowed!

Default Number: 88776655

MEX Number:

Default Number
ITSP as primary CO access
Enter one of the call numbers supplied by your network provider here. This will be used in outgoing calls as the calling party number in case no other number is available for the respective call.
All call numbers supplied by your network provider are to be entered within the trunk and telephones configuration (DID field) primary CO access.

MEX Number
To use the feature Mobile Extension (MEX) you have to enter a MEX number here. An entered MEX number will only be stored if the ITSP is marked as 'active'.
For use of MEX it is also necessary to configure a DISA number.

Help Abort Back **OK & Next** Delete Data

Click OK & Next

Setup - Wizards - Central Telephony - Internet Telephony

Internet Telephony Stations for TDC DK

	Name of Internet Telephony Station
Edit	88776655

Help Abort Back **OK & Next**

Click OK & Next

TDC SIP
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Setup - Wizards - Central Telephony - Internet Telephony

Call Number Assignment for TDC DK

Name of Internet Telephony Station	Internet Telephony Phone Number	Direct inward dialing	Use as PABX number for outgoing calls
------------------------------------	---------------------------------	-----------------------	---------------------------------------

In order to complete the configuration please verify that the relevant user DIDs are set in stations.(Telephones / Subscribers configuration)

Help

Abort

Back

OK & Next

Click OK & Next

Setup - Wizards - Central Telephony - Internet Telephony

Provider configuration and activation for Internet Telephony

No call via Internet: ☐

Country specific view: Denmark

Note: changes done in expert mode must be reviewed/repeated after running through the wizard.

	Activate Provider	Internet Telephony Service Provider
Add		Other Provider
Edit	<input type="checkbox"/>	COLT UK & Europe
Edit	<input type="checkbox"/>	COLT VPN
Edit	<input type="checkbox"/>	Global Connect
Edit	<input type="checkbox"/>	Skype Connect
Edit	<input checked="" type="checkbox"/>	TDC DK
Edit	<input checked="" type="checkbox"/>	Uni-tel A/S
Edit	<input type="checkbox"/>	Verizon
Edit	<input type="checkbox"/>	Vodafone Anlagenanschluss R3

Help

Abort

Back

OK & Next

Display Status

Click OK & Next

Define bandwidth and number of Trunks

Enter the upstream information and the number of lines

Setup - Wizards - Central Telephony - Internet Telephony

Settings for Internet Telephony

Simultaneous Internet Calls

Available Lines for ITSP: 193

Please enter in field 'Upstream up to (Kbit/sec)' the Upstream of your Internet connection communicated by your Provider. You have typed in **Upstream up to (Kbps) = 512**

in the 'Change Feature --> Internet Telephony' Assistant. This upstream allows you to conduct up to 4 Internet phone calls simultaneously. If the call quality deteriorates due to the network load, you will need to reduce this number of simultaneous calls.

The number of simultaneous Internet Calls also depends on the licensing

Upstream up to (Kbps): 512

Number of Simultaneous Internet Calls: 4 Distribute Lines

Line assignment

Internet Telephony Service Provider	Configured Lines	Assigned Lines
TDC DK	0	4

Help Abort Back OK & Next

Special phone numbers

In this dialog it is possible to route special phone numbers. When special phone numbers are not supported over the ITSP route it is possible to change this here.

The screenshot shows a dialog box titled "Setup - Wizards - Central Telephony - Internet Telephony". The main heading is "Special phone numbers". Below the heading is a note: "Note: Please make sure that all special call numbers are supported by the selected provider without fail." The dialog contains a table with three columns: "Special phone number", "Dialed digits", and "Dial over Provider". The table has 15 rows, numbered 1 to 15. Row 1 has "0C112" in the "Dialed digits" column. All "Dial over Provider" cells show "TDC DK" with a dropdown arrow. At the bottom of the dialog are four buttons: "Help", "Abort", "Back", and "OK & Next".

Special phone number	Dialed digits	Dial over Provider
1	0C112	TDC DK ▾
2		TDC DK ▾
3		TDC DK ▾
4		TDC DK ▾
5		TDC DK ▾
6		TDC DK ▾
7		TDC DK ▾
8		TDC DK ▾
9		TDC DK ▾
10		TDC DK ▾
11		TDC DK ▾
12		TDC DK ▾
13		TDC DK ▾
14		TDC DK ▾
15		TDC DK ▾

After this status page two more dialogs with „Exchange Line Seizure“ and an overview with all configured „Outside line Seizure“ are displayed.

Configure DID

Setup - Wizards - Telephones / Subscribers - IP Telephones

Select a station -LAN Phones/WLAN Phones

☐ Take DID from changed call number

	CallNo	First Name	Last Name	Name	DID	Type	Fax CallNo	Fax DID	Class of
	100	Anders	And	Anders And	44221890	System Client	898	44221898	Internationz
	101	Rip	And	Rip And	44221891	System Client	-	-	Internationz
	102	Rap	And	Rap And	44221892	System Client	-	-	Internationz
	103	Rup	And	Rup And	44221893	System Client	-	-	Internationz
	104	Joakim	Von And	Joakim Von And	44221894	System Client	-	-	Internationz
	105	Andersine	And	Andersine And	44221895	SIP Client	-	-	Internationz
	106	Bedstemor	And	Bedstemor And	-	System Client	-	-	Internationz
	107	-	-	-	-	No Port	-	-	Internationz
	108	-	-	-	108	No Port	-	-	Internationz
	109	-	-	-	109	No Port	-	-	Internationz
	110	-	-	-	110	No Port	-	-	Internationz
	111	-	-	-	111	No Port	-	-	Internationz
	112	-	-	-	112	No Port	-	-	Internationz
	113	-	-	-	113	No Port	-	-	Internationz
	114	-	-	-	114	No Port	-	-	Internationz
	115	-	-	-	115	No Port	-	-	Internationz
	116	-	-	-	116	No Port	-	-	Internationz
	117	-	-	-	117	No Port	-	-	Internationz
	118	-	-	-	118	No Port	-	-	Internationz
	119	-	-	-	119	No Port	-	-	Internationz

Page 1 of 81

Items per page 10 25 50 100

Help

Abort

Back

OK & Next

Save Data

Multisite

Multisite no possible in Denmark, we do not use area code.

How to check the status of SIP connection with TDC

ITSP Status

Call the ITSP service department, no web page or other available for technician and customer.

ITSP OpenScape Business

Service center-Diagnostics-Event Viewer

Service center-Diagnostics-Status-ITSP Status (You can also restart the ITSP Here).

How to get Traces in case of problem

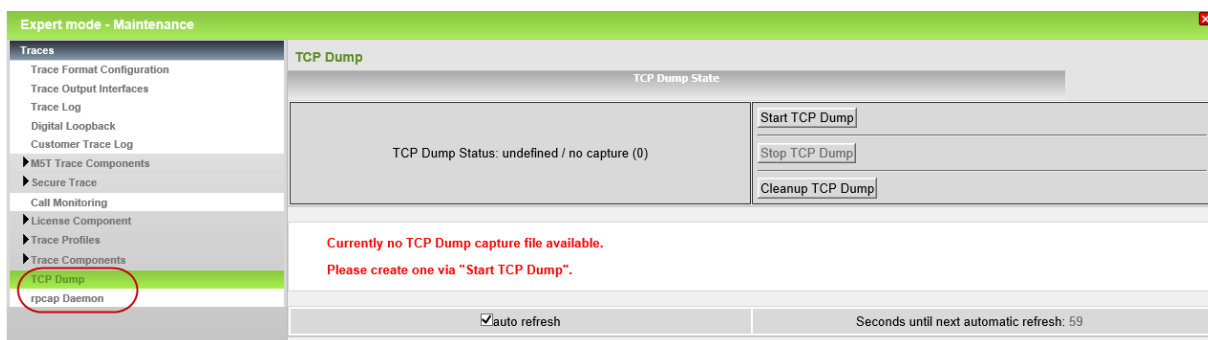
Wireshark traces

A Wireshark trace helps you to analyse SIP issues very easily. It is possible to start traces on the system which can be analyzed via Wireshark.

Expert mode / maintenance / traces

TCP Dump: Create max. 5 files with PCAP which can be downloaded afterwards and opened in Wireshark.

Rpcap Daemon: Will start the rpcap daemon and open a server port which allows direct remote access from protocol analyzers like Wireshark.



Internal traces

For a better analysis of problems internal system traces will be needed. Trace profiles are already pre-configured to make it easier to capture internal traces.

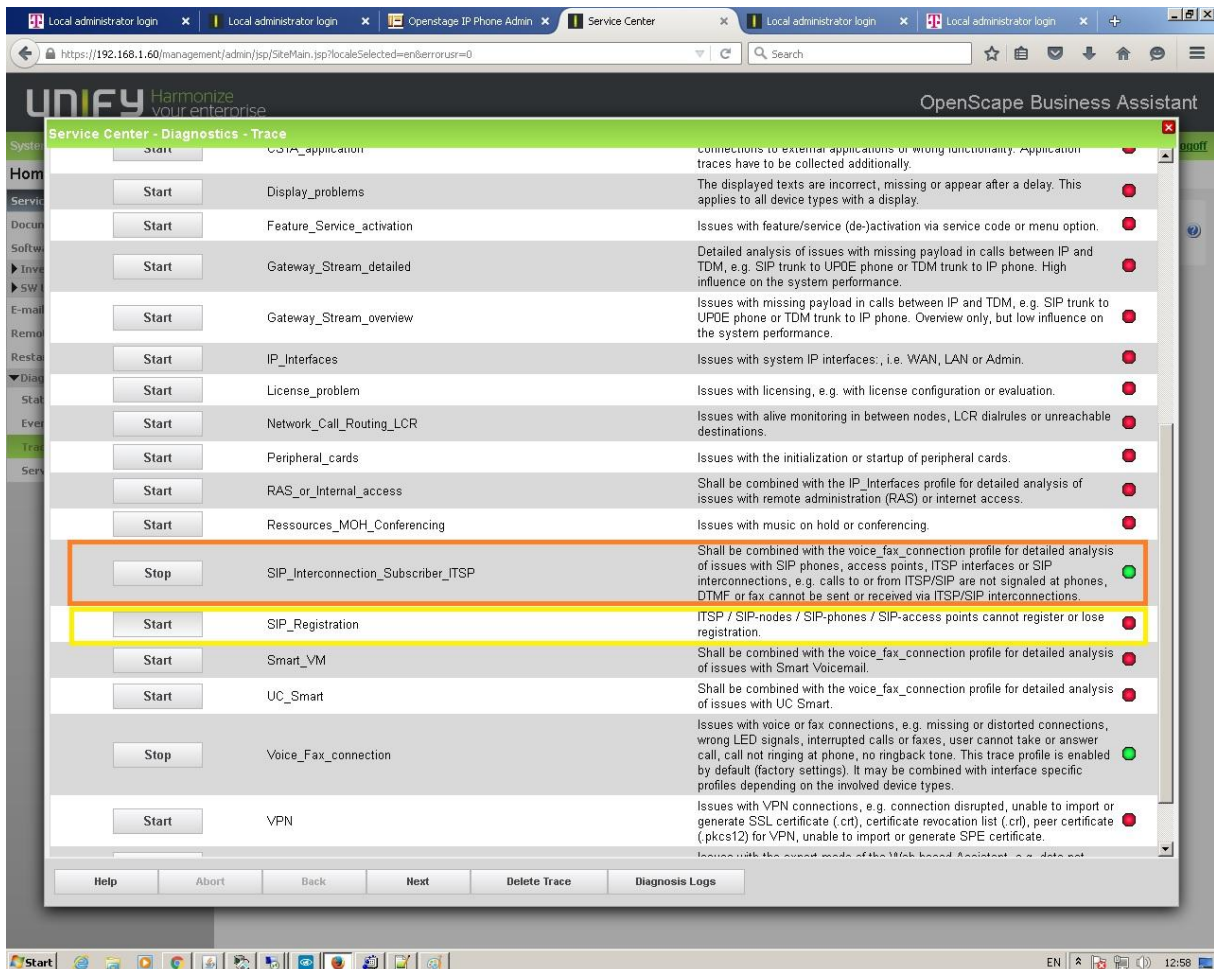
When issues with ITSP occurs, the following trace profiles should be activated:

- Basic
- Voice_Fax_Connection
- SIP_Interconnection_Subscriber_ITSP

In case there are issues with the registration of an ITSP the following trace profile should also be activated.

- SIP_Registration

The relevant traces can be downloaded via Service Center –Diagnostics-Trace menu.



Technical Data of TDC

A SIP INVITE may exceed standard MTU size on TDC Managed CPE and can be sent fragmented. You must therefore ensure that your equipment supports defragmentation.

Examples of SIP signaling connection. TDC SIP Trunk:

Example of SIP OPTIONS sent from TDC SBC:

OPTIONS sip:ping@sa1-VK123456.hvoip.dk:5060;transport=udp SIP/2.0

...

To: sip:ping@sa1-VK123456.hvoip.dk
From: <sip:ping@195.249.145.X>;tag=0cc...

Example of SIP OPTIONS sent to TDC SBC:

OPTIONS sip:195.249.145.X SIP/2.0

...

FROM: <sip:lynscbc01.blah.net:5060>;...

TO: sip:195.249.145.X

Example of SIP INVITE sent from TDC SBC:

INFO: It can be fully canonical or normal Danish numbering plan with 8-digit map, the traces below are just examples. (Normal Danish plan is used in certification with OSBiz)

INVITE sip:+458752****@VK123456.hvoip.dk:5060 SIP/2.0

...

To: "Ole Olsen" <sip:+458752****@VK123456.hvoip.dk>;cscf
From: <sip:+4570909090@***.243.25.***:5060;user=phone>;tag=41...-

...

Contact: sip:195.249.145.X:5060;transport=udp

Example of SIP INVITE sent from the customer at TDC SBC:

INVITE sip:+4570909090@lynscbc01.blah2.blah.blah.net;user=phone SIP/2.0

...

FROM: "Olsen, Ole" <sip:+4458752****@blah1.blah.blah.net;user=phone>;...

TO: sip:+4570909090@lynscbc01.blah2.blah.blah.net;user=phone

Service offering with single numbers / range of numbers	Yes/yes
Transport	
UDP / TCP / TLS / IPSec Tunnel *	Yes / Yes** / no / no
Codecs	
G.711 a-law	yes (Sample rate = 20ms)
G.711 μ -law	yes (Sample rate = 20ms)
G.729A	yes (Sample rate = 20ms)
Fax	
T.38 / G.711 based fax	Yes / Yes
DTMF transmission	
RFC2833 / Inband / INFO*	Yes / Yes / Yes
Security	
Authentication (e.g. Digest Authentication, other)	Digest Authentication
Special Features	

Does ITSP perform Session refresh / Session supervision by sending: Sessiontimer - UPDATE / Sessiontimer - reINVITE / OPTIONS / INFO	Yes / Yes / Yes / -
Proxy or B2BUA, Media handling	B2BUA
Forking	no
Transfer with REFER *	Yes
* not supported by OpenScape Business	

** : The transport protocol may be either TCP or UDP, but UDP is preferred and this is the way TDC certified with OSBiz.