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

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Table of History

Date	Version	Changes
2016-07-18	1.0	First version
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2016-10-13	1.2	Re-formatting of document

TDC SIP OpenScape Business V2

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	PBX type : SBC Peering
195.249.145.XX : 5060 UDP, 50000-60001	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

Expert mode - Telephony Server					X
VHUI IGIGKUIT					
Paritel Operateur	Internet Telephony Service Provider				
Peoplefone AG (CH)	Edit Internet Telephony Service Provider	Delete Inte	rnet Telephony Service Provider	Add Internet Telephony Station	
Peoplefone AG (DE)		B 11 N	TRO DI		-
Priority Telecom		Provider Name:	JIDC DK		
Purtel		Enable Provider:	Π		
QSC AG, IPfonie extended connect	Provider Id	entifier in System:			
QSC AG, IPfonie extended					
RoutIT		Domain Name:	vk123456.hvoip.dk		
Salzburg AG CableLink	-	Franspor: protocol:	udp 🔻		
Sewan Communications					
Sipgate Trunking		Franspor: security:	traditional (udp or tcp) 💌		
▶ Sipgate	Provider Registrar				
Skype Connect		Use Registrar:			
Slovak Telekom_VVN	IP Add	ress / Host name:			
SoTel with register					
▶ SoTel		Port:	5060		
SpeakUp	Reregistration Interva	al at Provider (sec)	600		
▶ Sunrise	Provider Proxy				-
Swisscom BCON	IP Add	ress / Hast name:	wk123456 bygin dk		
Swisscom Enterprise SIP		ress / risst fiame.	WK123430.11V013.0K		
Swisscom Smart Business Communication		Port:	5060		
Swisscom VoipGate	Provider Outbound Proxy				
T-Mobile (NL)	Use	Outbound Proxy:			
▶T-Mobile	hhA 9I	ress / Host name:	0000		
▶ Talk Talk					
TDC DK		Port:	þ		
▶твс	Provider Inhound Proxy				
Telco Pack SA	U	se Inbound Proxy:			
Tele2 Austria	IP Add	ress / Host name:	0.0.0.0		_

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

UNIFY Harmonize OpenScape Busi					
		tommy@system <u>Loqo</u>			
Home Administrators Set	Ip Expert mode Data Backup License Management Service Center				
Setup					
▼ Wizards	Central Telephony	()			
Basic Installation					
Telephones / Subscribers	Edit Internet Telephony Access parameters of the Internet Telephony Senice Provider (ITSP) e.g., user account, password, SIP				
Central Telephony	station number	J			
User Telephony	Fritt Voicemail				
UC Suite	Access numbers for integrated voicemail. Set up of voicemail boxes				
Circuit	Edit Phone Book / Speed Dialing Set up central speed-dial destinations for the system's internal phone book				
	Edit Multisite Management Configuration of multi-ITSP connections				
	Edit Call Detail Recording Set up call detail recording connection parameters for call detail applications				
	Editt Music on Hold / Announcements Record new melodies and announcements for Music on Hold and announcement before answering				

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

Setup - Wizards	- Central Teleph	ony - Internet T	elephony				×
				Over	view		
Note: changes done Note: At least the c PABX number	e in expert mode m onfiguration of the '	ust be reviewed/re Country code' is n	peated after running the eeded for features suc	rough the wizard. h as 'Internet telephor	ıy' and 'MeetMe confere	ence'.	
				Country code:	45	(mandatory)	
				Local area code:		(optional)	
				PABX number:		(optional)	
Help	Abort	Back	OK & Next				

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

Setup - Wizards ·	etup - Wizards - Central Telephony - Internet Telephony				
	Provider configuration and activation for Internet Telephony				
Note: changes don	No call via Internet: Country specific view: Denmark Vote: changes done in expert mode must be reviewed/repeated after running through the warard				
	Activate Provider	Internet Telephony Service Provider			
Add		Other Provider			
Edit		COLT UK & Europe			
Edit		COLT VPN			
Edit		Global Connect			
Edit		Skype Connect			
Edit		TDC DK			
Edit		Uni-tel A/S			
Edit		Verizon			
Edit		Vodafone Anlagenanschluss R3			
Help	Abort Back	OK & Next Display Status			

Click Add

Setup - Wizards -	Central Telephony	- Internet Tel	ephony	8
			Inte	ernet Telephony Stations for TDC DK
	`			Name of Internet Telephony Station
Add				New Internet Telephony Station
Help	Abort	Back	OK & Next	

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: Use public number (DID) Use public number (DID)				
Use internal number (Callno) / Single entries O Use internal number (Callno) / Range entry O 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: 188776655 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

Setup - Wizards - Central Telephony - Internet	Felephony		E		
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 config	uration)		
Help Abort Back	OK & Next				

Click OK & Next

Setup - Wizards -	tup - Wizards - Central Telephony - Internet Telephony					
	Provider configuration and activation for Internet Telephony					
		No colluis Internet:				
		No cali via internet:				
Note: changes don	e in expert mode must be reviewed/repe	eated after running through the wizard.				
	Activate Provider	Internet Telephony Service Provider				
Add		Other Provider				
Edit		COLT UK & Europe				
Edit		COLT VPN				
Edit		Global Connect				
Edit		Skype Connect				
Edit		TDC DK				
Edit		Uni-tel A/S				
Edit		Verizon				
Edit		Vodafone Anlagenanschluss R3				
Hala	Abart Rect	OV 8 Hard				
Help	Abort Back	UK & Next UISplay 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							
	O atting a fact late	an at Talanka and					
	Settings for Inte	ernet Telephony					
Simultaneous Internet Calls							
Available Lines for ITSP: 193							
Please enter in field 'Upstream up to (Kbit/sec)' the Upstre Upstream up to (Kbps) = 512	eam of your Internet connection communic	ated by your Provider. You have	e typed in				
in the 'Change Feature> Internet Telephony' Assistant. will need to reduce this number of simultaneous calls.	This upstream allows you to conduct up to	4 Internet phone calls simultar	eously. If the call qua	lity deteriorates due to the network load, you			
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			I				
Internet Telephony Service Provider	Configur	ed Lines	Assigned Lines				
TDC DK	C)	4				

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.

- Wizards - Central Telephony - Interne	et Telephony	
	Special phone numbers	
e make sure that all special call numbers are	supported by the selected provider without fail	
Special phone number	Dialed digits	Dial over Provider
1	0C112	TDC DK \sim
2		TDC DK 🗸
3		TDC DK 🗸
4		TDC DK ${\scriptstyle\checkmark}$
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 ~

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

Configure DID

			Select a station	on -LAN Phone	s/WLAN Phones				
Take DID from ch	anged call number								
Callno	First Name	Last Name	Name	DID	Туре		Fax Callno	Fax DID	Class
						~			
100	Andoro	And	Andore And	44221890	System Client		0.9	44221999	Internations
100	Din	And	Dip And	44221050	System Client	~ 0.	50	44221030	Internations
101	Ran	And	Ran And	44221031	System Client				Internationa
102	Rup	And	Rup And	44221893	System Client				Internations
104	Joakim	Von And	Joakim Von And	44221894	System Client			-	Internationa
105	Andersine	And	Andersine And	44221895	SIP Client	~ -		-	Internationa
106	Bedstemor	And	Bedstemor And	-	System Client	~-		-	Internationa
107	-	-	-	-	No Port	~ -		-	Internationa
108	-	-	-	108	No Port	~ -		-	Internationa
109	-	-	-	109	No Port	~ -		-	Internationa
110	-	-	-	110	No Port	~ -		-	Internationa
111	-	-	-	111	No Port	~ -		-	Internationa
112	-	-	-	112	No Port	~ -		-	Internations
113	-	-	-	113	No Port	~ -		-	Internationa
114	-	-	-	114	No Port	~ -		-	Internationa
115	-	-	-	115	No Port	~ -		-	Internationa
116	-	-	-	116	No Port	~ -		-	Internationa
117	-	-	-	117	No Port	~ -		-	Internationa
118	-	-	-	118	No Port	~ -		-	Internationa
119	-	-	-	119	No Port	~ -		-	Internationa
ge 1 of 81			H 4	1 2 3 4 5 6 Z 8				Items per	> page <u>10</u>

<u>Multisite</u>

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 analyses 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.

Expert mode - Maintenance		3			
Traces	TCP Dump				
Trace Format Configuration	TCP Dump State				
Trace Output Interfaces					
Trace Log		Start TCP Dump			
Digital Loopback					
Customer Trace Log	TCP Dump Status; undefined / no capture (0)	Stop TCP Dump			
M5T Trace Components					
Secure Trace		Cleanup TCP Dump			
Call Monitoring					
License Component					
Trace Profiles	Currently no TCP Dump capture file available.				
Trace Components	Please create one via "Start TCP Dump".				
TCP Dump					
rpcap Daemon					
	⊠auto refresh	Seconds until next automatic refresh: 59			

Internal traces

For a better analysis of problems internal system traces will be needed. Trace profiles are already preconfigured 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

	- 9 vour enter	orise	OpenScape Business A
vice	Center - Diagnostic: State	s - Trace ConA_application	connections to external applications or wong functionality. Application
	Start	Display_problems	The displayed texts are incorrect, missing or appear after a delay. This applies to all device types with a display.
	Start	Feature_Service_activation	Issues with feature/service (de-)activation via service code or menu option.
	Start	Gateway_Stream_detailed	Detailed analysis of issues with missing payload in calls between IP and TDM, e.g. SIP trunk to UPDE phone or TDM trunk to IP phone. High influence on the system performance.
	Start	Gateway_Stream_overview	Issues with missing payload in calls between IP and TDM, e.g. SIP trunk to UPDE phone or TDM trunk to IP phone. Overview only, but low influence on the system performance.
	Start	IP_Interfaces	Issues with system IP interfaces; , i.e. WAN, LAN or Admin.
	Start	License_problem	Issues with licensing, e.g. with license configuration or evaluation.
	Start	Network_Call_Routing_LCR	Issues with alive monitoring in between nodes, LCR dialrules or unreachable destinations.
	Start	Peripheral_cards	Issues with the initialization or startup of peripheral cards.
	Start	RAS_or_Internal_access	Shall be combined with the IP_Interfaces profile for detailed analysis of issues with remote administration (RAS) or internet access.
	Start	Ressources_MOH_Conferencing	Issues with music on hold or conferencing.
	Stop	SIP_Interconnection_Subscriber_ITSP	Shall be combined with the voice_fax_connection profile for detailed analysis of issues with SIP phones, access points, ITSP interfaces or SIP interconnections, e.g. calls to or from ITSP/SIP are not signaled at phones, DTMF or fax cannot be sent or received via ITSP/SIP interconnections.
	Start	SIP_Registration	ITSP / SIP-nodes / SIP-phones / SIP-access points cannot register or lose registration.
	Start	Smart_VM	Shall be combined with the voice_fax_connection profile for detailed analysis of issues with Smart Voicemail.
	Start	UC_Smart	Shall be combined with the voice_fax_connection profile for detailed analysis of issues with UC Smart.
	Stop	Voice_Fax_connection	Issues with voice or fax connections, e.g. missing or distorted connections, wrong LED signals, interrupted calls or faxes, user cannot take or answer call, call not miging at phone, no ringback tone. This trace profile is enabled by default (factory settings). It may be combined with interface specific profiles depending on the involved device types.
	Start	VPN	Issues with VPN connections, e.g. connection disrupted, unable to import or generate SSL certificate (.crt), certificate revocation list (.crt), peer certificate ((.pkcs12) for VPN, unable to import or generate SPE certificate.
			lanuar with the ownest made of the 18/ah haved Assistant a x date not

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:lyncsbc01.blah.net:5060;... TO: <u>sip:195.249.145.X</u>

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@lyncsbc01.blah2.blah.blah.net;user=phone SIP/2.0

FROM: "Olsen, Ole"<sip:+4458752****@blah1.blah.blah.net;user=phone>;... TO: sip:+4570909090@lyncsbc01.blah2.blah.blah.net;user=phone

Service offering with	Nee /wee		
single numbers / range of numbers	ies/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.