# TechNote

# Alcatel-Lucent OmniPCX Enterprise R11 September 2, 2014











# Introduction

This document is intended to support you with the XCAPI integration version 3.4.0 (or above) into an existing environment of the Alcatel-Lucent OmniPCX Enterprise R11.In the case of pre R11 releases, please review the document **XCAPI TechNote (en) - Alcatel-Lucent OXE via 4760i - SIP.pdf** From OmniPCX release 10.1 SIP trunking requires a minimum of XCAPI version 3.3.271.

In the following sections we describe the essential steps of configuration to allow optimal cooperation of both, XCAPI and the Alcatel OmniPCX. At this point we suppose that the Alcatel OmniPCX, the hardware where XCAPI is running on and both the XCAPI and your CAPI applications are already installed properly.

For XCAPI basics, the documents **XCAPI Product Information.pdf** and **XCAPI TechNote (en)** - **Quick Start Guide** has to be reviewed. XCAPI related information and documents, e.g. regarding installation procedures, License on Demand process, facsimile transmission or VMware Virtual Machines, are available at XCAPI Website within our community download section in the XCAPI TechNotes area.





# **XCAPI Configuration**

Please start up the XCAPI configuration to create a new controller assigned to the Alcatel-Lucent OmniPCX Enterprise. If you've just installed the XCAPI and start it for the first time, the **XCAPI Controller Wizard** will pop-up automatically. This will also happen if there's no controller configured at all.

To start up the **XCAPI Controller Wizard** on your own, just click the hyperlink labeled **Click here** to add a controller on the main page of the XCAPI. On the first page of the Controller Wizard please select the **Add Voice-over-IP controller (VoIP)** option and continue by clicking on the **Next**-button.



# 2.1 Network Interface

On this page of the **XCAPI Controller Wizard** you can select the network adapter you want to bind to the XCAPI controller. Should you have any doubts here, please refer to the XCAPI Quick Start Guide for further details.

Controller Wizard				×
Add new controller Select the network inter	face			
<ul> <li>Type of controller</li> </ul>	Since each terminal an network, your system network. Please select	d gateway rec needs a netwo : a certain nic f	uires a physical connection to prk-interface-controller (nic) v rom the list below.	o the voice-over-ip with a link to this
Network interface				
VoIP environment	Device	Comment		
	172, 16.0, 153	Intranet	[00-21-5A-C4-EC-EC]	
<u>G</u>				
			< Back Next >	<u>C</u> ancel



### 2.2 Voice-over-IP Environment

The next dialog of the configuration wizard shows a list of some common Voice-over-IP environments. Selecting one of those will configure the XCAPI with a selection of near-optimal presets for the kind of environment you have, sparing you quite a lot of manual configuration.

In the case of Alcatel-Lucent OmniPCX Enterprise R11 with INTIP3/GD3 couplers please select the according entry which is available from XCAPI version 3.4.18.



# 2.3 Signaling Protocol

The next dialog shows a list of signaling protocols which are supported for the given Voiceover-IP environment.

Controller Wizard	<u>×</u>
Add new controller Select the Voice-over-IP	signaling protocol
<ul> <li>Type of controller</li> <li>Network interface</li> </ul>	Each voice-over-ip network operates with a specific voice-over-ip protocol like H.323 or SIP. The list below contains any voice-over-ip protocol that may be used with the selected environment. Please select the protocol from the list that is used in your network.
✓ VoIP environment	H 323
Signamp protocol     AlcateHucent OmmiPDX     Enterprise (DXE)     Description and channels     Confirmation	SIP
	< Back Next > Cancel



# 2.4 IP Address of the Alcatel OmniPCX

In the dialog Network Address you have to provide the IP address of the Alcatel-Lucent OmniPCX Enterprise SIP gateway device.

<ul> <li>Type of controller</li> </ul>	Please provide the hostname or the ip address of the voice-ove (obx) that should be used.	r-ip remote peer
Network interface		
✓ VoIP environment		
<ul> <li>Signalling protocol</li> </ul>	Alcatel-Lucent OmniPCX Enterprise (OXE) 172. 18.0.50	
<ul> <li>Alcatel-Lucent OmniPCX</li> <li>Enterprise (0XE)</li> </ul>		
Description and channels Confirmation		

# 2.5 Description and Channels

The next-to-final dialog of the Controller Wizard allows you to configure a meaningful description for the controller you're going to create. This dialog also allows configuring the number of channels that the new controller will be able to provide. Please enter how many simultaneous connections the XCAPI respectively the bound application should handle when communicating with the Alcatel OmniPCX Gateway.

Controller Wizard		×
Add new controller Provide a description and	select the number of channels	
<ul> <li>Type of controller</li> </ul>	Please enter a meaningful deso channels should be available fo	cription for the new controller and decide how many or applications. Please consider that the effective
<ul> <li>Network interface</li> </ul>	number of available channels d	depend on the installed license.
✓ VoIP environment		
<ul> <li>Signalling protocol</li> </ul>	Description	Alcatel-Lucent OmniPCX Enterprise R11 (OX
<ul> <li>Alcatel-Lucent OmniPCX</li> <li>Enterprise (DXE)</li> </ul>	Channels	20
Description and channels		
Confirmation		
		< Back Next > Cancel





# 2.6 Confirmation

The final controller wizard dialog performs some checks on the configuration parameters you've made. If everything is correct please use the **Finish** button in order to finally create the new controller.

The controller now will appear on the overview page of the XCAPI configuration tool.

XCAPI Configuration	
ile View Help	
8 9 9	
CAP	
Licenses	
	XCAPI 1000 Lines + Fax Connections: 1000 (H.323: 1000, SIP: 1000), G.729: 1000, T.38: 1000, and Softfax: 1000
Click here to	nanage licenses
Controlle	21
	Alcatel-Lucent OmniPCX Enterprise R11 (0XE) (172.16.0.153) 20 channels using ITU G.711 A-Law [64 kbit] (8000 Hz), ITU G.711 µ-Law [64 kbit] (8000 Hz), ETSI GSM 6.10, ITU G.729, T.38 at domain "172.18.0.50" = Disable \$\$ Remove ▲ Move up ▼ Move down
Click here to	add a controller
Trace	
	Disabled Currently not collecting diagnostic information.
Click here to	start the trace



You always need to restart the bound CAPI application, in meaning of its services, for the changes to take effect.





# **OmniPCX Enterprise Configuration**

This examples configurations will be reviewed with the Alcatel OmniVista 4760i frontend.

Configuration: alcatel-oxe		F
alcatal-ove		
- 🖗 Shelf	Node Number (reserved)	101
👇 🏈 Media Gateway	Version name	k1.400
PWT/DECT System		00088755
- Gystern	Patch No.	25
🖕 🏟 Classes of Service	Notes	
► 🖉 Attendant	Object Identity	
- Gusers	Node Number (reserved)	101
🗠 🍓 Set Profile	Ethernet Notes	
🗠 🏈 Groups	Netmask	255.255.254.0
Speed Dialing	Local CPU	
🗢 🏈 Entities	Name	alcatei-oxe
🗠 🏈 Trunk Groups	IP Address	172.18.0.50
External Services	Twin CPU	
- 🖉 X25	Name	
🗠 🏈 DATA	IP Address	
Applications	Main CPU	
- ATM	Name	alcateLoxe
🖕 🏈 Events Routing Discriminator	IP Address	172 18 0 50
Security and Access Control	Standby CPU	112.10.000
🖕 🍝 SIP	Name	alcatel ava
🗢 🟟 DHCP Configuration		470.48.0.50
Alcatel-Lucent 8&9 Series	CL Nates ( )	172.10.0.30
- Christen		
🖕 🏟 Passive Com. Server	SLINOTES	
🗠 🍘 SNMP Configuration	Link Name	
	Protocol	
	Netmask	
	Port	
	IP/X25 Tunnel Notes	
	Netmask	255.255.0.0
	Local Node	
	Name	×001001 tun
	IP Address	172.30.1.1
	May Keys AOMV NOE	72
		14
	All Action	
		💉 🧀 🗙 🔐 Annhy Grid 💌 💙
		Appryona V





#### 3.1 SIP Gateway

The Alcatel-Lucent OmniPCX Enterprise SIP gateway, here related to IP address 172.18.0.50 and the host name node000000, enables the speech and data services to your VoIP and PSTN network. The SIP Subnetwork and SIP Trunk Group relations must be set up on requirements.

🖟 Configuration: alcatel-охе		
PCX	Coarob CID Catoway	- Di Pia In clostel que -
P m alcatel-oxe ► Shelf	Search SiP Galeway	
🗠 🙀 Media Gateway	SIP	
<ul> <li>✓ PWT/DECT System</li> <li>✓ System</li> <li>✓ Translator</li> </ul>	SIP Gateway Where Instance (reserve	i) V Equal V -
Classes of Service	A =	
🗠 🏟 Attendant		alcatel-oxe:1
🗣 🏈 Users		
Set Brofile	Instance (reserved)	1
- Groups	SIP Subnetwork	0
🗠 🏟 Speed Dialing	SIP Trunk Group	61
🗠 🏈 Phone Book	IP Address	172.18.0.50
- Contractions	Machine name - Host	node000000
🗠 🏈 External Services	SIP Proxy Port Number	5060
🗢 🐲 Inter-Node Links	SIP Subscribe Min Duration	300
~ % X25	SIP Subscribe May Duration	86400
Applications	Sin Subscript Max Duration	1990
🗠 🍓 Specific Telephone Services	Session Timer	1800
er 🏈 ATM	Min Session Timer	90
Events Routing Discriminator	Session Timer Method	RE_INVITE
Security and Access Control	DNS local domain name	
🗠 🏟 SIP	DNS type	DNS A
- 🗭 DHCP Configuration	SIP DNS1 IP Address	172.16.0.30
Alcatel-Lucent 869 Series	SIP DNS2 IP Address	172.18.0.2
- Generation	SDP in 18x	
🗠 🐲 Passive Com. Server	Cac SIP-SIP	
🗢 🏈 SNMP Configuration	INFO method for remote extension	
	Dynamic Payload type for DTMF	101
	•	

### 3.2 SIP Proxy

The Alcatel-Lucent OmniPCX Enterprise SIP Proxy is used to locate, route and authenticate SIP users. In accordance to the XCAPI controller defaults the option Minimal authentication method must be set to SIP None.

onfiguration: alcatel-ox	e			
Search	SIP Proxy	🔻 <sup>0</sup> ij 😸	In alcatel-oxe 💌	٩, ١
SIP				
SIP Proxy	Where Instance (reserved)	- Equal	<b>~</b>	•
₩		alcatel-oxe:1		
Instance (record rock)		4		
SIP initial time-out		500		
SIP timer T2		4000		
Dns Timer overflow		5000		
Timer TLS		30		
Recursive search				
Minimal authentication	method	SIP None		
Authentication realm				
Only authenticated inc	oming calls			
Framework Period		3		
Framework Nb Messa	ge By Period	25		
Framework Quarantine	e Period	1800		
TCP when long messa	ages			
Retransmission numb	er for INVITE	2		





# 3.3 SIP External Gateways

The XCAPI has to be assigned as SIP External Gateway which is here done with the default SIP Port Number 5060 and UDP as Transport type. Set the IP address of XCAPIs listening Ethernet interface as SIP Remote domain. The Trunk Group is assigned to number 61 as described in the chapter Trunk Groups starting on page 13.

Please ensure that those trunk group settings are equivalent to settings of the XCAPI SIP controller. The most important settings are marked on the following screenshot.







#### 3.4 SIP Parameters

The SIP parameters are used as shown below.

Via Header\_Inbound Calls Routing is enabled for determining the origin of incoming calls when other headers do not match with the remote domain of an external SIP gateway.

Reject unidentified proxy calls should be enabled for the VoIP environment. In the case of 403 Forbidden replies from the call server, this parameter should be disabled to exclude any interrelations of this behavior.

🖟 Configuration: alcatel-oxe										_ 🗆 🗵
PCX	s	earch SIP Pa	arameters			- Bi 📴		In alcatel-oxe 🔻		۵. ۵
Shelf     Gateway     Gateway	System Where	istance (reser	ved)	E	qual					••
<ul> <li>System</li> <li>Translator</li> </ul>	Other System Param. Where	istance (reser	ved)	E	qual	-				••
<ul> <li>Classes of Service</li> <li>Attendant</li> <li>Users</li> </ul>	SIP Parameters Where	/ia Header_Int	bound Call		-					+ .
► State	A.7.					aleatol ovo	.4.4			
Groups	System Option	Packetization	. Via Header.		. Transfer : F	Refer using single step	SIP Bearer Capability	. Enhanced codec negotiation	Private SIP transit mode	Blind transfer.
🗠 🏟 Speed Dialing	Packetization times per codec	Г								
Phone Book	Via Header Inbound Calls Routing		V							
- Groups	TI S signaling possible									
🗢 🐲 External Services	Hardwareless for OTBE									
Inter-Node Links	Local resources		-							
🗠 🏟 DATA	Loose Route with RegID		-							
<ul> <li>Applications</li> <li>Specific Telephone Services</li> </ul>	Reject unidentified proxy calls									
► 🖗 ATM	SRTP offer answer mode									
- Sevents Routing Discriminator	Hotel doorcam application									
<ul> <li>Security and Access Control</li> <li>Security and Access Control</li> </ul>	Transfer : Refer using single step				R					
🗠 🏟 SIP	RE-INVITE delay for hold						Ú.			
Generation     Generation     Generation     Generation     Generation     Generation	SIP Bearer Capability						3.1 KHz audio			
► SIP Extension	Number of SIP trunks (UCaaS)									
- G Encryption	Enhanced codec negotiation							Network Type		
SNMP Configuration	G722 for SIP trunking									
•	sipmotor restart delay									
	Private SIP transit mode								Mixed mode	
	SIP registered pseudo reservation									
	Blind transfer with direct RTP									
	All 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ď 4	<del>.</del> ×	s.					Apply Grid 🔻 🔲	<b>X</b> 19
A.T.										

SIP Bearer Capability is set to Speech by default. In the case of facsimile issues with remote devices whose only allow the 3.1 kHz bearer capability, this parameter must be set to 3.1 kHz audio (via MGR SYSTEM -> Other System Param. -> SIP Parameter -> SIP Bearer Capability).

```
-Consult/Modify: SIP Parameters
Node Number (reserved) : 101
Instance (reserved) : 1
Instance (reserved) : 1
System_Option + SIP Bearer Capability
SIP Bearer Capability + 3.1 KHz audio
```





### 3.5 IP Parameters

The IP Parameters for this environment are used as shown on the next screenshot. Those codec and facsimile settings depends on the telephony environment and involved gateways and must correspond to the according XCAPI configurations.

+	COMPVISU
Ī	Inter-node protocol H323 yes
I.	RTP Direct yes
I.	RTP Direct for H323 terminals no
I.	Fast Start no
I.	VAD (Voice Activity Detection):
I.	- G723/G729 no
I.	- G711 no
I.	ECE (Echo Canceller) yes
I.	- INTIP/GA/GD 128 ms
I.	Volume for IP Phone 0dB
I.	Volume for other device 0dB
I.	Law (Except Media Gateway) A law
I.	Global compression type G723
I.	Multi-algorithm (for H323/SIP) yes
L	Compression for INTIP/GD without
L	Compression for IPP without
L	Transit on IP Boardsyes
L	ticket Stat IP yes
I.	IP version IPv4
L	Transit compatibility yes
L	Voip Framing G711 20 ms
L	Voip Framing G723 30 ms
L	Voip Framing G729 20 ms
I.	No RBT For Direct RTP H323 no
L	T38 FAX no
L	Enhanced Codec Nego NETWORK
I	G722 for SIP Trunking yes
+*	



### 3.6 System Parameter

Please note that the  ${\tt Fax}$  –  ${\tt Voice}$   ${\tt Quality}$  parameter has to be enabled for ensuring compatibility with some fax devices.

Lonfiguration: alcatel-oxe		
PCX	Search System	💌 🖧 🛅 In alcatel-oxe 💌 🔍 🔍
Gradin Stelf     Gradin Stelf     Gradin Gateway     Gradin Gateway     Gradin Gateway     Gradin Gateway     Gradin Gateway     Gradin Gateway	System Where Instance (reserved)	Equal
Gristenn     Gristennn     Gristenn	, ▲	cafel-oxe
⊷ 🏟 Attendant ⊷ 🏈 Users	Instance (reserved)	1
<ul> <li>Users by profile</li> <li>Set Profile</li> <li>Groups</li> </ul>	Transfer Right	1
← 🏈 Speed Dialing ← 🏈 Phone Book	Multi-line Call in PCX	1 
► 🏟 Entities ► 🍻 Trunk Groups	Double-click Use on 4048 (FBC) Mode of Overfl.Extern.Assoc.	<u>v</u>
<ul> <li>Kernal Services</li> </ul>	Overlap Seizure Rout.On Immediate Forward.	<u>र</u>
⊷ 🍻 DATA ⊷ 🙀 Applications	Display called No.on calling set	
<ul> <li>Specific Telephone Services</li> <li>ATM</li> <li>Events Pouting Discriminator</li> </ul>	Display Entity On No Answer DID	
<ul> <li>Security and Access Control</li> <li>IP</li> </ul>	Ext.Phone Book Appli. Call Completely Busy User	
► 🏟 SIP ► 🏟 DHCP Configuration	Infocenter Protocol 47xx directory - 4400 Synchro.	N0
Aicatei-Lucent 8&9 Series     SIP Extension     Generyption	Type of Keyboard	European v
Passive Com. Server	AII 3 3 49 49 53 65 49 ¥	Apply Grid 🔻 🚺 🕺 1

# 3.7 Trusted IP Addresses

The trusted address (in this example IP address 172.18.0.153) cannot be put under quarantine for any reason, even if the amount of incoming messages of this origin is higher than the threshold values configured out of the SIP-Proxy configuration dialog.

Trusted address	Fqual	172.16.0.153	+ .
	alcatel-oxe:1		
	172.16.0.153		
	Trusted address	Equal	Equal     Trusted address     ▼     Equal     Tr2.16.0.153      alcateLoxe:1      172.16.0.153



Please ensure that the CLI command dhs3\_init -R SIPMOTOR will be invoked afterwards for allowing the new Trusted IP Address.





#### 3.8 Trunk Groups

This environment use Trunk Group ID 61 as shown on the next screenshot. Up to the requirements and availability, set the T2 Specification to MINI SIP or SIP. Please ensure that those trunk group settings are properly assigned to your VoIP environment. Ensure the correct Associated Ext. SIP gateway relation.

🖧 Configuration: alcatel-oxe			
PCX			
• 🔊 alcatel-ove	Search Trunk Groups	n alcatel-oxe	S 50
🔶 🍻 Shelf			
🗠 🏟 Media Gateway	Trunk Groups Where Trunk Group ID	Equal Equal	1 💶 🔤
🔶 🖗 PWT/DECT System			· <b></b>
System			
- Classes of Service		alcatel.oxe	
🖙 🍓 Attendant			
🗠 🙀 Users	Trunk Group ID	61	
← 🕼 Users by profile	Trunk Group Type	72	
Groups	Trunk Group Name	XCAPI	
🗣 🍓 Speed Dialing	UTE-8 Trunk Group Name		
🗠 🏟 Phone Book	Node number	1	
🗝 🏈 Entities	Turner Turner Comm		
🗢 🍘 Trunk Groups	Transcom Trunk Group		
- 🍹 Inter-Node Links	Auto.reserv.by Attendant		
🗢 🏟 X25	Overflow trunk group No.	-1	
🗠 🏟 DATA	Tone on seizure		
🗢 🍬 Applications	Private Trunk Group		
	Q931 Signal variant	ABC-F	
🖙 🕉 Events Routing Discriminator	SS7 Signal variant	No variant	
🗢 箳 Security and Access Control	Number Compatible With	-1	
	Number Of Digits To Send	30	
- Configuration	Obernel colorier tree	Quantified	
🖙 🍓 Alcatel-Lucent 8&9 Series		Guantiled	_
🗠 🙀 SIP Extension	Remote Network	10	
Encryption	Shared Trunk Group		
- A SNMP Configuration	Auto.DTMF dialing on outgoing call	YES	
	T2 Specification	MINI SIP	
	Homogenous network for direct RTP	NO	
	Public Network COS	31	
	DID transcoding		
	Special Services	Nothing	
	Can support III IS in SETLIP		
	Associated Ext CID reterior		
	Associated Ext SIP gateway	2	
	Implicit Priority		
	Activation mode	0	
	Priority Level	0	
	Preempter	NO	
	Incoming calls Restriction COS	10	
	Outgoing calls Restriction COS		
	Callee number mpt1 343	NO	
	Overlan dialing	NO	
	Call diversion in ISDN	VES	
	All		
	6 5 6 B 7 4	🗶 🚽 🛛 Apply Grid 👻 📑 🗶	1

Please note that the Q931 Signal Variant must be set to ABC-F for enabling services such as Message Waiting Indication, Call Transfer and Redirecting Number.





# 3.9 Trunk Group

**Please ensure that the parameters** Quality profile for Voice over IP and IP Compression Type are set to Always VoIP and G.711.

🔏 Configuration: alcatel-oxe			_ 🗆 ×
PCX			
- 😰 alcatel-oxe	Search Trunk Group	n alcatel-oxe	S 50
🔶 🏟 Shelf	Trunk Croumo Marco T. L.O. ID		
P 🥵 Media Gateway	Trunk Groups Where Trunk Group ID		
- G System			
🗠 🖗 Translator	Trunk Group Where Instance (reserved)	Equal	
Classes of Service			
- Attendant		alcatel-oxe:61	
🗠 🙆 Users by profile			
🔶 🌽 Set Profile	Instance (reserved)	1	
- Groups	Trunk Group Type	72	
🗠 🏟 Phone Book	T2 Specification	MINI SIP	
• 🏈 Entities	Public Network Ref.		
<ul> <li>We fruit of oups</li> <li>External Services</li> </ul>	End-to-end dialing	YES	
🕶 🏟 Inter-Node Links	DTMF end-to-end signal.	YES	
- 🖉 X25	Trunk group used in DISA	NO	
Applications	DISA Secret Code		
🖕 藵 Specific Telephone Services	VG for non-existent No.	YES	
🖕 🏈 ATM	Routing To Manager	NO	
We Events Routing Discriminator	Trunk COS	31	
- 🍹 IP	Sending of Progress message	YES	
🗠 🏈 SIP	No. of digits unused (ISDN)	0	
OHCP Configuration	B Channel Choice	YES	
- 🍘 SIP Extension	Channels: Attendant Control (Rsvd)	0	
🗠 🐲 Encryption	Redirection For ACD (Dissuasion)	NO	
Passive Com. Server	DTO joining	NO	
- Cram conigaration	Consultation Call On B Channel	NO	
	Automated Attendant	NO	
	Calling party Rights COS	0	
	Entity Number	0	
	TS Overflow	VEQ	
	Number To Re Added	120	
	Running to be Added	NO	
	VDN Cost Limit for Income Calle	NO	
	VPN Cost Limit for incom.cails	0	
	Immediate Trk Listening if VPNCall	YES	
	VPN IS %	50	
	CSTA-Monitored	NO	
	Max.% of trunks out CCD	U	
	Charge Calling And ADN Creation	NO	
	Ratio analog.to ISDN cost		
	Logical Channel	115 & 1731	
	TS Distribution on Accesses	YES	
	Use Split Access	NO	
	Heterogeneous Remote Network	NO	
	COS Restrictions - Barring mode	Not Restricted / Not barred	
	ARS Class of service	31	
	Quality profile for voice over IP	Always VoIP	
	IP Compression Type	G 711	
	Use of volume in system	YES	
	External Access Server	NO	
	CSTA Tracking MCDU Trk		
	IE External Forward	None	
	Announcement for dial tone	NO	
	Announcement for Ring tone	NO	
	Reroute Anonymous Calls to Entity	NO	
	All Action		
	8 9 8 8 8 8	Apply Grid 🔻 🚺	≥1
A 7			



# 3.10 Trunk Group NPD Selector

The numbering behavior depends on local circumstances. Please ensure an appropriate configuration, see also chapter Numbering Plan Descriptor starting on page 17.







#### 3.11 Translator

The routing of this configuration example is handled over a Routing No. of the Prefix Plan with its relations to the Network Number and Node Number/ABC-F Trunk Group.

Configuration: alcatel-oxe عراج		
PCX	Search Prefix Plan	v 🖦 📴 In alcatel-oxe v
All	Translator	
🗠 🍝 Media Gateway	Parfu Dian	
🗢 🏟 PWT/DECT System	Prenx Plan Where Number	Equal 4
🗠 🏈 System		
<ul> <li>Translator</li> <li>Observe of Consistent</li> </ul>		
Glasses of Service     Attendant		alcatel-oxe:1
► 🕯 Users		
🕶 🍓 Users by profile	Number	4
🗠 🍘 Set Profile	Prefix Meaning	Routing No.
🗠 🐲 Groups	Network Number	10
🟲 🏈 Speed Dialing	Node Number/ABC-F Trunk Group	61
Entities	Number of Digits	4
- G Trunk Groups	Number With Subaddrass (ISDN)	NO
🖙 藵 External Services		110
🗢 🏟 Inter-Node Links	Default X25 ID.pret.	NO
► 🗭 X25		
- DATA		
- Applications		
ATM		
🖙 藵 Events Routing Discriminator		
👇 🐲 Security and Access Control		
🔶 🏟 IP		
DHCP Configuration		
SIP Extension		
- 🍝 Encryption	AH L	
🖕 🏟 Passive Com. Server		
🖕 🍘 SNMP Configuration	6 6 6 C S	🜪 🗶 🚽 🛛 Apply Grid 👻 🔼 1

### 3.12 Network Routing Table

Network Routing Tables, here entry 10, enable the modification of the origin and destination numbers in order to adapt to remote network constraints. If required please review the chapter Redirecting Number on page 25.

Configuration: alcatel-oxe	
PCX	Search Network Routing Table 🔍 🗠 😂 In alcatel-oxe 💌 🔍
- 🍻 Shelf • 🏟 Media Gateway	Translator
∽ 🕼 PWT/DECT System ∽ 🏈 System ∽ 🏟 Translator	Network Routing Table Where Network Number V Equal V 10 + -
🗠 👰 Classes of Service	
► 🐼 Attendant ► 😭 Lisers	alcatel-oxe:1
🗠 🍯 Users by profile	Network Number 10
<ul> <li>Set Profile</li> <li>Groups</li> </ul>	Rank of First Digit to be Sent 1
🖕 🏈 Speed Dialing	Incoming identification prefix
🗠 🏈 Phone Book	Protocol Type QSIG-OF
- Groups	Numbering Plan Descriptor ID 11
🖕 🍘 External Services	ARS Route list 0
⊷ 🕼 Inter-Node Links ⊷ 🏈 X25	Schedule number -1
🗠 🏟 DATA	ATM Address ID -1
- 🥵 Applications - 🎑 Specific Telephone Services	Network call prefix
🗠 🏟 ATM	City/Town Name
Security and Access Control	Send City/Town Name
- 🌾 IP	Associated Ext SIP gateway 2
► 🕼 SIP ► 🧟 DHCP Configuration	CMN available on QSIG-GF
- Alcatel-Lucent 8&9 Series	Enable UTF8 name sending
- 🚱 SIP Extension	
🖙 🖝 Encryption 🖙 🏟 Passive Com, Server	
- 🍝 SNMP Configuration	😪 🚭 🖶 🕤 💣 🤿 🗶 🐒 🖌 Apply Grid 🕶 🔽 1



# 3.13 External Numbering Plan

For the External Numbering Plan you may have to review the according Discriminators, Numbering Plan Descriptions (NPD's) and/or other Translator related settings.

alcatel-oxe	Searc	ch Discrimina	or Rule		In alcatel-ox	e 💌 🤇
🏈 Shelf	Translator					
🏈 Media Gateway	Extornal Numb	oring Dlan				
System PWT/DECT System	<b>A</b> . <del></del>					
💓 System			alca	atel-oxe:1:1:0		
Translator	Call Number	Area Number	ARS Route List Number	Schedule Number	Number of Digits	
Classes of Service	0	1	0	-1	255	
Allenre		-	•		200	
Licerc hy nrofile	1	1	U	-1	255	
Set Profile	2	1	0	-1	255	
Groups	3	1	0	-1	255	
🏈 Speed Dialing	4	1	0	-1	255	
🟈 Phone Book			0		200	
🖗 Entities	5	1	U	-1	200	
🗭 Trunk Groups	6	1	0	-1	255	
External Services	7	1	0	-1	255	
V26	8	1	n	-1	255	
			0		200	
Applications	a	1	U	-1	200	
Specific Telephone Services						
🏟 ATM						
🕼 Events Routing Discriminator						
🔅 Security and Access Control						
🌾 IP						
🐓 SIP						
DHCP Configuration						
Alcatel-Lucent 8&9 Series						
SIP EXtension						
Encryption Paceive Com Server	AII					
SNMP Configuration	All					
- or an o or mgal about	A A	. D	R 🕷 🌰	¥ all	Annhy Grid	- · · · · · · · · · · · · · · · · · · ·

### 3.14 Numbering Plan Descriptor

The numbering behavior depends on local circumstances. Please ensure its appropriate configurations.

onfiguration: alcatel-oxe		
x	Search Numbering Plan Description (NPD)	v 🕒 🖏 In alcatel-oxe v
🖕 🏟 Shelf 🗠 🎑 Media Gateway	Translator	
PWT/DECT System	External Numbering Plan	
<ul> <li>Gystern</li> <li>Translator</li> <li>Classes of Service</li> </ul>	Numbering Plan Descri Where Description identifier	▼ Equal ▼ 2 + -
🗠 🏟 Attendant		
🕶 🎑 Users by profile	alca	atel-oxe:1:1
► 🏟 Set Profile ► 🏟 Groups	Description identifier	2
🗝 🏟 Speed Dialing	Name	U_U_E_E_NDDI
Phone Book	Calling Numbering plan ident.	Unknown
- 🏟 Trunk Groups	Called numbering plan ident.	Unknown
Éxternal Services	Authorize personal calling num use	
► 🗭 Inter-Node Links ► 🚰 X25	Install. number source	Entity source
🗠 🏟 DATA	Default number source	Entity source
Applications	Called DID identifier	-1
- 🅼 Specific Telephone Services	Calling/Connected DID identifier	-1
🗠 🏟 Events Routing Discriminator		
Security and Access Control		
🗠 🏟 SIP		
DHCP Configuration		
Alcatel-Lucent 889 Series		
Encryption	All	
- 🏟 Passive Com. Server		Y all Annhy Grid y 1
🗢 🐲 SINMP Configuration		Approversity of the View of th





### 3.15 Classes of Service

The administration of the dial plan and managing the incoming and outgoing calling numbers is a quite complex task and needs to be configured individually for your VoIP environment. Here we recommend reviewing the Alcatel system documentation. According to this example we only review some of the topics.

First we review the most important settings of the properly configured Network Routing Table and Trunk Groups.

For the Network Routing Table, we already described on page 16 to use the Numbering Plan Description ID number 11.

The Numbering Plan Description ID (NPD) describes the incoming calls from the external network and describes how to create the dial number for outgoing calls. The ARS Route list is used with its default value 0.

Public Network COS, Trunk COS and ARS Class of service is set to # 31. The Incoming and Outgoing calls Restrictions COS is set to # 10 and the Calling party Rights COS and Entity Number is used with # 0.

# 3.16 Connection COS

The Classes of Service consist of Public Network COS, Connection COS, Transfer COS, Private Calls COS and Phone Features COS. This example doesn't use any restrictions, nevertheless Connection COS number 5 might be set for allowing trunk to trunk connections.

alastel ava	Search	Connection COS		🔻 🔁 📚	In alcatel-oxe	- 🔍
- 🏈 Shelf - 🏈 Media Gateway	Classes of Service	2				
- 🍻 PWT/DECT System - 🎓 System - 🎓 Translator	Connection COS	Where Con	nnection COS	<b>E</b> qual		+
- 🏈 Classes of Service - 🏈 Attendant			alc	tol ovo:1		
- 🍘 Users - 🍘 Users by profile - 🗇 Set Brofile	Connection COS	Number of COS	Connection Rights	Connection Rights COS 1	Connection Rights COS 2	Connection Rights COS 3
- Groups	0	32	1	1	1	1
- 🙊 Speed Dialing	1	32	1	1	1	1
<ul> <li>Phone Book</li> <li>Entities</li> </ul>	2	32	1	1	1	1
- 🍊 Trunk Groups	3	32	1	1	1	1
- 箳 External Services	4	32	1	1	1	1
- 🍘 Inter-Node Links - 🍓 X25	5	32	1	1	1	1
- 🍝 DATA	6	32	1	1	1	1
- 🏈 Applications	7	32	1	1	1	1
- 🍊 Specific Telephone Services - 🐔 ATM	8	32	1	1	1	1
- 🍝 Events Routing Discriminator	9	32	1	1	1	1
<ul> <li>Security and Access Control</li> </ul>	10	32	1	1	1	1
- 🏽 SIP	11	32	1	1	1	1
- 🏟 DHCP Configuration	12	32	1	1	1	1
<ul> <li>Alcatel-Lucent 8&amp;9 Series</li> <li>SIP Extension</li> </ul>	13	32	1	1	1	1
- GI Excension	14	32	1	1	1	1
- 🏟 Passive Com. Server		न	1.			





Page 1<u>9</u>

# 3.17 Public Network COS

The Public Network COS defines the accessing rights for external calls, which is configured in Entity objects.

Each Public Network COS is divided into the parts Public Access COS, Private Access COS, Business Access COS, Network Access COS and Trunk Group Access COS.

Here you need to configure each COS part with its necessary rights according to you dial plan.

For this TechNote the Public Network COS # 31 is used with the following settings.

Configuration: alcatel-oxe						
PCX	Sear	ch Public Acce	ess COS	▼ <sup>0</sup> 0 20	In alcatel-oxe	- & &
- 🍘 Shelf	Classes of Serv	ice				
Media Gateway	Access COS	Where	Public Network COS	▼ Equal	<b>~</b>	+ -
Gystern     G	Public Access (	COS Where	Area Identifier	<b>F</b> qual	▼ 31	+ -
🗠 🖗 Attendant	↓ ▲.▼					
🗠 🍘 Users				alcatel-oxe:1		
<ul> <li>General Set Profile</li> <li>Groups</li> </ul>	Access COS	Area Identifier	Public Access Rights Night	Public Access Rights Day	Public Access Rights Mode 1	Public Access Rights Mode 2
🗢 🏈 Speed Dialing	31	5	1	1	1	1
🗢 👙 Phone Book	31	6	1	1	1	1
<ul> <li>M Entities</li> <li>Trunk Groups</li> </ul>	31	7	1	1	1	1
- Catternal Services	31	8	1	1	1	1
🗢 箳 Inter-Node Links	31	9	1	1	1	1
~ 🖉 X25	31	10	1	1	1	1
Applications	21	11	1	1	1	1
🖕 🏟 Specific Telephone Services	04	()	4	1	4	4
e 🏈 ATM	37	12	1	1	1	4
We Events Routing Discriminator	31	13	1	1	1	1
- 🖉 IP	31	14	1	1	1	1
🖕 🏟 SIP	31	15	1	1	1	1
<ul> <li>BHCP Configuration</li> </ul>	31	16	1	1	1	1
- Alcalei-Lucent 849 Series	31	17	1	1	1	1
<ul> <li>Gin Encontrol</li> <li>Gin Enc</li></ul>	All All	A 4	R 🖻 📣	×. all.	Apply Grid 💌	2048





#### 3.18 Fax Parameters

The Fax Parameters are used with their defaults.



A

Please note, after fax parameter modifications you have to reset GD, GA and INT-IPA boards manually.





# **Configuration Notes**

In these chapters you'll find some configuration hints about supplementary services such as message waiting indication or call transfer and facsimile transmissions. The supplementary services are enabled by default to the XCAPI controller configuration. Nevertheless they has to be reviewed such as the according gateway parameters.

# 4.1 Softfax

With the Softfax mode, the XCAPI simulates an analogue Fax device by transmitting modulated Fax-signals modem-like through the established G.711 audio channels. Facsimile via G.711 is supported from OmniPCX release 11 using INTIP3/MG3 couplers only and requires the following configuration adjustments.

Review the XCAPI controller configuration tab labeled **Features**. There, ensure that the parameter **Always use software fax over audio channels** is enabled.

🗲 XCAPI Configuration	
File View Help	
Configuration  Configuration  Configuration  Configuration  Configuration  Configuration  Controler  Controler	Controller Features Simulate ECT In cases where the environment does not support call-transfer operations it is possible to simulate call-transfer by call-tromboning (line-interconnect). Simulate ECT by call-tromboning (line-interconnect) Notify destination Tornel signaling information to destination Try path replacement Hold/Retrieve relay Software Codecs These features affect the behaviour of the system in some situations and will be applied to each connection of this controller. Always use software modem over audio channels Always use software modem over audio channels



For the Alcatel-Lucent OmniPCX Enterprise please ensure that G711 Only is selected as FAX Procedure Type.

Configuration: alcatel-oxe				
РСХ				
👇 论 alcatel-oxe	Search SIP Ext Gateway			
🗠 🐲 Shelf	SID			
Media Gateway				
- System	SIP Ext Gateway Mithere SID External Cateway ID	- Equal		
- Gystern	Sill Excertial Galeway iD			
🗠 🍓 Classes of Service	↓ ▲ ▼			
🗢 🚎 Attendant	a	Icatel-oxe:1		
🗠 🏈 Users				
- G Set Profile	SIP External Gateway ID	2		
- Groups	Contact with IP address			
🗢 🏟 Speed Dialing	Dynamic Payload type for DTMF	97		
🗠 🏟 Phone Book	100 REL for Outbound Calls	Not Supported		
- Gentities	100 REL for Incoming Calls	Not Requested		
- G Evternal Services	Cotowou tuno	Ptondord two		
- 🖌 Inter-Node Links		otanuaru iype		
🗢 🏟 X25	Re-Irans No. for Register/or fights	2		
🗠 🏈 DATA	P-Asserted-ID in Calling Number			
- Applications	Trusted P-Asserted-ID header			
- ATM	Trusted From header			
🗣 藵 Events Routing Discriminator	Diversion Info to provide via	Diversion		
🗢 🙀 Security and Access Control	Support Re-invite without SDP			
∼ 🖉 IP ∼ 🍊 cip	Proxy identification on IP address			
- DHCP Configuration	Outhound calls only			
- 🏈 Alcatel-Lucent 8&9 Series	COB relevan Ext. Coll Evid	Default		
🗢 🐲 SIP Extension				
- 🖗 Encryption	SDP Transparency Override			
Passive Com. Server	RFC 5009 supported / Outbound call	Not Supported		
- Shawi Conligaration	Nonce caching activation	NO		
	FAX Procedure Type	G711 only		
	Type of codec negotiation	Default		
	All			
	😯 😌 🖨 🔁 🖸 🗗 🗣 🗙	Apply Grid 🔻 🛄 🕺 1		
- <u>-</u>	1			



Please note, facsimile via G.711 (Softfax) is supported from OmniPCX release 11 using INTIP3/MG3 couplers.





# 4.2 T.38 Fax

Pre Alcatel-Lucent OmniPCX Enterprise R11 releases only allows facsimile via T.38. Nevertheless for release 11 and INTIP3/MG3 couplers, facsimile via G.711 is recommended as XCAPI allows the advantage of using ECM (Error Correction Mode).

When using **T.38** it is mandatory that **T.38** - **UDP** Codec is enabled within the XCAPI controller configuration.

🗲 XCAPI Configuration			
File View Help			
0			
Configuration	Codecs	blishment. The orde	er of the
P - 20 Licenses (XCAPI 1000 Lines + Fax)     P - 0 CAPI 2.0 Options     H Trace     Trace     Fax	codecs determines their priority.		
Controler	Codec	Samplerate	Packettime
Audoports     Magnetic Autor Alexandree	Audio Codecs           ✓         ♦:ITU G.711 A-Law (64 kbit)           ✓         ♦:ITU G.711 µ-Law (64 kbit)           ✓         ♦:PCM 16-bit (L16)           ④:ETSI GSM 6.10         ●:ITU G.729           Fax Codecs         ✓           ✓         IT.38-UDP           Auxiliary Codecs         ✓	8000 Hz 8000 Hz 8000 Hz 8000 Hz 8000 Hz	20 ms 20 ms 20 ms 20 ms 20 ms
	Telephone-Event (RFC 2833)      Add Codec      Remove Codec		÷ 4

The option **Always use software fax over audio channels** has to be disabled within the XCAPI controller's **Features** tab configuration.



Ensure that T.38 only is selected in the according External SIP Gateway.

CX alcatel-oxe	Search SIP Ext Gateway		
		In alcatel-oxe 💌 🔍 🐼	
<ul> <li>Sherr</li> <li>Media Gateway</li> <li>MUCDECT Pustom</li> </ul>	SIP		
⊷ 🏟 System ⊷ 🌾 Translator	SIP Ext Gateway Where SIP External Gateway	D V Equal V 2 + -	
<ul> <li>Classes of Service</li> <li>Attendant</li> </ul>	▲ <del>▼</del>		
- 🖉 Users	alcatel-oxe:1		
🗠 🏟 Users by profile	SIP External Gateway ID	2	
🗠 🏈 Set Profile	Gateway type	Standard type	
Groups	Re-Trans No. for REGISTER/OPTIONS	2	
- Greed Draining	P-Asserted-ID in Calling Number		
🗢 🏟 Entities	Tructed P.Accerted.ID header	<b>F</b>	
<ul> <li>Trunk Groups</li> <li>External Construct</li> </ul>	Tructed From booder		
<ul> <li>External Services</li> <li>Inter-Node Links</li> </ul>	Diversion lefe to provide via	Diversion	
🗢 🍓 X25		Diversion	
🗢 🐲 DATA	Support Re-Invite without SDP		
<ul> <li>Applications</li> <li>Applications</li> </ul>	Proxy identification on IP address		
Specific Telephone Services     ATM	Outbound calls only		
🖕 🅉 Events Routing Discriminator	SDP relay on Ext. Call Fwd	Default	
🗢 🟟 Security and Access Control	SDP Transparency Override		
	RFC 5009 supported / Outbound call	Not Supported	
SIP     Ganfiguration	Nonce caching activation	NO	
- Alcatel-Lucent 8&9 Series	FAX Procedure Type	T38 only	
🗢 🏟 SIP Extension	Time of codes acception	Default	
🗠 🏈 Encryption	Type of codec negotiation	Delault	
Passive Com. Server	All		
- 🖝 orami Conniguration		🗙 📲 Apply Grid 👻 🕺 1	

# 4.3 Call Transfer

The Call Transfer services are supported by the XCAPI and the Alcatel-Lucent OmniPCX Enterprise SIP gateway. Ensure that the Simulate ECT by call tromboning (line interconnect) is disabled.







#### 4.4 Redirecting Number

Redirecting Numbers provide delivering beside the origin calling number also the calling number of the device that initiates the call redirection. You may have to use the QSIG-GF protocol type for the SIP trunk related Network Routing Table, as shown in the same named chapter on page 16.

### 4.5 Hold

If the supplementary service Hold is enabled, the system temporarily removes a participant from a connection and executes a remote hold. The participants placed on hold will then usually hear Music on Hold while they wait and the participant who pressed the hold button can place a second call. This is activated by default with the attributes Sendonly and Recvonly if creating the Alcatel-Lucent OmniPCX Enterprise controller via the XCAPI controller wizard.



Select whether incoming audio data should be discarded if the system is held by a remote endpoint. Note that an application will not receive any Music on Hold streamed from a remote terminal if incoming audio data is discarded, normally, the caller would like to listen to Music on Hold while being held.

Deactivate the option Discard incoming audio data when held to receive Music on Hold from a remote endpoint. However, if you use the XCAPI to interconnect several endpoints in a conference, this behavior might be undesirable. Assumed that one participant of a conference places the conference line on hold to make another telephone call, all other participants will hear the Music on Hold. Activate this option to prevent incoming Music on Hold from disturbing the conference.





### 4.6 Message Waiting Indications

MWIs are indicated by the SIP Notify command through SIP connections. When using the XCAPI controller wizard this method is activated by default. MWI services can only be processed by setting ABC-F signaling for related SIP trunk. The SIP trunk configuration is described in the chapter Trunk Groups described on page 13.







From Alcatel version 9, it is necessary to define a user for signaling message waiting indications on system behavior. This can be realized, as shown on the following screenshots, by creating a non-existing user and its appropriate settings. For this example we created a user with Directory Number 4499 which makes use of the set type MULITMEDIA PC 2. You also need to ensure the correct settings for the URL UserName and URL Domain parameter.

Configuration: alcatel-oxe علي		
РСХ	Count Hanne Ditter	
ዮ 论 alcatel-oxe	search users	
🗠 🙀 Shelf		
🗢 餫 Media Gateway	Users Where Directory Number 🗸 Equal 🔍 4499 + -	
PWIDECT System		
► 🕼 Translator		
🖙 🍓 Classes of Service	alcatel-oxe	
🕶 🏟 Attendant		
🗠 🙀 Users	Directory Number 4499	
<ul> <li>Users by profile</li> <li>Out Durafile</li> </ul>	Directory name MWI Server Number	
Groups	Directory First Name	
- 🎑 Speed Dialing	LITE-8 Directory Name	
🗠 🏟 Phone Book		
🗢 🐲 Entities	OTF-8 Directory First Name	
🗠 🏈 Trunk Groups	Location Node 1	
- External Services	Shelf Address 255	
► 4 X25	Board Address 255	
🗠 🍓 DATA	Equipment Address 255	
🗢 🐲 Applications	Set Type MULTIMEDIA PC 2	
Specific Telephone Services	Entity Number	
Events Routing Discriminator	anny runnor bergen	
- G Security and Access Control	Delault	
⊷ 🏟 IP	Profile Name	
🗠 🐲 SIP	Key Profiles None	
DHCP Configuration	Domain Identifier 0	
Alcatel-Lucent 889 Series	URL UserName 4499	
- Generation	URL Domain node000000	
🗠 🏟 Passive Com. Server		
🖕 🍘 SNMP Configuration	Contenar characteristics PIN ASSUCSETS Rights PTOTILE VOICEMAIL	
	Facilities Set Characteristics Hotel SIP Miscellaneous All Action	
<b>.</b>		

This user can not be called directly and has to be forwarded to an accessible number out of the related SIP trunk configuration. Thus, an indicated client is allowed to initiate a call-back to the SIP trunk related CAPI application.

Configuration: alcatel-oxe		
PCX	Search Dynamic State User 🗸	🕒 🔁 in alcatel-oxe 💌 🔍 🖧
<ul> <li>✓ Shelf</li> <li>✓ Media Gateway</li> <li>✓ PWT/DECT System</li> </ul>	Users Where Directory Number	▼ Equal ▼ 4499 + -
<ul> <li>✓ System</li> <li>✓ Translator</li> </ul>	Dynamic State User Where Instance (reserved)	▼ Equal ▼ .
⊷ @ Classes of Service ⊷ @ Attendant ⊷ @ Users	alcatel-ox	e:4499
<ul> <li>Users by profile</li> <li>Set Profile</li> <li>Groups</li> </ul>	Instance (reserved) 1	
<ul> <li>Gloups</li> <li>Speed Dialing</li> <li>Phone Book</li> </ul>	Forward Im Forward Directory Number 61	1999
► 🕼 Entities ► 🍘 Trunk Groups ► 🎕 External Services	Secondary Line Forward New York Secondary Line Number Forward 44	o forward 199
<ul> <li></li></ul>	Lock	]
<ul> <li>Applications</li> <li>Specific Telephone Services</li> </ul>	Busy Camp-on           Overflow on associate	1 1
Control     Control     Control     Control     Control	Overfl.busy to assoc.set	199
<ul> <li>✓ Gecanty and Access Control</li> <li>✓ ✓ IP</li> <li>✓ ✓ SIP</li> </ul>	Reset Charge Counter	1
G DHCP Configuration     G Alcatel-Lucent 8&9 Series     G Alcatel-Lucent 9	User Type Ac	dministrative
<ul> <li>Sir Extension</li> <li>Encryption</li> <li>Passive Com. Server</li> </ul>	SIP Survivability Mode	one
← 🕼 SNMP Configuration	All	





# **Exclusion of Liability**

# Copyright © 2014 TE-SYSTEMS GmbH

#### All rights reserved

This document, in part or in its entirety, may not be reproduced in any form without the prior consent of TE-SYSTEMS GmbH.

The information contained in this document was correct at the time of writing. TE-SYSTEMS GmbH reserves the right to make any alterations without prior notice.

The utmost care was applied during the compilation of texts and images, as well as during the creation of the software. Nevertheless, no responsibility can be taken for the content being accurate, up to date or complete, nor for the efficient or error-free operation of the software for a particular purpose. Therefore, TE-SYSTEMS GmbH cannot be held liable for any damages resulting directly or indirectly from the use of this document.

#### **Trademarks**

All names of products or services used are trademarks or registered trademarks (also without specified indication) of the respective private or legal persons and are therefore subject to legal regulations.

#### Third Party Disclaimer and Limitations

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

This product includes source code derived from the RSA Data Security, Inc. MD2, MD4 and MD5 Message Digest Algorithms.

This product includes source code derived from the RFC 4634 Secure Hash Algorithm software.

#### **Copyright-Notices**

All files included in this sample are copyrighted by TE-SYSTEMS GmbH.

All samples and the SDK may only be used in combination with the XCAPI-product.

The SDK contains code from libtiff with the following copyright-notice:

Copyright (c) 1988-1997 Sam Leffler

Copyright (c) 1991-1997 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

#### **TE-SYSTEMS** GmbH

Managing Directors Andreas Geiger Oliver Körber

> Address Max-von-Laue-Weg 19 D-38448 Wolfsburg Germany

> > Tel. +49 5363 8195-0 Fax +49 5363 8195-999

E-Mail info@te-systems.de Internet www.te-systems.de www.xcapi.de