TechNote

Alcatel-Lucent OmniPCX Office R10.1 May 13, 2015







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Introduction

This document is intended to support you with the integration of the XCAPI from version 3.5.46 into an existing environment of the Alcatel-Lucent OmniPCX Office series.

Though being based on the Alcatel-Lucent OmniPCX Office R10.1 series, it should be applicable to higher or lower versions, given a few adjustments.

In the following sections we describe the essential steps of configuration to allow for optimal cooperation of both the XCAPI and the Alcatel-Lucent OmniPCX Office. At this point we suppose that the third party environment (including PSTN access and required licenses for appropriate SIP trunking) is in operation and the XCAPI and CAPI applications are properly installed. For XCAPI basics please refer to the document **XCAPI TechNote (en) - Quick Start Guide.pdf**, which is available for registered users within our community download area. We also recommend to visit our **YouTube channel** for additional information and hints.

XCAPI Configuration

Please start up the XCAPI configuration to create a new controller that will be assigned to the Alcatel-Lucent OmniPCX Office. The XCAPI controller wizard will pop up automatically if you start the configuration tool for the first time, or no controller is present at all. Use the link **Click here to add a controller** for starting up the XCAPI controller wizard manually.

On the first page of the controller wizard please select **PBX or other VoIP System** and continue with the **Next** button.





2.1 Voice-over-IP Environment

The next dialog 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.

Controller Wizard	×
Add new controller Select the Voice-over-IP	environment
 Type of controller 	Select the environment for the new controller to operate in. If the list below does not contain your PBX you should select a compatible or one of the generic
✓ VoIP environment	environments.
Description and channels	
Signalling protocol	Aastra 400
Alcatel-Lucent OmniPCX Office (0X0)	Aastra BusinessPhone 250 Aastra IntelliGate
Network Interface	Alcatel-Lucent OmniPCX Enterprise (OXE)
Port Allocation	Alcatel-Lucent OmniPCX Enterprise (OXE) R11 (with INTIP3/MG3 couplers) Alcatel-Lucent OmniPCX Office (OXO)
Confirmation	arymode arymode (on localhost) Asterisk (SIP-Trunk) AutoCondes Mediant Series
	< Back Qext > Cancel

2.2 Description and Channels

This dialog allows you to set a meaningful description for the controller you're going to create. It also allows setting up the number of channels that the new controller will be able to provide. Please enter how many simultaneous connections the XCAPI should handle when communicating with the Alcatel-Lucent OmniPCX Office.

Type of controller	Please enter a meaningful description for the new controller and decide how many channels should be available for applications. Please consider that the effective number of available channels depend on the installed license.
Description and channels	
Signalling protocol	Description
Alcatel-Lucent OmniPCX / Office (0X0)	Alcatel-Lucent OmniPCX Office (OXO)
Network Interface	20
Port Allocation	
Confirmation	



2.3 Voice-over-IP Signaling Protocol

Next, please select the appropriate signaling protocol used for this VoIP environment.

 Type of controller VolP environment 	Each voice-over-ip network operates with a specific voice-over-ip protocol like H. 32 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.
Description and channels	11.000
Signalling protocol	H.323 SIP
Alcatel-Lucent OmniPCX Office (0X0)	
Network Interface	
Port Allocation	
Confirmation	

2.4 IP Address of the Alcatel-Lucent OmniPCX Office

Next, the remote address of the Alcatel-Lucent OmniPCX Office gateway device has to be set.

Controller Wizard	×
Add new controller Provide the hostname or	the ip address of the voice-over-ip remote peer
Type of controller VolP environment	Please provide the hostname or the ip address of the voice-over-ip remote peer (pbx) that should be used.
 Description and channels 	
✓ Signalling protocol	Alcatel-Lucent OmniPCX Office (OXO)
 Alcatel-Lucent OmniPCX Office (0×0) 	172.18.1.235
Network Interface	
Port Allocation	
Confirmation	
a Tita anti	
	< Back Next > Cancel

2.5 Network Interface

For this XCAPI Controller Wizard dialog the related network interface must be selected.







2.6 Port Allocation

On demand a UDP (RTP/T.38) port range can be set that will be used for inbound data.



2.7 Confirmation

The final dialog of the Controller Wizard performs some checks on the configuration parameters you've made. If any errors are detected here, you can go back to the respective dialogs and correct the necessary input. If everything is correct please use the **Finish** button in order to finally create the new controller.







The controller you've just created now will appear on the main page of the XCAPI configuration. As we're now finished with all XCAPI related configuration tasks, please save the changes you've made and exit the configuration tool.





Please keep in mind that the XCAPI configuration changes will only take effect after saving its configuration, followed by a restart of the bound **CAPI** application. Restarting any XCAPI related services won't help at all. If enabled the XCAPI diagnostic monitor will pop-up with an notification on success.





Configuring the OmniPCX Office Gateway

In order to establish a connection between XCAPI and the Alcatel-Lucent OmniPCX Office gateway, you need to setup XCAPI as VoIP trunk with appropriate settings for using line and direction channels. Some **VoIP Channels** must be at least available as **Software Key Features** for appropriate SIP trunking.

DmniPCX Office Management Console	2					_ 🗆 X
File Comm View Options ?						
OMC	Software Key Features					
CMC						
E - TE-SYSTEMS GmbH	Software Key Features	Software Key Features			×	
Customer/Supplier Info	1 oddaros	Custom features	Call facilities	Network Management	eri l	
Installation typical		Voice communication	Voice co	mmunication (continued)	Multivite	
Munication typical			1 100000	(initial contract)	India alco	
Collective Speed Dialog				Authorized by	Really	
Directory		11A users		Soliwale Key		
LDAP Connector		OM GOOD				
Subscribers/Basestations List		Analog users		8	8	
🗉 👸 Voice Processing		IP users		2	2	
- 🕐 Time Ranges		IP.PIMohonu Madia usera		0		
Attendant Groups		In a impriority modia asors		0		
- A Hunting Groups		DECT users		0	0	
Broadcast Groups		Mobile IP users		0	0	
Pickup Groups		Open CID Phone upor		0		
Manager-Secretary Relations		open oir Fhone users		0		
Subscribers Misc		VoIP channels		12	12	
Ardware and Limits		Number of On Demand users		0	0	
Main Cabinet		My TeamWork Release		0	0	
Auxiliary Interfaces		My TeamWork Audio Ports		0	0	
Software Key Features		My TeamWork Data Ports		0	0	
Fan Management		Mobile users for any phone		0		
System Limits		Mobile users for Windows		0		
Traffic Sharing & Barring		mobile deere for windows		10		
Retwork Management Control		Mobile users for Nokia		0	0	
🖅 🧑 Voice Over IP		Fax Server Ports		0	0	
🗉 🦓 System Miscellaneous				Cube	aribara	
inport/Export				Subs	chodis	
History & Anomalies						
Data Saving & Swapping		OK Cancel	1			
Central Services Global Info						
I I I D Date						-
I ⊞∼ ⊌ IP Dect]					
Carmany Alcatel Lucent OmniPCX R1.xR	10.× Business					



3.1 VoIP Parameters

The **VOIP: Parameters** will be configured beneath the OMCs **Voice Over IP** configuration node. For this example, the **General** configuration tab is used with the following settings:

VoIP: Parameters
General Gateway DSP DHCP Fax SIP Trunk SIP Phone Codecs Topology
Number of VoIP-Trunk Channels
ValP Protocol SIP
Codec pass-through for SIP trunks
Codec pass-through for SIP phones
G711 codec for Music on Hold and preannouncement
I RTCP attribute in SDP
OK Cancel

The **Gateway** configuration tab is used with the defaults. The default **SIP Trunk Signal Source Port** 5060 is also used by the XCAPI controller. Ensure that it's conform to the XCAPI controller configuration if you consider any changes here.

VoIP: Parameters	×
General Gateway DSP DHCP Fax SIP Trunk SIP Phone Codecs Topology	
S RAS Request Timeout	
50 s Remote Gateway Presence Timeout	
500 👷 s Connect Timeout	
40 s H.245 Request Timeout	
5.0 👘 s H.323 End of Dialing Timeout	
5060 SIP Trunk Signal Source Port	
✓ End of Dialing table used	
RTP Tickets activation	
OK Cancel	

The Echo Cancellation and Voice Activity Detection within the DSP configurations are used as shown next.

VoIP: Parameters	×
General Gateway DSP DHCP Fax SIP Trunk SIP Phone Codecs Topology	
Law Mode A-Jaw	
Echo Lancellation	
Voice Active Detection	
OK Cancel	



The parameters of the Fax configuration tab are also used with their defaults.

VoIP: Parameters				×
General Gateway DSP	DHCP Fax SIP Trunk SIF	Phone Codecs T	opology	
T38 Parameters				
UDP Redundancy	1			
Framing	3			
🔽 Error Correction Mode	•			
OK Canc	el			

The **SIP Trunk** parameters are used as shown next.

P: Parameters	
eneral Gateway DSP DHCP Fax SIP Trunk SIP Phone	Codecs Topology
1000 📩 ms Timer T1	6 Number of Retries
4000 ms Timer T2	DIFFSERV_PHB_BE IP Quality of Service for Signal
	UDP to TCP Switching
	DNS Authentication
Registration Registration Registrat IP Address O 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Authentication Username Shared Secret Registered Realm 3000 = s Expire Time
Blacklist Behavior 250 * Message Peak Number 10 * s Period Peak Detection	10 🛨 min Quarantine Time 10 🛨 min Unreachable Proxy List Timer
ocal Domain Name	
OK Cancel	



The **Default Codecs List** is here used with G.711.

foIP: Parameters		×
General Gateway DSP DHCP	Fax SIP Trunk SIP Phone Codecs	Topology
Audio Codecs		
Available Codecs	Default Codecs List	
G722	G711.a	-
G722.2	G711.μ	
G723.1 G729.a		
	\Leftrightarrow	
Default Framing	20 💌	Factory Default
Dunamic Pauload		
106		
G722.2 117		
OK Cancel		

The configurations of the **Topology** tab is here used as shown next.

VoIP: Parameters		×
General Gateway DSP DHCP Fax	SIP Trunk SIP Phone Codecs Topology	
Static NAT(public data)		
IP Address	172.18.1.235	
SIP Port (UDP/TCP)	5060	
Range Ports for RTP (UDP)	32000 - 32255	
Range Ports for T38 (UDP)	6666 - 6761	
OK Cancel		





3.2 External Lines

The **External Lines** configuration is used for setting up external call signaling parameters. For this example we review and configure the **List of Accesses**, **List of Trunk Groups** and **Protocols** dialog. Additional configurations might be done for **Remote Substitution**, **Analog Protocol Selection** and **Incoming Call Handling** dialogs regarding to the local VoIP environment.

3.2.1 List of Accesses

The configuration dialog **List of Accesses** shows information about the available digital and VoIP devices with their indications, their physical addresses and their available channels. For each device the number of available b channels can be set and the type of access can be set to Private or Public. Further configurations have to be made for the trunk sub-dialogs Speed Dial, Call Distribution and Link Category. However, select the device and make the necessary changes within their details.





3.2.2 List of Trunk Groups

Within the List of Trunk Groups, the available trunks will be added and shown with their details. Here you can specify whether a cyclic or a sequential mode should be used, declaring a name or assigning the Link Category for each trunk in this list.

For this example Trunk number **0** is used for the public access while Trunk number **61** is used for SIP trunking, which is declared as Secondary Trunk Group in the Numbering Plan configuration dialog.







3.3 Numbering

The **Numbering** configuration dialog is used to configure the dial plan of the Alcatel-Lucent OmniPCX Office. The next chapter shows the relevant configuration parts for setting up a range of numbers to the XCAPI. The numbering plan has to match the global defined installation numbers. For this test environment the **Installation Numbers** were used as shown below. Of course this has to be adjusted for the local environment.

nstallation Numbers	×
Installation Numbers	
Installation Number	8195
International Prefix	
International Code	49
Intercity Prefix	
Intercity Code	5363
Recall Prefix	
Alternative System CLIP	
Private Installation Number	
Private Level2 Prefix	
Private Level2 Code	
Private Level1 Prefix	
Private Level1 Code	
VPN Escape Prefix to remove	

3.3.1 Numbering Plans

The configurations of the **Numbering Plans** consist of the Internal, Public, Restricted and Private Numbering Plan. The VoIP trunk has to be declared as Secondary Trunk Group. Depending on your numbering you may have to declare different rules for allowing inbound and outbound calls. However, this example uses the ARS related numbering range 300-399 for SIP trunking and numbering schemas as shown next. This example doesn't use any numbering plan restrictions. The Private Numbering Plan is used as shown next.

Numbering Plans	Numbering Plans 🗙
Internal Numbering Plan Public Numbering Plan Restricted Public Numbering Plan Private Numbering Plan	Internal Numbering Plan Public Numbering Plan Restricted Public Numbering Plan Private Numbering Plan
Function State Function State Function State Add Seconday Tunk Group 300 339 AR5 Keep Yes Yes	Function Stat End Base NMT Priv Fax SIP Accludex Acriate Meet Me 0 0 0 Drop No Delete Main Turk Group 0 0 Drop No Delete Schoolby Turk Group 0 0 Drop No Secondsty Turk Group 0 0 Drop No Secondsty Turk Group 0 0 0 Drop
DK Cancel Numbering Plans X	OK Cancel Numbering Plans
Internal Numbering Plan Public Numbering Plan Peritricited Public Numbering Plan Private Numbering Plan Private Numbering Plan Private Numbering Plan Private Numbering Plan Add Deleter Not Plan Plan Plan Plan Plan Plan Plan Plan	Internal Numbering Plan Public Numbering Plan Provab Numbering Plan Function Stat End Base NIT Priv Fax SIP Acc.Index Activate Meet Me Image Image Nin Priv Fax SIP Acc.Index Main Truth Group 0 0 Drop Nin Priv Priv Priv Main Truth Group 0 0 Drop Nin Priv Priv Seconday Truth Group 00 95 AFS Keep Yes Deconday Truth Group 454300 45439 AFS Keep Yes Seconday Truth Group 6 6 1 Drop Down





3.4 Automatic Route Selection

Within the **Automatic Route Selection** configuration dialog you have to add the trunk group for the Trunk Group Lists, setting up the prefix and the according values for the SIP trunking.

3.4.1 Trunk Groups Lists

In the **Trunk Group Lists** configuration dialog you have to specify the trunk which has to be used with the ARS mechanism. This list is related to the Lists of Trunk Groups and Numbering Plans configuration.

🗐 OmniPCX Office Management Console								
Eile Comm View Options ?								
OMC	Trunk Gr	oups Lists	;					
C MC	List ID	Index	No.	Char	Provider/Destination	Access Digits	Auth.Code ID	Tone/Pause
🍪 Tools	1	2	61	٧	None		None	None
🗄 🗐 TE-SYSTEMS GmbH								
- 🍏 Customer/Supplier Info								
🎇 Installation typical								
🎇 Modification typical								
-03 Numbering								
- Default Configuration								
- In Numbering Plans								
DDI Number Modification Table								
- In Number Modification Table								
End of Dialing Table								
- Automatic Routing Selection								
Automatic Routing: Prefixes								
Gateway Parameters								
SIP Accounts								
SIP Public Numbering								
Trunk Groups Lists								
- Hours								
Day Groups								
Providers/Destinations								
Authorization Codes								
Tone/Pause-MF								
ARS Miscellaneous								
Germany Alcatel Lucent OmniPCX R1.xR10.x Busi	iness							





3.4.2 Automatic Routing: Prefixes

The range of dialing numbers, which we already described in the chapter **Numbering Plans** on page 13, has also to be configured as prefix in the **Automatic Routing: Prefixes** configuration dialog and is configured as shown on the next screenshot.

Please ensure that the destination is set up as SIP Gateway with the right IP address. The bandwidth should be selected adequately and the codec/framing should be conform to your VoIP environment.





3.4.3 Gateway Parameters

The Gateway Parameters Index of the XCAPI related ARS entry is used as shown next.



The **Domain Proxy** is related to the XCAPI controllers bound Ethernet Interface. Please ensure that those configurations (Remote Signaling Port, Default Transport Mode) are conform to the ones of the XCAPI controller.

The Media / Fax is here set to G.711. The Codec/Framing is set to G711_20 which is also used by default from the XCAPI controller. The Gateway Bandwidth has to be set to the local requirements in meaning of the available and licensed VoIP channels. The Identity and Protocol configuration tabs are used with their defaults.

Gateway Parameters Details	Gateway Parameters Details	×	Gateway Parameters Details	X
General Domain Proxy Registration Media DNS Identity Protocol	General Domain Proxy Registration Media D	DNS Identity Protocol	General Domain Proxy Registration M	tedia DNS Identity Protocol
Index Label SIP Numbers Formal Index 1	IP Type Static IP Address 172 16 0.1 Hothame UDP Target Domain Name Local Domain Name Realm Renote Signaling Pott 5060 Outbound Proxy 172 16 0.15 Outbound Proxy 172 16 0.15	53	Fax Grin T38 additional signaling Color Codec/Framing G711 Gateway Bandwidth D=102	ana y led identification Tone (CED) _20 y 44 kBa/s (p.20 cale) y
	OK Cancel		OK Cancel	
Gateway Parameters Details General Domain Proxy Registration M General Domain Proxy Registration M Gating Professed denkity Calling Preferred denkity PAssetted-Iden Promosig PAssetted-Iden Promosida Outgoing Performation Perfo	eda DNS Identity Protocol	Intervery Parameter's Details General Domain Proxy Registration Me Protocol Session Timer 720 Image: Perform Proxy Registration Me 1000000000000000000000000000000000000	ida DNS Identity Protocol	×
Connected Preferred identity Connected Preferred identity PAssented identity Proferred identity Connect Tra- OK. Cancel	ntay	Keep Alive Alive Protocol SIP Option Alive Timeout/s 300 Alive Status Down	¥ 3	



3.4.4 SIP Public Numbering

The **SIP Public Numbering** specifies the handling of the numbering format of the incoming and outgoing calls for private or public SIP numbers. For this environment the numbering is used as shown next.

OmniPCX Office Management Console Elle Comm View Onlinns 2	
OMC	SIP Public Numbering
Ele comm View Options 2 OMC OMC Common Common Common Common Customer/Suppler Info Customer/Suppler Info Cust	SIP Public Numbering Index Calling Format (Out Called Format (Out Called Short Prefix (Out 1 Canonical Undefined Index Calling Format (In Called Format (In Called Prefix (In Index Calling Format (In Called Format (In Called Prefix (In Alternative CLIP/COLP Number Canonical/Interna DDI
Hours Hours Hours Day Groups Day Groups Authorization Codes Tone/Pause-MF D5 Microllaneau r	

3.5 Subscribers/Basestations List

You may have to enable some phone features for allowing services like external call diversion or need to modify some traffic and/or barring categories.

However, here we just review the feature rights of an Alcatel 4029 terminal. Some additional information can be found in the chapter redirection number on page 20.

Feature Rights	×	Feature Rights	×	Feature Rights	×
Phy. Add. No. Terminal 01-001-01 133 4039	Name Client	Phy. Add. No. Terminal 01-001-01 133 4039	Name Client	Phy. Add. No. Terminal Name 01-001-01 133 4039 Client	
Feature Rights Part 1	I⊽ Paging	Feature Rights Part 2	Join incoming and incoming	Feature Rights Part 3 Maibox of initial Called party	
Camp on Protection	Selective Diversion	Private Subscriber	Join incoming and outgoing	Calback in VM Consultation	
Conference	🔽 External Diversion	🗖 Inhibit Flag	Join outgoing and outgoing		
Calback (automatic)	Intrusion Allowed	🔽 Trunk Allot	Remote Substitution		
✓ Name Display	Intrusion Protection	DND override allowed	DDC Protection		
Call Pickup Allowed	Warntone Protection	Protection against DND override	Assign Auth. for MTR charge		
UUS Allowed	Identity Secrecy	MF Transparency	Inhibition Time ranges		
Meet Me Conf activation	WAN API Access	CLI is diverted party	Remote custom. Company greeting		
My IC Web Office Support	☐ Video Support	Conference Bridge Allowed	Remote customization		
OK. Cancel	Part 2	OK Cancel	Part 3	OK Cancel Part	<u>a </u>





3.6 System Miscellaneous

This chapter is about **System Miscellaneous** configurations. Beside of this example used **Features Design** settings some hints about the noteworthy addresses will be given. For details please refer to the according OmniPCX Office administration and technical documentations.

3.6.1 Features Design

The **Features Design** configuration parts 1 and 2 are used as shown next. The omitted configuration tabs 3,4 and 5 are used with their defaults.



3.6.2 Noteworthy Addresses

For appropriate SIP signaling please ensure that the **SimConnImm** ([System Miscellaneous] - [Memory Read/Write] - [Other Labels]) address is set to 0. For some OmniPCX releases this is set to 1 by default and omit correct SIP signaling for busy lines.

Other Labels, Deta	ails		×
Format:	Offset (HEX)	00	Modify
Hex 💌	000000	00	Read
Baselabel:			Write
Label:			
SimConnImm			
Address: 0219C7D3			
Length (HEX):			
Relevant			
Return			





SoftFax (G.711 fax pass through)

In the **SoftFax** mode, the XCAPI simulates an analog Fax device by transmitting modulated Fax-signals modem-like via audio-channels.

Please ensure that the **Fax** method within the gateway parameters **Media** settings are set to **G.711**. For appropriate facsimile interworking, please ensure that those **Codec/Framing**, **Bandwidth** and **DTMF**, as shown in the chapter **Gateway Parameters** starting on page 16 are set conform to XCAPI controller configuration.

🖉 XCAPI Configuration	
File View Help	
Configuration ✓ Information	Options Fax Method Select whether the XCAPI should transfer fax messages via T.38 signaling or via T.30 signaling encoded in the audo channel (Softfax). Selecting Disabled will also remove any configured fax codecs. Fax Method Softfax (G.711 fax pass through) Y 34 Fax Support Enabled Fax Caling Tone/Fax Called Tone Depending on direction fax transmissions start with a CED or ONG signal tone. Select whether these shall be transmitted before or after T.38 negotiation. Transmit CDD signal tone after T.38 negotiation Transmit CNG signal tone after T.38 negotiation Transmit CNG signal tone after T.38 negotiation Transmit CNG signal tone befault
1	li.



Call Transfer

For enabling call transfer via SIP refer **Simulated ECT by call-tromboning (line-interconnect)** has to be disabled within the XCAPI controller **Features** tab.

🗲 XCAPI Configuration	
File View Help	
Configuration	Controller Features
Information Decision (XCAPI 1000 Lines + Fax) Controler Controler Controler Decision StP Controler Decision StP Decision StP Decision StP Decision Controler Decontroler Decontroler Decision Controler Decontroler	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) Notify destination Try path replacement Volify destination Try path replacement Volify destination Software Codecs These features affect the behaviour of the system in some situations and will be applied to each connection of this controller. Use software fax over audio channels Try native fax first. Use software modem over audio channels

Redirecting Number

Some CAPI applications require redirecting numbers beside the origin calling number. For this, please review the OxO's feature design settings, as shown in the same named chapter starting on page 18. Ensure that CLI for external diversion is enabled and CLI is diverted party if external caller is disabled.

In accordance with your CAPI application you have to enable/disable the client(s) feature rights parameter **CLI is diverted party**.





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