



Application Partner Program Inter-Working Report

Partner: ASCOM
Application type: VoWiFi handset
Application name: i62
Alcatel-Lucent Platform: OmniPCX Enterprise

ascom

The product and version listed have been tested with the Alcatel-Lucent Communication Server and the version specified hereinafter. The tests concern only the inter-working between the Application Partner product and the Alcatel-Lucent Communication platforms. The inter-working report is valid until the Application Partner issues a new version of such product (incorporating new features or functionality), or until Alcatel-Lucent issues a new version of such Alcatel-Lucent product (incorporating new features or functionality), whichever first occurs.

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Tests identification

Date of the tests	May 2011
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Alcatel-Lucent Communication Platform (OmniPCX 4400/Enterprise, OmniTouch, OmniPCX Office, ...)	OmniPCX Enterprise
Alcatel-Lucent compatibility release	OXE : R9.1 (i1.605.21) OXE : R10 (i1.410.27e) OAW: 5.0.3.0 with AP105/12x
Partner's application version	i62 2.2.17
Environment (if it has a sense)	<input type="checkbox"/> ACD <input type="checkbox"/> Business

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Historic

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Test results OXE 9.1

- Passed Refused Postponed
 Passed with restrictions

Test results OXE 10

- Passed Refused Postponed
 Passed with restrictions

Refer to the section 4 for a summary of the test results.

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1 Introduction

The goal of these tests is to qualify an external application as an Alliance & Application Partner Program solution for the Alcatel-Lucent Communication Platform.

The scope of the tests is the interoperability of the application with the Alcatel-Lucent Communication Platform. It covers a basic or complex inter-working to ensure that services requested by the application and provided by the Communication Platform (and/or conversely) are properly completed.

These tests do not verify the functional achievement of the application as well as they do not cover load capacity checks, race conditions and generally speaking any real customer's site conditions.

Note: This interworking report does not cover mass provisioning and/or remote device management of the partner device.

2 Application information

Application type: VoWiFi handset

Application commercial name: i62

Application version: 2.2.17

Interface type: SIP/IP/802.11

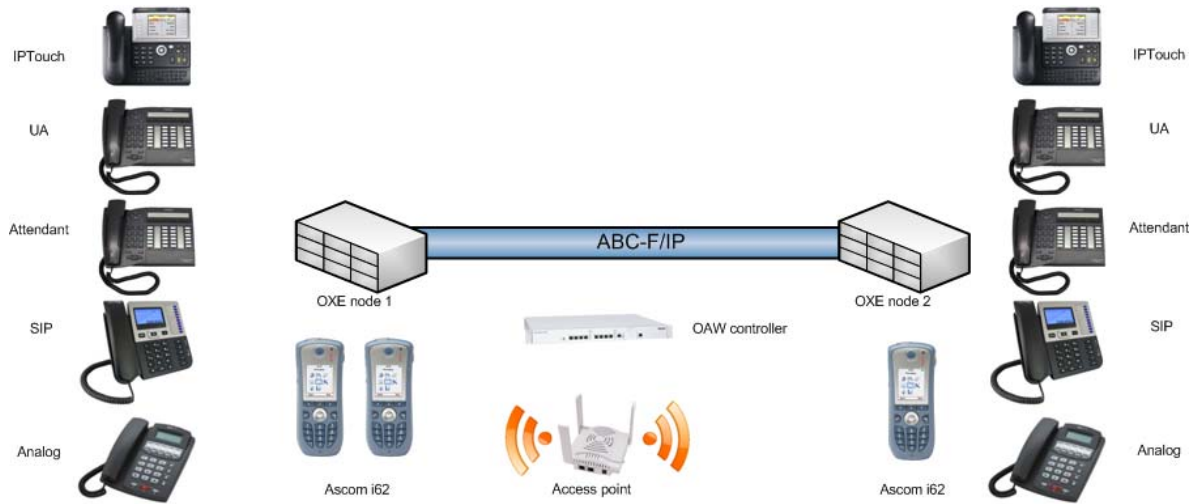
Brief application description: All telephony features as provided by SEPLoS (SIP Endpoint Level of Service) are available to the handsets.



3 Tests environment

3.1 General architecture

OXE / SEPLoS Test Environment:



3.2 Hardware configuration:

Node1:

- OmniPCX Enterprise common hardware.
- Duplicated call servers
- Spatial redundancy (Different IP subnetworks)

Crystal 1 :

```

+-----+
| Cr | cpl | cpl type | hw type | cpl state | coupler ID |
+-----+
| 1 | 0 | GD-3 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 1 | MIX244 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 2 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 3 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 4 | CS | ----- | CS+4645 | BAD PCMS CODE |
| 1 | 6 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 8 | CS | ----- | CS+4645 | BAD PCMS CODE |
+-----+

```

Node2:

- OmniPCX Enterprise common hardware.
- Duplicated call servers
- Spatial redundancy (Different IP subnetworks)
- Two media gateways

Crystal 0 :

```

+-----+
| Cr | cpl | cpl type | hw type | cpl state | coupler ID |
+-----+
| 0 | 6 | CPU_CS | ----- | IN SERVICE | BAD PCMS CODE |
| 0 | 10 | CPU_CS | ----- | IN SERVICE | BAD PCMS CODE |
+-----+

```

> Display list of PCS :

```

+-----+
| PCS Name | Address | State |
+-----+
| etesting_pcs | 10.10.11.10 | INACTIVE |
+-----+

```

Crystal 1 :

```

+-----+
| Cr | cpl | cpl type | hw type | cpl state | coupler ID |
+-----+
| 1 | 0 | GD | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 1 | MIX244 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 2 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 3 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 4 | GA | ----- | REG NOT INIT | BAD PCMS CODE |
| 1 | 5 | APPLI | ----- | LANX 16 | BAD PCMS CODE |
| 1 | 6 | PRA T2 | ----- | IN SERVICE | BAD PCMS CODE |
| 1 | 8 | CS | ----- | CS+4645 | BAD PCMS CODE |
+-----+

```

Crystal 6 :

```

+-----+
| Cr | cpl | cpl type | hw type | cpl state | coupler ID |
+-----+

```

6	0	GD	-----	IN SERVICE	BAD PCMS CODE
6	1	PRA T2	-----	IN SERVICE	BAD PCMS CODE
6	2	PRA T2	-----	IN SERVICE	BAD PCMS CODE
6	3	MG_IVR_Z30	-----	IN SERVICE	BAD PCMS CODE

3.3 Software configuration

- **Alcatel-Lucent Communication Platform:** OmniPCX Enterprise 9.1 (i1.605.24) and 10 (j1.410.27e)

Note: SIP Endpoint Level of Service (SEPLoS) is used for the external sets. This means that all telephone features must be tested once by prefixes and once locally on the phone, if available.

- **WLAN infrastructure:** Alcatel OAW 5.0.3.0 with AP105/12x access points. Two controllers were deployed in a Master/Local redundant configuration.
- **Application platform:** i62 2.2.17.

4 Summary of test results

4.1 Summary of main functions supported

4.1.1 OXE / SEPLOS

- Installation and configuration of the i62 handsets through the Ascom WinPDM application (configuration also possible through remote management “over the air”) .
- Configuration of the i62 handsets as SIP users on the OXE registrar server
- Registration
- Prefixes are supported (mainly all SEPLOS features)
- Basic communications (internal and external, intra-node, inter-nodes)
- Supports telephonic features (Broker call, Transfer, Conference, Call back, Waiting, Forwards, in intra-node and inter-nodes communications).
- Attendant calls
- Access to the OXE Voice mail boxes and DTMF dialling for navigation
- Codec choice

4.1.2 Wifi Infrastructure

- 12 calls are possible on a single Access Point (full voice wifi network)
- Subjective speech quality is quite good
- Stress tests for data and voice coexistence are acceptable (downstream and upstream).
- Handovers between Access Points
- Master/Local OAW configuration is supported

4.2 Summary of problems

None

4.3 Summary of limitations

4.3.1 OXE / SEPLOS

- One-way speech can sometimes be caused by activation of VAD on the GD. Ascom NCR 18050. Workaround : deactivate VAD on GD
- Per design i62 doesn't support post-dial. For prefixes use, all digits should be dialed when sending the call (ie. Prefix+additional digits) . Ascom NCR 18079
- No de REGISTER message sent by i62 before shutting down. Ascom NCR 17517
- No local Do Not Disturb feature. Ascom CR18093. Workaround : use OXE system feature
- During a call with an attendant station, i62 set can put the attendant on hold and answers a second call. i62 doesn't care about 488 NOT ACCEPTABLE HERE message send by OXE.
Ascom reference: NCR16019. Fix included in the next Maintenance Release (2.3.x).
- During a switchover the existing call are not maintained. In dialog SIP messages are sent to the old main call server. It is not possible to update an existing call. I62 uses the IP address of its DNS cache until it registers on the new main call server. Ascom CR18091
- A new call is not possible just after a switchover. I62 uses the IP address of its DNS cache until it registers on the new main call server. Use a small registration period to limit non-availability period on i62 (120 seconds as default on i62). The maximum failover timer would be an expires + a sip message timeout (32s).

- On Hold display : when an Ascom set is put On Hold, no indication of this on its screen (communication seems to be still active)
- Attended transfer: there is no more direct RTP after the transfer. (Alcatel-Lucent reference: crms00228893)
- Switches between call servers only occur after “Register”. Use a small registration period to limit non-available period on i62 (120 seconds)
- When CAC is activated and the call limit is exceeded, an i62 is unable to authenticate at power up. The phone receives a “Death” answer from the AP. The association is possible when one call is ended on the AP.
- Passive Communication Server (PCS):
 - On i62 it is only possible to configure two proxies. Passive Communication Server use is possible if there is only one main CPU, or if redundant main CPUs share a unique IP.
 - It is not possible to configure a Passive Communication Server if main/secondary proxy field are filled with main/stand-by CPU.

4.3.2 Wifi Infrastructure

- Roaming between master/local controllers: the state of RP connexion isn’t exchanged between controllers. You have to open all possible RTP ports on OAW to keep the voice after the roaming.
- Voice/Data coexistence: We recommend to set the maximal number of calls per AP to 8 when voice/data coexistence on the same radio.
We have noticed sub-optimal performance in the prioritization of voice traffic when other traffic load is medium/high on the OAW controller, so the restriction of 8 calls per AP is OK.
- WMM and U-APSD: OK. QoS configuration should be carefully made. On the wired network, the RTP/RTCP packets must be configured with an 802.1d/DSCP value that matches the Voice WMM Access Category. (6 for the 802.1d, 46 for the DSCP).
- U-APSD/retries : During a call, the AP sends a downstream voice packet with EOSP=1 (that is acknowledged by the i62) than resends the same voice packet (that is not received by the phone because it is in power save mode). Increase the number of retries
- A problem was observed when mixing 802.11b and 802.11g data rates. The solution is to disable all 802.11b data rates on the SSID used.
- The handset will attempt to use U-APSD even if it is not announced by the system. The solution is to ensure that the system and client configuration match.
- De-authenticated occurs during roaming when using WEP. The solution is to avoid WEP as encryption method.

4.4 Notes, remarks

- Only AP105/12x Access Points are covered by this IWR.
- WEP and TKIP are supported on i62 phones but are not part of the IEEE 802.11n standard. 802.11n deployments should always employ security profiles based on WPA2-AES.
- It must be mentioned that in VoWiFi systems, voice quality is strongly linked to the RF site survey deployment on the field. The specificities of each installation as far as radio coverage is concerned should always be analysed case by case and optimised accordingly.
- Ascom abbreviations :
 - Non Conformity Report (NCR)
 - Change or feature Request (CR)

5 Test Scenario

5.1 Test Procedure

Test	Action	Result	Comment
------	--------	--------	---------

Test/Step: Number of the test/step. A test may comprise multiple steps depending on its complexity. Each step has to be completed successfully in order to conform to the test. Step 0 when present represents the initial state for all the following steps.

Action: describes which action to realize in order to set-up the conditions of the test.

Result: describes the result of the test from an external point of view.

OK for positive result.

NOK for negative result. In the latter case, the Comment column describes as precisely as possible the problem.

N/A if this test is not applicable to this application. (Use Comment column to describe why).

NTY apply for “Not Tested Yet” tests.

Comment: This column has to be filled in when a problem occurs during the test and if any additional restriction applies or information has to be communicated. It must contain a high level evaluation of the localization of the responsibility: Alcatel-Lucent or the Partner.

6 Omni PCX Enterprise - SEPLOS Test Results

6.1 Connectivity and Setup

6.1.1 Test Objectives

These tests shall verify that the different components are properly connected and can communicate together (the external application and the Alcatel-Lucent Communication Platform are connected and the interface link is operational).

6.1.2 Test Results

Test	Action	Result	Comment
1	I62 configuration using Ascom WinPDM application.	OK	
2	DHCP registration	OK	
3	NTP registration / The SIP phone is configured to retrieve the date and time from the OXE internal NTP server Check the phone retrieves the information and displays it.	OK	
4	SIP set registration to OXE in static IP addressing mode (without authentication) / The phone is configured to use IP static parameters	OK	
5	SIP registration, using DNS (without authentication) / The phone is configured to use a domain name as registrar / proxy server address. The DNS IP address is the OXE CPUs addresses	OK	On i62, do not declare primary SIP proxy IP addresses (0.0.0.0), only SIP proxy ID. A SIP proxy ID can be a FQDN. DNS servers can either be statically defined or updated dynamically through DHCP.
6	SIP registration, using DNS (without authentication) / The phone is configured to use a domain name as registrar / proxy server address. The DNS IP address is a third party DNS server	OK	On i62, do not declare primary SIP proxy IP addresses (0.0.0.0), only SIP proxy ID. A SIP proxy ID can be a FQDN. DNS servers can either be statically defined or updated dynamically through DHCP.
7	Support of "423 Interval Too Brief" for registration or subscribe (1)	OK	Set expires on i62 : 120 seconds
8	SIP registration with authentication: Turn on SIP Digest authentication, specify realm on OXE, and specify user name and password on SIP client. / SIP digest authentication is activated on OXE and phone side. Check also that outgoing call is authenticated.	OK	

Notes:

- (1) On the SIP client, specify a default registration period inferior to that of OXE SIP registrar. OXE will reject with error “423 Interval Too Brief”. Check that SIP set increases registration period accordingly.

6.2 Outgoing Calls

6.2.1 Test Objectives

The calls are generated to several users belonging to the same network.

Called party can be in different states: free, busy, out of service, do not disturb, etc.

Calls to data devices are refused.

Points to be checked: tones, voice during the conversation, display (on caller and called party), hang-up phase.

Note: dialing will be based on direct dialing number but also using programming numbers on the SIP phone.

6.2.2 Test Results

Test	Action	Result	Comment
1	Call to a local user	OK_but	One-way speech can sometimes be caused by activation of VAD on the GD. Ascom NCR 18050 Workaround : deactivate VAD on GD
2	Call to a local user with overlap dialing: Dial a part of the number, wait and continue.	NA	No overlap dialing on i62
3	Call to a local user with overlap dialing, timeout: Dial a part of the number, wait and stop.	NA	No overlap dialing on i62
4	Call to a local user with overlap dialing, release: Dial a part of the number, wait and release the call.	NA	No overlap dialing on i62
5	Call to local user with no answer.	OK	
6	Call to another SIP set / The SIP phone under test calls another SIP phone. Check the display and audio during all steps (dialing, ring back tone, conversation, release).	OK	
7	Call to wrong number (SIP: “404 Not Found”)	OK	Displays “Invalid Number”
8	Call to idle user, decline this call (SIP: “603 Decline”)	OK	Displays “Call failed” Note : OXE usually implements coverage for callee (ie forwarded to attendant, VM ask for a callback...).
9	Call to busy user (SIP: “486 Busy Here”) Check busy tone.	OK	
10	Call to user in “Out of Service” state (SIP: “480 Temporarily Unavailable”)	OK	Display “No response”

11	Call to user in "Do not Disturb" state (SIP: "603 Decline" or "486 User Busy") / Dial "42+password", wait for acknowledgement ring back tone from OXE	OK	Busy Ringtone is played
12	Call to local user, immediate forward (CFU). (SIP: "302 Moved Temporarily")(1) / Dial "51 + target extension", wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK	
13	Call to local user, forward on no reply (CFNR). (1) / Dial "53 + target extension", wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK	
14	Call to local user, forward on busy (CFB). (1) / Dial "54 + target extension", wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK	
15	Call to a local user with proxy Authentication	OK	
16	Call within same IP domain. SIP set in domain A (intra-domain=without compression). Call to OXE set in domain A (intra-domain=without compression). Check order of codecs in SDP list. Check chosen codec. We expect G.711.	OK	See note (2)
17	Call to another IP domain. SIP set in domain A (extra-domain=with compression). Call to OXE set in domain B (extra-domain=with compression). Check order of codecs in SDP list. Check chosen codec. We expect G723 or G.729	OK	See note (2) G723 can not be configured as preferred codec on i62, but supported in SDP offer.
18	Call to external number (via T2 loopback) (Check ring back tone, called party display)	OK_but	One-way speech can sometimes be caused by activation of VAD on the GD. Ascom NCR 18050 Workaround : deactivate VAD on GD
19	Call to busy user, Call waiting. (Camp-on)	NOK	Per design i62 doesn't support post-dial.
20	SIP session timer expiration: Check if call is maintained or released after the session timer has expired.	OK	

Notes:

(1) For test cases with call to forwarded user: User is forwarded to another local user. Special case of forward to Voice Mail is tested in another section.

(2) For IP domain tests, the following setup is used:

number	0	3
type	NIPR	IP_R
allowed	ffff	_1
used	0	0
IPP Intr	G711	G711
IPP Extr	G729	G729

Partner SIP set is in domain 3.

6.3 Incoming Calls

6.3.1 Test Objectives

Calls will be generated using the numbers or the name of the SIP user.
 SIP terminal will be called in different states: free, busy, out of service, forward ...
 The states are to be set by the appropriate system prefixes unless otherwise noted.
 Points to be checked: tones, voice during the conversation, display (on caller and called party), hang-up phase.

6.3.2 Test Results

Test	Action	Result	Comment
1	Local /network call to free SIP terminal / Check ring back tone, called party display	OK	One-way speech can sometimes be caused by activation of VAD on the GD. Ascom NCR 18050 Workaround : deactivate VAD on GD
2	Local/network call to busy SIP terminal / Call a set which is already in conversation	OK	
3	Local/network call to unplugged SIP terminal	NOK	No de REGISTER message sent by i62 before shutting down. Ascom NCR 17517.
4	Local/network call to SIP terminal in Do Not Disturb (DND) mode		
4A	By local feature if applicable	NA	Feature unavailable. Ascom CR18093 Workaround : use OXE system feature
4B	By system feature (SEPLoS) Dial "42 + user password" wait for acknowledgement ring back tone from OXE	OK_but	Ok only if all digits are composed when starting the call (i.e. "DND prefix"+"password") Ascom NCR 18079
5	Local/network/SIP call to SIP terminal in immediate forward (CFU) to local user:		
5A	By local feature if applicable	OK	
5B	By system feature (SEPLoS) Dial "51 + target extension" wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK_but	Per design i62 doesn't support post-dial. OK only if all digits are composed when starting the call (i.e. "immediate forward prefix"+"password"). Ascom NCR 18079

6	Local/network/SIP call to SIP terminal in immediate forward (CFU) to network number:		
6A	By local feature if applicable	OK	
6B	By system feature (SEPLoS) / Dial "51 + target extension" wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK_but	Per design i62 doesn't support post-dial. Ok only if all digits are composed when starting the call (i.e. "immediate forward prefix"+"password") Ascum NCR 18079
7	Local/network/SIP call to SIP terminal in immediate forward (CFU) to another SIP user		
7A	By local feature if applicable	OK	
7B	By system feature (SEPLoS) Dial "51 + target extension" wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK_but	Per design i62 doesn't support post-dial. Ok only if all digits are composed when starting the call (i.e. "immediate forward prefix"+"password") Ascum NCR 18079
8	Local call to SIP terminal in "forward on busy" (CFB) state:		
8A	By local feature if applicable	NA	i62 is declared as SEPLoS (2-line set). When this set is fully busy, the new invite is not presented to the set.
8B	By system feature (SEPLoS) Dial "52 + target extension" wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK_but	Per design i62 doesn't support post-dial. Ok only if all digits are composed when starting the call (i.e. "forward on busy prefix"+"password") Ascum NCR 18079
9	Local call to SIP terminal in "forward on no reply" (CFNR)		
9A	By local feature if applicable	OK	
9B	By system feature (SEPLoS) Dial "53 + target extension" wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK_but	Per design i62 doesn't support post-dial. Ok only if all digits are composed when starting the call (i.e. "forward on no reply"+"password") Ascum NCR 18079
10	External call to SIP terminal. Check that external call back number is shown correctly.	OK	
11	Secret identity : Local call to SIP terminal. / Dial "409 + extension". Check that caller id is not shown.	OK_but	Per design i62 doesn't support post-dial. Ok only if all digits are composed when starting the call (i.e. "Secret identity"+"extension") Ascum NCR 18079
12	Display: Call to free SIP terminal from user with a name containing non-ASCII characters. Check caller display.	OK	
13	Display: Call to free SIP terminal from user with a UTF-8 name containing non-ASCII characters. Check caller display.	OK	
14	SIP set is part of a sequential hunt group. Call to hunt group. Check call/release.	OK	

15	SIP set is part of a cyclic hunt group. Call to hunt group. Check call/release.	OK	
16	SIP set is declared as a twin set (tandem). Call to main set and see if twin set rings. Take call with twin set.	OK	

6.4 Features during Conversation

6.4.1 Test Objectives

Features during conversation between local user and SIP user must be checked. Check that right tones are generated on the SIP phone.

6.4.2 Test Results

Test	Action	Result	Comment
1	Hold and resume (both directions) (Check tones)	OK_but	Per design there is no “on hold” display when i62 is put on hold. One-way speech can sometimes be caused by activation of VAD on the GD. Ascom NCR 18050 Workaround : deactivate VAD on GD
2	Second call to another local user. Distant user is put on hold.	OK	
3	Broker request (toggle back and forth between both lines, local feature if applicable)	OK	
4	Release first call. Keep second call.	OK	
5	Call park: - Call between SIP set and OXE set. - Put your call on hold. - New call: Dial the prefix for call parking (“402”+number). Now call can be hung up. Later call can be retrieved by calling prefix+number again.	OK	
6	Send/receive DTMF	OK	
7	Meet Me conference	OK_but	Per design i62 doesn’t support post-dial. Ok only if all digits are composed when starting the call (i.e. “meet me conference prefix”+“destination extension”+“conference code”)
8	Three party conference initiated from OXE set. Released by OXE set. / Dial extension target + suffix “3”.	OK	
9	Three party conference initiated from SIP set (local feature). Released by SIP set.	OK	The other parties can be OXE sets, i62 or external parties

6.5 Call Transfer

6.5.1 Test Objectives

During the consultation call step, the transfer service can be requested and must be tested. Several transfer services exist: Unattended Transfer, Semi-Attended Transfer and Attended Transfer.

Audio, tones and display must be checked.

We use the following scenario, terminology and notation:

There are three actors in a given transfer event:

- A - *Transferee* : the party being transferred to the Transfer Target.
- B - *Transferor* : the party doing the transfer.
- C - *Transfer Target* : the new party being introduced into a call with the Transferee.

The scenario is:

1. A (Transferee) calls B (Transferor).
2. B (Transferor) calls C (Transfer Target). A is on hold during this phase.
3. B (Transferor) executes the transfer. B drops out of the communication. A is now in communication with C.

There are three sorts of transfers in the SIP world:

- *Unattended Transfer* or *Basic Transfer*: Unattended Transfer consists of the Transferor providing the Transfer Target's contact to the Transferee. The Transferee attempts to establish a session using that contact and reports the results of that attempt to the Transferor.
- *Semi-Attended Transfer* or *Early Attended Transfer* or *Transfer on ringing* : Semi-Attended Transfer consists of the Transferor having a session in hold state with the Transferee and initiating the Transfer when the consultation call to the Target Transfer is in ringing state.
- *Attended Transfer* or *Transfer in conversation*: Attended Transfer consists of the Transferor having a session in hold state with the Transferee and initiating the Transfer when the session between the Transferor and Transfer target is established.

Note: Unattended transfers are not provided by OXE. This kind of transfer is only managed by the SIP set (i62)

Semi attended transfers are not provided by the SIP set (i62). This kind of transfer is only managed by OXE.

Note : Desactivate VAD to avoid one way call when connected to a GD : Ascom NCR 18050.

6.5.2 Test Results

In the tables below, *SIP* means a partner SIP set, *OXE* means a proprietary OXE (Z/UA/IP) set.

6.5.2.1 Unattended transfers

Test	Action			Result	Comment
	A Transferee	B Transferor	C Transfer Target		

1	OXE/Ext . call	SIP	OXE/Ext . call	OK	
2	SIP	OXE/Ext . call	OXE/Ext . call	NA	Not provided by OXE
3	OXE/Ext . call	OXE/Ext . call	SIP	NA	Not provided by OXE
4	SIP	OXE/Ext . call	SIP	NA	Not provided by OXE
5	OXE/Ext . call	SIP	SIP	OK	
6	SIP	SIP	OXE/Ext . call	OK	
7	SIP	SIP	SIP	OK	

6.5.2.2 Semi-attended transfers

Test	Action			Result	Comment
	A Transfe ree	B Transfe ror	C Transfe r Target		
1	OXE/Ext . call	SIP	OXE/Ext . call	NA	Not provided by the SIP set (i62).
2	SIP	OXE/Ext . call	OXE/Ext . call	OK	
3	OXE/Ext . call	OXE/Ext . call	SIP	OK	
4	SIP	OXE/Ext . call	SIP	OK	
5	OXE/Ext . call	SIP	SIP	NA	Not provided by the SIP set (i62).
6	SIP	SIP	OXE/Ext . call	NA	Not provided by the SIP set (i62).
7	SIP	SIP	SIP	NA	Not provided by the SIP set (i62).

6.5.2.3 Attended transfers

Test	Action			Result	Comment
	A Transfe ree	B Transfe ror	C Transfe r Target		
1	OXE/Ext . call	SIP	OXE/Ext . call	OK	
2	SIP	OXE/Ext . call	OXE/Ext . call	OK	
3	OXE/Ext . call	OXE/Ext . call	SIP	OK	
4	SIP	OXE/Ext . call	SIP	OK	
5	OXE/Ext . call	SIP	SIP	OK	
6	SIP	SIP	OXE/Ext . call	OK	
7	SIP	SIP	SIP	OK	

6.6 Attendant

6.6.1 Test Objectives

An attendant console is defined on the system. Call going to and coming from the attendant console are tested.

6.6.2 Test Results

Test	Action	Result	Comment
1	call to attendant (using attendant call prefix)	OK_but	(1) Ascom : NCR16019
2	call to attendant (using attendant call prefix), attendant transfers to OXE set, unattended.	OK_but	(1) Ascom : NCR16019
3	call to attendant (using attendant call prefix), attendant transfers (semi-attended) to OXE set, attended.	OK_but	(1) Ascom : NCR16019
4	OXE set calls to attendant (using attendant call prefix), attendant transfers (semi-attended) to SIP set, attended.	OK_but	(1) Ascom : NCR16019
5	call to attendant (using attendant call prefix), attendant transfers (attended) to OXE set, attended.	OK_but	(1) Ascom : NCR16019
6	OXE set calls to attendant (using attendant call prefix), attendant transfers (attended) to SIP set, attended.	OK_but	(1) Ascom : NCR16019

(1) During a call with an attendant station, i62 set can put the attendant on hold but isn't able to make a new call. i62 is able to take a second call when in conversation with the attendant. i62 doesn't care about 488 NOT ACCEPTABLE HERE message send by OXE.

A correction will be done by Ascom. When trying to put the attendant on hold, this action will fail. The only possible action will be to go back to the original call with the attendant station.

6.7 Voice Mail

6.7.1 Test Objectives

Voice Mail notification, consultation and password modification must be checked.
MWI (Message Waiting Indication) has to be checked.

6.7.2 Test Results

Test	Action	Result	Comment
1	A Voice Mail message for the SIP subscriber is generated. Check that MWI is activated. / Dial prefix "570" + target extension or target extension + suffix "8"	OK	
2	Message consultation	OK	
3	Password modification	OK	
4	SIP call to a OXE user forwarded to Voice Mail / Dial "51 + VoiceMail extension", wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK	
5	OXE call to a SIP user forwarded to Voice Mail / Dial "51 + VoiceMail extension", wait for acknowledgement ring back tone from OXE / Dial "41" for forward cancellation	OK	

6.8 Duplication and Robustness

6.8.1 Test Objectives

Check how the system will react in case of a CPU reboot, switchover or link failure etc. The test system is configured with spatial redundancy (duplicate call servers on two different IP subnetworks).

Spatial redundancy can be configured in two ways:

“Alternate Proxy method”: Specify both CS MAIN addresses as primary and alternative proxy respectively. Requires that on non availability of primary proxy, secondary proxy is used. Requires ability to send outgoing call and accept incoming calls from secondary proxy just after the switchover. In dialog, it is not possible to update a call with this redundancy method (put on hold, transfer....)

“DNS method”: Do not specify a proxy address, only SIP domain. Specify the CS MAIN addresses as first and second DNS server, respectively. Requires that (at least on non availability of current proxy) a new DNS request is issued for every message. Only MAIN CS will respond. Requires ability to send outgoing call and to accept incoming calls from secondary CS when it becomes new MAIN.

For each configuration, check:

Can new outgoing calls be made immediately after switchover?

Are existing calls maintained after switchover?

Are incoming calls (from new MAIN CS) accepted immediately after switchover?

Can existing call be modified (transfer, hang-up, etc.) after switchover?

Check if a session that has been started before switchover is maintained after switchover, i.e. does the new MAIN CS send session updates and is this accepted by the client?

6.8.2 Test Results

Test	Action	Result	Comment
1	Spatial redundancy, using “Alternate Proxy method”: Switchover to standby call server. Check that an existing calls are maintained.	OK	SIP RE-INVITE after a session timer exceed coming from the new main call server are accepted on i62
2	Spatial redundancy, using “Alternate Proxy method”: Switchover to standby call server. Check that an outgoing call can be done just after the switchover.	OK_but	Switches between call servers only occur after “Register”. Use a small registration period to limit non-available period on i62 (120 seconds set as default on i62)
3	Spatial redundancy, using “DNS method”, OXE used as DNS server or using a delegation server: Switchover to standby call server. Check that an existing call can be updated (put on hold, transfer...).	OK	

4	Spatial redundancy, using “DNS method”, OXE used as DNS server or using a delegation server: Switchover to standby call server. Check that an existing call can be updated (put on hold, transfer...).	NOK	In dialog SIP messages are sent to the old main call server. It is not possible to update an existing call. I62 uses the IP address of its DNS cache until it registers on the new main call server. Ascom CR18091
5	Spatial redundancy, using “DNS method”, OXE used as DNS server or using a delegation server: Switchover to standby call server. Check that an outgoing call can be done just after the switchover.	OK_but	I62 uses the IP address of its DNS cache until it registers on the new main call server. Use a small registration period to limit non-availability period on i62 (120 seconds set as default on i62). The maximum failover timer would be an expires + a sip message timeout (32s).
6	Switchover to Passive Communication Server (PCS). (IP link to main/stand-by call servers down)	OK but	On i62 it is only possible to configure two proxies. PCS use is possible if there is only one main CPU, or if redundant main CPUs share a unique IP. It is not possible to configure a PCS if main/secondary proxy field are filled with main/stand-by CPU addresses.
7	SIP device reboot. Check that calls are possible as soon as device has come back to service.	OK	
8	Temporary Link down with the PBX	OK	

7 WiFi Infrastructure Testing

7.1 Security - i62 association

7.1.1 Cipherring modes testing

The aim is to verify that i62 phones can associate to an AP with the following security:

- None
- WPA-PSK / TKIP
- WPA2-PSK / AES

Then a basic call is made.

Test description:

Configure the SSID and the phone with the tested security. The phone is powered on and a basic call is performed.

Test results:

Test	Result	Comment
Associate with the no security. Make a basic call.	OK	
Associate with the WPA-PSK/TKIP security. Make a basic call.	OK	
Associate with the WPA2-PSK/AES security. Make a basic call.	OK	

7.1.2 Omni Access ALG SIP firewall

The aim is to verify the compatibility of the Omni Access Wireless switch SIP firewall ALG and the i62 phones.

Test description:

The OAW is configured to give the i62 phones a role with the following security policies:

Id	Source	Destination	Service	Action
1	Any	Any	Dhcp	Permit
2	User	CS(proxy SIP)	Svc-sip-udp	Permit
3	CS(proxy Sip)	User	Svc-sip-udp	Permit
4	User	NTP server	Svc-ntp	Permit
5	Any	Any	Icmp	Permit

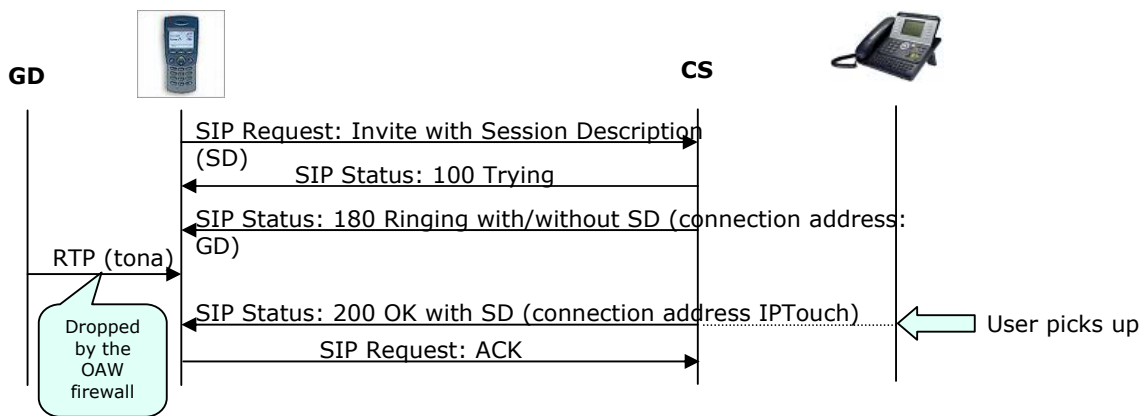
The phone is powered on. It should be ready to do or receive a call. It is correctly registered on the Sip registrar. Incoming and outgoing calls are performed.

Verify that the firewall ALG SIP opens the RTP and RTCP ports correctly and that the voice data path session is labeled with the "V" (like Voice).

Test results:

Test	Result	Comment
ALG SIP. Power on the phone. The phone must be registered and ready to do receive a call.	OK	
ALG SIP. Basic calls are done.	OK	
ALG SIP. Advanced telephony services are done (transfer, forward...)	OK	

Note: Just for information. When an i62 initiates a call, the GD sends RTP packets to the i62 with the tone until the called phone answers. These RTP packets are dropped by the ALG SIP. This is not a problem because the tone is played locally on the i62.



7.2 Voice quality

7.2.1 Speech quality

Description: This test aims at checking the voice quality between 2 set and one of them is a SIP set

- Make a call from a SIP set of <<<System A>>> to another set of <<<System B>>>. Check the subjective quality of the voice. Voice quality is OK
- Same test in reverse direction : voice quality is OK

Test	Result	Comment
Make a call from a SIP set (in Active mode) to another set. Check the subjective quality of the voice on both directions.	OK	
Make a call from one set to the SIP set (in Active mode). Check the subjective quality of the voice on both directions.	OK	
Make a call from a SIP set (in U-APSD mode) to another set. Check the subjective quality of the voice on both directions.	OK	
Make a call from one set to the SIP set (in U-APSD mode). Check the subjective quality of the voice on both directions.	OK	

7.3 Quality of Service

7.3.1 Number of i62 on call per Access Point

The aim is to validate that we can put at least 12 i62 phones on call per AP and that these calls are stable for at least 1 hour.

Test description:

Several phones are associated with a single AP. 6 sets are on call.
Add new phones and try to make call: 12 phones.

Parameters:

- OXE: Framing 20ms, codec G.711 A or μ
- i62: max 20 dBm
- AP: 20 dBm
- The access was configured to support 802.11b/g/n (2.4 Ghz) and 802.11a/n (5Ghz).

Test results:

Tests were performed with 12 i62 phones.

Test	Result	Comment
Max_on_call_WPA2-PSK/AES (in Active mode) 2.4 Ghz (802.11 b/g/n) and 5 Ghz (802.11 a/n)	OK	12 i62 are in call during 20 minutes.
Max_on_call_WPA2-PSK/AES (in U-APSD mode) 2.4 Ghz (802.11 b/g/n) and 5 Ghz (802.11 a/n)	OK	12 i62 are in call during 20 minutes.
12 hour call between two SIP sets 2.4 Ghz (802.11 b/g/n) and 5 Ghz (802.11 a/n)	OK	
12 hour call between an i62 and the GD (UA set). 2.4 Ghz (802.11 b/g/n) and 5 Ghz (802.11 a/n)	OK	

7.3.2 Voice/Data coexistence

The aim is to validate the voice/data coexistence.

Test description:

Two laptops are associated to the same AP as phones and generate data traffic. Iperf is used to generate the data traffic and determines the available data throughput.

This test is a stress test as Iperf will try to use the maximal bandwidth.

Outgoing and incoming data traffic are performed in 2 tests. Phones are putting on call progressively up to 8 phones (4 calls).

Parameters:

- The laptops and the phones are at first connected to the 802.11b/g/n radio and then on the 802.11a/n radio.
- OXE: Framing 30ms, codec G.711
- Iperf generates TCP traffic. Data traffic is encrypted with WPA2-PSK.

Test results:

Test	Result	Comment
Voice_data_coexistence_WPA2-PSK /AES _upstream 2.4 Ghz (802.11 b/g/n)	OK	
Voice_data_coexistence_WPA2-PSK/ AES _downstream 2.4 Ghz (802.11 b/g/n)	OK	
Voice_data_coexistence_WPA2-PSK /AES _upstream 5 Ghz (802.11 a/n)	OK	
Voice_data_coexistence_WPA2-PSK/ AES _downstream 5 Ghz (802.11 a/n)	OK	

During the test, only g clients were present. The data traffic is TCP traffic

7.3.3 Roaming

The aim is to determine the subjective voice disturbance during a roaming.

This test will be performed in:

- WPA2-PSK / AES on 2.4 GHz (802.11 b/g/n)
- WPA2-PSK / AES on 5 GHz (802.11 a/n)

Test description

2 APs are on the same channel and connected to the same OAW or on a Master/local configuration. Several handovers are performed between these 2 APs. We check the subjective voice disturbance.

Test results:

Test	Result	Comment
Handover in call between 2 APs connected to the same OAW. Security: WPA2-PSK/AES on 2.4 GHz (802.11 b/g/n)	OK	No heard loss of voice
Roaming in call between 2 APs connected to different OAWs. Controllers are declared as Master/Local. Security: WPA2-PSK/AES on 2.4 GHz (802.11 b/g/n)	OK_but	RTP port range must be opened on OAW firewall. If not, the RTP flows are dropped on the OAW.
Handover in call between 2 APs connected to the same OAW. Security: WPA2-PSK/AES on 5 GHz (802.11 a/n)	OK	No heard loss of voice
Roaming in call between 2 APs connected to different OAWs. Controllers are declared as Master/Local. Security: WPA2-PSK/AES on 5 GHz (802.11 a/n)	OK_but	RTP port range must be opened on OAW firewall. If not, the RTP flows are dropped on the OAW.

The time displays in the comment column is the time interval between the last voice packet sent/received on the AP1 and the first voice packet sent/received on AP2.

7.3.4 Call Admission Control

Test description:

On the Omni Access wireless switch, we set the number of allowed calls per AP to 2. 2 phones are on call. Initiate a new call (incoming and outgoing) and check the behavior.

With a phone on call, try to roam to a full AP.

Test parameters:

- The QoS configuration for the test is:
 - call-admission-control
 - sip-call-capacity 2
 - call-handoff-reservation 0

The tested configuration is:

- TSPEC “disable” on the i62 phones and OAW controller / “Disconnected Extra Call” unchecked on the OAW QoS configuration

Test results:

Test	Result	Comment
Access point is full. Power on an i62 phone.	NOK	The phone receives a “Death” answer form the AP. The association is possible when one call is ended on the AP.

Access point is full. Call from an idle i62.	OK	The call is not accepted. The set receives an "User busy" message from the controller.
Access point is full. An idle i62 receives a call.	OK	The call is not accepted. OXE receives an "User busy" message from the controller.

7.3.5 WMM and U-APSD

On the OXE PABX, specify a DSCP value 46 for voice.

Wireless captures are performed and analyzed to see WMM and U-APSD information.

“show” command are used on the OAW switch to check some wmm information about the client and the AP.

Test results:

Regarding the Voice/Data convergence test, voice packets are prioritized against data packets (see “Voice/Data coexistence” tests results).

Test	Result	Comment
WMM: downstream voice packets are classified into the Access Category Voice	OK	
U-APSD: U-APSD seems working correctly	OK	

Depending on the DSCP/802.1d values, the downstream voice packets are classified into the matching WMM Access Category.

For example, a RTP/RTCP packets sent by an IPTouch with:

- a DSCP=46 (in decimal) will be classified into the Voice Access Category.
- A DSCP=0 will be classified into the Best Effort Access Category.

The i62 phones use U-APSD for the Voice Access Category.

Downstream RTP/RTCP packets must be classified into the Voice Access Category. So, a correct DSCP value must be used.
The SIP Signaling must not be in the Voice Access Category otherwise the phone will not initialize.
These pre-requisites are satisfied if you set the DSCP=46 in the OXE PBX qos configuration.

7.4 Defence

7.4.1 Omni Access VRRP redundancy

For these tests, two OAW are configured with VRRP redundancy. The aim is to check the phone behavior when the master vrrp OAW fails and the backup one becomes master.

Test description:

Two OAW are configured with vrrp redundancy. The AP has the vrrp virtual address defined as lms-ip.

The i62 phone is on call with an IP Touch or another i62 phone. We disconnect the master vrrp OAW. The expected behavior is that the call is broken (there is no firewall table exchange between the OAW) but that the system is operational.

Test parameters:

Security: WPA2-PSK, WPA2

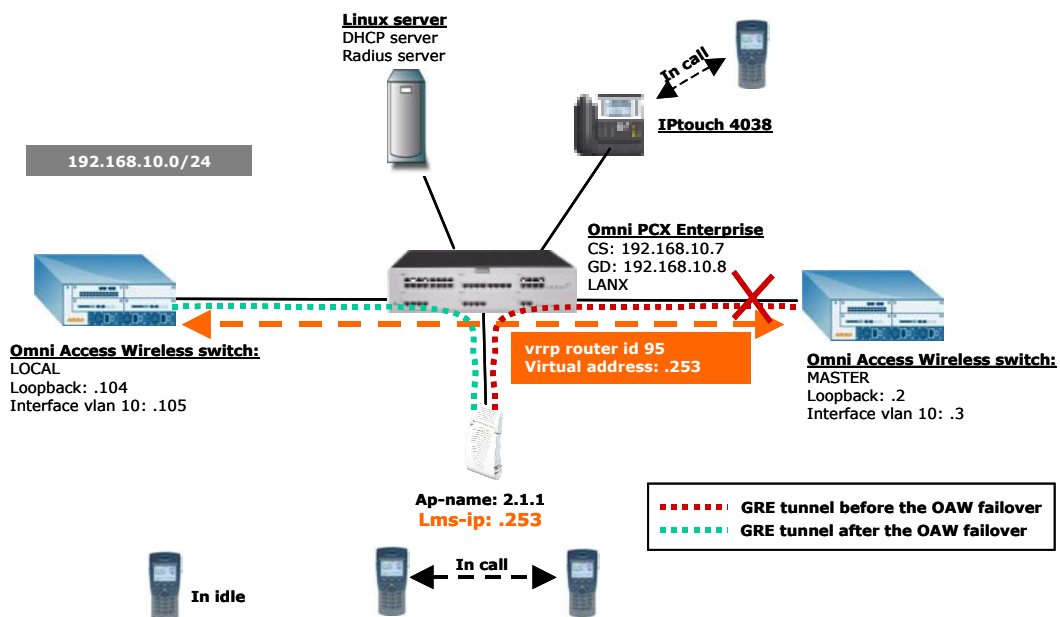
No mobility between both OAW controllers.

Tests results:

The following diagram describes the test platform. A vrrp router is configured on both OAW. The AP establishes its GRE tunnel to the virtual ip address.

For the test, a call between 2 i62 and a call between an i62 and an IPTouch are performed. Another i62 is in idle mode. The Ethernet link of the MASTER switch (that is the MASTER vrrp for the router id) is disconnected. The LOCAL becomes the new MASTER vrrp and the AP establishes its GRE tunnel to the LOCAL switch.

We check the state of both calls and if the i62 phones are operational.



Test	Result	Comment
Defense: i62 - IPTouch call, WPA2-PSK	OK	See remarks below
Defense: i62 - i62 call, WPA2-PSK	OK	See remarks below

After the failover, the RTP/RTCP flows are denied as there is no firewall session table replication. The i62 phones still continue to send RTP/RTCP traffic (they stay active and “connected” is displayed on the screen) even if they don’t receive RTP/RTCP packets; **they don’t hang up automatically**. The user has to hang up.

After that, they are ready to receive or initiate a new call.
“IP mobility” must be disabled otherwise an IP mobility tunnel is created between both OAW when the failed OAW becomes the new active; this results in an instable situation.

8 Appendix A : Application description

- CONFIGURATION :

The WinPDM PC tool application is used to configure Ascom i62 sets. WinPDM application manages the set through PDM cradle, a specific charger with an USB connection.

Minimum PC environment for WinPDM is Xp win SP2 and Java 6.

Recover the i62 set binaries file (.bin) and i62 definition file (.def file).

Recover the WinPDM software for i62.

After WinPDM installation, connect the cradle on PC and place i62 mobile on charger with its battery. Switch on the mobile. Launch the application, WinPDM should recognise the mobile on.

If not, you have to run the setup for the usb driver.

If i62 isn't recognised on base, you have to add the i62 definition file .def for WinPDM. (file > definition file > add)

Once detected, accept to store data in local database to edit parameters when mobile off line.

- SOFTWARE UPGRADE :

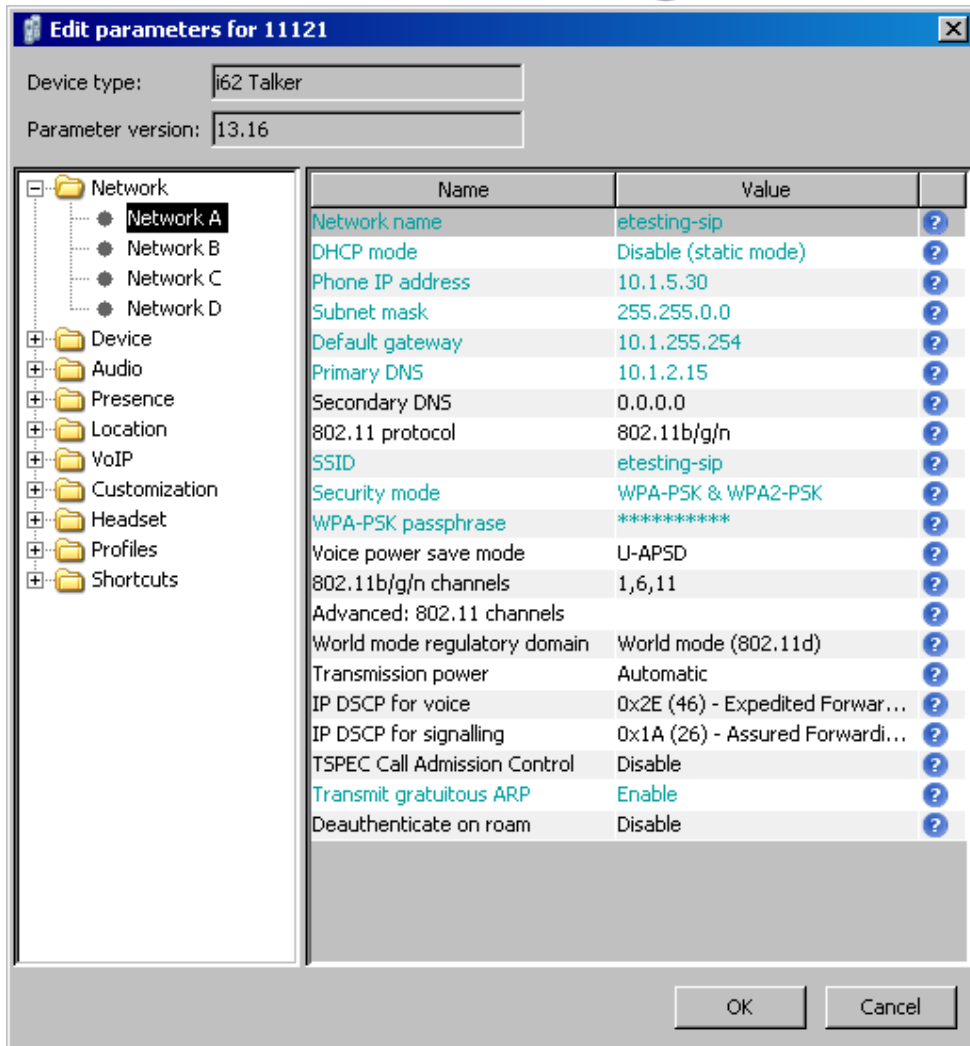
Select 'Devices' tab and double click in the list on device to upgrade. Import binaries ..pkg file and accept. Download is pending.

Moreover, there is a centralized device management "over the air" option. This procedure allows an update of i62 using the WLAN network. Please contact Ascom Wireless for further details.

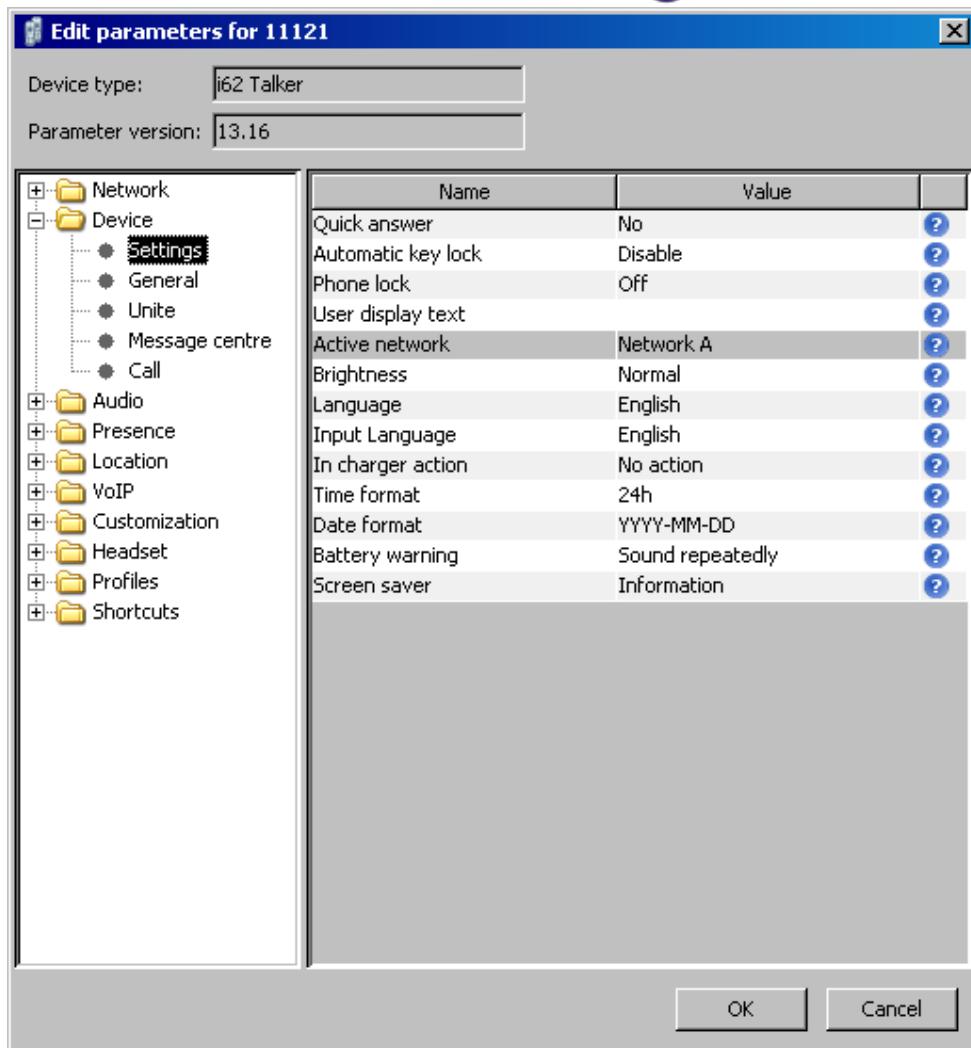
- SETUP A TEMPLATE FOR A SITE

Select 'Template' tab and click 'new' to add and give a name to your site.

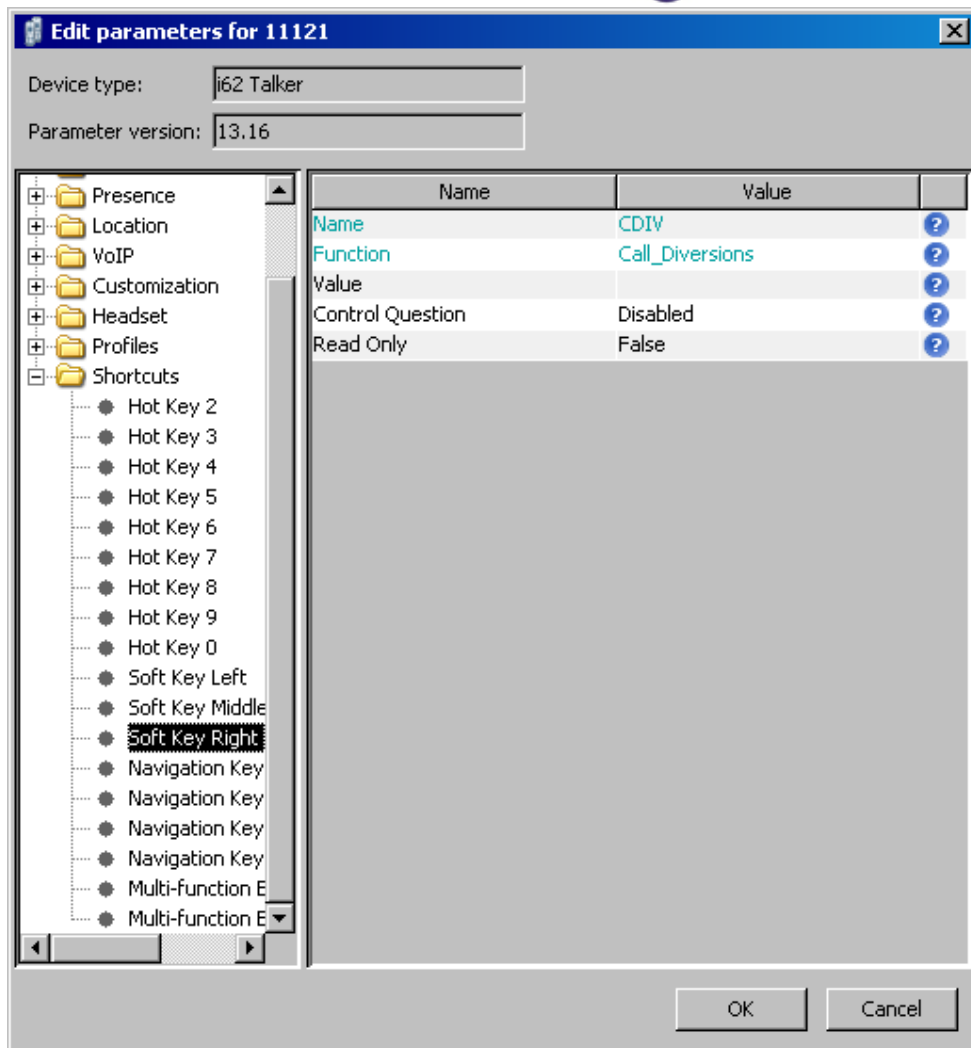
Here an example for i62 settings.



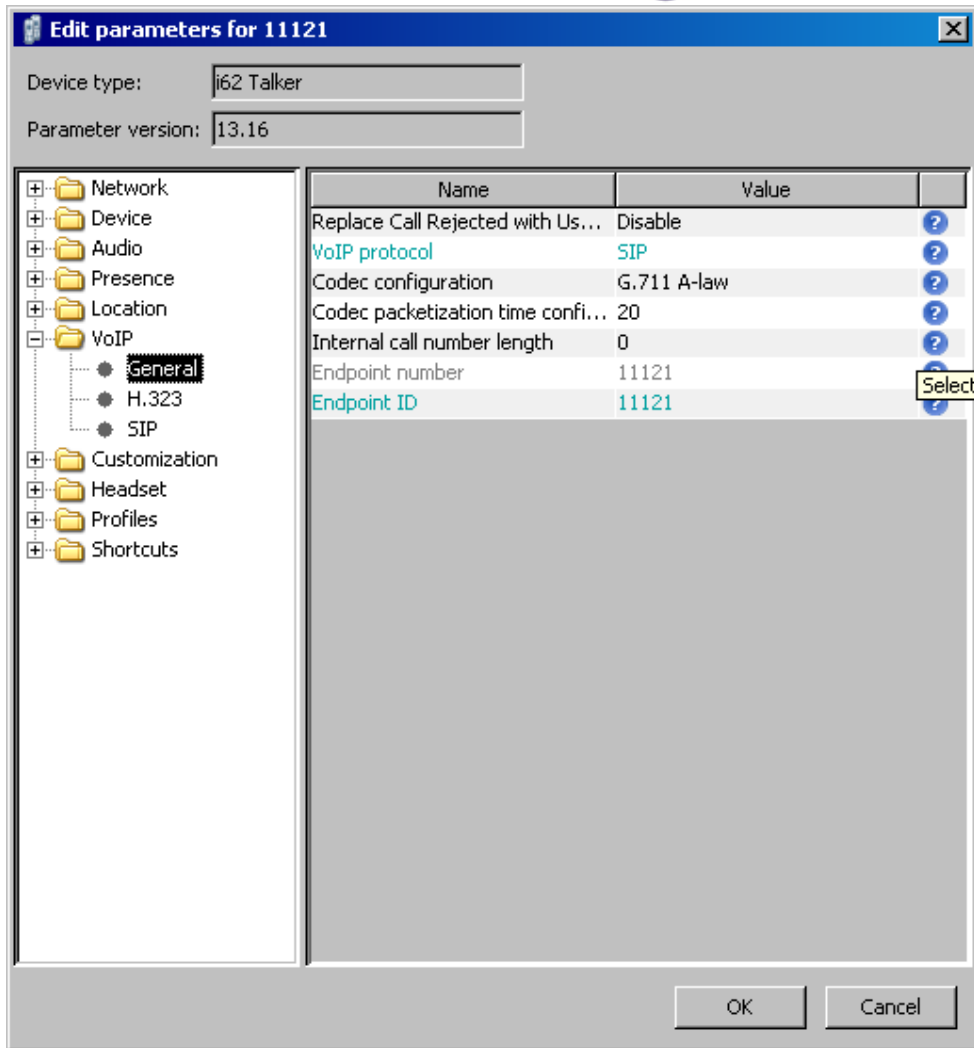
Here system A sets up an access to etesting-sip VoWLAN with WPA2 PSK security. Reg. domain is ETSI and channels 1,6 and 11 are used. TSPEC CAC is disabled and IP configuration is dynamic.



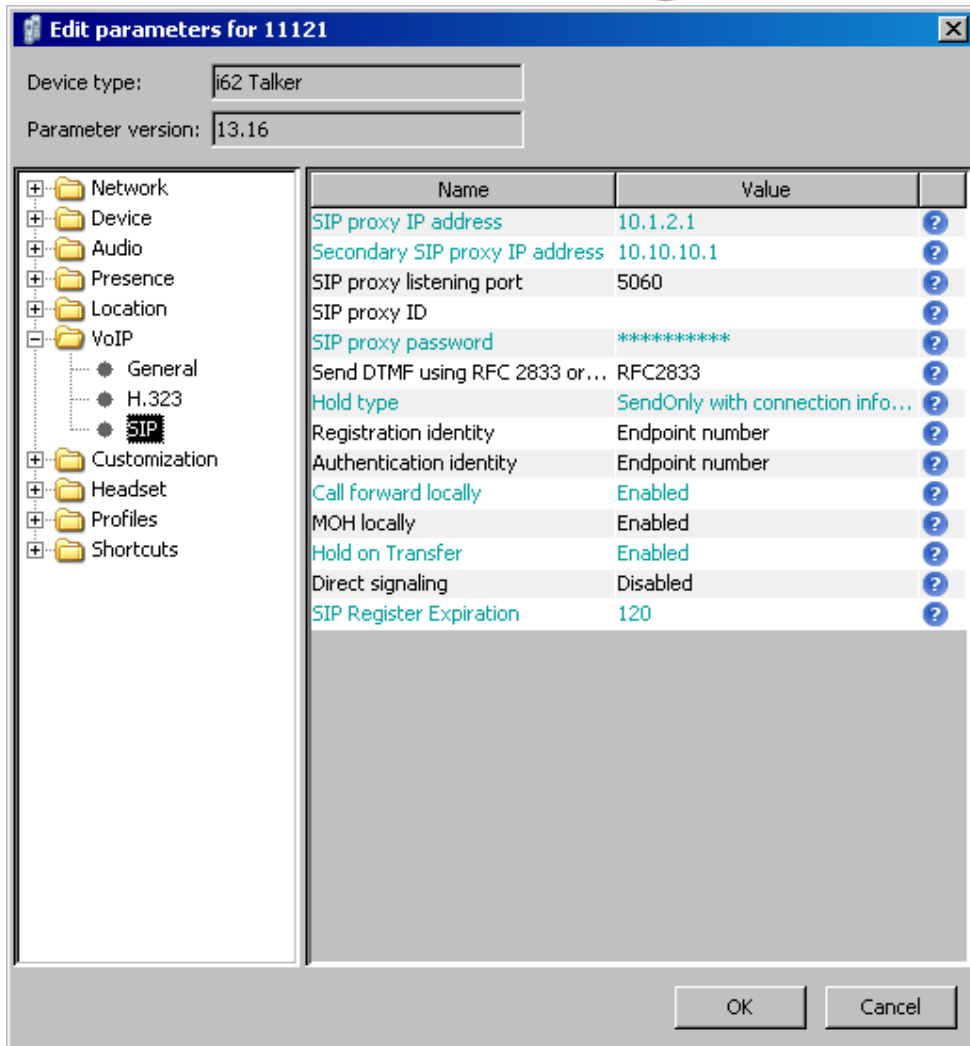
This panel activates the system A. After applying the template, add a user display text and an endpoint ID.



This configuration allows local forward features. Activation can also be done through hotkey.

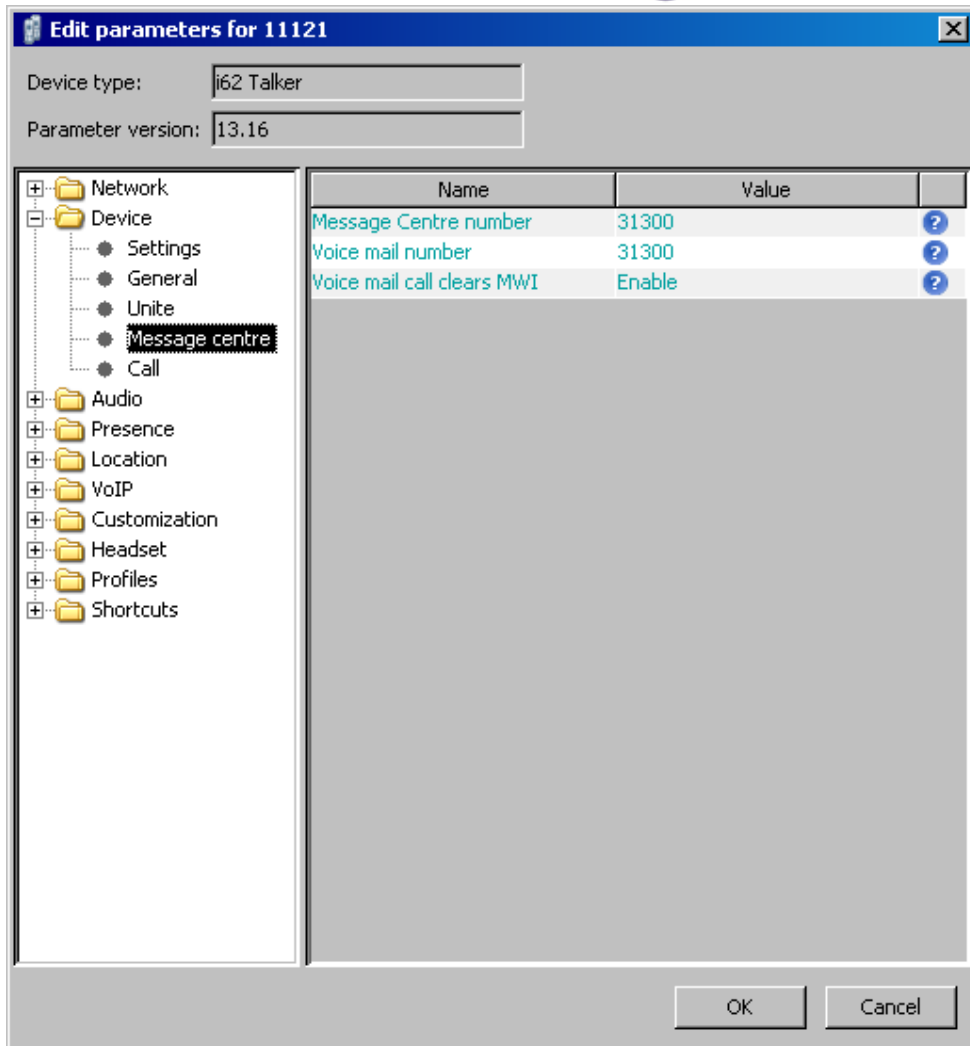


The VoIP protocol is SIP, codec configuration is G711 A law and packetisation time is 20ms.



Here the settings of the SIP gateway. It is the internal OXE one and there is no authentication method for the Proxy SIP (authentication identity parameter).

If this value is not compatible with “min register period”, the i62 set will adapt this value after the reception of “423 interval too brief” message.



Here you can configure Voice mail access.

- SET UP A NEW NUMBER IN THE SITE

Select 'Number' tab and click 'new' to add a number. Select the related template.

You can write a range of numbers.

Note: Edit a number doesn't modify the template

- ERASE A NUMBER / DEVICE

Go to a 'device' menu > factory reset and then associate with number. You can unplug the device to see the screen "Remotely updated"

Display information on handset:

"No system": i62 cannot find the wireless infrastructure with settings matching those configured in the handset. Check the VoWLAN ESSID, the security settings, the regulatory domain settings and the channels used. Then correct system (A, B, C or D) setting if wrong selected.

"No access": Once i62 is associated to the VoWLAN, it could encounter network issues. Check first that the handset has an IP address by entering the "System information" screen and correct with appropriate IP configuration method used (DHCP server or not). Check either the gatekeeper and IMS addresses. Try to ping the default gateway from another wireless client. Try to ping the IMS from another wireless client. Check the SIP proxy address and then authentication method used, i62 does not support Digest authentication method.

"Voice only": means the handset is configured to use both a gatekeeper and an IMS/IP-WiFi, but the set has lost contact with the gatekeeper.

"Messaging only": means the handset is configured to use both a gatekeeper and an IMS/IP-WiFi, but the set has lost contact with the IMS/IP-WiFi.

9 Appendix B: Alcatel-Lucent Communication Platform: configuration requirements

List of prefixes and suffixes defined on OmniPCX TSS lab system (default):

dir	mean
400	Set_In/Out_of_service
401	Recordable_Voice_Guides
402	Park_Call/Retrieve
403	Charging_meter_readout
404	Associated_Set_No_Modif
405	Password_modification
406	Redial_last_number
407	Night_service_answering
408	Contrast_programmation
409	Secret/Identity
41	Forward_cancellation
42	Do_not_disturb
43	Voice_Mail
44	Canc_auto_call_back_on_busy
45	PadLock
46	Consult_Call_back_list
470	Waiting_call_consultation
471	Business_account_code
472	Consult_Messages
473	Paging_Call_answer
474	Language
480	Set_group_entry
481	Set_group_exit
482	Switch_off_Message_LED
483	Mask_Remote_Calling_Identity
484	Cancel_Remote_forward
485	Overfl_busy_to_assoc_set
486	Overf_busy/no_repl_assoc_set
487	Recording_Conversation
490	Ubiquity_Mobile_Programming
491:493	Ubiquity_Services_Pfx
495	Ubiquity_Assistant
500	Last Caller Call back
501	Remote_forward
502	Overflow_on_associated_set
503	Cancel_Overfl_on_assoc_set
504	Protection_against_beeps
505	Substitution
506	Wake_up/appointment_remind
507	Cancel_Wake_up
508	Forward_cancel_by_destinat
509	Meet_me_Conference
51	Immediate_forward
52	Immediate_forward_on_busy
53	Forward_on_no_reply
54	Forward_on_busy_or_no_reply
55	Direct_call_pick_up
56	Group_call_pick_up
570	Voice_Mail_Deposit
580	Tone_test
581	Personal_directory_Progr
582	Personal_Directory_Use
583	Force_type_identification_pfx
584	Suite_Wakeup
585	Suite_Wakeup_Cancel
586	Suite_Dont_Disturb
587	Room_status_management
588	Mini_bar
589	Direct_Paging_Call

```
|591      |Pabx_address_in_DPNSS
|599      |Professional_trunk_seize
|899      |Pabx_address_in_DPNSS
|9        |Attendant_Call
|*        |DTMF_End_to_End_Dialling
|#        |Speed_call_to_associated_set
```

SIP user declaration

```
Consult/Modify: Users
Node Number (reserved) : 1
Directory Number : 11601
Directory name : Noeud 1
Directory First Name : SIP 1
UTF-8 Directory Name : Noeud Un
UTF-8 Directory First Name : SIP Un
Location Node : 1
Shelf Address : 255
Board Address : 255
Equipment Address : 255
Set Type + SIP extension
Entity Number : 10
Set Function + Default
Profile Name : -----
Key Profile + None
Identifier of Domain : 0
Language Id. : 1
Secret Code : ****
Confirm : ****
```

OXE SIP gateway configuration

```
Consult/Modify: SIP Gateway
Node Number (reserved) : 102
Instance (reserved) : 1
Instance (reserved) : 1
Subnetwork number : 2
Trunk Group : 2
IP Address : 192.168.24.6
Machin name : Etoilenoire
Proxy Port Number : 5060
SIP Subscribe Min Duration : 60
SIP Subscribe Max Duration : 86400
Session Timer : 1800
Min Session Timer : 900
Session Timer Method + RE_INVITE
DNS local domain name : etoilenoire.fr
DNS type + DNS A
First DNS IP Address : 192.168.23.6
Second DNS IP Address : -----
SDP in 18x + True
Cac SIP-SIP + False
```

OXE SIP proxy configuration

```

Consult/Modify: Proxy
Node Number (reserved) : 102
Instance (reserved) : 1
Instance (reserved) : 1

Initial timeout : 500
timer T2 : 4000
Dns Timer overflow : 5000
Recursive search + False
Minimal authentication method + None
Authentication realm : icehockey
Only authenticated incoming calls + False
Framework Period : 3
Framework Nb Message By Period : 25
Framework Quarantine Period : 1800
    
```

OXE SIP registrar configuration

```

Consult/Modify: Registrar
Node Number (reserved) : 102
Instance (reserved) : 1
Instance (reserved) : 1

Min expiry date : 60
Max expiry date : 86400
    
```

OXE Quality of service configuration

```

Review/Modify: IP Quality Of Service COS
Node Number (reserved) : 101
Instance (reserved) : 1
IP QoS COS : 0

Quality of Service Category Name : -----
8021Q Used + False
8021p Priority : 5
VLAN ID : 0
TOS/diffServ : 48
UDP Lost : 7
UDP Lost Reinit : 7
UDP Keep-alive : 35
SIP Diff. Service : 46
SIP Lost : 5
SIP Keep Alive : 30
    
```

OXE Phone classes of service configuration

```
Review/Modify: Phone classes of service
Node Number (reserved) : 1
Instance (reserved) : 1
Phone COS : 0
Display UTF-8 + YES
Display call server information + YES
Keep Alive + NO
```

OAW configuration

The following OAW Controller configuration settings are recommended for use with Ascom i62 handsets:

RF Recommended Settings

- Beacon Interval: 100ms
- DTIM Period: 5
- WMM/ U-APSD Enabled
- 802.11d Regulatory Domain: Country specific

Adaptive Radio Management

Enable ARM, voice aware scanning, WMM / UAPSD, and band steering.

User Roles and Policies

The Ascom phones support SIP, so ensure that the user role contains the voice ACL (voice-acl).

Firewall configuration:

```
ip access-list session SIP_WMM_Rules
any any svc-dhcp permit
any any svc-icmp permit
any any svc-sip-udp permit queue high
any any svc-sip-tcp permit queue high
any any svc-ntp permit
any any udp 16384 32767 permit queue high
!
aaa derivation-rules user SIP
set role condition essid equals "etesting-sip" set-value SIP_WMM
!
user-role SIP_WMM
session-acl SIP_WMM_Rules
!
```

Master/Local configuration (failover):

```
vrrp 5
priority 110
ip address 10.1.5.5
description "higher priority on master"
vlan 10
preempt
no shutdown
!
vrrp 6
ip address 10.1.5.13
description "higher priority on local"
vlan 10
preempt
no shutdown
!
```

Access point / WLAN configuration:

```
aaa profile "aaa_phone"
authentication-dot1x "default-psk"
```



```
user-derivation-rules "SIP"
!
ap system-profile "etesting"
  lms-ip 10.1.5.5
  native-vlan-id 10
!
ap system-profile "video"
  lms-ip 10.1.5.13
  native-vlan-id 10
!
wlan edca-parameters-profile station "EDCA-station-sip"
!
wlan edca-parameters-profile ap "EDCA-ap-sip"
  video aifsn 1 ecw-min 3 ecw-max 4 txop 94 acm 1
  voice aifsn 1 ecw-min 2 ecw-max 3 txop 47 acm 1
!
wlan ssid-profile "etesting-sip"
  essid "etesting-sip"
  opmode wpa2-psk-aes
  dtim-period 5
  wpa-passphrase a0865e17df7ef0cb1253cc32c3e83add9baadd9274831456
  edca-parameters-profile station "EDCA-station-sip"
  edca-parameters-profile ap "EDCA-ap-sip"
!
wlan virtual-ap "etesting-sip"
  aaa-profile "aaa_phone"
  ssid-profile "etesting-sip"
!
ap-group "etesting"
  virtual-ap "etesting"
  virtual-ap "etesting-sip"
  ap-system-profile "etesting"
!
ap-group "video"
  virtual-ap "etesting"
  virtual-ap "etesting-sip"
  ap-system-profile "video"
!
```

10 Appendix C: Partner escalation process

The following list of contacts can be used to escalate possible issues according to the country:

Company/Country	Technical Manager/ Service Manager	e-mail
Ascom AG, Wireless Solutions, CH	Christoph Gsell	christoph.gsell@ascom.ch
Ascom Tateco AS, NO	Morten S. Pettersen	Morten.Pettersen@ascom.no
Ascom Nira BV, NL	Kees Voorwinden	Kees.Voorwinden@ascom.nl
Ascom Nira BV, NL	Jacques Koring	Jacques.Koring@ascom.nl
Ascom Tele-Nova Ltd, UK	Adrian Davenport	Adrian.Davenport@ascomtelenova.co.uk
Ascom Wireless Solutions Inc., USA	Tim Overstreet	Tim.Overstreet@ascomwireless.com
Ascom France, FR	Eric Dille	Eric.Dille@ascom.fr
Ascom Danmark, DK	Jaap Bootsman	Jaap.bootsman@ascom.dk
Ascom Germany GmbH, DE	Hermann Füg	Hermann.Fueg@ascom.de
Ascom NV/SA, BE	Kees Voorwinden	Kees.Voorwinden@ascom.nl
Ascom Austria, AT	Karl Burda	Karl.Burda@ascom.se
Ascom Sverige, SE	Mats Andersson	Mats.Andersson@ascom.se
Exhibo SpA, IT	Domenico Pirillo	domenico.pirillo@exhibo.it
International	Marko Savinainen	marko.savinainen@ascom.se

11 Appendix E: AAPP program

11.1 Alcatel-Lucent Application Partner Program (AAPP)

Complete e-business solutions at your disposal

The Application Partner Program is designed to support companies that develop communication applications for the enterprise market, based on Alcatel-Lucent's Omni product family.

The program provides tools and support for developing, verifying and promoting compliant third-party applications that complement Alcatel-Lucent's Omni-based products. Alcatel-Lucent facilitates market access for compliant applications.

The Alcatel-Lucent Application Partner Program (AAPP) has two main objectives:

- **Provide easy interfacing for Alcatel-Lucent communication products:** Alcatel-Lucent's communication products for the enterprise market include infrastructure elements, platforms and software suites. To ensure easy integration, the AAPP provides a full array of standards-based application programming interfaces and fully-documented proprietary interfaces. Together, these enable third-party applications to benefit fully from the potential of Alcatel-Lucent products.
- **Test and verify a comprehensive range of third-party applications:** to ensure proper inter-working, Alcatel-Lucent tests and verifies selected third-party applications that complement its portfolio. Successful candidates, which are labelled Alcatel-Lucent Compliant Application, come from every area of voice and data communications.

The Alcatel-Lucent Application Partner Program covers a wide array of third-party applications/products designed for voice-centric and data-centric networks in the enterprise market, including terminals, communication applications, mobility, management, security, ...

Web site

If registered Application Partner, you can access the AAPP website at this URL:
<http://applicationpartner.alcatel-lucent.com>

11.2 Alcatel-Lucent.com

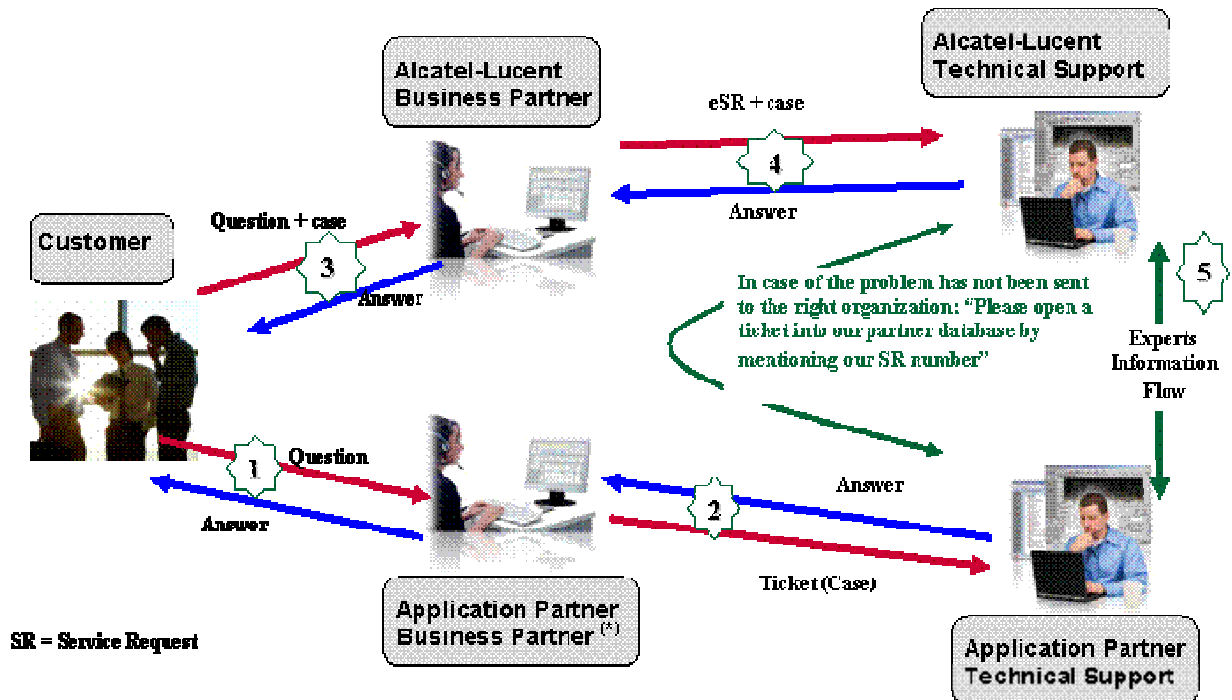
You can access the Alcatel-Lucent website at this URL: <http://www.Alcatel-Lucent.com/>

12 Appendix F: AAPP Escalation process

12.1 Introduction

The purpose of this appendix is to define the split of responsibilities and the escalation process to be applied by the Alcatel-Lucent Business Partners when facing a problem with a solution involving an Alcatel-Lucent platform and a Third-Party application *with or without a valid Alcatel-Lucent Inter-Working Report*.

If a problem occurs on an installation involving Alcatel-Lucent platforms and a certified product or application, both parties, Alcatel-Lucent and the Application Partner, are engaged as follows:



(*) The Application Partner Business Partner can be a Third-Party company or the Alcatel-Lucent Business Partner itself

12.2 Escalation in case of certified application/products

The Alcatel-Lucent support will be limited to applications with a valid Inter-Working Report (IWR). Known problems or remarks mentioned in the IWR will not be taken into account.

A valid IWR means an official IWR exists which is posted on the Alcatel-Lucent Enterprise Business Portal and mentions the same release/version of the software of both parties as those of the current customer installation (Or an official agreement between Alcatel-Lucent and the Third-Party exists to support the customer installation if the release/version doesn't match those mentioned in the latest IWR).

If there is an interworking issue, both parties, Alcatel-Lucent and the Application Partner, are engaged:

Case 1: the responsibility can be established 100% on Alcatel-Lucent side.

In that case, the problem must be escalated by the ALU Business Partner to the Alcatel-Lucent Support Center using the standard process: open a ticket (eService Request -eSR)

Case 2: the responsibility can be established 100% on Application Partner side.

In that case, the problem must be escalated directly to the Application Partner by opening a ticket through the Partner Hotline. In general, the process to be applied for the Application Partner is described in the IWR.

Case 3: the responsibility can not be established.

In that case the following process applies:

- The Application Partner shall be contacted first by the Business Partner (responsible for the application, see figure in previous page) for an analysis of the problem.
- The Alcatel-Lucent Business Partner will escalate the problem to the Alcatel-Lucent Support Center only if the Application Partner has demonstrated with traces a problem on the Alcatel-Lucent side or if the Application Partner (not the Business Partner) needs the involvement of Alcatel-Lucent.

In that case, the Alcatel-Lucent Business Partner must provide the reference of the Case Number on the Application Partner side. The Application Partner must provide to Alcatel-Lucent the results of its investigations, traces, etc, related to this Case Number.

Alcatel-Lucent reserves the right to close the case opened on his side if the investigations made on the Application Partner side are insufficient or do not exist.

IMPORTANT NOTE 1: The possibility to configure the Alcatel-Lucent PBX with ACTIS quotation tool in order to interwork with an external application is not a guarantee of the availability of the solution. Please check the availability of the Inter-Working Report on the AAPP (Url: <https://private.applicationpartner.alcatel-lucent.com>) or Enterprise Business Portal (Url: [Enterprise Business Portal](#)) web sites.

IMPORTANT NOTE 2: Involvement of the Alcatel-Lucent Business Partner is mandatory, the access to the Alcatel-Lucent platform (remote access, login/password) being the Business Partner responsibility.

12.3 Escalation in case of non-certified application/product

If an Alcatel-Lucent Business Partner escalates an issue where a 3rd party application is involved and the following conditions apply:

1. no IWR exist (not available on the Enterprise Business Portal for Business Partners or on the Alcatel-Lucent Application Partner web site) ,
2. Or the 3rd party company is referenced as AAPP participant but with no existing IWR,
3. Or the existing IWR is available but the release/version of the both parties (Alcatel-Lucent and 3rd-party) are not the same than those currently deployed at the customer site (see exception in Note 2).

In this case, the only responsibility of the Alcatel-Lucent Technical Support is to verify that the Alcatel-Lucent platform is correctly installed and configured for a standard use and that the Alcatel-Lucent equipments perform as expected. If that's the case, Alcatel-Lucent will be forced to close the case.

If the Alcatel-Lucent Business Partner, the customer or the 3rd party company need additional and specific involvement from Alcatel-Lucent, there are two options:

- Either request a quote for specific investigation and diagnosis (with no agreement to fix the issue),
- Or the AAPP program process is followed to officially certify the 3rd party application/product.

For both options, just send the request to the AAPP team (by opening an e-SR).

IMPORTANT NOTE 1: Even if the 3rd party company is able to demonstrate the issue is on the Alcatel-Lucent side, there is no obligation from Alcatel-Lucent to fix it (there is no official IWR established between the two parties).

IMPORTANT NOTE 2: For case 3, Alcatel-Lucent and the Third-Party company may decide to provide a document specifying the possible extension of the IWR by mentioning the list of releases/versions officially supported. (Another way is to update an existing IWR with new release/version compatibility).

12.4 Technical Support access

The Alcatel-Lucent **Support Center** is open 24 hours a day; 7 days a week:

- e-Support from the Application Partner Web site (if registered Alcatel-Lucent Application Partner): <http://applicationpartner.alcatel-lucent.com>
- e-Support from the Alcatel-Lucent Business Partners Web site (if registered Alcatel-Lucent Business Partners): <https://businessportal.alcatel-lucent.com> click under “Let us help you” the *eService Request* link
- e-mail: Ebg_Global_Supportcenter@alcatel-lucent.com
- Fax number: +33(0)3 69 20 85 85
- Telephone numbers:

Alcatel-Lucent Business Partners Support Center for countries:

Country	Supported language	Toll free number
France	French	+800-00200100
Belgium		
Luxembourg		
Germany	German	
Austria		
Switzerland		
United Kingdom	English	
Italy		
Australia		
Denmark		
Ireland		
Netherlands		
South Africa		
Norway		
Poland		
Sweden		
Czech Republic		
Estonia		
Finland		
Greece		
Slovakia		
Portugal		
Spain	Spanish	

For other countries:

- English answer : + 1 650 385 2193
- French answer : + 1 650 385 2196
- German answer : + 1 650 385 2197
- Spanish answer : + 1 650 385 2198

