

[ ]

# INTEROPERABILITY REPORT

## Ascom IP-DECT

Innovaphone IP302, IP810 and IP6010, Firmware version 10

IP PBX Integration (H323)

Ascom IPBS, Software version 6.1.3

Ascom, Gothenburg

October 2013

innovaphone

PURE IP-COMMUNICATIONS

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## INTRODUCTION

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This interoperability report describes test results and optimal configuration of Ascom IP-DECT towards the Innovaphone IP PBX.

The document should be used in conjunction with configuration guide(s) from Innovaphone and Ascom.

### **Ascom**

Ascom Wireless Solutions is a leading provider of on-site wireless communications for key segments such as hospitals, manufacturing industries, retail and hotels. More than 75,000 systems are installed at major companies all over the world. The company offers a broad range of voice and professional messaging solutions, creating value for customers by supporting and optimizing their Mission-Critical processes. The solutions are based on VoWiFi, IP-DECT, DECT and Nurse Call and paging technologies, smartly integrated into existing enterprise systems.

Founded in the 1950s and based in Göteborg, Sweden, Ascom Wireless Solutions is part of the Ascom Group and listed on the Swiss Stock Exchange. The company has subsidiaries in 10 countries and approximately 1,200 employees worldwide.

For further information, see the following URL: <http://www.ascom.com/ws>.

### **Innovaphone**

Innovaphone develops pure IP telephone systems under the name of "Innovaphone PBX", uniting security and high availability with the flexibility and scalability of IP. The Innovaphone PBX hardware comprises gateways and a series of IP telephones which are developed entirely in Germany and manufactured to a large extent in Europe. The entire product range is based on the unified hardware and software platform which is the core of the Innovaphone product philosophy. The number of activated licenses can be determined as required which renders the solution suitable for companies of any size: from small companies over medium size companies with several branch offices to large enterprises. The Innovaphone IP telephone systems are available exclusively through authorised distributors and resellers.

Innovaphone has been playing a decisive role in the development of IP telephony ever since the company was founded in 1997. Head office is located in Sindelfingen, South Germany.

For further information, see the following URL: <http://www.innovaphone.com/>

SITE INFORMATION

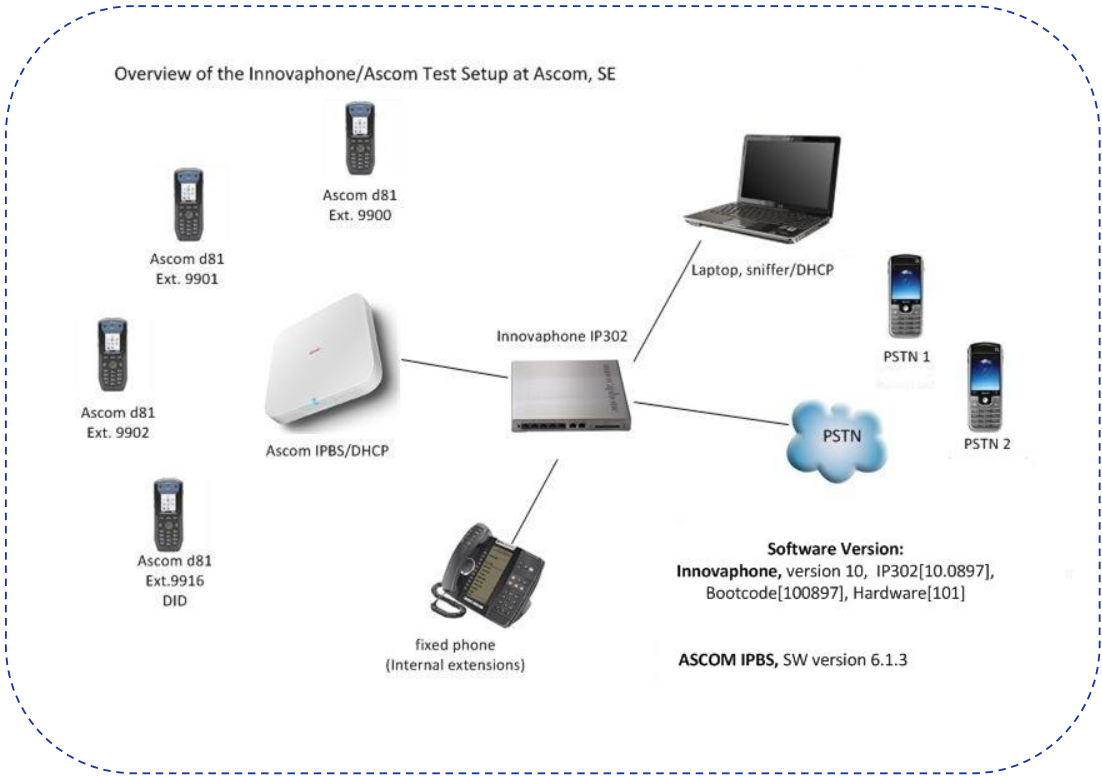
---

Test Site: Ascom HQ  
Gothenburg  
Sweden

Participant(s):

Raheleh Kamali (Ascom HQ, SE)  
Peter Åstrand (Ascom HQ, SE)

Test Topology



## SUMMARY

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Innovaphone, version 10

Test cases in nearly all areas with regard to Ascom IP-DECT and Innovaphone IP PBX passed successfully.

Overall, the conclusion has to be that H.323 integration towards IP302 is very good.

Queries about licensing should be directed to Innovaphone.

Please also see "**APPENDIX A: TEST CONFIGURATIONS**" for further details.

### IP-DECT

High Level Functionality	Result
Basic Call	OK <sup>b</sup>
DTMF	OK
Hold, Retrieve, Enquiry and Brokering	OK
Attended Transfer	OK
Blind-transfer	OK
Semi-attended Transfer	OK
Call Forward Unconditional	OK <sup>a</sup>
Call Forward No Reply	OK <sup>a</sup>
Call Forward Busy	OK <sup>a</sup>
Call Waiting	OK <sup>a</sup>
Message Waiting Indication	OK
Do Not Disturb	OK
Calling Line/Name Identification	OK
Connected Line/Name Identification	OK

a. Tested with Supplementary Services enabled

b. See **Known Issue(s)** in page 7

## General Conclusions

Ascom interoperability verification produced good results towards Innovaphone IP302 version 10 with few exceptions, See *Known Issue(s)*: in page 7.

IP-DECT was configured to register at the IP PBX using endpoint numbers. The codec of choice for these tests was G.711A/20ms, while DTMF signalling was transmitted through RTP. One can say that, in comparison to SIP, H.323 requires little configuration besides the IP address of the H.323 gatekeeper and above mentioned settings. Parameter settings are elaborated upon in the *“TEST RESULTS”* section for respective platforms.

Call waiting (CW), do-not-disturb (DND) and call diversion (CDIV) were tested with supplementary services enabled on the IP-DECT base station (IPBS). Practically all test cases regarding basic call, brokering/enquiry, transfer and CDIV passed with positive results. No issues were logged for follow-up at Ascom HQ.

## TEST RESULTS

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Innovaphone IP302, v 10

- Ascom IPBS, v 6.1.3

Signalling Protocol:

- H.323

Innovaphone IP302:

- Settings are based on "Ascom VoIP Gateway: Installation and Operation Manual" (TD 92326GB), pp. 62-100
- LDAP replication required between IP PBX and IP-DECT master
- DSCP should be configured appropriately under IP -> Settings

Ascom IPBS:

- "Endpoint ID" and "Endpoint Number" corresponds to name and number in the user object
- (Assigning password is optional, it works in both cases)
- "Enbloc Dialling" and "Allow DTMF through RTP" enabled

### Known Issue(s):

- No timeout when DECT calls another DECT that does not answer (PBX issue, per design)
- Internal ring tone after external call is blind-transferred to C, which does not save external number in call list (per IPBS design)
- Ascom IP-DECT does not support post-dial (per design)
- Possible to divert call to "diverter" (calling party hears busy, minor issue)

## Test Areas

---

Basic Call, DTMF: 94% pass (17/18)

- CNIP/CONP OK, requires IP PBX configuration
- DTMF OK
- Overlap sending (post-dial) not supported by Ascom d81
- DECT ignores DECT NOK (#5103.1), no timeout

Basic Call, Portable Unavailable: 100 % pass (8/8)

- Good results overall

Procedure Mapping: 100% pass (2/2)

- Test cases passed with supplementary services and LDAP replicator enabled
- “Enbloc dialing” and “Local R-Key Handling” are checked in IPBS

Three-party Services: 95% pass (39/41)

- CNIP/CONP OK (updated after transfer)
- CLIP/COLP could not be verified properly for PSTN
- A calling A is treated as any other call (#5126.1)

Call Diversion: 90% pass (9/10)

- Supplementary Services enabled
- Feature codes supported through IPBS
- Test case #5132.1 (Diversion to Diverter), it is possible to divert the phone to itself (minor issue).

Telephony Features: 100% pass (9/9)

- Limited testing due to lack of 3rd party competence
- DND OK, Supplementary Services enabled
- Group calls tested with good results

Please keep in mind that metrics do NOT account for untested cases.



## APPENDIX A: TEST CONFIGURATIONS

---

### Innovaphone IP302, version 10

Below one will find screen shots reflecting the management interface and some aspects of setting up the PBX application on the IP302.

General -> info

**IGWP01: innovaphone IP302**

General Interfaces IP4 IP6 Services PBX Gateway Maintenance

Info Admin Compact-Flash License Kerberos Certificates

Version	10.00 sr2 IP302[10.0897], Bootcode[100897], Hardware[101]
SerialNo	00-90-33-1e-02-fd (20)
DRAM	16 MB
FLASH	8 MB
Coder	4 Channels of G.711,G.729,G.723
Conference	0 Channels
HDLC	2 Channels
Sync	BRI1-L1
Temperature	44.0° Celsius
SNTP Server	10.11.24.243
Time	25.10.2013 22:04
Uptime	2d 7h 27m 2s

IP->Settings: DSCP markings used for signalling and RTP

**IGWP01: innovaphone IP302**

General Interfaces IP4 IP6 Services PBX Gateway Maintenance

General ETH0 ETH1 PPP NAT

Settings Routing ARP

TOS Priority - RTP Data  0xc0

TOS Priority - Signaling  0x68

First UDP-RTP Port  Number of Ports  First/Last 16384 / 32767

First UDP-NAT Port  Number of Ports  First/Last 0 / 0

- Local Networks -

Address	Mask
<input type="text"/>	<input type="text"/>

- Private Networks -

Address	Mask
<input type="text"/>	<input type="text"/>

LDAP-> Server: Read-write account "ipdect" used for replication

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 **Services** PBX Gateway Maintenance

HTTP NTP Sync Update Logging **LDAP** SNMP Telnet DNS

**Server**  
 Srv-Status  
 Replicator  
 Rep-Status  
 Expert

User	Password	Write Access
ldap-guest	.....	<input type="checkbox"/>
ipdect	.....	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

- Allowed networks -

Address	Mask	Force TLS
10.11.24.0	255.255.255.0	<input type="checkbox"/>
		<input type="checkbox"/>

LDAP->Server-Status: Successful LDAP replication

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 **Services** PBX Gateway Maintenance

HTTP NTP Sync Update Logging **LDAP** SNMP Telnet DNS

**Server**  
 Srv-Status  
 Replicator  
 Rep-Status  
 Expert

connections	3	
write connections	3	
rx search	793	
rx modify	17	
rx add	0	
rx del	0	
rx abandon	0	
tx notify	1105	
tx error	0	
tx error 49	0	(Invalid Credentials)
tx error 50	0	(Insufficient Access Rights)

PBX->General: General Settings

IGWP01: innovaphone IP302


General Interfaces IP4 IP6 Services **PBX** Gateway Maintenance

Config Objects Registrations Calls SOAP myPBX Dyn-PBXs

- General
- Security
- Filter
- myPBX
- Import
- Export

PBX Mode  ▾

---

System Name  Use as Domain

PBX Name

Unknown Registrations  - With PBX Pwd only

Music On Hold URL

External Music On Hold

Response Timeout

Dial Complete Timeout

No of Regs w/o Pwd.

Recall Timeout

Max Call Duration (h)

Enable External Transfer

No CLIR on internal calls

RTP Proxy

Generate CDRs

Route Root-Node External Calls to  on Master or Slave with License Only

Route PBX-Node External Calls to

Route Internal Calls to

Escape Dialtone from

Prefix for Intl/Ntl/Subscriber

Log Calls

---

-Licenses-

Name	Count	Usage	Local	Slaves
Port9	100	4	4	0
Standby9	100	100	100	0
Voicemail9	100	100	100	0
Mobility9	100	0	0	0
Operator9	100	0	0	0
SoftwarePhones9	100	0	0	0

PBX->Objects: PBX objects added to PBX application

## IGWP01: innovaphone IP302

General Interfaces IP4 IP6 Services **PBX** Gateway Maintenance

Config **Objects** Registrations Calls SOAP myPBX Dyn-PBXs

User  new  
 show  
 •

Long Name	Name	No	HW-ID	Node	PBX	Filter	Groups	CF*
DECT				root	.		+	+
DECT2				root	.		+	+
EXTERN	EXTERN	EXTERN	root	.	normal		+	+
FE	9900	9900	9900	root	.		FE*	+
Miratel 6202	6202	6202	6202	root	.		+	+
Miratel 6212	6212	6212	6212	root	.		+	+
Miratel 6213	6213	6213	6213	root	.		+	+
Miratel 6221	6221	6221	6221	root	.		+	+
Miratel 6222	6222	6222	6222	root	.		+	+
Miratel 6223	6223	6223	6223	root	.		+	+
Miratel 6231	6231	6231	6231	root	.		+	+
serak 9900	9900	9900	9900	root	.		+	+
serak 9901	9901	9901	9901	root	.		+	+
serak 9902	9902	9902	9902	root	.		+	+
serak 9903	9903	9903	9903	root	.		+	+
serak 9904	9904	9904	9904	root	.		+	cfu:9906
serak 9905	9905	9905	9905	root	.		FE*	+
serak 9906	9906	9906	9906	root	.		FE*	+
serak 9907	9907	9907	9907	root	.		FE*	+

PBX->Objects: Adding a new DECT system

Dect System - Google Chrome

10.11.24.244/PBX0/ADMIN/mod\_cmd\_login.xml?cmd=show&user-guid=019fad78e909d311929a0090331e02

**General**

Description

Long Name

Critical

PBX

PBX->Objects: Adding a new user object

The screenshot shows a web browser window titled 'Edit User - Google Chrome' with the URL `10.11.24.244/PBX0/ADMIN/mod_cmd_login.xml?cmd=show&user-guid=88ca04a6e909d31194e60090331e02fd&loc="&filter="&cor`. The interface has three tabs: 'General', 'User', and 'DECT'. The 'General' tab is active and contains the following fields:

- Description:  Hide from LDAP
- Long Name:  Display Name:
- Name:  Number:  Critical
- Password:  retype Password:
- Node:  Local:
- PBX:
- Send Number:  URL:
- Group Indications:
- Config Template:

Below these fields is a 'Devices' section with a table:

Hardware Id	Name	PBX Pwd No Filter
<input type="text" value="9900"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

At the bottom of the form are buttons for 'OK', 'Cancel', 'Apply', 'Delete', and 'Help'.

PBX->Objects: Linking a user object to DECT system (IP-DECT only)

The screenshot shows the same 'Edit User' web browser window, but with the 'DECT' tab selected. The 'General' and 'User' tabs are visible but inactive. The 'DECT' tab contains the following fields:

- Gateway:
- IPEI:
- Idle Display:
- AC:

At the bottom of the form are buttons for 'OK', 'Cancel', 'Apply', 'Delete', and 'Help'.

PBX->Objects: Adding a gateway object ("EXTERN")

**General Gateway**

Description  Hide from LDAP

Long Name  Display Name

Name  Number  Critical

Password  retype Password

Node  Local

PBX  Reject ext. Calls

Max Calls  Response Timeout

Reporting

-Devices-

Hardware Id	Name	PBX	Pwd	No Filter
EXTERN	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel Apply Delete Help

Gateway->GK: Binding an interface to the gateway object ("EXTERN")

**IGWP01: innovaphone IP302**

General Interfaces IP4 IP6 Services PBX **Gateway** Maintenance

General Interfaces SIP **GK** Routes CDR0 CDR1 Calls

Interface	CGPN-In	CDPN-In	CGPN-Out	CDPN-Out	Alias	Registration	Product
GW1	+						
GW2	+						
GW3	+						
GW4	+						
GW5	+						
GW6	+						
GW7	+						
GW8	+						
GW9	+						
GW10	+						
GW11	+						
GW12	EXTERN	+					EXTERN → 127.0.0.1

Gateway->GK: Registering the gateway in H.323

Name:

Disable:

Protocol:

Mode:

Address:

Address:  (alternate)

Gatekeeper Identifier:

Local Signaling Port:

---

Authorization

Password:  Retype:

---

Alias List

Name	Number
EXTERN	<input type="text"/>
<input type="text"/>	<input type="text"/>

---

Media Properties

General Coder Preference:  Framesize [ms]:  Silence Compression  Exclusive

Local Network Coder:  Framesize [ms]:  Silence Compression

Enable T.38  SRTP:  No DTMF Detection  Enable PCM  Media-Relay

Record to (URL):

---

H.323 Interop Tweaks

No Faststart  No H.245 Tunneling

Suppress HLC  Suppress FTY  Suppress Subaddr

OK Cancel Apply Delete Help

PBX->Registrations: Overview of H.323 registrations

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 Services **PBX** Gateway Maintenance

Config Objects **Registrations** Calls SOAP myPBX Dyn-PBXs

Address	Long Name	Name	No	Device	Product	Firmware	Uptime
127.0.0.1	H323	EXTERN	EXTERN	EXTERN	innovaphone IP302:IGWP01	9.00 hotfix15 [9.061078/9061078/101]	9d 2h 50m 27s
10.11.24.151	SIP	Test 24	9924	9924	snom320	7.3.30	9d 2h 46m 37s
10.11.24.168	SIP	Test 25	9925	9925	PolycomSoundPointIP-SPIP_335-UA	3.2.1.0078	9d 2h 50m 20s
127.0.0.1	H323	Test 29	9929	9929	innovaphone IP302:IGWP01	9.00 hotfix15 [9.061078/9061078/101]	9d 2h 50m 27s

Gateway->Routes: Routing of incoming and outgoing calls

IGWP01: innovaphone IP302


General Interfaces IP4 IP6 Services PBX **Gateway** Maintenance

General Interfaces SIP GK **Routes** CDR0 CDR1 Calls

From	To	Counter	CGPN	Maps
BRI1	03155 → GW12:EXTERN	i	→	
GW12:EXTERN	→ BRI1	i	→	PBX to EXTERN
TEL1:tel1	→ RAB1:tel1	→	→	
RAB1:tel1	→ TEL1:tel1	→	→	

PBX->Registrations: Calling and called party number formats for incoming and outgoing calls

IGWP01: innovaphone IP302

 General Interfaces IP4 IP6 Services PBX Gateway Maintenance

General Interfaces SIP GK Routes CDR0 CDR1 Calls

Interface	CGPN-In	CDPN-In	CGPN-Out	CDPN-Out	State	Alias	Registration
TEL1	tel1				Up	9929:9929	→ 127.0.0.1
TEL2					Up		
BRI1	n→0		9916→031559916		Up		
	i→00		9915→031559915				
TEST							
TONE							
HTTP							
ECHO							

Please refer to Innovaphone's documentation for further details about Innovaphone configuration and licensing.



## Ascom IP-DECT Base Station (IPBS)

### H.323 Settings

IP-DECT Base Station

Configuration

System
Suppl. Serv.
Master
Mobility Master
Radio
Radio config
PARI
SARI
Air Sync

- General
- LAN
- IP
- LDAP
- DECT
- VoIP
- UNITE
- Central Phonebook
- Administration
- Users
- Device Overview
- DECT Sync
- Traffic
- Gateway
- Backup
- Update
- Diagnostics
- Reset

Mode Active

Multi-Master

Master ID 0

Enable PARI Function

IP-PBX

Protocol H.323

Gatekeeper IP Address 10.11.24.244

Alt. Gatekeeper IP Address

Gatekeeper ID

Max. Internal Number Length 4 used to decide internal/external ring signal

Enbloc Dialing

Enable Enbloc Send-Key

Send Inband DTMF

Allow DTMF Through RTP

Short Disconnect Tone

Configured With Local GK

Registration For Anonymous Devices

Registration Name / Number  /

Deactivate Master If No Connection

Mobility Master

Name

Password

IP Address

Alt. IP Address

Status

OK
Cancel

Codec Settings

## IP-DECT Base Station

Configuration

System

Suppl. Serv.

Master

Mobility Master

Radio

Radio config

PARI

SARI

Air Sync

General

LAN

IP

LDAP

DECT

VoIP

UNITE

Central Phonebook

Administration

Users

Device Overview

DECT Sync

Traffic

Gateway

Backup

Update

Diagnostics

Reset

System Name

Password

Confirm Password

Subscriptions  ▼

Authentication Code

Tones  ▼

Default Language  ▼

Frequency  ▼

Enabled Carriers

0	1	2	3	4	5	6	7	8	9
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Local R-Key Handling

No Transfer on Hangup

No On-Hold Display

Coder  ▼ Frame (ms)  Exclusive  SC

Secure RTP

Supplementary Services Activated

## IP-DECT Base Station

Configuration

System

Suppl. Serv.

Master

Crypto Master

Mobility Master

Radio

Radio config

- General
- LAN
- IP
- LDAP
- DECT
- VoIP
- Unite
- Services
- Administration
- Users
- Device Overview
- DECT Sync
- Traffic
- Gateway
- Backup
- Update
- Diagnostics
- Reset
- Debug

Enable Supplementary Services

	Activate	Deactivate	Disable
Call Forwarding Unconditional	<input type="text" value="*21*\$#"/>	<input type="text" value="#21#"/>	<input type="checkbox"/>
Call Forwarding Busy	<input type="text" value="*67*\$#"/>	<input type="text" value="#67#"/>	<input type="checkbox"/>
Call Forwarding No Reply	<input type="text" value="*61*\$#"/>	<input type="text" value="#61#"/>	<input type="checkbox"/>
Do Not Disturb	<input type="text" value="*42#"/>	<input type="text" value="#42#"/>	<input type="checkbox"/>
Call Waiting	<input type="text" value="*43#"/>	<input type="text" value="#43#"/>	<input type="checkbox"/>
Call Completion	<input type="text" value="5"/>	<input type="text" value="#37#"/>	<input type="checkbox"/>
Call Park	<input type="text" value="*16\$(1)"/>	<input type="text" value="#16\$(1)"/>	<input type="checkbox"/>
Interception	<input type="text" value="*23*\$#"/>	<input type="text" value="#23#"/>	<input type="checkbox"/>
Call Service URI	<input type="text" value="*5\$(1)"/>		<input type="checkbox"/>
Call Service URI (Argument)	<input type="text" value="*7\$(1)\$#"/>		<input type="checkbox"/>
Logout User	<input type="text" value="#11*\$#"/>		<input type="checkbox"/>
Clear Local Setting	<input type="text" value="*00#"/>		<input type="checkbox"/>
MWI Mode	<input type="text" value="User dependent interrogate number"/>		
MWI Notify Number	<input type="text" value="4298"/>		
Local Clear of MWI	<input type="text" value="."/>		
External Idle Display			<input type="checkbox"/>

### LDAP Configuration

## IP-DECT Base Station

Configuration

- General
- LAN
- IP
- LDAP**
- DECT
- VoIP
- UNITE
- Central Phonebook
- Administration
- Users
- Device Overview
- DECT Sync
- Traffic
- Gateway
- Backup
- Update
- Diagnostics
- Reset

Server
Server-Status
**Replicator**
Replicator-Status
Expert

Replication Type

Type Full Replication

---

Full Replication

Enable

Server 10.11.24.244

Alt. Server

DN cn=PBX0 [Show options...](#)

Filter Type Dect Gateway Name

DECT Gateway Name

User ipdect

Password \*\*\*\*\*

Use TLS

OK
Cancel

### User Configuration

## IP-DECT Base Station

Configuration

- General
- LAN
- IP
- LDAP
- DECT
- VoIP
- UNITE
- Central Phonebook
- Administration
- Users**
- Device Overview
- DECT Sync
- Traffic
- Gateway
- Backup
- Update
- Diagnostics
- Reset

Users
Anonymous

PARK	31100363021103				
PARK					
3rd pty	24100365522				
Master Id	0				
		<a href="#">show</a>	<a href="#">new</a>	<a href="#">import</a>	<a href="#">export</a>

User Adminis

**Long Name**

User Adminis

---

Users

**Long Name**

- serak 9900
- serak 9901
- serak 9902
- serak 9903

Users: 4, Reg

Registration

- Subscribed
- Subscribed
- Subscribed
- Subscribed

Edit User - Google Chrome

10.11.24.88/GW-DECT/mod\_cmd\_login.xml?cmd=show&user-guid=

User type

User

User Administrator

Long Name serak 9900

Display Name 9900

Name 9900

Number 9900

Auth. Name  (SIP only)

Password \*\*\*\*\*

Confirm Password \*\*\*\*\*

IPEI / IPDI 002020904856

Idle Display 9900

Auth. Code

Feature Status

OK
Apply
Delete
Unsubs.
Cancel

## APPENDIX B: DETAILED TEST RECORDS

### IP-DECT

Pass	84
Fail	0
Comments	4
Untested	16
Total	104



Test  
Record-Innovaphone

### Miscellaneous

Please refer to IP-DECT test specifications available on the Ascom Extranet for detailed information regarding each test case.

See URL (requires login):

<https://www.ascom-ws.com/AscomPartnerWeb/en/startpage/Sales-tools/Interoperability>

### Document History

Rev	Date	Author	Description
PA1	25.10.2013	SERAK	
PA2	12.12.2013	SEPAA	

[ ]

# INTEROPERABILITY REPORT

## Ascom i62

### Innovaphone IP302, IP810 and IP6010, Firmware version 10

IP PBX Integration (H323)

Ascom i62, Software version 4.3.12

Ascom, Gothenburg

October 2013



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## INTRODUCTION

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This interoperability report describes test results and optimal configuration of Ascom i62 towards the Innovaphone IP PBX.

The document should be used in conjunction with configuration guide(s) from Innovaphone and Ascom.

### **Ascom**

Ascom Wireless Solutions is a leading provider of on-site wireless communications for key segments such as hospitals, manufacturing industries, retail and hotels. More than 75,000 systems are installed at major companies all over the world. The company offers a broad range of voice and professional messaging solutions, creating value for customers by supporting and optimizing their Mission-Critical processes. The solutions are based on VoWiFi, IP-DECT, DECT and Nurse Call and paging technologies, smartly integrated into existing enterprise systems.

Founded in the 1950s and based in Göteborg, Sweden, Ascom Wireless Solutions is part of the Ascom Group and listed on the Swiss Stock Exchange. The company has subsidiaries in 10 countries and approximately 1,200 employees worldwide.

For further information, see the following URL: <http://www.ascom.com/ws>.

### **Innovaphone**

Innovaphone develops pure IP telephone systems under the name of “innovaphone PBX“, uniting security and high availability with the flexibility and scalability of IP. The innovaphone PBX hardware comprises gateways and a series of IP telephones which are developed entirely in Germany and manufactured to a large extent in Europe. The entire product range is based on the unified hardware and software platform which is the core of the innovaphone product philosophy. The number of activated licenses can be determined as required which renders the solution suitable for companies of any size: from small companies over medium size companies with several branch offices to large enterprises. The innovaphone IP telephone systems are available exclusively through authorised distributors and resellers.

Innovaphone has been playing a decisive role in the development of IP telephony ever since the company was founded in 1997. Head office is located in Sindelfingen, South Germany.

For further information, see the following URL: <http://www.innovaphone.com/>



SITE INFORMATION

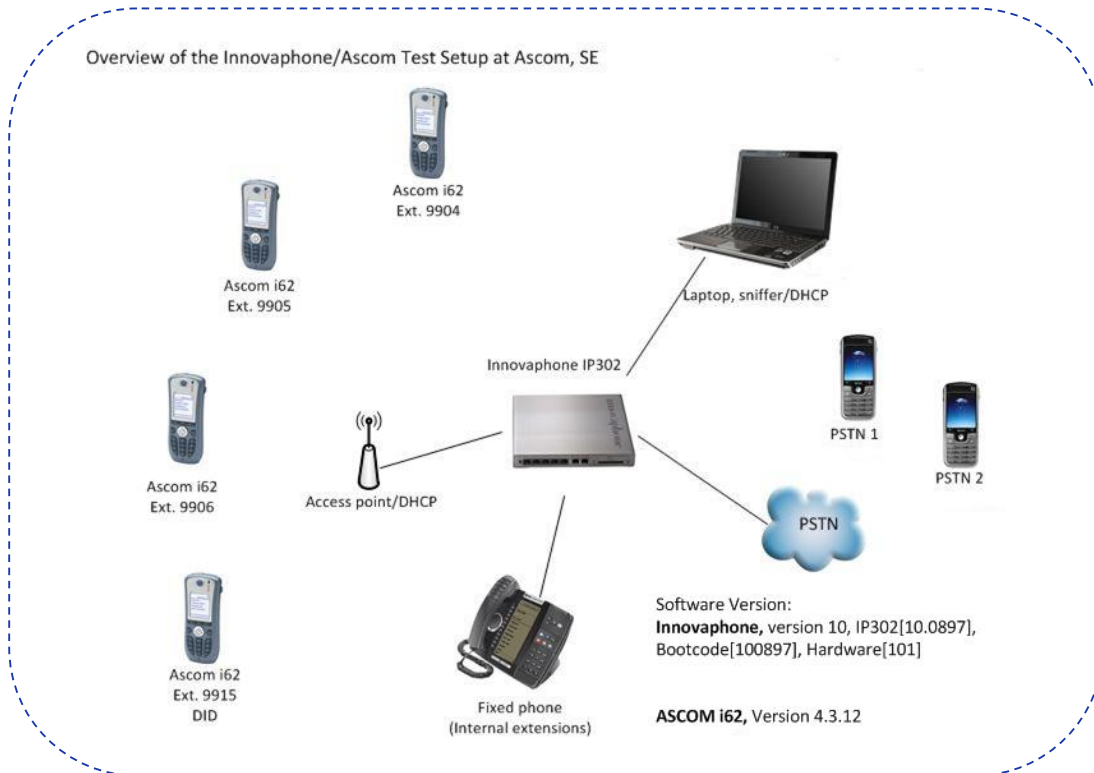
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Test Site: Ascom HQ  
Gothenburg  
Sweden

Participant(s):

Raheleh Kamali (Ascom HQ, SE)  
Peter Åstrand (Ascom HQ, SE)

Test Topology



## SUMMARY

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### Innovaphone, version 10

Test cases in nearly all areas with regard to Ascom i62 and Innovaphone IP PBX passed successfully. Overall, the conclusion has to be that H.323 integration towards IP302 is very good.

Queries about licensing should be directed to Innovaphone.  
Please also see “**APPENDIX A: TEST CONFIGURATIONS**” for further details.

### VoWiFi

High Level Functionality	Result
Basic Call	OK <sup>b</sup>
DTMF	OK
Hold, Retrieve, Enquiry and Brokering	OK
Attended Transfer	OK
Blind-transfer	OK
Semi-attended Transfer	OK
Call Forward Unconditional	OK <sup>a</sup>
Call Forward No Reply	OK <sup>a</sup>
Call Forward Busy	OK <sup>a</sup>
Call Waiting	OK
Message Waiting Indication	OK
Do Not Disturb	OK
Calling Line/Name Identification	OK
Connected Line/Name Identification	OK

a. Soft- or hot-key is optional (call diversions can also be configured via the GUI of the IP PBX)

b. See **Known Issue(s)** in page 7

## General Conclusion

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Ascom interoperability verification produced good results towards Innovaphone IP302 version 10 with few exceptions; see **Known Issue(s)** in page 7.

Ascom i62 handsets were configured to register at the IP PBX using endpoint numbers. The codec of choice for these tests was G.711A/20ms, while DTMF signaling was transmitted through RTP. One can say that, in comparison to SIP, H.323 requires little configuration besides the IP address of the H.323 gatekeeper and abovementioned settings. Parameter settings are elaborated upon in the “**TEST RESULTS**” section for respective platforms.

Ascom i62 can use a special configuration of a soft- or hot-key for the purpose of programming call diversion (CDIV) at the IP PBX. Practically all test cases regarding basic call, brokering/enquiry, transfer and CDIV passed with positive results. No issues were logged for follow-up at Ascom HQ.

## TEST RESULTS

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### Innovaphone IP PBX Integration – VoWiFi

- Innovaphone IP PBX version 10
- Ascom i62, v 4.3.12

#### Signalling Protocol:

- H.323

#### Innovaphone IP302:

- Settings are based on "Ascom VoIP Gateway: Installation and Operation Manual" (TD 92326GB), pp. 62-100
- DSCP should be configured appropriately under IP -> Settings

#### Ascom i62:

- "Endpoint ID" and "Endpoint Number" corresponds to name and number in the user object (Assigning password is optional, it works in both cases)
- Default H.323 settings except hot-key for call diversions
- Call waiting enabled

### Known Issue(s)

- No timeout when i62 calls another i62 that does not answer (PBX issue, per design)
- Ascom i62 does not support post-dial (per design)
- Possible to divert call to "diverter", calling party hears busy (minor issue)
- There are two ongoing Intop issues related to Call pick up group (#23739) and Waiting Queue (#23741).

## Test Areas

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Basic Call, DTMF: 94% pass (17/18)

- CNIP/CONP OK, requires IP PBX configuration
- DTMF OK
- Overlap sending (post-dial) not supported by Ascom i62
- i62 ignores i62 NOK (#5103.1), no timeout

Basic Call, Portable Unavailable: 100% pass (8/8)

- Good results overall

Procedure Mapping: 100% pass (2/2)

- Hot-key used in i62

Three-party Services: 90% pass (37/41)

- CNIP/CONP OK (updated after transfer)
- CLIP/COLP could not be verified properly for PSTN extensions
- Ignored CW on internal call does not give busy(#5125.3)

Call Diversion: 90% pass (9/10)

- Call diversion programmed through i62 hot-key
- Test case #5132.1 (Diversion to Diverter), it is possible to divert the phone to itself (Minor issue)

Telephony Feature: 100% pass (9/9)

- Limited testing due to lack of 3rd party competence
- Group calls tested with good results

Please keep in mind that metrics do NOT account for untested cases

## APPENDIX A: TEST CONFIGURATIONS

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### Innovaphone IP302, version 10

Below one will find screen shots reflecting the management interface and some aspects of setting up the PBX application on the IP302.

General -> info

The screenshot shows the management interface for IGWP01: innovaphone IP302. The 'Info' tab is selected, displaying the following system information:

Version	10.00 sr2 IP302[10.0897], Bootcode[100897], Hardware[101]
SerialNo	00-90-33-1e-02-fd (20)
DRAM	16 MB
FLASH	8 MB
Coder	4 Channels of G.711,G.729,G.723
Conference	0 Channels
HDLC	2 Channels
Sync	BRI1-L1
Temperature	44.0° Celsius
SNTP Server	10.11.24.243
Time	25.10.2013 22:04
Uptime	2d 7h 27m 2s

IP->Settings: DSCP markings used for signalling and RTP

The screenshot shows the management interface for IGWP01: innovaphone IP302, specifically the 'IP4' settings. The 'Settings' tab is selected, displaying the following configuration options:

TOS Priority - RTP Data	<input type="text" value="0xc0"/>	0xc0	
TOS Priority - Signaling	<input type="text" value="0x68"/>	0x68	
First UDP-RTP Port	<input type="text"/>	Number of Ports <input type="text"/>	First/Last 16384 / 32767
First UDP-NAT Port	<input type="text"/>	Number of Ports <input type="text"/>	First/Last 0 / 0

Below these settings are sections for 'Local Networks' and 'Private Networks', each with 'Address' and 'Mask' input fields. At the bottom, there are 'OK' and 'Cancel' buttons.

PBX->General: General Settings

IGWP01: innovaphone IP302


General Interfaces IP4 IP6 Services **PBX** Gateway Maintenance

Config Objects Registrations Calls SOAP myPBX Dyn-PBXs

- General
- Security
- Filter
- myPBX
- Import
- Export

PBX Mode

---

System Name   Use as Domain

PBX Name

Unknown Registrations  - With PBX Pwd only

Music On Hold URL

External Music On Hold

Response Timeout

Dial Complete Timeout

No of Regs w/o Pwd.

Recall Timeout

Max Call Duration (h)

Enable External Transfer

No CLIR on internal calls

RTP Proxy

Generate CDRs

Route Root-Node External Calls to  on Master or Slave with License Only

Route PBX-Node External Calls to

Route Internal Calls to

Escape Dialtone from

Prefix for Intl/Ntl/Subscriber

Log Calls

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-Licenses-

Name	Count	Usage	Local	Slaves
Port9	100	4	4	0
Standby9	100	100	100	0
Voicemail9	100	100	100	0
Mobility9	100	0	0	0
Operator9	100	0	0	0
SoftwarePhones9	100	0	0	0

PBX->Objects: PBX objects added to PBX application

### IGWP01: innovaphone IP302

 [General](#) [Interfaces](#) [IP4](#) [IP6](#) [Services](#) **[PBX](#)** [Gateway](#) [Maintenance](#)

[Config](#) **[Objects](#)** [Registrations](#) [Calls](#) [SOAP](#) [myPBX](#) [Dyn-PBXs](#)

User    
   
• .

Long Name	Name	No	HW-ID	Node	PBX	Filter	Groups	CF*
DECT				root	.		+	+
DECT2				root	.		+	+
EXTERN	EXTERN	EXTERN		root	.	normal	+	+
FE	9900	9900	9900	root	.		FE*	+
Miratel 6202	6202	6202	6202	root	.		+	+
Miratel 6212	6212	6212	6212	root	.		+	+
Miratel 6213	6213	6213	6213	root	.		+	+
Miratel 6221	6221	6221	6221	root	.		+	+
Miratel 6222	6222	6222	6222	root	.		+	+
Miratel 6223	6223	6223	6223	root	.		+	+
Miratel 6231	6231	6231	6231	root	.		+	+
serak 9900	9900	9900	9900	root	.		+	+
serak 9901	9901	9901	9901	root	.		+	+
serak 9902	9902	9902	9902	root	.		+	+
serak 9903	9903	9903	9903	root	.		+	+
serak 9904	9904	9904	9904	root	.		+	cfu:9906
serak 9905	9905	9905	9905	root	.		FE*	+
serak 9906	9906	9906	9906	root	.		FE*	+
serak 9907	9907	9907	9907	root	.		FE*	+



PBX->Objects: Adding a new user object

10.11.24.244/PBX0/ADMIN/mod\_cmd\_login.xml?cmd=show&user-guid=88ca04a6e909d31194e60090331e02fd&loc=\*&filter="&cor

**General** User DECT

Description  Hide from LDAP

Long Name  Display Name

Name  Number  Critical

Password  retype Password

Node  Local

PBX

Send Number  URL

Group Indications

Config Template

Devices

Hardware Id	Name	PBX	Pwd	No Filter
<input type="text" value="9900"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel Apply Delete Help

PBX->Objects: Adding a gateway object ("EXTERN")

**General** Gateway

Description  Hide from LDAP

Long Name  Display Name

Name  Number  Critical

Password  retype Password

Node  Local

PBX

Max Calls  Response Timeout

Reporting

Devices

Hardware Id	Name	PBX	Pwd	No Filter
<input type="text" value="EXTERN"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OK Cancel Apply Delete Help

Gateway->GK: Binding an interface to the gateway object ("EXTERN")

**IGWP01: innovaphone IP302**

General Interfaces IP4 IP6 Services PBX **Gateway** Maintenance

General Interfaces SIP **GK** Routes CDR0 CDR1 Calls

Interface	CGPN-In	CDPN-In	CGPN-Out	CDPN-Out	Alias	Registration	Product
GW1						+	
GW2						+	
GW3						+	
GW4						+	
GW5						+	
GW6						+	
GW7						+	
GW8						+	
GW9						+	
GW10						+	
GW11						+	
GW12	EXTERN					+	EXTERN → 127.0.0.1

Gateway->GK: Registering the gateway in H.323

Name:

Disable:

Protocol:

Mode:

Address:

Address:  (alternate)

Gatekeeper Identifier:

Local Signaling Port:

-Authorization-

Password:  Retype:

-Alias List-

Name	Number
<input type="text" value="EXTERN"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

-Media Properties-

General Coder Preference:  Framesize [ms]:  Silence Compression:  Exclusive:

Local Network Coder:  Framesize [ms]:  Silence Compression:

Enable T.38:  SRTP:  No DTMF Detection:  Enable PCM:  Media-Relay:

Record to (URL):

-H.323 Interop Tweaks-

No Faststart:  No H.245 Tunneling:

Suppress HLC:  Suppress FTY:  Suppress Subaddr:

*PBX->Registrations: Overview of H.323 registrations*

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 Services **PBX** Gateway Maintenance

Config Objects **Registrations** Calls SOAP myPBX Dyn-PBXs

Address	Long Name	Name	No	Device	Product	Firmware	Uptime
127.0.0.1	H323	EXTERN	EXTERN	EXTERN	innovaphone IP302:IGWP01	9.00 hotfix15 [9.061078/9061078/101]	9d 2h 50m 27s
10.11.24.151	SIP	Test 24	9924	9924	9924	snom320	7.3.30
10.11.24.168	SIP	Test 25	9925	9925	9925	PolycomSoundPointIP-SPIP_335-UA.3.2.1.0078	9d 2h 50m 20s
127.0.0.1	H323	Test 29	9929	9929	9929	innovaphone IP302:IGWP01	9.00 hotfix15 [9.061078/9061078/101]

*Gateway->Routes: Routing of incoming and outgoing calls*

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 Services PBX **Gateway** Maintenance

General Interfaces SIP GK **Routes** CDR0 CDR1 Calls

From	To	Counter	CGPN	Maps
BRI1	03155	→	GW12:EXTERN	i
GW12:EXTERN	→	→	BRI1	i
TEL1:tel1	→	→	RAB1:tel1	→
RAB1:tel1	→	→	TEL1:tel1	→

*PBX->Registrations: Calling and called party number formats for incoming and outgoing calls*

IGWP01: innovaphone IP302

General Interfaces IP4 IP6 Services PBX **Gateway** Maintenance

General **Interfaces** SIP GK Routes CDR0 CDR1 Calls

Interface	CGPN-In	CDPN-In	CGPN-Out	CDPN-Out	State	Alias	Registration
TEL1	tel1	+			Up	9929:9929	→ 127.0.0.1
TEL2		+			Up		
BRI1	n→0		9916→031559916		Up		
	i→00		9915→031559915				
TEST							
TONE							
HTTP							
ECHO							

Please refer to Innovaphone's documentation for further details about Innovaphone configuration and licensing.

## Ascom i62

Network => <A|B|C|D>

- DHCP mode: Enable
- SSID: <ssid>
- Encryption: WPA-PSK & WPA2-PSK
- Voice Power Save Mode: U-APSD
- 802.11 b/g Channels: UNII1
- World Mode Regulatory Domain: ETSI
- IP DSCP for VOICE: 0x2E (46) – Expedited Forwarding
- IP DSCP for SIGNALLING: 0x1A (26) - Assured Forwarding 31

Device => General

- Time Zone: Central European Time (UTC+1)
- Shared Phone License: No

Audio => General

- Dialing Tones Pattern: <country>

VOIP => General

- VoIP Protocol:H.323
- Codec Configuration: G711A
- Codec Packetization Time Configuration: 20ms
- Internal call number length: 4
- Endpoint ID: <extension>

VoIP => H323

- Gatekeeper IP Address: <ip>
- Secondary Gatekeeper IP Address: <n/a>
- Gatekeeper Listening Port: 1720
- Gatekeeper ID: <n/a>
- Gatekeeper Password: <n/a>

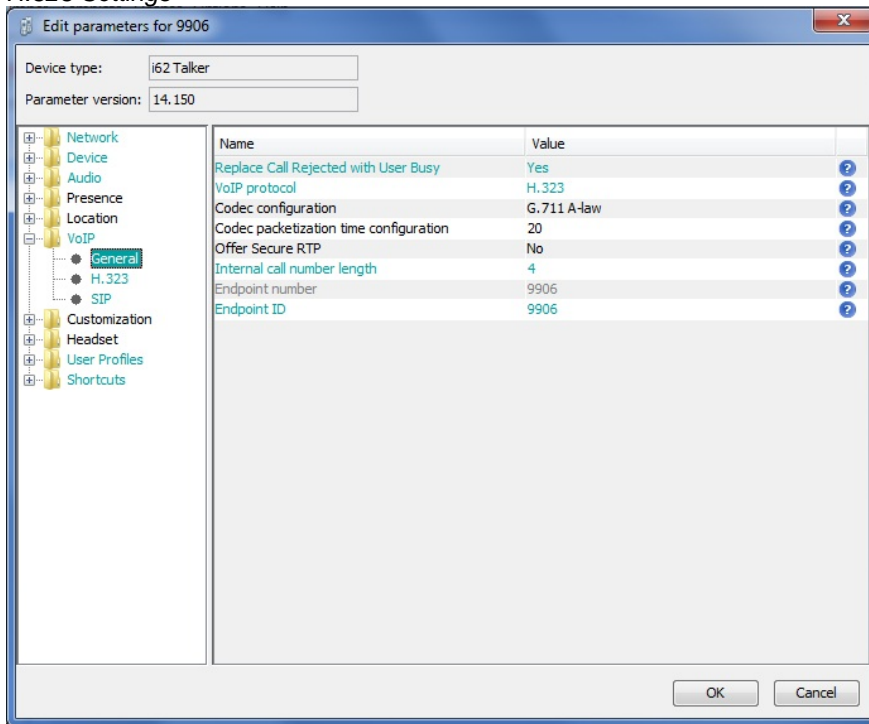
Shortcut => Hot Key 2

- Function: Call\_Diversions

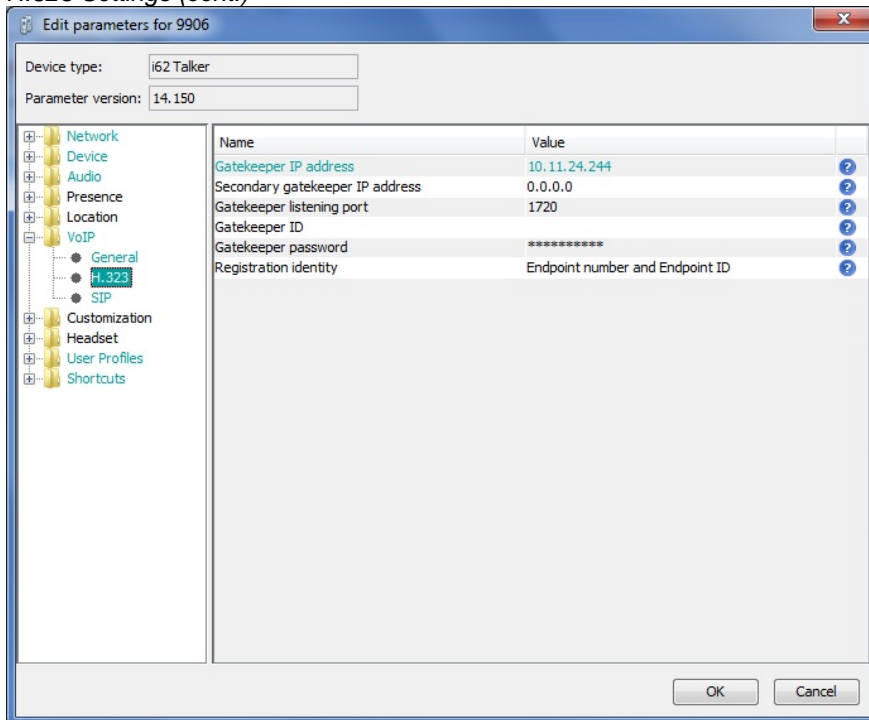
< I62 Template file >

**Other settings were left as their defaults.**

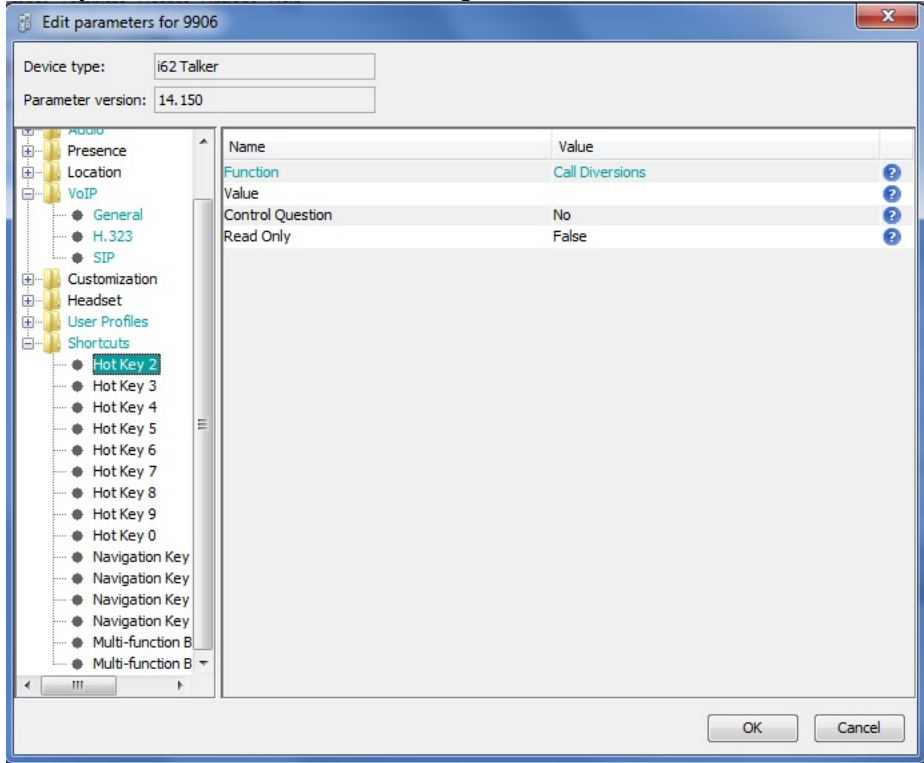
H.323 Settings



H.323 Settings (cont.)

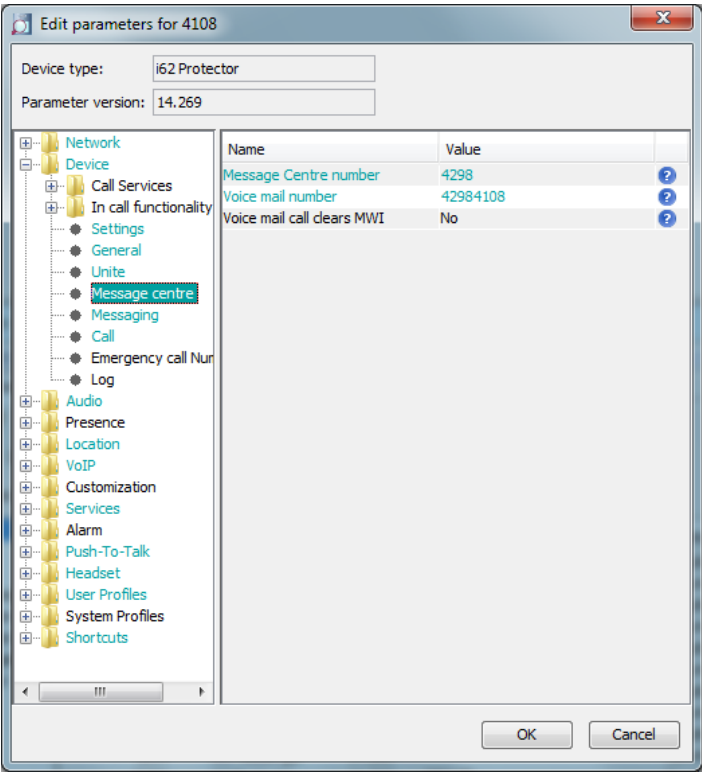


Hot-key for Call Diversion/Call Forwarding



Please refer to **APPENDIX B: DETAILED TEST RECORDS** for more information regarding device configuration.

Voice Mail settings



**APPENDIX B: DETAILED TEST RECORDS**

**Ascom i62**

Pass	82
Fail	1
Comments	5
Untested	16
Total	104



Test  
Record-Innovaphone

**Miscellaneous**

Please refer to the VoWiFi test specifications available on the Ascom Extranet for detailed information regarding each test case.

See URL (requires login):

<https://www.ascom-ws.com/AscomPartnerWeb/en/startpage/Sales-tools/Interoperability>

**Document History**

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PA1	25.10.2013	SERAK	
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