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INTEROPERABILITY REPORT

Ascom IP-DECT

Cisco Unified Communications Manager, version 8.6.1.20000-1

IP PBX Integration

Session Initiation Protocol (SIP)

Ascom, Gothenburg, SE

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INTRODUCTION

This document describes necessary steps and guidelines to optimally configure the Cisco Unified Communications Manager and Ascoms IP-DECT platforms.

The guide should be used in conjunction with both Cisco and Ascoms configuration guide(s).

About Ascom

Ascom Wireless Solutions (www.ascom.com/ws) 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, Nurse Call and paging technologies, smartly integrated into existing enterprise systems. The company has subsidiaries in 10 countries and 1,200 employees worldwide. Founded in the 1950s and based in Göteborg, Sweden, Ascom Wireless Solutions is part of the Ascom Group, listed on the Swiss Stock Exchange.

About Cisco

Cisco, (NASDAQ: CSCO), the worldwide leader in networking that transforms how people connect, communicate and collaborate, this year celebrates 25 years of technology innovation, operational excellence and corporate social responsibility. Information on Cisco can be found at <http://www.cisco.com>. For ongoing news, please go to <http://newsroom.cisco.com>.

SITE INFORMATION

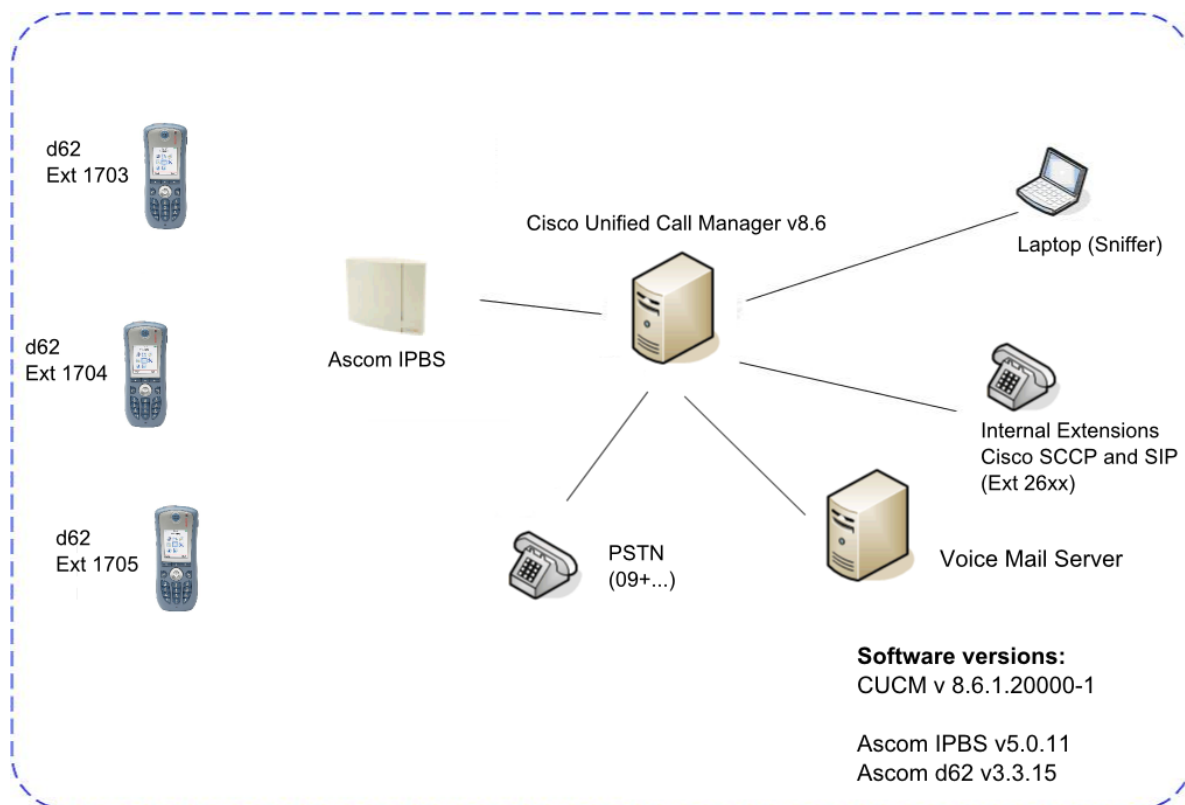
Test Site:

TekVizion Labs
Richardson, TX
US

Participant(s):

Karl-Magnus Olsson (Ascom HQ, SE)
Eder Moncada (TekVizion)

Test Topology



Product	Type	Comment	Number
CUCM	MCS7835	Publisher and 2 Subscriber nodes	3
Cisco 3845 (PSTN GW)		PSTN gateway	1
Cisco SIP Phones	7960	Endpoint	2
Cisco SCCP Phones	7960	Endpoint	1
Unity VoiceMail		Voice Mail Server	30 ports
Ascom IP-DECT base station	IPBS1	Version 5.0.11	1
Ascom d62 handset	d62	Version 3.3.15	3

SUMMARY AND TEST RESULTS

Cisco Unified Communications Manager (CUCM), version 8.6 test result

The following guide: “Configuration Notes for Cisco Call Manager in Ascom IP-DECT System” (TD 92424GB) was used for configuration. Queries about licensing should be directed to Cisco.

Please also see “Appendix A: Test Configurations” for further details.

IP-DECT

High Level Functionality	Result
Basic Call	OK
DTMF	OK
Hold, Retrieve, Enquiry and Brokering	OK
Attended Transfer	OK
Unattended Transfer	OK
Call Forward Unconditional	OK*
Call Forward No Reply	OK*
Call Forward Busy	OK*
Call Waiting	OK*
Message Waiting Indication	OK*
Do Not Disturb	OK*
Calling Line/Name Identification	OK
Connected Line/Name Identification	OK
Registration as “Ascom IP-DECT device”	OK
SIP-TLS and SRTP	OK

*) Supplementary Services enabled

Known issues

- Support for registration without digest authentication (instance-id) was removed by Cisco from version 7 and above when it comes to third-party SIP devices.

(Registration without digest authentication is however possible if the Ascom system is registered as an “Ascom IP-DECT Device” in the CUCM. This option requires an identification file for the CUCM and a license key for every Ascom base station)

General Conclusions

This test was performed as a CDN IVT (Interoperability Verification Test) at TekVizions lab. Tekvizions test plan was used.

Ascom interoperability verification produced in general very good results towards Cisco Unified Communications Manager (CUCM), version 8.6.

IP-DECT handsets were configured to register at the CUCM with their endpoint numbers and to provide DTMF signalling through RTP (RFC2833). The codec of choice for these tests was G.711U, with a packet interval of 30ms, while the “Hold Type” was left at its default setting, namely “inactive”. Parameter settings are elaborated upon in the “Test Results” section for respective platform later on.

Basic Call, brokering/enquiry, (un)attended transfers, Call Diversion (CDIV) and Message Waiting Indication (MWI) passed. It should be emphasised that Call Waiting (CW), Do-not-Disturb (DND), CDIV and MWI were tested with Supplementary Services enabled on the IP-DECT base station (IPBS).

New in IP-DECT R5 is support for registration as an “Ascom IP-DECT Device” which enables both easier registrations (with instance ID) but also enables support for SIP-TLS and Secure RTP. All new features, including SIP-TLS and Secure RTP were successfully verified.

At the time of testing, CUCM did not support, due to limitations of the license for 3rd party SIP devices, certain telephony features, e.g. Music on hold and feature codes/call procedures.

APPENDIX A: TEST CONFIGURATIONS

There are now two ways of adding devices into the Cisco Unified Communications Manager.

1. Device added as “Third-party SIP Device”.
 - This method requires both a “Device” and an “End User” to be created in the CUCM.
 - Digest user has to be enabled. (Support for registration without digest authentication was removed by Cisco from version 7 and above when it comes to third-party SIP devices)

2. Device added as “Ascom IP-DECT Device”
 - Requires only that a “Device” is created in the CUCM.
 - An identification file (.cop)* to be uploaded to all servers in the CUCM cluster to enable the functionality of “Ascom IP-DECT device”
 - Requires a license** key to be entered in the base station

*) The identification (.cop) file is provided by Ascom.
**) License is provided through the license web. Part number: IPBS1-L01
(License for Additional Cisco functionality for IPBS1)

These notes shall be considered as a complement to the Ascom document “Configuration Notes for Cisco Call Manager in Ascom IP-DECT System” (TD 92424GB)

Please refer to Cisco’s documentation for further details about CUCM configuration and licensing.

Cisco Unified Communications Manager (CUCM), version 8.6 configuration

- Settings per “Configuration Notes for Cisco Call Manager in Ascom IP-DECT System” (TD 92424GB)
- Handsets require fictitious MAC addresses, see abovementioned guide
- Caller Line Identities (CLI) require additional configuration
- CUCM license for “Third-party SIP device” implies some limitations, e.g. no Music-on-Hold (MoH), lack of telephony features configurable from the handset etc.

The screenshot displays the Cisco Unified CM Administration web interface. The top navigation bar includes the Cisco logo, the title "Cisco Unified CM Administration", and a navigation menu with options like "administrator", "Search Documentation", "About", and "Logout". Below this is a secondary navigation bar with categories such as "System", "Call Routing", "Media Resources", "Advanced Features", "Device", "Application", "User Management", "Bulk Administration", and "Help".

The main content area is titled "Phone Configuration" and includes a "Related Links" section with a "Back To Find/List" button. A toolbar contains icons for "Save", "Delete", "Copy", "Reset", "Apply Config", and "Add New".

The configuration details are organized into several sections:

- Association Information:** Shows a single entry for "7MS Line [1] - 1703 (no partition)" with a sub-entry "7MS".
- Phone Type:**
 - Product Type: Ascom IP-DECT Device
 - Device Protocol: SIP
- Device Information:**
 - Registration: Registered with Cisco Unified Communications Manager clus4sub2
 - IP Address: 10.70.19.47
 - Active Load ID: Unknown
 - Device is Active:
 - Device is not trusted:
 - MAC Address*: EEEEEEEE1703
 - Description: SEPEEEEEEEE1703
 - Device Pool*: Default (with a "View Details" link)
 - Common Device Configuration: < None > (with a "View Details" link)
 - Common Phone Profile*: Standard Common Phone Profile
 - Calling Search Space: < None >
 - Media Resource Group List: < None >
 - Location*: Hub_None
 - Device Mobility Mode*: Default (with "View Current Device" and "Mobility Settings" links)
 - Owner User ID: < None >
 - Use Trusted Relay Point*: Default
 - Always Use Prime Line*: Default
 - Always Use Prime Line for Voice Message*: Default
 - Calling Party Transformation CSS: < None >
 - Geolocation: < None >
 - Use Device Pool Calling Party Transformation CSS:
 - Ignore Presentation Indicators (internal calls only):
 - Logged Into Hunt Group:
 - Remote Device:

Device->Phone: Adding a device (phone). Part 1.

Note that IP-DECT endpoints require fictitious MAC addresses. For example, if the Directory Number is "1234", the MAC address should be set to "EEEEEEEE1234".

Device->Phone: Adding a device (phone). Part 2

Note. In the above mentioned example “Digest User” is set to <None>. If the handsets are added as “Third party SIP devices” instead of “Ascom IP-DECT Device”, the Digest User has to be pointed to an End User.

User Management -> End User: Adding an user ID

Note that adding a user is only necessary if the handsets are added as “Third-party SIP devices”

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾

Phone Security Profile Configuration

Copy
 Reset
 Apply Config
 Add New

Status

Status: Ready

Phone Security Profile Information

Product Type: Ascom IP-DECT Device
Device Protocol: SIP
Name * Ascom IP-DECT Device - Standard SIP Non-Secure Profile
Description Ascom IP-DECT Device - Standard SIP Non-Secure Profile
Nonce Validity Time * 600
Device Security Mode Non Secure
Transport Type * TCP+UDP
 Enable Digest Authentication
 Exclude Digest Credentials in Configuration File

Parameters used in Phone

SIP Phone Port * 5060

System->Security->Security Profiles.

"Ascom IP-DECT Device" default security profile.

Product Type: Ascom IP-DECT Device
Device Protocol: SIP
Name * secure-profile.ascom-ws.com
Description Ascom IP-DECT Device - Std SIP Secure Profile SIP over TLS
Nonce Validity Time * 600
Device Security Mode Encrypted
Transport Type * TLS

System->Security->Security Profiles.

Security profile to utilize SIP over TLS.

- Device Security Mode: Encrypted
- Transport Type: TLS

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration | administrator | Search Documentation | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

Find and List Phones | Related Links: [Actively Logged In Device Report](#)

Add New |
 Select All |
 Clear All |
 Delete Selected |
 Reset Selected |
 Apply Config to Selected

Status
3 records found

Query Information
Searching on Directory Number may show the same device name multiple times depending on the number of lines configured per device.

Phone (1 - 3 of 3) | Rows per Page 50

Find Phone where: Directory Number begins with 17 | Find | Clear Filter

Device Name(Line)	Description	Device Pool	Extension	Partition	Device Protocol	Status	IP Address	Copy	Super Copy
SEPEEEEEEE1703(1)	SEPEEEEEEE1703	Default	1703		SIP	Registered with clus4sub2	10.70.19.47		
SEPEEEEEEE1704(1)	SEPEEEEEEE1704	Default	1704		SIP	Registered with clus4sub2	10.70.19.47		
SEPEEEEEEE1705(1)	SEPEEEEEEE1705	Default	1705		SIP	Registered with clus4sub2	10.70.19.47		

Device Overview. (Device->Phone)

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

Ascom IP-DECT version 5.0.11 configuration

- “Number” and “Password” correspond to User ID and Password
- Hold signaling: Inactive
- Supplementary Services enabled (incl. MWI)
- “Local R-key Handling”, “Enbloc Dialing”, “Allow DTMF through RTP” & “Hold before Transfer” enable

The screenshot shows the 'IP-DECT Base Station' configuration interface. The 'General' tab is selected in the left sidebar. The main content area displays the following information:

Version	IPBS[5.0.11], Bootcode[5.0.7], Hardware[IPBS1-A3/5A]
Serial Number	T2610491U3
MAC Address (LAN)	00-01-3e-12-5d-4b
SNTP Server	10.10.10.5
Time	07.03.2012 14:15
Uptime	0d 1h 10m 20s
RFP SW version	3.0.21

General->Info

- General information. Software version etc.

The screenshot shows the 'IP-DECT Base Station' configuration interface with the 'License' tab selected. The main content area displays the following information:

License Key	41926363463506192248716149332
Serial Number	T2610491U3
License Status	Valid
Options	Cisco UCM Extended SIP Line Support

Below the table are 'OK' and 'Cancel' buttons.

General->License.

- A license key is required in order to register as “Ascom IP-DECT device”.

Note. A license key is not needed if handsets are registered as a “Third-party Sip device”.

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

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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Local R-Key Handling:

No Transfer on Hangup:

No On-Hold Display:

Coder: Frame (ms) Exclusive SC

Secure RTP:

DECT->System

Note that the settings shown above apply for a system located in North America.

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

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

Mode: Active

Multi-Master

Master ID:

Enable PARI Function:

IP-PBX

Protocol: SIP

Proxy:

Alt. Proxy:

Domain:

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

International CPN Prefix:

Enbloc Dialing:

Enable Enbloc Send-Key:

Send Inband DTMF:

Allow DTMF Through RTP:

Short Disconnect Tone:

Configured With Local GK:

SIP Interoperability Settings

Registration Time-To-Live: [sec]

Hold Signalling: inactive

Hold Before Transfer:

Accept Inbound Calls Not Routed Via Home Proxy:

Register With Number:

KPML support:

DECT ->Master.

- Enable "Enbloc Dialing"
- Enable "Allow DTMF Through RTP"
- Hold signaling: inactive
- Enable "Register With Number"
- Registration Time-To-Live is kept as default (120s)

Note. Alt Proxy was entered for test purpose in order to verify redundancy.

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

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 Busy Subscriber	<input type="text" value="5"/>	<input type="text" value="#37#"/>	<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="2302"/>		
Local Clear of MWI	<input type="text" value="."/>		
External Idle Display			<input type="checkbox"/>

DECT -> Supplementary Services

- Make sure Supplementary Services are enabled.
- MWI Mode: User dependent interrogate number. This means that the user's own call number is used as MWI Interrogate number.
- MWI Notify Number: Enter the number to the Voice Mail.

IP-DECT Base Station

Configuration
SIP

General

LAN

IP

LDAP

DECT

VoIP

UNITE

Central Phonebook

Administration

Add Instance ID To The User Registration With The IP-PBX SIP TSIP SIPS

IP-PBX Supports Redirection Of Registration When Registered To Alternative Proxy SIP TSIP SIPS

Use Local Contact Port As Source Port For TCP/TLS Connections SIP TSIP SIPS

Prefer P-Asserted-Identity As Calling Party Identity SIP TSIP SIPS

Session Timer (Initial Value) [sec] SIP

VoIP->SIP

Important. Instance ID can only be used if the Ascom endpoints are added as "Ascom IP-DECT Device" in the CUCM.

If the Ascom device are added as "3rd Party SIP device", Instance ID cannot be used.

The screenshot displays the 'IP-DECT Base Station' configuration interface. On the left, a navigation menu includes 'Configuration' (General, LAN, IP, LDAP, DECT, VoIP, UNITE, Central Phonebook) and 'Administration' (Users, Device Overview, DECT Sync, Traffic, Gateway, Backup, Update, Diagnostics, Reset). The 'Users' tab is active, showing a table with columns for 'PARK', 'Long Name', and 'Master Id'. The table contains three entries: 'PARK 3rd' with ID 31100421444248, 'pty' with ID 2110024607, and 'Master Id' with ID 0. Below the table are links for 'show', 'new', 'import', and 'export'. A list of users is shown on the right: '1703', '1704', and '1705'. An 'Edit User' dialog box is open, showing fields for 'User type' (User selected), 'Long Name' (1703), 'Display Name' (1703), 'Name' (1703), 'Number' (1703), 'Auth. Name' (SIP only), 'Password' and 'Confirm Password' (masked), 'IPEI / IPDI' (036470896892), 'Idle Display' (1703), and 'Auth. Code' (1259). The 'Feature Status' section includes 'Call Waiting On', 'CFB' (1704), and 'CFNR' (2646). Buttons for 'OK', 'Apply', 'Delete', 'Unsubs.', and 'Cancel' are at the bottom of the dialog.

Users - > Users

Note. Password is needed only if the CUCM security profile is set as mandatory.

Document History

Rev	Date	Author	Description
PA1	2012-03-07	SEKMO	Initial draft
PB	2012-03-12	SEKMO	Second draft
PC	2012-03-22	SEKMO	Minor corrections
R1	2012-04-03	SEKMO	Corrections after internal feedback. R1 state