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INTEROPERABILITY REPORT

Ascom VoWIFI

NEC IS3000/SIP@Net 51.00.0.0 (851.00.0) & Business ConneCT 6.0.0200

IP-PBX Integration

Session Initiation Protocol (SIP)

Ascom, Gothenburg, SE

October, 2012

TABLE OF CONTENT:

INTRODUCTION

This interoperability report describes test results and optimal configuration of Ascom i62 towards NEC's IP-PBX.

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

Ascom

Ascom Wireless Solutions (http://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.

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.

NEC

About NEC Corporation

NEC Corporation is a leader in the integration of IT and network technologies that benefit businesses and people around the world. By providing a combination of products and solutions that cross utilize the company's experience and global resources, NEC's advanced technologies meet the complex and ever-changing needs of its customers. NEC brings more than 100 years of expertise in technological innovation to empower people, businesses and society.

For more information, visit NEC at http://www.nec.com.

About NEC Unified Solutions

NEC Unified Solutions specialises in providing communications solutions to small, medium and large enterprises in both the private and public sectors. Designed for open connectivity, high availability and flexible growth, these solutions incorporate the latest voice, data and video technologies and enable real-time, collaborative working, increased productivity and significantly improved customer satisfaction. Serving customers through a network of direct sales organisations, business partners and value-added resellers, NEC Unified Solutions fosters a company-wide culture of customer dedication, flexibility and excellence throughout the EMEA (Europe, Middle East & Africa) region.

For more information, please visit: www.nec-unified.com.

SITE INFORMATION

Test Site: NEC
Hilversum
The Netherlands

Participant(s):

André Blokland (NEC, NL)
Luc Rader (Ascom, NL)
Matthew Williams (Ascom HQ, SE)
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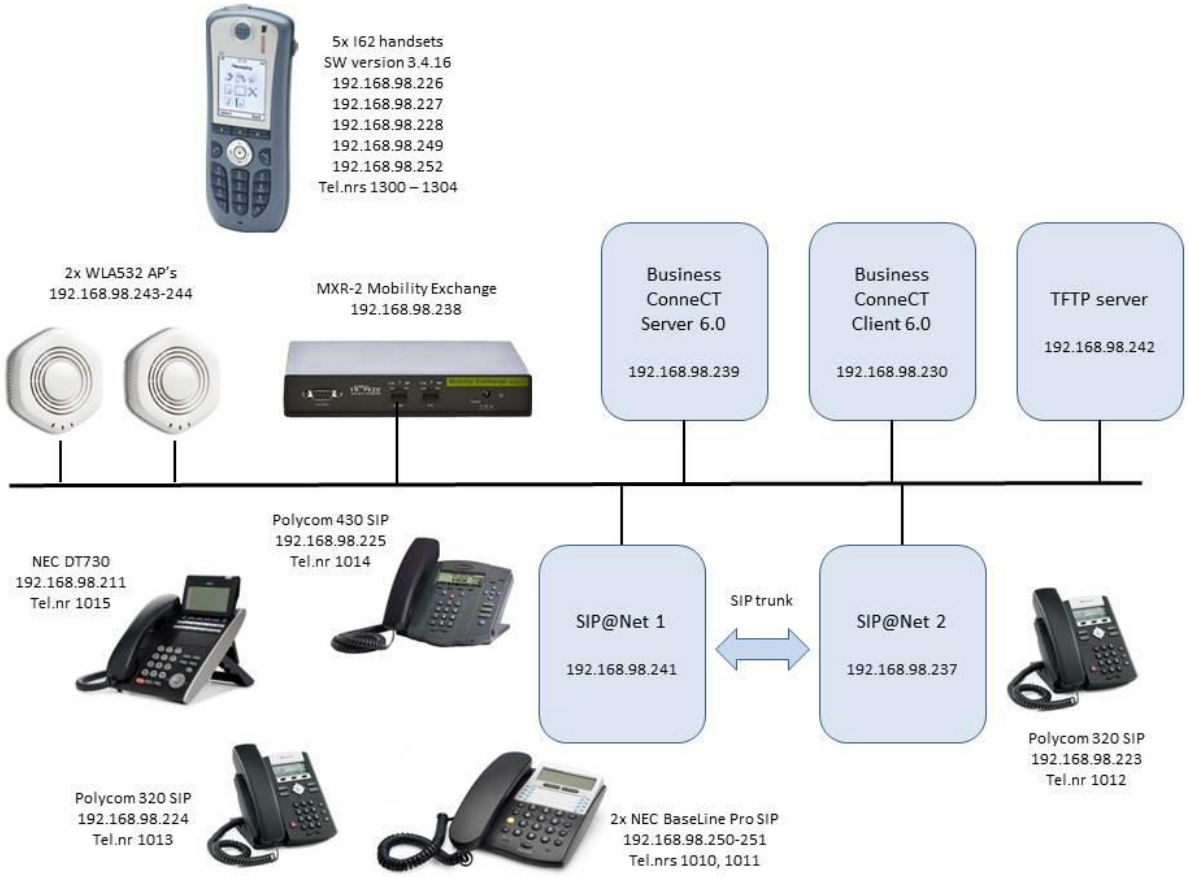
Martijn van der Meulen (Zetacom, NL)

Test Topology



SUMMARY

NEC IS3000/SIP@Net 51.00.0.0 (851.00.0) & Business ConneCT 6.0.0200

The outcomes of individual test cases in most areas were positive. However, it was agreed that the integration would not cover wall waiting (CW) due to unexpected behaviour in regard to some scenarios. It is also important to note that call park/pick-up was not tested at the time of validation.

Queries regarding licensing should be directed to the supplier of the IP-PBX solution.

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

WIFI

High Level Functionality	Result
Basic Call (UDP, no TLS)	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	Not supported
Message Waiting Indication	OK
Call Park/Pick-up	Not Tested
Twinning (Concurrent call)	OK
Conference	OK***
Conference (ad-hoc)	OK
Do Not Disturb	OK
Calling Line/Name Identification	NOK*
Connected Line/Name Identification	NOK*

*) Transfer target (C) not updated with name of transferee (A), see “Known Issues”
**) Call diversions can either be supported by IP-PBX or locally in handset (previous preferred)
***) Requires conference bridge

Known Issues and Limitations

- MD5 authentication by name is not supported.
  Workaround: One must authenticate using the number instead.
- Dual hold not supported by IP PBX (renders “500 Internal Server Error”).
- No indication at handset upon activation of IP-PBX-controlled call diversion (CDIV)
- Transfer target (C) is not updated with the name of transferee (A). This is resolved in NEC SIP@Net patch, version 51.00.0.0 (851.00.3). The fix will be included in official release SIP@Net Server 851.01.0.
- Name updates are not supported by the IP PBX over SIP trunks.
- Call waiting (CW) is not supported. It is therefore recommended to disable CW in the handset through WinPDM or remote management, i.e. Unite CM or IMS.
  (Device > Call > Disable call waiting: Yes)

Note: The Ascom i62 must run hotfix version 3.4.16 to provide an acceptable level of integration towards this IP PBX.

For additional information regarding known issues, please contact interop@ascom.se.

General Conclusion

Ascom interoperability verification produced respectable results towards NEC IS3000/SIP@Net 51.00.0.0 (851.00.0) & Business ConneCT (BCT) 6.0.0200. Some exceptions concerned a number of test cases in which unexpected behaviour was observed, specifically in regard to call waiting (CW). That said, most test cases concerning basic call, brokering/enquiry, transfer, call diversion and message waiting indication passed with positive results.

Ascom i62 handsets were configured to register at the IP PBX using temporary three-day licenses. The “Hold Type” was left at its default setting (inactive), while DTMF signalling was transmitted through RTP (RFC2833/4733). In addition, handsets had “SIP Expires” set to 300 seconds and CW disabled. The codec of choice during testing was G.711A/20ms.

Please note that call park/pick-up was not tested at the time of validation. Furthermore call waiting is not covered in the certified solution.

BCT functionality was tested exclusively by NEC. Please see Appendix B for details.

TEST RESULTS

IP-PBX Integration - VoWIFI

Software Versions:

- NEC IS3000/SIP@Net, v. 51.00.0.0 (851.00.0)
- Business ConneCT, v. 6.0.0200
- Ascom i62, v. 3.4.16

Signaling Protocol:

- SIP (UDP)

NEC IS3000/SIP@Net & Business ConneCT:

- Appropriate caller line identities (CLI) require additional configuration on the IP PBX
- The IP-PBX must support “302 Moved Temporarily” SIP messages for local call diversion (CDIV) to work properly (enabled on IP-PBX)

Ascom i62:

- “Endpoint Number” and “SIP Proxy Password” correspond to number and password on IP-PBX
- Hold signaling: Inactive
- SIP Registration Expiration: 300s (recommended by NEC)
- Disable call waiting: Yes

Test Areas

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

- MD5 Authenication with number OK (name not supported, see “Known Issues”)
- DTMF OK
- Call rejected hangs up after 7 seconds due to signaling from IP PBX
- #5106.5 NOK
  Cannot decline second incoming call when CW is enabled (CW not supported, see “Known Issues”)

Basic Call, Portable Unavailable: 100 % pass (6/6)

- Works as expected

Basic call, Stability: 100 % pass (2/2)

- Expected behavior

Procedure Mapping: 50 % pass (1/2)

- #5115.1 NOK
  Feature codes do not work on second line

Three-party Services: 72% pass (18/25)

- #5117.1, 5117.2:
  Dual hold not supported by IP PBX (renders “500 Internal Server” error)
- #5125.1, 5125.2, 5125.3, 5125.4, 5126.4:
  Problems relating to CW (CW not supported, see “Known Issues”)

Call Diversion: 100 % pass (9/9)

- PBX-controlled and local CDIV OK
- 302 Moved Temporily support must be enabled on IP PBX for local CDIV to work

Telephony Features: 100% pass (15/15)

- Tested telephony features OK
- MWI OK, however tested through simulation and not with actual Voice Mail
- Call park/pick-up not tested

BCT Features: 88% pass (14/16), carried out by NEC

- #5142.3:
  Switched off status cannot be seen in BCT
- #5149.1:
  Incoming calls can be answered by i62, not by BCT button (same as 3rd party DECT handsets)

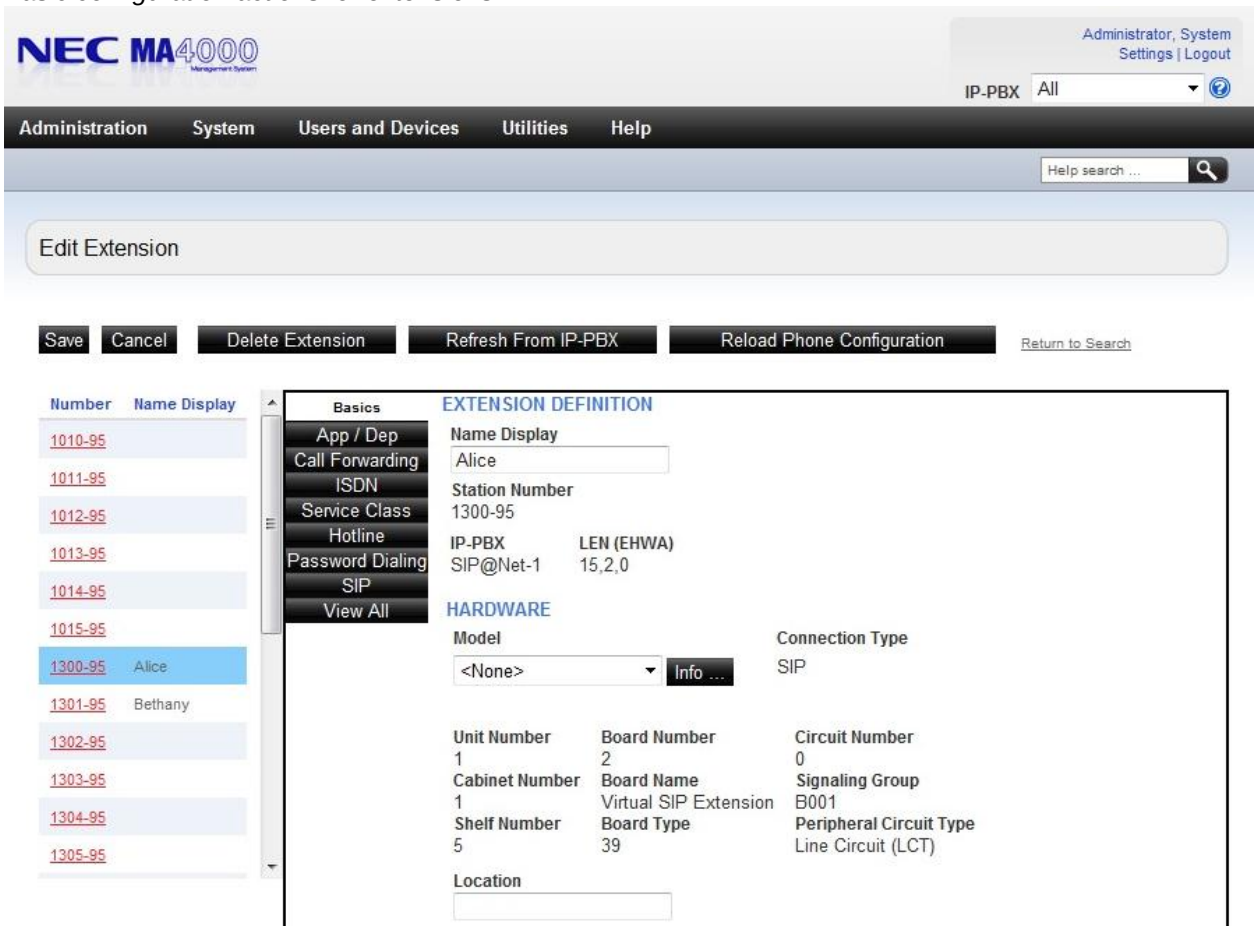
Please keep in mind that metrics do not account for “no comments” or “untested” cases.

APPENDIX A: TEST CONFIGURATIONS

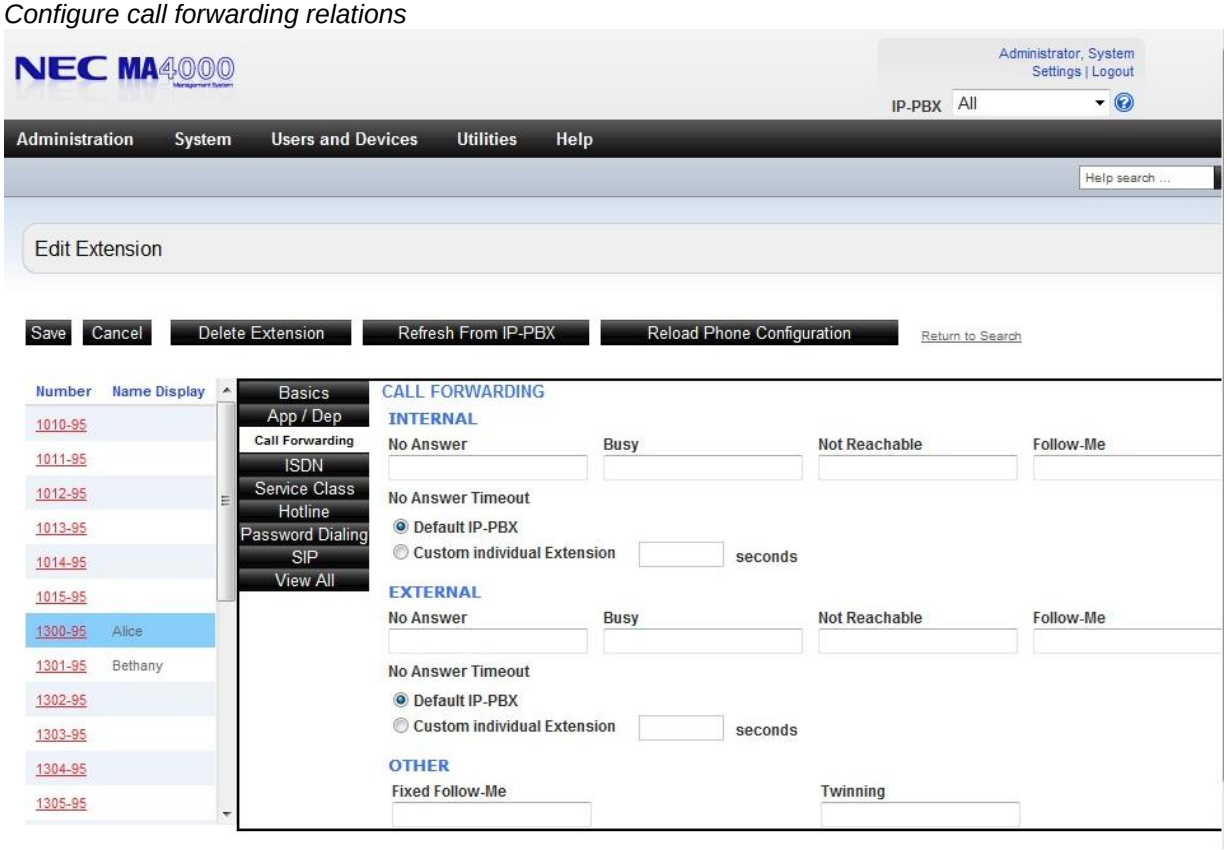
NEC IS3000/SIP@Net 51.00.0.0 (851.00.0) & Business ConneCT 6.0.0200

In the following appendix, you will find screenshots reflecting the management interface and aspects of configuring the IP-PBX application.

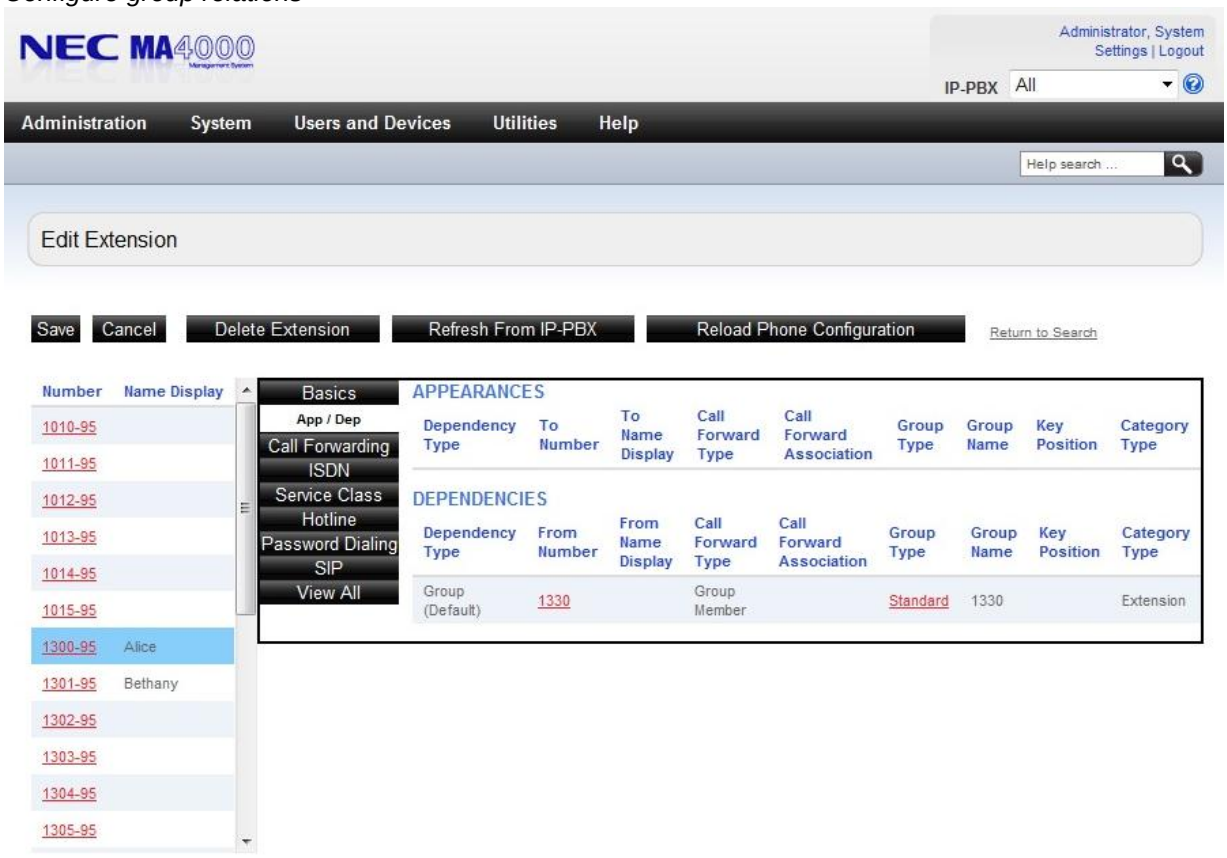
Basic configuration actions for extensions



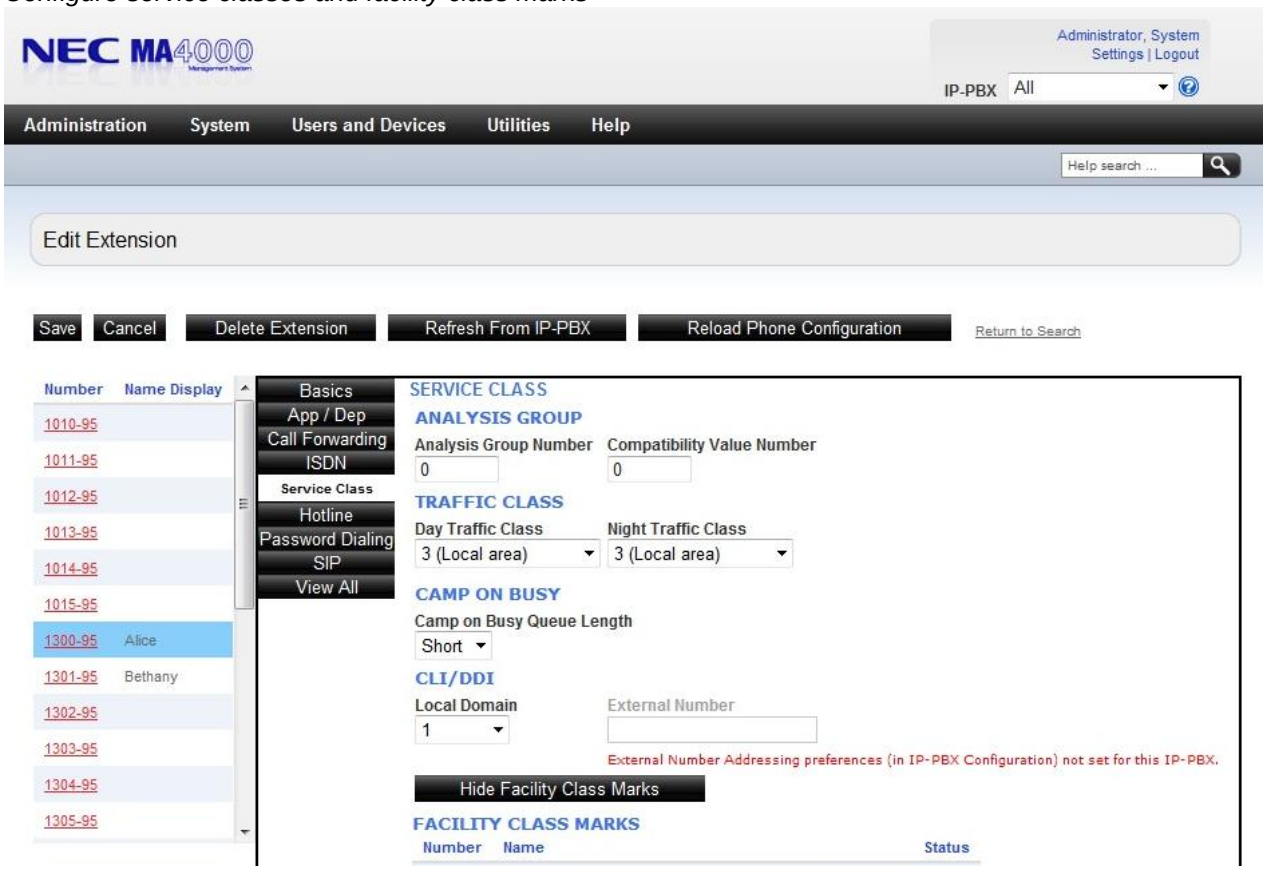
Configure call forwarding relations



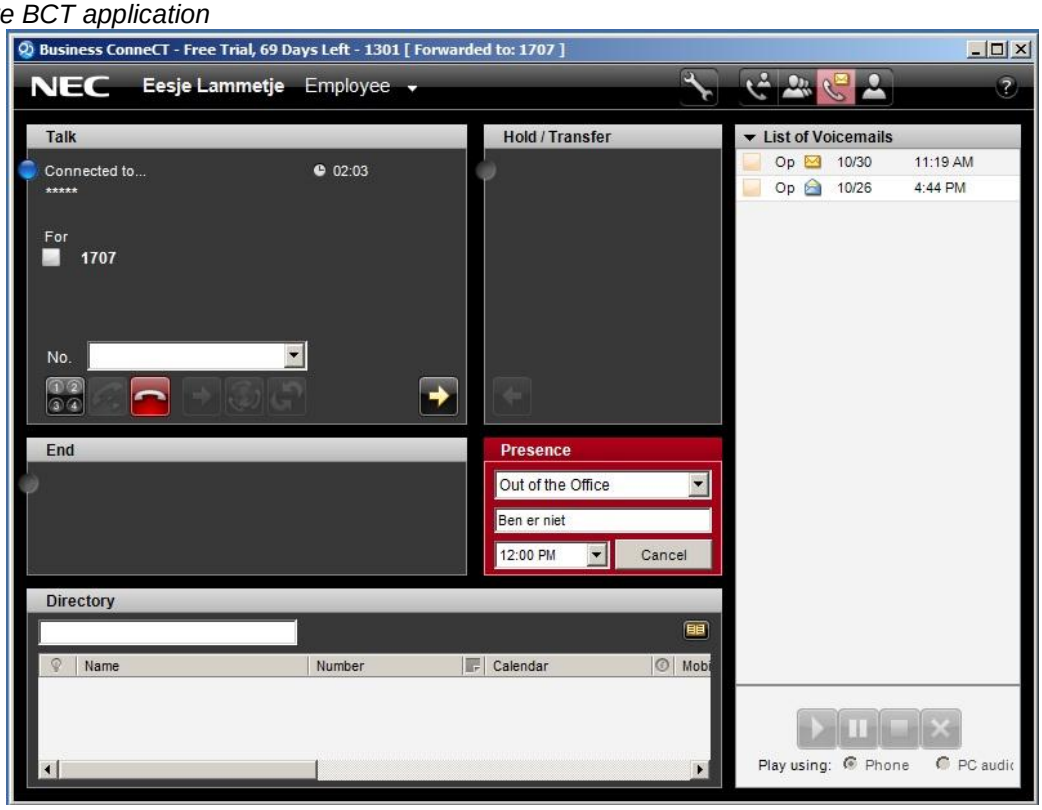
Configure group relations



Configure service classes and facility class marks



Configure BCT application



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

Configuration:

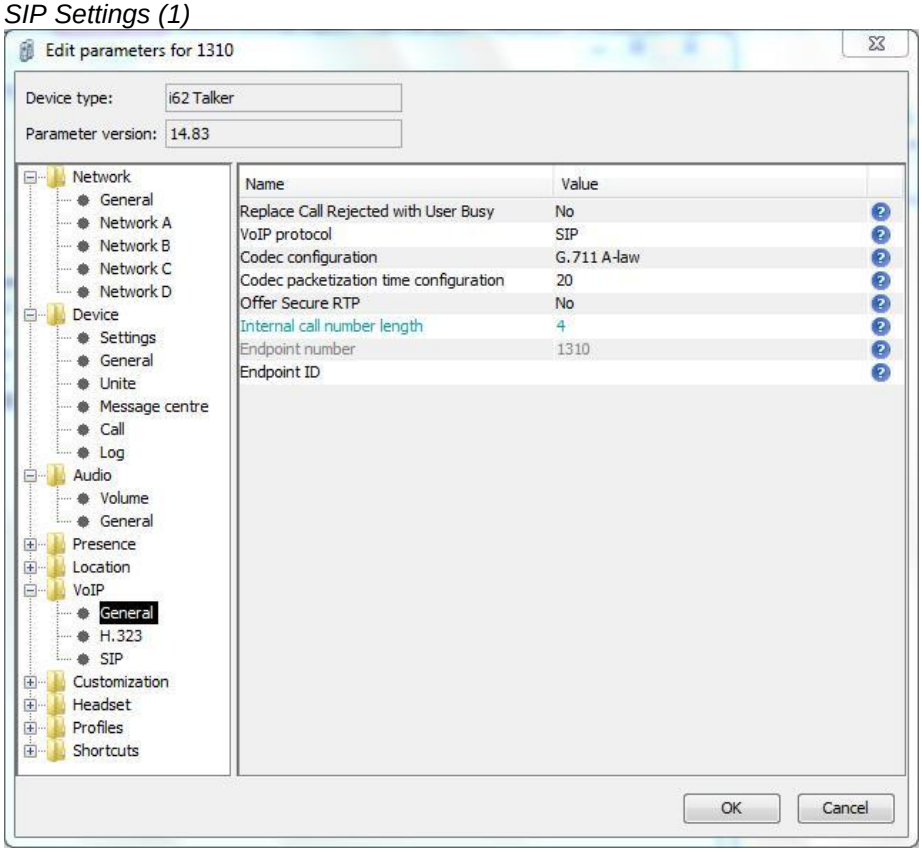
SIP@NET
Configuration Info

Ascom i62

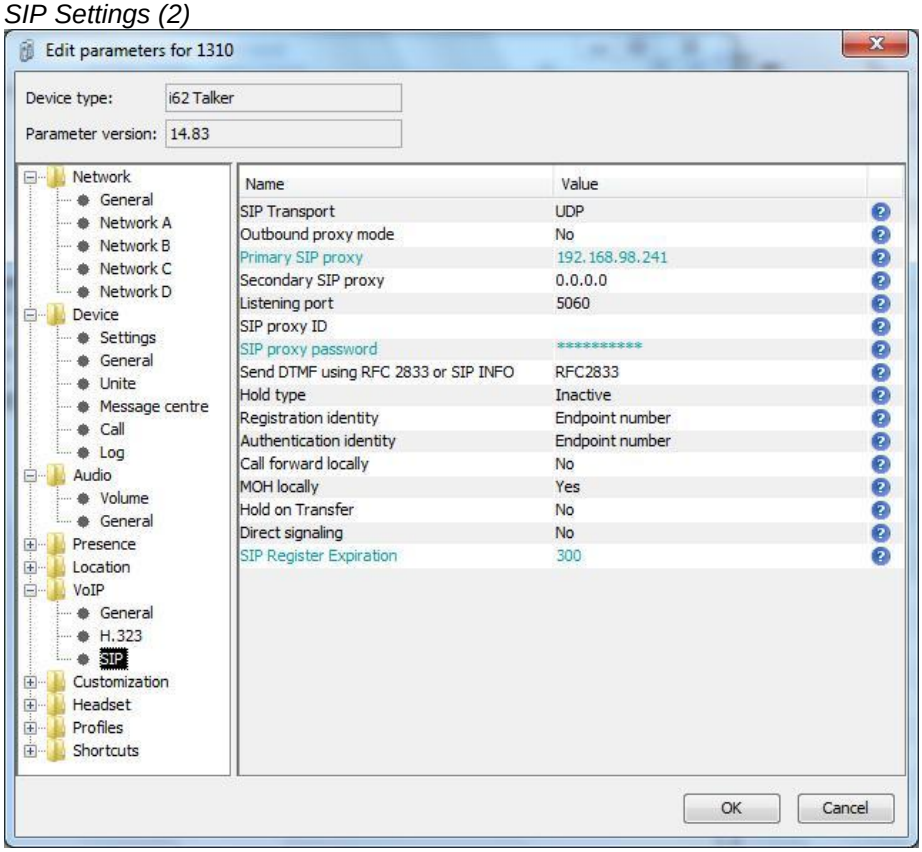
```
System => <A|B|C|D>
- Network Name: <name>
- DHCP Mode: ON
- 802.11 Protocol: 802.11a
- SSID: <SSID>
- Security Mode: WPA-PSK & WPA2-PSK
- WPA-PSK Passphrase: <***>
- Voice Power Save Mode: None
- 802.11 a/n Channels: UNII-1
- World Mode Regulatory Domain: World Mode (802.11d)
- Transmit Gratuitous ARP: Yes

Device => Settings
- User Display Text: <name>
- Language: <language>
- Language input: <language>

Device => General
- Time Zone: <time zone>

Device => Message Centre
- Message Centre number: <BCT Message Centre Number>
- Voice Mail number: <BCT Message Centre Number>
- Voice mail call clears MWI: No

Device => Call
- Disable call waiting: Yes

Audio => General
- Dialing Tones Pattern: <country>

VoIP => General
- VoIP Protocol: SIP
- Codec Configuration: G711A
- Codec Packetization Time Configuration: 20ms
- Internal Call Number length: 4
- Endpoint Number: <Endpoint>
- Endpoint ID: <NULL>

VoIP => SIP
- SIP Transport: UDP
- Primary SIP Proxy: <IP>
- SIP Proxy password: <user password>
- SIP Register Expiration: 300
```

Other settings were left at their defaults.

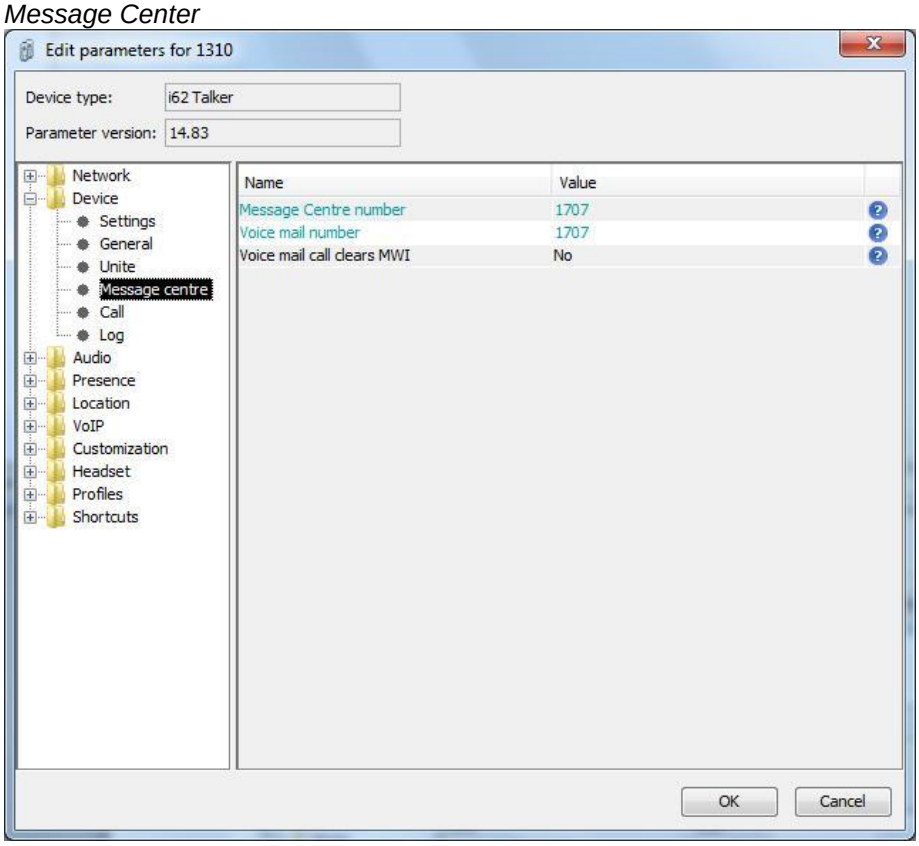
SIP Settings (1)



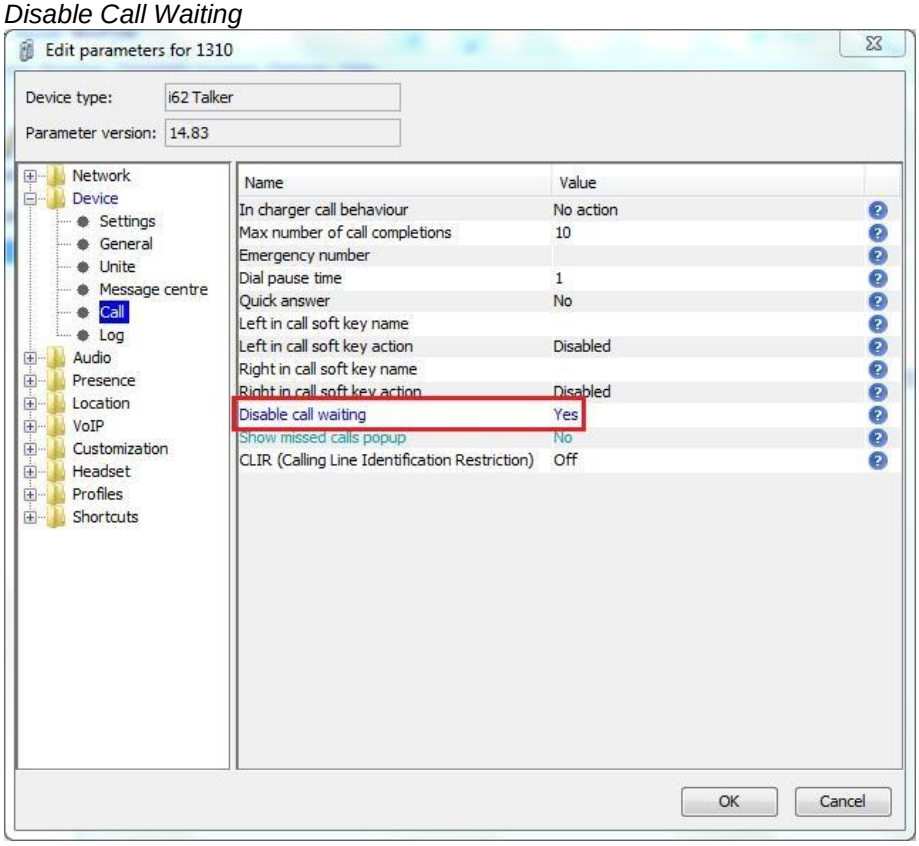
SIP Settings (2)



Message Center



Disable Call Waiting



Please note that WLAN infrastructure is <u>not</u> a part of this certification.

Template file:

Ascom i62 template

APPENDIX B: DETAILED TEST RECORDS

Ascom VoWIFI

Pass	82
Fail	11
Comments	25
Untested	3
Total	121

Ascom i62 Test Results

Miscellaneous

Please refer to Ascom's "IP Telephony Services" test specification for detailed information regarding each test case. The document is available on the Ascom Extranet.

URL (requires login):
https://www.ascom-ws.com/AscomPartnerWeb/en/startpage/Sales-tools/Interoperability

Document History

Rev	Date	Author	Description
PA1	2012-09-20	SEMW	Initial draft
PA2	2012-10-22	SEMW, AnBl	Review and updates by NEC
PA3	2012-10-30	SEMW	Final draft
RevA	2012-10-30	SEMW	RevA