PBX Configuration Guide

Innovaphone V12

Vodafone One Fixed
Vodafone Corporate Net over IP

Index

1 Introduction

This document provides a summary of the test results and a detailed configuration description of Innovaphone V12, for interworking with the SIP trunking services Vodafone One Fixed and Vodafone Corporate Net over IP.
These results are achieved by a PBX approval process. During this approval process interoperability tests are executed between the named Vodafone services and Innovaphone V12.
The approval of a PBX is a prerequisite for it to be connected to the named Vodafone SIP trunking services and to avoid any interoperability issues between them.
The PBX vendor and Vodafone NL both cooperated in this approval process to make sure that the tests are done correctly and according to the Vodafone standards.

2 General Test Approach and Test Results

The general test approach is to configure a simulated enterprise site using Innovaphone V12. The PBX is configured to use the SIP trunking services for Vodafone One Fixed and Vodafone Corporate Net over IP. So, two SIP trunks are connected to the PBX.

2.1 PBX approval testing

During PBX approval testing, different call scenarios are used to test the features of both services.
A summary of the approved features are indicated here:

Vodafone One Fixed

- ☒ G.711 A-law codec
- ☒ G.729a codec, with fall back to G.711
- ☒ Fax support G.711 pass-through
- ☒ Fax support T.38 (with fall-back to G.711)
- ☒ Privacy (according to RFC3325)
- ☒ DTMF (according to RFC2833)

Vodafone Corporate Net over IP

- ☒ G.711 A-law codec
- ☒ Privacy (according to RFC3325)
- ☒ DTMF (according to RFC2833)
- ☒ Forced on PBX (mobile originating)
- ☒ Forced on PBX (mobile terminating)

2.2 Hardware and software

The equipment used during this approval and the Vodafone network reference point are identified in the following table:

System	HW version	SW version
Vodafone SIP Gateway CPE	Cisco 2901	VF-CUBE 1.1
PBX components		
Innovaphone V12 signalling	IP 411	V12
Innovaphone V12 media	IP 411	V12

3 Vodafone NL SIP Certification Program (VSCP)

The approved features will result in a VSCP level. The test with Innovaphone V12 has resulted in the following VSCP level. The corresponding logo can be used by the PBX vendor.

Vodafone SIP Certified level:

☒ Vodafone SIP certified Gold

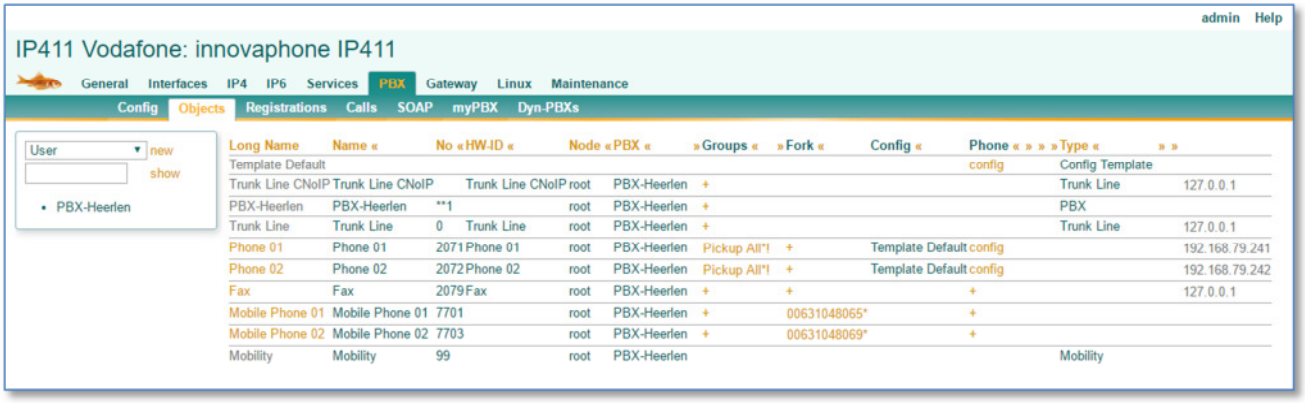
4 PBX Configuration

This chapter provides an overview of the SIP trunk configuration on the Innovaphone V12 which was used during the test. There are two SIP trunks defined in the Innovaphone V12 PBX:

Vodafone One Fixed
Vodafone Corporate Net over IP

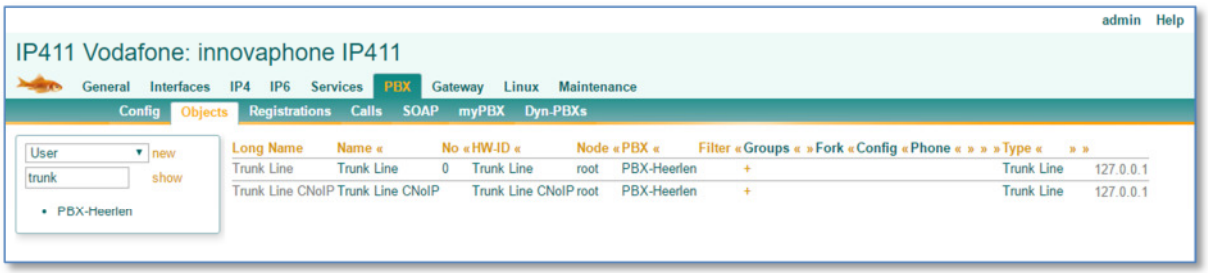
The PBX is configured to route all mobile destinations via the Vodafone Corporate Net over IP SIP trunk. This is also applicable for the short and long numbers of the mobile VPN users.
The PBX is configured to route all other PSTN destinations via the Vodafone One Fixed SIP trunk.

Overview PBX- objects for basic configuration:

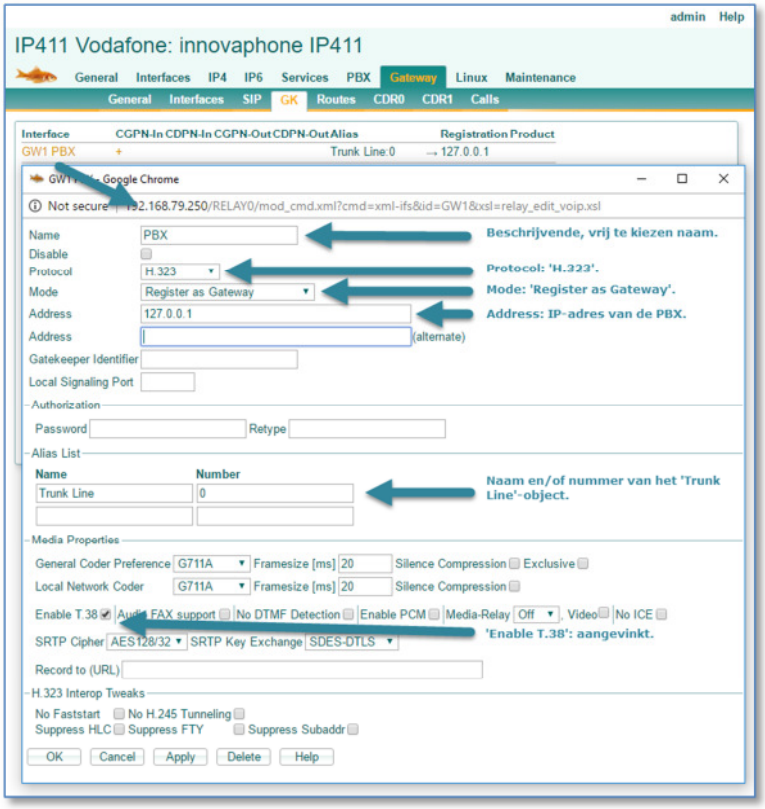


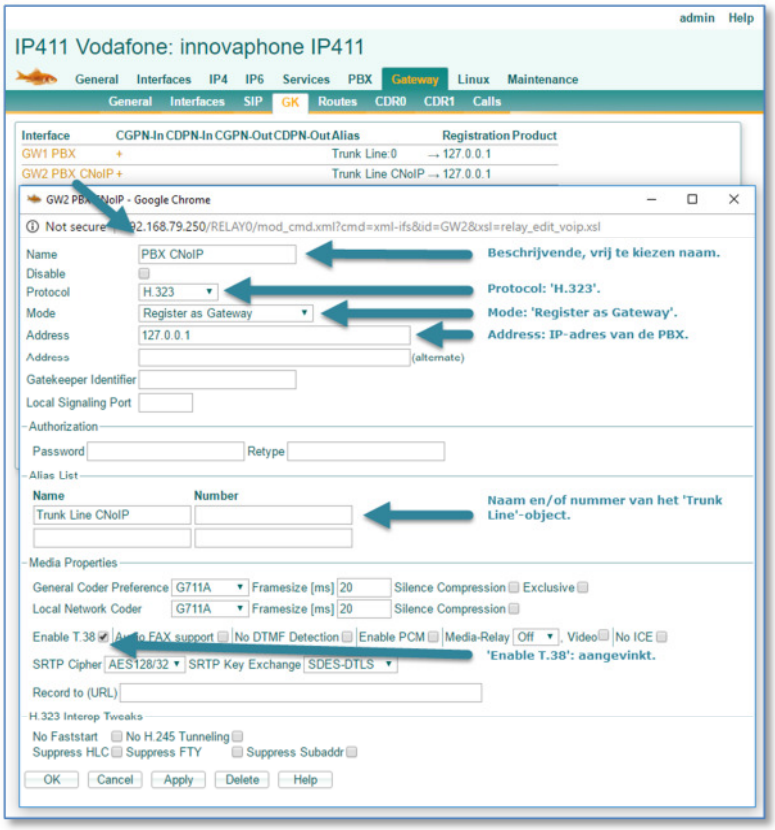
Connection Innovaphone Gateway-PBX:

There are two connection between the Innovaphone gateway and the innovaphone PBX. The 'Trunk Line'- object with 0 is used to manage the external inbound calls while the "Trunk Line"- object without 0 is used to manage the routing for the inbound call internally in the PBX.



To configure the trunk Line see the screenshots below

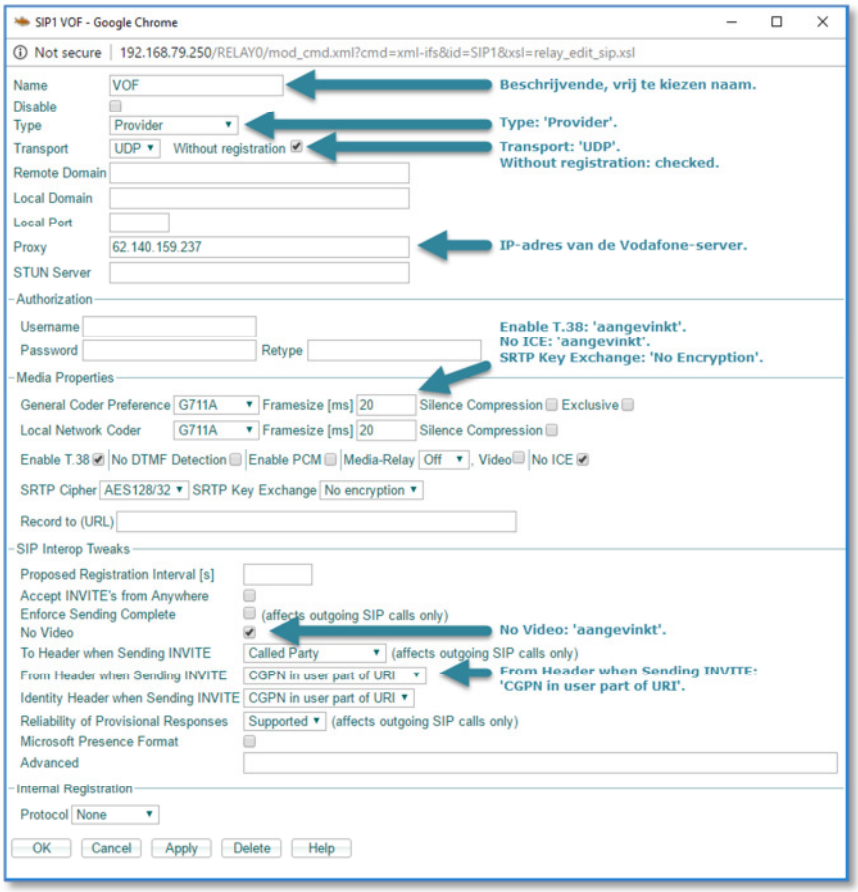

admin Help
IP411 Vodafone: innovaphone IP411
General Interfaces IP4 IP6 Services PBX Gateway Linux Maintenance
General Interfaces SIP GK Routes CDR0 CDR1 Calls
Interface CGPN-In CDPN-In CGPN-Out CDPN-Out Alias Registration Product
GW1 PBX + Trunk Line:0 → 127.0.0.1
Google Chrome
Not secure 192.168.79.250/RELAY0/mod_cmd.xml?cmd=xml-ifs&id=GW1&xsl=relay_edit_voip.xsl
Name PBX
Disable
Protocol H.323
Mode Register as Gateway
Address 127.0.0.1
Address (alternate)
Gatekeeper Identifier
Local Signaling Port
Authorization
Password Retype
Alias List
Name Number
Trunk Line 0
Media Properties
General Coder Preference G711A Framesize [ms] 20 Silence Compression Exclusive
Local Network Coder G711A Framesize [ms] 20 Silence Compression
Enable T.38 Audio FAX support No DTMF Detection Enable PCM Media-Relay Off Video No ICE
SRTP Cipher AES128/32 SRTP Key Exchange SDES-DTLS
Record to (URL)
H.323 Interop Tweaks
No Faststart No H.245 Tunneling
Suppress HLC Suppress FTY Suppress Subaddr
OK Cancel Apply Delete Help
Beschrijvende, vrij te kiezen naam.
Protocol: 'H.323'.
Mode: 'Register as Gateway'.
Address: IP-adres van de PBX.
Naam en/of nummer van het 'Trunk Line'-object.
'Enable T.38': aangevinkt.



As mention above there are two sip trunk which need to be configure in the PBX:

4.1 SIP trunk configuration Vodafone One Fixed

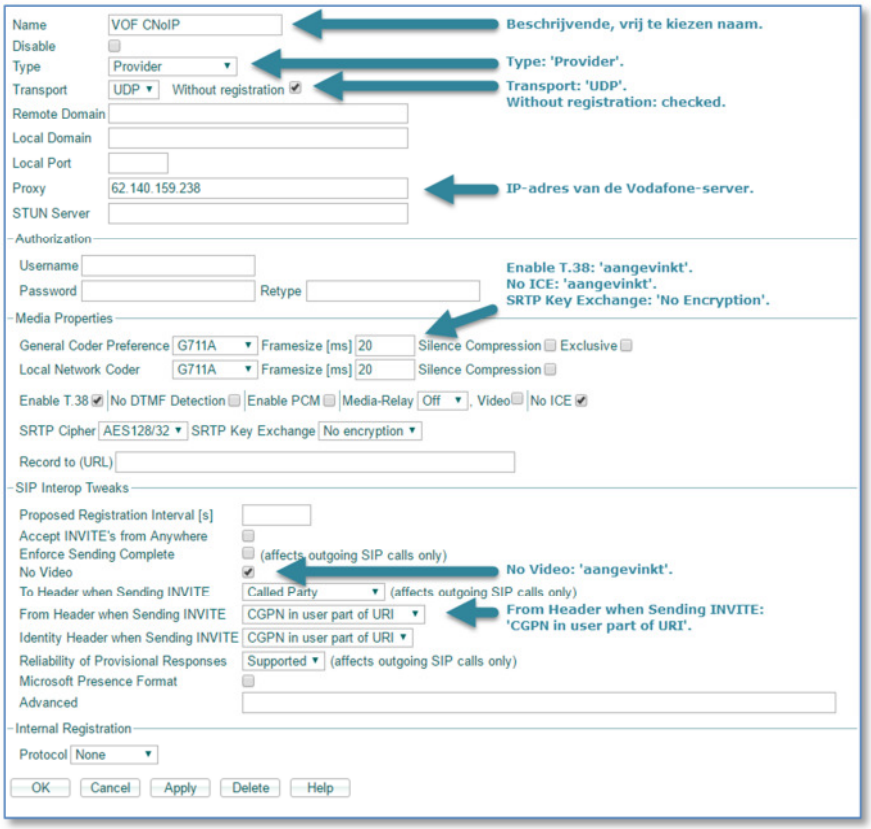
Configuration VoF SIP Trunk Vodafone



** IP addresses and telephone numbers used during the approval tests can be different then used in real customer's setup.*

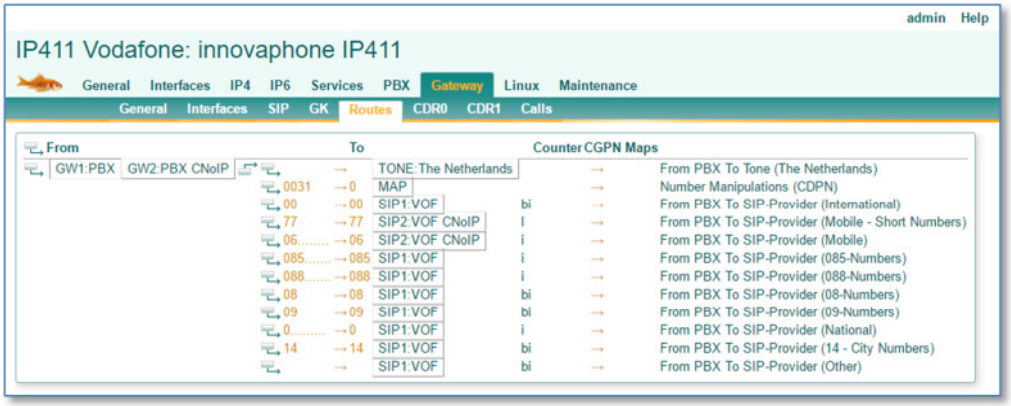
4.2 SIP trunk configuration Vodafone Corporate Net over IP

Configuration CNoIP SIP trunk



IP addresses and telephone numbers used during the approval tests can be different then used in real customer's setup.

Configuration outbound routers:

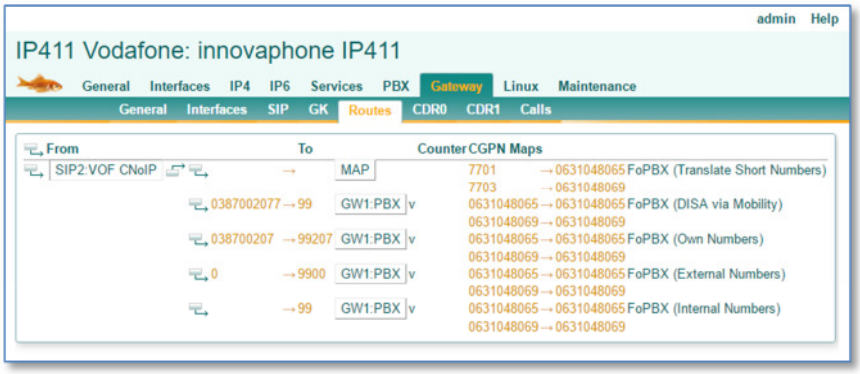


Configuration for correct CLI for the outbound calls to the correct sip trunk.

Configuration Inbound numbers format

Configuration inbound routers:

Forced on PBX:



4.3 Configuration exceptions

In some cases the PBX default configuration settings have to be changed for specific features. These special settings are described here:

- No changes

5 Glossary

DTMF	Tones generated on a phone and send across a communications network (i.e. for menu selections in voicemail).
E.164	Standardized international type of number format on a communications network.
Fax support G.711 pass-through	Fax on an IP network, transported like a voice call.
Fax support (T.38 with fall-back to G.711)	Fax on an IP network, transported with a special mechanism (T.38), with fall-back to G.711 pass-through if T.38 is not supported by both sides.
Forced on PBX (mobile originating)	When a mobile phone makes a call to a destination, the call always traverses the PBX. Thereby providing call control to the PBX.
Forced on PBX (mobile terminating)	When a call is made towards a mobile phone, the call always traverses the PBX. Thereby providing call control to the PBX.
G.711 A-law	Sampling algorithm, used to digitize speech on a communications network.
G.729a	Sampling and compression algorithm, used to digitize speech on a communications network.
Gateway	Interconnection device between incompatible networks.
IP	Internet Protocol (addressing protocol on a computer network).
PBX	Private Branch eXchange or private telephone switch.
Privacy	Ability to hide one's identity on a communications network.
Short number	Non-public destination number used in private networks and PBX's.
SIP	Signalling protocol for media communication on an IP network.
T.38	Transport protocol to transport fax over an IP network.
Trunk	Communications channel.
Unknown number format	Number format "as dialled" on a phone.