



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring NovaLink NovaConf via H.323/QSIG with Avaya IP Office – Issue 1.0

Abstract

These Application Notes describe the configuration for connecting the NovaLink NovaConf conferencing system via an H.323/QSIG interface to Avaya IP Office.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

The purpose of this document is to describe the configuration for connecting NovaLink NovaConf and Avaya IP Office, as well as a description of the compliance tests that were performed and a summary of the results of those tests.

The NovaLink NovaConf server includes a Web-based administration facility that allows remote administration of users and conferences from a web browser. Various types of conferences can be configured, dependent on conference participant needs:

Incoming Conferences allow users to “dial in” to conferences held at specific times.

Outgoing Conferences can be configured to call a pre-defined list of conference participants as a specific time.

Ad-hoc conferences can be created to meet an immediate need.

Chief conferences are started by calling a pre-defined telephone number, and calling a pre-defined list of conference participants at that time.

Conference participants can optionally be assigned a PIN code with which they are required to authenticate themselves. NovaLink NovaConf supports multiple interfaces, including the H.323 trunk described in these Application Notes.

The reference configuration for these Application Notes is shown in **Figure 1**.

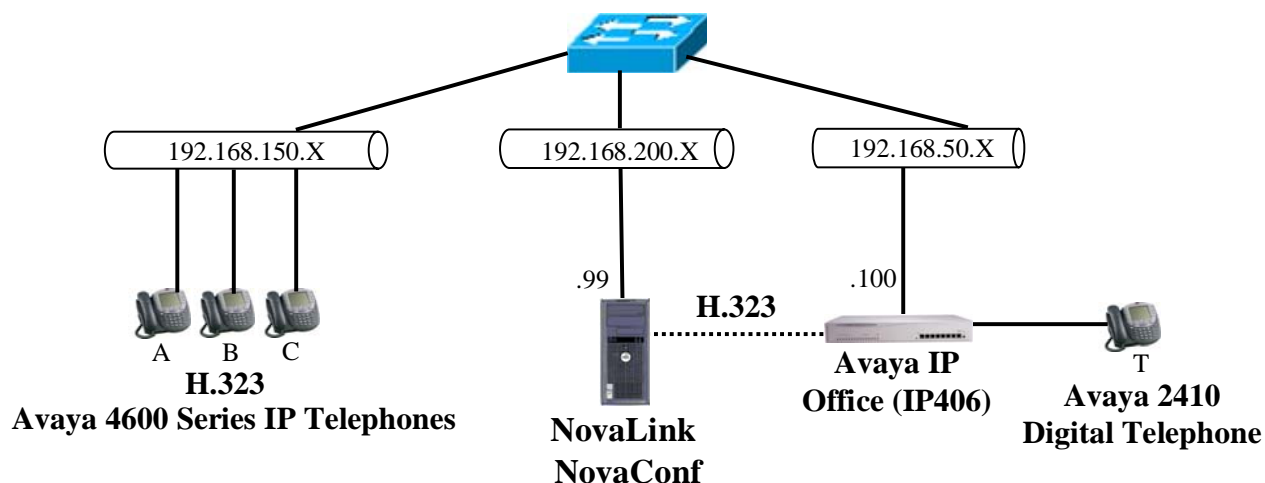


Figure 1: NovaLink NovaConf Reference Configuration

The function of each of the components in **Figure 1** is as follows:

- The NovaLink NovaConf server is attached to Avaya IP Office via an H.323/QSIG trunk using the physical LAN/IP interface as the transport medium.
- Avaya Telephones attached to Avaya IP406 Office either directly via digital interface or via IP network.
- The NovaLink NovaConf server establishes conference calls among Avaya telephones using the communication capabilities of Avaya IP Office.
-

The following extensions were used in the reference configuration:

Extension	Designation
5000136	A
5000134	B
5000133	C
5000001	T
7111111	NovaLink NovaConf QSIG H.323

Table 1: Extensions Used in Reference Configuration

2. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software Version
Avaya IP Office (IP406 platform)	4.0 (5)
Avaya 4600 Series IP Telephones	2.8
Avaya 2410 Digital Telephone	5.0
NovaLink NovaConf	7.5
Microsoft Windows Server 2003 SE	SP2

Table 2: Version Numbers of Equipment and Software

3. Configure Avaya IP Office

The information provided in this section describes the configuration of Avaya IP Office for this solution. The configuration and verification operations illustrated in this section were all performed using the Avaya IP Office Manager application. For other information concerning installation, configuration, and provisioning please refer to [1].

The configuration operations describe in this section can be summarized as follows:

- Configure the dial plan and call routing required for the NovaLink NovaConf configuration.
- Configure the telephone stations which are to be used for testing.

Note that the configuration screens shown within this section contain red frames around those parameters which are set to something other than the default values. The values for those parameters which are not contained within such frames are left with their default assignments.

Many of the descriptions contained within this section make reference to the “left frame” of the Avaya IP Office Manager application. This portion of the Manager’s main display contains a list of the components which can be configured by the Manager program, as follows:

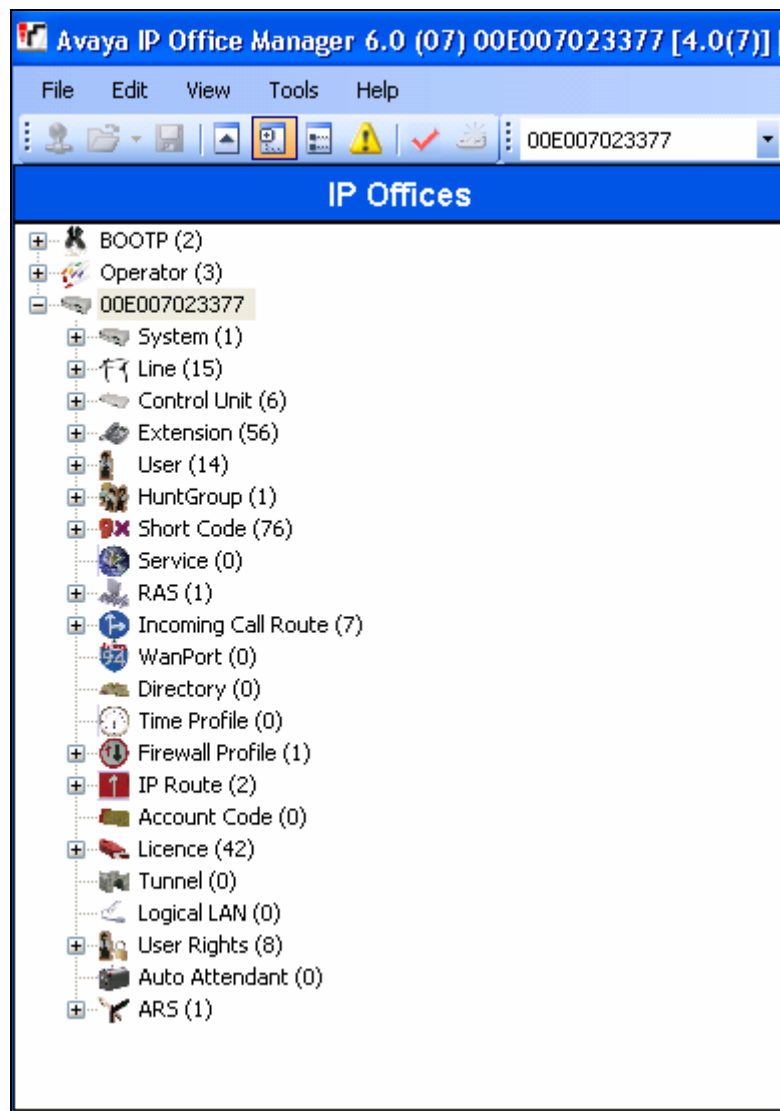


Figure 2: Avaya IP Office Manager Main Menu

3.1. Configure System Settings

Select the “System” icon from the left frame, and set the parameters as shown in **Table 3**.

Tab	Parameter	Usage
LAN1 / LAN Settings	IP Address	The IP address which is to be assigned to Avaya IP Office.
	IP Mask	The IP mask which is to be assigned to Avaya IP Office.
Telephony	Companding Law: Switch	Select the appropriate value for the region in which the system is located: ALAW for Europe.
	Companding Law: Line	Select the appropriate value for the region in which the system is located: ALAW for Europe.

Table 3: “System” Parameters

00E007023377*

System LAN1 DNS Voicemail Telephony LDAP System Alarms Twinning CDR VCM

LAN Settings Gatekeeper Network Topology

IP Address 192 . 168 . 50 . 10

IP Mask 255 . 255 . 255 . 0

RIP Mode None

Number Of DHCP IP Addresses 200

DHCP Mode

☐ Server ☐ Client ☐ Dialin ☒ Disabled

Figure 3: Avaya IP Office System Parameters: LAN1 / LAN Settings

00E007023377*

System

LAN1

DNS

Voicemail

Telephony

LDAP

System Alarms

Twining

CDR

VCM

Default Outside Call Sequence

Normal

Default Inside Call Sequence

Ring Type 1

Default Ring Back Sequence

Ring Type 2

Dial Delay Time (sec)

1

Dial Delay Count

4

Default No Answer Time (secs)

15

Hold Timeout (secs)

15

Park Timeout (secs)

300

Ring Delay (secs)

5

☒ Local Dial Tone

☐ Local Busy Tone

☐ Conferencing Tone

☐ Inhibit Off-Switch Forward/Transfer

☒ Dial By Name

Default Currency

EUR

Companding Law

Switch

☐ ULAW

☒ ALAW

Line

☐ ULAW Line

☒ ALAW Line

Busy Tone Detection

Mode

System Frequency

Single Freq. [10Hz]

42

Dual Freq. [10Hz]

48

+

62

On Width [10ms]

50

Off Width [10ms]

50

☐ GSM Silence Suppression

☒ Show Account Code

☒ Auto Hold

☐ Use External Music on Hold

☐ WAN Mode Override

Disconnect Tone

Default

Figure 4: Avaya IP Office System Parameters: Telephony

3.2. Configure H.323 Interface to NovaLink NovaConf

Select the icon corresponding to the H.323 line from the list of lines in the left frame, and set the parameters as shown in the table below.

Parameter	Usage
Line Number	Accept the default line number which was allocated by the system.
Telephone Number	This parameter is used for informational purposes only.
Incoming Group ID	Select an unused group number, or use the default value.
Outgoing Group ID	Select the same group as for “Incoming Group ID”.
Number of Channels	Select a number which is sufficient to handle the maximum anticipated number of simultaneous calls, or accept the default allocated by the system.
Outgoing Channels	Select the same value as used for “Number of Channels”.
Voice Channels	Select the same value as used for “Number of Channels”.
Data Channels	Select the same value as used for “Number of Channels”.

Table 4: H.323 Line Parameters

The screenshot shows the 'IP - Line 2' configuration window with the 'VoIP Line' tab selected. The 'Incoming Group ID' and 'Outgoing Group ID' fields are highlighted with red boxes and both contain the value '2'. The 'Number of Channels', 'Outgoing Channels', 'Voice Channels', and 'Data Channels' fields are also highlighted with red boxes and all contain the value '20'. The 'Line Number' is set to '2' and 'TEI' is set to '0'. The 'Telephone Number' field is empty. The 'Prefix', 'National Prefix', and 'International Prefix' fields are also empty.

Figure 5 H.323 Line: VoIP Line Tab

Select the parameters shown in the table below for the “VoIP Settings” tab.

Parameter	Usage
Gateway IP Address	Enter the IP address of the NovaLink NovaConf server.
Compression Mode	Select “Automatic Select” from the drop-down box.
H450 Support	Accept the default value of “H450”.
Enable Faststart	Check this box.
Out Of Band DTMF	Check this box.
Allow Direct Media Path	Check this box.

Table 5: H.323 VoIP Settings Parameters

The screenshot shows the 'IP - Line 2' configuration window with the 'VoIP Settings' tab active. The following parameters are highlighted with red boxes:

- Gateway IP Address: 192 . 168 . 200 . 99
- Voice Payload Size (ms): 0
- Compression Mode: Automatic Select
- H450 Support: H450
- Enable Faststart: ☒
- Out Of Band DTMF: ☒
- Allow Direct Media Path: ☒

Other visible options include:

- VoIP Silence Suppression: ☐
- Local Tones: ☐
- Enable RSVP: ☐
- Voice Networking: ☐
- Fax Transport Support: ☐

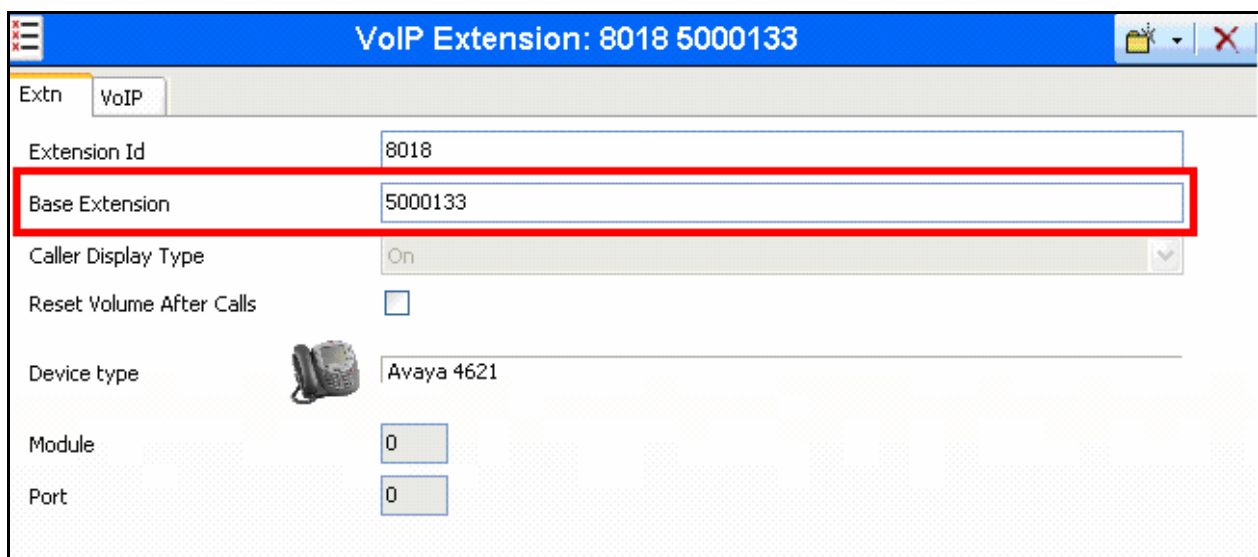
Figure 6 H.323 Line: VoIP Settings Tab

3.3. Configure H.323 Telephone Extensions

When the Call Server address Avaya IP Telephone is assigned to the IP address of Avaya IP Office, a default extension is allocated by Avaya IP Office for that device upon its initial registration. For each of the stations A-C, reassign this default extension to one of the extensions shown in **Table 1**, and configure each of these extensions using the parameters shown in **Table 6**.

Tab	Parameter	Usage
Extn	Base Extension	Enter one of the extension to be assigned to stations A-C.
	Device type	Accept the device type which was assigned when this device was initially registered by Avaya IP Office.
VoIP	Compression Mode	Select G.711 ALAW 64K.
	Out Of Band DTMF	Check this box.
	Allow Direct Media Path	Check this box.

Table 6: Extension Parameters



The screenshot shows a configuration window titled "VoIP Extension: 8018 5000133". It has two tabs: "Extn" and "VoIP". The "Extn" tab is active. The "Base Extension" field is highlighted with a red rectangle and contains the value "5000133". Other fields include "Extension Id" (8018), "Caller Display Type" (On), "Reset Volume After Calls" (unchecked), "Device type" (Avaya 4621), "Module" (0), and "Port" (0).

Figure 7: Extensions: Extn Tab


Figure 8: Extensions: VoIP Tab

3.4. Configure Digital Telephone Extensions



When the Avaya 2410 Digital Telephone (shown as “T” in **Figure 1**) is initially attached to Avaya IP Office, it is assigned a default extension. Select the “Extension” icon from the Avaya IP Office Manager, as shown in **Figure 2**, and assign parameter the values shown in **Table 7**.

Tab	Parameter	Usage
Extn	Base Extension	Enter one of the extension to be assigned to station T.
	Device type	Use the value which was assigned by Avaya IP Office when the device was initially registered.

Table 7: Extension Parameters



Digital Extension: 35 5000001



Extn


Extension Id	35
Base Extension	5000001
Caller Display Type	On
Reset Volume After Calls	<input type="checkbox"/>
Device type	 Avaya 2410
Module	BD
Port	1

Figure 9: Extensions: Extn Tab

3.5. Configure Users

Configure users by performing an “add” operation via the “Users” icon contained in the left frame for stations A-C and T.

Tab	Parameter	Usage
User	Name	Enter a name which identifies the user.
	Extension	Enter one of the extensions A-C,T.
Telephony	Can Intrude	Check this box.
	Cannot be Intruded	Uncheck this box.

Table 8: User Parameters

Extn5000133: 5000133

User DND ShortCodes Source Numbers Telephony Forwarding Dial In Button Programming Menu Programming Twir

Name Extn5000133

Password

Confirm Password

Full Name

Extension 5000133

Locale

Priority 5

☐ Ex Directory

Device Type Avaya 4621

User Rights

User Rights view User data

Working hours time profile <None>

Working hours User Rights

Out of hours User Rights

Figure 10: Users: User Tab

Extn5000133: 5000133*

User DND ShortCodes Source Numbers **Telephony** Forwarding Dial In Button Programming Menu Programming Twir

Outside Call Sequence Default Ring

Inside Call Sequence Default Ring

Ringback Sequence Default Ring

No Answer Time (secs)

Wrap-up Time (secs) 2

Transfer Return Time (secs)

Individual Coverage Time (secs) 10

Login Code

Login Idle Period (secs)

Monitor Group <None>

Ring Delay (secs)

Call Cost Mark-Up 100

Status on No-Answer Logged On (No change)

Multi Line Options

☒ Ringing Line Preference

☒ Idle Line Preference

☐ Delayed Ring Preference

☐ Answer Pre-Select

Reset Longest Idle Time

☒ All Calls

☐ External Incoming

☐ Call Waiting On

☒ Answer Call Waiting On Hold (Analogue)

☐ Busy On Held

☐ Outgoing Call Bar

☐ Offhook Station

☒ Can Intrude

☐ Cannot be Intruded

☐ Force Login

☐ Force Account Code

☐ System Phone

☐ Inhibit Off-Switch Forward/Transfer

☐ Reserve Last CA

☐ Can Trace Calls

Figure 11: Users: Telephony Tab

3.6. Configure Short Codes

Configure Short Codes by performing an “add” operation via the “Short Codes” icon contained in the left frame.

3.6.1. Configure Short Code for Routing to NovaLink NovaConf

Create a short code to route calls to the NovaLink NovaConf H.323 trunk. In this example, seven-digit extensions beginning with “7” are specified.

Tab	Parameter	Usage
Short Code	Code	Enter “7XXXXXX”.
	Feature	Enter “Dial”.
	Telephone Number	Enter “.” to dial the entire extension which was recognized.
	Line Group Id	Enter the group number assigned to the H.323 line in Section 3.2 .

Table 9: User Parameters

The screenshot shows a web application window titled "7XXXXXX: Dial". The "Short Code" tab is selected. The form contains the following fields:

- Code: 7XXXXXX
- Feature: Dial (dropdown menu)
- Telephone Number: .
- Line Group Id: 2 (dropdown menu)
- Locale: (dropdown menu)
- Force Account Code: ☐

A red rectangle highlights the Code, Feature, Telephone Number, and Line Group Id fields.

Figure 12: Short Codes: Short Code Tab

4. Configure NovaLink NovaConf

4.1. Configuration file NovaConf.ini

The NovaConf.ini configuration file is a “flat” ASCII file which can be edited with a text editor. This file is contained in the main installation directory on the NovaLink NovaConf server (e.g. C:\Program Files\NovaConf). Note that the “DefaultCallingParty” and “LocalUserName” parameters can be assigned to the same extension, as these parameters are used by different subcomponents of the NovaConf server. Edit the following parameters in the file as described in **Table 10**.

Parameter	Usage
CardDriver	Set this value to “3” to select the H.323 driver.
DefaultCallingParty	This number should be configured to lie within the dialing plan and be chosen such that calls originating from Avaya IP Office are routed to the trunk used to connect to NovaLink NovaConf. A value of “7111111” was used for testing.
QSIGStandard	Set this value to “2” for “QSIG ISO over H.323”
LocalUserName	This number should be configured to lie within the dialing plan and be chosen such that calls originating from Avaya IP Office are routed to the trunk used to connect to NovaLink NovaConf. A value of “7111111” was used for testing.
H323_Gateway	Enter the IP address of Avaya IP Office.
H323_UseGateKeeper	Enter a value of “0” to disable the NovaLink NovaConf gatekeeper.
H323_UseFastStart	Enter a value of “0” to disable the FastStart.
H323_UseH245Tunneling	Enter a value of “1” to enable H245 tunneling.

Table 10: NovaConf.ini Parameters

```
[CallInfo]
CardDriver=3
DefaultCallingParty=7111111
QSIGStandard=2

[VoIP]
DriverPref=2
LocalUserName=7111111
H323_Gateway=192.168.50.100
H323_UseGateKeeper=0
H323_UseFastStart=0
H323_UseH245Tunneling=1

[NovaConf]
Rufnummer=7111111
```

Figure 13: NovaConf.ini Configuration File Content

4.2. Configure NovaLink NovaConf Application

Use the Windows “Start” button to select the program “NovaConf Webclient”. After entering the appropriate user name and password, the NovaLink NovaConf startup screen is displayed. Click the “Show users” icon to show potential conference participants.

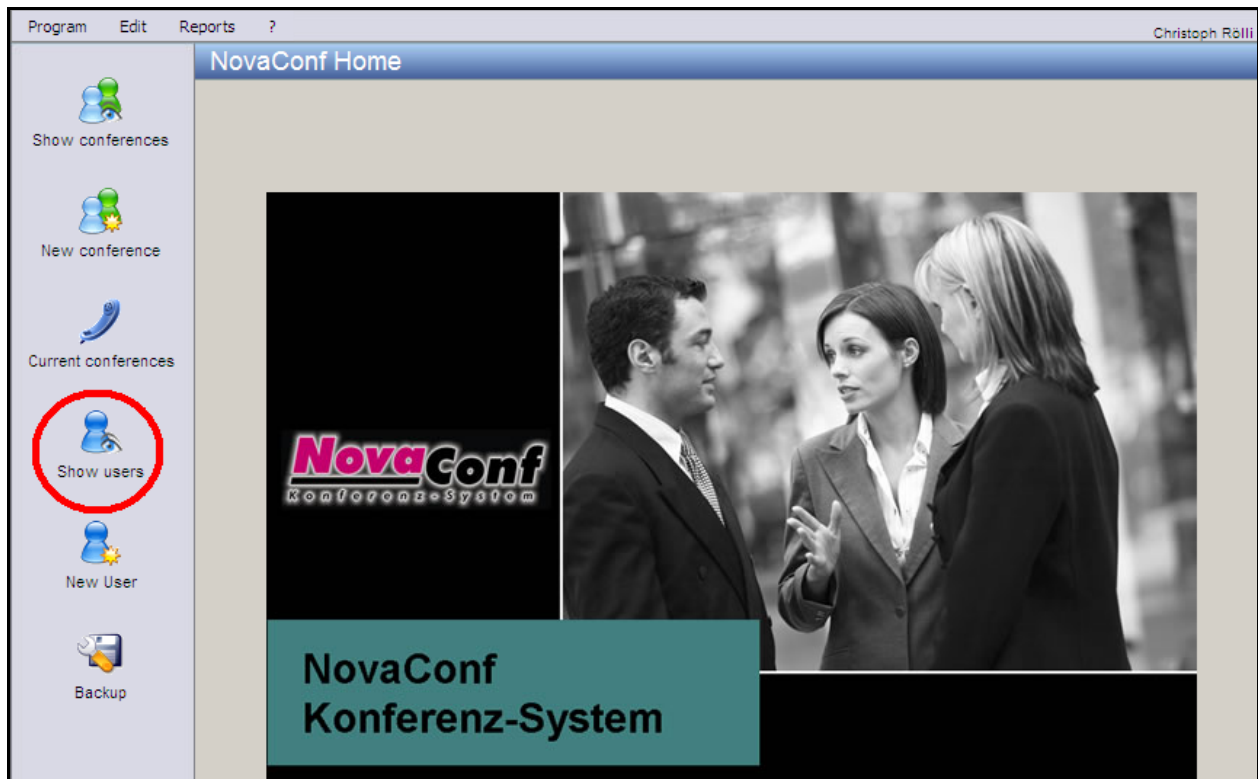


Figure 14: NovaLink NovaConf Startup Screen

4.2.1. Configure Users

Assuming that no other users have been defined, the user designated as administrator is displayed. The configuration of the administrator is beyond the scope of these Application Notes. See reference [2] for additional information.

Click the “New person” button to add a potential conference participant. A conference user should be configured for each of the telephone extensions shown in **Table 1** Error! Reference source not found..

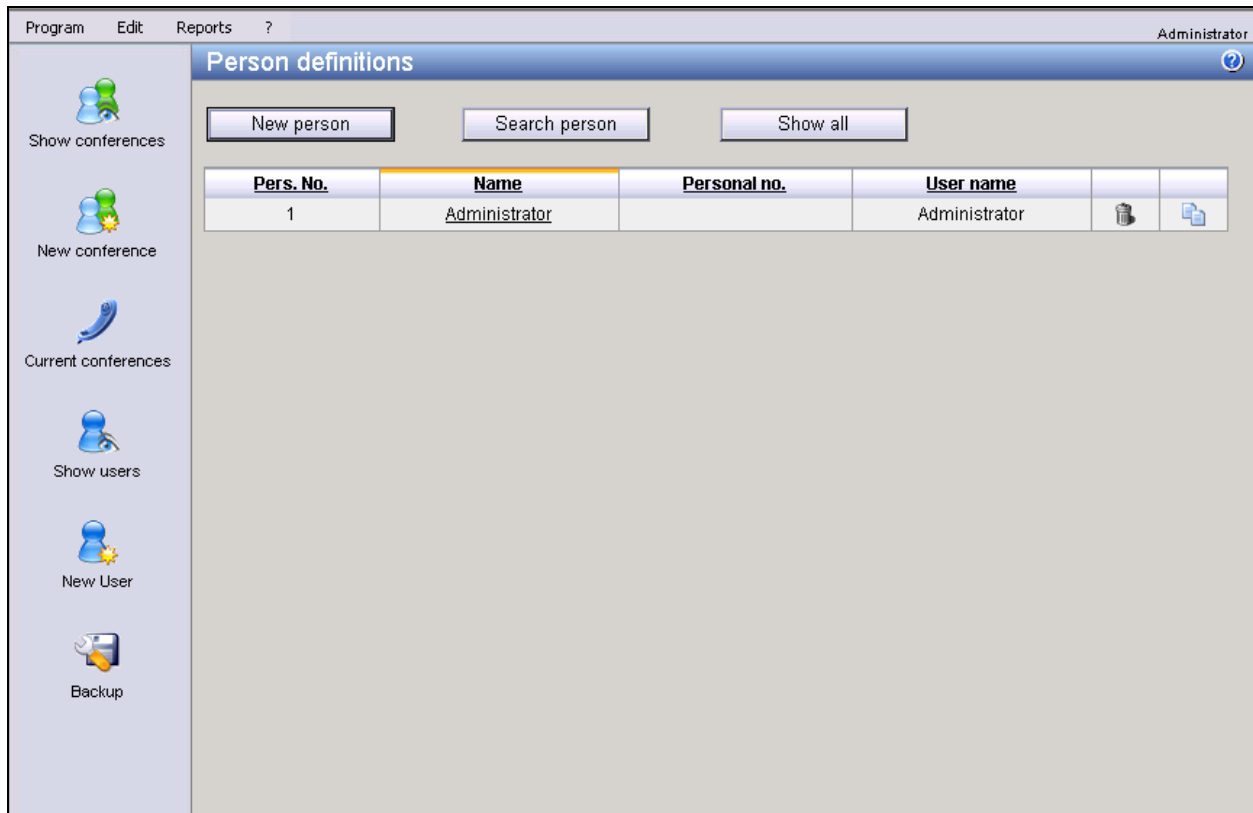


Figure 15: NovaLink NovaConf User Configuration Screen

In the next screen, select the “Personal details” tab, enter the user’s name in the “Name” field and a numeric PIN code to be assigned to the user in the “PIN code” field. The user will use this PIN code when an authorization sequence for a conference operation is required.

Program Edit Reports Extras ? Administrator Zurück ?

Edit person

No.: Name:

Personal details Telephone numbers Authorization Notes

Name: ☐ Deactivated:

Add. information: PIN code:

Name of street: Personal ID:

ZIP/Town/City:

Lingua:

Figure 16: NovaLink NovaConf Edit person/Personal Details Screen

Select the “Telephone numbers” tab to enter the telephone number to be assigned to the user. For testing purposes, it is sufficient to configure one telephone extension, which can be entered into the “Office 1” field. Click the “Save changes” button to save the user’s configuration and return to the “Person definitions” screen.

The screenshot shows the 'Edit person' window in the NovaLink NovaConf application. The window has a menu bar at the top with 'Program', 'Edit', 'Reports', 'Extras', and a help icon. The user is logged in as 'Administrator'. On the left is a sidebar with icons for 'Show conferences', 'New conference', 'Current conferences', 'Show users', 'New User', and 'Backup'. The main area is titled 'Edit person' and has four tabs: 'Personal details', 'Telephone numbers' (which is selected), 'Authorization', and 'Notes'. Below the tabs are several input fields: 'No.' and 'Name' at the top; 'Office 1' (containing '5000001'), 'Office 2', 'Home 1', 'Home 2', 'Mobile 1', 'Mobile 2', 'DECT/WLAN 1', and 'DECT/WLAN 2' in two columns; and 'E-Mail' at the bottom. At the very bottom of the window are two buttons: 'Save changes' and 'Discard'.

Figure 17: NovaLink NovaConf Edit person/Telephone Numbers Screen

Repeat the preceding allocation steps for each of the extensions in Table 1Error! Reference source not found.. The newly configured persons are now listed in the “Person definitions” screen, as shown below.

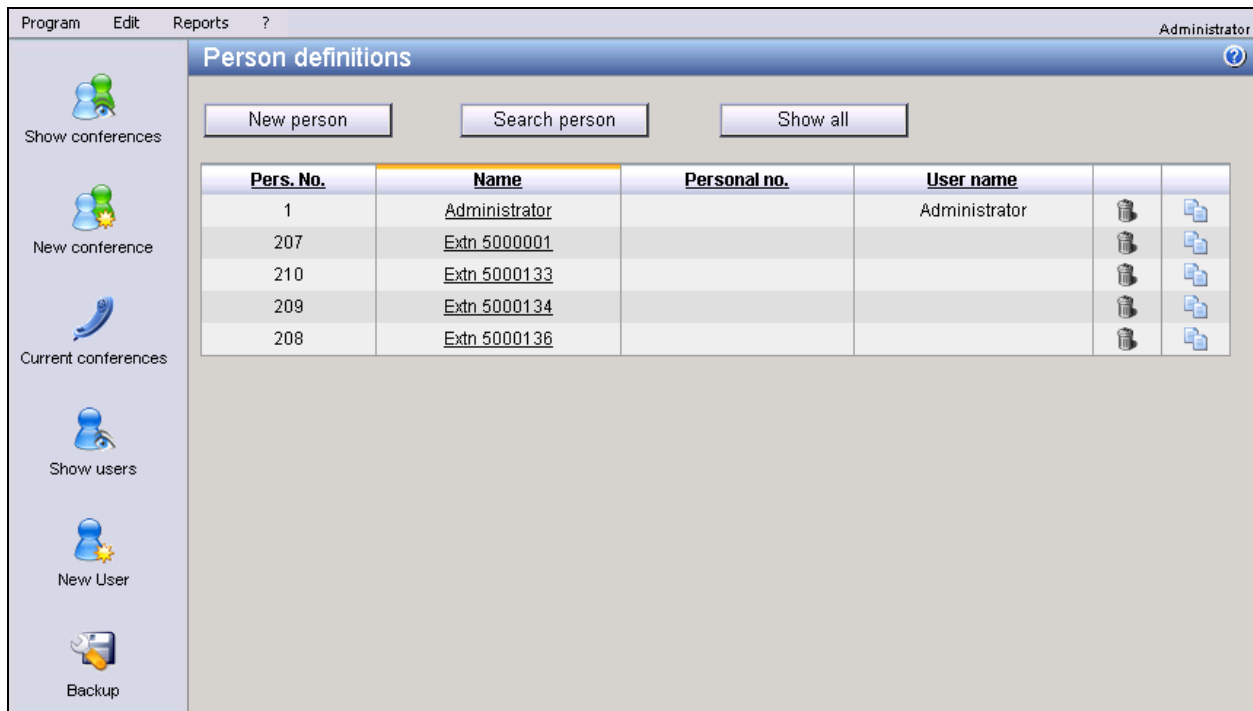


Figure 18: NovaLink NovaConf Person definitions Display Screen

4.2.2. Configure Conferences

From the screen shown in **Figure 18**, click the “Show conference” icon to display the “Predefined Conferences” screen. Click the “New Conference” button to create a new conference. This operation is performed once for each of the three conference types used by the tests described in these Application Notes: incoming conference, outgoing conference, and ad-hoc conference.

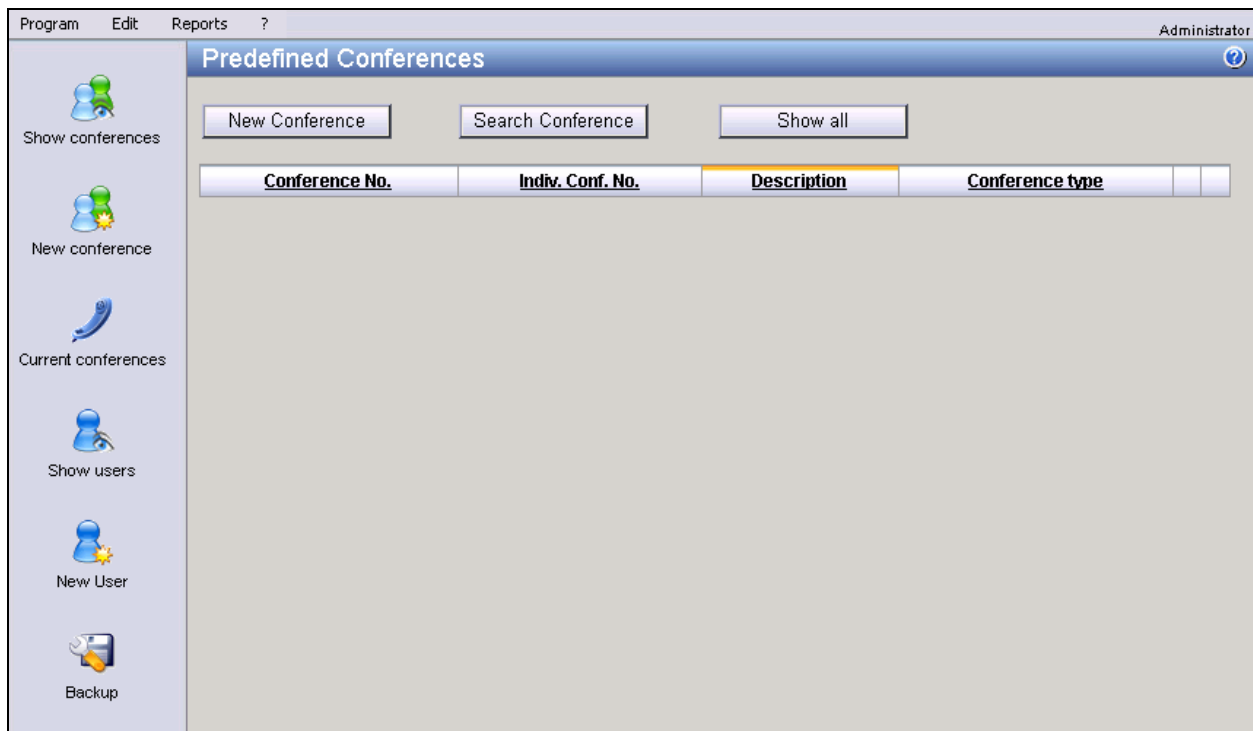


Figure 19: Predefined Conferences List Screen

The “Common” tab of the “Edit conference” screen allows the creation of various conference types. Enter the parameters for the conference to be configured as shown in the table below.

Parameter	Usage
Description	Assign a descriptive name to the conference.
Individual No.	Assign an unused conference number to be used as an identifier for this conference.
Conference-Type	Select “Outgoing Conference”, “Incoming Conference”, or “Ad-hoc Conference” from this drop-down box, dependent on the type of conference which it to be created.
Message	Select an existing message from the list of files contained within this drop-down box, or click the button to the right to record a new message.

Table 11: NovaLink NovaConf Conference Common Configuration Parameters

Program Edit Reports Extras ? Administrator

Edit conference Zurück ?

No.: 2 Description: General Conference

Common User Timetable Notes

Description: General Conference Individual No.:

Conference-Type: Ad-Hoc Conference

Message: Test Announcement Responsible: <No selection> Call attempts: 1

Specification values for Conf. Users:

Authentication-Type: None Authentication:

Dial-In values for incoming conferences:

Dial-In No.: Add. Authentic.-Type: None (Additional authentication to start a Chef conference) Add. Authentic.:

Save changes Discard entries

Show conferences
 New conference
 Current conferences
 Show users
 New User
 Backup

Figure 20: NovaLink NovaConf Edit conference Screen

Select the “User” tab and allocate users to the conference using “drag and drop” operations, as shown below.

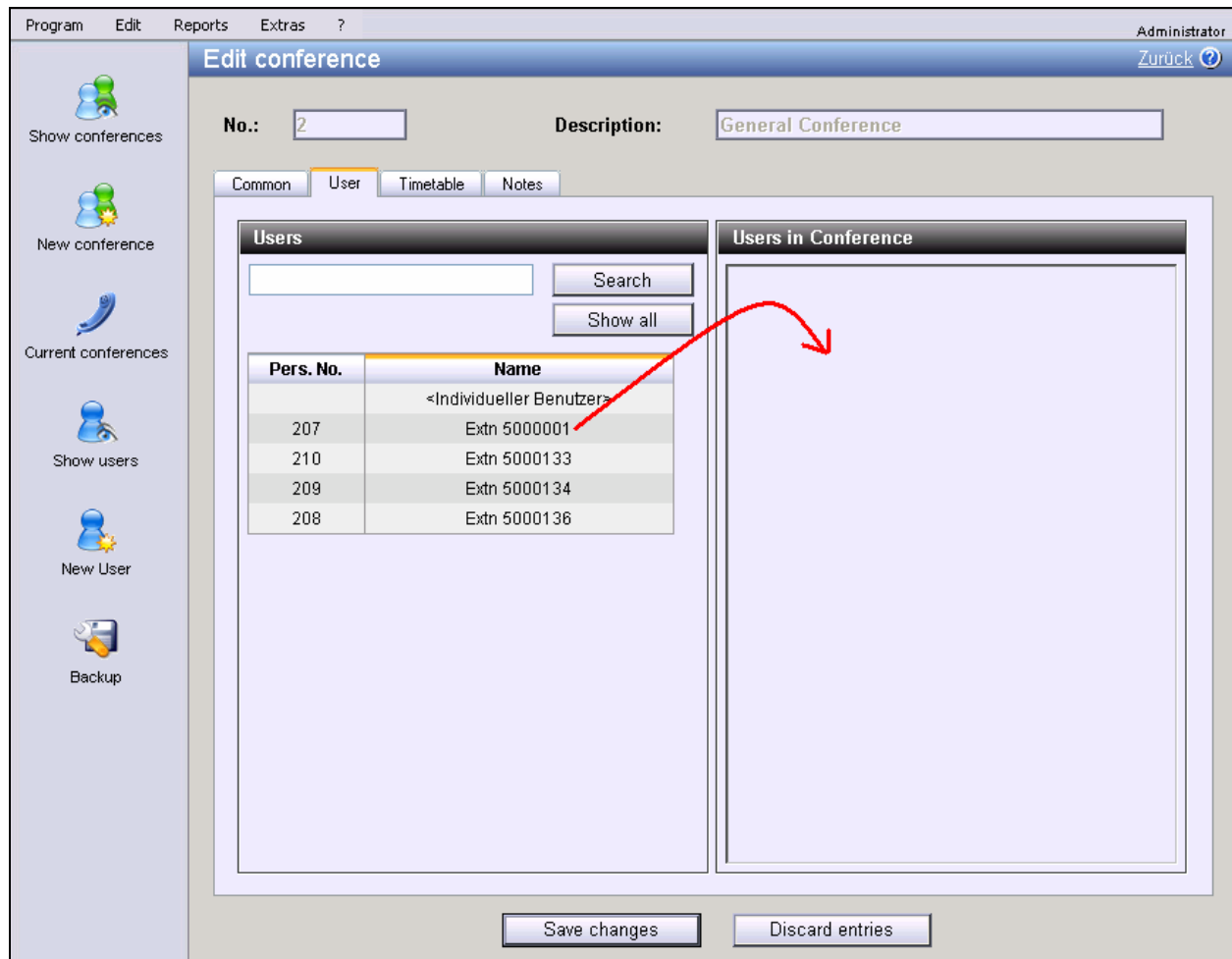


Figure 21: NovaLink NovaConf User Allocation via Drag and Drop

A newly selected conference participant is removed from the list of “Users” and added to the list of “Users in Conference”. Repeat this operation for all users who are to participate in the conference.

The screenshot shows the 'Edit conference' window in the NovaLink NovaConf application. The window has a sidebar on the left with icons for 'Show conferences', 'New conference', 'Current conferences', 'Show users', 'New User', and 'Backup'. The top menu bar includes 'Program', 'Edit', 'Reports', 'Extras', and '?'. The main content area has tabs for 'Common', 'User', 'Timetable', and 'Notes'. The 'User' tab is selected, showing a list of users and a 'Users in Conference' section.

Edit conference (Administrator | Zurück ?)

No.: Description:

Common | **User** | Timetable | Notes

Users

Pers. No.	Name
	<Individueller Benutzer>
210	Extn 5000133
209	Extn 5000134
208	Extn 5000136

Users in Conference

Extn 5000001 (207)

Add. information:
Office 1 (5000001)

None

Figure 22: NovaLink NovaConf Conference After Allocation of First Participant

5. Interoperability Compliance Testing

The interoperability compliance tests included feature and serviceability testing.

The feature testing focused on testing scenarios that involve interaction between the NovaLink NovaConf server and Avaya products, including the following:

- Establishing conferences initiated by various Avaya telephones calling the NovaLink NovaConf server.
- Establishing conferences initiated by the NovaLink NovaConf server by calling various Avaya telephones.
- Verification of the ability of the NovaLink NovaConf server to establish conferences with parties that have activated call diversion. The conference should be established with the diverted-to station.
- NovaLink NovaConf's ability to recognize DTMF tones.
- Verification of the ability of Avaya telephones to correctly log unanswered conference calls.

The serviceability testing focused on verifying that the NovaLink NovaConf server can recover from interruption to interface connections that can occur during routine maintenance activities. The NovaLink NovaConf server was also tested for recovery from unexpected power interruption.

5.1. General Test Approach

The test method employed can be described as follows:

- Correct interoperation between the NovaLink NovaConf server and Avaya IP Office was verified by confirming that the various telephony operations that can be invoked by conferencing activity all function properly.
- NovaLink NovaConf server robustness was tested by verifying its ability to recover from interruptions to its external connections via the LAN between the NovaLink NovaConf and the network.
- Verifying the ability to recover from power interruptions to the NovaLink NovaConf server further tested its robustness.

All testing was performed manually. The tests were all functional in nature, and no performance testing was done.

5.2. Test Results

The following problem was encountered during testing:

- It is not possible for NovaLink NovaConf to detect that an Avaya 4600 Series IP Telephone is disconnected, as this status is not reported to the caller by Avaya IP Office.

This issue did not prohibit the solution from meeting Avaya compliance test requirements.

6. Verification Steps

The following steps can be performed to verify the basic operation of the various system components:

- Verify that Avaya IP Office and the NovaLink NovaConf server can ping each other.
- Start the NovaLink NovaConf Monitor from the Windows “Start” control, and verify that the “Line Status” control is green to indicate that the interface to Avaya IP Office is operational.
- Verify that each of the Avaya Telephones can call the extension allocated to NovaLink NovaConf to participate in an incoming conference.
- Verify that it is possible for NovaLink NovaConf to call each of the Avaya IP Telephones to participate in an outgoing conference.
- Verify that it is possible to navigate the NovaLink NovaConf voice menu from each of the Avaya Telephones by calling the NovaLink NovaConf extension, and entering key sequences in response to prompting requests from NovaLink NovaConf.
- Verify the ability of Avaya Telephones to correctly log unanswered calls by initiating an unanswered conference call from NovaLink NovaConf to each of the Avaya Telephones, verifying the name and number in the log of the telephone, and subsequently dialing the caller from the telephone log.

7. Support

Technical support from NovaLink can be obtained through the following:

NovaLink GmbH
Business tower
Zuercherstrasse 310
8500 Frauenfeld
Switzerland
helpdesk@novalink.ch
Phone: +41 52 762 66 77
Fax: +41 52 762 66 99

8. Conclusion

These Application Notes describe the configuration steps for connecting NovaLink NovaConf with Avaya IP Office. The various features of the NovaLink NovaConf which involve its telephone interface were tested. NovaLink NovaConf passed all of the tests performed, which included both functional and robustness tests.

9. Additional References

- [1] *IP Office 4.0 Installation Manual*, February 2007, Issue 1, Document Number 15-601047.
- [2] *NovaConf 7.5 Manual*, May 2007

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