Avaya Solution & Interoperability Test Lab

Application Notes for Configuring NovaLink NovaAlert PRI-S0 with Avaya IP Office – Issue 1.0

Abstract

These Application Notes describe the compliance testing of the NovaLink NovaAlert alarm system connected via both PRI and S0 interfaces to Avaya IP Office. These Application Notes contain an extensive description of the configurations for both NovaAlert and Avaya IP Office. The testing that was performed tested the major functions of NovaAlert.

Information in these Application Notes has been obtained through Avaya 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 compliance testing done with NovaAlert and Avaya Communication Manager, including a description of the configuration of each, a description of the tests that were performed, and a summary of the results of those tests.

The NovaAlert is a PC-resident application, which is used in a health care, hotel or industrial environment for alerting, messaging or information services. NovaLink NovaAlert can react to external alarm stimuli, which indicate the existence of an emergency situation by informing affected persons of the situation.

Alarms can be triggered from various possible input sources including manual input via web browser, serial interfaces, potential free contacts, SNMP, etc. “Direct” alarms can also be defined which allow alarms to be input and triggered via telephone calls. The alarm triggering described within these application notes is restricted to those methods that involve interaction with Avaya Communication Manager.

Once an alarm has been triggered, the medium selected when the alarm was configured is used to deliver the alarm. Possible delivery interfaces include phone calls (including conferences), E-Mail, Pager, SMS, Fax etc. Multiple recipients can be configured for an alarm, thus possibly creating multiple simultaneous telephone calls. These application notes only deal with those delivery methods that involve interaction with Avaya Communication Manager.

Alarms which are triggered via Avaya Communication Manager can include pre-recorded or ad hock voice messages, or can generate voice message via a text-to-speech mechanism. The calling party name can also be configured to contain a brief alarm message, so that alarm message will appear in the caller list of intended recipients who are unable to answer an alarm call.

NovaLink NovaAlert supports a wide range of interfaces for input and output, where telephony is the one most commonly used for alarming.

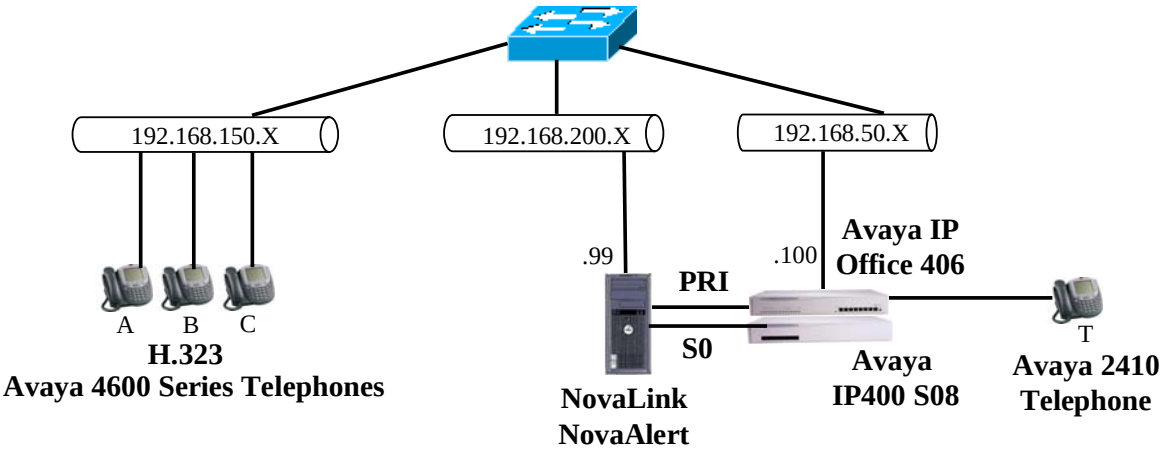

Figure 1: NovaLink NovaAlert Test Configuration

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

- The NovaLink NovaAlert server is attached to Avaya IP Office 406 via either a S0 or Primary Rate Integrated Services Digital Network (ISDN) interface. The S0 interface is on the front panel of the IP400 S08. The PRI interface is at the rear of the IP Office 406. Normally a customer would need to configure only one of these interfaces for an actual installation.
- Avaya Telephones attached to Avaya IP Office either directly via the digital interface or via IP network.
- The NovaLink NovaAlert server signals alarm events via calls over S0 or PRI to the Avaya telephones on Avaya IP Office.

2. Equipment and Software Validated

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

Equipment	Software Version
Avaya IP406 Office	4.0 (5)
Avaya IP400 S08	6.0 (5)
Avaya 4600 series H.323 stations	2.8
NovaLink NovaAlert	7.5 SP 1A
Gerdes Primux 1S2M II / 4S0 II	3.6.4695
Microsoft Windows Server 2003 SE	SP2

Table 1: Version Numbers of Equipment and Software

3. Configuration

The following extensions are used for testing:

Extension	Designation
5000136	A
5000134	B
5000133	C
5000001	T
8000000	NovaLink NovaAlert via PRI
9200000	NovaLink NovaAlert via S0

Table 2: Extensions Used for Testing

3.1. Configure Avaya IP Office

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

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

- Verify that the licenses allocated to the system are sufficient to support the required configuration.
- Configure the dial plan and call routing required for the NovaLink NovaAlert configuration.
- Configure the S0 or PRI interfaces used to connect to the NovaLink NovaAlert server.
- Configure the telephone stations that are to be used for testing.

Many of the descriptions contained within this section make reference to the "left frame" of the IPO Manager application. This portion of the Manager's main display, as depicted in **Figure 2** below, contains a list of the components that can be configured by the Manager program:

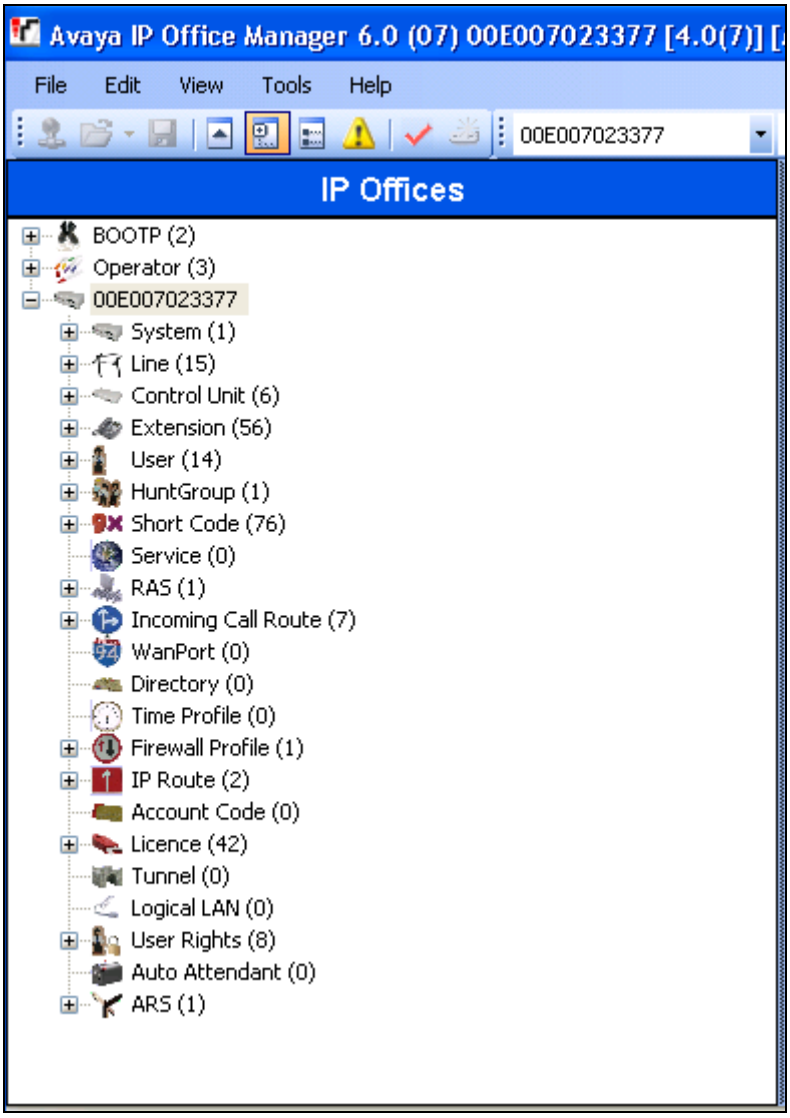

Figure 2: IPO Manager Main Menu

3.1.1. Verify Licenses

No additional licenses are required for these tests.

3.1.2. Configure System Settings

Select the IPO "System" icon from the left frame of the Manager application, 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 IP Office
	IP Mask	The IP mask which is to be assigned to 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

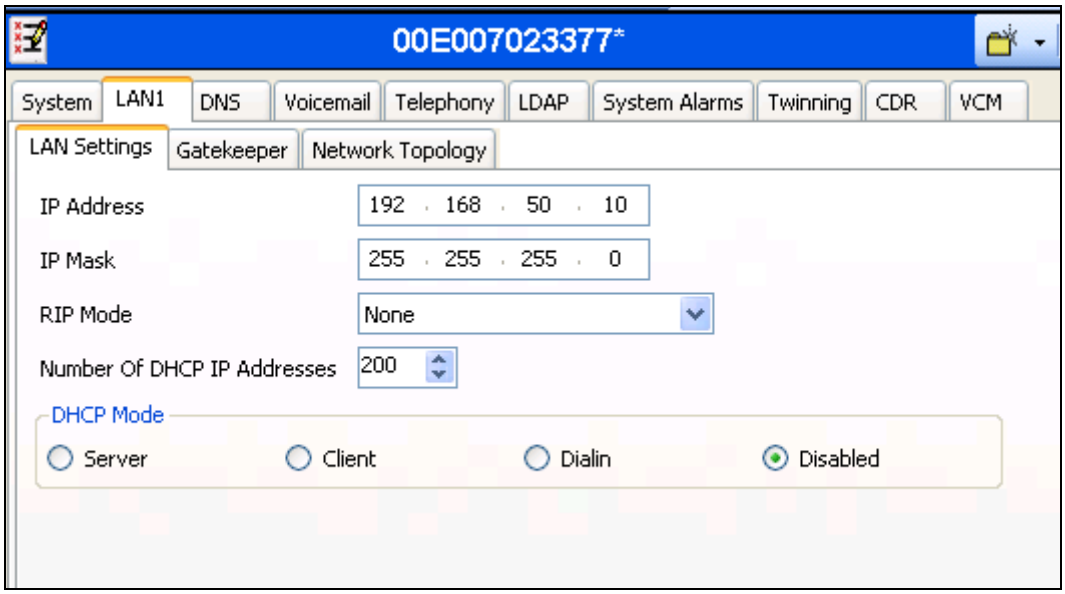

Figure 3: IPO System Parameters: LAN1 / LAN Settings

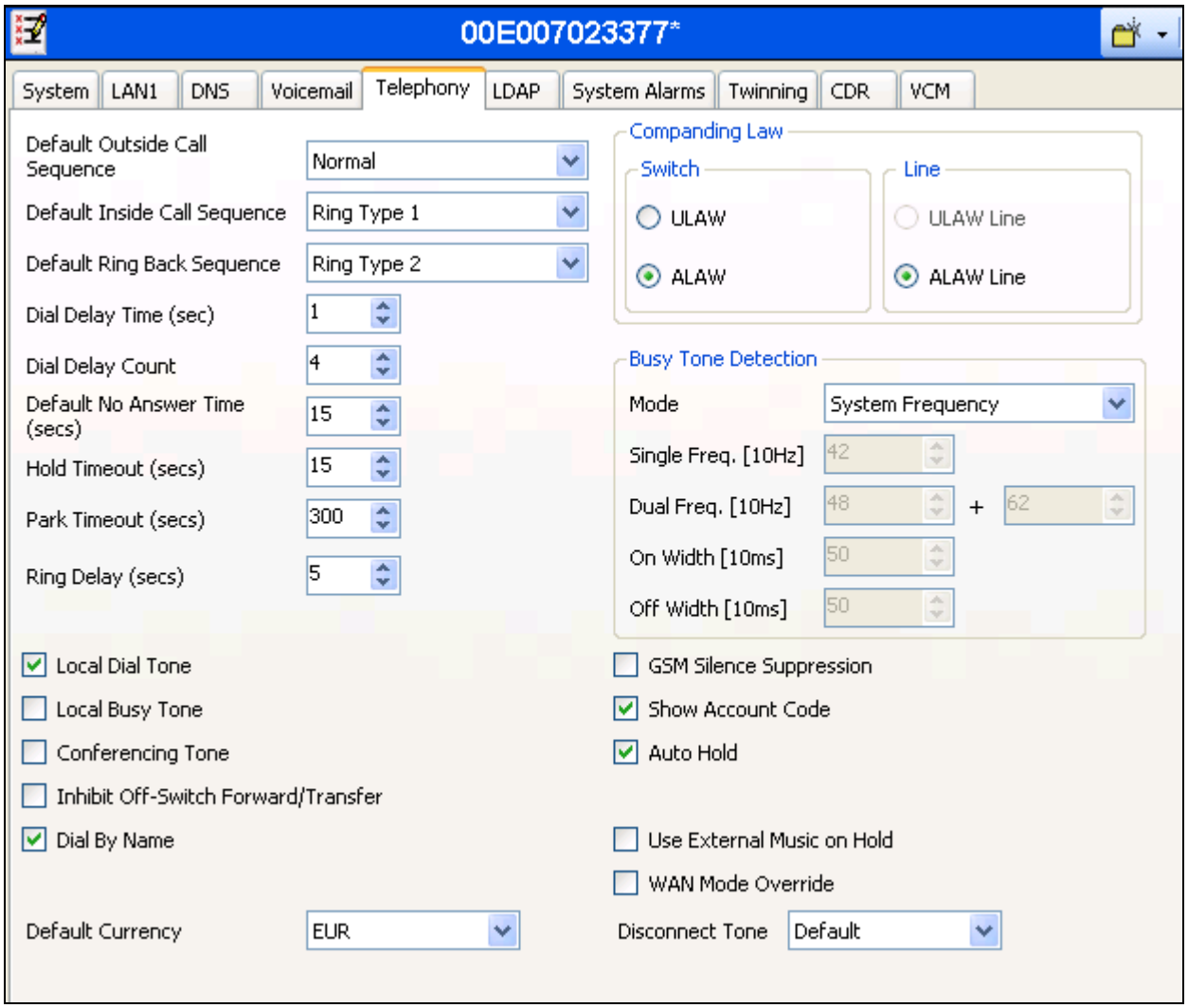

Figure 4: IPO System Parameters: Telephony

3.1.3. Configure PRI Interface to NovaLink NovaAlert

Select the icon corresponding to the "PRI" line from the list of lines from the left frame of the Manager application, and set the parameters as shown in **Table 4**.

Parameter	Usage
Telephone Number	Enter a telephone number to be used as identification, for informational purposes only.
Incoming Group ID	Select an unused group number, or use the default value
CRC Checking	Check this box
Line SubType	Select QSIG A
Outgoing Group ID	Select the same group as for "Incoming Group ID"
Number of Channels	Select 30 channels, as are available for an E1 interface.
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: PRI Line Parameters

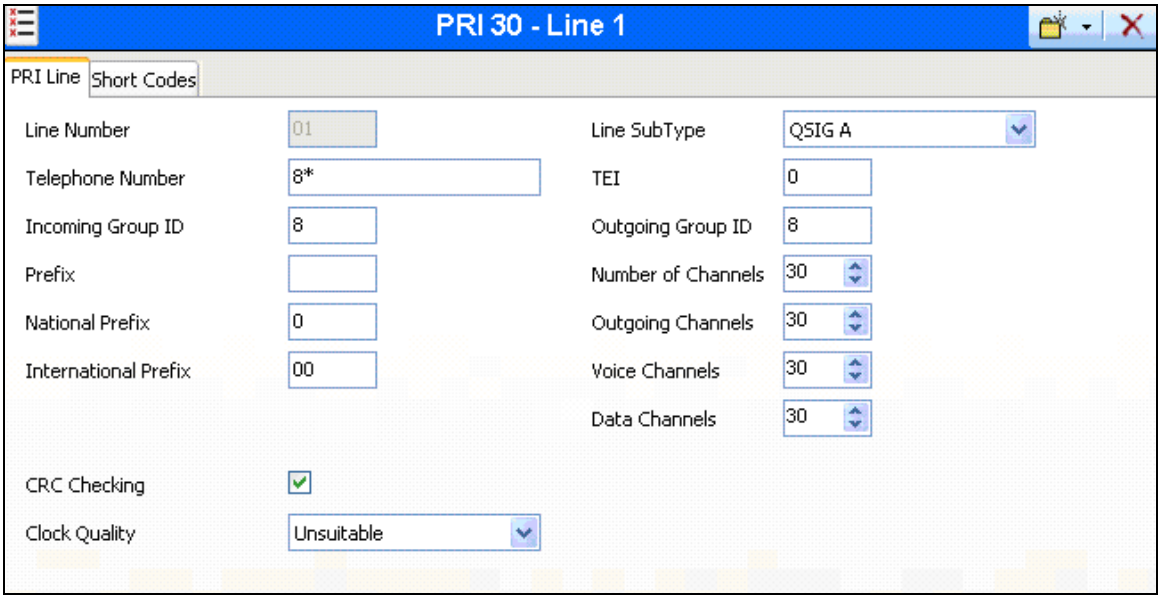

Figure 5: PRI Line: PRI Line Tab

3.1.4. Configure S0 Interface to NovaLink NovaAlert

Select the icon corresponding to the "S0" line from the list of lines from the left frame of the Manager application, and set the parameters as shown in **Table 5**.

Tab	Parameter	Usage
S0 Line	Incoming Group ID	Select an unused group number
	Outgoing Group ID	Select the same group as for "Incoming Group ID"
	Number of Channels	Select "2" channels as required for S0 interface.
	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"
Channels / 1	Line Appearance	Assign the S0 outgoing group ID to the line appearance of the first S0 channel.
Channels / 2	Line Appearance	Assign the S0 outgoing group ID to the line appearance of the second S0 channel.

Table 5: S0 Line Parameters

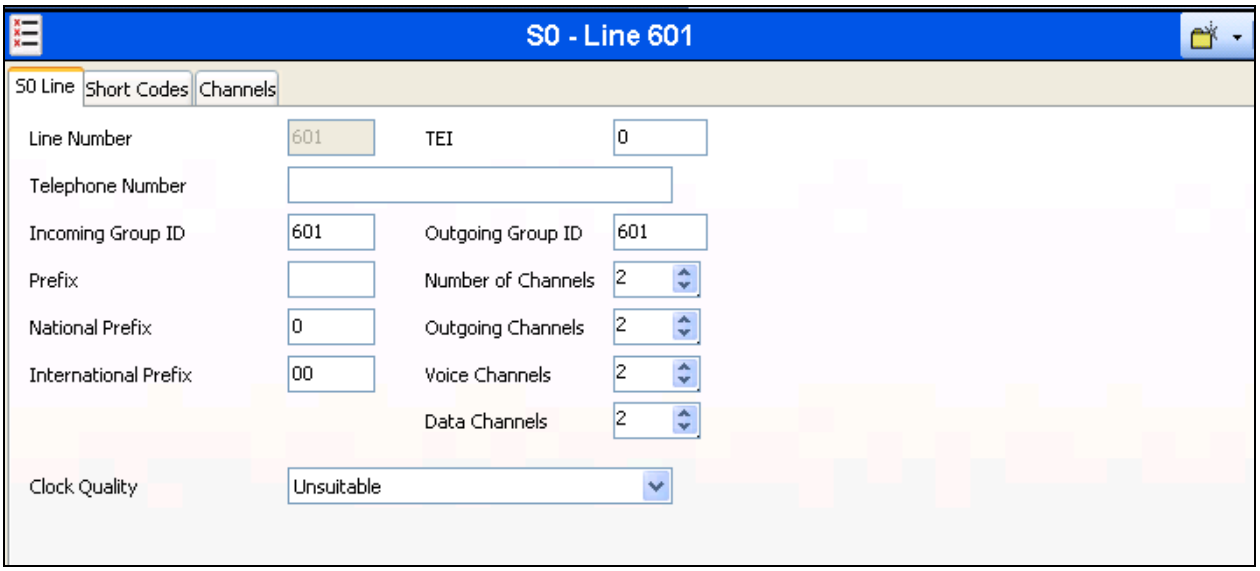

Figure 6: S0 Line: S0 Line Tab

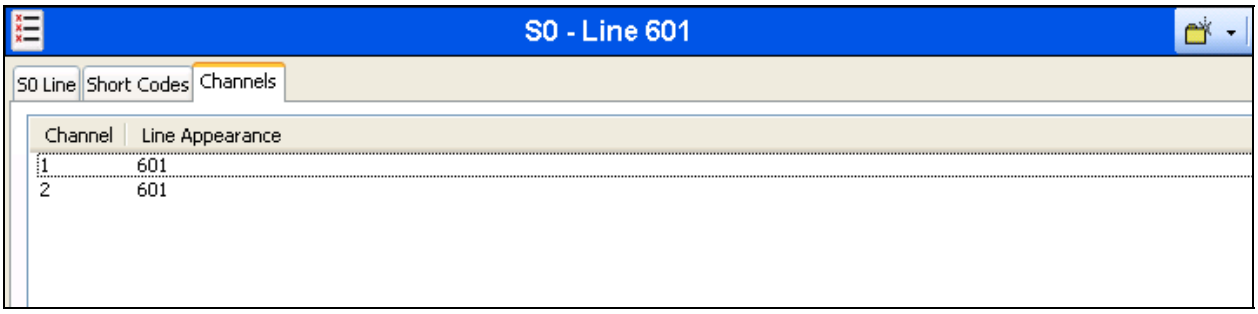

Figure 7: S0 Line: Channels Tab

3.1.5. Configure H.323 Telephone Extensions

Configure stations A-C by performing an "add" operation via the "Extensions" icon contained in the left frame of the main Manager window.

Tab	Parameter	Usage
Extn	Base Extension	Enter one of the extension numbers to be assigned to stations A-C
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

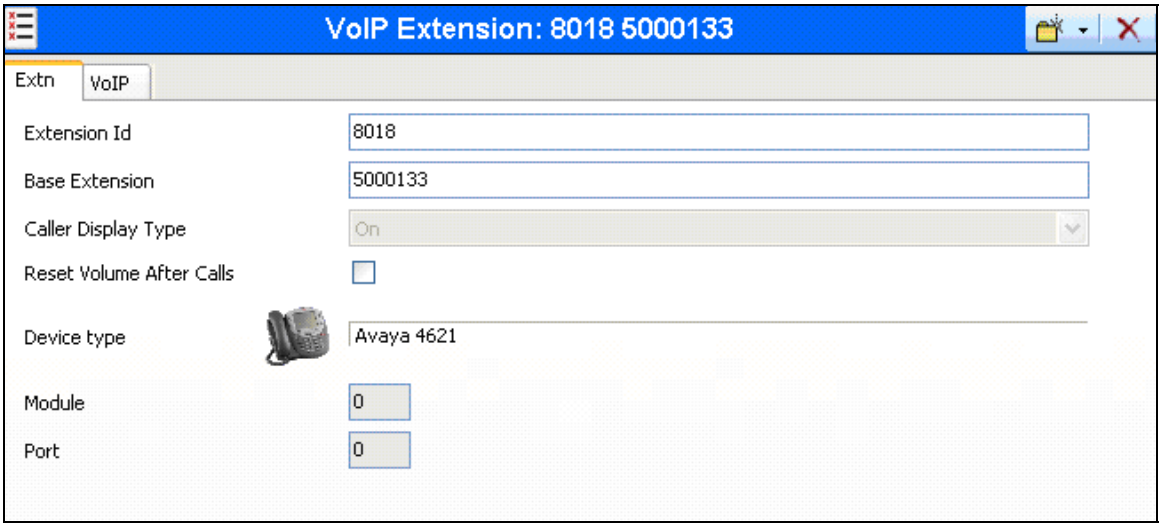

Figure 8: Extensions: Extn Tab

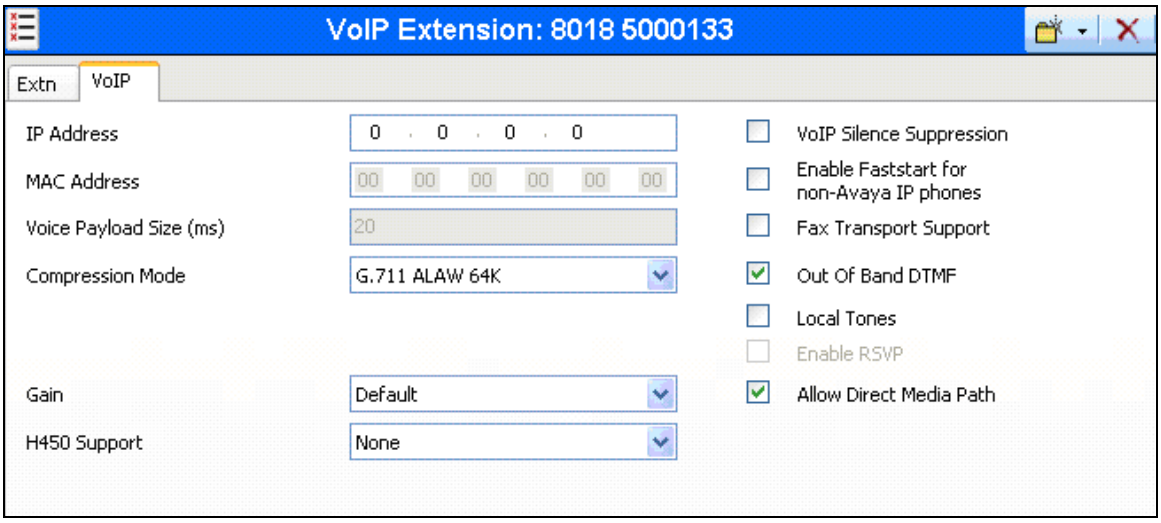

Figure 9: Extensions: VoIP Tab

3.1.6. Configure Digital Telephone Extension

Configure station T by performing an "add" operation via the "Extensions" icon contained in the left frame of the main Manager window.

Tab	Parameter	Usage
Extn	Base Extension	Enter the extension number to be assigned to station T

Table 7: Extension Parameters

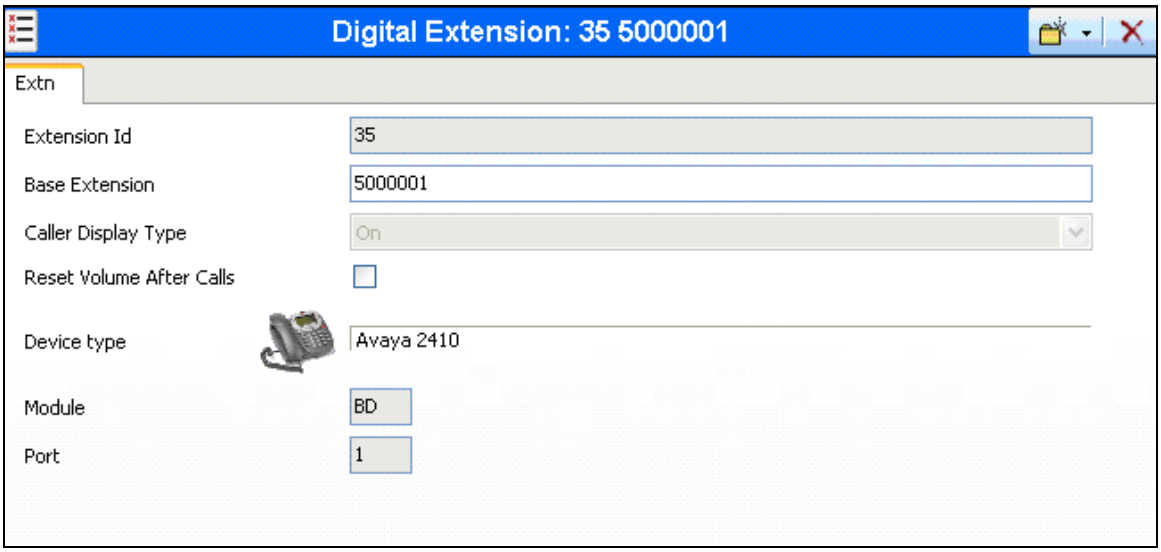

Figure 10: Extensions: Extn Tab

3.1.7. Configure Users

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

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

Table 8: User Parameters

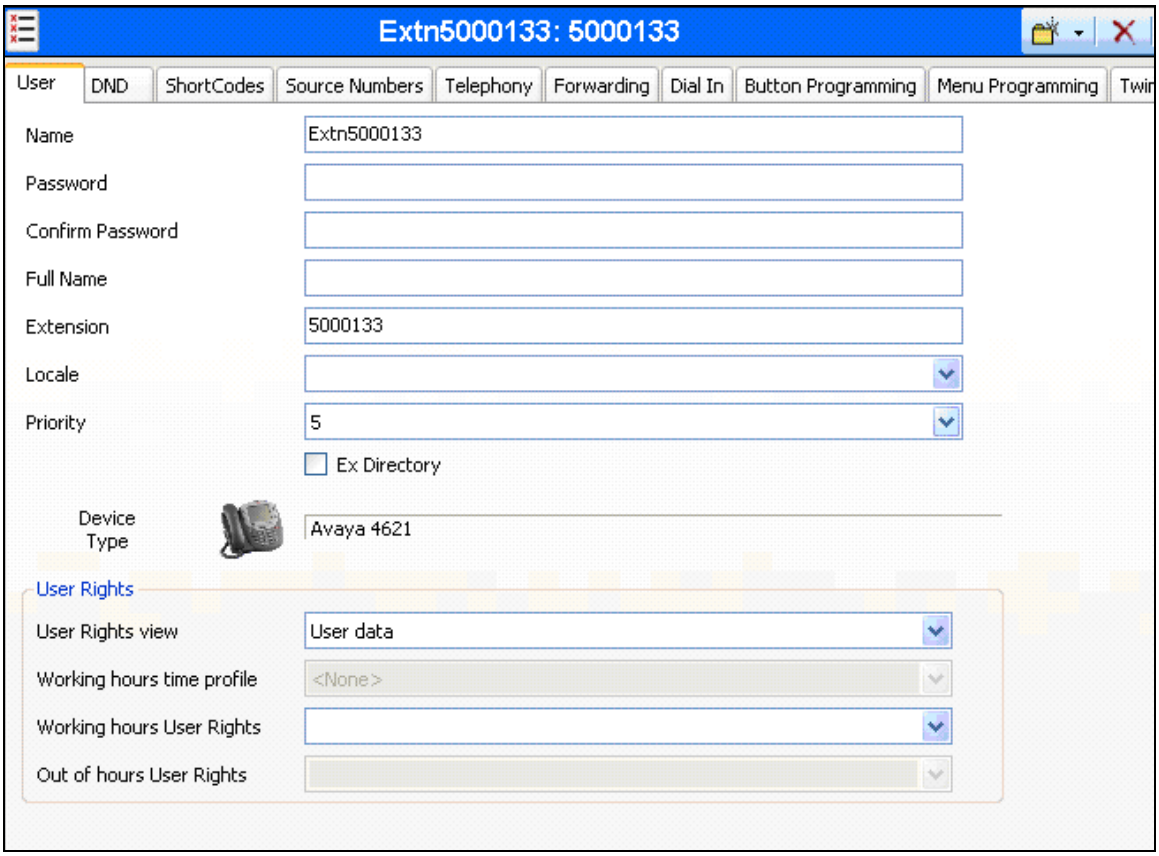

Figure 11: Users: User Tab

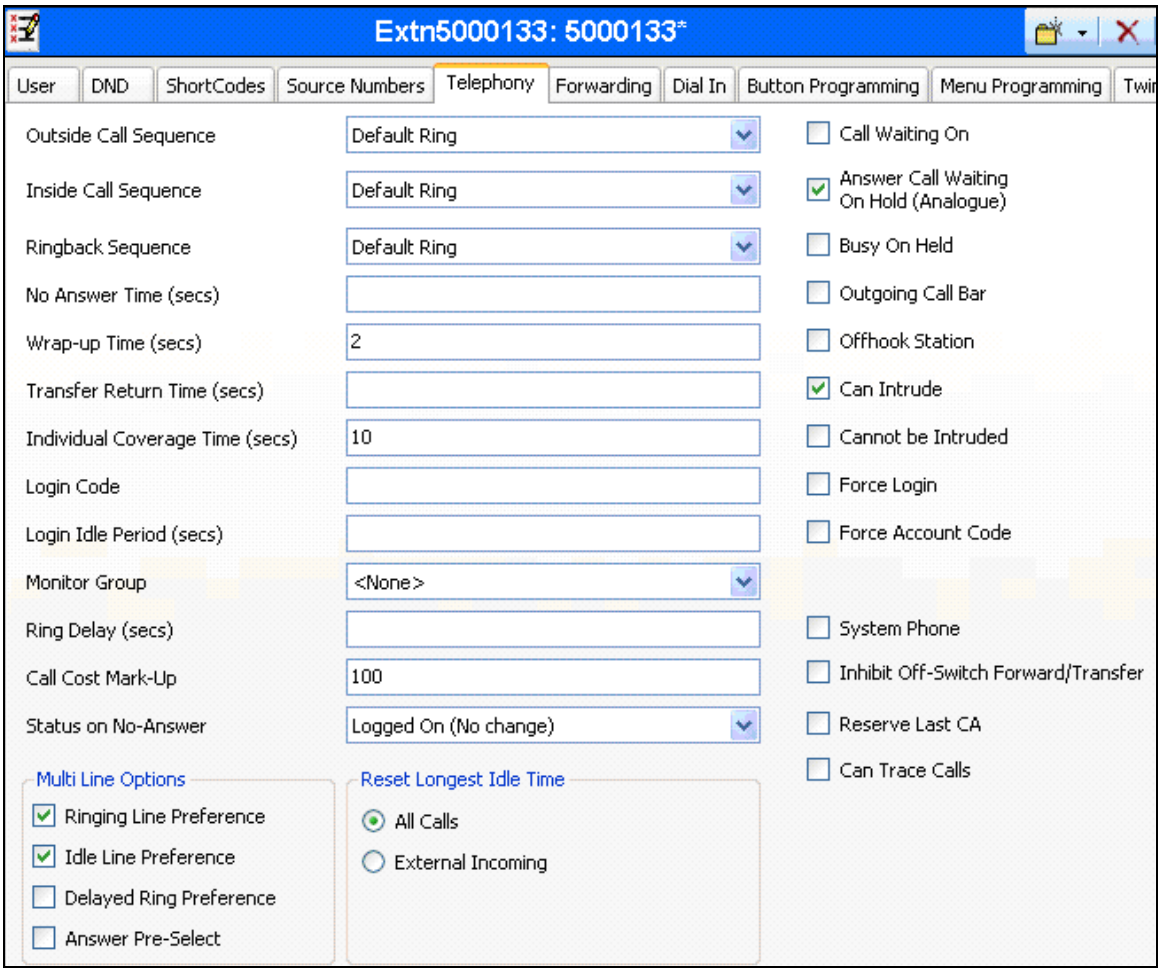

Figure 12: Users: Telephony Tab

3.1.8. Configure Short Codes

3.1.8.1 Configure PRI Line Short Codes

Configure Short Codes by performing an "add" operation via the "Short Codes" icon contained in the left frame of the main Manager window.

Tab	Parameter	Usage
Short Code	Code	Enter "8XXXXXX"
	Feature	Enter "Dial"
	Telephone Number	Enter "."
	Line Group Id	Enter the group number assigned to the PRI line.

Table 9: User Parameters

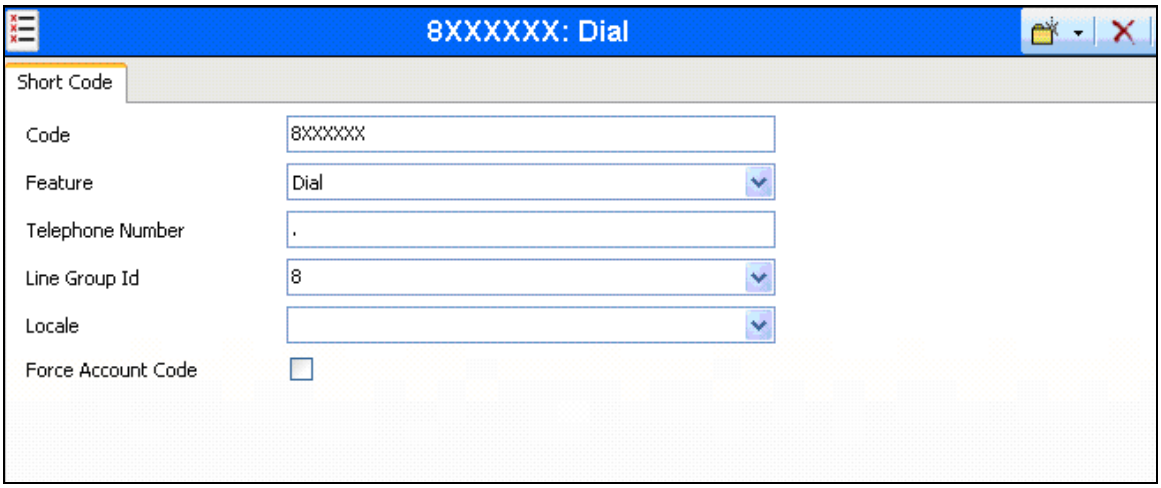

Figure 13: Short Codes: User Tab

3.1.8.2 Configure S0 Line Short Codes

Configure Short Codes by performing an "add" operation via the "Short Codes" icon contained in the left frame of the main Manager window.

Tab	Parameter	Usage
Short Code	Code	Enter 92XXXXX
	Feature	Enter "Dial"
	Telephone Number	Enter "."
	Line Group Id	Enter the number used for the Outgoing Group ID for the S0 line.

Table 10: User Parameters

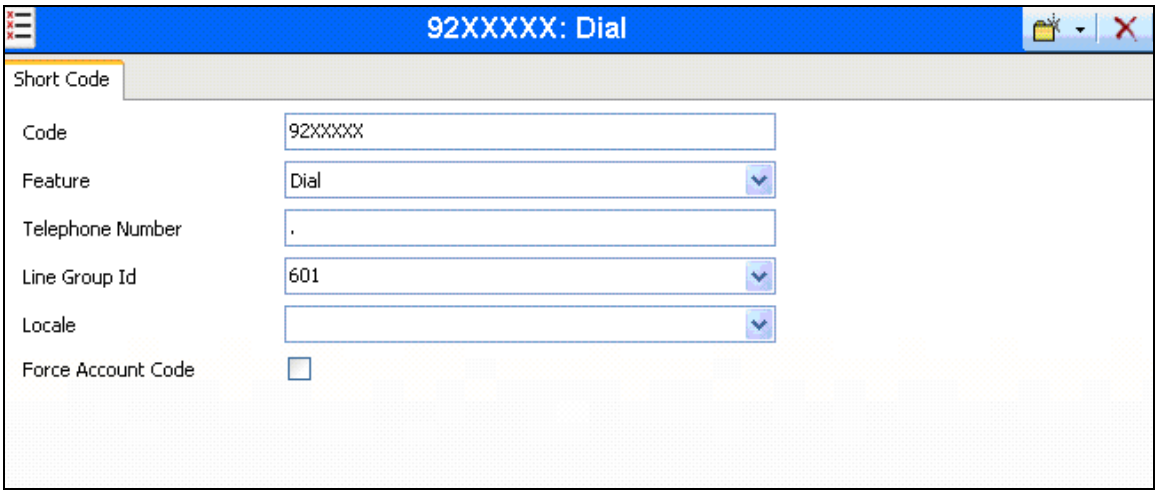

Figure 14: Short Codes: User Tab

3.2. Configure NovaLink NovaAlert

3.2.1. Configuration file NovaAlert.ini

The NovaAlert.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 NovaAlert server (e.g. C:\Program Files\NovaAlert).

Parameter	Usage
CardDriver	Set this value to "2" for CAPI cards
Interface	Set this value to "2" for PRI or "3" for S0
DefaultCallingParty	This number should be configured to lie within the dialing plan and be chosen such that calls originating from IP Office are routed to the trunk used to connect to NovaLink NovaAlert. For PRI testing a value of "8000000" was used, and for S0 testing a value of "9200000" was used.
TelNrLinie	This number should be configured to lie within the dialing plan and be chosen such that calls originating from IP Office are routed to the trunk used to connect to NovaLink NovaAlert. For PRI testing a value of "8000000" was used, and for S0 testing a value of "9200000" was used.

Table 11: Extension Parameters

The other parameters in this file should be configured with the default values which are shown.

```
[CallInfo]
CardDriver=2
Interface=2
GewählteNummer=1
MinDigits=0
AufschaltenAktiv=0
CallingPartyAktiv=1
DefaultCallingParty=8000000
DefaultLocalName=NovaAlert
CNIPAktiv=1
QSIGStandard=2

[Watchdog]
TelNrLinie=8000000
```

Figure 15: NovaAlert.ini Configuration File Content

3.2.2. Configure Interface to Avaya IP Office

Use the Windows “Start” button to select the program Primux ISDN / CAPI Configuration. If the S0 interface is used, the “PrimuX 4S0 II” icon should be selected. If the PRI interface is used, the “PrimuX 1S2M II” icon should be selected.

3.2.2.1 Configure PRI Interface

Set the parameters in the “General” tab as show in the following table.

Parameter	Usage
Switch Type	Specify “PBX, Q.SIG”.
Interface Type	Specify “Point-to-Point“
Inbound calls	Specify “No Phone Numbers”

Table 12: ISDN PRI Interface General Configuration Parameters

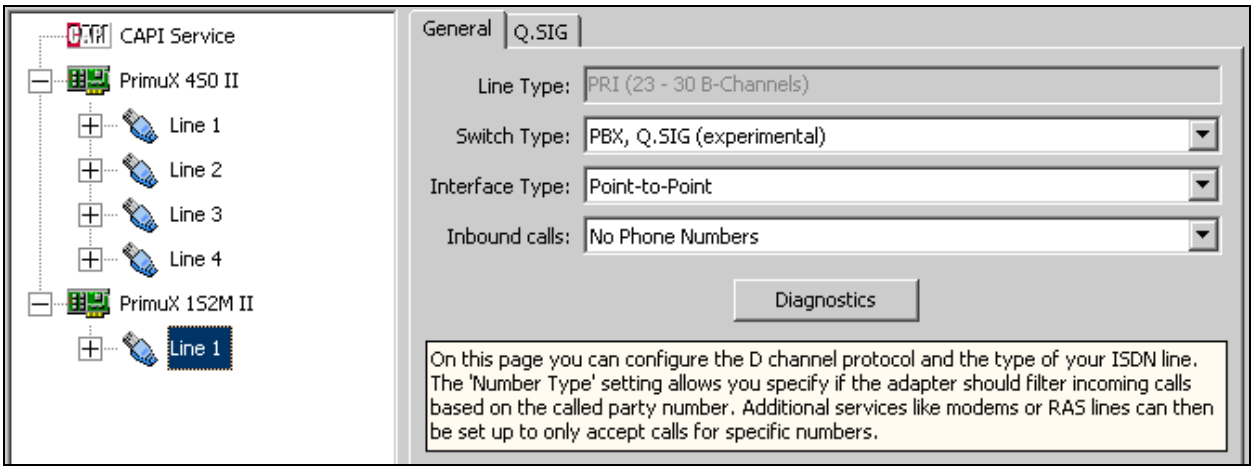

Figure 16: ISDN PRI Interface General Configuration Settings

Configure the parameters in the Q.SIG tab as shown in the following table.

Parameter	Usage
PBX type	Specify “Universal”.
Q.SIG Standard	Specify “Automatic”
Length of CR Value	Specify “Default”
Length of Channel Info IE	Specify “Continuous Number”
Call transfer mode	Specify “Automatic”
Disconnect on PROGRESS	Specify “Off”
Process Interpretation APDU	Specify “Off”

Table 13: ISDN PRI Interface Q.SIG Configuration Parameters

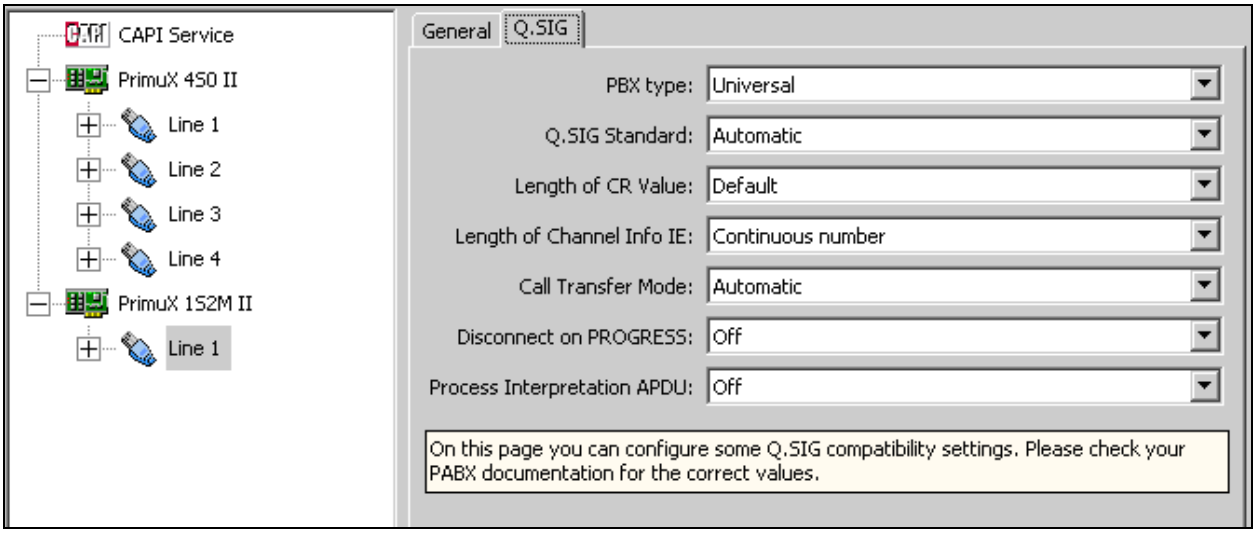

Figure 17: ISDN PRI Interface Q.SIG Configuration Settings

3.2.2.2 Configure S0 Interface

Set the parameters in the “General” tab as show in the following table.

Parameter	Usage
Switch Type	Specify “Europe/other countries, Euro-ISDN (ETSI-DSS1)”.
Interface Type	Specify “Point-to-Multipoint“
Inbound calls	Specify “No Phone Numbers”

Table 14: ISDN S0 Interface General Configuration Parameters

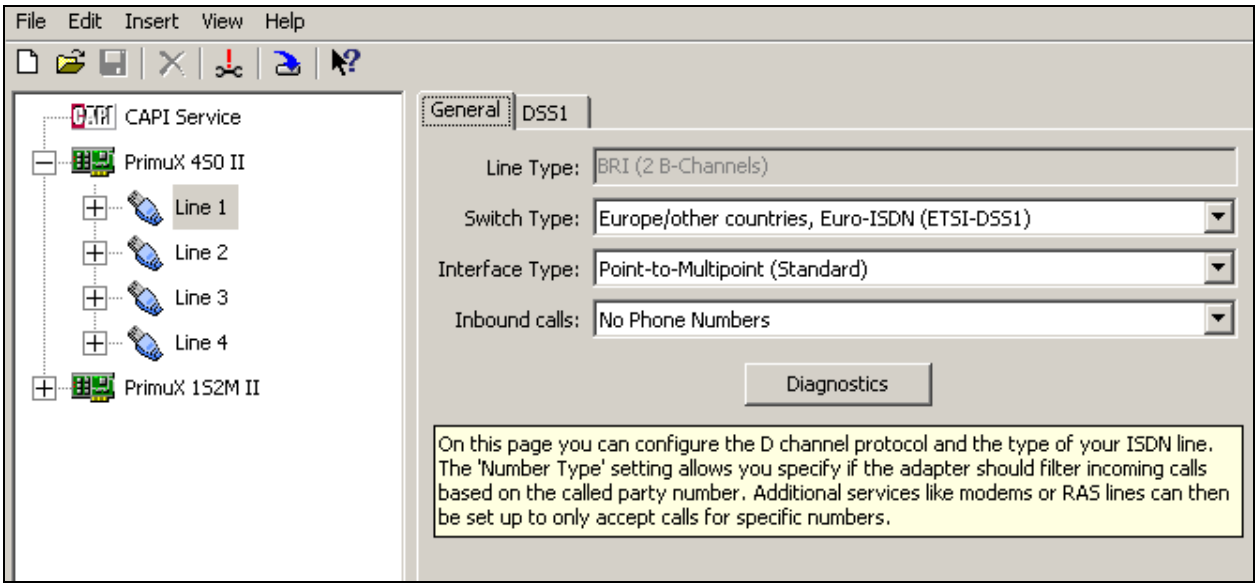

Figure 18: ISDN S0 Interface General Configuration Settings

Configure the parameters in the DSS1 tab as shown in the following table.

Parameter	Usage
ECT Mode	Specify “ECT-I”.
Disconnect on PROGRESS	Specify “Off”
Calling Party Number	Specify “Unchanged”
B channel selection	Specify “Preallocate channel”
Num Ziffern in Rufnummer (only digits in phone number).	Specify “On”

Table 15: ISDN S0 Interface Q.SIG Configuration Parameters

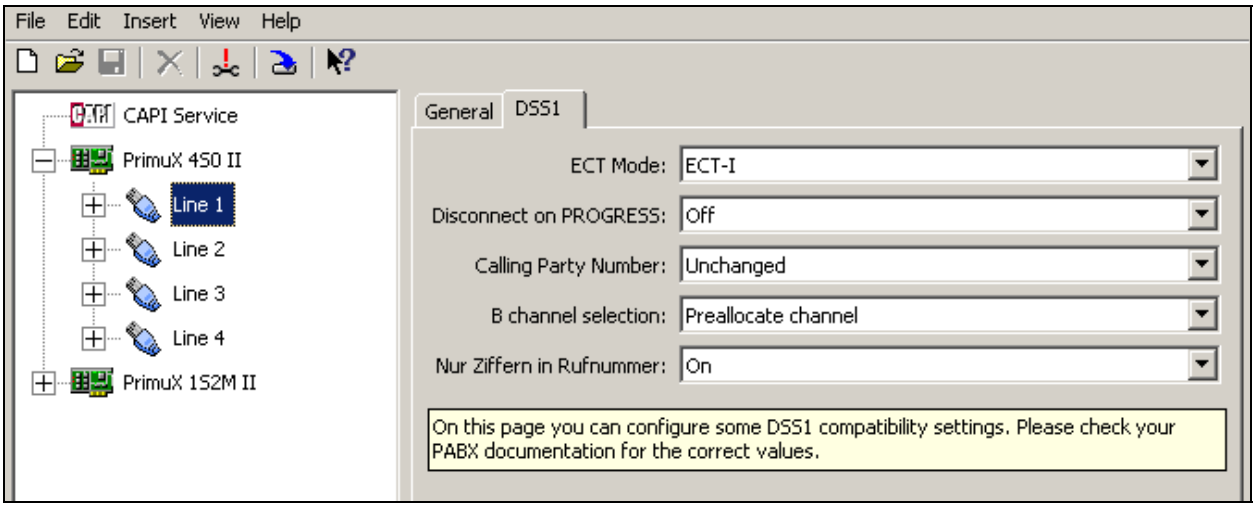

Figure 19: ISDN S0 Interface DSS1 Configuration Settings

3.2.3. Configure Application

Start the “NovaAlert Web Client” application from the Windows “start” control.

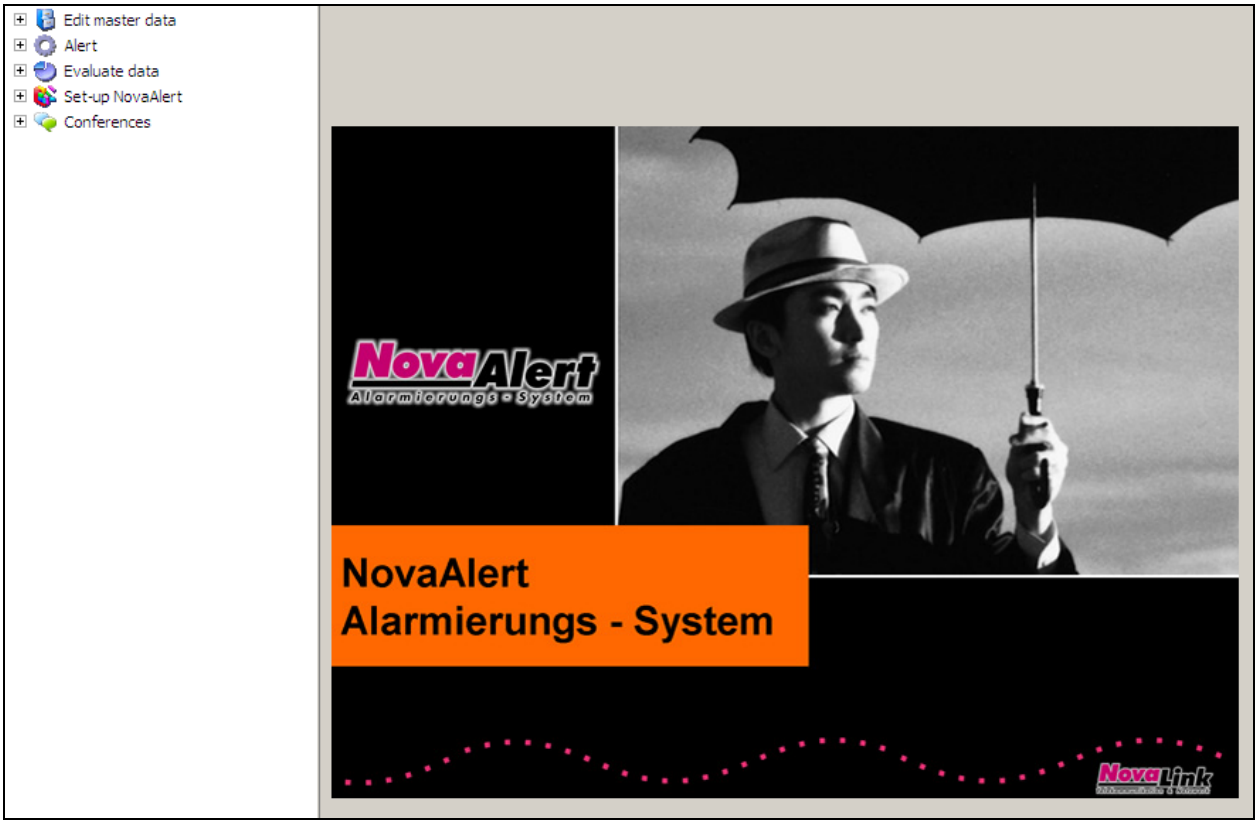

Figure 20: NovaLink NovaAlert Introductory Screen

3.2.4. Configure Users

Click the “User master data” icon from the left frame. When the “Person definitions” screen appears, click the “New person” button to display the “Edit person” dialog. In the “Personal details” tab, enter the name and a PIN code to be assigned to the user. The user will use this PIN code when an authorization sequence is required.

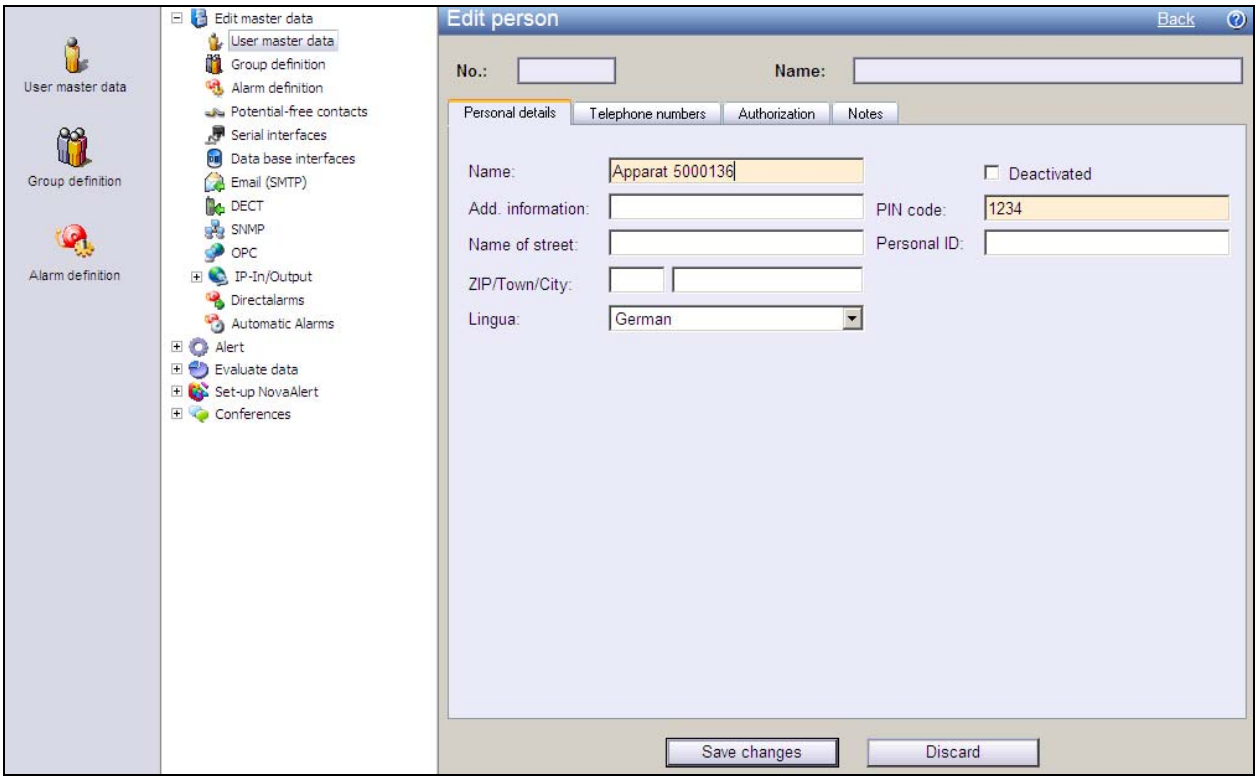

Figure 21: New Person Selection from NovaLink NovaAlert User Screen

Select the “Telephone numbers” tab, enter the telephone numbers to be assigned to the user, and click the “Save changes” button.

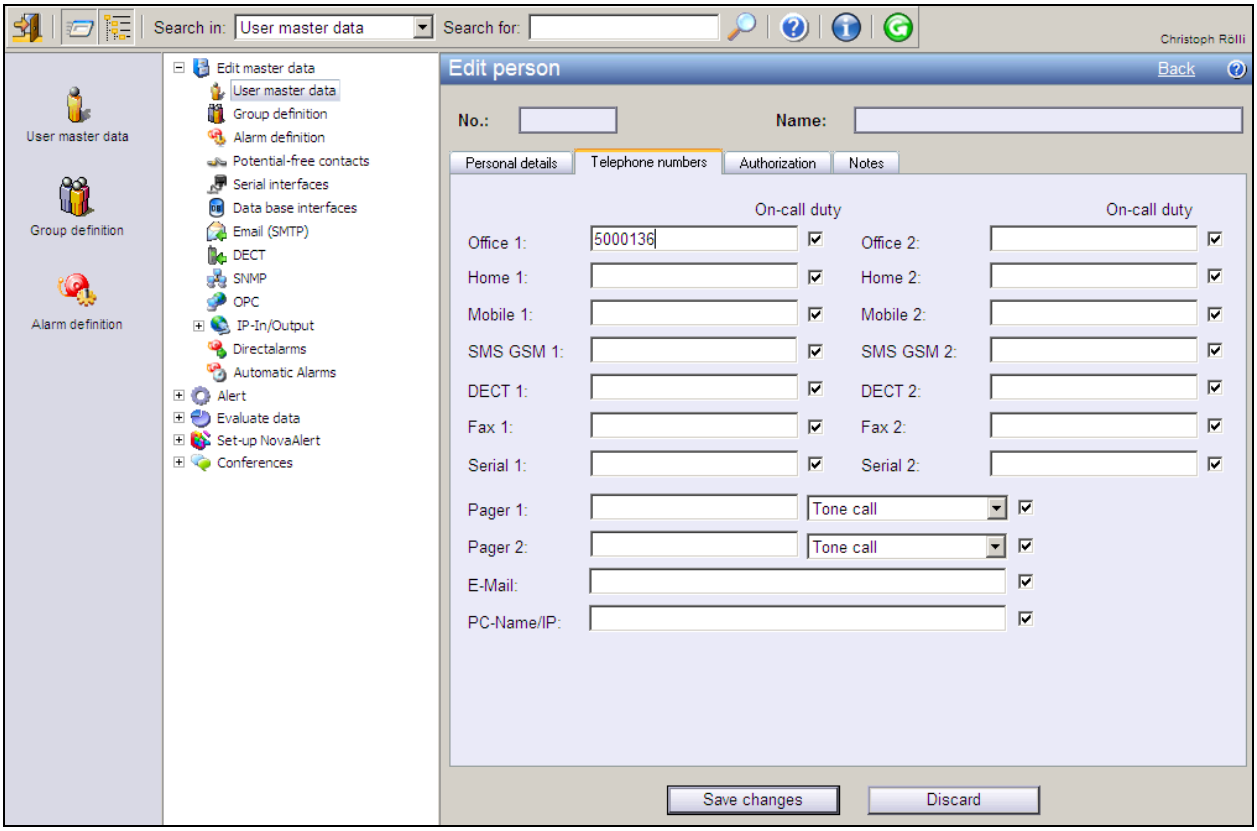

Figure 22: NovaLink NovaAlert Edit Personal Telephone Numbers Screen

Repeat this for the other extensions that are used for testing.

3.2.5. Configure Alarms

Select the “Alarm definition” icon in left frame of the display. When the “Alarm definition” screen appears, click the “New Alarm” button. Configure the “General” alarm definition tab with the information shown in the following table.

Parameter	Usage
Description	Enter a name to be assigned to the alarm.
Pin code for trigger	Enter the PIN code to be used for alarm recipient verification.
Priority	Select “Höchste Priorität” (highest priority) from the drop-down box.
Group call	Select “Group Call” from the drop-down box.
Nbr. Of pers. To be contac	Select “Alle” (all) from the drop-down box.
Based on person	Check this box.
Display on reports	Check this box.
Select contact group	Select the “Compile individual alert list” radio button.

Table 16: NovaLink NovaAlert General Alarm Configuration Parameters

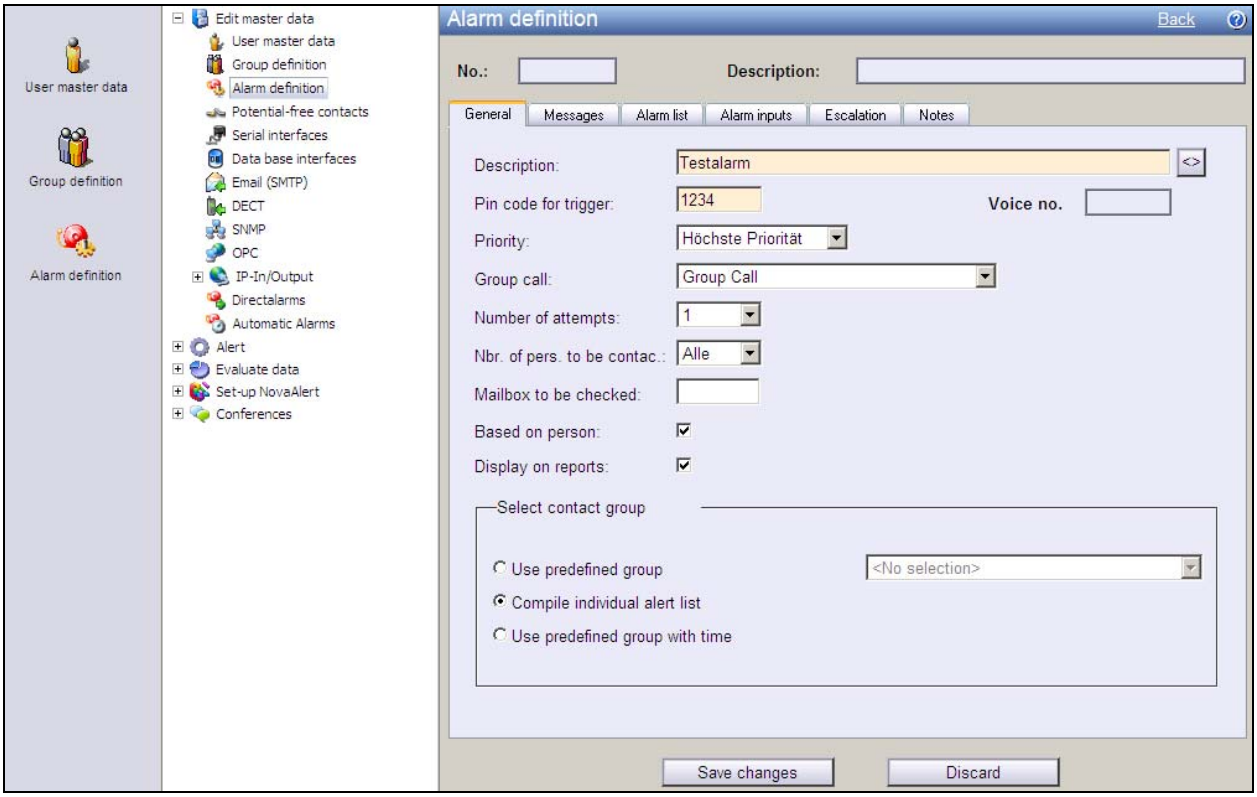

Figure 23: NovaLink NovaAlert New Alarm Definition Screen

Configure the “Messages” alarm definition tab with the information shown in the following table and click the “Save changes” button.

Parameter	Column	Usage
Phone display	Alarm messages	Enter the text message which is to be shown on the Avaya telephone display. The length of this message should not exceed the maximum calling party name text length which can be displayed by Avaya telephones, which is 15 characters for telephones used for these tests.
	Event text	Select “Yes” from the drop-down box.
	Call type	Select “Dauer” from the drop-down box.
	copy	Select this check box.
Phone TTS		Select the check box which is positioned to the left of the “Alarm messages” text box.
	Alarm messages	Enter the text message which is converted to speech and announced to the party receiving the alarm.
	Event text	Select “Yes” from the drop-down box.

Table 17: NovaLink NovaAlert Alarm Messages Configuration Parameters

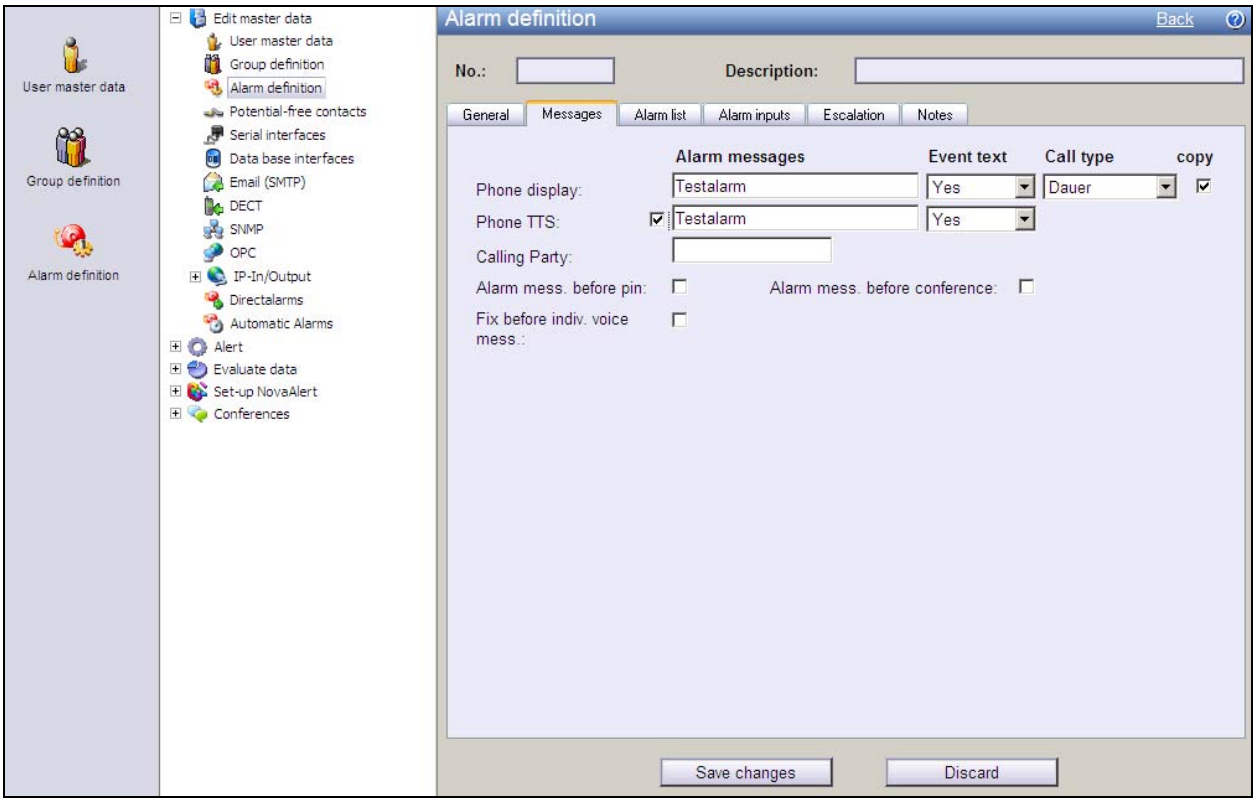

Figure 24: NovaLink NovaAlert Alarm Message Definition Screen

Configure the “Alarm List” alarm definition tab with the information shown in the following table and click the “Save changes” button.

Parameter	Usage
Person / IP output	Select the name of the recipient to which the alarm is to be sent from the upper drop-down box.
Tel. number	Select the recipient’s endpoint to which the alarm is to be sent from the lower drop-down box.

Table 18: NovaLink NovaAlert Alarm List Configuration Parameters

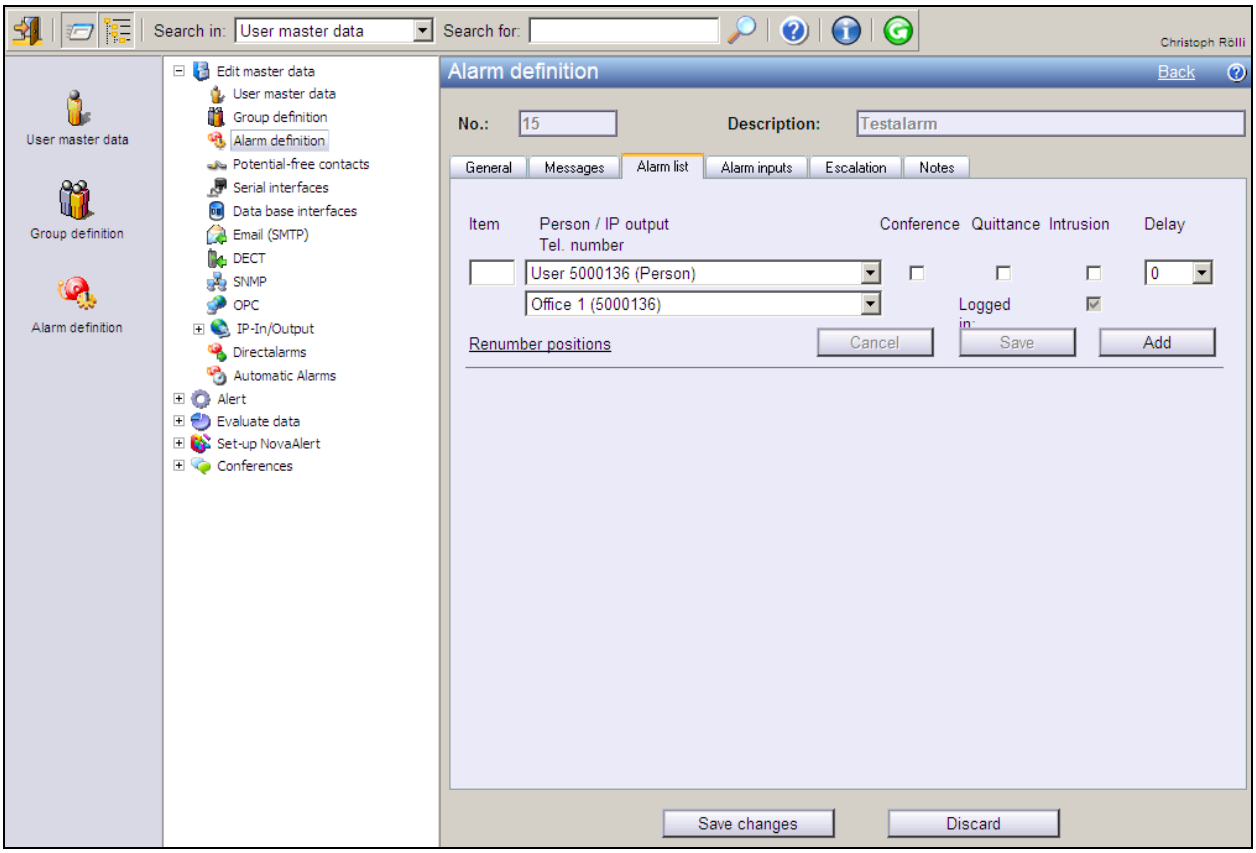

Figure 25: NovaLink NovaAlert Alarm List Configuration Screen

3.2.6. Configure Direct Alarms

The Direct Alarm function maps a specific Called Party Number to an alarm, so that when this number is dialed (e.g. 8111111), the caller records a message (optional) and the alarm is triggered. The recorded message is played on the alarmed stations. Select the "Directalarms" icon in left frame of the display. When the "Direct alarm" screen appears, click the "New Alarm" button.

Configure the "General" alarm definition tab with the information shown in the following table, and click the "Save changes" button.

Parameter	Usage
Description	Enter a name to be assigned to the alarm.
Initiating call number	Enter the telephone number which is to be used by NovaLink NovaAlert to make the alarm call. For PRI testing a number of 8111111 was used, and for S0 testing a number of 9211111.
PIN Code	Enter a PIN code that needs to get input to trigger the alarm. Leave empty if none is required.
Alarm no.	Select one of the previously configured alarms from the drop-down box.
Alarm text	Input an alarm text to display on the alarmed stations (as Calling Party Name). Leave empty for the default alarm text.
Recording	Check this box to allow the recording of an alarm message per call.
Min. recording time	Enter the minimum recording time, in seconds.

Table 19: NovaLink NovaAlert General Direct Alarm Configuration Parameters

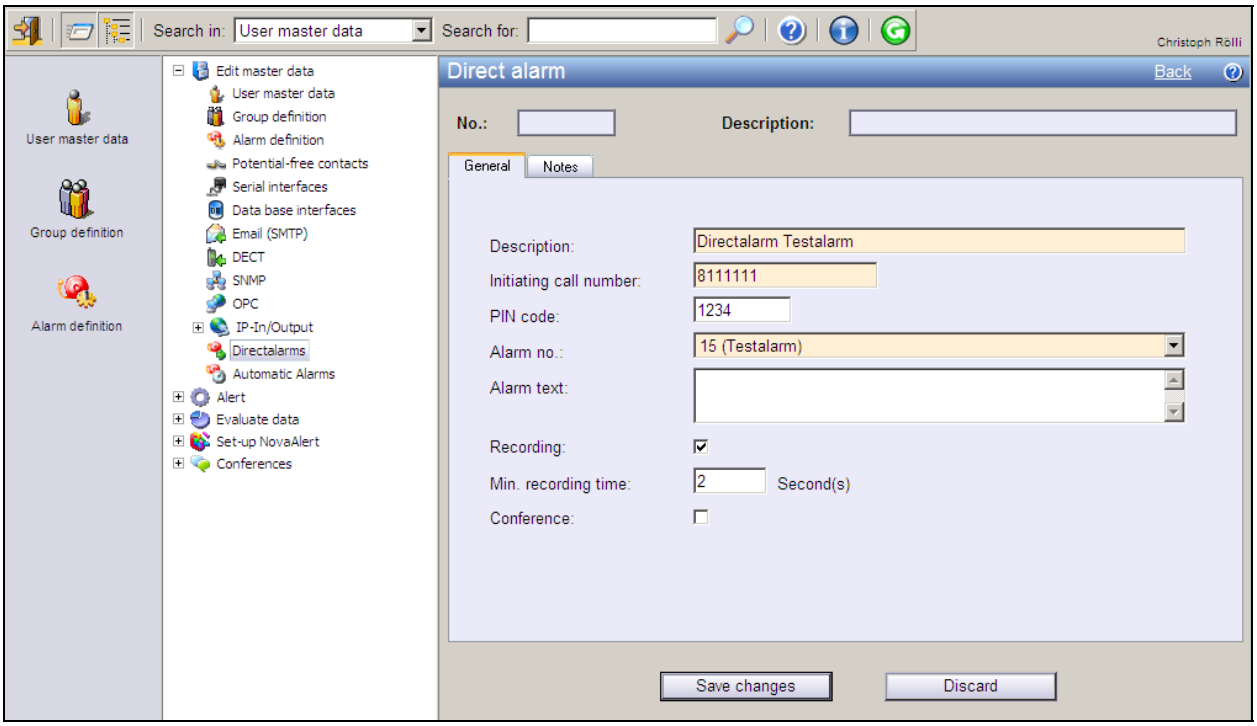

Figure 26: NovaLink NovaAlert Direct Alarm Configuration Screen

4. Interoperability Compliance Testing

The interoperability compliance tests included feature and serviceability testing.

The feature testing focused on testing use case scenarios, which involve interaction between the NovaLink and Avaya products, including various sequences involving:

- Verification of the correct delivery of alarm voice messages.
- Verification of the correct display of alarm text messages.
- Verification of the ability of NovaLink NovaAlert to recognize DTMF tones.
- Verification of the ability of NovaLink NovaAlert to receive overlap number transmission.
- Verification of the ability of Avaya telephones to correctly log unanswered alarms.

The serviceability testing focused on verifying that the NovaLink product components can recover from interruption to interface connections, which can occur during routine maintenance activities. Each of these units was also tested for recovery from unexpected power interruption.

4.1. General Test Approach

The test method employed can be described as follows:

- Manually generating alarms from the NovaLink NovaAlert console and manually making calls from Avaya telephones tested the individual features of the NovaLink NovaAlert.
- NovaLink NovaAlert robustness was tested by verifying its ability to recover from interruptions to its external connections including:
  - The LAN connection between the NovaLink NovaAlert and the network
  - The S0 connection between NovaLink NovaAlert and the Avaya IP400 S08
  - The PRI connection between NovaLink NovaAlert and the Avaya IP Office 406
- Verifying the ability to recover from power interruptions to the NovaLink NovaAlert server further tested NovaLink NovaAlert robustness.

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

4.2. Test Results

The following problems were encountered during testing:

- It is not possible to interrupt existing calls to deliver alarm messages, as IP Office does not support this capability over trunks.
- It is not possible for NovaLink NovaAlert to detect that an Avaya 4600-series H.323 phone is disconnected, as Avaya IP Office does not report this status to the caller.

None of these problems were determined to be of a serious nature.

5. 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 NovaAlert server can ping each other.
- Verify that the IP phones can call each other.
- Start the NovaLink NovaAlert Monitor from the Windows "Start" control, and verify that the "Line Status" control is green to indicate that the interface to the IP Office is operational.

6. Support

Technical support from NovaLink can be obtained through the following:

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

7. Conclusion

These Application Notes describe the conformance testing of the NovaLink NovaAlert with Avaya IP Office. The various features of the NovaLink NovaAlert, which involve its telephone interface, were tested. A detailed description of the configuration required for both the Avaya and the NovaLink equipment is documented within these Application Notes. NovaLink NovaAlert passed all of the tests performed, which included both functional and robustness tests.

8. Additional References

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

9. Change History

Issue	Date	Reason
1.0	20/8/2007	Initial issue