



Avaya Solution & Interoperability Test Lab

Application Notes for the Interoperation of NovaLink NovaConf with Avaya Communication Server Integral 55 LX - Issue 1.1

Abstract

These Application Notes describe the necessary configuration steps for the successful interoperation of the NovaLink NovaConf with the Avaya Communication Server Integral 55 LX (I55 LX).

NovaLink NovaConf is a proprietary conference solution which complements other applications from NovaLink.

An Avaya Communication Server I55 LX with software version L03 GA was used as the hosting PBX for the NovaConf system.

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

1. Introduction

This document specifies the configurations and tests used to verify compatibility and interoperability between the NovaLink NovaConf server with an Avaya Communication Server Integral 55 LX (I55 LX). The NovaConf Server is a proprietary conference solution from NovaLink. With its scope of services it supplements NovaAlert and NovaMail. The NovaConf server initiates conferences among telephones attached to the Avaya I55 LX via a Basic Rate (BRI) or a Primary Rate Interface (PRI) with QSIG protocol.

Various types of conferences can be configured, dependent on conference participants' needs:

"Incoming Conferences" allow users to dial in to conferences held at a specific time.

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

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

The figure below shows the interconnection of the NovaLink NovaConf system with the Avaya I55 LX.

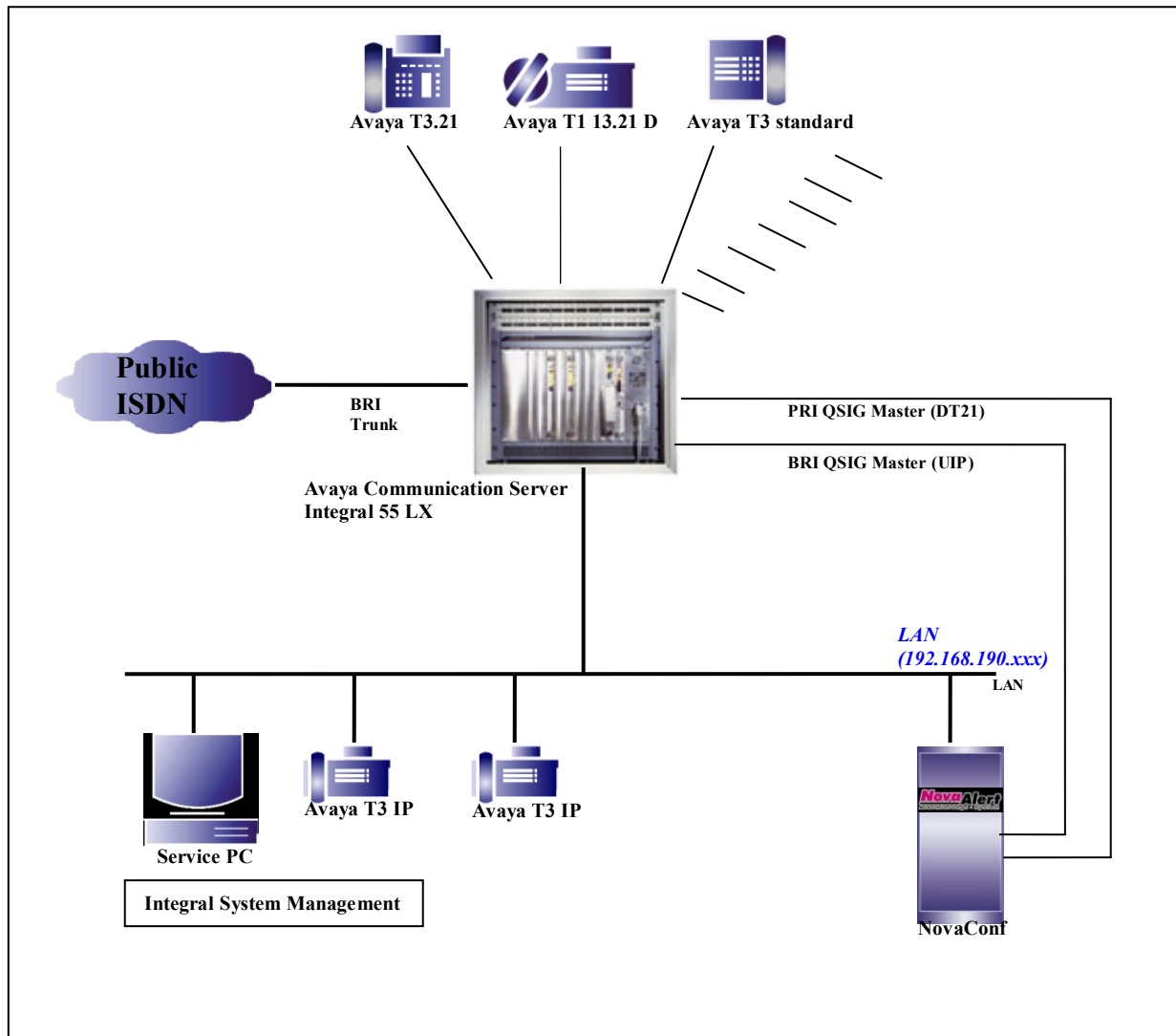


Figure 1: Avaya I55 LX with NovaLink NovaConf server

2. Equipment and Software Validated

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

Equipment	Software
Avaya™ Communication Server Integral 55 LX	L030V00_1_5.1
Avaya™ DT21 circuit pack	Loading list: DT200100 SW-File: DT210016.ICP
Avaya™ UIP circuit pack	Loading list: UIP05100 1.SW-File:UIPOB051.ICP 2.SW-File:UIPOB151.ICP
Avaya™ ACB circuit pack	Platform version: V4.0.16
Avaya™ CF22 circuit pack	Loading list: MSC20201 1.SW-File:MSC2S001.ICP 2.SW-File:MSC202T3.ICP 3.SW-File:MSC202D3.ICP 4.SW-File:MSC20204.ICP
Avaya™ ASCEU circuit pack	Loading list:ASCEU000 1.SW-File:ASCCD002.ICP 2.SW-File:ASCEU023.ICP
Avaya™ Integral System Management (ISM)	V13.003
Avaya™ ComMan	V4401
Avaya™ ICU Editor	V13.004
Avaya™ T3 IP Comfort	Bootloader: B01.03 SW: T323_0DE.h3i
Avaya™ T3.21	Bootloader: V00.09 SW: T314_0DE.hx1
Avaya™ T3 analogue phone (standard)	-
Avaya™ D3 mobile	SW: 17-00-26 EE17-04
Service PC Dell optiplex gx270	Microsoft Windows XP Professional SP2
Deutsche Telekom BRI ISDN trunk (point to point)	-
Numbering plan: 4 digits	-
NovaLink NovaConf Server	V.7.5 SP1a
Gerdes Primux ISDN card 1xPRI / 4xBRI	V3.6.4389

3. Configuration the Avaya I55 LX

The configuration of the Avaya I55 LX is done via the Integral System Management (ISM) and its components which are running on a Service PC connected to the system via the LAN. ISM is the basic service tool for administrating the Avaya I55 systems. It is an application running under Windows-2000 or Windows-XP operating system. The following ISM components are used for the configuration:

ICU Editor - For administrating the various circuit packs of the system.

Transparent console **MML** - For administrating the entire Avaya I55 LX system.

The ISM is opened by default with username n1 and password p1.



The image shows a screenshot of the Avaya ISM (Integral System Management) login window. The window has a title bar that says "Benutzer LOGIN". Inside the window, there is a large box containing the Avaya logo (red text "AVAYA" on a white background), followed by the text "I S M" in large black letters, and "Integral System Management" in smaller black letters. Below this, there is a small red copyright notice: "© Avaya-Tenovis GmbH & Co KG". Below the main box, there are two input fields: "Benutzername" (Username) with the value "n1" and "Paßwort" (Password) with the value "**". At the bottom of the window, there are three buttons: "OK", "Abbrechen" (Cancel), and "Sprache >>" (Language >>).

In order to access the Avaya I55 LX via the LAN, Customer Administration data must be entered:

Software version: IEE3

User name: xxxxxx (default username)

Password: xxxxxx (default password)

MML password: xxxxxxxxxx (default MML password)

IP Address of the system

Kundenverwaltung

Kunde: Customername [Neuer Kunde]

PABX: Integral 55 LX [Neu TK-Anlage]

Rufnummer Intern
Rufnummer Extern

Zugang
☒ Intern ☐ Extern + AKZ
☐ Extern ☐ Extern + LDD

IP Adresse
ISDN Schnittstelle
Ethernet Schnittstelle 192.168.190.7

TUX
☒ Ethernet ☐ ISDN
☐ USB ☐ ISDN über Router

Software-Version: IEE3
Adresse:
Benutzername: EXPERT
Paßwort für die TK-Anlage: xxxxx
Paßwortbestätigung: xxxxx
MML Passwort: xxxxx
Paßwortbestätigung: xxxxx

PPP Passwort
☒ Passwort der TK-Anlage benutzen
PPP Passwort: xxxxx
Paßwortbestätigung: xxxxx

Auswählen Abbrechen Speichern Löschen Verbindung testen ?

3.1. Configuration of the I55 BRI (QSIG) on the UIP circuit pack

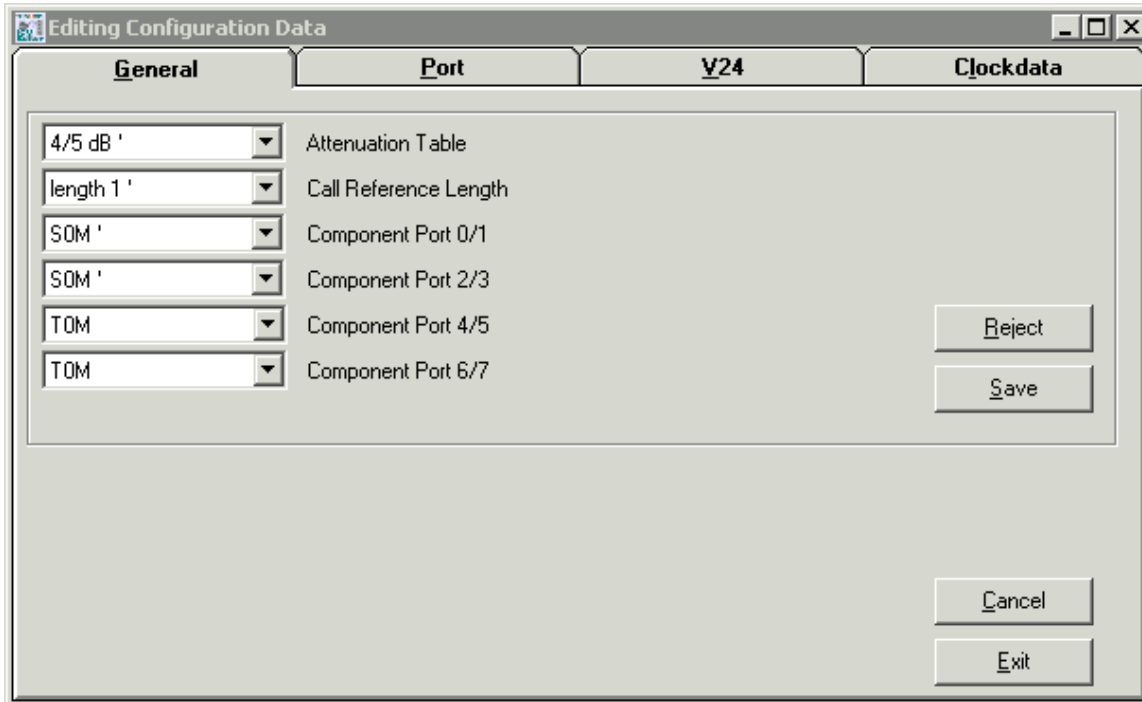
3.1.1. ICU-Editor

The BRI with QSIG protocol is to be configured with the ICU Editor. The ICU Editor is an integrated tool in ISM. The ICU editor can be opened via the following way:

PABX-Administration - Board - SW Exchange Config Data - selection of the board number of the UIP circuit pack. Once the necessary changes are made: Save and Exit.

Important settings according to guidelines from NovaLink are shown below:

- General:
The Component Port 4/5 has to be set to TOM (for the point-to point BRI).



The image shows a software dialog box titled "Editing Configuration Data". It has four tabs: "General", "Port", "V24", and "Clockdata". The "General" tab is currently selected. Inside the dialog, there are six rows of configuration options, each with a dropdown menu and a label:

Configuration Option	Label
4/5 dB ' (dropdown)	Attenuation Table
length 1 ' (dropdown)	Call Reference Length
SQM ' (dropdown)	Component Port 0/1
SQM ' (dropdown)	Component Port 2/3
TOM (dropdown)	Component Port 4/5
TOM (dropdown)	Component Port 6/7

On the right side of the dialog, there are four buttons: "Reject", "Save", "Cancel", and "Exit". The "Reject" and "Save" buttons are located next to the "Component Port 4/5" dropdown.

- Port:
 - Port No: 5
 - Connection Type: tie
 - S0 Mode: PTP (point to point connection)
 - Layer 1 and Layer 2 Mode: Master (clock generator)
- According to this, the connected application (NovaLink) is Slave.
- Protocol: QSIG, Special Type: none.

Editing Configuration Data

Port

Connection Type: tie | S0 Mode: PTP ' | Layer 1 Mode: Master ' | Layer 1 Disc: no ' | Layer 2 Mode: Master ' | Layer 2 Disc: no ' | Disturbance Ends: reset

Protocol: QSIG | Special Type: none | Port No.: 5

Buttons: Next Port, Reject, Save, Cancel, Exit

Nr.	Connection Type	S0 Mode	Layer 1 Mode	Layer 1 Disc	Layer 2
3	subscriber '	PTP '	Master '	no '	Master '
4	subscriber '	PTP '	Master '	no '	Master '
5	tie	PTP '	Master '	no '	Master '
6	trunk	PTP '	slave	no '	slave
7	tie	PTP '	Master '	no '	Master '

3.1.2. Overview of the System Configuration by MML

Overview of the QSIG line F9000 configured by MML (in the system task AOGD):

Important settings:

Call No.: arbitrary Call No.

Hardware address: 01-01-04-05 (system-module-slot-port)

AO type: BAN (basic access network)

Protocol: QSIG version 0

AO state: must be "In Operation"

Service data:

tlp (telephony), dat (data), gen (general) must be arranged with own dial and traffic groups.

B-channel data:

Allocation code:: NSTA (PABX)

Deliberation code: Active (B-channel negotiation)

AOGD<anzg:f9000;

22.03.07 10:37:19

Connecting circuit

Call No. : F9000 - F9001
Slot / HWA : 01-01-04-05
AO type : BAN

General ADS data

Name :
Accounting section : 00000
Protocols :
Protocol | Version | faulty | busy 2 | error

QSIG | 0 | OFF | OFF | OFF
Overload priority : 0
Public bar. unit gr. : 1
Colisee bar. unit gr. : 0
DISA-group : 0
Dealergroup : 0
CN alloc. HKZ line & tie :
Category : -1
Waiting field maximum : 10
Reserved :
Connection memory : 1
Service memory : 3
AO state : IN OPERATION
Service block : sv-free
Call number block : Off

Service data

	TLP	DAT	GEN	
Status	RELEASED	RELEASED	RELEASED	
Dial group	5	5	5	
Traffic group	1	1	1	
Switchover group	0	0	0	
Code dial group	0	0	0	
LCR-group	0	0	0	
Dial retrieval	DEACTIVE	DEACTIVE	DEACTIVE	
Backward rel.	DEACTIVE	DEACTIVE	DEACTIVE	

B channel data

Allocation code : NSTA
Deliberation code : ACTIVE

Overview of enabled AO-features in the system task AOLM for the services TLP (telephony), DAT (data), and GEN (general) for the QSIG line:

Authorization for the line: SWF4 is the authorization for worldwide telephony in the configured services TLP, DAT and GEN. It is set in the system task SPWE.

```
AOLM<aalm;
AO-Number  AO - Perform. features ( Service: TLP, DAT u. GEN )
21.03.07  17:04:28
-----
F9000      AMT  RULED CIPL0 CIPL1 DQV  PRE  CRF  QBS  QBCFF QIS
AOLM<exit;
AOLM<pgwe:spwe;
Command processing in progress !
SPWE<anbe;
21.03.07  17:05:05
AONo      COS ( service : TLP, DAT u. GEN )      (Customer data )
-----
F9000      SWF4  -  SWF zone 4      ( SWF4 )
```

Generally, each line must be assigned to a bundle. A mixture of different types of lines (e.g., QSIG, ISDN, etc.) within a bundle is not permitted. Therefore, the QSIG line has to be assigned to its own bundle. The lines can then be seized according to their type by means of a feature access code (FAC / AKZ) defined in the corresponding dial group.

The two QSIG lines are added to bundle 99 in the task BNDL:

Bundle data 99 for the line F9000 – F9001:

```

SPWE<exit;
SPWE<pgwe:bndl;
Command processing in progress !
BNDL<anzg;
BNDL<dbnd:99;

```

21.03.07 17:06:19

```

Bundle number      : 99
Overflow bundle number : 0
Bundle status      : free
Bundle type        : ALV
ALV stage          : LM overlapp.
Seizure direction  : bothway
Available lines    : 2
Line limit         : 0
Route digit sequence : -
Postdialing flag   :      : nein
QSIG Line          : no
Information text    :

```

- VWZ data

```

outgoing:
  Allocation digit : -1,-1,-1,-1,-1,-1,-1,-1,-1,-1
  Selector        : -1
incoming:
  Allocation digit : -1,-1,-1,-1,-1,-1,-1,-1,-1,-1
  Selector        : -1

```

FOAC reactions for bundle number

Event	Reaction
nstf	nein
nstb	nein
kres	nein
uvwa	nein
nwa	nein
nbao	nein
anaw	nein
kbne	nein
aoab	nein
nuel	nein

Lines entered :

```

F9000 - seizable      F9001 - seizable

```

Explanation for FOAC data - FOAC event:

NSTF - called extension free	NSTB - called extension busy
KRES - no resources available	UVWA - incomplete dialling
NEWA - invalid dialling	NBAO - called extension not assigned
ANAW - call rejected	KBNE - incoming calls barred
AOAB - out of order	NUEL - network busy

Explanation for FOAC data - FOAC reaction:

With the MML task ANLM the important system features for this interface must be enabled:

- *ALV System network
- *AUL Cut-in line
- *AUV Cut-in prevention

- *CIPL0 Cut-in protection, no
- *CIPL1 Cut-in protection, low
- *CIPL2 Cut-in protection, medium
- *CIPL3 Cut-in protection, high

- *CRF Connection retention flag
- *DQV Digital tie line
- *GVW Predial alloc. outgoing call
- *PRE Path reservation
- *QBS QSIG barring supplm. servic.
- *QIS QSIG ISO
- *QPR QSIG path replacement
- * QF7 QSIG future extension 7

The line is configured (see task AOGD above) for dial group 5. The extensions are in dial group 2. To seize the line from the extensions, a FAC / AKZ (80) in dial group 2 was configured. This FAC has a reference to bundle 99 to which the lines are actually assigned.

WABE<anzg;
WABE<dwgr:2,v;

21.03.07 17:45:05

Display of dial evaluation data to a dial group

=====

Dial group : 2
Dial method : Predial

AKZ	Dial sele.	Bndl numb.	AKZ Info	SA group	Co. nr.	LCR data set	dialing conversion digits	sel	ext. all. cat.	LCR rout flg	RI- SA flg	Num. Plan
0	EXTERN	1	-	-	-	-		0	INIT	ROFF	-	-
18	INTERN	-	3	-	-	-		0	-	-	-	-
2	EXTERN	2	-	-	-	-		0	INIT	ROFF	-	-
3	INTERN	-	3	-	-	-		0	-	-	-	-
4	INTERN	-	3	-	-	-		0	-	-	-	-
5	CCC	-	-	-	-	-		0	-	-	-	-
6	INTERN	-	4	-	-	-		0	-	-	-	-
78	NETZ	30	3	-	-	-		0	INIT	ROFF	-	-
79	NETZ	33	-	-	-	-		0	INIT	ROFF	-	-
80	NETZ	99	1	-	-	-		0	INIT	ROFF	-	-
83	NETZ	83	4	-	-	-		0	INIT	ROFF	-	-
85	NETZ	85	3	-	-	-		0	INIT	ROFF	-	-
9003	BCA	-	-	-	-	-	-	-	-	-	-	-
E40	RUVA	-	-	-	-	-	-	-	-	-	-	-
E41	RUFB	-	-	-	-	-	-	-	-	-	-	-
E42	RUFA	-	-	-	-	-	-	-	-	-	-	-
E43	RUVB	-	-	-	-	-	-	-	-	-	-	-
E44	RWLDA	-	-	-	-	-	-	-	-	-	-	-
E45	RWLVA	-	-	-	-	-	-	-	-	-	-	-
E46	RUDA	-	-	-	-	-	-	-	-	-	-	-
E47	CFMVA	-	-	-	-	-	-	-	-	-	-	-
E48	CFMDE	-	-	-	-	-	-	-	-	-	-	-
E49	CFMDE	-	-	-	-	-	-	-	-	-	-	-
E50	RNUAK	-	-	-	-	-	-	-	-	-	-	-
E51	RNUDE	-	-	-	-	-	-	-	-	-	-	-
E52	RNUFR	-	-	-	-	-	-	-	-	-	-	-
E53	RNUSP	-	-	-	-	-	-	-	-	-	-	-
E54	CW	-	-	-	-	-	-	-	-	-	-	-
E55	CWZUS	-	-	-	-	-	-	-	-	-	-	-
E56	CWPRV	-	-	-	-	-	-	-	-	-	-	-
E57	CWS2	-	-	-	-	-	-	-	-	-	-	-
E58	CWS1	-	-	-	-	-	-	-	-	-	-	-
E59	CPZEOS	-	-	-	-	-	-	-	-	-	-	-
E60	CPEOS	-	-	-	-	-	-	-	-	-	-	-
E61	CWZP	-	-	-	-	-	-	-	-	-	-	-
E62	EME	-	-	-	-	-	-	-	-	-	-	-
E63	GENLOE	-	-	-	-	-	-	-	-	-	-	-
E64	SADIR	-	-	2	-	-	-	-	-	-	-	-
E65	SAHAK	-	-	-	-	-	-	-	-	-	-	-

3.2. Configuration of the I55 PRI (QSIG) on the DT21 circuit pack

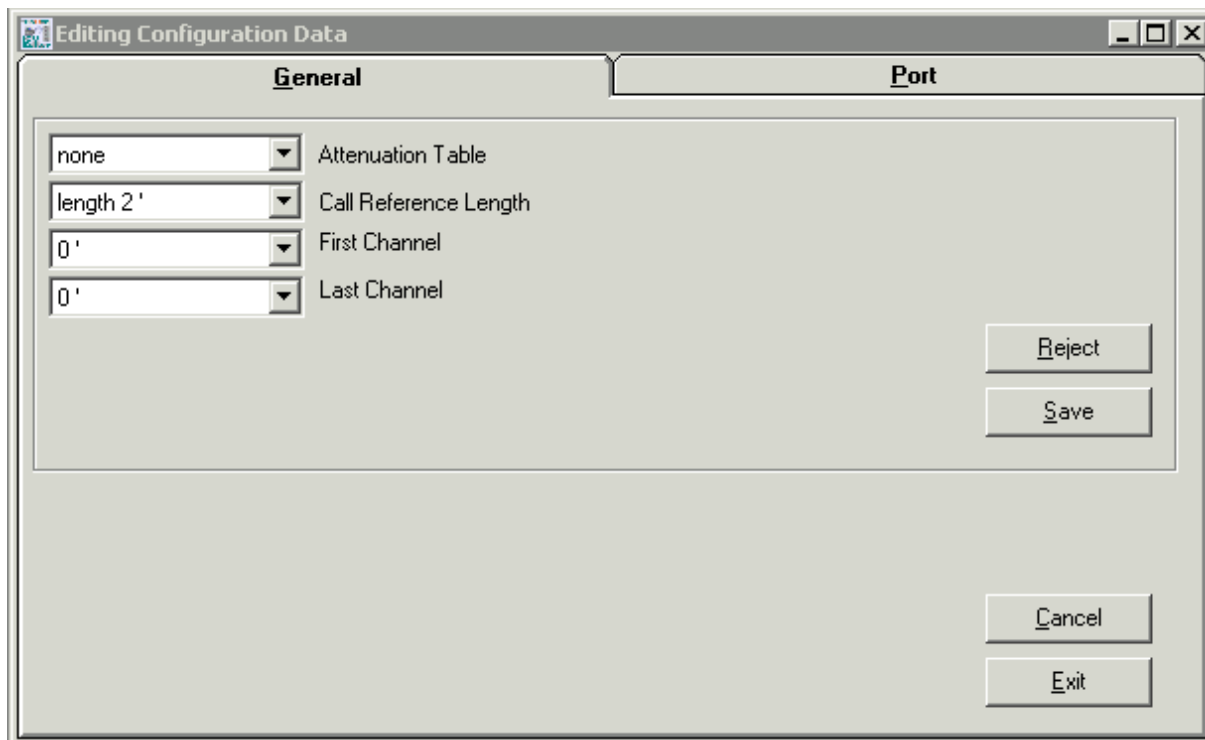
3.2.1. ICU-Editor

The PRI (Primary Rate Interface) with QSIG protocol is to be configured with the ICU Editor. The ICU Editor is an integrated tool in ISM. The ICU editor can be opened via the following way:

PABX-Administration - Board - SW Exchange Config Data - selection of the board number of the UIP circuit pack. Once the necessary changes are made: Save and Exit.

Important settings according to guidelines from NovaLink are shown below:

- General:
 - Attenuation Table: none
 - Call Reference Length: length 2.



- Port:
 - Port No: 0 (the DT21 circuit pack has only one port)
 - Connection Type: tie
 - Layer 1 Mode: transparent
 - Connection Type: symmetrical
 - Layer 2 Mode: Master

According to this, the connected application (NovaLink) is Slave.
 Protocol: QSIG, Special Type: none.

Editing Configuration Data

General | **Port**

tie | Connection Type | 16 | Time slot | Port No. 0
 transparent | Layer 1 Mode
 symmetrical | Connection Type
 with CRC4 | CRC4 Procedure
 Master | Layer 2 Mode
 QSIG | Protocol
 none | Special Type

Next Port
 Reject
 Save

Nr.	Connection Type	Layer 1 Mode	Connection Type	CRC4	Layer 2 Mode
0	tie	transparent	symmetrical	with CRC4	Master

Cancel
 Exit

3.2.2. Overview of the System Configuration by MML

Overview of the QSIG PRI configured by MML (system task AOGD) with number D2100 – D2129.

Important settings:

Call No. : arbitrary Call No.

Hardware address: 01-01-12-00 (system-module-slot-port)

AO type: PRN (primary rate network)

Protocol: QSIG version 0

AO state: must be "In Operation"

Service data:

tlp (telephony), dat (data), gen (generally) must be arranged with own dial and traffic groups.

B-channel data:

Allocation code:: NSTA (PABX)

Deliberation code: Active (B-channel negotiation)

All B-channels are in an own bundle with two-way direction. The status must be "enabled" (F).

AOGD<2:d2100;

23.03.07 12:24:39

Connecting circuit

Call No. : D2100 - D2129
Slot / HWA : 01-01-12-00
AO type : PRN

General ADS data

Name :
Accounting section : 00000
Protocols :
Protocol | Version | faulty | busy 2 | error

QSIG | 0 | OFF | OFF | OFF
Overload priority : 2
Public bar. unit gr. : 1
Colisee bar. unit gr. : 0
DISA-group : 0
Dealergroup : 0
CN alloc. HKZ line & tie :
Category : -1
Waiting field maximum : 10
Reserved :
Connection memory : 1
Service memory : 4
AO state : IN OPERATION
Service block : sv-free
Call number block : Off

Service data

	TLP	DAT	TLT	GEN
Status	RELEASED	RELEASED	RELEASED	RELEASED
Dial group	5	6	6	6
Traffic group	1	1	1	1
Switchover group	0	0	0	0
Code dial group	0	0	0	0
LCR-group	0	0	0	0
Dial retrieval	DEACTIVE	DEACTIVE	DEACTIVE	DEACTIVE
Backward rel.	DEACTIVE	DEACTIVE	DEACTIVE	DEACTIVE

B channel data

Allocation code : NSTA
Deliberation code : ACTIVE

B chan. number	Bundle number	Direct	Acc.	Status	B chan. number	Bundle number	Direct	Acc.	Status
1	30	W	M	F	16	30	W	M	F
2	30	W	M	F	17	30	W	M	F
3	30	W	M	F	18	30	W	M	F
4	30	W	M	F	19	30	W	M	F
5	30	W	M	F	20	30	W	M	F
6	30	W	M	F	21	30	W	M	F
7	30	W	M	F	22	30	W	M	F
8	30	W	M	F	23	30	W	M	F
9	30	W	M	F	24	30	W	M	F
10	30	W	M	F	25	30	W	M	F
11	30	W	M	F	26	30	W	M	F
12	30	W	M	F	27	30	W	M	F
13	30	W	M	F	28	30	W	M	F
14	30	W	M	F	29	30	W	M	F
15	30	W	M	F	30	30	W	M	F

Number of seizable B channels: 30

Seizure direction

G - outgoing
K - incoming
W - bothway

Access right

M - with
O - without

Status

B - BUSY
D - DEFECT.
EB - EDSS1 BUSY
ER - EDSS1 RESERVED
F - FREE
G - FAULTY
R - RESERVED
S - BARRED
T - DEFECT./BARRED
V - SEIZED/BARRED

Overview of enabled AO-features in the system task AOLM for the services TLP (telephony), DAT (data) and GEN (general) for the QSIG PRI D2100.

Authorization for the line. SWF4 is the authorization for worldwide telephony in the configured services TLP, DAT and GEN in the system task SPWE.

AOLM<aou:d2100;
AOLM<aalm;

AO-Number AO - Perform. features (Service: TLP, DAT, TLT, u. GEN) 23.03.07 12:17:43

D2100 AMT CIPL0 DQV QPR CRF QBS QBCFF QIS

SPWE<anbe;

23.03.07 12:19:19

AONo COS (service : TLP, DAT, TLT u. GEN) (Customer data)

D2100 SWF4 - SWF zone 4 (SWF4)

Generally, each line must be assigned to a bundle. A mixture of different types of lines (e.g., QSIG, ISDN, etc.) within a bundle is not permitted. Therefore, the QSIG line has to be assigned to its own bundle. The lines can then be seized according to their type by means of a feature access code (FAC / AKZ) defined in the corresponding dial group.

The thirty QSIG lines are added to bundle 30 in the task BNDL:

Bundle data 30 for the lines D2100 – D2127:

```
BNDL<dbnd:30,j;

Bundle number      : 30
Overflow bundle number : 0
Bundle status      : free
Bundle type        : ---
ALV stage          : LM overlapp.
Seizure direction  : bothway
Available lines    : 30
Line limit         : 0
Route digit sequence : -
Postdialing flag   :      : nein
QSIG Line          : no
Information text    :

- VWZ data
outgoing:
  Allocation digit : -1,-1,-1,-1,-1,-1,-1,-1,-1,-1
  Selector         : -1
incoming:
  Allocation digit : -1,-1,-1,-1,-1,-1,-1,-1,-1,-1
  Selector         : -1
```

FOAC reactions for bundle number

Event	Reaction
nstf	nein
nstb	nein
kres	nein
uvwa	nein
nwa	nein
nbao	nein
anaw	nein
kbne	nein
acab	nein
nuel	nein

Lines entered :

D2100	-	seizable	D2101	-	seizable
D2102	-	seizable	D2103	-	seizable
D2104	-	seizable	D2105	-	seizable
D2106	-	seizable	D2107	-	seizable
D2108	-	seizable	D2109	-	seizable
D2110	-	seizable	D2111	-	seizable
D2112	-	seizable	D2113	-	seizable
D2114	-	seizable	D2115	-	seizable
D2116	-	seizable	D2117	-	seizable
D2118	-	seizable	D2119	-	seizable
D2120	-	seizable	D2121	-	seizable
D2122	-	seizable	D2123	-	seizable
D2124	-	seizable	D2125	-	seizable
D2126	-	seizable	D2127	-	seizable

The same system features (ANLM) as for the BRI are used here:

- *ALV System network
- *AUL Cut-in line
- *AUV Cut-in prevention
- *CRF Connection retention flag
- *DQV Digital tie line
- *GVW Predial alloc. outgoing call
- *PRE Path reservation
- *QBS QSIG barring supplm. servic.
- *QIS QSIG ISO
- *QPR QSIG path replacement
- * QF7 QSIG future extension 7
- *CIPL0 Cut-in protection, no
- *CIPL1 Cut-in protection, low
- *CIPL2 Cut-in protection, medium
- *CIPL3 Cut-in protection, high

The line is configured (see task AOGD above) for dial group 5. The extensions are in dial group 2. To seize the line from the extensions, a FAC / AKZ (78) in dial group 2 was configured. This FAC has a reference to bundle 30 to which the lines are actually assigned.

```
WABE<anzg;
WABE<dwgr:2,v;

21.03.07 17:45:05

Display of dial evaluation data to a dial group
=====
Dial group   : 2
Dial method  : Predial

AKZ          Dial  Bndl AKZ  SA  Co. LCR  dialing  ext.  LCR  RI-  Num.
sele.        numb. Info group nr. data conversion sel all. rout SA Plan
cat. flg flg flg

-----
0           EXTERN 1  -  -  -  -  -  0  INIT ROFF -  -
18          INTERN -  3  -  -  -  -  0  -  -  -  -
2           EXTERN 2  -  -  -  -  -  0  INIT ROFF -  -
3           INTERN -  3  -  -  -  -  0  -  -  -  -
4           INTERN -  3  -  -  -  -  0  -  -  -  -
5           CCC    -  -  -  -  -  -  0  -  -  -  -
6           INTERN -  4  -  -  -  -  0  -  -  -  -
78          NETZ   30  3  -  -  -  -  0  INIT ROFF -  -
79          NETZ   33  -  -  -  -  -  0  INIT ROFF -  -
80          NETZ   99  1  -  -  -  -  0  INIT ROFF -  -
83          NETZ   83  4  -  -  -  -  0  INIT ROFF -  -
85          NETZ   85  3  -  -  -  -  0  INIT ROFF -  -
9003        BCA    -  -  -  -  -  -  -  -  -  -  -
E40         RUVA    -  -  -  -  -  -  -  -  -  -  -
E41         RUFB    -  -  -  -  -  -  -  -  -  -  -
E42         RUFA    -  -  -  -  -  -  -  -  -  -  -
E43         RUVB    -  -  -  -  -  -  -  -  -  -  -
E44         RWLDA    -  -  -  -  -  -  -  -  -  -  -
E45         RWLVA    -  -  -  -  -  -  -  -  -  -  -
E46         RUDA    -  -  -  -  -  -  -  -  -  -  -
E47         CFMVA    -  -  -  -  -  -  -  -  -  -  -
E48         CFMDE    -  -  -  -  -  -  -  -  -  -  -
E49         CFMDE    -  -  -  -  -  -  -  -  -  -  -
E50         RNUAK    -  -  -  -  -  -  -  -  -  -  -
E51         RNUDE    -  -  -  -  -  -  -  -  -  -  -
E52         RNUFR    -  -  -  -  -  -  -  -  -  -  -
E53         RNUSP    -  -  -  -  -  -  -  -  -  -  -
E54         CW       -  -  -  -  -  -  -  -  -  -  -
E55         CWZUS    -  -  -  -  -  -  -  -  -  -  -
E56         CWPRV    -  -  -  -  -  -  -  -  -  -  -
E57         CWS2     -  -  -  -  -  -  -  -  -  -  -
E58         CWS1     -  -  -  -  -  -  -  -  -  -  -
E59         CPZEOS    -  -  -  -  -  -  -  -  -  -  -
E60         CPEOS    -  -  -  -  -  -  -  -  -  -  -
E61         CWZP     -  -  -  -  -  -  -  -  -  -  -
E62         EME      -  -  -  -  -  -  -  -  -  -  -
E63         GENLOE   -  -  -  -  -  -  -  -  -  -  -
E64         SADIR    -  -  2  -  -  -  -  -  -  -  -
E65         SAHAK    -  -  -  -  -  -  -  -  -  -  -
```

4. Configuration of the NovaConf Server

The NovaConf offers the following ways of configuration:

For initial configuration, the Configuration & License Manager is used (as described below). Further configurations or changes can be made by means of a web interface (not described here). All configurations of NovaConf are saved in the NovaAlert.ini file. This file can also be altered by means of a text editor and restored.

The configuration for NovaConf includes some screen shots and fields that are in German.

4.1. Configuration of the NovaConf for the BRI

4.1.1. Configuration of the Gerdes PrimuX ISDN Card for BRI

The configuration of the Gerdes PrimuX ISDN Card is done together with the installation of the card:

D-Kanal-Protokoll: PBX, Q.SIG

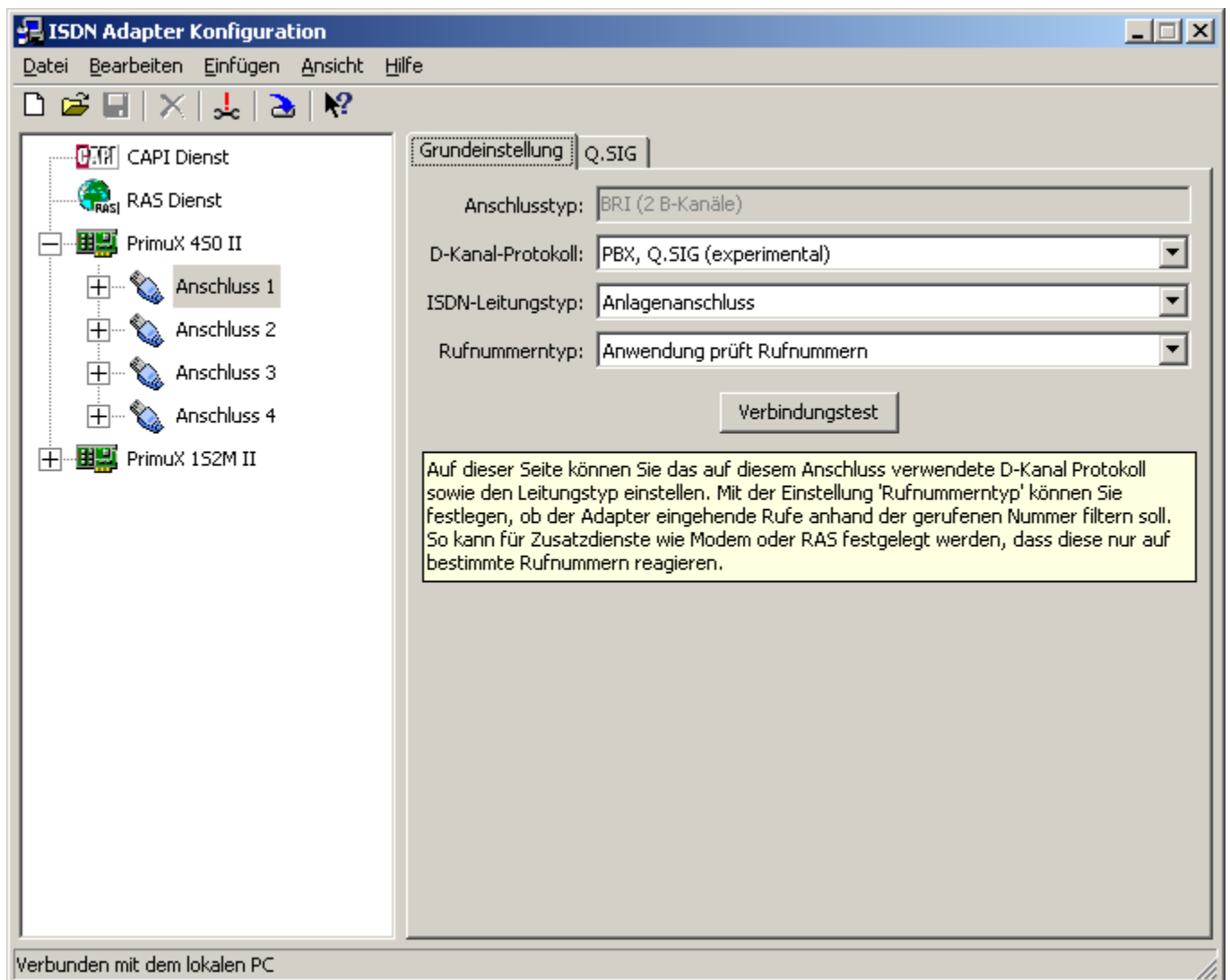
ISDN-Leitungstyp: Anlagenanschluss

Rufnummerntyp: Anwendung prüft Rufnummern

D-channel-protocol: PBX, Q.SIG

Type of ISDN trunk: Trunk (point to point)

Type of number: Application checks call numbers



Under the tab Q.SIG:

TK-Anlagentyp: Tenovis

QSIG Standard: ISO

Länge der Call Reference: Kurz

B-Kanal Information Element: Timeslot

Call Transfer Modus: Automatisch

Verbindungsabbau bei PROGRESS: Aus

Interpretation APDU auswerten: Aus

Type of telecommunication-system: Tenovis

QSIG standard: ISO

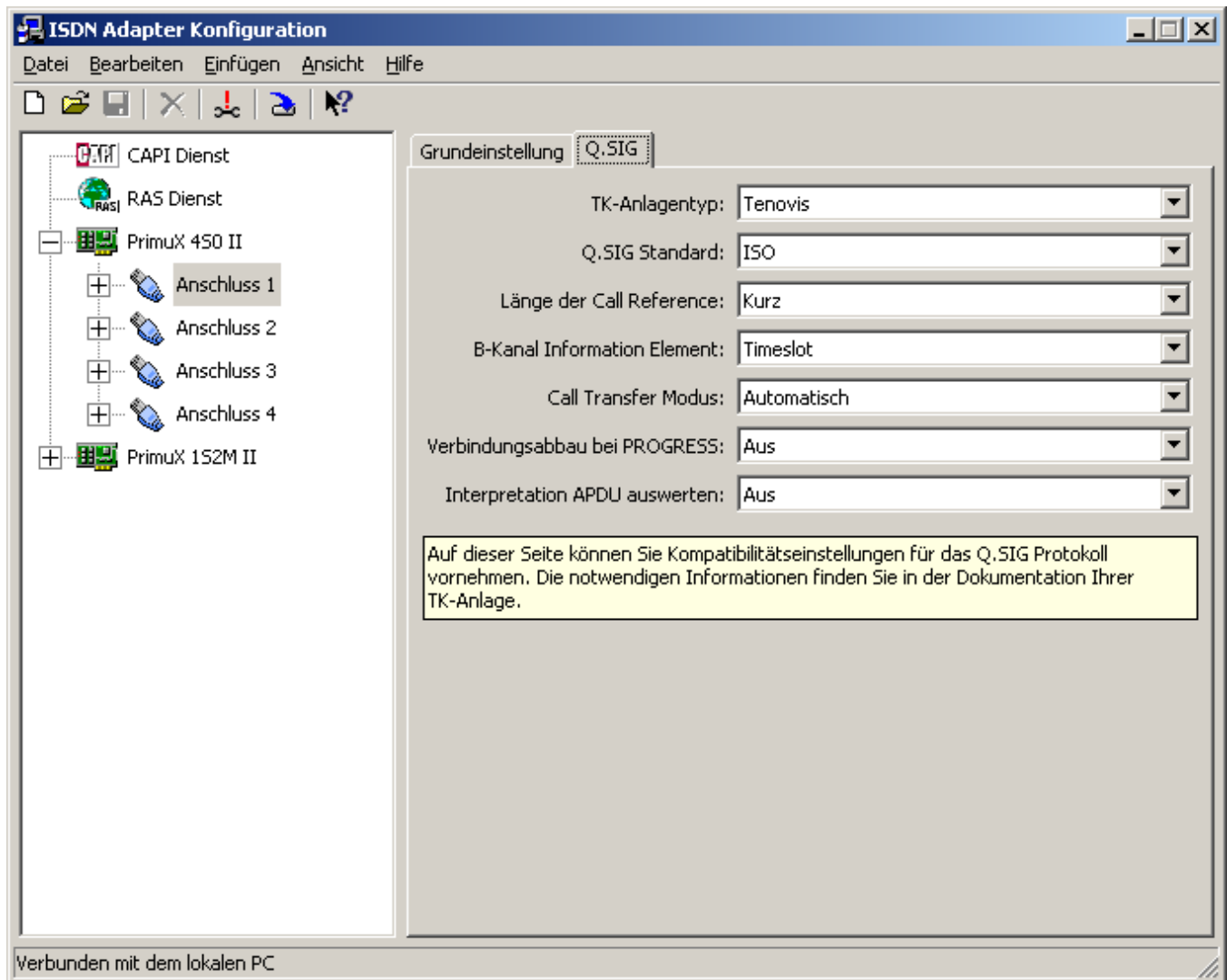
Call reference length: short

B-channel information: Timeslot

Call transfer mode: Automatic

Disconnect on PROGRESS: Off

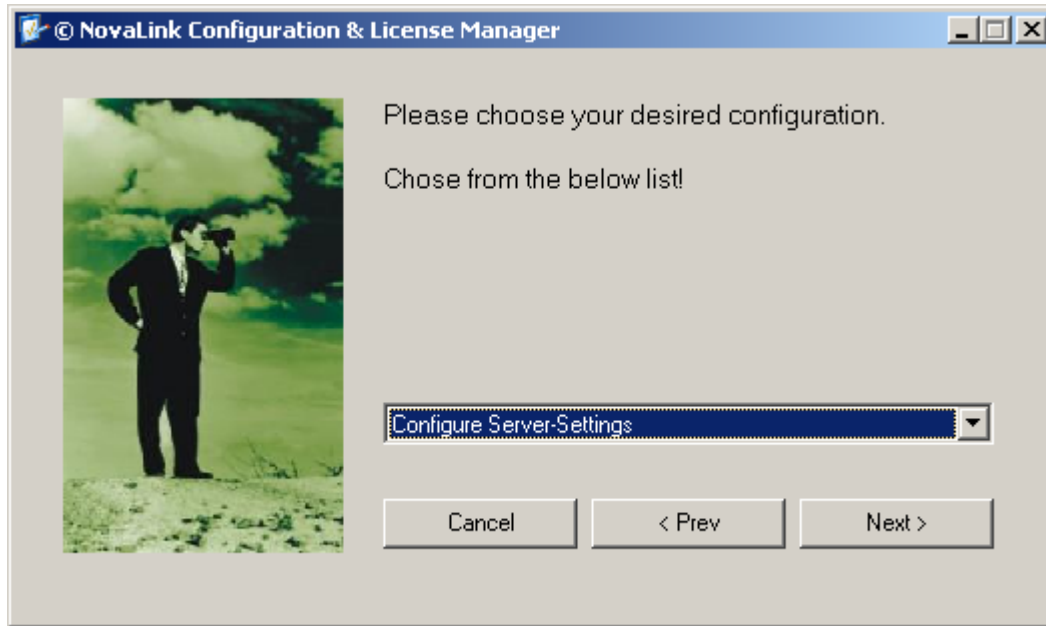
Interpretation APDU evaluation: Off



4.1.2. Configuration & License Manager for the BRI

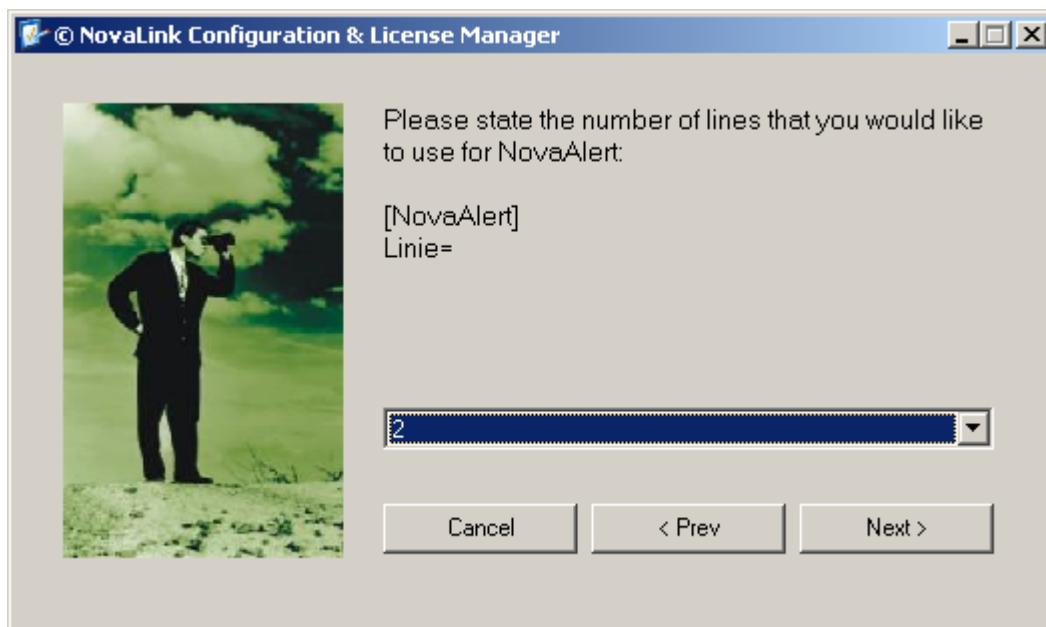
The following screens show the step-by-step configuration of the NovaConf server by means of the Configuration & License Manager.

Configure Server-Settings:

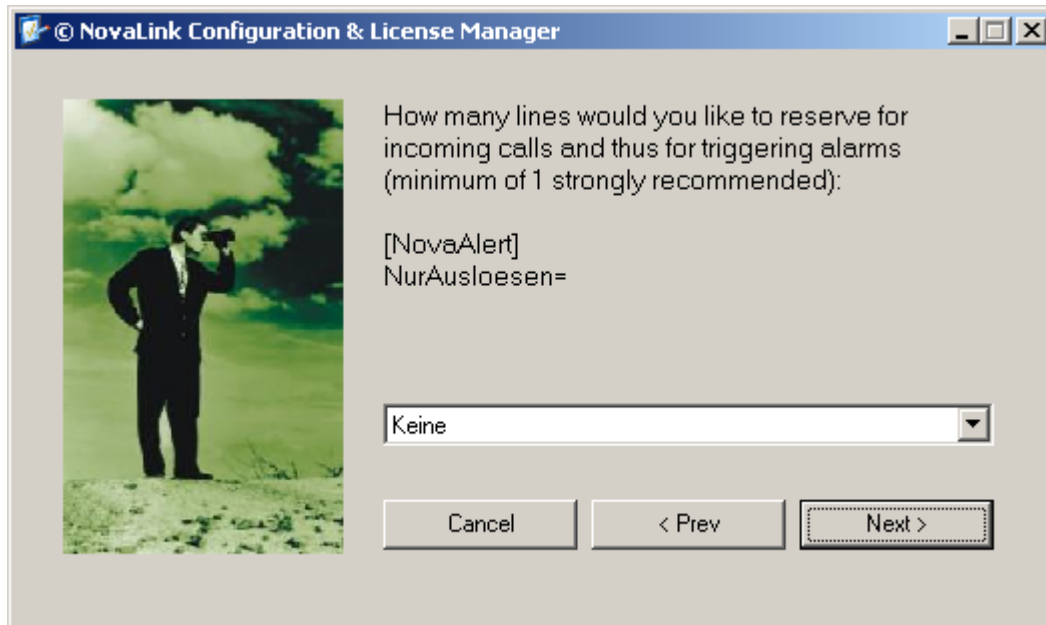


Linie=2

Two lines are used:



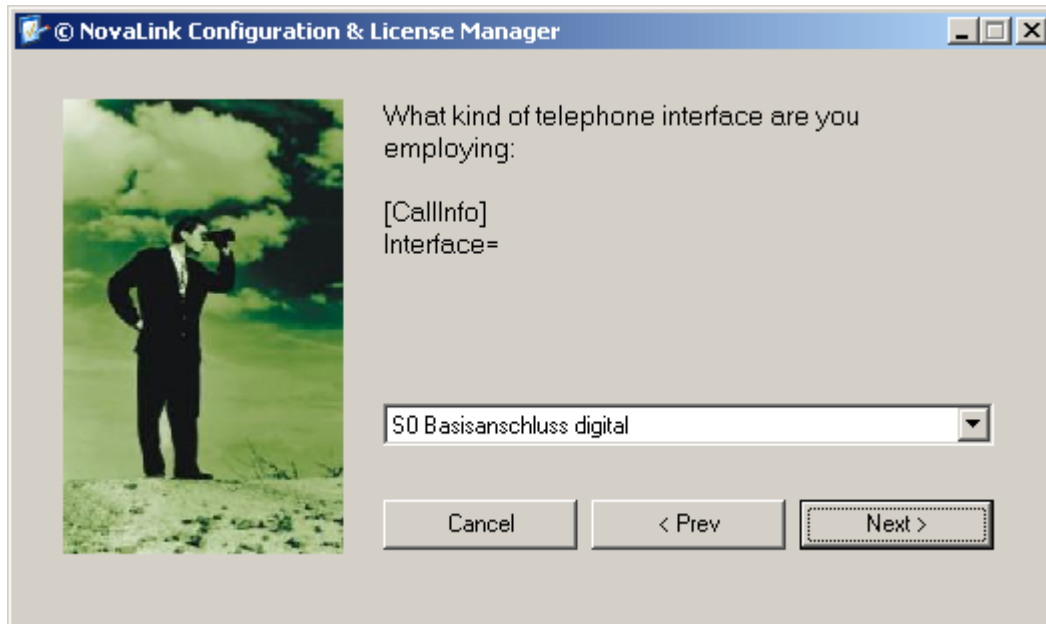
Nur Ausloesen: Keine
Release only= None:



CardDriver= CAPI:



Interface= S0 Basisanschluss digital
Interface= BRI digital



© NovaLink Configuration & License Manager

What kind of telephone interface are you employing:

[CallInfo]
Interface=

S0 Basisanschluss digital

Cancel < Prev Next >

QSIGStandard= QSIG nach ISO
QSIGStandard= QSIG according to ISO (International Standardization Organization)



© NovaLink Configuration & License Manager

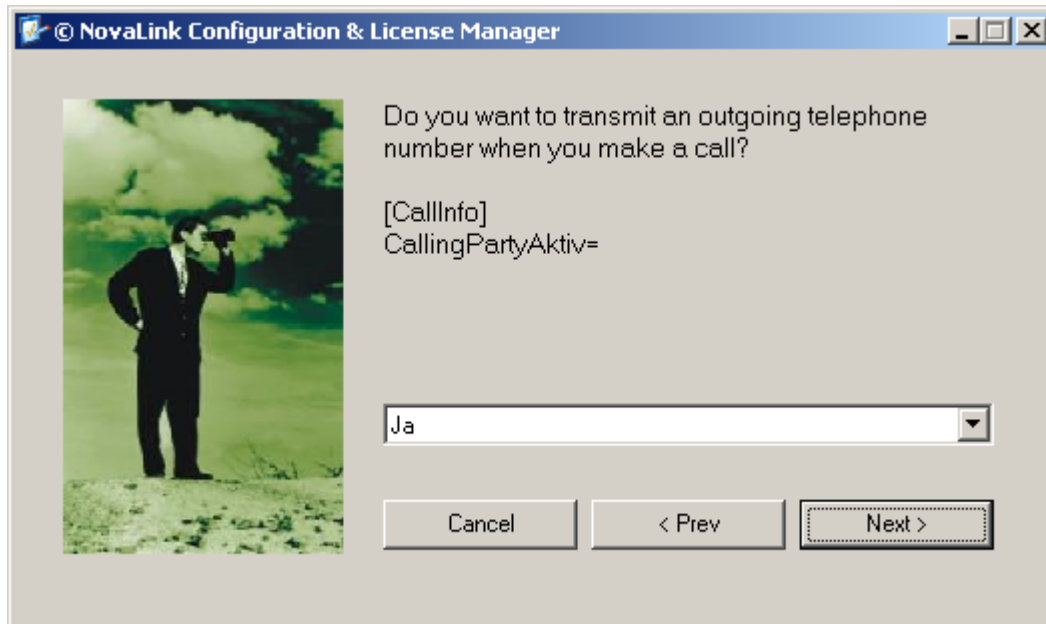
Which QSIG standard or signalling do you employ?

[CallInfo]
QSIGStandard=

QSIG nach ISO

Cancel < Prev Next >

CallingPartyAktiv= Ja
CallingPartyActive= yes



The image shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text asks: "Do you want to transmit an outgoing telephone number when you make a call?". Below this is a label "[CallInfo]" followed by "CallingPartyAktiv=" and a dropdown menu currently showing "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

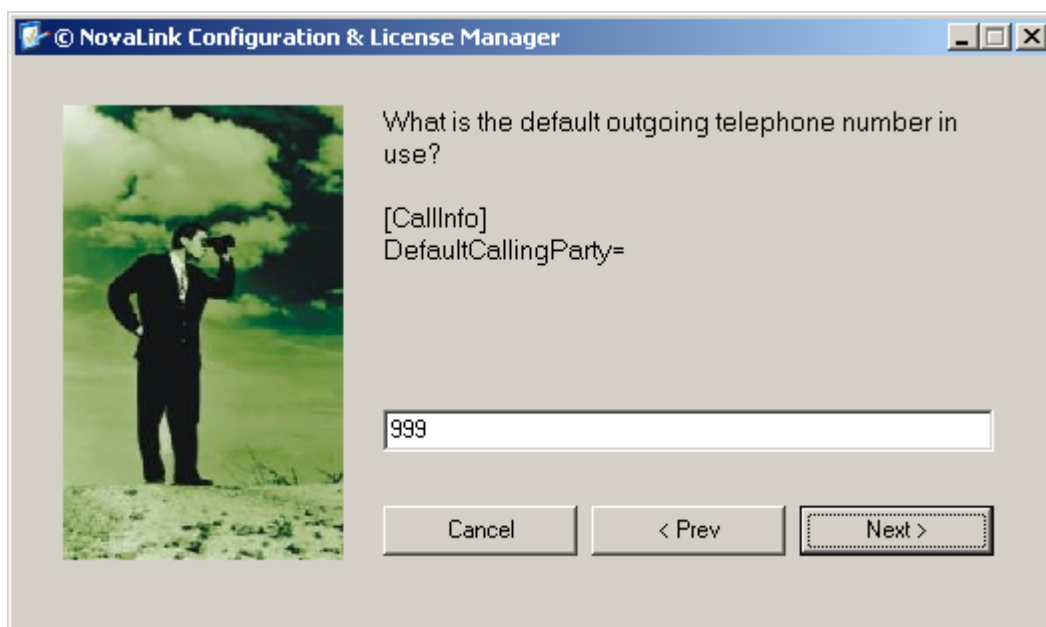
Do you want to transmit an outgoing telephone number when you make a call?

[CallInfo]
CallingPartyAktiv=

Ja

Cancel < Prev Next >

DefaultCallingParty= 999:



The image shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text asks: "What is the default outgoing telephone number in use?". Below this is a label "[CallInfo]" followed by "DefaultCallingParty=" and a text input field containing "999". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

What is the default outgoing telephone number in use?

[CallInfo]
DefaultCallingParty=

999

Cancel < Prev Next >

CNIPAktiv= Ja

Calling name identification presentation active= yes



The screenshot shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text area contains the question "Can the CNIP service (caller's name display) be used via QSIG?". Below this is a label "[CallInfo]" followed by "CNIPAktiv=" and a dropdown menu currently showing "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

Can the CNIP service (caller's name display) be used via QSIG?

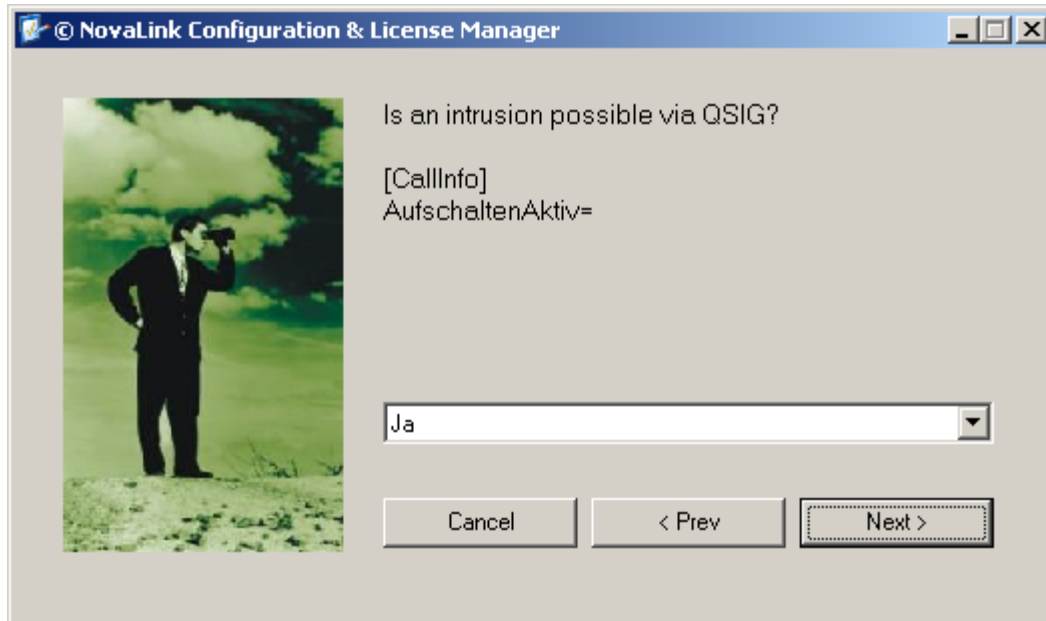
[CallInfo]
CNIPAktiv=

Ja

Cancel < Prev Next >

AufschaltenAktiv= Ja

Intrusion active= yes



The screenshot shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text area contains the question "Is an intrusion possible via QSIG?". Below this is a label "[CallInfo]" followed by "AufschaltenAktiv=" and a dropdown menu currently showing "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

Is an intrusion possible via QSIG?

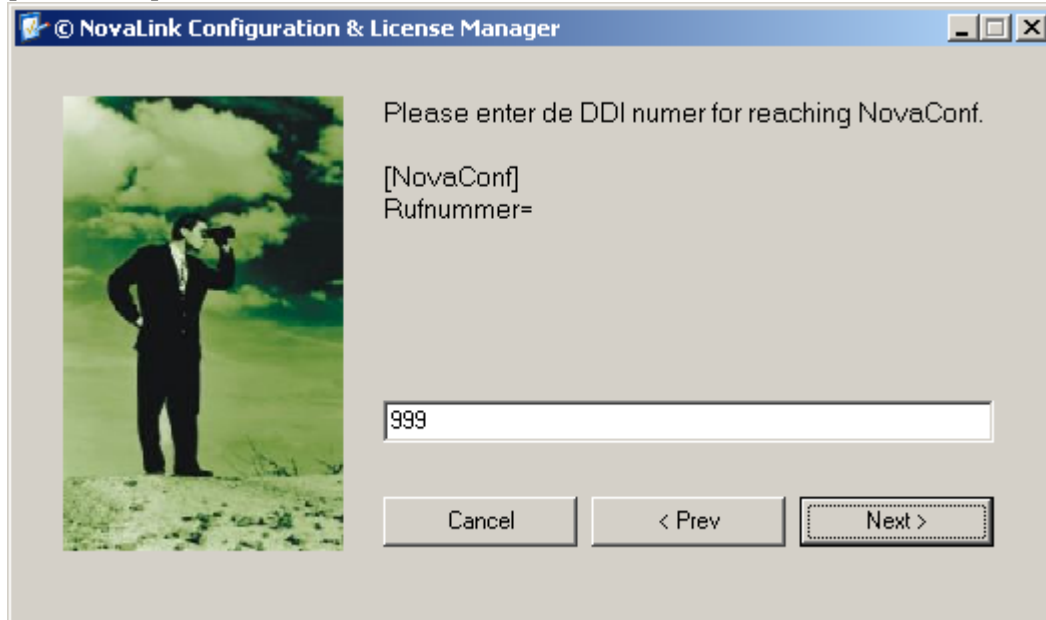
[CallInfo]
AufschaltenAktiv=

Ja

Cancel < Prev Next >

[NovaConf] Rufnummer = 999

[NovaConf] Call number = 999



© NovaLink Configuration & License Manager

Please enter de DDI numer for reaching NovaConf.

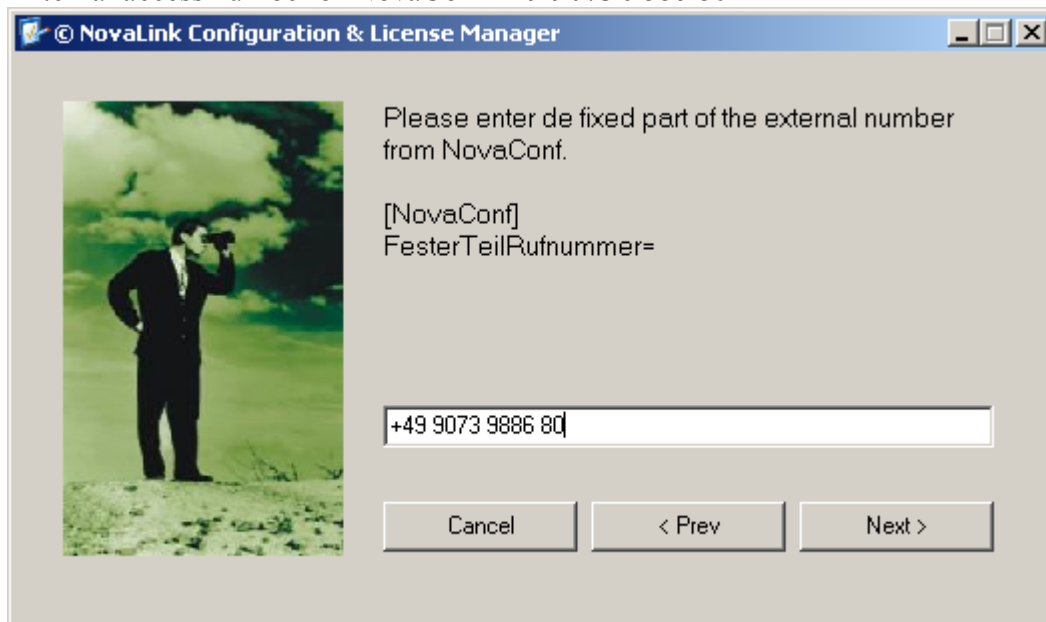
[NovaConf]
Rufnummer=

999

Cancel < Prev Next >

FesterTeilRufnummer= +49 9073 9886 80

External access number of NovaConf +49 9073 9886 80



© NovaLink Configuration & License Manager

Please enter de fixed part of the external number from NovaConf.

[NovaConf]
FesterTeilRufnummer=

+49 9073 9886 80

Cancel < Prev Next >

4.1.3. Settings in the NovaAlert.ini for NovaConf (BRI)

The settings from the NovaLink Configuration & License Manager for NovaConf have been taken over in the NovaAlert.ini. The file with the configurations as described above is listed below:

```
[NovaAlert]
NurAusloesen=0          'Line that only is used to set off an alert over the telephone
(supported no calls)
Linie1=1                'Allocation of the lines logical=physical
Linie2=2

[NovaConf]
Rufnummer=999           'direct dial number for NovaConf
FesterTeilRufnummer=+49 9073 9886 80 'System call number (without direct dial number)

[CallInfo]
CardDriver=2            '0=Auto-Detect, 1=Dialogic, 2=CAPI, 3=VoIP
Interface=3             'Line-Interface-type 1=analogue, 2=2 MBit primary digital, 3=BRI
basic interface digital
MinDigits=0             'Only for digital interfaces: standard=0 – specifies the number of
digits to be received..
AufschaltenAktiv=1      'If 1 is programmed, digital intrusion is active (QSIG)
CallingPartyAktiv=1     'Only for digital interfaces: If 1 is programmed, sending an
outgoing call number is enabled (QSIG)
DefaultCallingParty=999 'Only for digital interfaces: Call number is used, if no number for
the alert is registered (CallingPartyactive is 1)
CNIPAktiv=1             'Only for digital interfaces: If 1 is programmed, sending a display
text for incoming calls is allowed (QSIG, Feature CNIP)
QSIGStandard=2          '0=disable QSIG, 1=QSIG ETS/ECMA, 2=QSIG ISO, 3=User to
user signalling
```

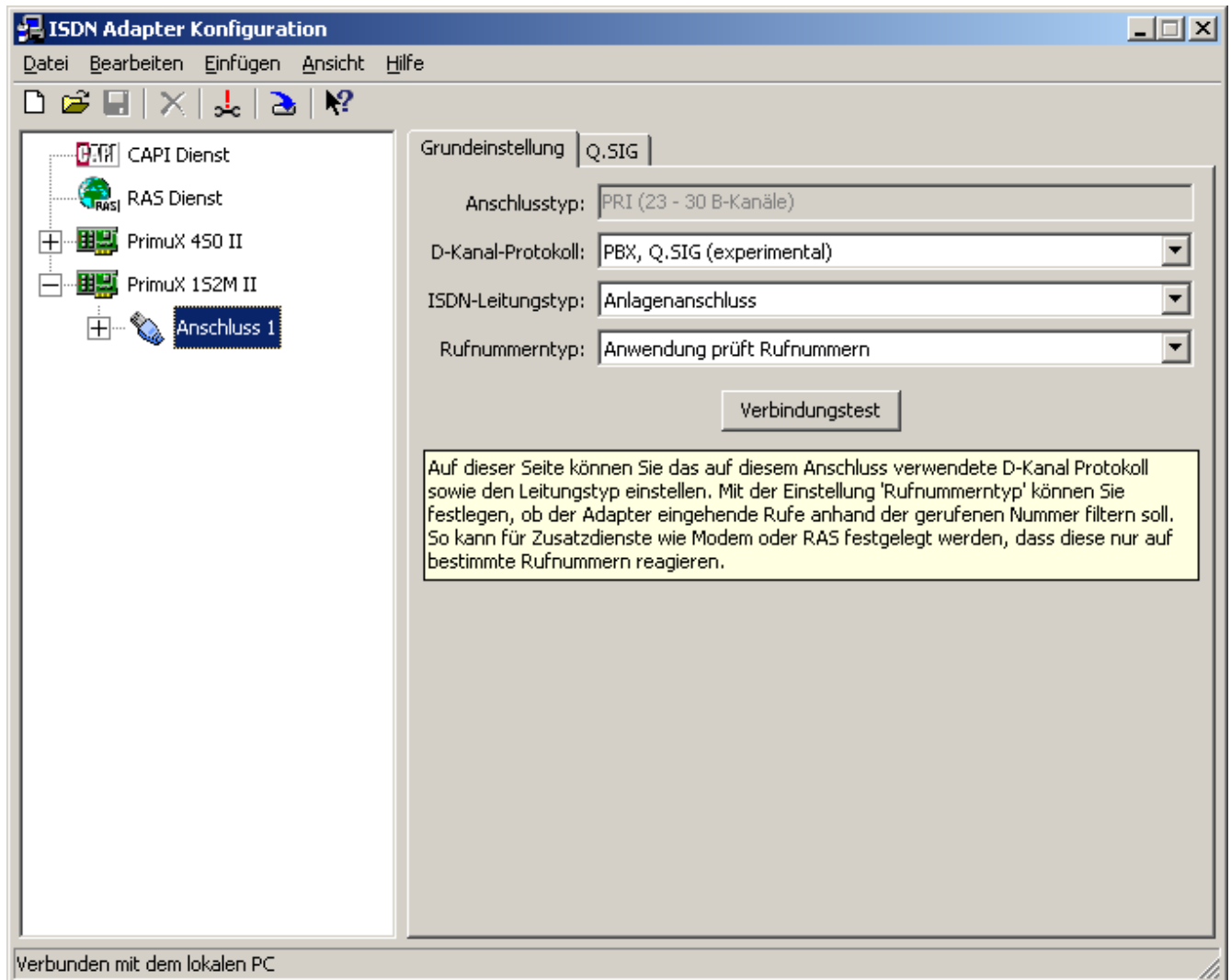
4.2. Configuration of the NovaConf for the PRI

4.2.1. Configuration of the Gerdes PrimuX ISDN Card for PRI

In the ISDN adapter configuration for interface 1 under the tab Grundeinstellungen (basic settings), the following settings have to be made:

D-Kanal-Protokoll: PBX, Q.SIG
ISDN-Leitungstyp: Anlagenanschluss
Rufnummerntyp: Anwendung prüft Rufnummern

D-channel-protocol: PBX, Q.SIG
Type of ISDN trunk: Trunk (point to point)
Type of number: Application checks call numbers



Under the tab Q.SIG:

TK-Anlagentyp: Tenovis

Q.SIG Standard: ISO

Länge der Call Reference: Standard

B-Kanal Information Element: Timeslot

Call Transfer Modus: Automatisch

Verbindungsabbau bei PROGRESS: Aus

Interpretation APDU auswerten: Aus

Type of telecommunication-system: Tenovis

Q.SIG standard: ISO

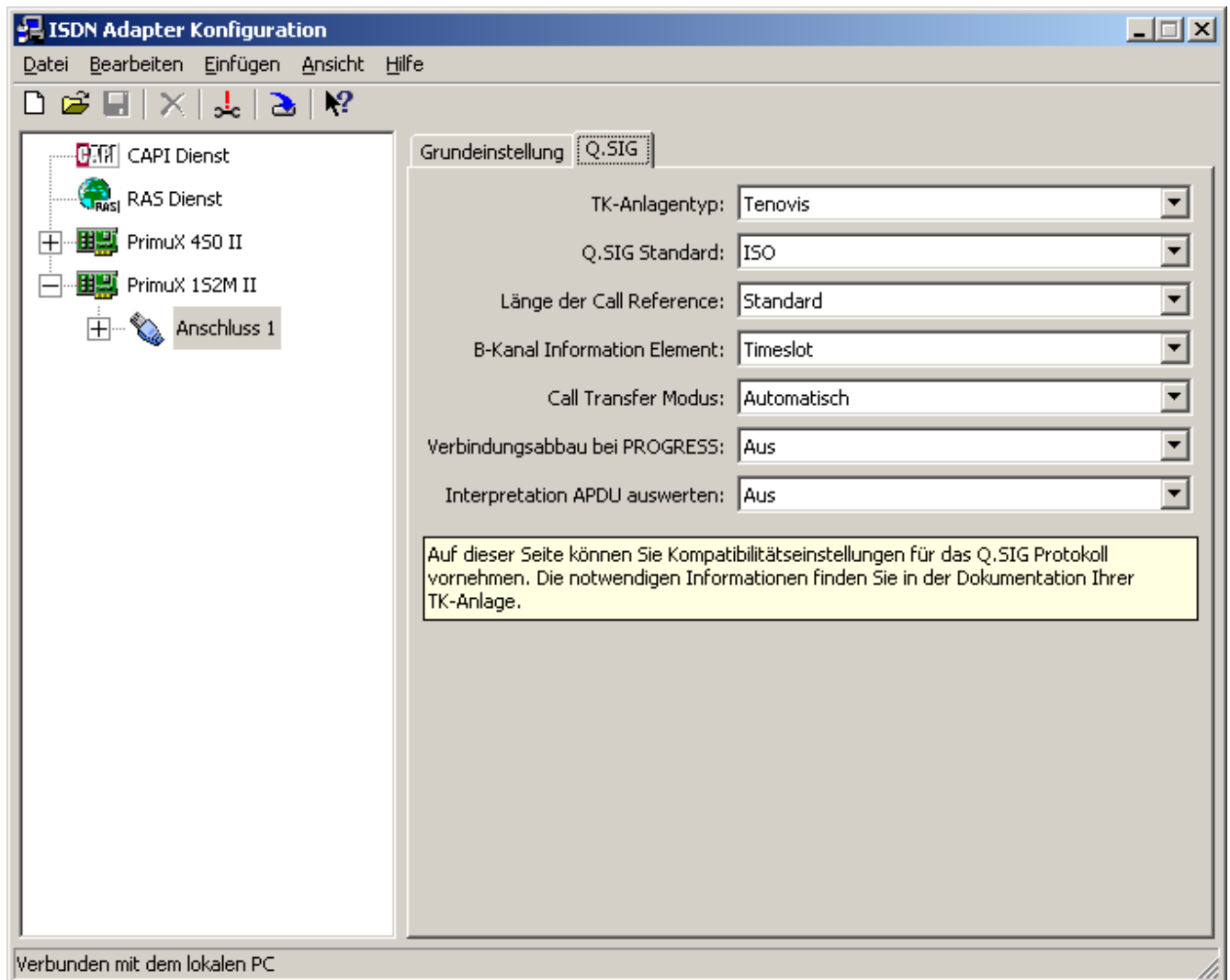
Call reference length: Standard

B-channel information: Timeslot

Call transfer mode: Automatic

Disconnect on PROGRESS: Off

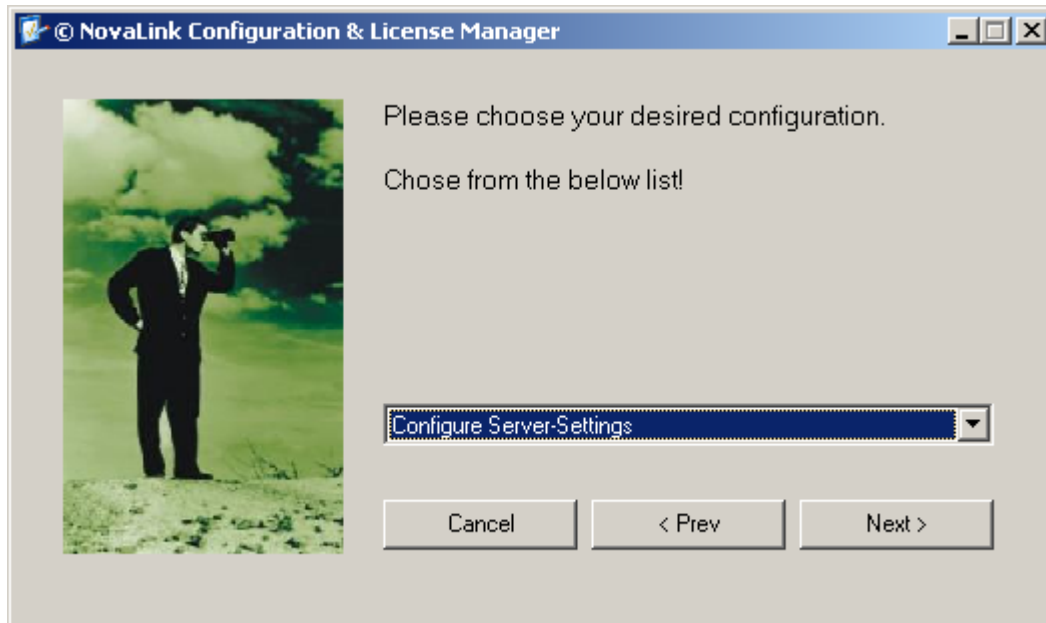
Interpretation APDU evaluation: Off



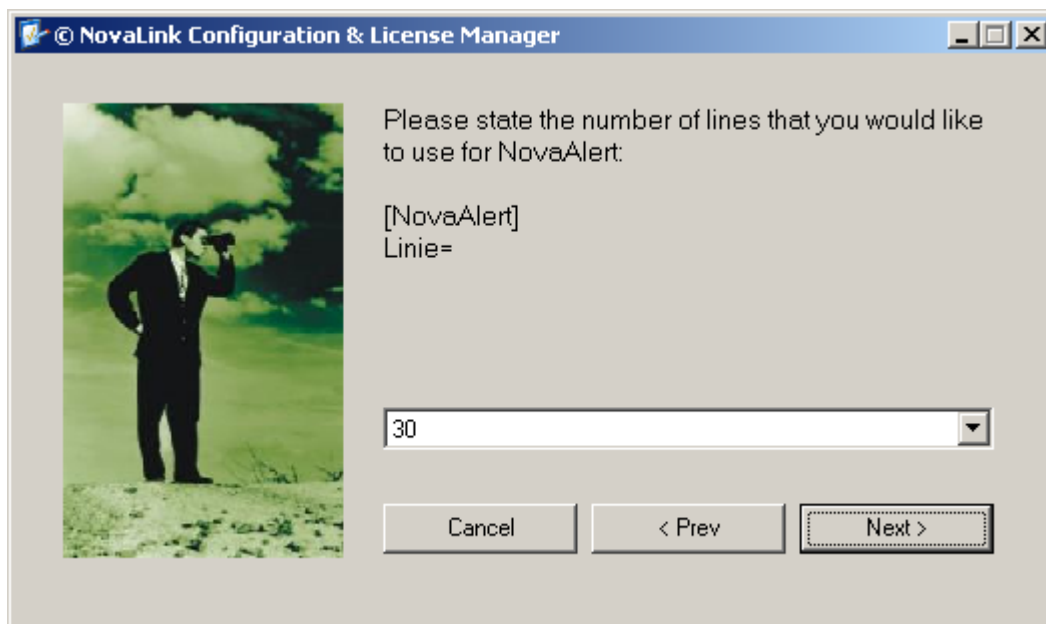
4.2.2. Configuration & License Manager for PRI

The following screens show the step-by-step configuration of the NovaConf server by means of the Configuration & License Manager.

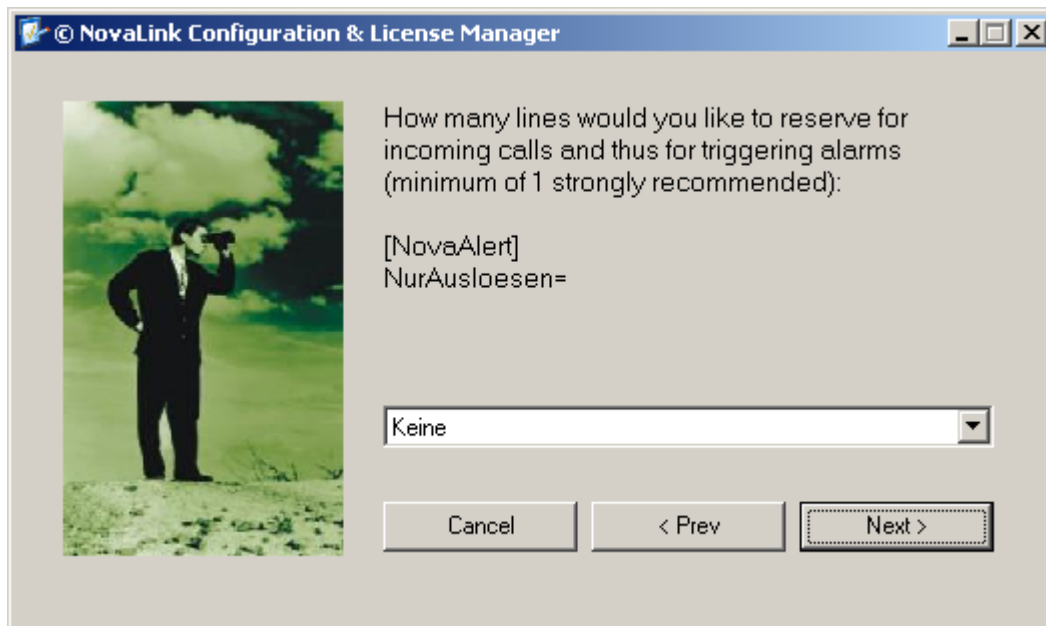
Configure Server-Settings:



Linie=30
Thirty lines are used.

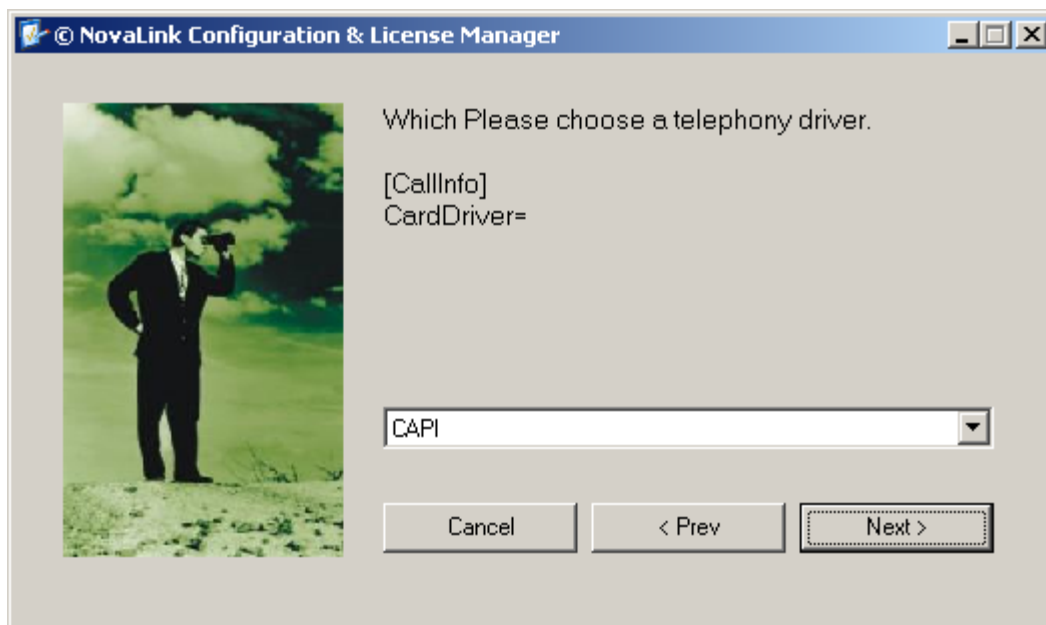


Nur Ausloesen: Keine
Release only= None:



The screenshot shows a window titled "© NovaLink Configuration & License Manager". On the left is a vertical image of a man in a suit looking through binoculars. The main text area contains the question: "How many lines would you like to reserve for incoming calls and thus for triggering alarms (minimum of 1 strongly recommended):". Below this, it says "[NovaAlert] NurAusloesen=" followed by a dropdown menu currently showing "Keine". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

Card Driver= CAPI



The screenshot shows a window titled "© NovaLink Configuration & License Manager". On the left is a vertical image of a man in a suit looking through binoculars. The main text area contains the question: "Which Please choose a telephony driver.". Below this, it says "[CallInfo] CardDriver=" followed by a dropdown menu currently showing "CAPI". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

Interface= 2MBit/s digital
Interface= 2MBit/s PRI digital



The screenshot shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text asks, "What kind of telephone interface are you employing:". Below this is a label "[CallInfo]" followed by "Interface=" and a dropdown menu. The dropdown menu is currently set to "2 MBit Primär digital". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

What kind of telephone interface are you employing:

[CallInfo]
Interface=

2 MBit Primär digital

Cancel < Prev Next >

QSIGStandard= QSIG nach ISO
QSIGStandard= QSIG according to ISO



The screenshot shows a second Windows-style dialog box titled "© NovaLink Configuration & License Manager". It features the same man-with-binoculars image on the left. The main text asks, "Which QSIG standard or signalling do you employ?". Below this is a label "[CallInfo]" followed by "QSIGStandard=" and a dropdown menu. The dropdown menu is currently set to "QSIG nach ISO". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

© NovaLink Configuration & License Manager

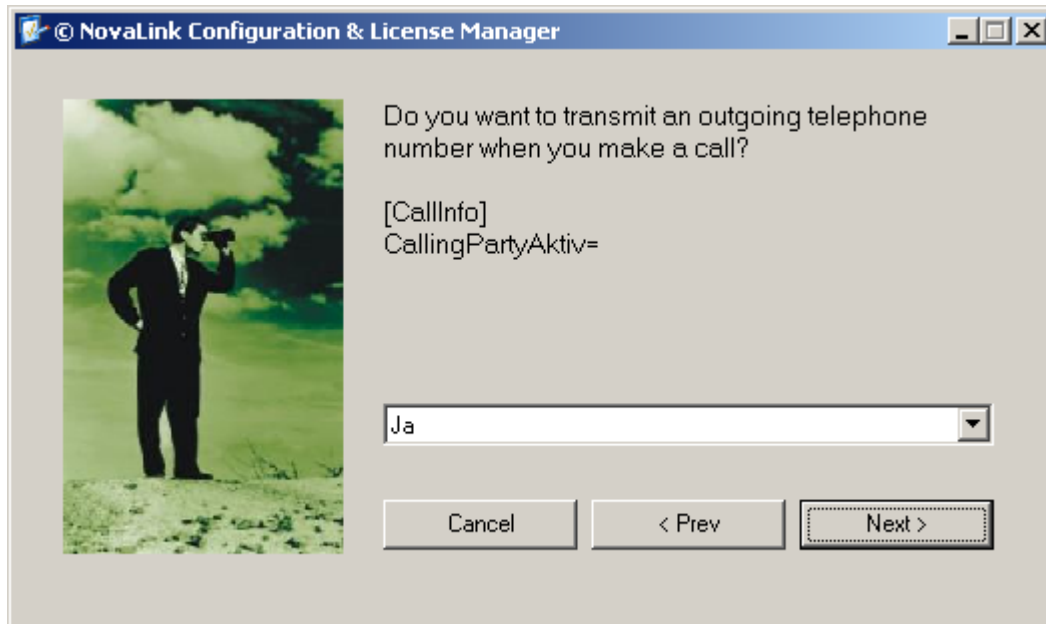
Which QSIG standard or signalling do you employ?

[CallInfo]
QSIGStandard=

QSIG nach ISO

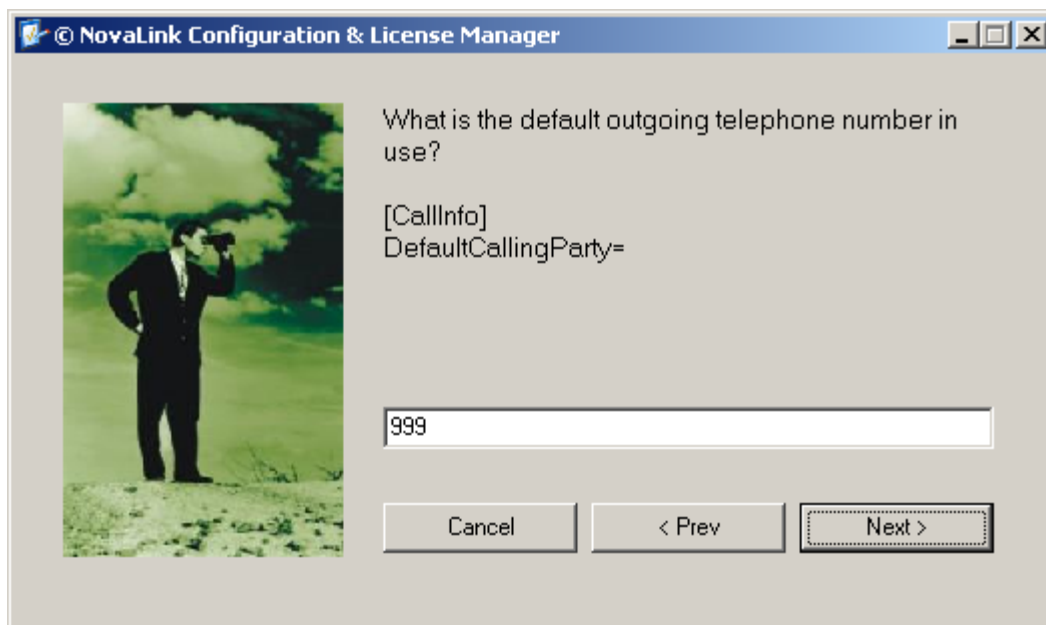
Cancel < Prev Next >

CallingPartyAktiv= Ja
CallingPartyActive= yes



The screenshot shows a window titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text asks: "Do you want to transmit an outgoing telephone number when you make a call?". Below this is a label "[CallInfo] CallingPartyAktiv=" followed by a dropdown menu currently showing "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

DefaultCallingParty= 999:



The screenshot shows the same window as above. The main text now asks: "What is the default outgoing telephone number in use?". Below this is a label "[CallInfo] DefaultCallingParty=" followed by a text input field containing "999". The buttons at the bottom remain "Cancel", "< Prev", and "Next >".

CNIPAktiv= Ja

Calling name identification presentation active= yes



The screenshot shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text area contains the question "Can the CNIP service (caller's name display) be used via QSIG?". Below this, it says "[CallInfo]" and "CNIPAktiv=". A dropdown menu is set to "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

Can the CNIP service (caller's name display) be used via QSIG?

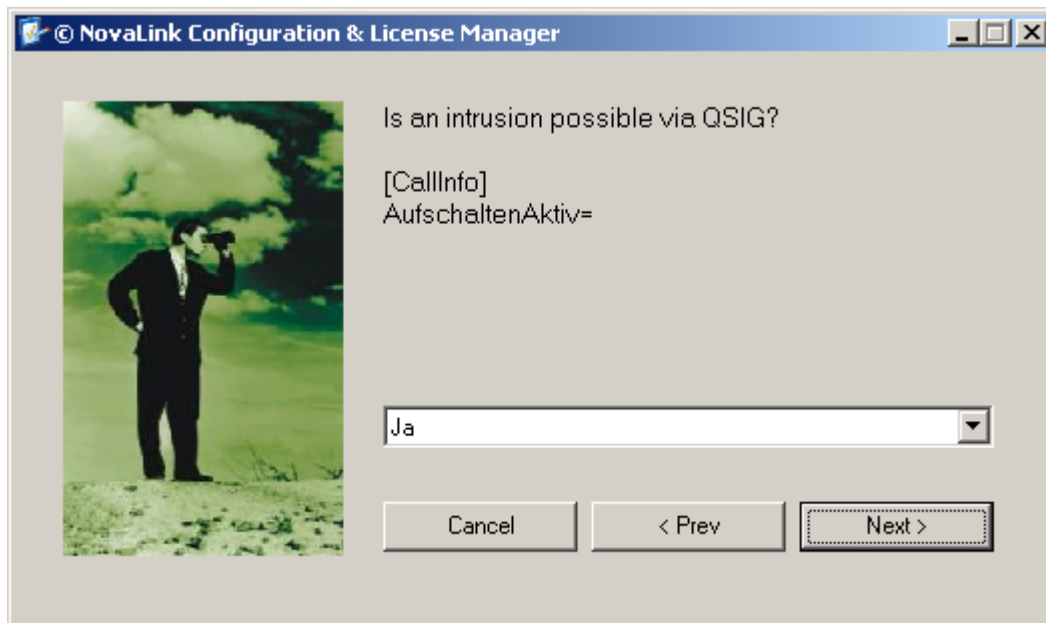
[CallInfo]
CNIPAktiv=

Ja

Cancel < Prev Next >

AufschaltenAktiv= Ja

Intrusion active= yes



The screenshot shows a Windows-style dialog box titled "© NovaLink Configuration & License Manager". On the left is a small image of a man in a suit looking through binoculars. The main text area contains the question "Is an intrusion possible via QSIG?". Below this, it says "[CallInfo]" and "AufschaltenAktiv=". A dropdown menu is set to "Ja". At the bottom are three buttons: "Cancel", "< Prev", and "Next >".

Is an intrusion possible via QSIG?

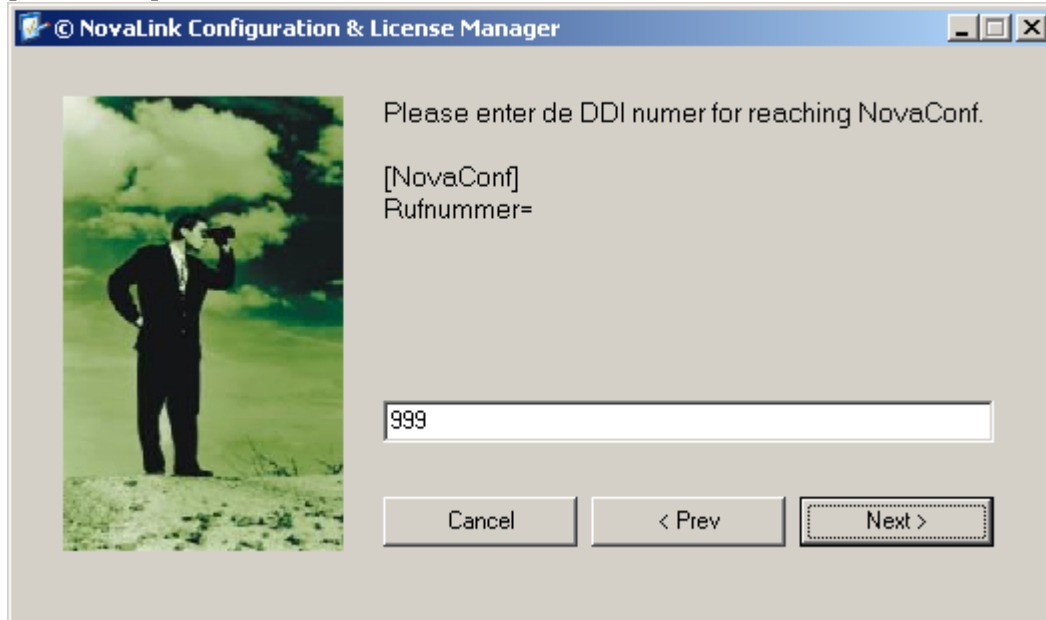
[CallInfo]
AufschaltenAktiv=

Ja

Cancel < Prev Next >

[NovaConf] Rufnummer = 999

[NovaConf] Call number = 999



© NovaLink Configuration & License Manager

Please enter de DDI numer for reaching NovaConf.

[NovaConf]
Rufnummer=

999

Cancel < Prev Next >

FesterTeilRufnummer= +49 9073 9886 80

External access number of NovaConf +49 9073 9886 80



© NovaLink Configuration & License Manager

Please enter de fixed part of the external number from NovaConf.

[NovaConf]
FesterTeilRufnummer=

+49 9073 9886 80

Cancel < Prev Next >

4.2.3. Settings in the NovaAlert.ini for NovaConf (PRI)

The settings from the NovaLink Configuration & License Manager for NovaConf have been taken over in the NovaAlert.ini. The file with the configurations as described above is listed below:

```
[NovaAlert]
Only release=0          'Line that only is used to set off an alert over the telephone
Linie1=1                'Allocation of the lines logical=physical
...
Linie30=30

[NovaConf]
Rufnummer=999          'direct dial number for NovaConf
FesterTeilRufnummer=+49 9073 9886 80 'System call number (without direct dial number)

[CallInfo]
CardDriver=2           '0=Auto-Detect, 1=Dialogic, 2=CAPI, 3=VoIP
Interface=2            'Line-Interface-type 1=analogue, 2=2 MBit primary digital, 3=BRI
basic interface digital
MinDigits=0            'Only for digital interfaces: standard=0 – specifies the number of
digits to be received..
AufschaltenAktiv=1     'If 1 is programmed, digital intrusion is active (QSIG)
CallingPartyAktiv=1    'Only for digital interfaces: If 1 is programmed, sending an
outgoing call number is enabled (QSIG)
DefaultCallingParty=999 'Only for digital interfaces: Call number is used, if no number for
the alert is registered (CallingPartyactive is 1)
CNIPAktiv=1            'Only for digital interfaces: If 1 is programmed, sending a display
text for incoming calls is allowed (QSIG, Feature CNIP)
QSIGStandard=2         '0=disable QSIG, 1=QSIG ETS/ECMA, 2=QSIG ISO, 3=User to
user signalling
```


5. Interoperability Compliance Testing

5.1. General Test Approach

Testing included validation of correct operation of the functions as agreed with NovaLink such as:

Normal cases:

- Incoming / outgoing calls internal / external
- Receipt of DTMF tones during incoming / outgoing calls
- Incoming calls with en-bloc number
- Incoming calls with overlap receiving

Supplementary services:

- Call transfer
- Call forwarding unconditional / on busy / on no reply / external
- Call with no answer - must be listed in the call log of the station

Recovery treatment

- Reconnect after disconnect of the BRI / PRI QSIG cable between NovaConf and Avaya Integral 55
- Power down the NovaConf services, start it again and wait for reconnect
- Power down the Avaya Integral 55, start it again and wait for reconnect

5.2. Test Results

All test cases were executed and passed.

6. Verification Steps

To verify that the solution is properly configured, the following steps can be taken:

After establishing the physical connection between the NovaConf Server and Avaya I55 LX for BRI and PRI, the correct LEDs on the associated circuit packs must be active. Also, the initialization of the BRI and PRI (layer 1) can be observed on an ISDN monitor at the NovaConf server. A test call to the NovaConf voice menu can be made by dialing the appropriate number (e.g., 999) after accessing the BRI or PRI.

7. Support

For technical support for the NovaLink “NovaConf” solution, please contact the technical support hotline of NovaLink:

- **Phone:** +41 52 762 6677
- **Email:** helpdesk@novalink.ch

8. Conclusion

These Application Notes describe the configuration steps required for NovaLink NovaConf to successfully interoperate with an Avaya Communication Server Integral 55 LX. A Linux based Advanced Computer Board (ACB) with running software version L03 was used. Normal test cases, (e.g., basic call incoming /outgoing or receiving DTMF tones and overlap receiving) were validated. The available supplementary services and the error and recovery treatment of the solution were checked. The configuration described in these Application Notes has been successfully compliance tested.

9. Additional References

Additional product information from Avaya:

Avaya Integral 55 LX:

<http://support.avaya.com/japple/css/japple?PAGE=Product&temp.productID=304366>

Additional product information from NovaLink:

<http://www.novalink.ch/index.php?id=48>

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