Manual
Workshops (Excerpt)

Archived Workshops

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Aim and purpose
This document is part of the user manual for the installation and configuration of bintec elmeg devices. For the latest information and notes on the current software release, please also read our release notes, particularly if you are updating your software to a higher release version. You will find the latest release notes under *www.bintec-elmeg.com* .

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Chapter 1 Telephony - Offsite extension without VPN IPSec

1.1 Introduction

The following chapters describe how to configure an offsite extension. This allows home office staff to connect to the central PABX.

You can set up an offsite extension as a VoIP extension (e.g. an **elmeg IP-290**) in an **elmeg ICT** system with a **VoIP-VPN gateway** using a dynDNS account for the SIP registrar. This assumes that a configured router with internet access is available.

Software version

Testing has occurred with the following software version:

- **elmeg ICT** system with Firmware Version 7.30
- **VoIP-VPN Gateway** module with Firmware Version 7.30
- WinTools **elmeg ICT** system with Version 7.30 Build 6

1.2 Configuration

1.2.1 Enabling Dynamic DNS

The data for the DynDNS account over which the **VoIP-VPN Gateway** can be accessed must be entered before a Dynamic DNS can be used.

For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Dynamic DNS**

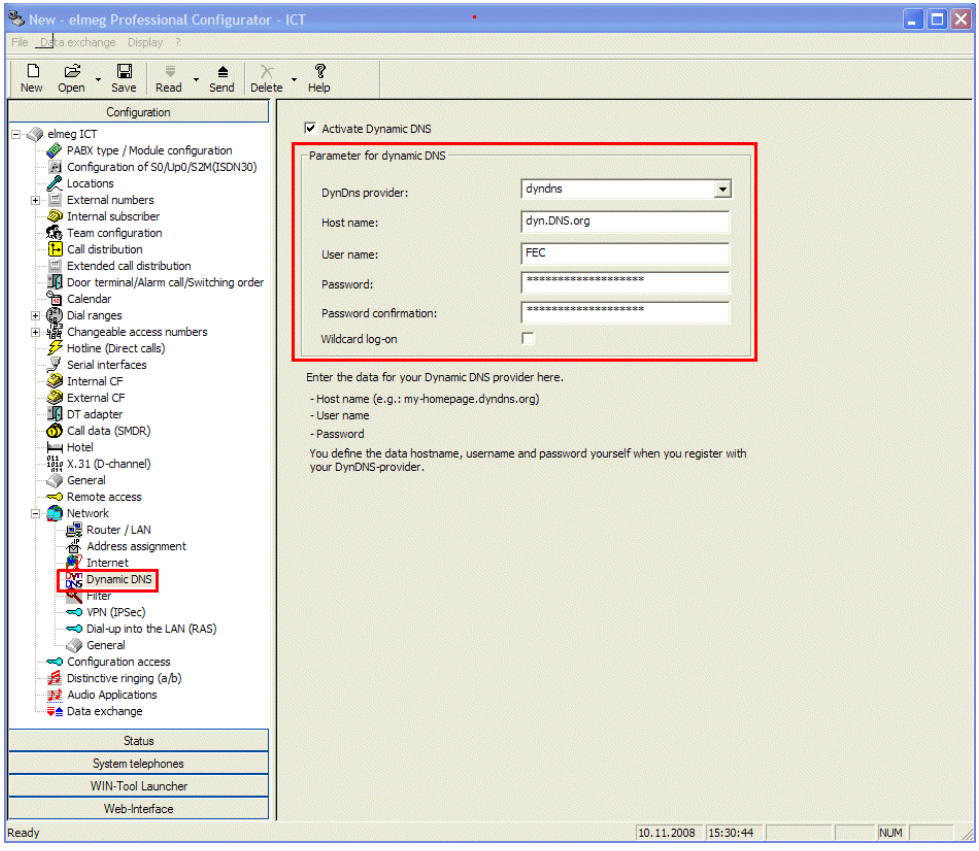

Fig. 2: **Configuration** -> **Network** -> **Dynamic DNS**

Relevant fields in the Parameters for Dynamic DNS menu

Field	Meaning
Enabling Dynamic DNS	Enable the entry.
DynDNS Provider	Select your DynDNS provider.
Hostname	Enter the complete name of the host over which the **VoIP-VPN Gateway** module can be accessed. You will have specified this data when registering with your provider.
User Name	Enter your user name.
Password	Enter your password.

1.2.2 Creating VoIP extensions

Note

You should never change the pre-defined "guest" entry as VoIP extension, otherwise you will not be able to register. Always create a new VoIP extension.

Go to the following menu to create a new VoIP extension:

(1) Go to **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

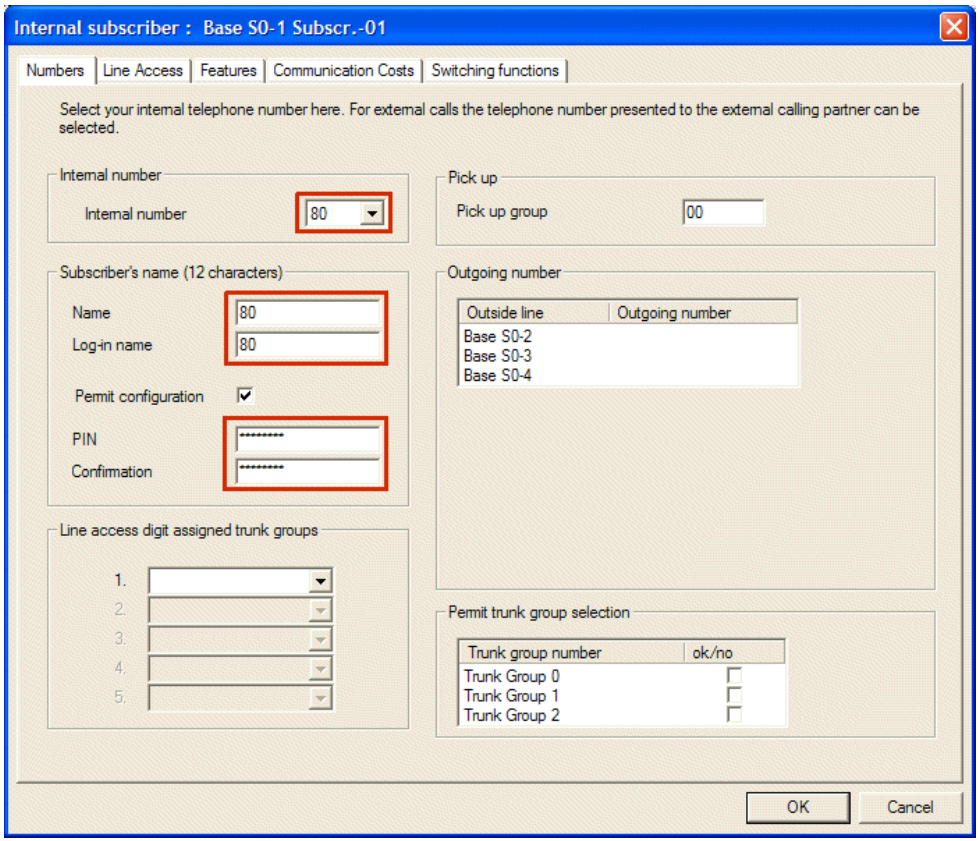

Fig. 3: **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

Relevant fields in the Subscriber Number menu

Field	Meaning
Internal Number	Enter the internal number.

Field	Meaning
Extension Name	Enter the name of the extension.
Login Name	The login name must always correspond to the **Internal Number**.
PIN	The PIN is required as a password to log in to the offsite extension.

Go to the following menu so that registration can be carried out over all interfaces (Global):

(1) Go to **Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**

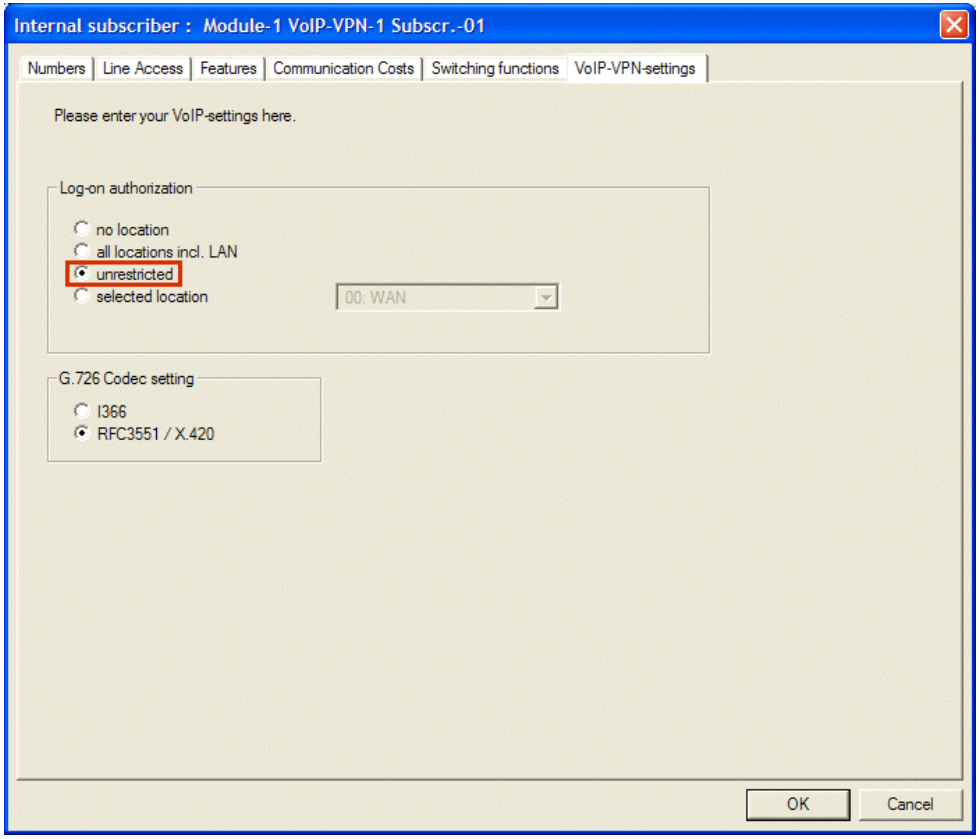

Fig. 4: **Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**

Relevant fields in the VoIP-VPN Settings menu

Field	Meaning
Login authorisation	Set **Login Authorisation** to `Unlimited`.

1.2.3 Setting for the offsite extension with a elmeg IP-290.

You can configure **elmeg IP-290** conveniently via the Web browser.

To access the configuration interface enter the IP address **elmeg IP-290** in your Web browser.

elmeg IP-290 is connected to a router on the LAN and logs in to the **VoIP-VPN Gateway**module via an internet service provider (ISP) and dynDNS.

For this, go to the following menu:

(1) Go to **Set up**-> **Line 1** -> **Login**

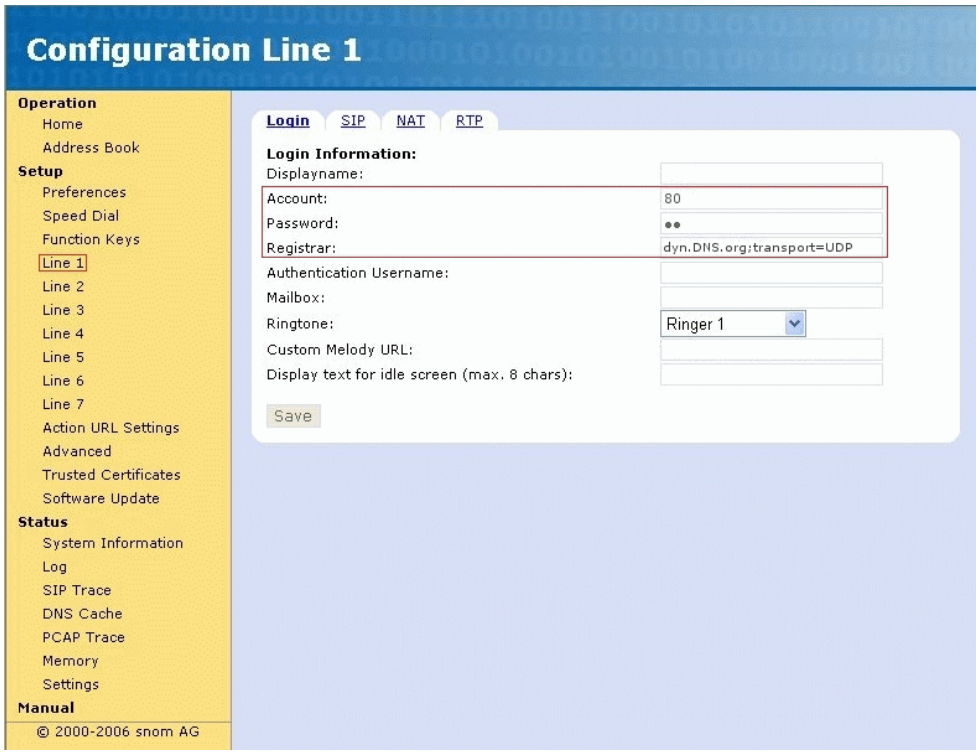

Fig. 5: **Set up**-> **Line 1** -> **Login**

Relevant fields in the Login Information menu

Field	Meaning
User ID	The **Internal Number** is entered under **User ID**.
Password	Enter the same password as previously entered in the **Extension Name** menu in the PIN field.

Field	Meaning
Registrar	Under **Registrar** enter your own dynDNS account with the extension ;transport=UDP. Transport=UDP is used to transmit messages and communication (RTP Packets) explicitly via UDP in both directions.

1.2.4 SIP line settings

Configure the SIP Proxy in the **Set up**-> **Line 1** -> **SIP** menu.

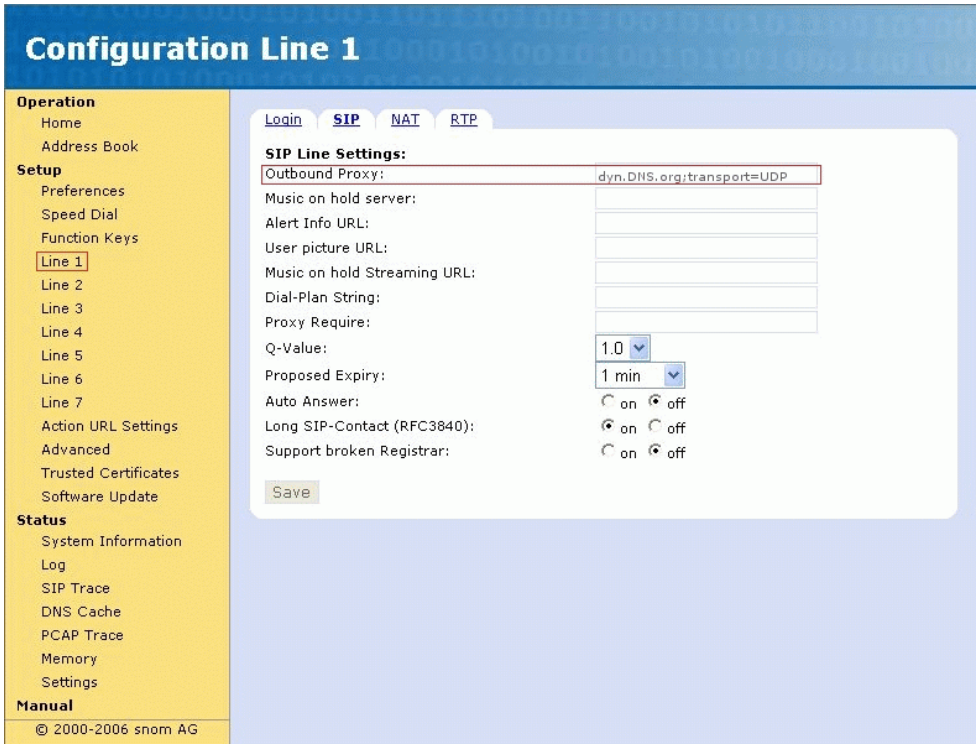

Fig. 6: **Set up**-> **Line 1** -> **SIP**

Relevant fields in the SIP Line Settings menu

Field	Meaning
Outbound Proxy	Here you enter your own dynDNS account as in the **Login** menu in the **Registrar** field. It is also useful to add the ;transport=UDP extension here.

1.3 Overview of configuration steps

Enabling Dynamic DNS

Field	Menu	Value
Enabling Dynamic DNS	**Configuration** -> **Network** -> **Dynamic DNS**	Enabled
DynDNS Provider	**Configuration** -> **Network** -> **Dynamic DNS**	e.g. *dyndns*
Hostname	**Configuration** -> **Network** -> **Dynamic DNS**	e. g. *my-homepage.dyndns.org*
User Name	**Configuration** -> **Network** -> **Dynamic DNS**	Your user name
Password	**Configuration** -> **Network** -> **Dynamic DNS**	Your password

Creating VoIP extensions

Field	Menu	Value
Internal Number	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *80*
Extension Name	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *80*
Login Name	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *80*
PIN	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *secret*

VoIP-VPN Settings

Field	Menu	Value
Login authorisation	**Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**	*Unlimited*

Login

Field	Menu	Value
User ID	**Set up** -> **Line 1** -> **Login**	e.g. *80*
Password	**Set up** -> **Line 1** -> **Login**	e.g. *80*
Registrar	**Set up** -> **Line 1** -> **Login**	e. g. *my-homepage.dyndns.org;transport=UDP*

SIP

Field	Menu	Value
Outbound Proxy	**Set up** -> **Line 1** -> **SIP**	e. g. *my-homepage.dyndns.org;transport=UDP*

Chapter 2 Telephony - ICT with VoIP-VPN module in other LANs

2.1 Introduction

The **VoIP-VPN Gateway** module and the router are connected physically over an LAN-LAN connection. The following diagrams explain the configuration steps that are required for the **VoIP-VPN Gateway** module and the **elmeg ICT** system. Make sure that the router is configured correctly.

Software version

Testing has occurred with the following software version:

- **elmeg ICT** system with Firmware Version 7.30 RC 08
- **VoIP-VPN Gateway** module with Firmware Version 7.30 RC 10
- WinTools **elmeg ICT** system with Version 7.30 Build 29

2.2 Configuration

2.2.1 Configuring the IP address

The IP addresses for the router have been defined for this example as follows:

Router: 192.168.1.254

DHCP Server: 192.168.1.254

DNS Server: 192.168.1.254

Go to the following menu to configure an IP address:

(1) Go to **Configuration** -> **Network** -> **Router / LAN**

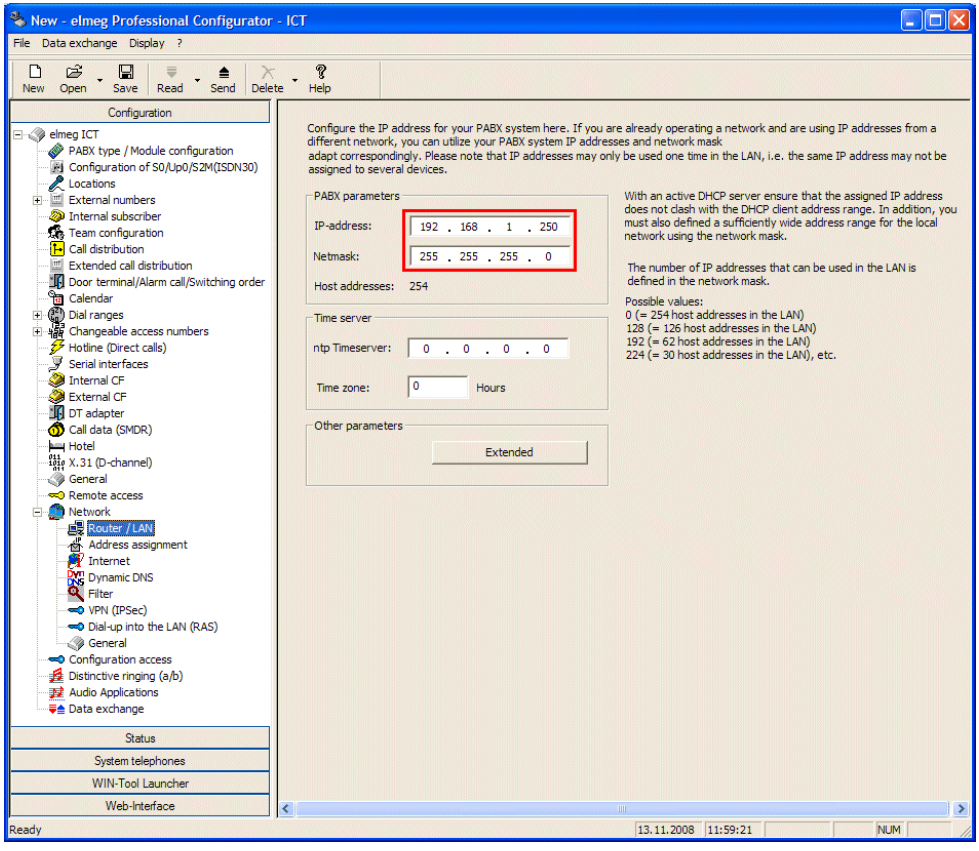

Fig. 7: **Configuration** -> **Network** -> **Router / LAN**

Relevant fields in the System Parameters menu

Field	Meaning
IP Address	Under **System Parameters** you can change the IP address for the **VoIP-VPN Gateway** module to the IP address pool of the router.
Subnet Mask	Enter the netmask.

2.2.2 Dynamic assignment of IP addresses

The Dynamic Host Configuration Protocol (DHCP) allows an IP address to be assigned dynamically.

Go to the following menu to enable dynamic assignment for IP addresses.

(1) Go to **Configuration** -> **Network** -> **Address Assignment**

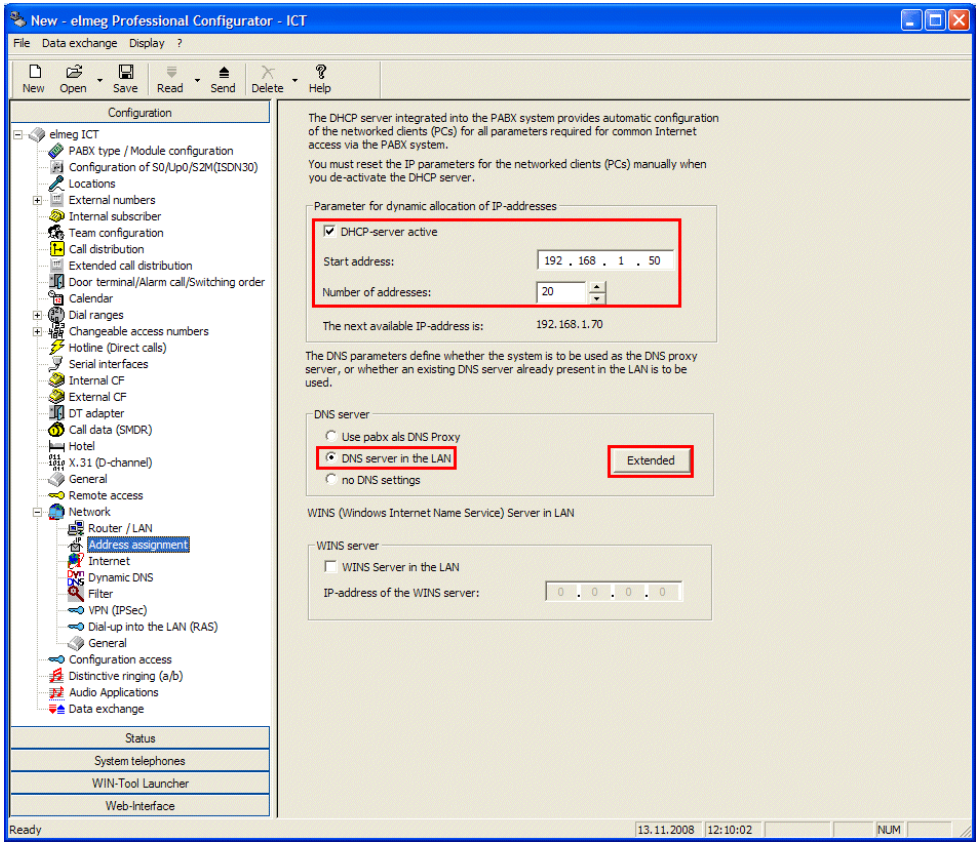

Fig. 8: **Configuration -> Network -> Address Assignment**

Relevant fields in the Address Assignment menu

Field	Meaning
DHCP server enabled	Disable the entry. If there is no DHCP server in the LAN, the entry is enabled.
Start address	Under **Start Address** you can define the starting point for the IP address pool managed by the DHCP server.
Address Number	The **Address Number** indicates the total number of IP addresses and determines the next available IP address. Here the **VoIP-VPN Gateway** module is used as the DHCP server. If another DHCP server exists within the existing network, the DHCP server in the **VoIP-VPN Gateway** module must be disabled.
DNS Server	Enable the entry *DNS Server in LAN*.

Once you have enabled the *DNS Server in LAN* function under **DNS Server**, you can

enter the IP address of the DNS server (router) under **Advanced**.

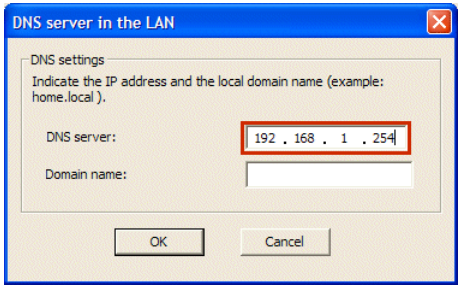

Fig. 9: **Configuration** -> **Network** -> **Address Assignment**-> **DNS Server** -> **Advanced**

2.2.3 Internet Access

Go to the following menu to set up an internet access:

(1) Go to **Configuration** -> **Network** -> **Internet Access**

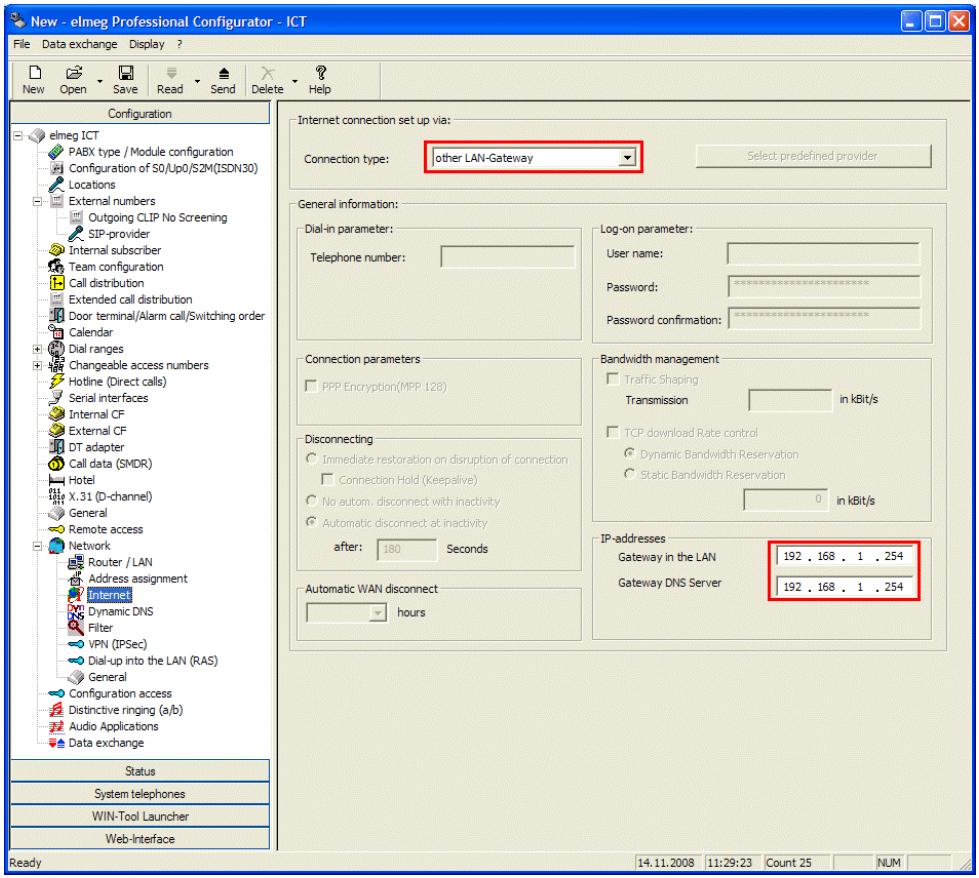

Fig. 10: **Configuration -> Network -> Internet Access**

Relevant fields in the Internet Access menu

Field	Meaning
Connector Type	Set the **Connection Type** to `Other Gateway in LAN`.
IP addresses	Enter the IP addresses of the router and the DNS server. If the router is also configured as the DNS server, both IP addresses will be identical.

2.2.4 Setting up the SIP provider

Note

If an SIP proxy is used in the router, you do not have to enter anything in the **STUN** menu. The outbound proxy is only configured if required by the SIP provider. Please ask your SIP provider if you are unsure.

When setting up an SIP provider all of the terminals connected to the ICT system can make telephone calls over the internet. The comprehensive bundling function allows you to specify which external connections should be used for each individual internal extension. You can also configure automatic selection by the desired provider.

Go to the following menu to create an outgoing connection:

(1) Go to **Configuration** -> **External Numbers** ->**SIP Provider** -> **Access Data**

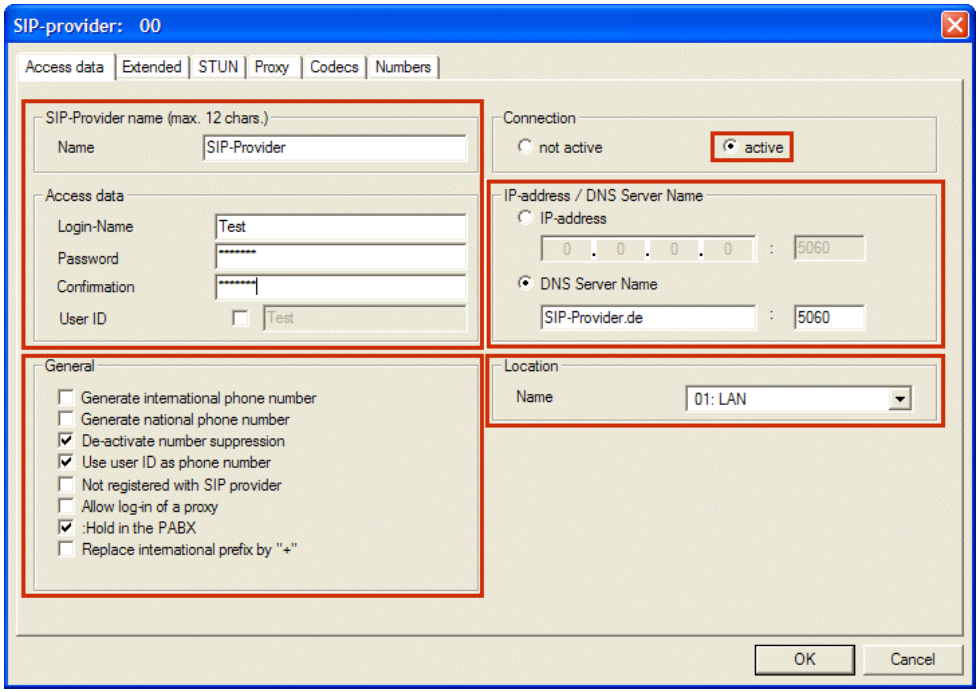

Fig. 11: **Configuration** -> **External Numbers** -> **SIP Provider** -> **Access Data**

Relevant fields in the Access Data menu

Field	Meaning
SIP provider name	Enter the access data for the SIP provider.
Access data	Enter your login name and password.
Connection	Enable the *Enabled* field.
SIP registrar	The DNS server name of the SIP provider is entered here.
Location	Select the locality. LAN is selected as the locality in this example as the **VoIP-VPN Gateway** module is connected to the router over LAN. Make sure that all of the necessary ports are enabled in the router for the VoIP telephony.
General	Select the desired action. Enable the *Holding in the PABX* field to transfer calls.

2.2.5 Advanced Configuration

The *Individual Number* or the *DDI Block* must be enabled in the **Number Configuration** menu depending on the SIP account so that the SIP provider number can be entered.

(1) Go to **Configuration** -> **External Numbers** -> **SIP Provider** -> **Advanced**

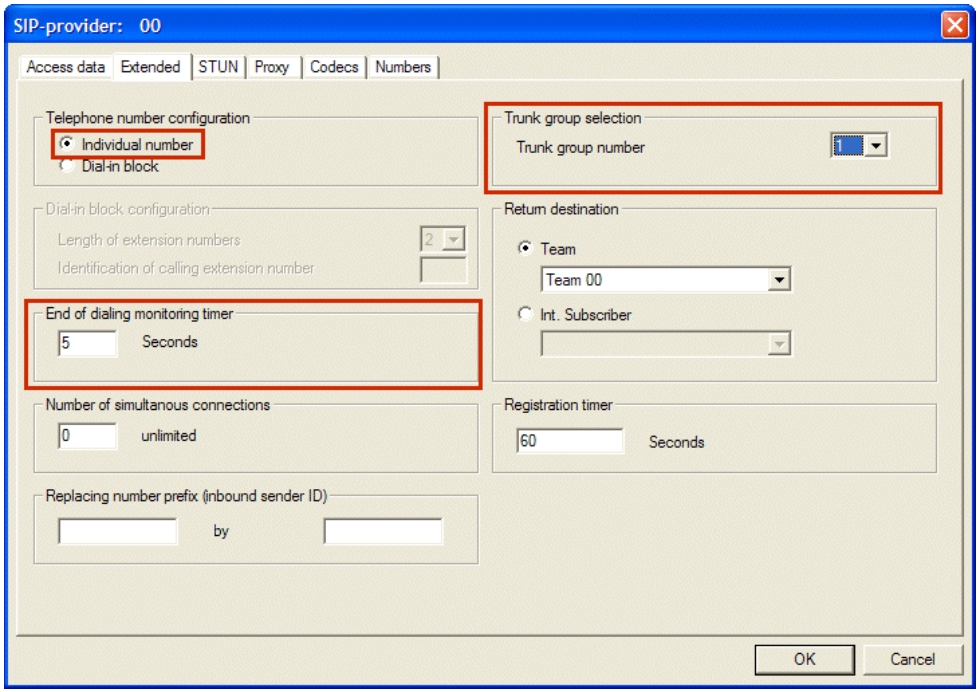

Fig. 12: **Configuration** -> **External Numbers** -> **SIP Provider** -> **Advanced**

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *Individual Number* field.
Bundle association	Enter a one-digit bundle number.
End of dialling monitoring timer	Enter the time after which the **elmeg ICT** system should start to dial.

2.2.6 Subscriber numbers

In the **Subscriber Numbers** menu only the SIP subscriber numbers are entered according to the SIP provider's specifications.

For this, go to the following menu:

(1) Go to **Configuration** -> **External Numbers** -> **SIP Provider** -> **Subscriber Numbers**

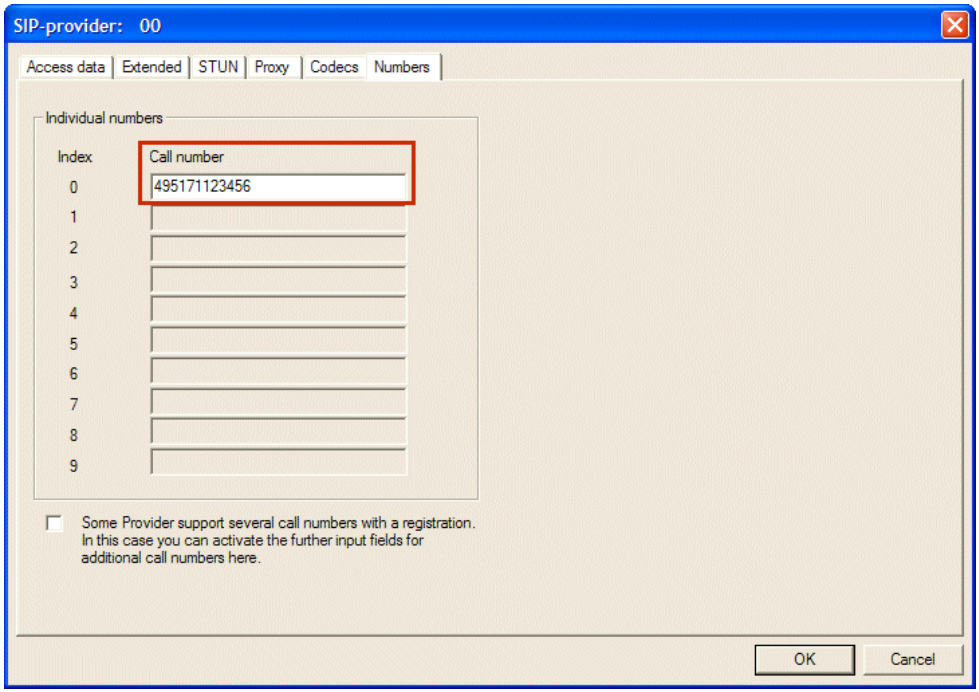

Fig. 13: **Configuration -> External Numbers -> SIP Provider -> Subscriber Numbers**

Relevant fields in the Subscriber Number menu

Field	Meaning
Individual Numbers	Enter the SIP subscriber numbers according to the SIP provider's specifications.

2.3 Overview of configuration steps

Changing system parameters

Field	Menu	Value
IP Address	**Configuration -> Network -> Router / LAN**	e.g. `192.168.1.250`
Subnet Mask	**Configuration -> Network -> Router / LAN**	e.g. `255.255.255.0`

Enabling address assignment

Field	Menu	Value
DHCP server enabled	**Configuration -> Network -> Address Assignment**	Disabled

Field	Menu	Value
DNS Server	**Configuration** -> **Network** -> **Address Assignment**	Enable the entry *DNS Server in LAN*

Establishing an internet connection

Field	Menu	Value
Connector Type	**Configuration** -> **Network** -> **Internet Access**	e.g. *Other Gateway in LAN*
Gateway in LAN	**Configuration** -> **Network** -> **Internet Access**	e.g. *192.168.1.254*
Gateway DNS Server	**Configuration** -> **Network** -> **Internet Access**	e.g. *192.168.1.254*

Entering the SIP provider

Field	Menu	Value
Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *SIP Provider*
Access data	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *test*
General	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *Holding in the PABX*
Connection	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	Active
DNS Server Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *SIP Provider.de*
Location	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *LAN*

Define an individual number

Field	Menu	Value
Individual Number	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	Enabled
End of dialling monitoring	**Configuration** -> **External**	e.g. *5*

Field	Menu	Value
timer	**Numbers** -> **SIP Provider**-> **Extended**	
Bundle Number	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e.g. *1*

Enter Extension Numbers

Field	Menu	Value
Individual Numbers	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Subscriber Numbers**	e.g. *490000000000*

Chapter 3 Telephony - Registering IP-290 on the VoIP-VPN module

3.1 Introduction

The **VoIP-VPN Gateway** module combines modern internet telephony through Voice over IP (VoIP) and secure data exchange over VPN. An **elmeg ICT** system, which is equipped with the **VoIP-VPN Gateway**, can provide all basis network services and so acts as a communications centre. The system functions as a DHCP server by assigning IP addresses to all computers in the network and mapping these to the correct DNS server and internet gateways. The TK system also provides internet access.

elmeg VoIP-VPN Gateway supports SIP to reach IP telephones in the local network. In addition, the VoIP module also allows encrypted voice communication over IP, for example, if a branch of the company is connected with the **elmeg ICT** system over the internet. In this scenario a VPN connection is used between the localities or directly between the IP telephone and the **elmeg ICT** system. Registration with other SIP carriers and SIP providers is permitted to ensure the best possible voice communication.

Software version

Testing has occurred with the following software version:

- **elmeg ICT** system with Firmware Version 7.30 RC 08
- **VoIP-VPN Gateway** module with Firmware Version 7.30 RC 10
- WinTools **elmeg ICT** system with Version 7.30 Build 29
- **elmeg IP-290** with Version 3.60x

3.2 Configuration

3.2.1 Configuring the IP address

When registering you must specify the IP address of the **VoIP-VPN Gateway** module. This forms the registrar.

For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Router / LAN**

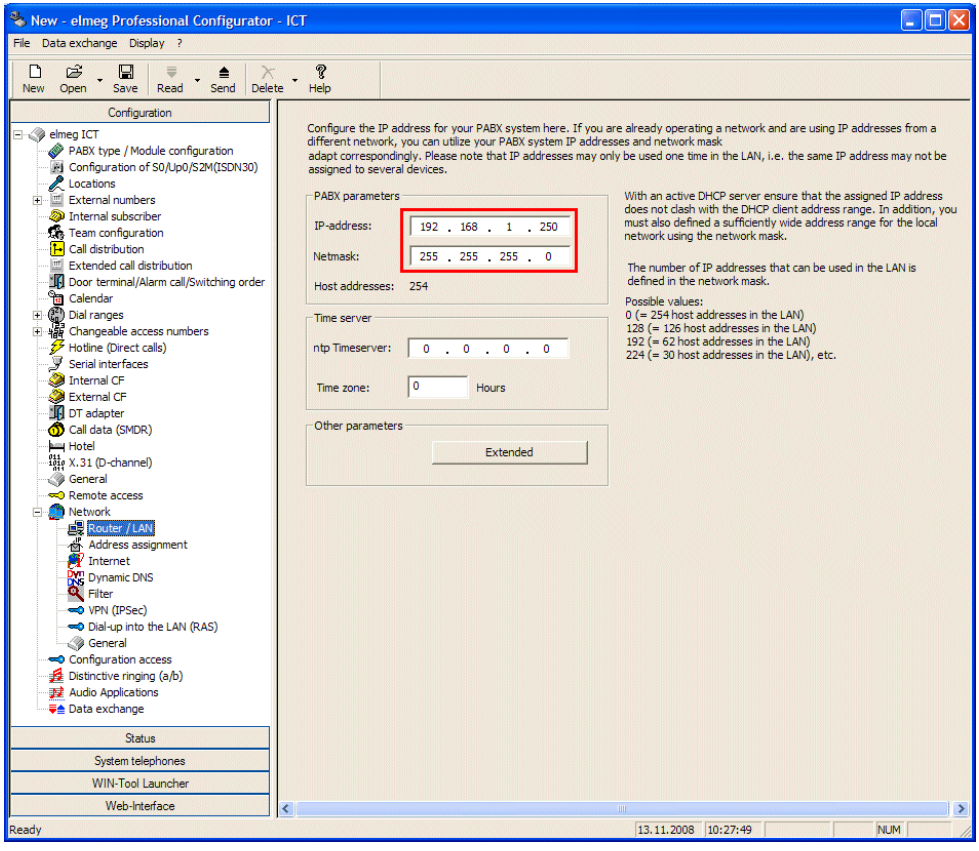

Fig. 14: **Configuration -> Network -> Router / LAN**

Relevant fields in the System Parameters menu

Field	Meaning
IP Address	Under **System Parameters** you can enter the IP address for the **VoIP-VPN Gateway** module.
Subnet Mask	Enter the netmask.

3.2.2 Setting up new extensions

Note

You should never change the pre-defined "guest" entry, otherwise you will not be able to register. Always create a new VoIP extension.

Go to the following menu to create a new VoIP extension:

(1) Go to **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

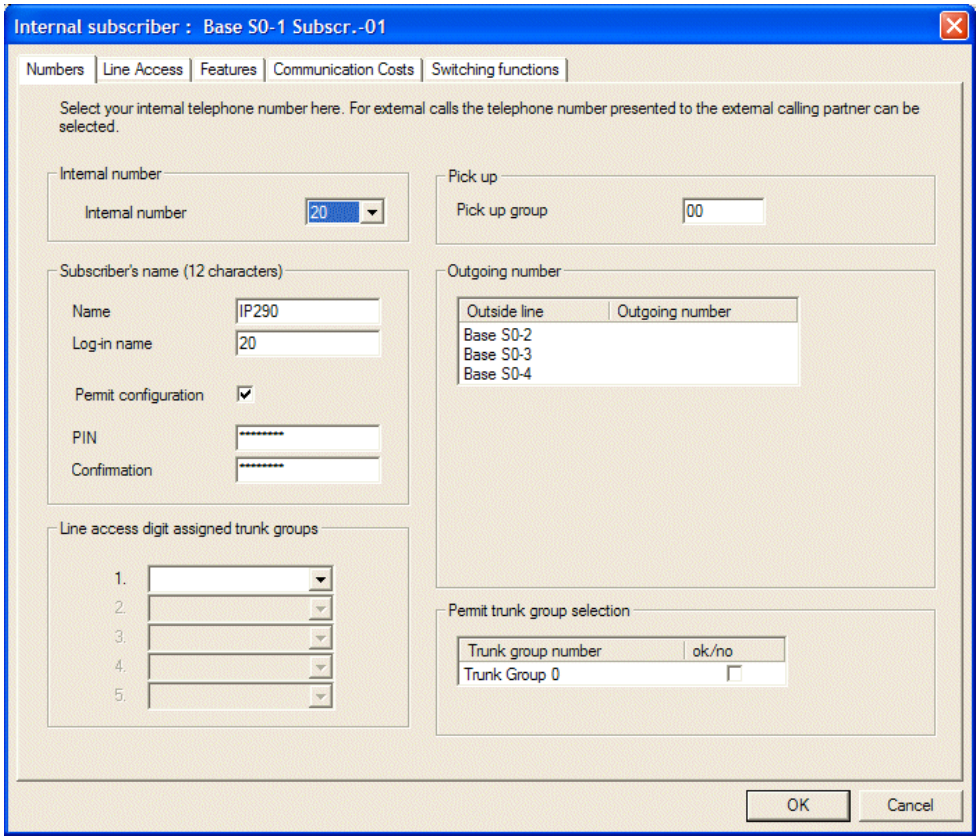

Fig. 15: **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

Relevant fields in the Subscriber Number menu

Field	Meaning
Internal Number	Enter the internal number.
Extension Name	Enter the name of the extension.
Login Name	The login name must always correspond to the **Internal Number**.
PIN	The PIN is required as a password to log in to the offsite extension.

Go to the following menu so that registration can be carried out over all interfaces (Global):

(1) Go to **Configuration** -> **Internal Extension** -> **VoIP-VPN Settings**

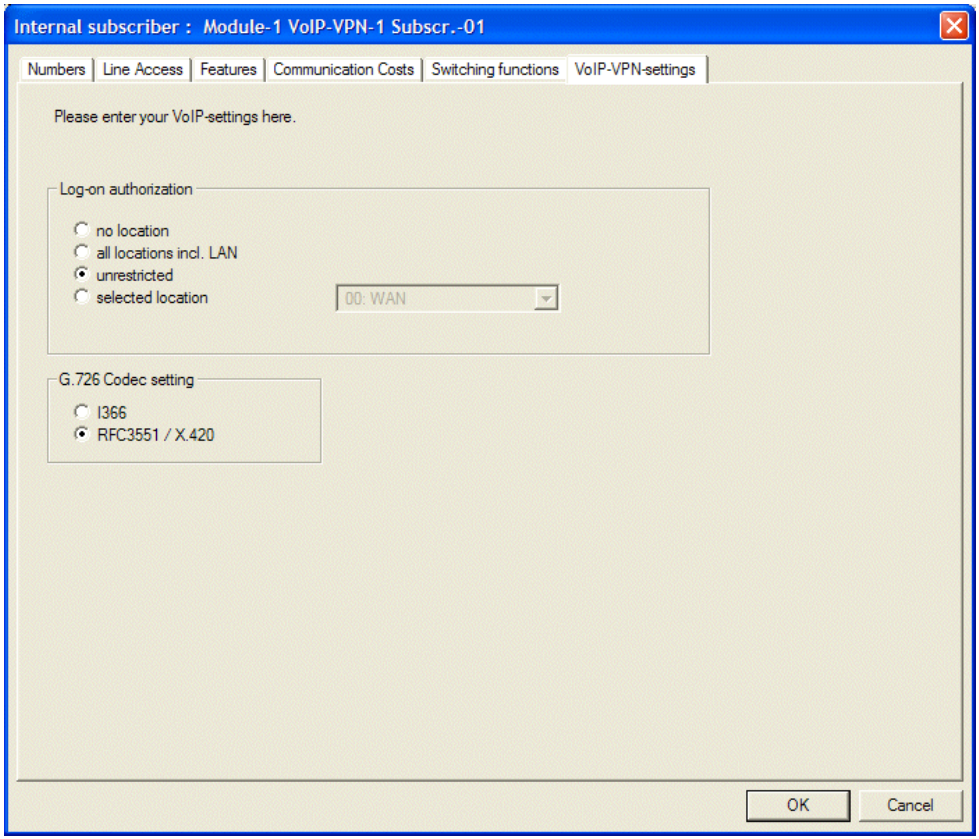

Fig. 16: **Configuration** -> **Internal Extension** -> **VoIP-VPN Settings**

Relevant fields in the Login Authorisation menu

Field	Meaning
Login authorisation	Set **Login Authorisation** to `Unlimited`.

3.2.3 Setting up elmeg IP-290 over the Web interface

You can configure **elmeg IP-290** conveniently via the Web browser.

To access the configuration interface enter the IP address **elmeg IP-290** in your Web browser.

Login data is entered in the **Login** menu.

For this, go to the following menu:

(1) Go to **Set up**-> **Line 1** -> **Login**

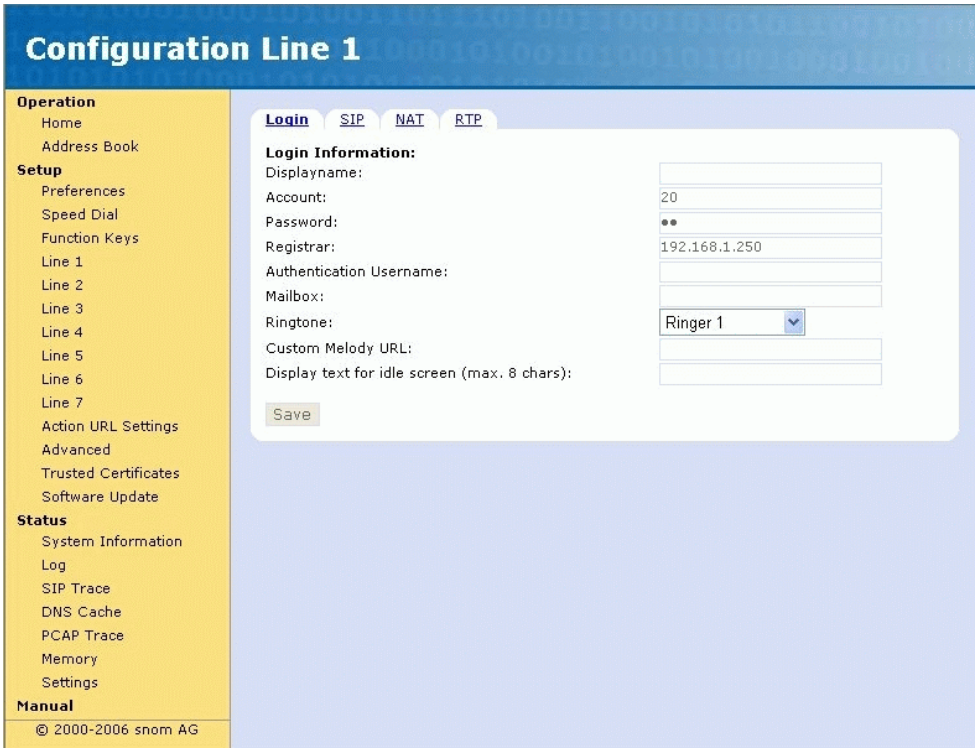

Fig. 17: **Set up**-> **Line 1** -> **Login**

Relevant fields in the Login Information menu

Field	Meaning
User ID	The **Internal Number** is entered under **User ID**.
Password	Enter the same password as previously entered in the **Extension Name** menu in the PIN field.
Registrar	Here you enter the IP address of the **VoIP-VPN Gateway** module.

3.2.4 SIP line settings

You must make settings in the following menu to be able to register the **elmeg IP-290**.

(1) Go to **Set up** -> **Line 1** -> **SIP**

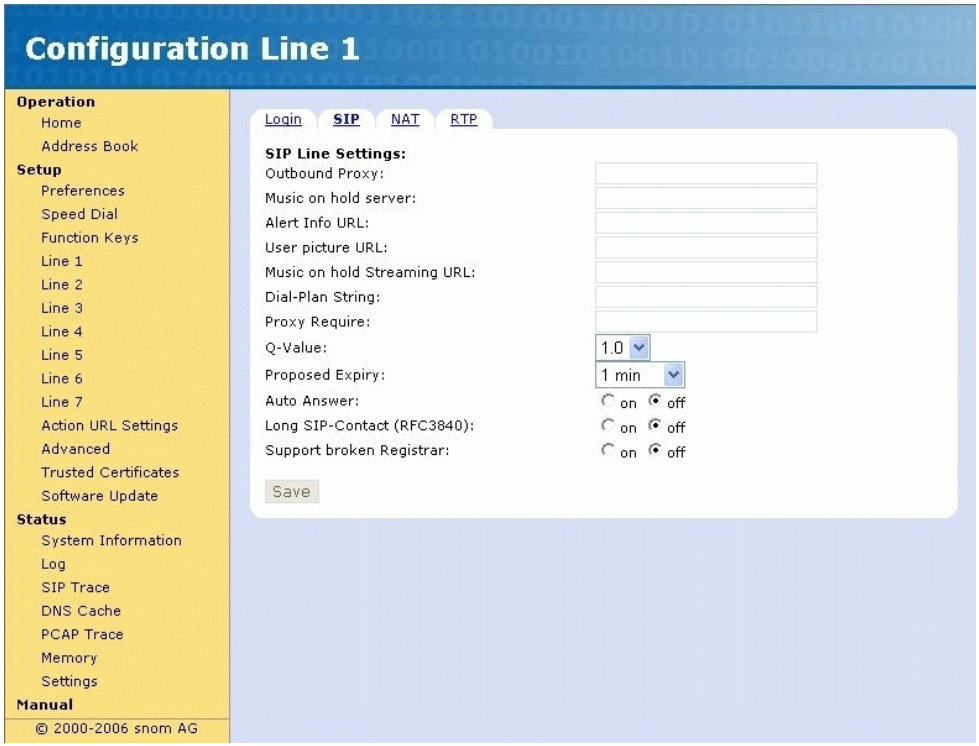

Fig. 18: **Set up**-> **Line 1** -> **SIP**

Relevant fields in the SIP Line Settings menu

Field	Meaning
Validity period	Select the period of time after which registration will expire. The telephone will send a new registration request after this time. Set the **Validity Period** to `1 minute`.
Long SIP contact (RFC3840)	Set the **Long SIP Contact (RFC3840)** to `Off`. The features that the telephone does not support will then be denied by the system.

3.3 Overview of configuration steps

Changing system parameters

Field	Menu	Value
IP Address	**Configuration** -> **Network** -> **Router / LAN**	e.g. *192.168.1.250*
Subnet Mask	**Configuration** -> **Network** -> **Router / LAN**	e.g. *255.255.255.0*

Setting up new extensions

Field	Menu	Value
Internal Number	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *20*
Login Name	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *20*
PIN	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *secret*

VoIP-VPN Settings

Field	Menu	Value
Login authorisation	**Configuration** -> **Internal Extension** -> **VoIP-VPN Settings**	*Unlimited*

Login

Field	Menu	Value
User ID	**Set up** -> **Line 1** -> **Login**	e.g. *20*
Password	**Set up** -> **Line 1** -> **Login**	e.g. *20*
Registrar	**Set up** -> **Line 1** -> **Login**	e.g. *192.168.1.250*

SIP

Field	Menu	Value
Validity period	**Set up** -> **Line 1** -> **SIP**	e.g. *1 minute*
Long SIP contact (RFC3840)	**Set up** -> **Line 1** -> **SIP**	Off

Chapter 4 Telephony - Registering IP-S290 and IP-S400 on the VoIP-VPN module

4.1 Introduction

With the new IP system telephones **elmeg IP-S290** and **elmeg IP-S400** and the **VoIP-VPN Gateway** module the elmeg system telephony is also available in IP networks.

Software version

Testing has occurred with the following software version:

- **elmeg ICT** system with Firmware Version 7.30 RC 08
- **VoIP-VPN Gateway** module with Firmware Version 7.30 RC 10
- WinTools **elmeg ICT** system with Version 7.30 Build 29
- **elmeg IP-S290** with Version 4.30
- **elmeg IP-S400** with Version 4.30

4.2 Configuration

4.2.1 Setting up new extensions

Note

You should never change the pre-defined "guest" entry, otherwise you will not be able to register. Always create a new VoIP extension.

Go to the following menu to create a new VoIP extension:

(1) Go to **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

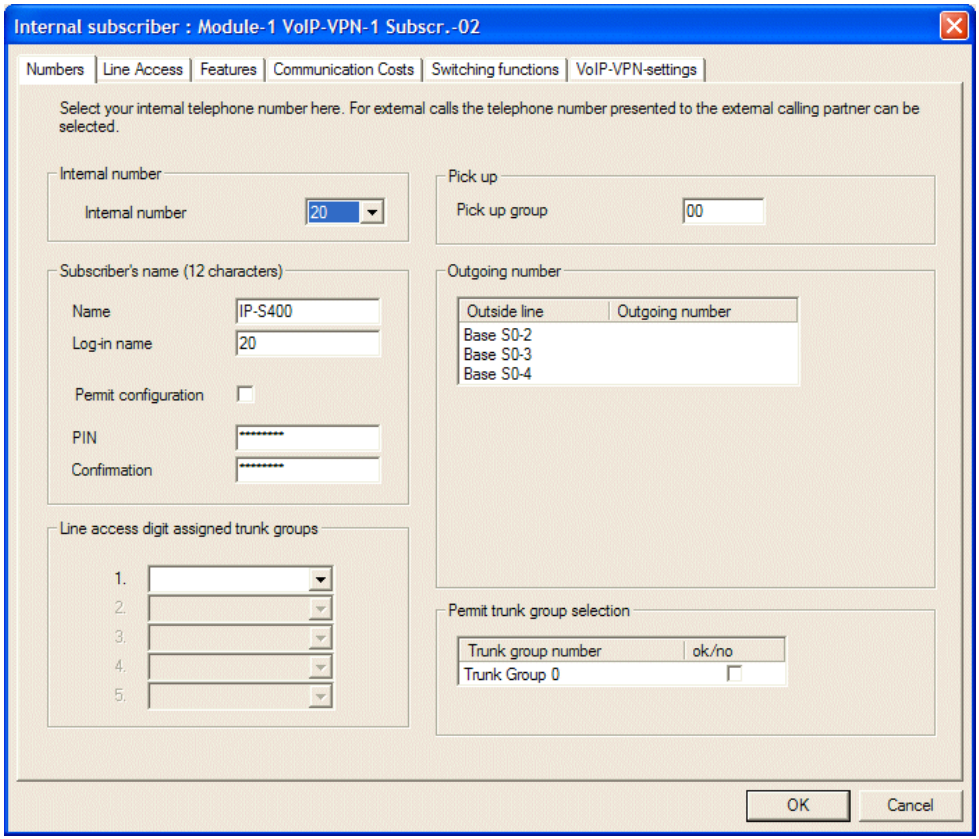

Fig. 19: **Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**

Relevant fields in the Subscriber Number menu

Field	Meaning
Internal Number	Enter the internal number.
Login Name	The login name must always correspond to the **Internal Number**.
PIN	The PIN is required as a password to log in to the offsite extension.

Go to the following menu so that registration can be carried out over all interfaces (Global):

(1) Go to **Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**

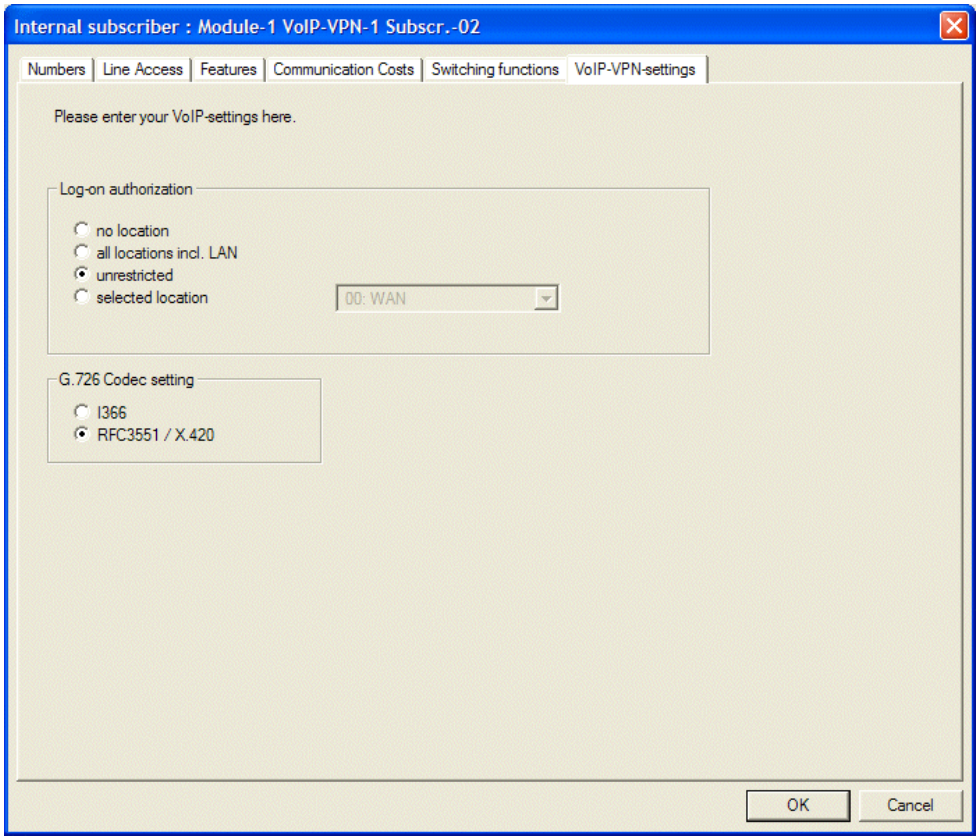

Fig. 20: **Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**

Relevant fields in the Login Authorisation menu

Field	Meaning
Login authorisation	Set **Login Authorisation** to `Unlimited`.

4.2.2 Setting up elmeg IP-S290 / IP-S400

elmeg IP-S290 and **IP-S400** can be programmed using the telephone's configuration program. The Software Professional Configurator supplied with Win-Tools is provided specifically for this purpose.

- Start the Professional Configurator program on the TK system.
- Click **Readout**. Under **System Telephones** you can query the connected system telephones.
- Select the system telephone (**IP-S290** or **IP-S400**).
- To start the program, click **Professional Configurator**.

Login data is entered in the **Subscriber Numbers** menu. Click one of the MSN numbers in the list to edit the MSN entries.

(1) Go to **Subscriber Numbers** -> **Edit MSN Entry**

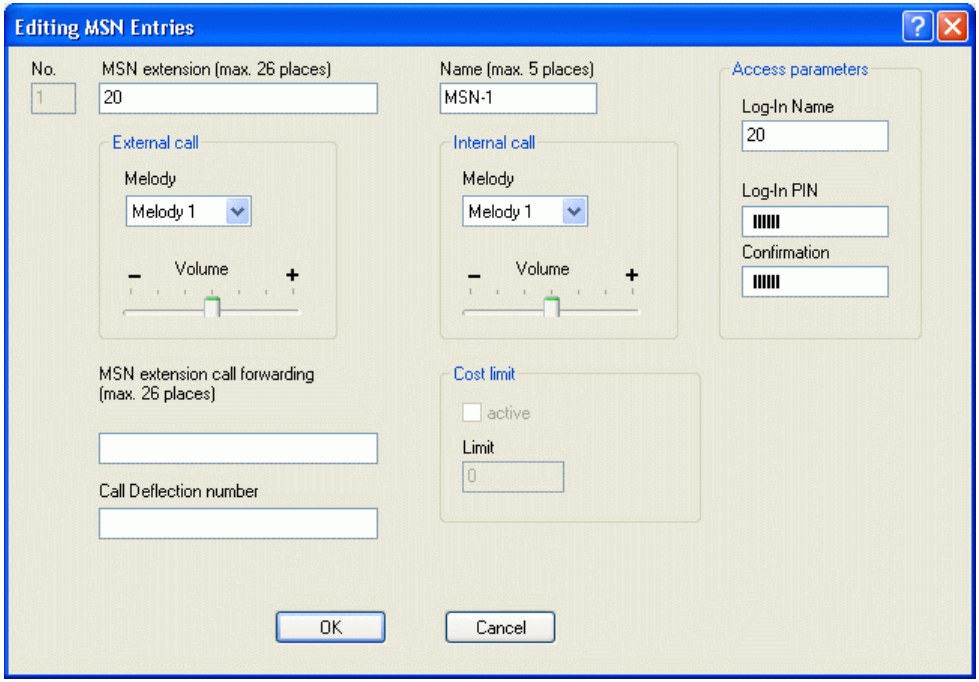

Fig. 21: **Subscriber Numbers** -> **Edit MSN Entry**

Relevant fields in the Edit MSN Entry menu

Field	Meaning
Call number	Enter the internal number.
Login Name	The login name must always correspond to the **Extension**.
Login PIN	Enter the login pin.

4.3 Overview of configuration steps

Setting up new extensions

Field	Menu	Value
Internal Number	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *20*
Login Name	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *20*
PIN	**Configuration** -> **Internal Extension** ->**New** -> **Extension Type VoIP-VPN**	e.g. *12345*

VoIP-VPN Settings

Field	Menu	Value
Login authorisation	**Configuration** -> **Internal Extension** -> **Internal Extension** -> **VoIP-VPN Settings**	*Unlimited*

Programming the telephone

Field	Menu	Value
Call number	**Subscriber Numbers** -> **Edit MSN Entry**	e.g. *20*
Login Name	**Subscriber Numbers** -> **Edit MSN Entry**	e.g. *20*
Login PIN	**Subscriber Numbers** -> **Edit MSN Entry**	e.g. *12345*

Chapter 5 Telephony - ICT system interface over dynDNS

5.1 Introduction

With this type of system interface the system both register as a SIP provider. An incoming SOP proxy and an outgoing SIP client connection are set up on each ICT system. The dynamic DNS over the internet acts as the SIP registrar. Connections between the two systems can be established via the tariff manager (LCR) or targeted bundle assignment using ID or procedures. The system interface allows internal telephony between the two ICT systems. A connection cannot be established from the first ICT system to the second ICT system and then over an external ISDN line (or SIP provider) of the second ICT system. In this scenario two **elmeg ICT88** are connected with the **VoIP-VPN Gateway** module.

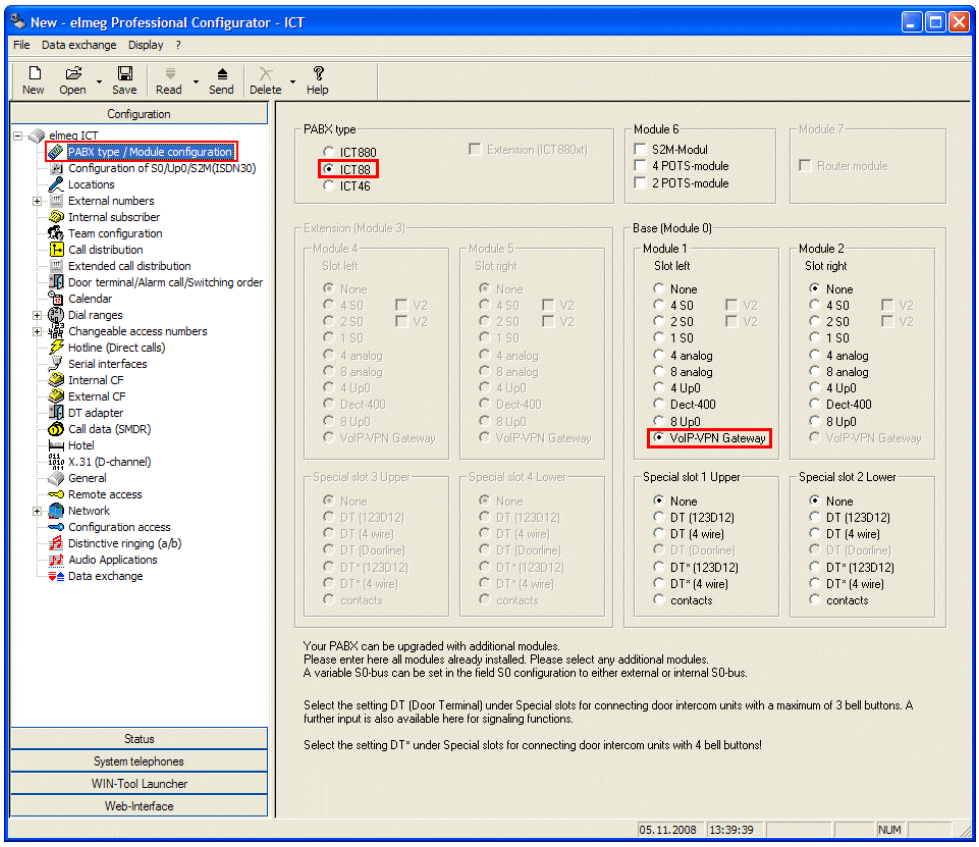

Fig. 22: Module extension

Software version

Testing has occurred with the following software version:

- **elmeg ICT** system with Firmware Version 7.30
- **VoIP-VPN Gateway** module with Firmware Version 7.30
- WinTools **elmeg ICT** with Version 7.30 Build 6

5.2 Configuration

5.2.1 Configuration steps for the first elmeg ICT system

5.2.1.1 Configuring the IP address

The system parameters must be entered before you can log in to the first **elmeg ICT** system.

For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Router / LAN**

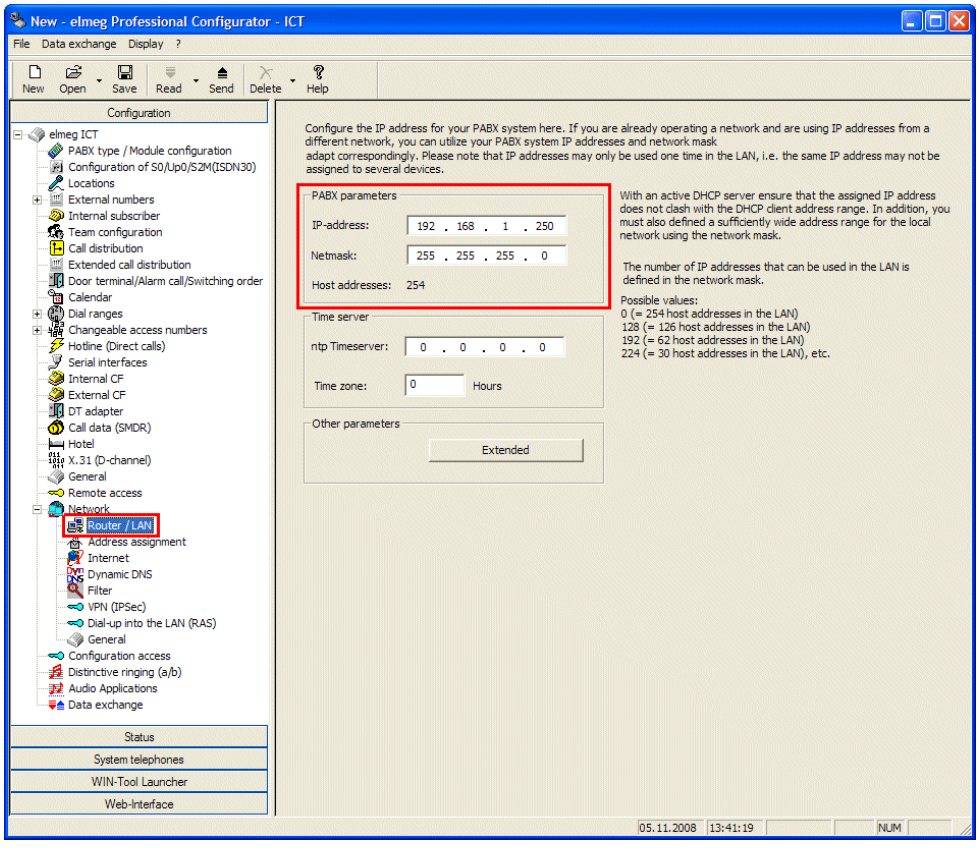

Fig. 23: **Configuration -> Network -> Router / LAN**

Relevant fields in the System Parameters menu

Field	Meaning
IP Address	The IP address is entered under **System Parameters**.
Subnet Mask	Enter the corresponding netmask here.

5.2.1.2 Dynamic assignment of IP addresses

Automatic IP address assignment can be configured in the **Address Assignment** menu. For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Address Assignment**

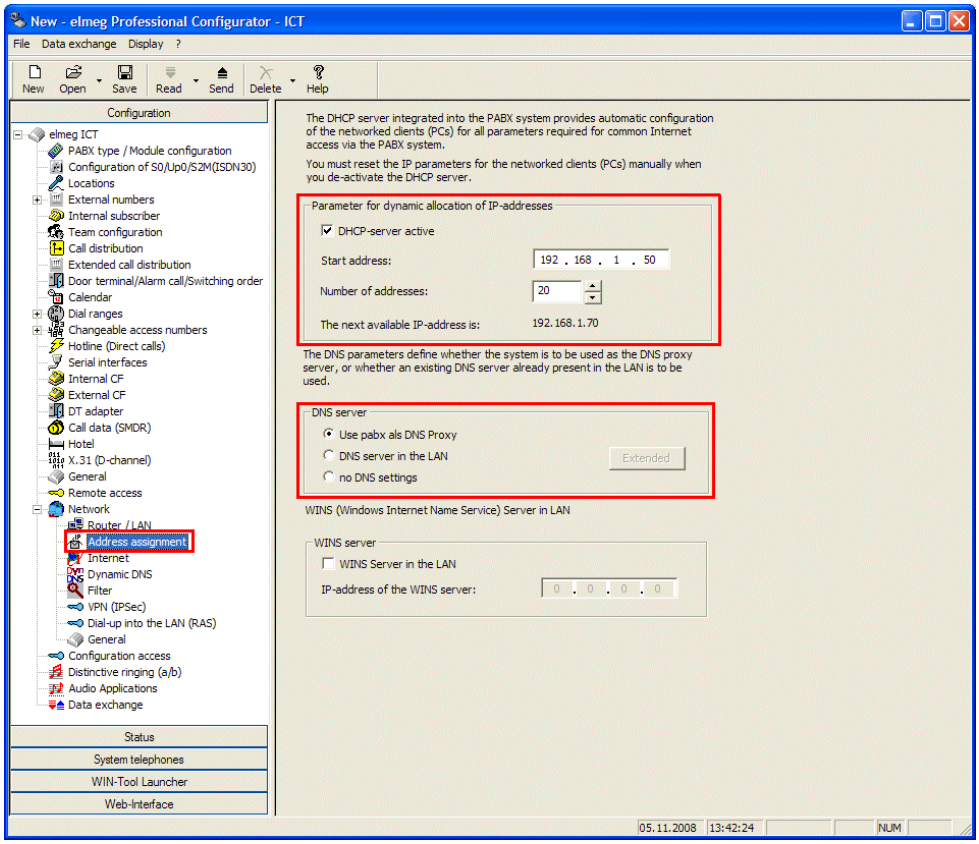

Fig. 24: **Configuration -> Network -> Address Assignment**

Relevant fields in the Address Assignment menu

Field	Meaning
DHCP server enabled	Under **Parameters for Dynamic IP Address Assignment** enable the option *DHCP Server Enabled*.
Start address	Under **Start Address** you can define the starting point for the IP address pool managed by the DHCP server.
Address Number	The **Address Number** indicates the total number of IP addresses and determines the next available IP address.
DNS Server	Enable the entry *Use System as DNS Proxy*.

5.2.1.3 Internet Access

In the **Internet Access** menu, configure the common access for your PCs and workstations in the internet.

For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Internet Access**

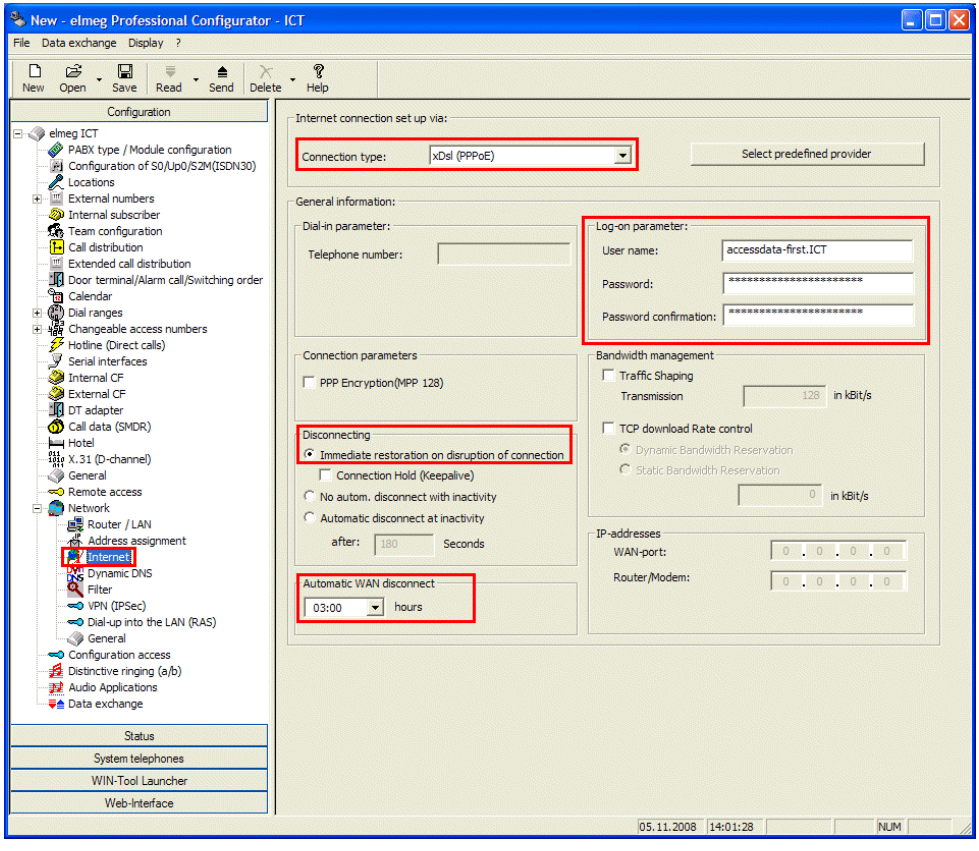

Fig. 25: **Configuration** -> **Network** -> **Internet Access**

Relevant fields in the Internet Access menu

Field	Meaning
Connector Type	Set the **Connection Type** to *xDSL (PPPoE)*.
Login Parameters	Specify the user names as indicated by the internet provider and enter the password.
Connection Setup	Enable *Re-establish Connection Immediately* . The time between the connection clearing and the connection setup should be as short as possible, otherwise registration problems can occur.
Automatic Separation of WAN Connection	The internet provider controls the forced separation and defines the time for repeatedly clearing and immediate re-establishing

Field	Meaning
	the connection.

5.2.1.4 Enabling Dynamic DNS

Go to the following menu to enter the dynDNS account data:

(1) Go to **Configuration** -> **Network** -> **Dynamic DNS**

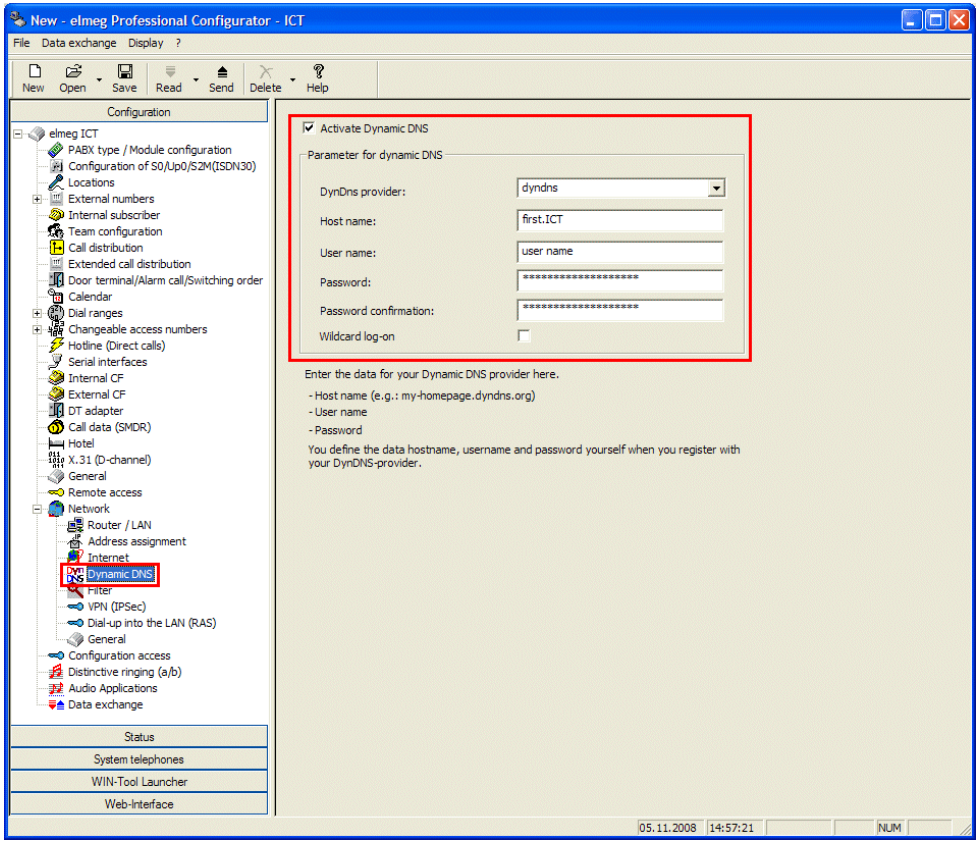

Fig. 26: **Configuration** -> **Network** -> **Dynamic DNS**

Relevant fields in the Dynamic DNS menu

Field	Meaning
Enabling Dynamic DNS	Enable the entry *Enable Dynamic DNS*.
Parameters for dynamic DNS	Enter the dynDNS account data over which the **VoIP-VPN Gateway** module for this system can be accessed. You will have specified this data when registering with your dynDNS provider.

5.2.1.5 Setting up a locality

You can set up an additional locality. This has the advantage that you can define the parameters and registration differently.

Go to the following menu for this:

(1) Go to **Configuration** -> **Localities**

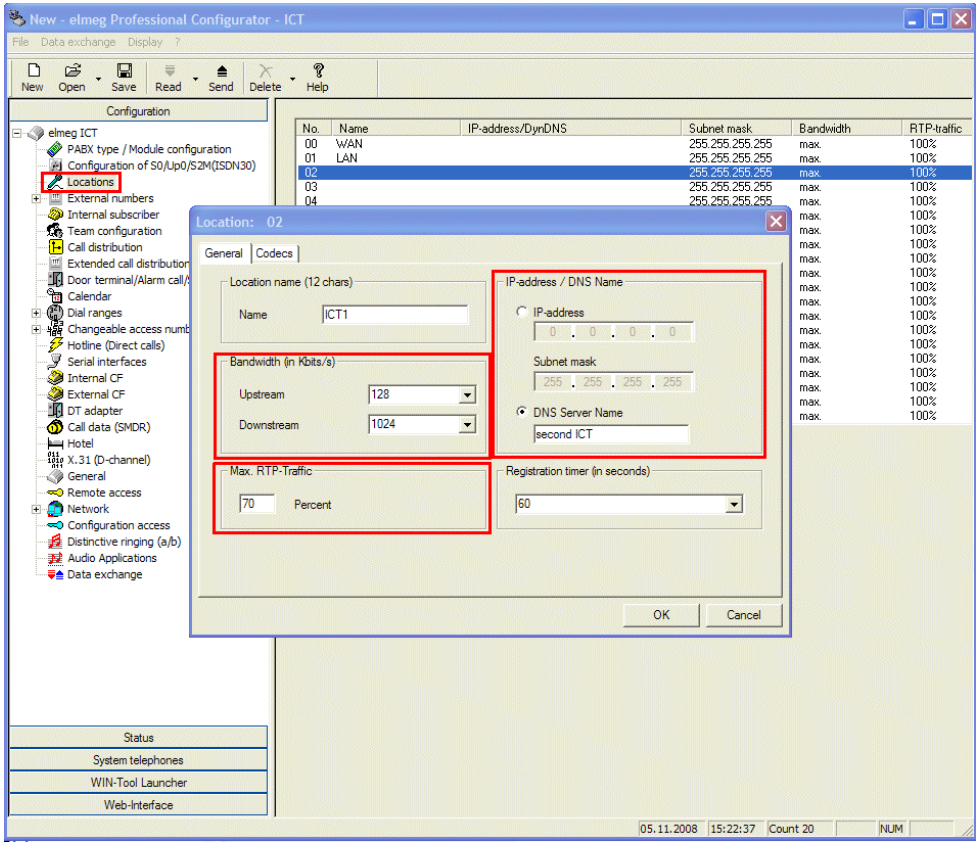

Fig. 27: **Configuration** -> **Localities**

Relevant fields in the menu Location: 02

Field	Meaning
IP Address / DNS Name	Enter the DNS Server Name for the second **elmeg-ICT** system here.
Bandwidth (in kbps)	The values for `Upstream` and `Downstream` are entered here. For a DSL 1000, for example, the values are 128 kbps upstream and 1024 kbps downstream. Further details can be

Field	Meaning
	found by consulting your provider.
Max. RTP Traffic	We also recommend setting the **Max. RTP Traffic** to *70 percent* for example. Only 70 percent is then used for voice data (RTP). This prevent data aborts after VoIP calls have been set up.

5.2.1.6 Creating a SIP provider (OUT connection)

Go to the following menu to create a SIP provider for an outgoing (OUT) connection:

(1) Go to **Configuration** -> **SIP Provider** -> **Access Data**

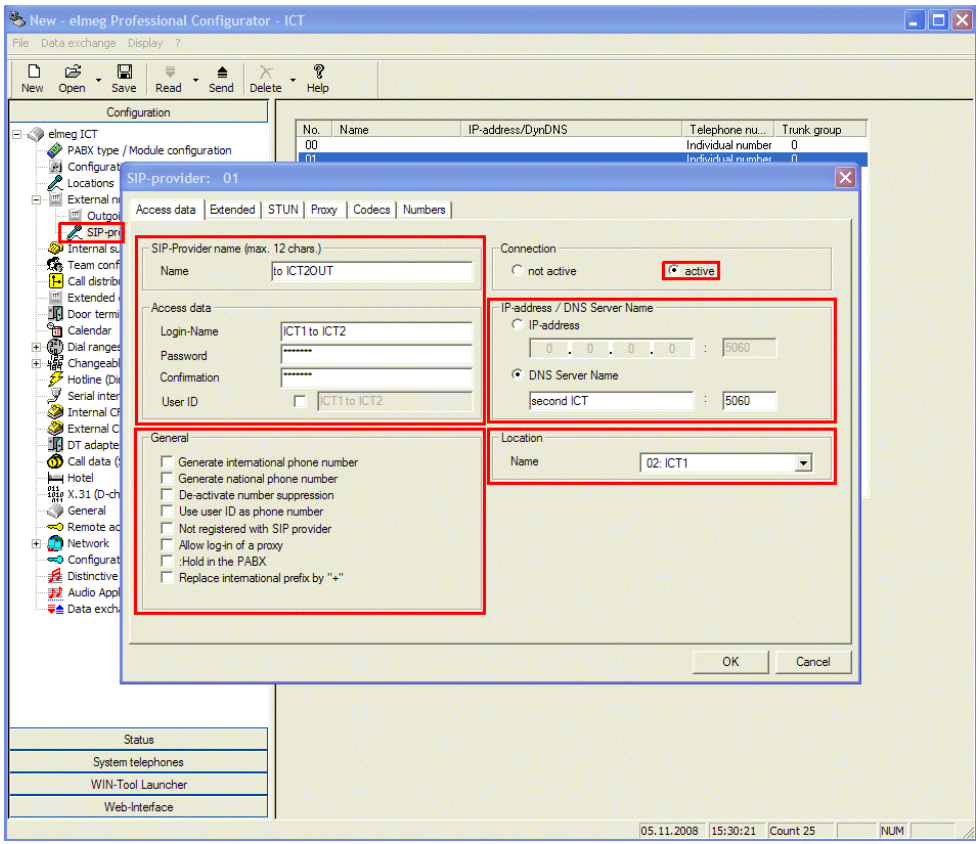

Fig. 28: **Configuration** -> **SIP Provider** -> **Access Data**

Relevant fields in the SIP Provider menu

Field	Meaning
SIP provider name	Enter the access data for the SIP provider.

Field	Meaning
Access data	Enter your login name and password.
Connection	Enable the *Enabled* field.
SIP registrar	Enter the DNS Server Name for the second **elmeg-ICT** system here.
Location	Under **Name** select the locality of the **elmeg ICT** system as the interface.
General	Select *Holding in the PABX* to transfer calls.

5.2.1.7 Advanced Configuration

The *Individual Number* or the *DDI Block* must be enabled in the **Number Configuration** menu depending on the SIP account so that the SIP provider number can be entered.

For this, go to the following menu:

(1) Go to **Configuration** -> **SIP Provider** -> **Advanced**

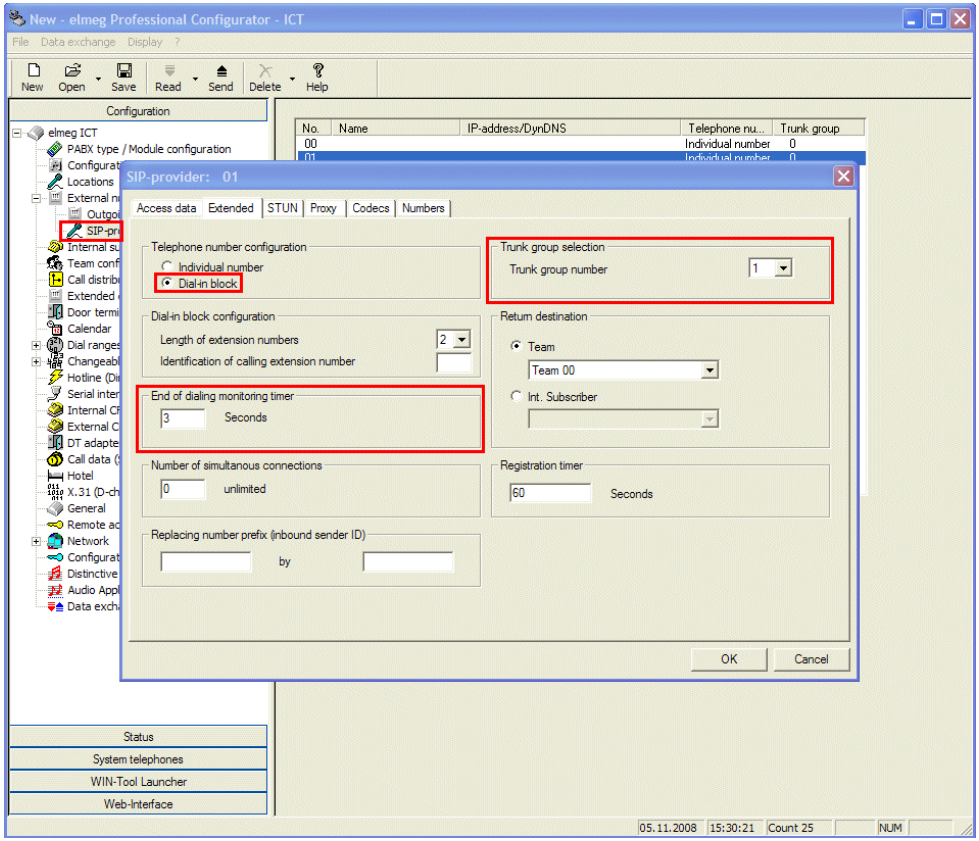

Fig. 29: **Configuration -> SIP Provider -> Advanced**

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *DDI Block* field. You can now access all internal extensions. In the **Subscriber Numbers** menu no numbers are entered.
Bundle association	Enter a one-digit bundle number.
End of dialling monitoring timer	Enter the time after which the **elmeg ICT** system should start to dial.

5.2.1.8 Creating a SIP provider (IN connection)

Go to the following menu to create a SIP provider for an incoming (IN) connection:

(1) Go to **Configuration** -> **SIP Provider** -> **Access Data**

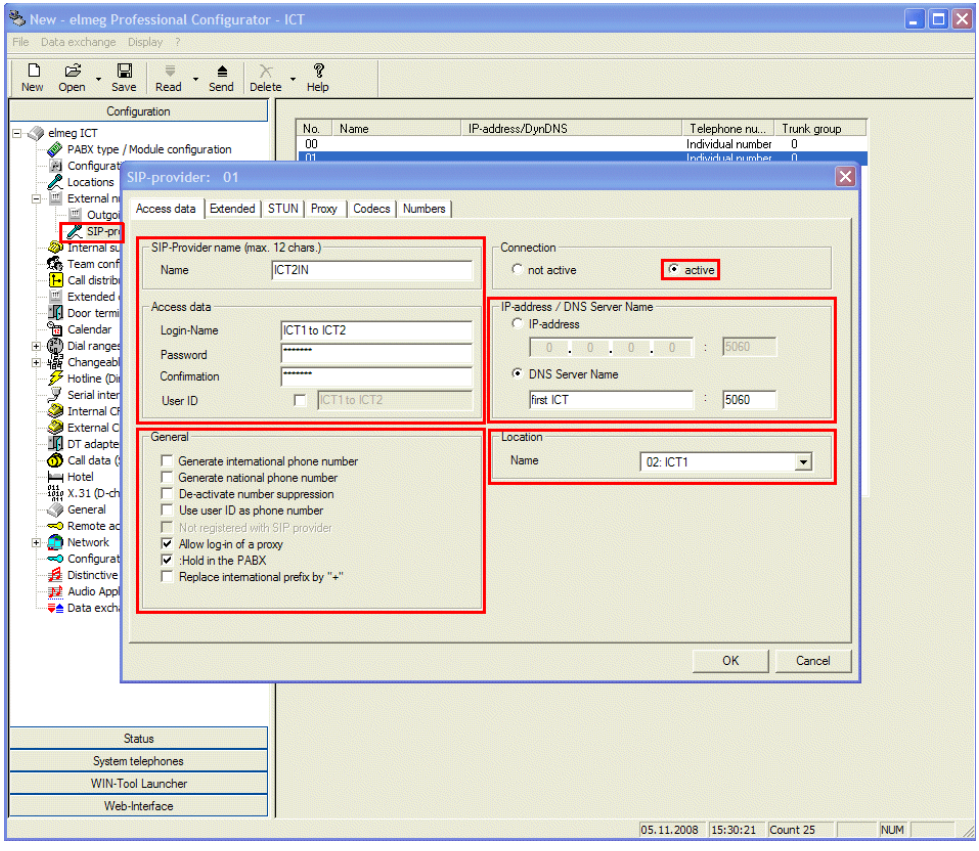

Fig. 30: **Configuration** -> **SIP Provider** -> **Access Data**

Relevant fields in the SIP Provider menu

Field	Meaning
SIP provider name	Enter the access data for the SIP provider.
Access data	Enter your login name and password.
Connection	Enable the *Enabled* field.
SIP registrar	Enter the DNS Server Name for the first **elmeg-ICT** system here.
Location	Under **Name** select the second locality of the first **elmeg ICT** system as the interface.
General	Select *Holding in the PABX* to transfer calls. Select the *Allow Proxy Registration* option to trigger the first **elmeg ICT** system to act as SIP proxy.

5.2.1.9 Advanced Configuration

The *Individual Number* or the *DDI Block* must be enabled in the **Number Configuration** menu depending on the SIP account so that the SIP provider number can be entered.

For this, go to the following menu:

(1) Go to **Configuration** -> **SIP Provider** -> **Advanced**

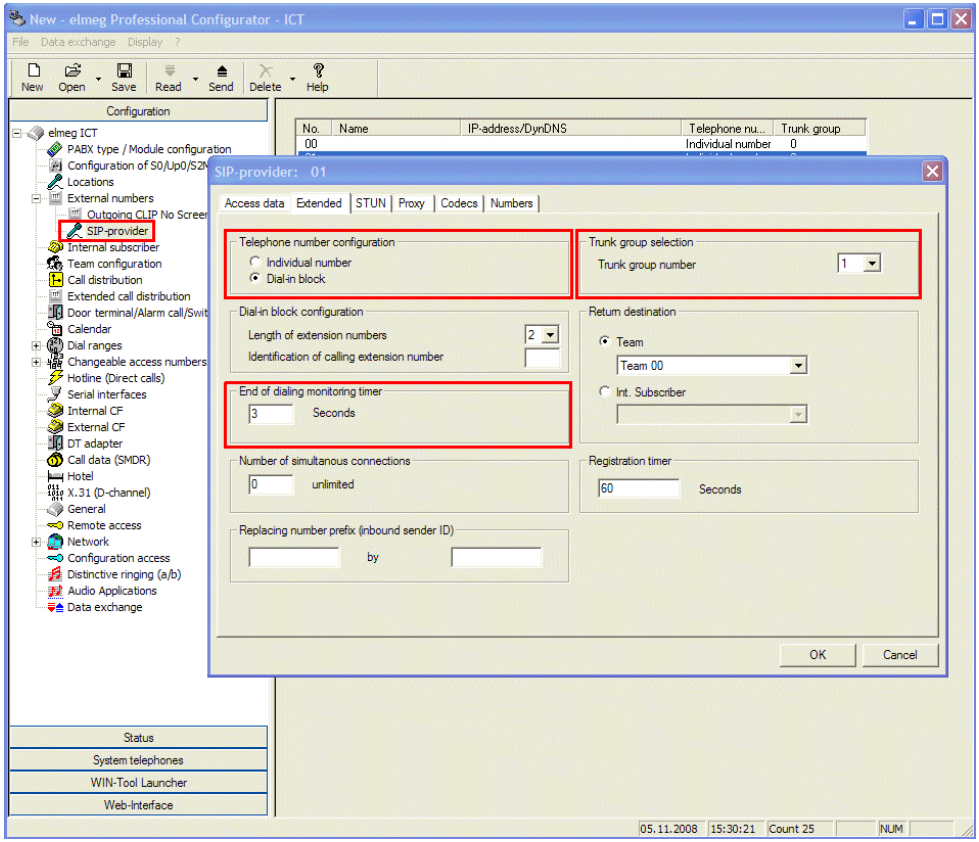

Fig. 31: **Configuration** -> **SIP Provider** -> **Advanced**

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *DDI Block* field. You can now access all internal extensions. In the **Subscriber Numbers** menu no numbers are entered.
Bundle association	Enter a one-digit bundle number. This can be the same number

Field	Meaning
	as the bundle number for the outgoing (OUT) connections (a bundle number is not required for an incoming call).
End of dialling monitoring timer	Enter the time after which the **elmeg ICT** system should start to dial.

5.2.1.10 Changeable access numbers

You can change the access numbers for the **Target Bundle Assignment** in the **Changeable access numbers** menu for the first **elmeg ICT** system. This makes it easier to assign the SIP provider (OUT).

For this, go to the following menu:

(1) Go to **Configuration** -> **Changeable access numbers** -> **Target Bundle Assignment**

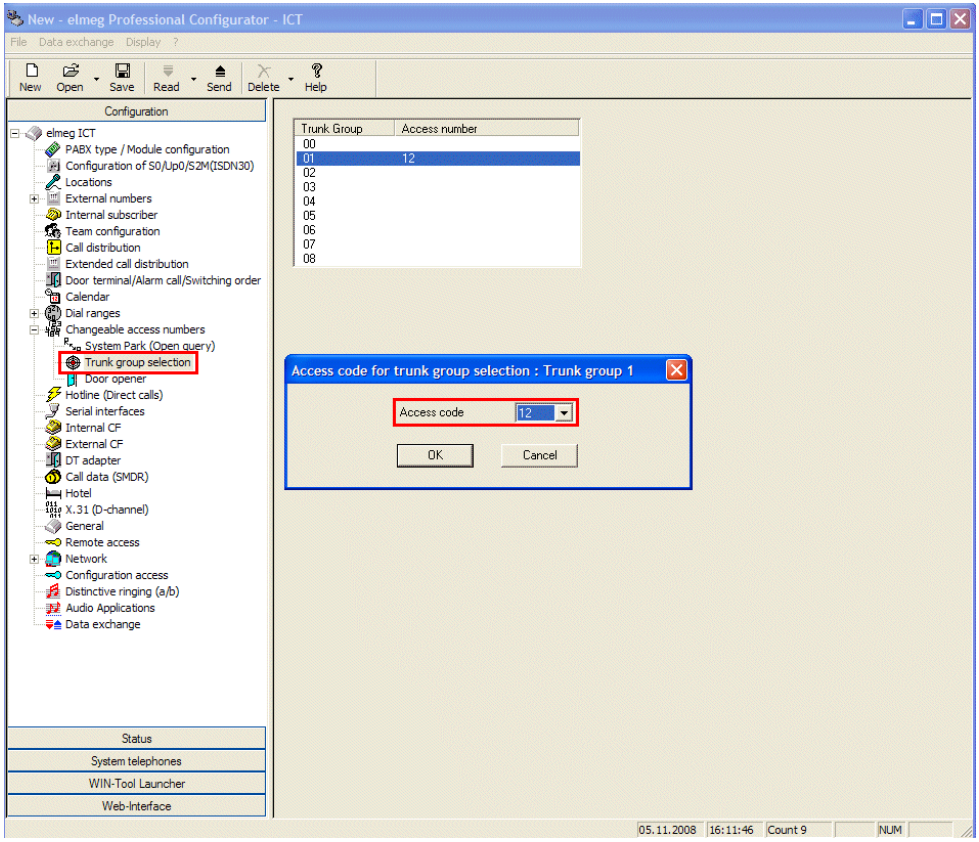

Fig. 32: **Configuration** -> **Changeable access numbers** -> **Target Bundle Assignment**

Relevant fields in the Target Bundle Assignment menu

Field	Meaning
Access number	Select the desired dialling code to establish an external connection. You do not need to dial the long *8 bundle number + subscriber number.

5.2.1.11 Internal Extension

You must allow the **Target Bundle Assignment** to be able to use the tariff manager (LCR) and the bundle assignment.

For this, go to the following menu:

(1) Go to **Configuration** -> **Internal Extension** -> **Internal Extension**

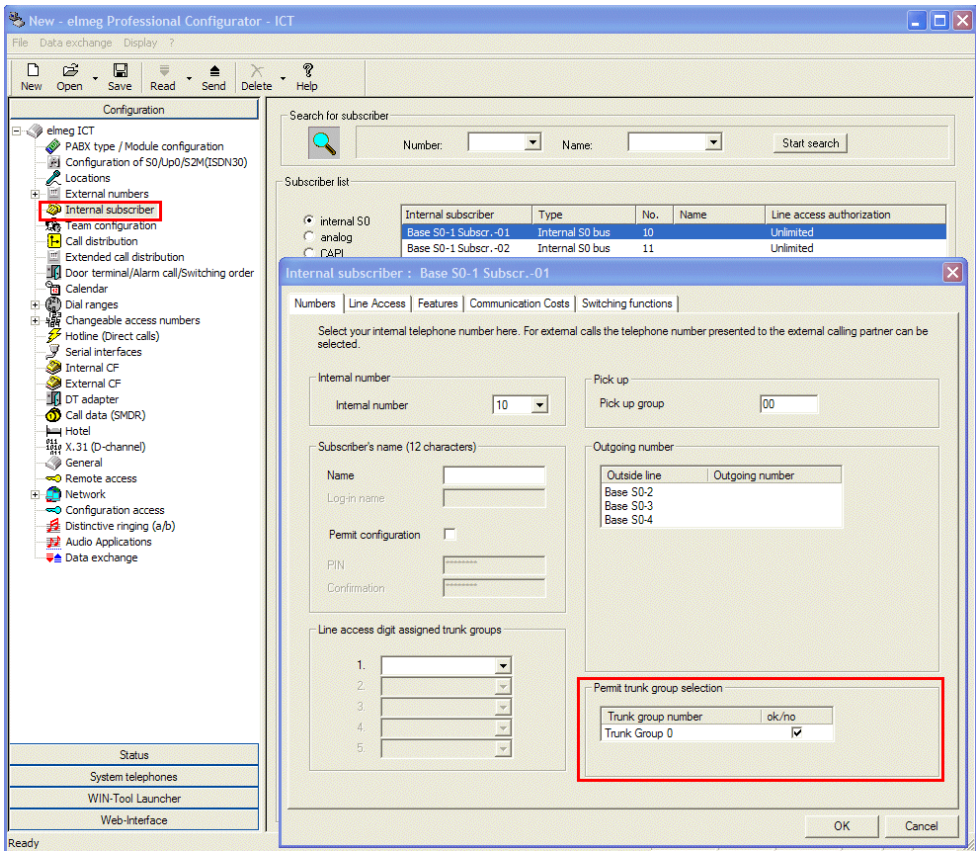

Fig. 33: **Configuration** -> **Internal Extension** -> **Internal Extension**

Relevant fields in the Internal Extension menu

Field	Meaning
Allow Target Bundle Assignment	The *Bundle 1* entry must be enabled for **Target Bundle Assignment**.

5.2.2 Configuration steps for the second elmeg ICT system

The second **elmeg ICT88** system with **VoIP-VPN Gateway** module is established in the same way for this interface and corresponds to the first **elmeg ICT88** system in some programming steps.

5.2.2.1 Configuring the IP address

When registering you must specify the IP address and the netmask.

For this, go to the following menu:

(1) Go to **Configuration** -> **Network** -> **Router / LAN**

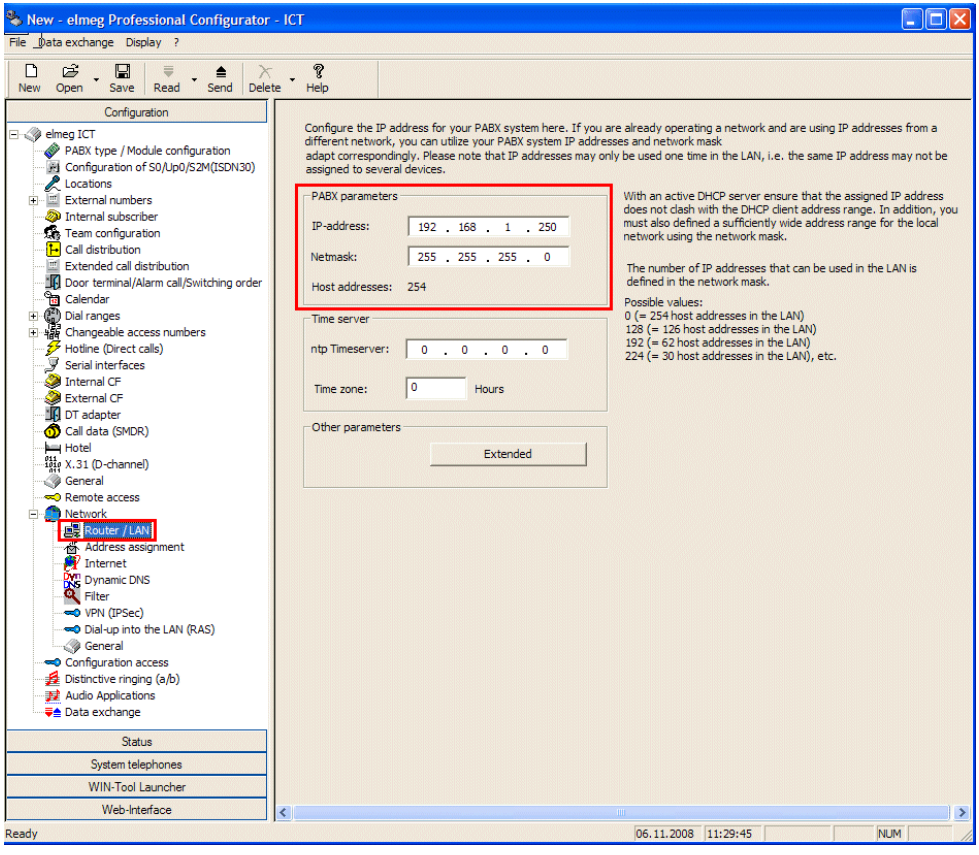

Fig. 34: **Configuration -> Network -> Router / LAN**

Relevant fields in the System Parameters menu

Field	Meaning
IP Address	The IP address is entered under **System Parameters**.
Subnet Mask	Enter the corresponding netmask here.

5.2.2.2 Dynamic assignment of IP addresses

Go to the following menu to enable dynamic assignment for IP addresses.

(1) Go to **Configuration** -> **Network** -> **Address Assignment**

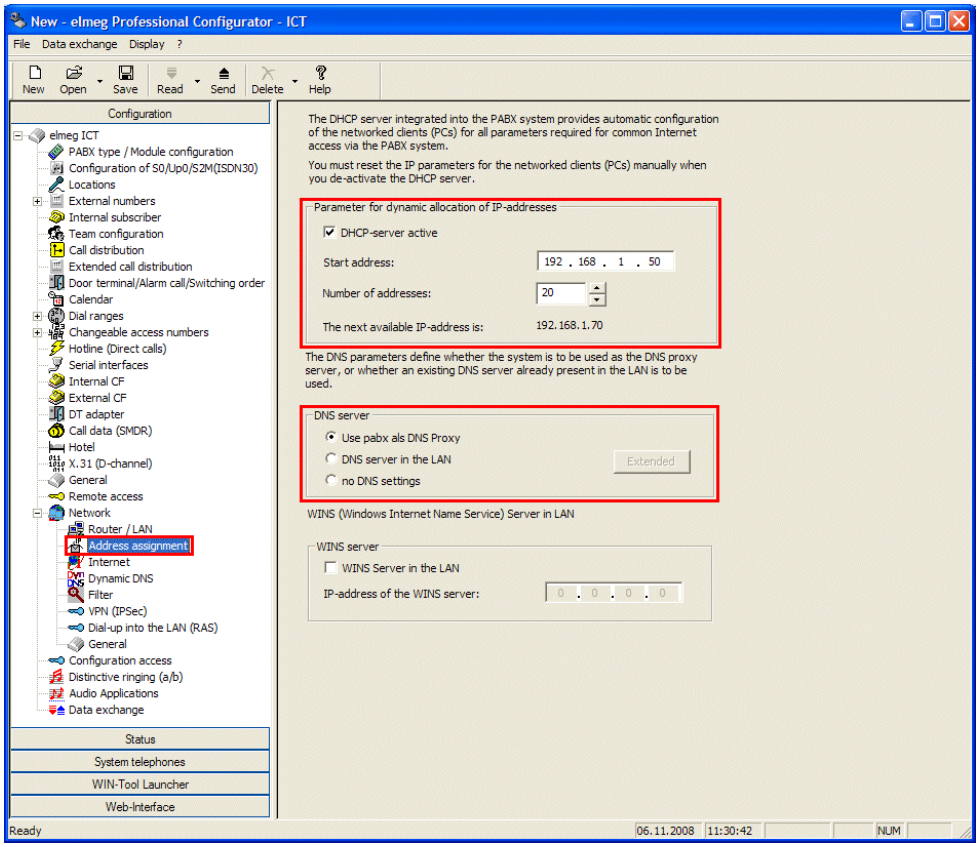

Fig. 35: **Configuration -> Network -> Address Assignment**

Relevant fields in the Address Assignment menu

Field	Meaning
DHCP server enabled	Under **Parameters for Dynamic IP Address Assignment** enable the option *DHCP Server Enabled*.
Start address	Under **Start Address** you can define the starting point for the IP address pool managed by the DHCP server.
Address Number	The **Address Number** indicates the total number of IP addresses and determines the next available IP address.
DNS Server	Enable the entry *Use System as DNS Proxy*.

5.2.2.3 Internet Access

Go to the following menu to set up an internet access:

(1) Go to **Configuration** -> **Network** -> **Internet Access**

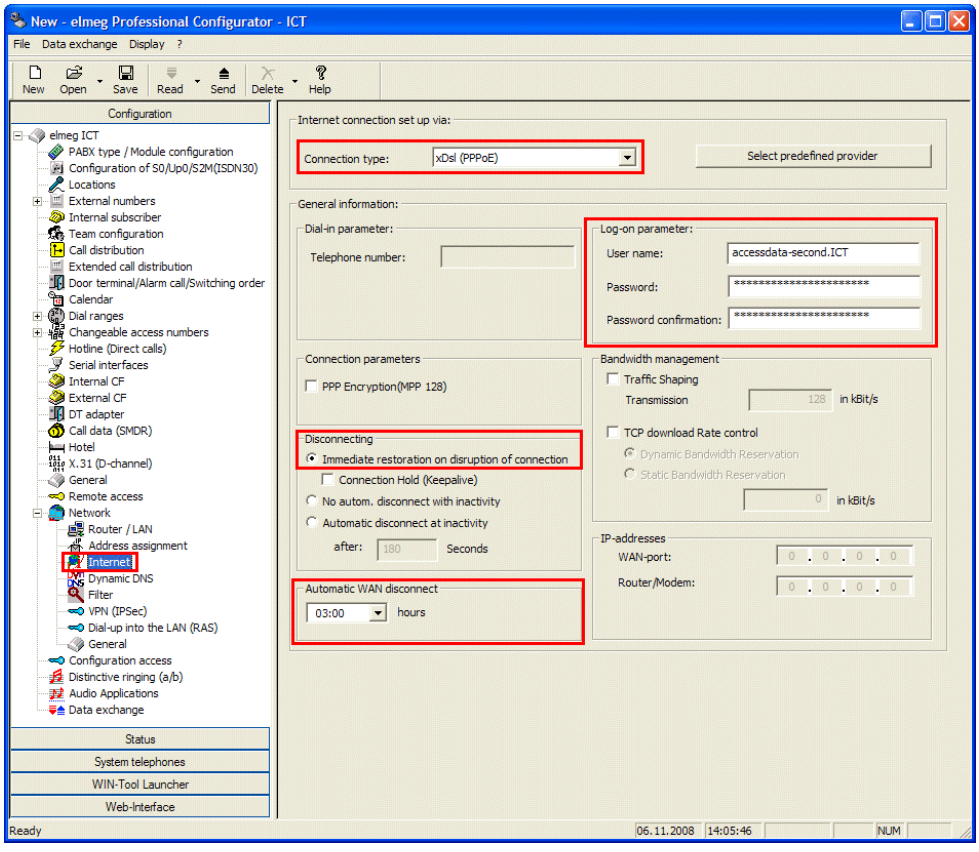

Fig. 36: **Configuration -> Network -> Internet Access**

Relevant fields in the Internet Access menu

Field	Meaning
Connector Type	Set the **Connection Type** to `xDSL (PPPoE)`.
Login Parameters	Specify the user names as indicated by the internet provider and enter the password.
Connection Setup	Enable `Re-establish Connection Immediately` . The time between the connection clearing and the connection setup should be as short as possible, otherwise registration problems can occur.
Automatic Separation of WAN Connection	The internet provider controls the forced separation and defines the time for repeatedly clearing and immediate re-establishing the connection.

5.2.2.4 Enabling Dynamic DNS

Go to the following menu to enter the dynDNS account data:

(1) Go to **Configuration** -> **Network** -> **Dynamic DNS**

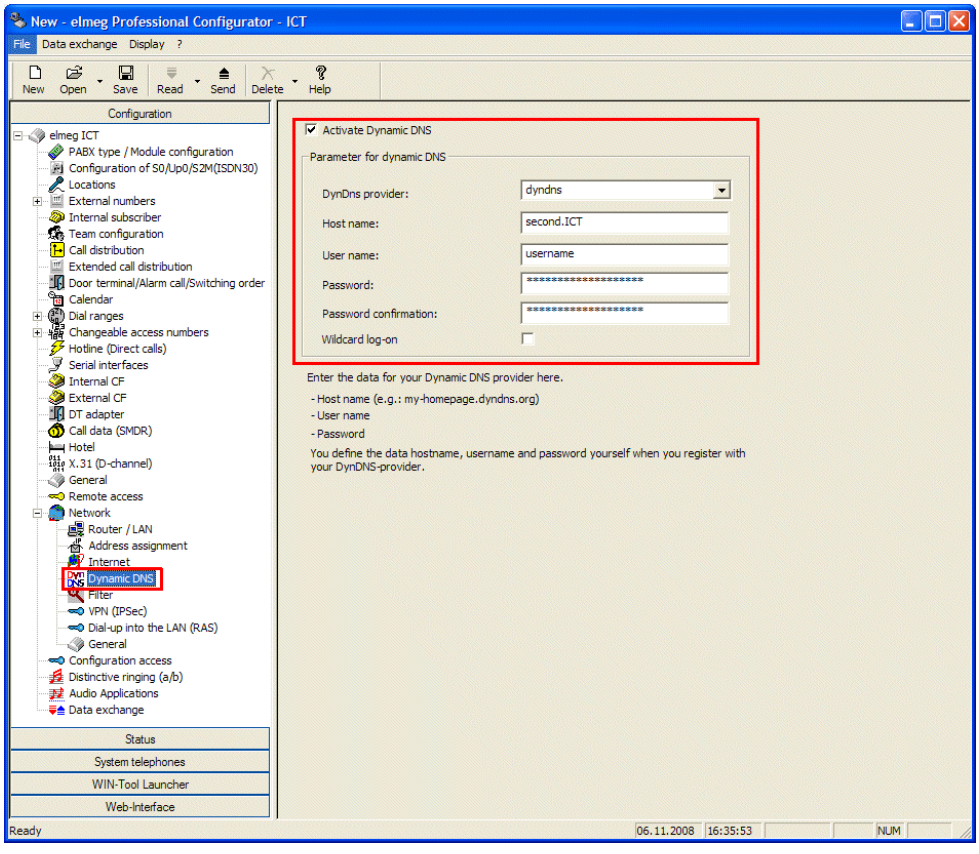

Fig. 37: **Configuration** -> **Network** -> **Dynamic DNS**

Relevant fields in the Dynamic DNS menu

Field	Meaning
Enabling Dynamic DNS	Enable the entry *Enable Dynamic DNS*.
Parameters for dynamic DNS	Enter the dynDNS account data over which the **VoIP-VPN Gateway** module for this system can be accessed. You will have specified this data when registering with your dynDNS provider.

5.2.2.5 Setting up a locality

You can set up an additional locality. This has the advantage that you can define the parameters and registration differently.

Go to the following menu for this:

(1) Go to **Configuration** -> **Localities**

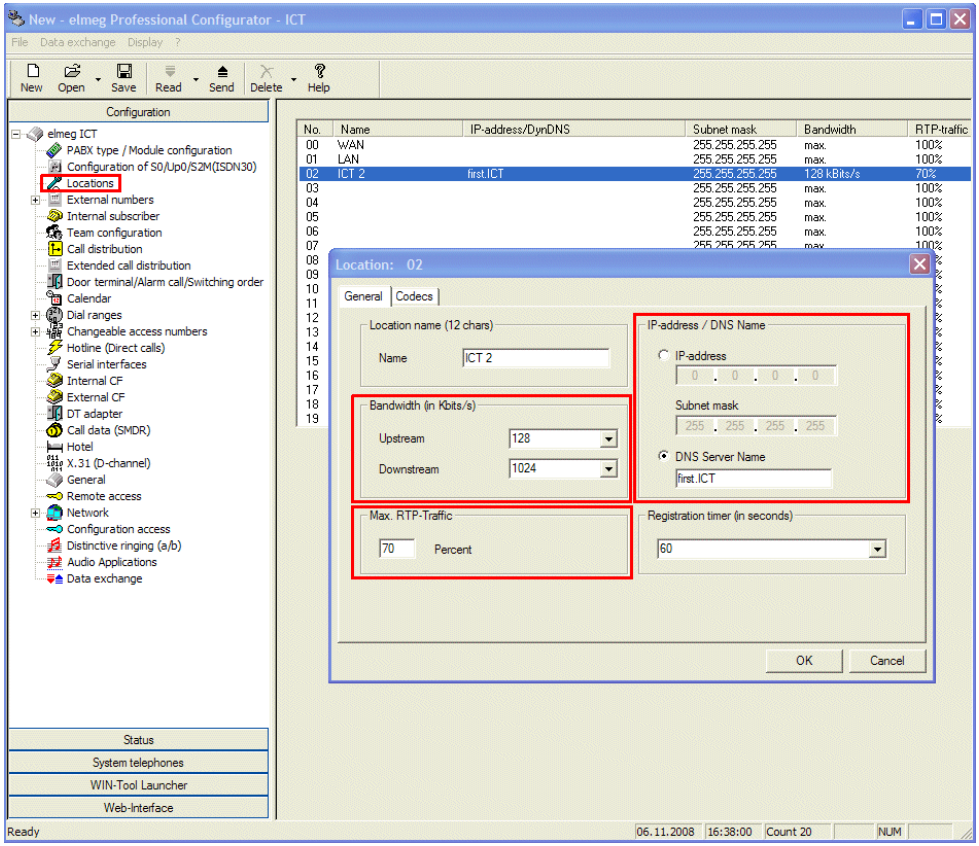

Fig. 38: **Configuration** -> **Localities**

Relevant fields in the menu Location: 02

Field	Meaning
IP Address / DNS Name	Enter the DNS Server Name for the first **elmeg-ICT** system here.
Bandwidth (in kbps)	The values for *Upstream* and *Downstream* are entered here. For a DSL 1000, for example, the values are 128 kbps upstream and 1024 kbps downstream. Further details can be

Field	Meaning
	found by consulting your provider.
Max. RTP Traffic	We also recommend setting the **Max. RTP Traffic** to *70 percent* for example. Only 70 percent is then used for voice data (RTP). This prevent data aborts after VoIP calls have been set up.

5.2.2.6 Creating a SIP provider (OUT connection)

Go to the following menu to create a SIP provider for an outgoing (OUT) connection:

(1) Go to **Configuration** -> **SIP Provider** -> **Access Data**

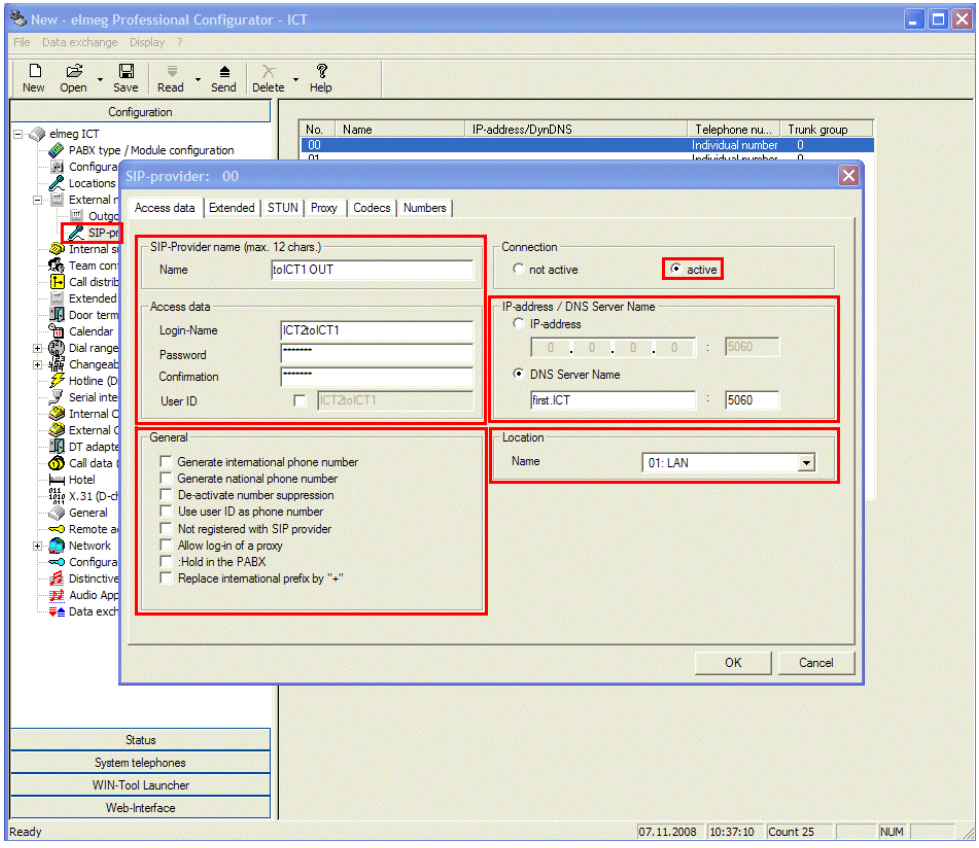

Fig. 39: **Configuration** -> **SIP Provider** -> **Access Data**

Relevant fields in the SIP Provider menu

Field	Meaning
SIP provider name	Enter the access data for the SIP provider.

Field	Meaning
Access data	Enter your login name and password.
Connection	Enable the *Enabled* field.
SIP registrar	Enter the DNS Server Name for the second **elmeg-ICT** system here.
Location	Under **Name** select the locality of the **elmeg ICT** system as the interface.
General	Select *Holding in the PABX* to transfer calls.

5.2.2.7 Advanced Configuration

The *Individual Number* or the *DDI Block* must be enabled in the **Number Configuration** menu depending on the SIP account so that the SIP provider number can be entered.

For this, go to the following menu:

(1) Go to **Configuration** -> **SIP Provider** -> **Advanced**

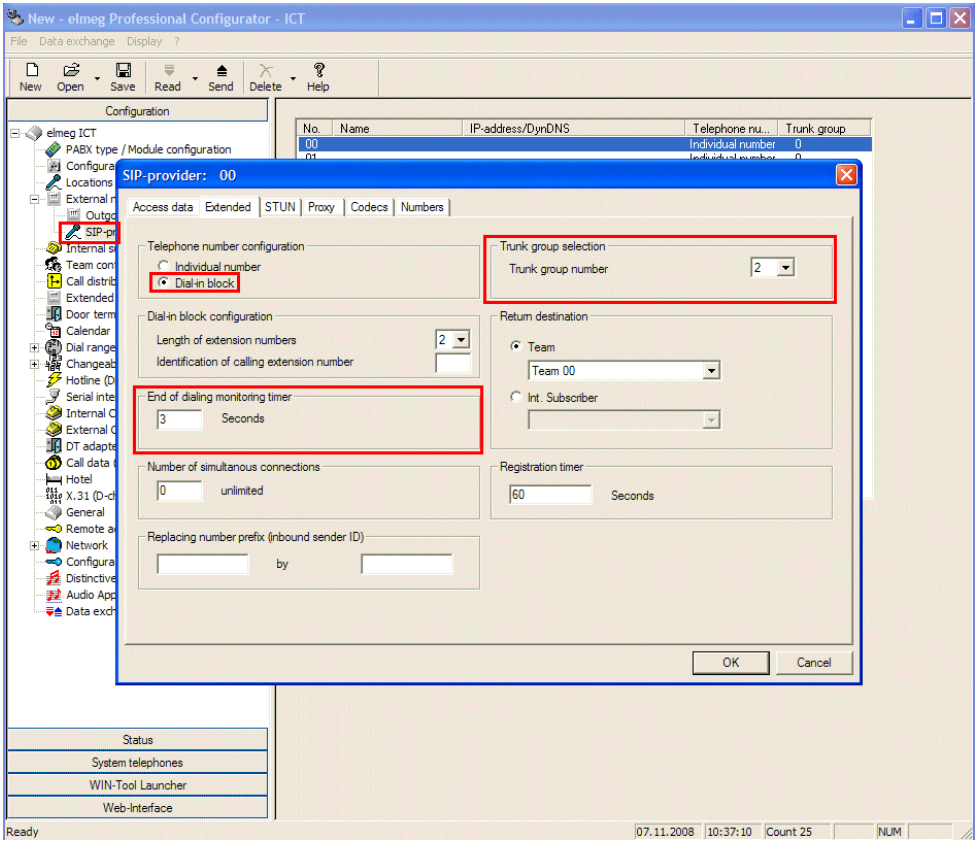

Fig. 40: **Configuration** -> **SIP Provider** -> **Advanced**

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *DDI Block* field. You can now access all internal extensions. In the **Subscriber Numbers** menu no numbers are entered.
Bundle association	Enter a one-digit bundle number.
End of dialling monitoring timer	Enter the time after which the **elmeg ICT** system should start to dial.

5.2.2.8 Creating a SIP provider (IN connection)

Go to the following menu to create a SIP provider for an incoming (IN) connection:

(1) Go to **Configuration** -> **SIP Provider** -> **Access Data**

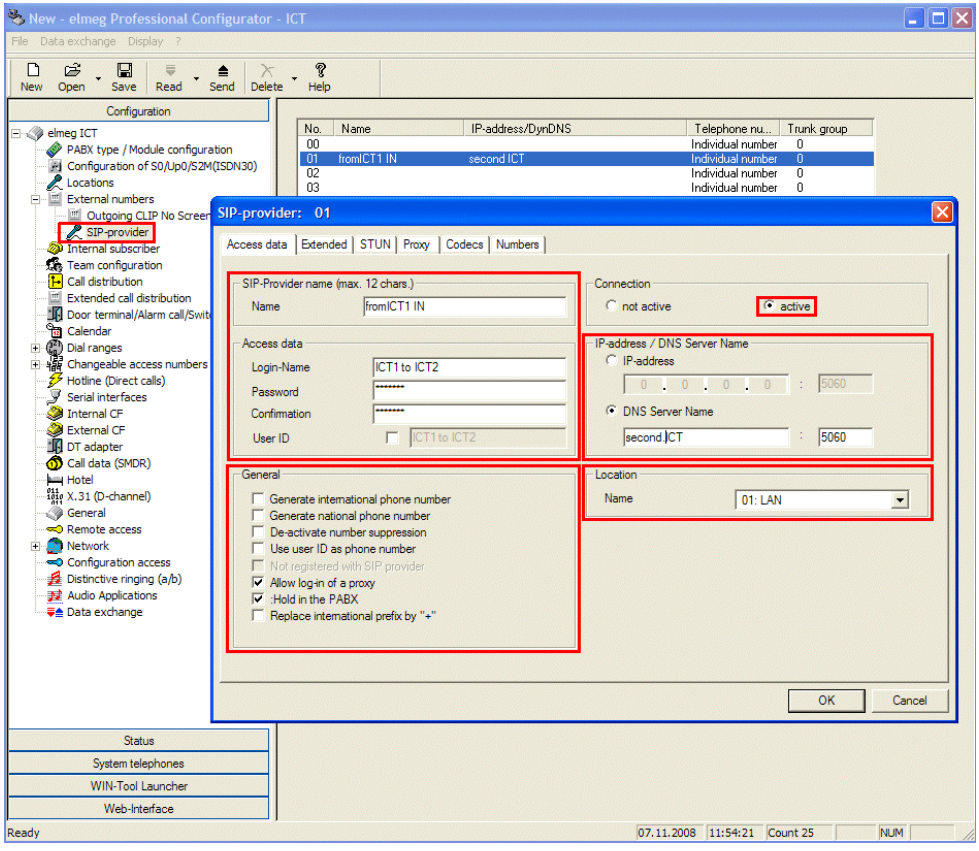

Fig. 41: **Configuration -> SIP Provider -> Access Data**

Relevant fields in the SIP Provider menu

Field	Meaning
SIP provider name	Enter the access data for the SIP provider.
Access data	Enter your login name and password.
Connection	Enable the *Enabled* field.
SIP registrar	Enter the DNS Server Name for the second **elmeg-ICT** system here.
Location	Under **Name** select the locality of the **elmeg ICT** system as the interface.
General	Select *Holding in the PABX* to transfer calls. Select the *Allow Proxy Registration* option to trigger the second **elmeg ICT** system to act as SIP proxy.

5.2.2.9 Advanced Configuration

The *Individual Number* or the *DDI Block* must be enabled in the **Number Configuration** menu depending on the SIP account so that the SIP provider number can be entered.

For this, go to the following menu:

(1) Go to **Configuration** -> **SIP Provider** -> **Advanced**

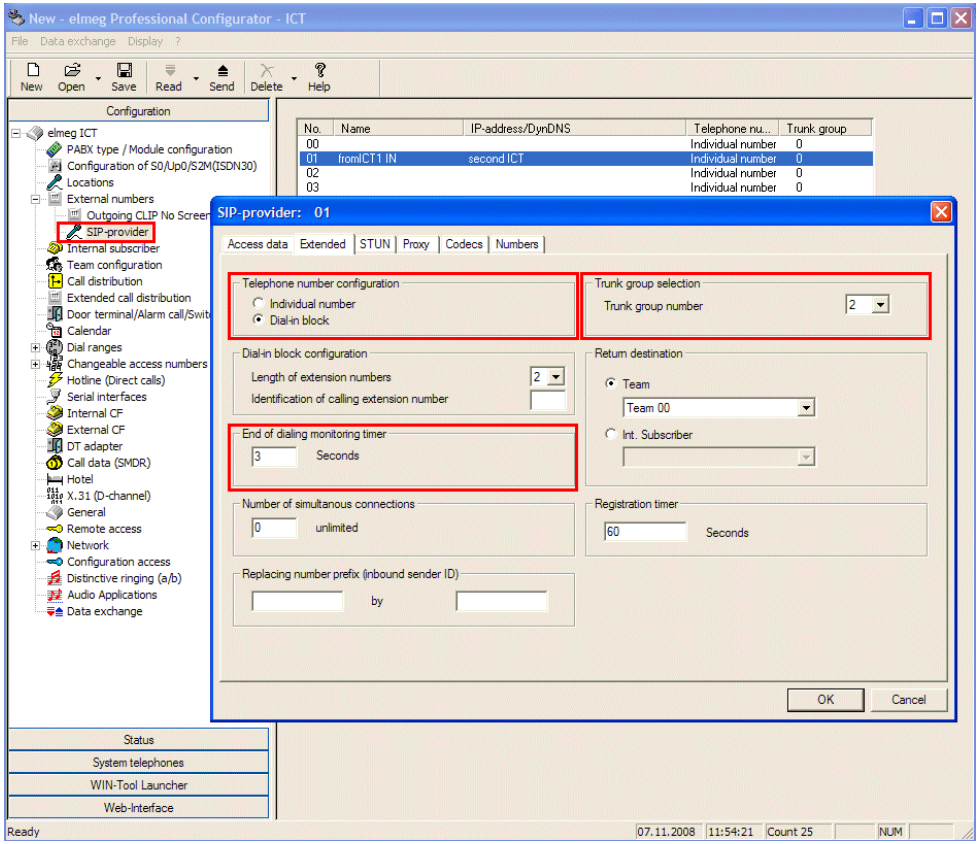

Fig. 42: **Configuration** -> **SIP Provider** -> **Advanced**

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *DDI Block* field. You can now access all internal extensions. In the **Subscriber Numbers** menu no numbers are entered.
Bundle association	Enter a one-digit bundle number. This can be the same number

Field	Meaning
	as the bundle number for the outgoing (OUT) connections (a bundle number is not required for an incoming call).
End of dialling monitoring timer	Enter the time after which the **elmeg ICT** system should start to dial.

5.2.2.10 Changeable access numbers

You can change the access numbers for the **Target Bundle Assignment** in the **Changeable access numbers** menu for the second **elmeg ICT** system. This makes it easier to assign the SIP provider (OUT).

For this, go to the following menu:

(1) Go to **Configuration** -> **Changeable access numbers** -> **Target Bundle Assignment**

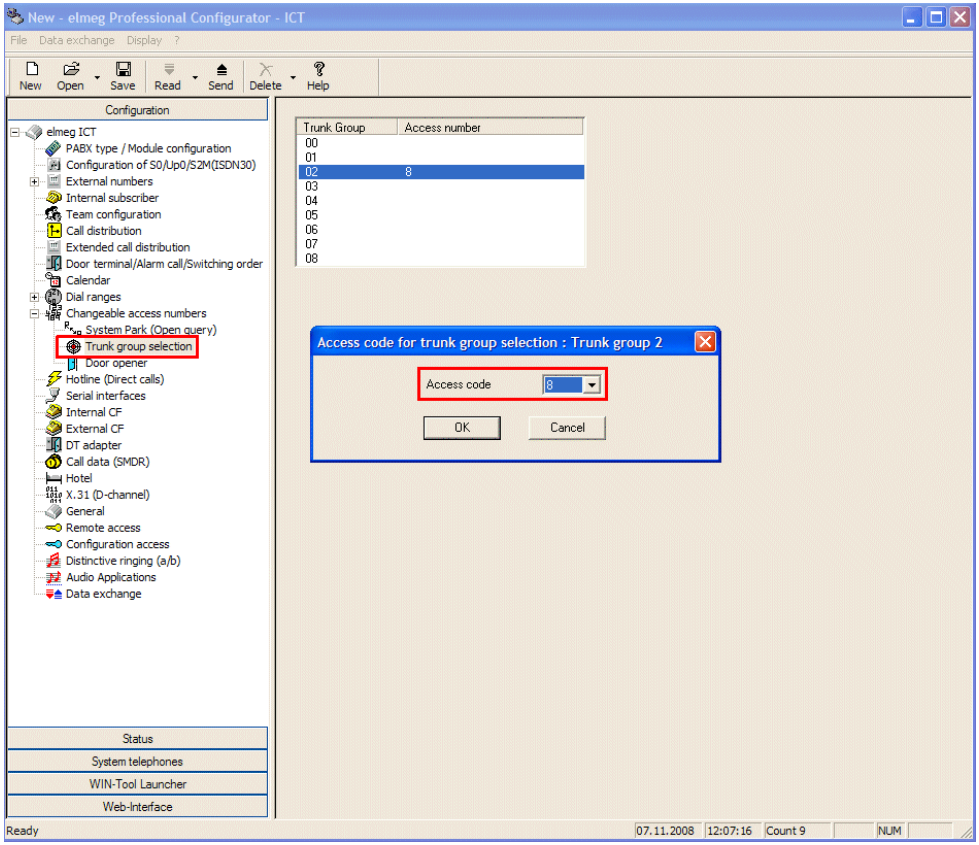

Fig. 43: **Configuration** -> **Changeable access numbers** -> **Target Bundle Assignment**

Relevant fields in the Target Bundle Assignment menu

Field	Meaning
Access number	Select the desired dialling code to establish an external connection. You do not need to dial the long *8 bundle number + subscriber number.

5.2.2.11 Internal Extension

You must allow the **Target Bundle Assignment** to be able to use the tariff manager (LCR) and the bundle assignment.

For this, go to the following menu:

(1) Go to **Configuration** -> **Internal Extension** -> **Internal Extension**

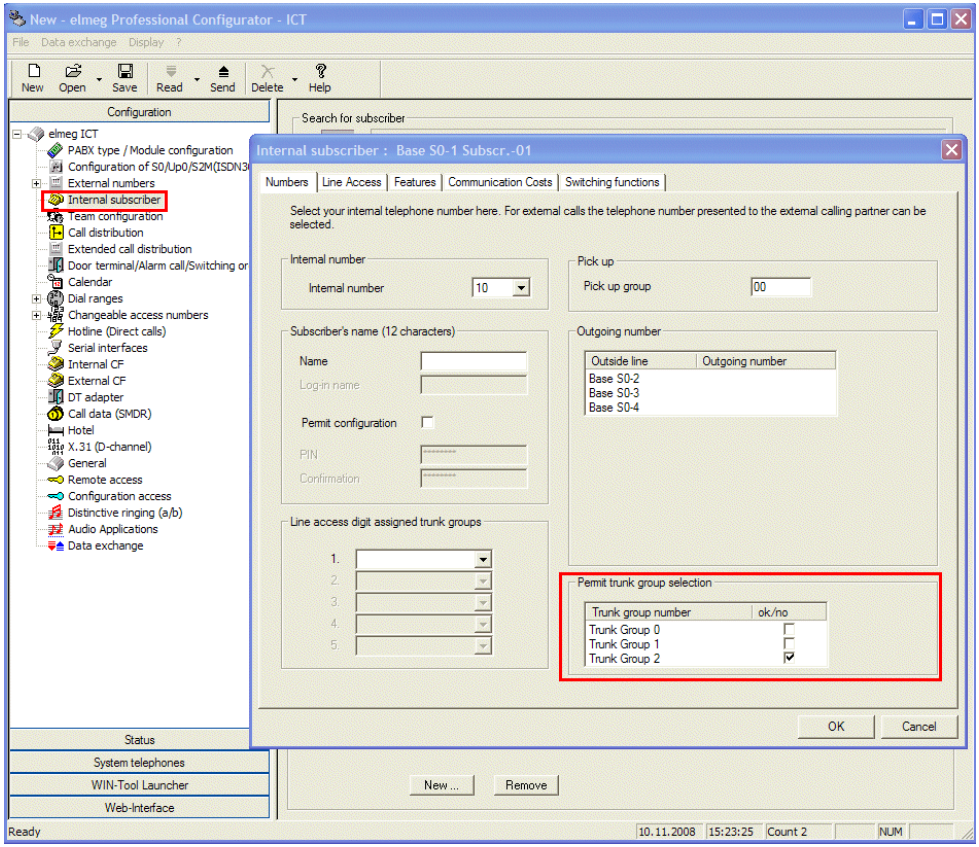

Fig. 44: **Configuration** -> **Internal Extension** -> **Internal Extension**

Relevant fields in the Internal Extension menu

Field	Meaning
Allow Target Bundle Assignment	The *Bundle 2* entry must be enabled for **Target Bundle Assignment**.

5.3 Overview of configuration steps

5.3.1 Configuration steps for the first elmeg ICT system

Changing system parameters

Field	Menu	Value
IP Address	**Configuration** -> **Network** -> **Router / LAN**	e.g. *192.168.1.250*
Subnet Mask	**Configuration** -> **Network** -> **Router / LAN**	e.g. *255.255.255.0*

Enabling address assignment

Field	Menu	Value
DHCP server enabled	**Configuration** -> **Network** -> **Address Assignment**	Select *DHCP server enabled*
Start address	**Configuration** -> **Network** -> **Address Assignment**	e.g. *192.168.1.10*
Address Number	**Configuration** -> **Network** -> **Address Assignment**	e.g. *20*
DNS Server	**Configuration** -> **Network** -> **Address Assignment**	Enable *Use System as DNS Proxy*.

Establishing an internet connection

Field	Menu	Value
Connector Type	**Configuration** -> **Network** -> **Internet Access**	*xDsl (PPPoE)*
Login Parameters	**Configuration** -> **Network** -> **Internet Access**	According to the internet provider's specifications.
Connection Clearing	**Configuration** -> **Network** -> **Internet Access**	*Enable re-establish connection immediately.*
Automatic Separation of	**Configuration** -> **Network** -	e.g. *3 am*

Field	Menu	Value
WAN Connection	> **Internet Access**	

Enabling Dynamic DNS

Field	Menu	Value
Enabling Dynamic DNS	**Configuration** -> **Network** -> **Dynamic DNS**	Select *Enable Dynamic DNS*
Hostname	**Configuration** -> **Network** -> **Dynamic DNS**	Host name of the first ICT system.
User Name	**Configuration** -> **Network** -> **Dynamic DNS**	Your user name
Password	**Configuration** -> **Network** -> **Dynamic DNS**	Your password

Setting up an extra locality

Field	Menu	Value
IP Address / DNS Name	**Configuration** -> **Localities** -> **Locality: 02**	IP address and DNS name of the second ICT system.
Bandwidth	**Configuration** -> **Localities** -> **Locality: 02**	e.g. for **Upstream***128* and for **Downstream***1024*
Max. RTP Traffic	**Configuration** -> **Localities** -> **Locality: 02**	e.g. *70*

Creating a SIP provider (OUT connection)

Field	Menu	Value
SIP Registrar	**Configuration** -> **SIP Provider** -> **Access Data**	IP address and DNS name of the second ICT system.
Location	**Configuration** -> **SIP Provider** -> **Access Data**	e.g. *02: ICT1*
General	**Configuration** -> **SIP Provider** -> **Access Data**	Select *Holding in the PABX*

Configuring a subscriber number (OUT connection)

Field	Menu	Value
Call Number Configuration	**Configuration** -> **SIP Provider** -> **Advanced**	Enable *DDI Block*.
Bundle association	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *1*
End of dialling monitoring	**Configuration** -> **SIP Pro-**	e.g. *3*

Field	Menu	Value
timer	**vider** -> **Advanced**	

Creating a SIP provider (IN connection)

Field	Menu	Value
SIP Registrar	**Configuration** -> **SIP Provider** -> **Access Data**	IP address and DNS name of the first ICT system.
Location	**Configuration** -> **SIP Provider** -> **Access Data**	e.g. *02: ICT1*
General	**Configuration** -> **SIP Provider** -> **Access Data**	Select *Allow Proxy Registration* and *Holding in the PABX*

Configuring a subscriber number (IN connection)

Field	Menu	Value
Call Number Configuration	**Configuration** -> **SIP Provider** -> **Advanced**	Enable *DDI Block*.
Bundle association	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *1*
End of dialling monitoring timer	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *3*

Changing the bundle assignment

Field	Menu	Value
Access number	**Configuration** -> **Target Bundle Assignment**-> **Access Number**	e.g. *9*

Allowing bundle assignment

Field	Menu	Value
Allow Target Bundle Assignment	**Configuration** -> **Internal Extension** -> **Internal Extension**-> **Subscriber Numbers**	Select *Bundle 1*

5.3.2 Configuration steps for the second elmeg ICT system

Changing system parameters

Field	Menu	Value
IP Address	**Configuration** -> **Network** -> **Router / LAN**	e.g. *192.168.2.250*
Subnet Mask	**Configuration** -> **Network** -> **Router / LAN**	e.g. *255.255.255.0*

Enabling address assignment

Field	Menu	Value
DHCP server enabled	**Configuration** -> **Network** -> **Address Assignment**	Select *DHCP server enabled*
Start address	**Configuration** -> **Network** -> **Address Assignment**	e.g. *192.168.2.30*
Address Number	**Configuration** -> **Network** -> **Address Assignment**	e.g. *20*
DNS Server	**Configuration** -> **Network** -> **Address Assignment**	Enable *Use System as DNS Proxy*.

Establishing an internet connection

Field	Menu	Value
Connector Type	**Configuration** -> **Network** -> **Internet Access**	*xDsl (PPPoE)*
Login Parameters	**Configuration** -> **Network** -> **Internet Access**	According to the internet provider's specifications.
Connection Clearing	**Configuration** -> **Network** -> **Internet Access**	*Enable re-establish connection immediately.*
Automatic Separation of WAN Connection	**Configuration** -> **Network** -> **Internet Access**	e.g. *3 am*

Enabling Dynamic DNS

Field	Menu	Value
Enabling Dynamic DNS	**Configuration** -> **Network** -> **Dynamic DNS**	Select *Enable Dynamic DNS*
Hostname	**Configuration** -> **Network** -> **Dynamic DNS**	Host name of the second ICT system.

Field	Menu	Value
User Name	**Configuration** -> **Network** -> **Dynamic DNS**	Your user name
Password	**Configuration** -> **Network** -> **Dynamic DNS**	Your password

Setting up an extra locality

Field	Menu	Value
IP Address / DNS Name	**Configuration** -> **Localities** -> **Locality: 02**	IP address and DNS name of the first ICT system.
Bandwidth	**Configuration** -> **Localities** -> **Locality: 02**	e.g. for **Upstream** *128* and for **Downstream** *1024*
Max. RTP Traffic	**Configuration** -> **Localities** -> **Locality: 02**	e.g. *70*

Creating a SIP provider (OUT connection)

Field	Menu	Value
SIP Registrar	**Configuration** -> **SIP Provider** -> **Access Data**	IP address and DNS name of the second ICT system.
Location	**Configuration** -> **SIP Provider** -> **Access Data**	e.g. *02: ICT2*
General	**Configuration** -> **SIP Provider** -> **Access Data**	Select *Holding in the PABX*

Configuring a subscriber number (OUT connection)

Field	Menu	Value
Call Number Configuration	**Configuration** -> **SIP Provider** -> **Advanced**	Enable *DDI Block*.
Bundle association	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *2*
End of dialling monitoring timer	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *3*

Creating a SIP provider (IN connection)

Field	Menu	Value
SIP Registrar	**Configuration** -> **SIP Provider** -> **Access Data**	IP address and DNS name of the second ICT system.
Location	**Configuration** -> **SIP Provider** -> **Access Data**	e.g. *02: ICT2*

Field	Menu	Value
General	**Configuration** -> **SIP Provider** -> **Access Data**	Select *Allow Proxy Registration* and *Holding in the PABX*

Configuring a subscriber number (IN connection)

Field	Menu	Value
Call Number Configuration	**Configuration** -> **SIP Provider** -> **Advanced**	Enable *DDI Block*.
Bundle association	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *2*
End of dialling monitoring timer	**Configuration** -> **SIP Provider** -> **Advanced**	e.g. *3*

Changing the bundle assignment

Field	Menu	Value
Access number	**Configuration** -> **Target Bundle Assignment**-> **Access Number**	e.g. *8*

Allowing bundle assignment

Field	Menu	Value
Allow Target Bundle Assignment	**Configuration** -> **Internal Extension** -> **Internal Extension**-> **Subscriber Numbers**	Select *Bundle 2*

Chapter 6 Telephony - ICT880 as Unified Messaging Gateway for Microsoft Exchange Server 2007

6.1 Introduction

The present chapter describes connection of the unified messaging roll for Microsoft Exchange Server 2007 to the public telephone network using an **elmeg ICT 880**

The unified messaging roll for Microsoft exchange server 2007 offers the following functions:

- Access to e-mails and voice messages, appointments and contacts by voice control/tone dialling
- Server for fax reception
- Answering machine function with message delivery by e-mail
- Auto Attendant / call relay

Fig. 45: Example scenario

Requirements

- An **elmeg ICT 880** Version 76.1 incl. VoIP-VPN gateway / DSP module
- Microsoft Exchange Server 2007 with Unified Messaging Roll
- Access to public telephone network

6.2 Configuration

6.2.1 Configuration steps on Microsoft Exchange server

Configuration of the Microsoft Exchange server is performed with the **exchange administration console** :

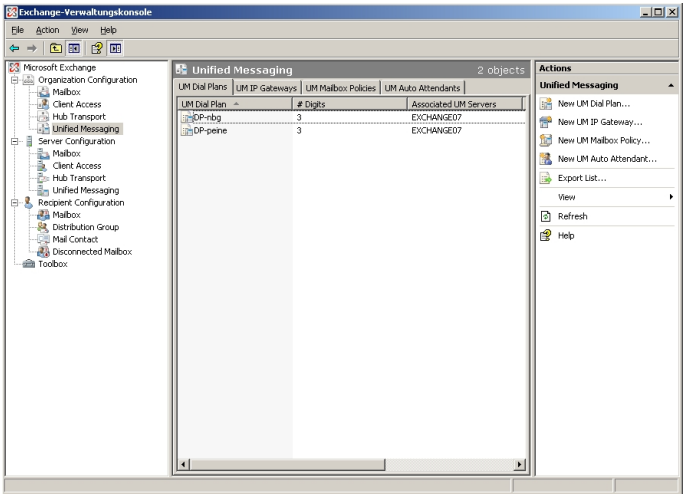

Fig. 46: **Exchange administration console**

Creation of a dial plan

In the **Unified Messaging** menu, you can launch the wizard to create a new UM dial plan.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan...**.

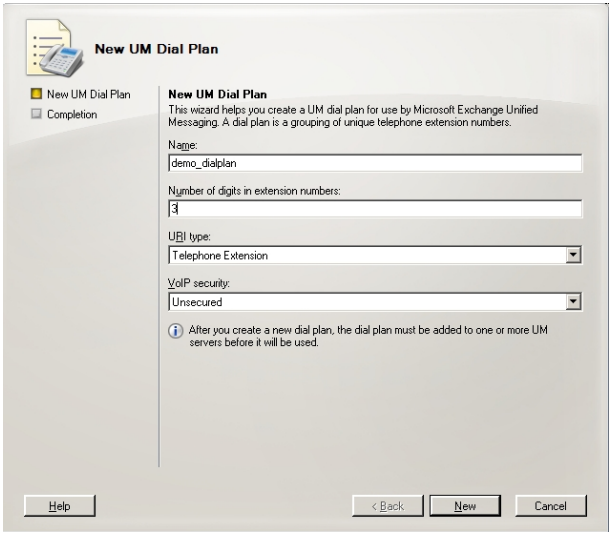

Fig. 47: New UM dial plan

To create a new UM dial plan, proceed as follows:

(1) Enter the dial plan name, e. g. `demo_dialplan`.

(2) In **Number of digits in extension numbers** set the number of direct dial-in numbers, e.g., `3`.

(3) In **URI type** select a designation for the resources, e.g. `Telephone Extension`.

(4) In **VoIP security** select `Unsecured`.

(5) With the option **New**, you create the new dial plan.

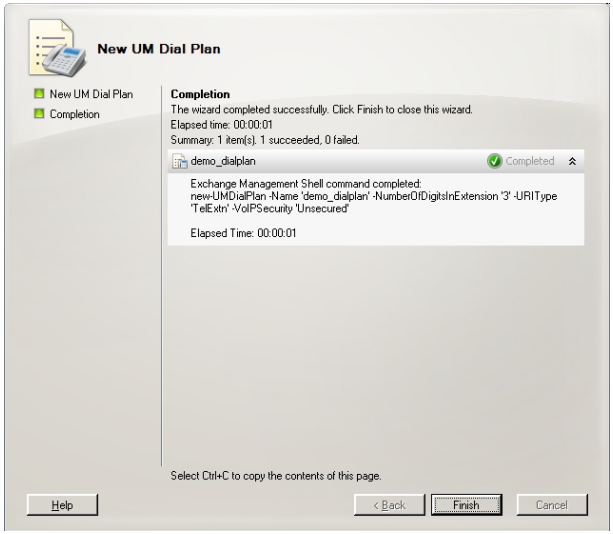

Fig. 48: New UM dial plan

Click on **Finish** to close the wizard.

After the wizard is closed, dial plan properties must be edited.

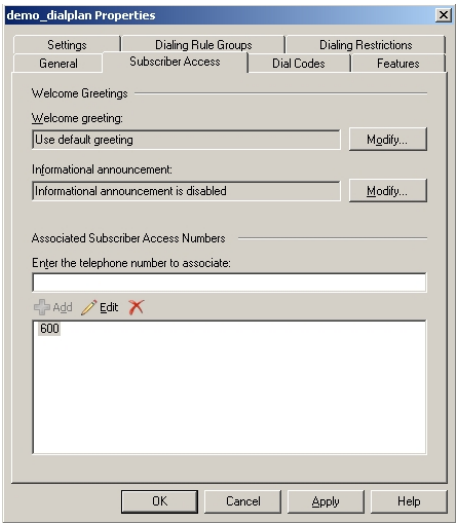

Fig. 49: Subscriber Access

Under **demo_dialplan Properties** -> **Subscriber Access** the call number under which the system may later be reached is saved, e.g., *600*.

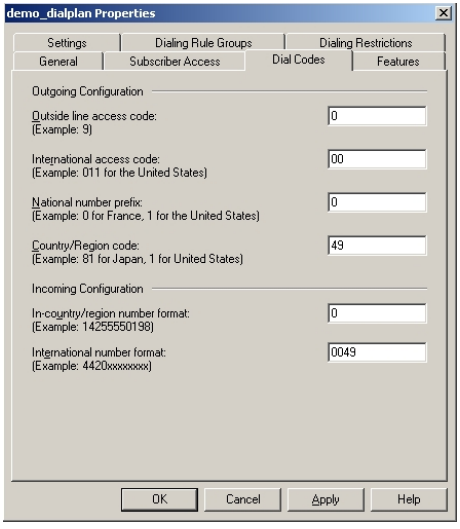

Fig. 50: Dial Codes

Under **demo_dialplan Properties** -> **Dial Codes** national and other prefixes are saved.

To save the prefixes, proceed as follows:

First, enter the numbers for outgoing calls.

(1) In **Outside line access code** a number for an outside line can be saved.

(2) In **International access code** enter the international access number `00`.

(3) In **National number prefix** enter the national prefix, here `0`.

(4) In **Country/Region code** enter the country code, e.g., `49` for Germany.

Now enter the numbers for incoming calls.

(1) In **In-country/region number format** enter `0`.

(2) In **International number format** enter the prefix, e.g., `0049` for Germany.

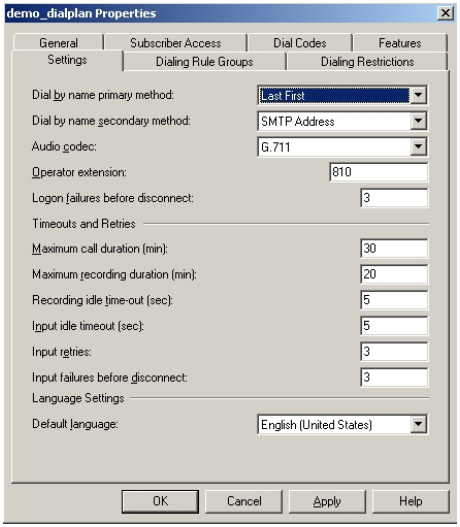

Fig. 51: Settings

In the **Settings** submenu, notably the language codecs and the language with which the system shall respond are saved.

To save additional settings, proceed as follows:

(1) In **Dial by name primary method** select, for example, *Last First*.

(2) In **Dial by name secondary method** select *SMTP Address*.

(3) In **Audio codec** enter language codec *G.711*.

(4) In **Operator extension** enter, for example, the switchboard number *810*.

(5) In **Default language** select the language in which the system shall subsequently answer, e.g., *English (United States)*.

In the submenu **Dialing Rule Groups** a UM dial plan is defined. This determines which type of calls the UM-enabled user can make. In our example, national and international connections are permitted. **Dialing Rule Groups** also allow transformation of destination numbers (e.g. setting of a specific prefix).

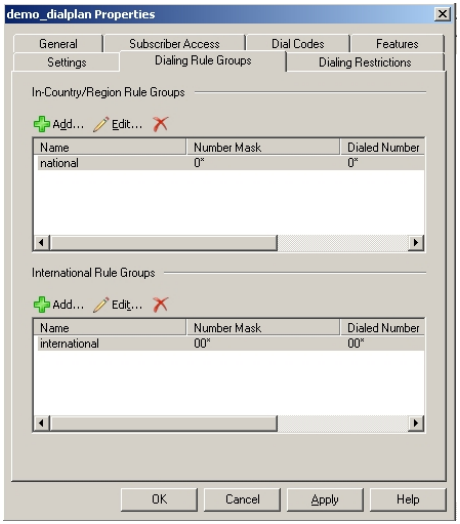

Fig. 52: Dialing Rule Groups

In the submenu **Dialing Restrictions**, it is determined which kinds of calls are permitted or, as the case arises, prohibited.

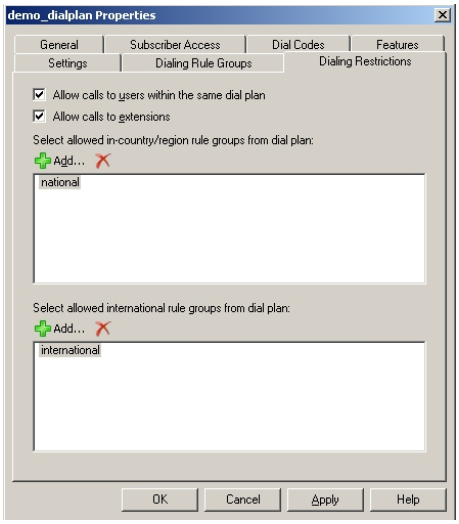

Fig. 53: Dialing Restrictions

The newly-created dial plan is subsequently allocated to a UM server. The dial plan can be added in Server Properties **UM Settings**. Here are administered the installed language packs and the restriction on the maximum possible number of voice and fax connections.

(1) Go to **Server Configuration** -> **Unified Messaging** -> **UM Settings**.

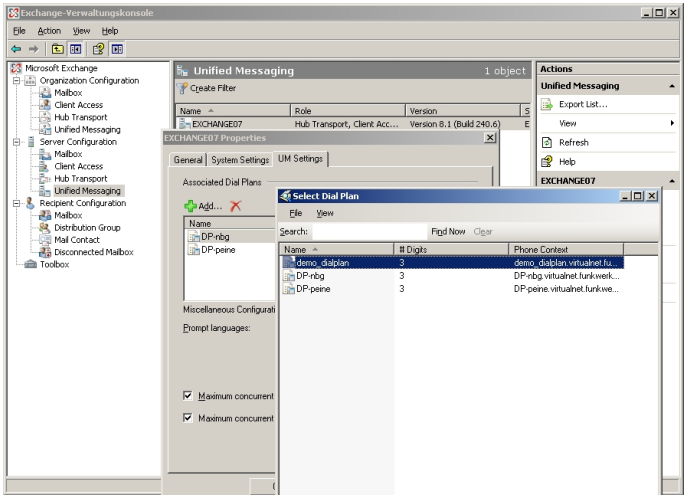

Fig. 54: UM Settings

Creation of a UM IP Gateway

A new UM IP gateway is created with the assistant in the **Unified Messaging** submenu.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**.

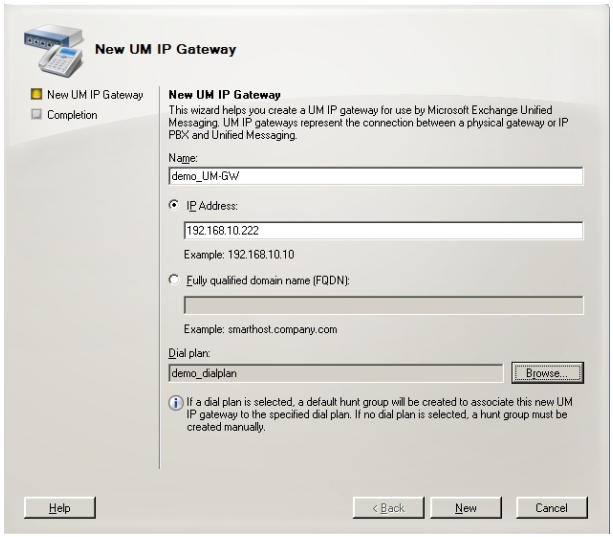

Fig. 55: New UM IP gateway

To create a new UM IP gateway, proceed as follows:

(1) In **Name** enter, for example, *demo_UM-GW*.

(2) Enter the IP address at which the UM gateway is accessible, e.g. *192.168.10.222*.

(3) In **Fully qualified domain name (FQDN)** you can enter the name under which the UM gateway is accessible.

(4) Next, the previously-created **Dial Plan** is assigned.

Creation of a UM hunt group

The **Hunt Groups** are required for drive of the exchange server by the UM gateway . The assistant for creation of a new UM hunt group is launched on the **exchange administration console**.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**.

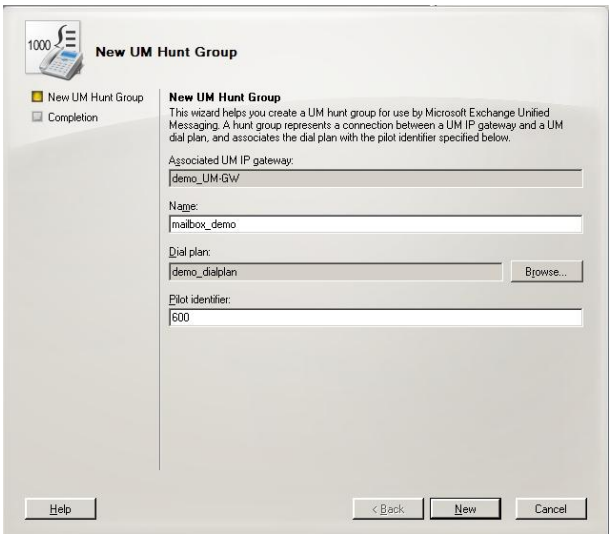

Fig. 56: New UM Hunt Group

To create a new UM hunt group, proceed as follows:

(1) In **Name** enter the name of the hunt group, e.g., *mailbox_demo*.

(2) In **Dial plan** select *demo_dialplan*.

(3) The number of the **Pilot identifier**, here *600*, for example, is later saved at the UM gateway as a VoIP extension in order to create a connection to the Exchange Server 2007.

You can view the completed configuration in the menu **Organization Configuration** -> **Unified Messaging** -> **UM IP Gateways**.

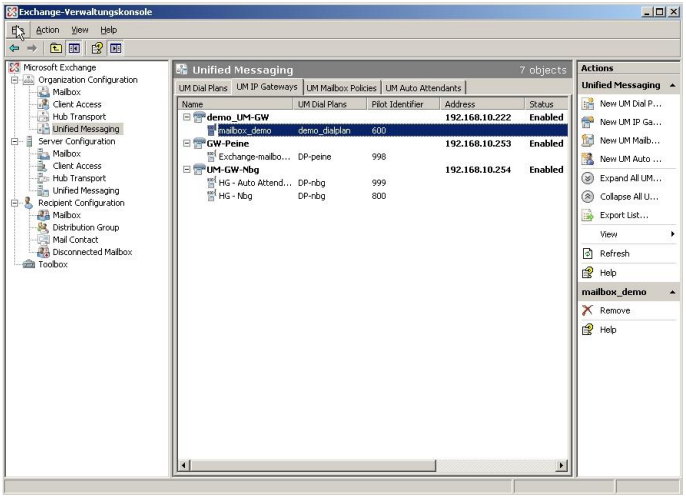

Fig. 57: UM IP Gateways

Configuration of a UM Mailbox Policy

Already when creating a **Dial Plan** a standard **UM Mailbox Policy** is created.

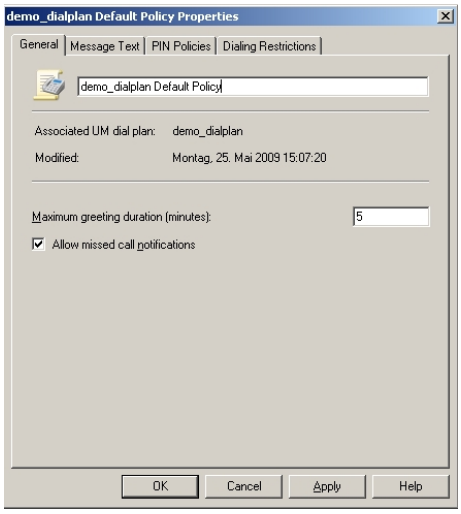

Fig. 58: Default Policy Properties

In properties of **UM Mailbox Policy**, in the **Message Text** submenu, various text templates can be saved; these can be sent to the UM user per e-mail (e.g., when activating the unified messaging mailbox or when resetting the unified messaging PIN).

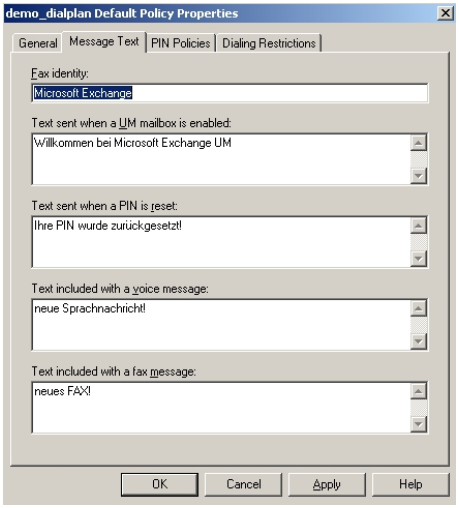

Fig. 59: Message Text

In the submenu **PIN Policies**, different properties of the UM PIN (e.g., PIN length) requested when accessing the UM system can be modified.

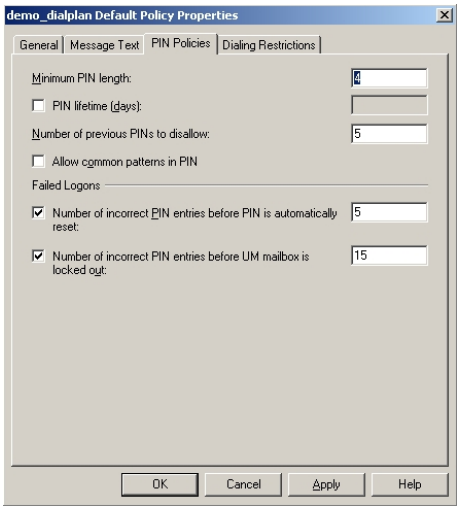

Fig. 60: PIN Policies

In the submenu **Dialing Restrictions**, it is determined which kinds of calls are permitted or, as the case arises, prohibited.

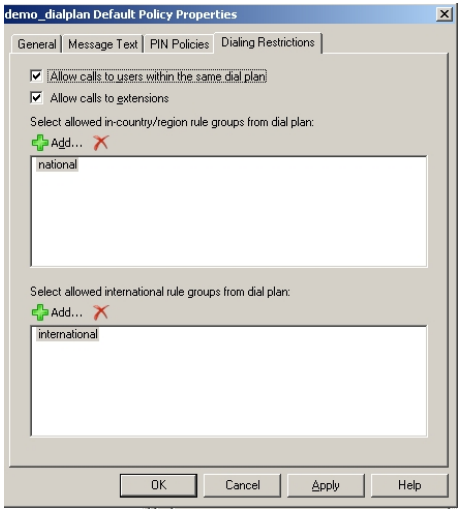

Fig. 61: Dialing Restrictions

Auto Attendants (optional)

Configuration of an **Auto Attendant**, a type of electronic telephone switchboard, is optional. For the **Auto Attendant** an additional **Hunt Group** should be created, under whose **Pilot Identifier** (extension number) the electronic switchboard position can be reached.

Activation of unified messaging for an exchange mailbox

In the **Mailbox** submenu, the unified messaging functions for an exchange mailbox/exchange user can be activated via an assistant. For this, the previously configured **Unified Messaging Mailbox Policy** must be saved, along with a **PIN** (for authentication).

(1) Go to **Organization Configuration** -> **Recipient Configuration** -> **Mailbox**.

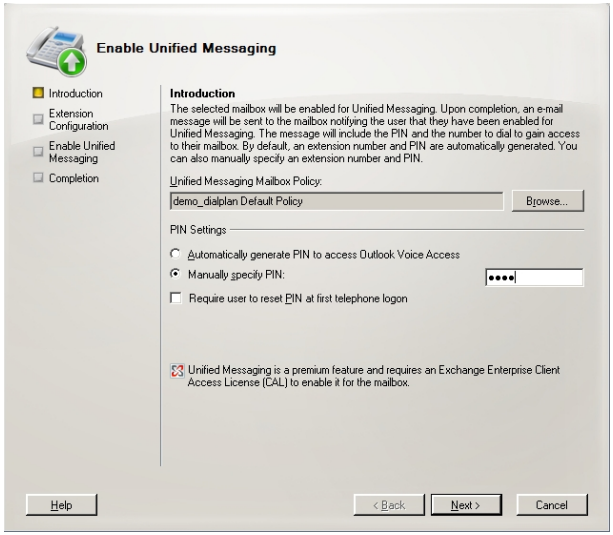

Fig. 62: Mailbox

In the assistant's second step, a **Mailbox Extension** (mailbox number) for the user must be saved. The **Mailbox Extension** should match the user's direct dial-in number.

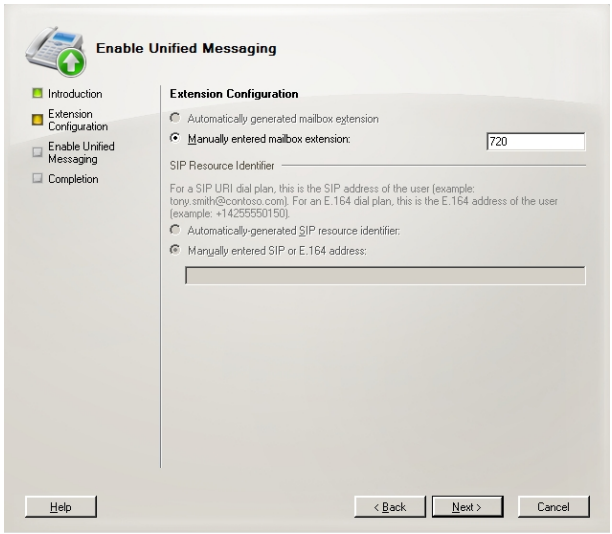

Fig. 63: Mailbox Extension

6.2.2 Configuration of the elmeg ICT 880

In this example, the **elmeg ICT 880** is connected to an ISDN point-to-multipoint via the external ISDN S0 interface (e.g. SO-4). MSN numbers are provided for this ISDN port.

(1) Go to **Configuration** -> **External numbers** -> **Base S0-4**.

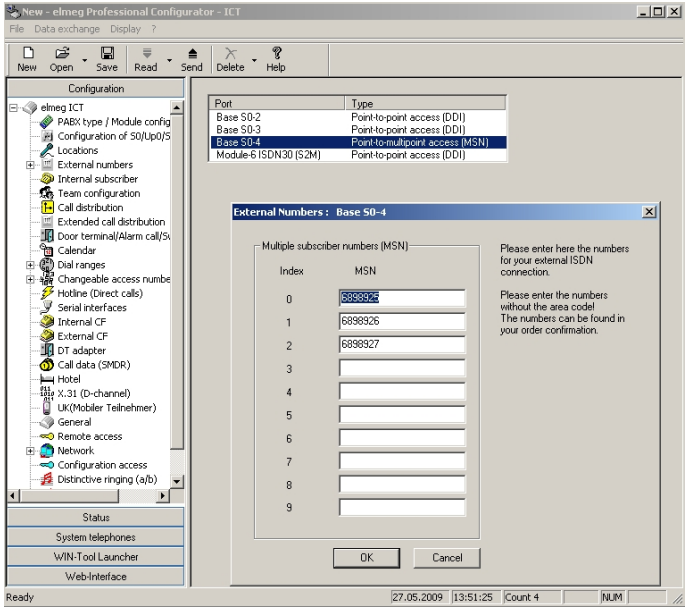

Fig. 64: **Configuration** -> **External numbers** -> **Base S0-4**

Relevant fields in the External Numbers menu: Base S0-4

Field	Meaning
MSN	For point-to-multipoint connections, you can enter up to 10 numbers (MSN, multiple subscriber number). These MSNs are the external phone numbers for your ISDN connection. The MSNs are consecutively numbered automatically from 0. Enter your connection's MSN numbers, e.g., `6898925`, `6898926` and `6898927` .

Connection of the exchange server as VoIP/SIP subscriber

The Microsoft Exchange Server 2007 is configured on the **elmeg ICT 880** as a VoIP/SIP subscriber.

(1) Go to **Configuration** -> **Internal subscriber** -> **Numbers**.

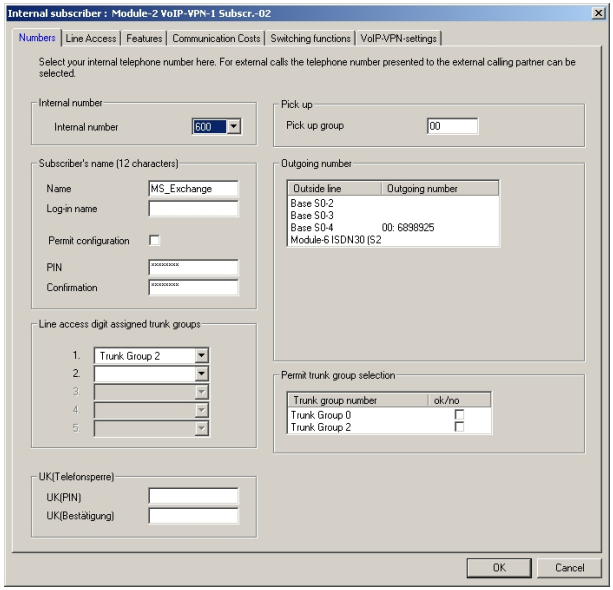

Fig. 65: **Configuration** -> **Internal subscriber** -> **Numbers**

Relevant fields in menu Numbers

Field	Meaning
Internal number	Select extension number *600* for the new subscriber. Before this, the VoIP subscriber already configured with call number 60 as **Guest** should be assigned another call number.
Name	Here you can assign the subscriber a name, e.g. *MS_Exchange*.
Login Name	A login name is not required as the Microsoft Exchange server operates without authentication when logging in.

In the menu **VoIP-VPN-settings** the SIP registration is disabled.

Go to **Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.

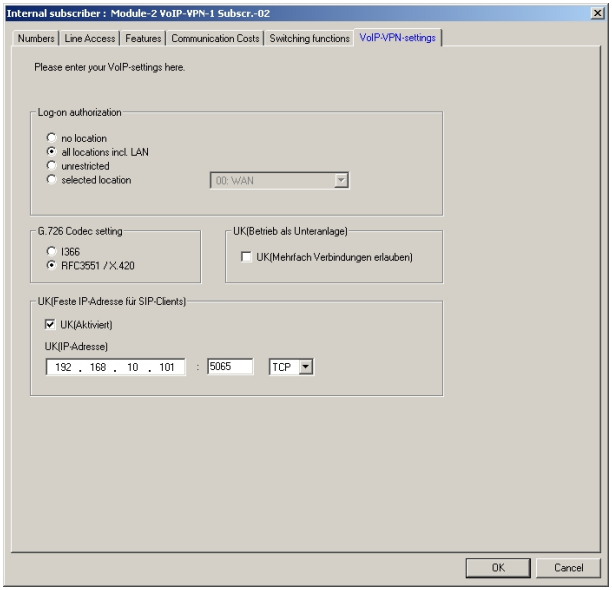

Fig. 66: **Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.

Relevant fields in the VoIP-VPN settings menu

Field	Meaning
UK (Fixed IP address for SIP clients)	Enable checkbox *UK(enabled)*.
UK(IP address)	Here, enter the IP Microsoft exchange server *192.168.10.101*.
Static Host Port	For connection to the Microsoft exchange server identify port *5065*.
Transport protocol	Set transport protocol for the connection to *TCP*.

Configuration of call assignment

Call assignment of incoming connections to Microsoft Exchange server 2007 via the ISDN outside line is configured over the **Call distribution** menu. In our example, an MSN number is assigned each subscriber as well as the Microsoft Exchange server 2007.

(1) Go to **Configuration** -> **Call distribution** .

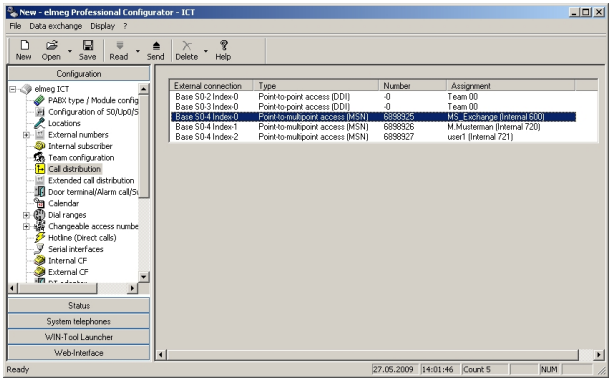

Fig. 67: **Configuration** -> **Call distribution**

6.2.3 Function test

At the first function test, it is possible to call from the telephone extension of the unified messaging user (e.g., demo user *John Everyman* with extension number *720*) to the extension of the exchange server (e.g., extension *600*). Microsoft Exchange server 2007 should respond with a PIN request and permit access to e-mails, contacts, etc.

At the second function test, a unified messaging user (e.g., demo user *John Everyman* with extension number *720*) should configure a call diversion to the Microsoft Exchange extension (call number *600*). With an incoming call to the user call number, the call/fax is put through to the user mailbox on the Microsoft Exchange server.

6.3 Overview of configuration steps

Creation of a dial plan

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	e.g. *demo_dailplan*
Number of digits in extension numbers	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	e.g. *3*
URI type	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	*Telephone Extension*
VoIP security	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	*Unsecured*
Subscriber Access	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Subscriber Access**	e.g. *600*
Outside line access code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
International access code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*00*
National number prefix	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
Country/Region code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*49*
In-country/region number format	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
International number format	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0049*
Dial by name primary method	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *Last First*
Dial by name secondary method	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**->	*SMTP Address*

Field	Menu	Value
	Settings	
Audio codec	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	*G.711*
Operator extension	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *810*
Logon failures before disconnect	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *3*
Default language	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *English (United States)*
In-Country/Region Rule Groups	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Rule Groups**	*national*, *0**, *0**
International Rule Groups	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Rule Groups**	*international*, *00**, *00**
Allow calls to uses within the same dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Restrictions**	*Enabled*
Allow calls to extensions	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Restrictions**	Enabled

Creation of a UM IP Gateway

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	e.g. *demo_UM-GW*
IP Address	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	e.g. *192.168.10.222*
Dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	*demo_dialplan*

Creation of a UM hunt group

Field	Menu	Value
Associated UM IP gateway	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *demo_UM-GW*

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *mailbox_demo*
Dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *demo_dialplan*
Pilot identifier	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *600*

Configuration of a UM Mailbox Policy

Field	Menu	Value
Fax identity	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	*Microsoft Exchange*
Text send when a UM mailbox is enabled	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *Welcome to Microsoft Exchange UM*
Text send when a PIN is reset	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *Your PIN has been reset!*
Text included with a voice message	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	z. B. *new voice message!*
Text included with a fax message	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *new fax!*
Minimum PIN length	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **PIN Policies**	e.g. *4*
Number of previous PINs to disallow	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *5*
Number of incorrect PIN entries before PIN is automatically reset	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *5*
Number of incorrect PIN entries before UM mailbox is locked out	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *15*
Allow calls to uses	**Organization Configuration** -> **Unified**	Enabled

Field	Menu	Value
within the same dial plan	**Messaging** -> **New UM Mailbox Policy** -> **Dialing Restrictions**	
Allow calls to extensions	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Dialing Restrictions**	Enabled

Activation of unified messaging for an exchange mailbox

Field	Menu	Value
Unified Messaging Mailbox Policy	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	e.g. *demo_dialplan Default Policy*
Manually specify PIN	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	Your PIN
Manually entered mailbox extension	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	e.g. *720*

Configure multiple subscriber number

Field	Menu	Value
MSN	**Configuration** -> **External numbers** -> **Base S0-4**	e.g. *6898925*, *6898926* and *6898927*

VoIP subscriber Configuration

Field	Menu	Value
Internal number	**Configuration** -> **Internal subscriber** -> **Numbers**	*600*
Name	**Configuration** -> **Internal subscriber** -> **Numbers**	e.g. *MS_Exchange*
UK (Fixed IP address for SIP clients)	**Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.	*UK(enabled)*
UK(IP address)	**Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.	e.g. *192.168.10.101*
Static Host Port	**Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.	*5065*
Transport protocol	**Configuration** -> **Internal subscriber** -> **VoIP-VPN-settings**.	*TCP*

Configure call assignment

Field	Menu	Value
External connection	**Configuration** -> **Call distribution**	e.g. Base S0-4 Index-0

Field	Menu	Value
Number	**Configuration** -> **Call distribution**	e.g. *6898925*
Assignment	**Configuration** -> **Call distribution**	e.g. *MS Exchange (Internal 600)*

Chapter 7 Telephony - TR200 - Basic scenario

7.1 Introduction

The following chapter describes how to configure a **bintec TR200** over ISDN and VoIP (for telephony) and over ADSL for connection to the internet.

Configuration is performed with the **GUI** (Graphical User Interface).

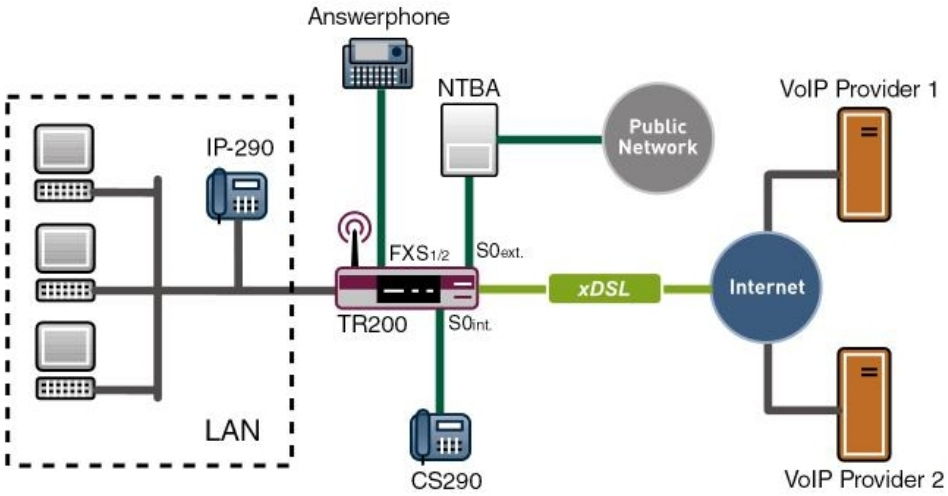

Fig. 68: Example scenario telephony with a **bintec TR200**

Requirements

- A **bintec TR200**
- A boot image of version 7.5.1 or later
- ISDN Internet access
- xDSL Internet access

7.2 Configuration

7.2.1 Connection from a bintec TR200 to the internet

bintec TR200 is connected to the internet via the internal ADSL modem.

For this, go to the following menu:

(1) Go to **WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**.

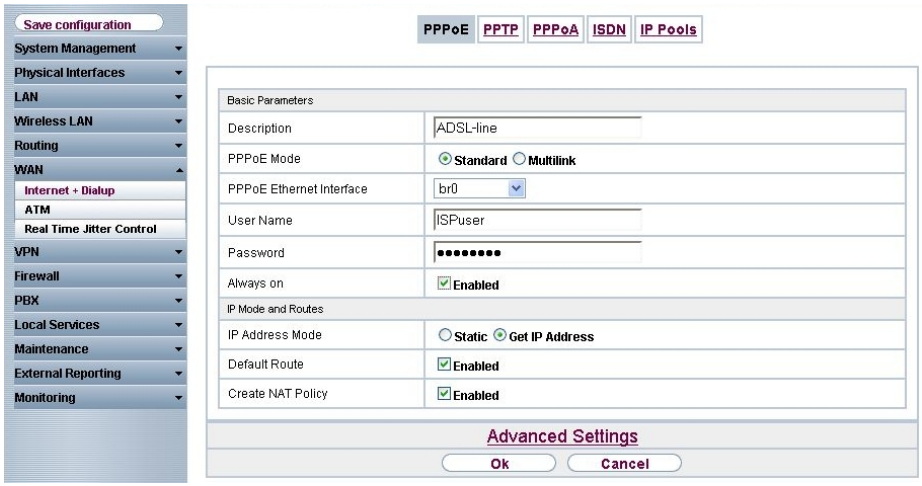

Fig. 69: **WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**

Relevant fields in the PPPoE menu

Field	Meaning
Description	Give the connection a name.
PPPoE ethernet interface	Specify the interface for your gateway over which the xDSL connection is to be established.
User Name	Enter the user name you received from the provider.
Password	Enter the password you received from the provider.
Always Active	This indicates that the gateway does not automatically clear the connection. Only activate this option if you have Internet access with a flat-rate charge.
IP address mode	Defines the mode following which the gateway receives the IP address.
Standard Route	For this connection, a standard route is automatically created.
Create NAT entry	NAT is enabled for this connection.

To set up Internet access over xDSL, proceed as follows:

(1) Under **Description** enter the name for the connection, e.g. *ADSL-line*.

(2) For **PPPoE Ethernet Interface**, select *ethoa50-0*.

(3) Under **User Name** enter your user name defined in the access data for your provider, e.g. *ISPuser*.

(4) Under **Password** enter the password for your Internet access.

(5) Select **Always Active**.

(6) Under **IP Address Mode** select *Get IP Address*.

(7) Keep **Default Route** selected.

(8) Leave **Create NAT Policy** enabled.

(9) Confirm with **OK**.

7.2.2 Configuring the external ISDN interface

In this example **bintec TR200** runs via a NTBA (Network Termination Basis Connection) operated by deutsche Telekom. Two external numbers (MSN) are defined. One of the numbers is configured for telephony, the second MSN number is configured for the ISDN login/ service login.

To do this, select *Point-to-multipoint* in the **PBX** -> **Line Configuration** -> **Access Configuration** menu.

Go to the following menu to configure the external numbers:

(1) Go to **PBX** -> **Line Configuration** -> **External Numbers** -> **New**.

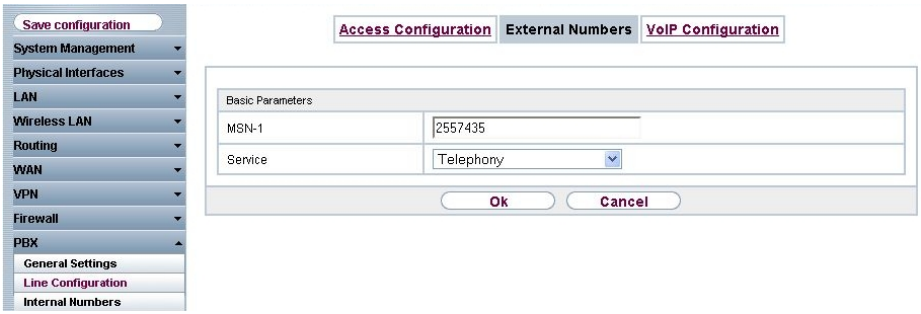

Fig. 70: **PBX** -> **Line Configuration** -> **External Numbers** -> **New**

Relevant fields in the External Numbers menu

Field	Meaning
MSN-0	Enter the subscriber numbers for the telephony or for the ISDN

Field	Meaning
	login/service login. You can enter up to 10 subscriber numbers (MSN, multiple subscriber numbers). The MSN are re-numbered automatically to start with *0*. A 24 digit sequence is possible.
Service	Select the desired service.

Proceed as follows to configure the external numbers:

(1) Enter the subscriber number for telephony under **MSN-0**, e.g. *2557435*.

(2) Select the **Service** *Telephony*.

(3) Confirm with **OK**.

(4) Click **New** to configure the second external number.

(5) Enter the subscriber number for the ISDN login/Service login under **MSN-1**, e.g. *2556295*.

(6) Under **Service** select *ISDN Login/Service Login*.

(7) Confirm with **OK**.

7.2.3 Registering bintec TR200 with two VoIP providers

bintec TR200 is connected to a national and an international VoIP SIP provider (in this example Italian) to reduce costs for telephone calls abroad and connections to the wireless network.

Go to the following menu to configure the VoIP providers:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

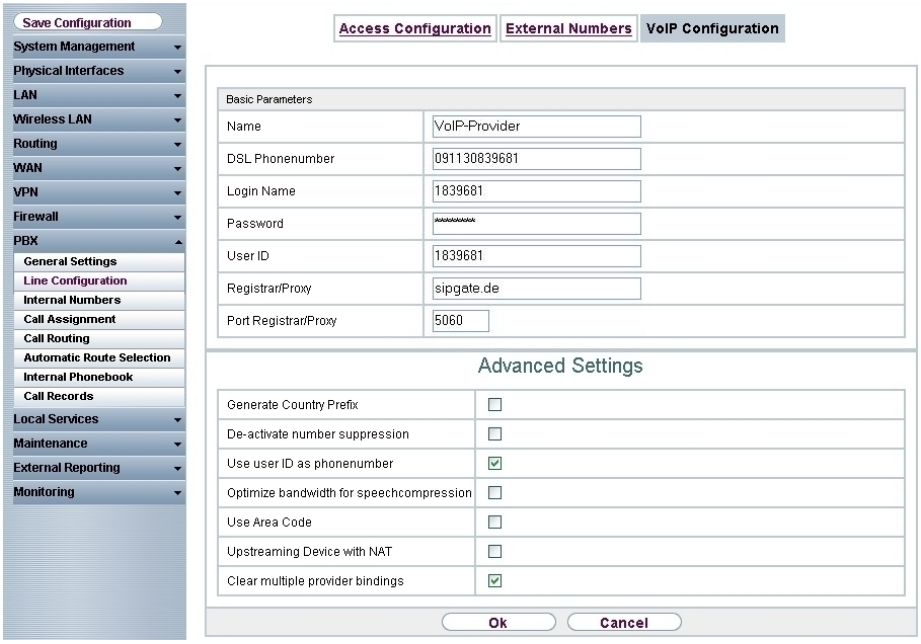

Fig. 71: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
Name	Enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible.
DSL Phonenumber	Enter the VoIP phonenumber you received from your VoIP provider. A 24 digit sequence is possible.
User Name	Enter the user name you received from your VoIP provider. A 64 digit alpha-numeric sequence is possible.
Password	Enter the password. A 32 digit alpha-numeric sequence is possible.
User ID	Enter your provider's user ID.
Registrar/Proxy	Enter the DNS name or IP address of the SIP server. A 26 digit alpha-numeric sequence is possible.

Proceed as follows to set up the VoIP provider:

(1) Under **Name** enter *VoIP Provider* for example.

(2) Under **DSL Phonenumber** enter *091130839681* for example.

(3) Under **User Name** enter *1839681* for example.

(4) Under **Password** enter *secret* for example.

(5) Under **User ID** enter *1839681* for example.

(6) Under **Registrar/Proxy** enter *sipgate.de* for example.

(7) Press **OK** to confirm your entries.

(8) Click **New** to configure the second VoIP provider.

(9) Under **Name** enter *Italia VoIP Provider* for example.

(10) Under **DSL Phonenumber** enter *0039123456789* for example.

(11) Under **Password** enter *secret* for example.

(12) Under **User Name** enter *user* for example.

(13) Under **Registrar/Proxy** enter *83.84.85.86* for example.

(14) Press **OK** to confirm your entries.

7.2.4 Configuring the internal extension

An internal number is assigned to every internal subscriber. The subscribers are sorted depending on the access configuration (port).

In the **PBX** -> **Internal Numbers** -> **Extensions** menu, a list of all call data is shown.

In this example an ISDN telephone (internal number 20) and an IP telephone (internal number 30) is created. Outgoing calls are normally sent over the ISDN path. If the ISDN line fails, an automatic backup is performed on the VoIP provider.

Go to the following menu to configure the internal extensions:

(1) Go to **PBX** -> **Internal Numbers** -> **Extensions** ->  .

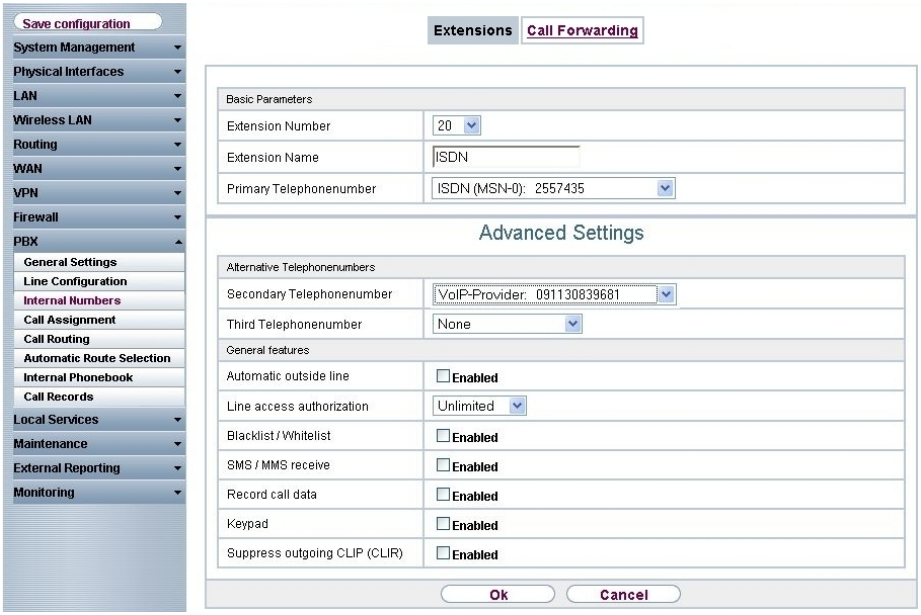

Fig. 72: **PBX** -> **Internal Numbers** -> **Extensions** ->

Relevant fields in the Extensions menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select a connection over which the external connection should be established.
User Name	Only for SIP extensions. The user name and extension number must be identical. The extension number is entered by default.
Password	Only for SIP extensions. At this point, you can assign a password.
Secondary Telephonenumber	Select another connection over which the external connection should be established. If the primary number/line is not operating, the secondary line/

Field	Meaning
	telephone number is used for outgoing connections. The alternative telephone number acts as a backup connection for the primary line.

Proceed as follows to edit the internal extensions:

(1) Select an ISDN telephone from the list, for example *20*, and click  .

(2) Under **Extension Name** enter *ISDN* for example.

(3) Select the **Primary Telephonenumber**, e.g. *ISDN (MSN-0): 2557435*.

(4) Select the **Secondary Telephonenumber**, e.g. *VoIP Provider: 091130839681*.

(5) Leave the remaining settings unchanged and confirm them with **OK**.

(6) Select an IP telephone from the list, for example *30*, and click  .

(7) Under **Extension Name** enter *elmeg IP-290* for example.

(8) Select the **Primary Telephonenumber**, e.g. *ISDN (MSN-0): 2557435*.

(9) The number is enter under **User Name** by default.

(10) Enter the password, e.g. *secret*.

(11) Select the **Secondary Telephonenumber**, e.g. *VoIP Provider: 091130839681*.

(12) Leave the remaining settings unchanged and confirm them with **OK**.

7.2.5 Call Assignment / Call Groups

The **Call Groups** function allows you to define the call assignment for external incoming calls.

This shows the entries you have made in the **PBX** -> **Line Configuration** -> **External Numbers** -> **New** menu.

(1) Go to **PBX** -> **Call Assignment** -> **Call Groups**.

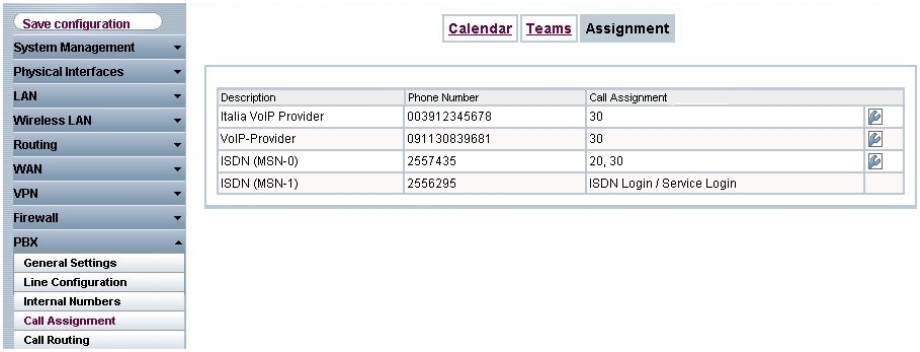

Fig. 73: **PBX** -> **Call Assignment** -> **Call Groups**

Relevant fields in the Call Groups menu

Field	Meaning
Name	Displays the name of the point-to-multipoint or point-to-point connection together with a sequential number.
phonenumber	For a point-to-multipoint connection, displays the multiple subscriber number (MSN) and for a point-to-point connection the PBX number together with the direct dial-in number. The DSL Phonenumber is displayed for a VoIP provider account.
Call Assignment	Displays the numbers of the internal telephones that ring in the event of an external incoming call.

Click the icon to edit existing call groups.

(1) Go to **PBX** -> **Call Assignment** -> **Call Groups**->.

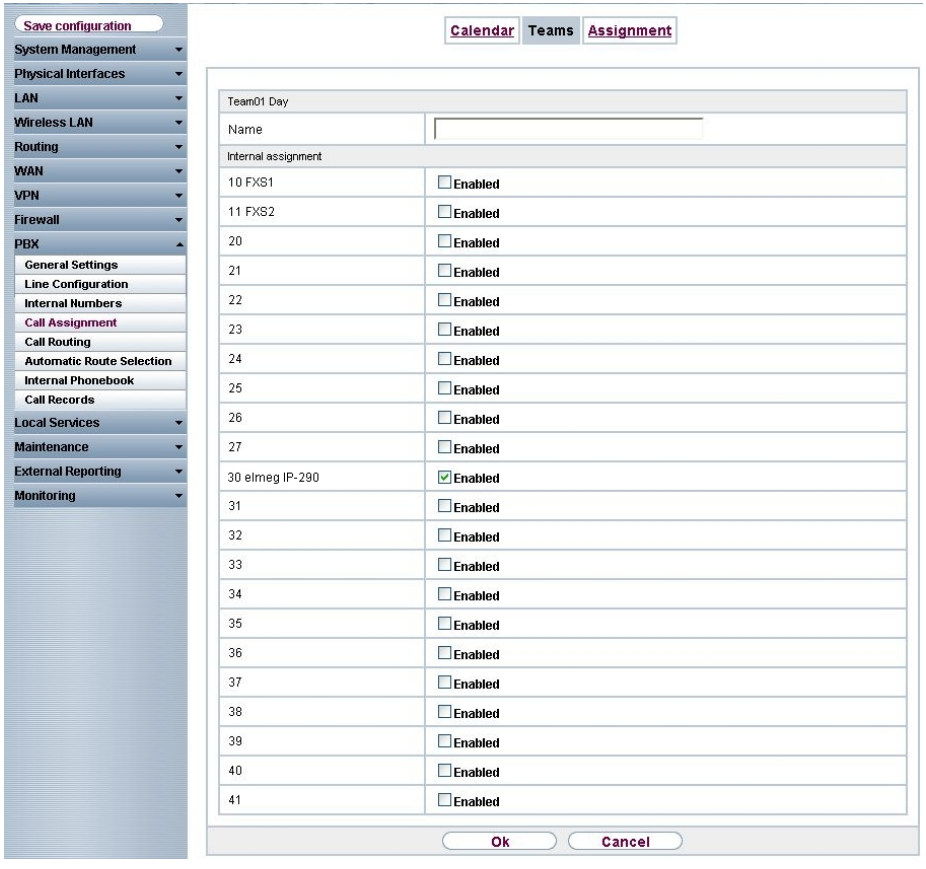

Fig. 74: **PBX** -> **Call Assignment** -> **Call Groups** ->

The internal number is activated by choosing *Enabled*. By default, certain internal number are already activate when the window is opened.

Proceed as follows to configure the call groups:

(1) Select the option so that incoming connections over ISDN (MSN-0 2557435) are signalled on extensions 20 (ISDN telephone) and on extension 30 (VoIP telephone).

(2) Connections to the Italian VoIP provider will be routed to the IP telephone (extension 30).

(3) Connections to the national VoIP provider will be routed to the IP telephone (extension 30).

(4) The setting for the ISDN login/service login is already pre-defined.

7.2.6 Calendar function / night service

You can also use the call group in conjunction with the calendar, so that different telephones ring for external calls during the day and at night.

To do this you must enable the **Operating status** in the **PBX** -> **Call Assignment** -> **Calendar** menu. In the calendar, you define the switching times for time-controlled call assignment.

Go to the following menu to configure the calendar settings:

(1) Go to **PBX** -> **Call Assignment** -> **Calendar**.

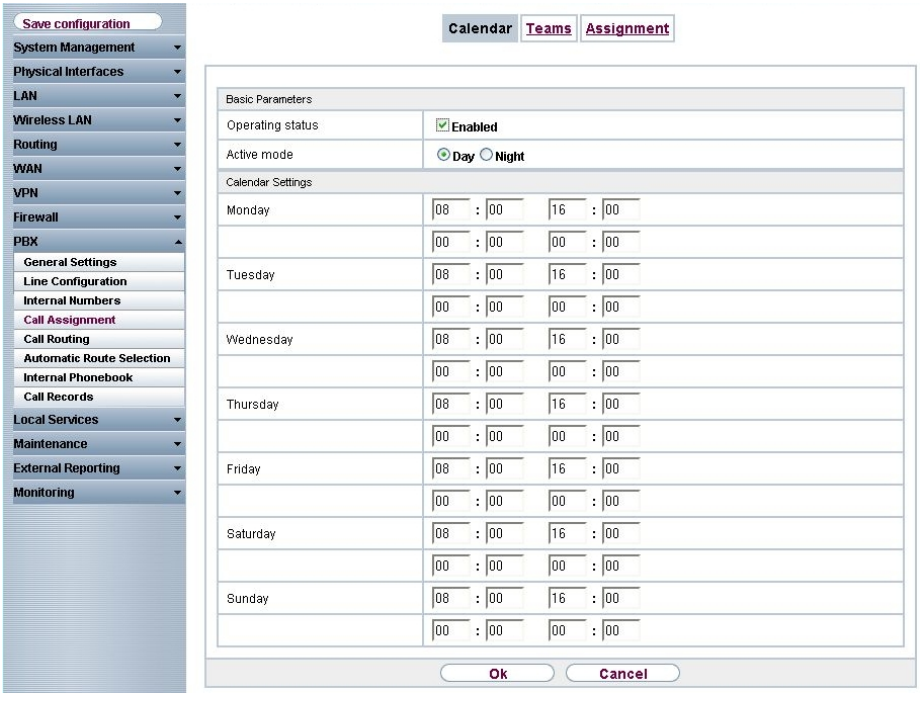

Fig. 75: **PBX** -> **Call Assignment** -> **Calendar**

Relevant fields in the Calendar menu

Field	Meaning
Operating status	Operating status is enabled for this function.
Calendar Settings	You can enter two periods for each weekday. These two periods are automatically assigned to the *Day* switching type. The system uses the gaps between the entered periods for the *Night* switching time.

In this example a similar answering machine is used. This is connected to the first FXS port. In the list of internal numbers the answering machine is assigned the extension 10.

For this, go to the following menu:

(1) Go to **PBX** -> **Internal Numbers** -> **Extensions** .

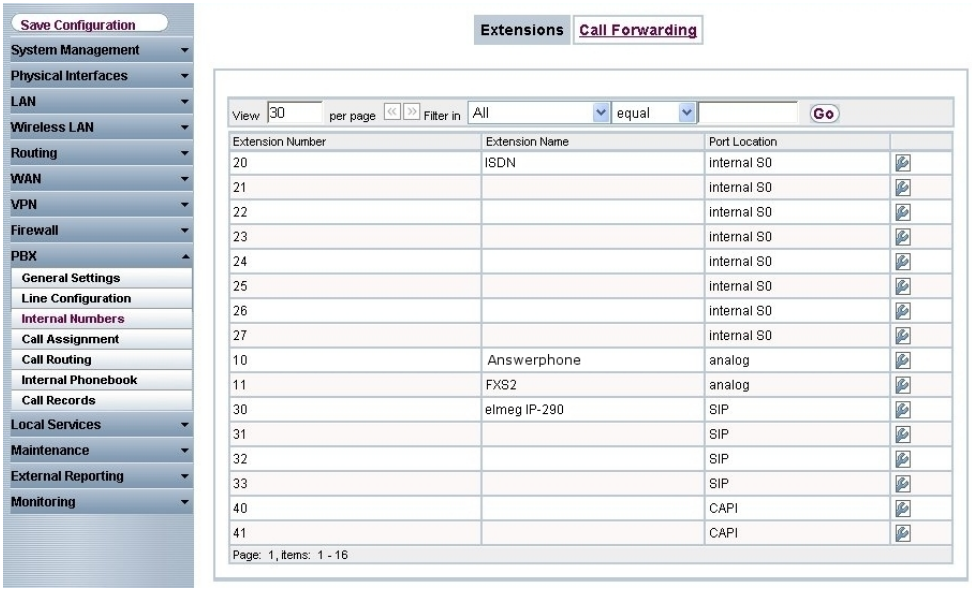

Fig. 76: **PBX** -> **Internal Numbers** -> **Extensions**

When the calendar is enabled the **Call Groups** menu is divided into day and night. Incoming connections during the day continue to be signalled on the respective telephone sets. At night (9 pm - 8 am) all incoming calls are routed to the answering machine.

The list of all entries is given in the **PBX** -> **Call Assignment** -> **Call Groups** menu.

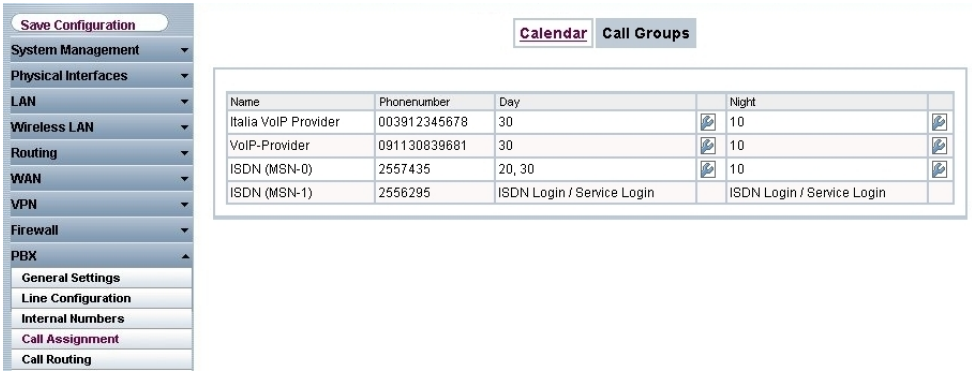

Fig. 77: **PBX** -> **Call Assignment** -> **Call Groups**

7.2.7 Automatic Route Selection

In this menu you can determine which outgoing connections are to by made via the ISDN or POTS interface or by VoIP and with which provider. You can define up to 50 automatic route selections.

You can, for example, determine that international calls are to be routed using VoIP and that the cheapest provider is to be used.

Go to the following menu to configure the automatic route selection:

(1) Go to **PBX** -> **Automatic Route Selection** -> **Subscriber Numbers / Routings** -> **New**.

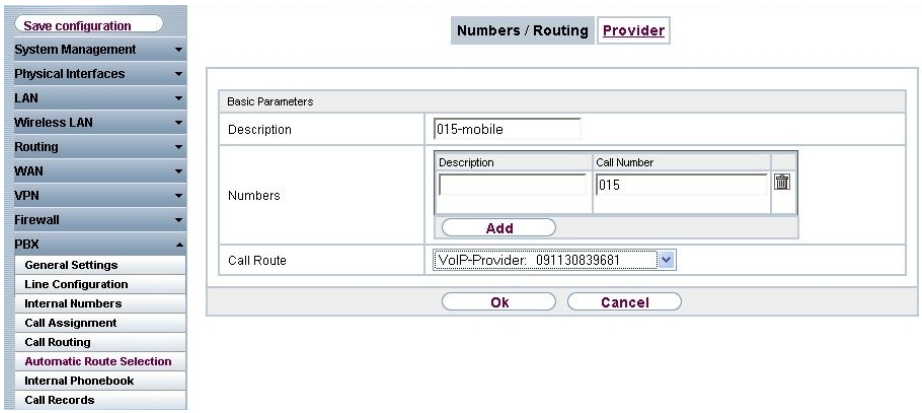

Fig. 78: **PBX** -> **Automatic Route Selection** -> **Numbers/Routing** -> **New**

Relevant fields in the Subscriber Numbers / Routing menu

Field	Meaning
Name	Enter the name of the group of which you wish to have the numbers dialled through a specific provider.
Subscriber numbers	Define the group members here. In the **Name** area, enter a name for the current group member. In the **Number** area, add the prefix code of the current group member. You can use the **Add** button to add entries. You can also delete entries.
Routing	Select whether the group's calls are to be routed via ISDN or through a specific provider. All available VoIP providers can be found under **PBX** ->**Line Configuration** ->**VoIP Configuration** and all entries that have been configured can be found under **PBX** -> **Automatic Route Selection** -> **Provider**.

In this example outgoing connections to national mobile telephone numbers (starting with 015, 016, 017) are routed to the VoIP provider.

Outgoing connections to the Italian network (starting with 0039) are routed via the Italian VoIP provider to reduce costs.

Note

In the **PBX** -> **Automatic Route Selection** -> **Provider** menu you can use automatic route selection to specify the call by call number for defined destination numbers.

Proceed as follows to configure the automatic route selection:

(1) Enter the name of the group under **Name**, e.g. *015-mobile*.

(2) Enter the dialling code of the group member under **Number**, e.g. *015*.

(3) Under **Routing** select the provider, e.g. *VoIP Provider: 091130839681*.

(4) Confirm your entries with **OK**.

(5) Proceed in the same way to configure the mobile telephone numbers 016, 017 and for the Italia VoIP Provider.

The list of configured subscriber numbers now appears as follows:

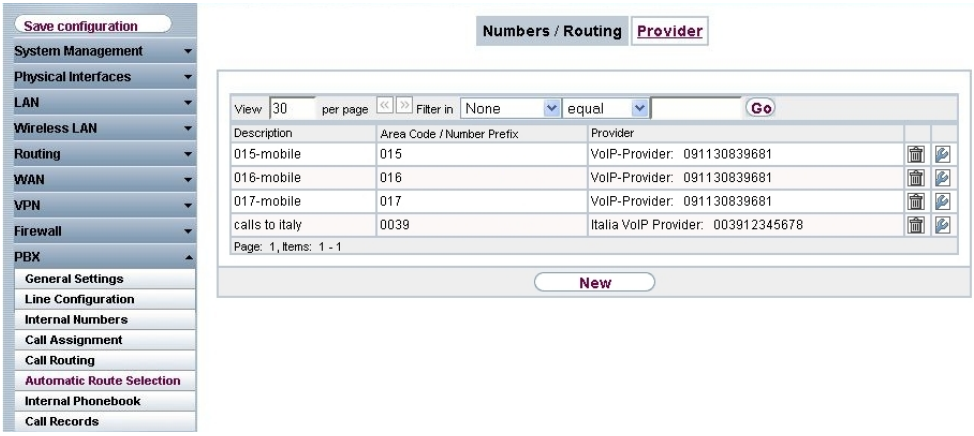

Fig. 79: **PBX -> Automatic Route Selection -> Subscriber Numbers / Routing**

7.3 Overview of configuration steps

Internet Access

Field	Menu	Value
Description	**WAN -> Internet + Dialup -> PPPoE -> New**	e.g. *ADSL-line*
PPPoE ethernet interface	**WAN -> Internet + Dialup -> PPPoE -> New**	*ethoa50-0*
User Name	**WAN -> Internet + Dialup -> PPPoE -> New**	Your user name
Password	**WAN -> Internet + Dialup -> PPPoE -> New**	Your password
Always Active	**WAN -> Internet + Dialup -> PPPoE -> New**	Enabled for flatrate
IP address mode	**WAN -> Internet + Dialup -> PPPoE -> New**	*Get IP Address*
Standard Route	**WAN -> Internet + Dialup -> PPPoE -> New**	Enabled
Create NAT entry	**WAN -> Internet + Dialup -> PPPoE -> New**	Enabled

External Numbers

Field	Menu	Value
MSN	**PBX -> Line Configuration**	e.g. *2557435*

Field	Menu	Value
	-> External Numbers -> New	
Service	**PBX -> Line Configuration -> External Numbers -> New**	e.g. *Telephony*

VoIP Configuration (national)

Field	Menu	Value
Name	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *VoIP Provider*
DSL Phonenumber	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *091130839681*
User Name	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *1839681*
Password	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *secret*
User ID	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *1839681*
Registrar/Proxy	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *sipgate.de*

VoIP Configuration (international)

Field	Menu	Value
Name	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *Italia VoIP Provider*
DSL Phonenumber	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *0039123456789*
User Name	**PBX -> Line Configuration -> VoIP Configuration -> New**	e.g. *user*
Password	**PBX -> Line Configuration**	e.g. *secret*

Field	Menu	Value
	-> **VoIP Configuration** -> **New**	
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *user*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *83.84.85.86*

Internal Extension (internal)

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *20*
Extension Name	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *ISDN*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *ISDN (MSN-0): 2557435*
Secondary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *VoIP Provider: 091130839681*

tab

Internal Extension (IP telephone)

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *30*
Extension Name	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *elmeg IP-290*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *ISDN (MSN-0): 2557435*
User Name	**PBX** -> **Internal Numbers** -> **Extensions** ->	*30*
Password	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *secret*
Secondary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** ->	e.g. *091130839681*

Call groups

Field	Menu	Value
20 ISDN	**PBX** -> **Call Assignment** -> **Call Groups** -> 	Enabled
30 elmeg IP-290	**PBX** -> **Call Assignment** -> **Call Groups** -> 	Enabled

Day / Night Calendar

Field	Menu	Value
Operating status	**PBX** -> **Call Assignment** -> **Calendar**	Enabled
Monday to Sunday	**PBX** -> **Call Assignment** -> **Calendar**	e.g. *8 am* and *9 pm*

Numbers / Routing

Field	Menu	Value
Name	**PBX** -> **Automatic Route Selection** -> **Numbers/Routing** -> **New**	e.g. *015-mobile*
Number	**PBX** -> **Automatic Route Selection** -> **Numbers/Routing** -> **New**	e.g. *015*
Routing	**PBX** -> **Automatic Route Selection** -> **Numbers/Routing** -> **New**	e.g. *VoIP Provider: 091130839681*

Chapter 8 Telephony - Parallel call

The following chapter describes how to use call assignment and call forwarding to signal an incoming call to an internal extension and an external extension simultaneously.

Note

Only one call forwarding (CF) to an external extension is permitted for each incoming multiple subscriber number/VoIP subscriber number. If several forwarding options are configured from internal extensions, only the first calling forwarding (CF) is used.

Configuration is performed with the **GUI** (Graphical User Interface).

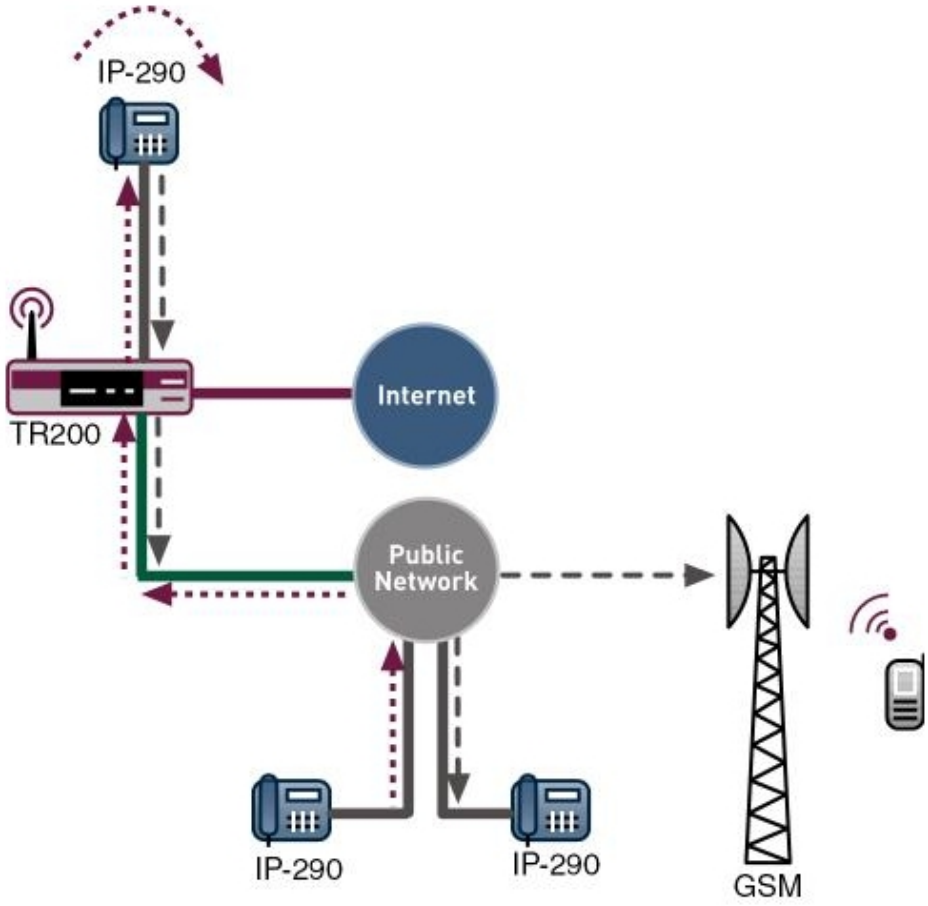

Fig. 80: Example scenario for parallel calls

8.1 Introduction

By combining call assignment and call forwarding (CF) you can signal incoming ISDN/SIP calls to an external extension. The incoming call is assigned to an internal extension number (e.g. 27) using call assignment to configure call forwarding. Call forwarding allows the call to be forwarded to any external subscriber number.

Requirements

In our example the **bintec TR200** with software version 7.5.1 Patch 1 is used.

The following are required for the configuration:

- Connection of the **bintec TR200** to LAN, ISDN exchange connection and, if necessary, DSL.
- An existing internet connection if using SIP providers.
- SIP provider for call forwarding over SIP.

8.2 Configuration

8.2.1 Access Configuration

The access configuration for an external ISDN can be configured for point-to-multipoint (PtMP), point-to-point (PtP) and POTS (analogue connection).

You must make settings in the following menu to configure your ISDN connection type:

(1) Go to **PBX** -> **Line Configuration** -> **Access Configuration**.

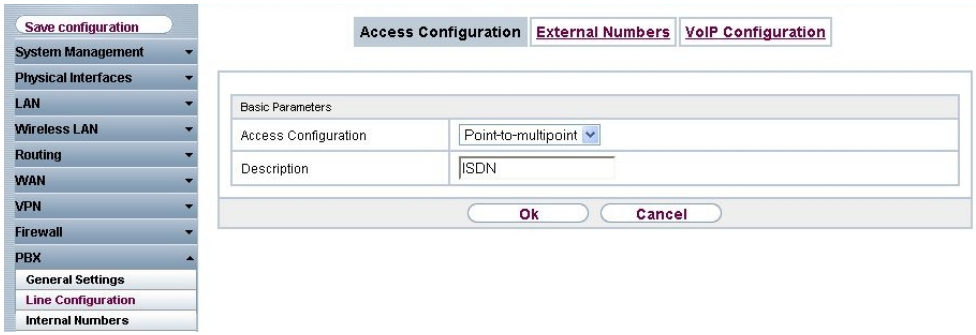

Fig. 81: **PBX** -> **Line Configuration** -> **Access Configuration**

Relevant fields in the Access Configuration menu

Field	Meaning
Access Configuration	Select the desired access configuration.
Name	Enter a name for the access configuration you selected.

Proceed as follows to configure the access configuration:

(1) Under **Access Configuration** select *Point-to-multipoint*.

(2) Under **Name** enter *ISDN* for example.

(3) Confirm with **OK**.

8.2.2 External Numbers

Go to the following menu to configure the external multiple subscriber number used for telephony:

(1) Go to **PBX** -> **Line Configuration** -> **External Numbers** -> **New**.

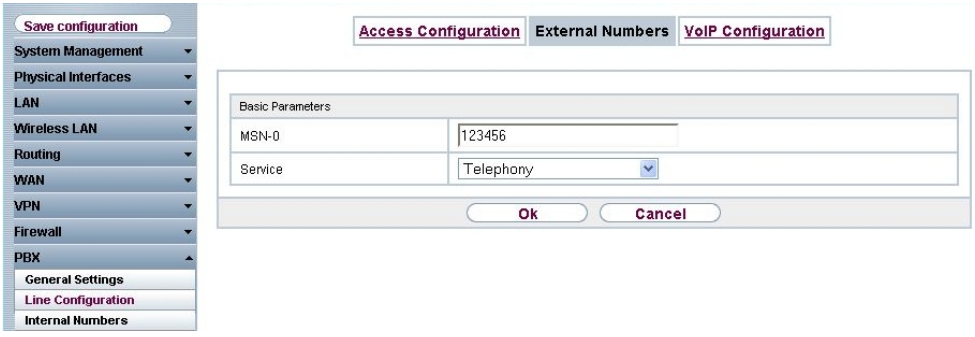

Fig. 82: **PBX** -> **Line Configuration** -> **External Numbers** -> **New**

Relevant fields in the External Numbers menu

Field	Meaning
MSN-0	For point-to-multipoint connections, you can enter up to 10 numbers (MSN, multiple subscriber number). These MSNs are the external phone numbers for your ISDN connection. The MSN are re-numbered automatically to start with `0`. A 24 digit sequence is possible.
Service	Select the desired service.

Proceed as follows to configure the multiple subscriber number:

(1) Enter the subscriber number under **MSN-0**, e.g. `123456`.

(2) Select the **Service** `Telephony`.

(3) Confirm with **OK**.

8.2.3 VoIP Configuration

In the **PBX** -> **Line Configuration** -> **VoIP Configuration** menu, the current VoIP configuration is shown. After about one minute, registration with the provider has taken place and the status is automatically set to (active).

Now configure the SIP connections to be used for VoIP telephony.

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

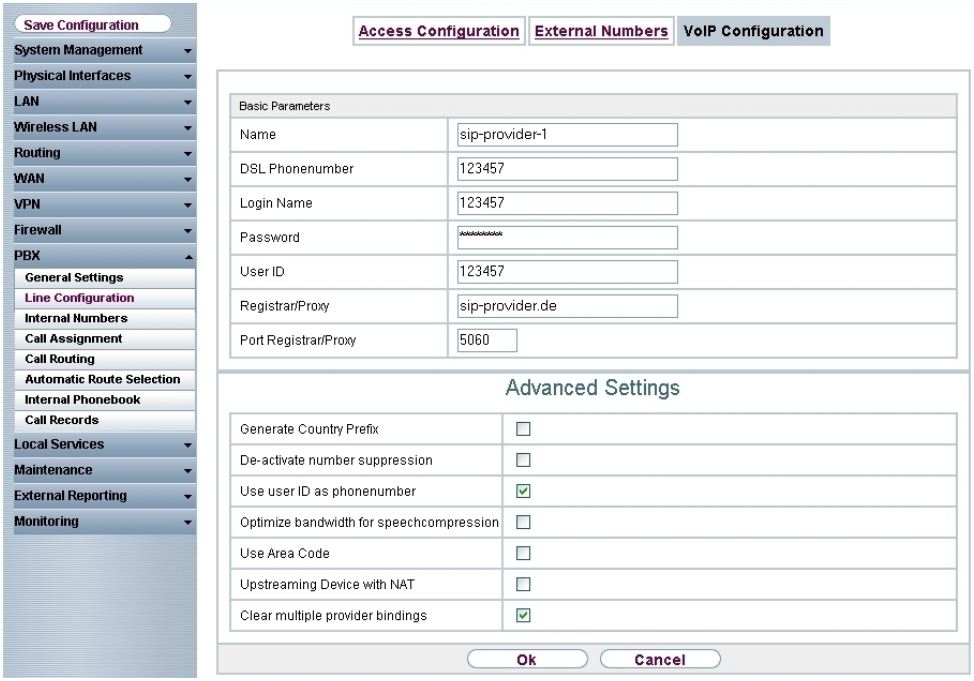

Fig. 83: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing *Enabled*.
Name	Enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.

Proceed as follows to configure the multiple subscriber number:

(1) Under **Name** enter *sip-provider-1* for example.

(2) Enter the **DSL Phonenumber** here, e.g. *123457*.

(3) Enter the IP address under **Registrar/Proxy**, e.g. *sip.de*.

(4) Confirm with **OK**.

8.2.4 Subscriber

An internal number is assigned to every internal subscriber. The subscribers are sorted depending on the access configuration (port).

Call forwarding requires use of an available extension number (in other words one that is not already used internally). The preset ISDN extensions 22-27 are suitable for this. Check the extension numbers and search for an extension that can be used for call forwarding.

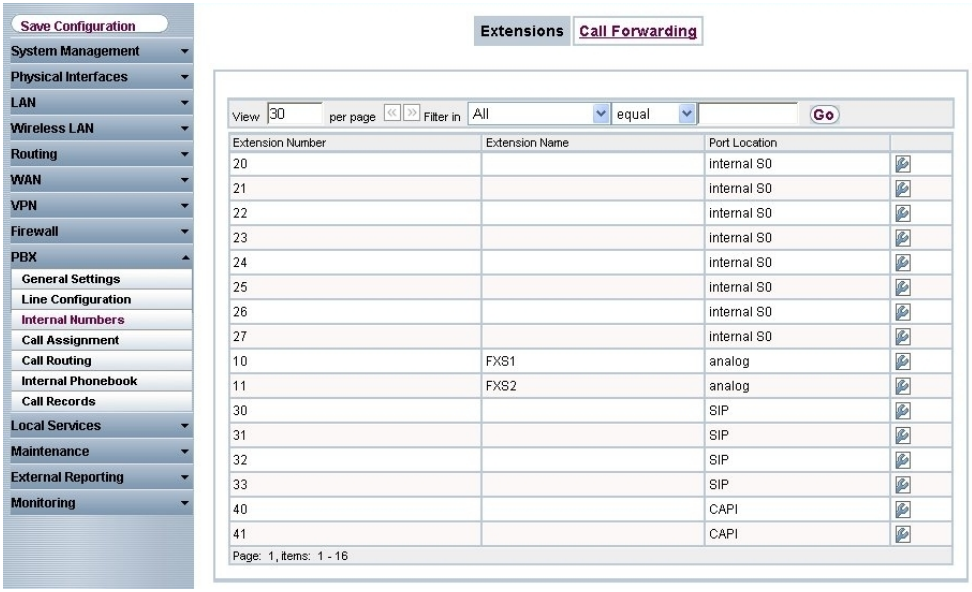

Fig. 84: **PBX** -> **Internal Numbers** -> **Extensions**

Values in the list Extension

Field	Description
Extension Number	This column shows which internal number is assigned to the extension (subscriber).
Extension Name	If a name is assigned to the extension (subscriber), it is displayed in this column.
Port	This column shows which port is assigned to which extension (subscriber). By default, the extension numbers *10* and *11* are analogue connections, *20* to *27* are internal S0 connections, *30* to *33* are SIP connections and *40* and *41* are both CAPI connections.

8.2.5 Call Assignment

The entries you have made in the **PBX** -> **Line Configuration** -> **External Numbers** -> **New** menu are displayed in the **PBX** -> **Call Assignment** -> **Call Groups** menu.

The **Call Groups** function allows you to define which incoming calls are forwarded externally. Add the required multiple subscriber numbers for the available extensions to the call assignment.

In this example, incoming calls are signalled on external ISDN (MSN-0) 123456 and calls to the SIP number 123457 are signalled on internal extensions 10 and 27.

(1) Go to **PBX** -> **Call Assignment** -> **Call Groups**.

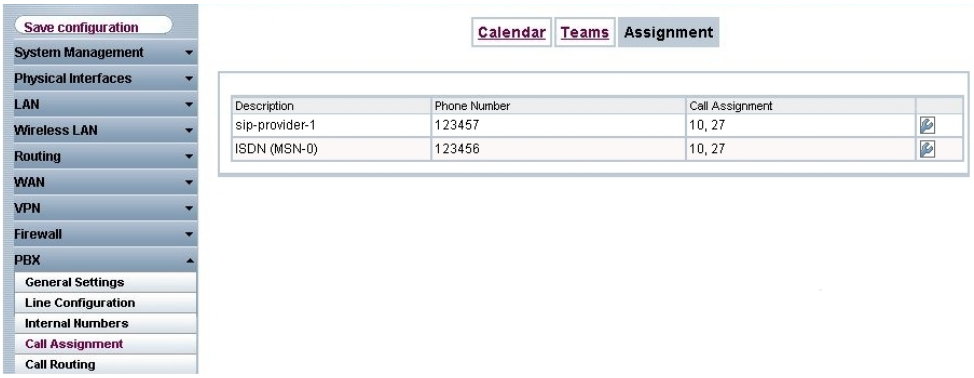

Fig. 85: **PBX** -> **Call Assignment** -> **Call Groups**

Fields in the Call Groups menu

Field	Description
Name	Shows the name of the point-to-multipoint connection.
phonenumber	Shows the multiple subscriber number (MSN).
Call Assignment	Displays the numbers of the internal telephones that are to ring in the event of an external call.

8.2.6 Call forwarding (CF)

Call forwarding relates to the routing of an incoming telephone call to another destination number or connection immediately, after a predefined period, or if the subscriber is busy.

(1) Go to **PBX** -> **Internal Numbers** -> **Call Forwarding (CF)**.

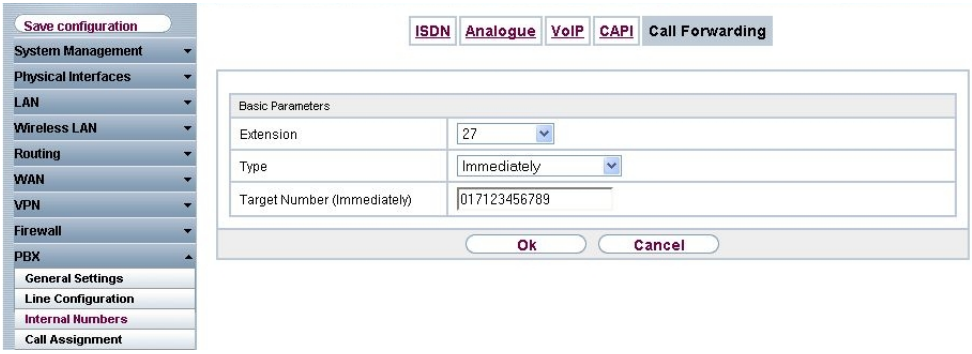

Fig. 86: **PBX** -> **Internal Numbers** -> **Call Forwarding (CF)**

Relevant fields in the Call Forwarding (CF) menu

Field	Description
Subscriber	Select the desired extension based on its extension number.
Type	Select the type of call forwarding you want to define for the subscriber. Choose whether call forwarding is *Direct* (immediate), *On busy*, or *On no reply* (after approx.. 15 seconds) or *On busy/no reply*.
Target Number (Direct)	Define the subscriber number for call forwarding (e.g. mobile).

Proceed as follows to configure call forwarding (CF):

(1) Under **Extension** select *27*.

(2) Under **Type** select *Direct*.

(3) Under **destination number (Direct)** enter *017123456789* for example.

(4) Confirm with **OK**.

Note

The multiple subscriber number is signalled to the external extension as the calling number, which is used for call forwarding on **bintec TR200**. If a multiple subscriber number of the ISDN connection is entered as a "primary telephone number" under extension 27, this number will signal, as the call is also forwarded over the ISDN connection. If an SIP connection is entered as a primary path, the call will be forwarded via this and the number of the SIP connection will be signalled.

8.3 Overview of configuration steps

Access Configuration

Field	Menu	Value
Access Configuration	**PBX** -> **Line Configuration** -> **Access Configuration**	e.g. *Point-to-multipoint*
Name	**PBX** -> **Line Configuration** -> **Access Configuration**	e.g. *ISDN*

External Numbers

Field	Menu	Value
MSN-0	**PBX** -> **Line Configuration** -> **External Numbers** -> **New**	e.g. *123456*
Service	**PBX** -> **Line Configuration** -> **External Numbers** -> **New**	e.g. *Telephony*

VoIP Configuration

Field	Menu	Value
Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *sip-provider-1*
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *123457*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *sip.de*

Call groups

Field	Menu	Value
10 FXS1	**PBX** -> **Call Assignment** -> **Call Groups**	Enabled
27 sip-provider-1	**PBX** -> **Call Assignment** -> **Call Groups**	Enabled

Call forwarding (CF)

Field	Menu	Value
Subscriber	**PBX** -> **Internal Numbers** -> **Call Forwarding (CF)** ->	e.g. *27*

Field	Menu	Value
	New	
Type	**PBX** -> **Internal Numbers** -> **Call Forwarding (CF)** -> **New**	e.g. *Direct*
Target Number (Direct)	**PBX** -> **Internal Numbers** -> **Call Forwarding (CF)** -> **New**	e.g. *0171123456789*

Chapter 9 Telephony - Automatic and manual call routing

9.1 Introduction

SIP/VoIP can be used with ISDN backup thanks to the automatic fallback function. Three connection paths can also be preset for each extension. A specific connection path can be dialled for an individual call using the code procedure.

Configuration is performed with the **GUI** (Graphical User Interface).

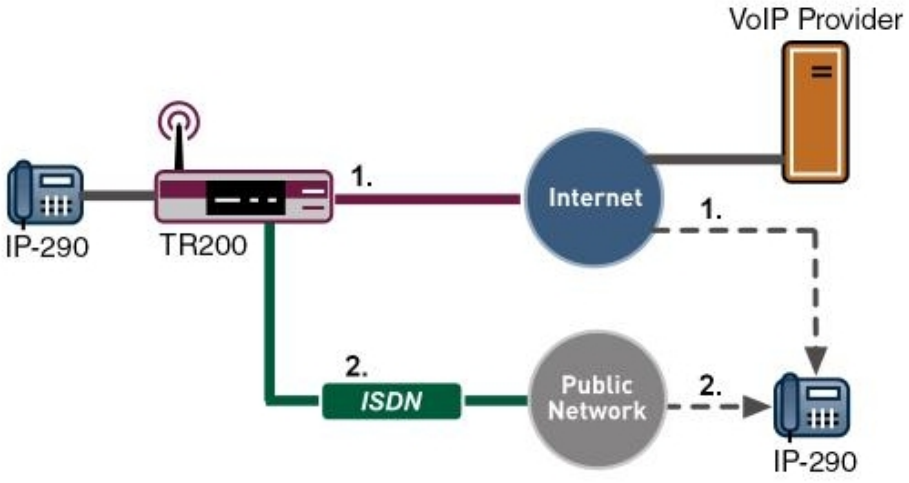

Fig. 87: Example scenario for call routing

Requirements

In our example the **bintec TR200** with software version 7.5.1 Patch 1 is used.

The following are required for the configuration:

- Connection of the **bintec TR200** to LAN, ISDN exchange connection and, if necessary, DSL.
- Internet dialup if using SIP providers.
- SIP provider for CF over SIP.

- Connection of at least one internal extension (FXS, ISDN, SIP).

9.2 Configuration

9.2.1 Automatic call routing VoIP/ISDN/POTS

If several exchange lines are available, these will be used in the default configuration in the following sequence:

(1) VoIP/SIP lines

(2) ISDN exchange line

(3) Analogue exchange line (POTS)

Series switching from ISDN to POTS does not occur because these are on the same RJ45 connection therefore only the ISDN connection or the POTS connection can be used at any one time.

If both the SIP lines and the ISDN/analogue lines are configured and active, the SIP lines will take priority for outgoing calls in the default configuration.

Note

If the SIP line is not available, an automatic fallback occurs to the ISDN or POTS line.

The SIP line may be unavailable due to the following reasons:

- Fault on the DSL connection or internet dialup
- Fault with the SIP provider
- Fault with the Internet Service Provider
- Bandwidth overcapacity, e.g. insufficient bandwidth is available for an additional VoIP call on the WAN path.

Example with a DSL line with 160 kbps upstream

(a) Call over SIP/VoIP with codec G.711 ==> 94 kbps

(b) Call over SIP/VoIP with codec G.729 ==> 38 kbps ==> 132 kbps

(c) Call: No more bandwidth on the DSL path => Fallback to ISDN

If a fault occurs on the DSL line, the system recognises that the SIP line is no longer available at the next SIP register interval. The SIP register interval is generally 60 seconds. In other words, if a DSL fails, outgoing calls are routed over ISDN or POTS after approx. 1 minute. If the DSL connection fails, the system falls back from ISDN to SIP after approx. 1

minute.

Automatic call routing can be set up in the **PBX** -> **Internal Numbers** -> **Extensions** menu for **Primary Telephonenumber** by selecting the *Automatic* option.

(1) Go to **PBX** -> **Internal Numbers** -> **Extensions** -><21> .

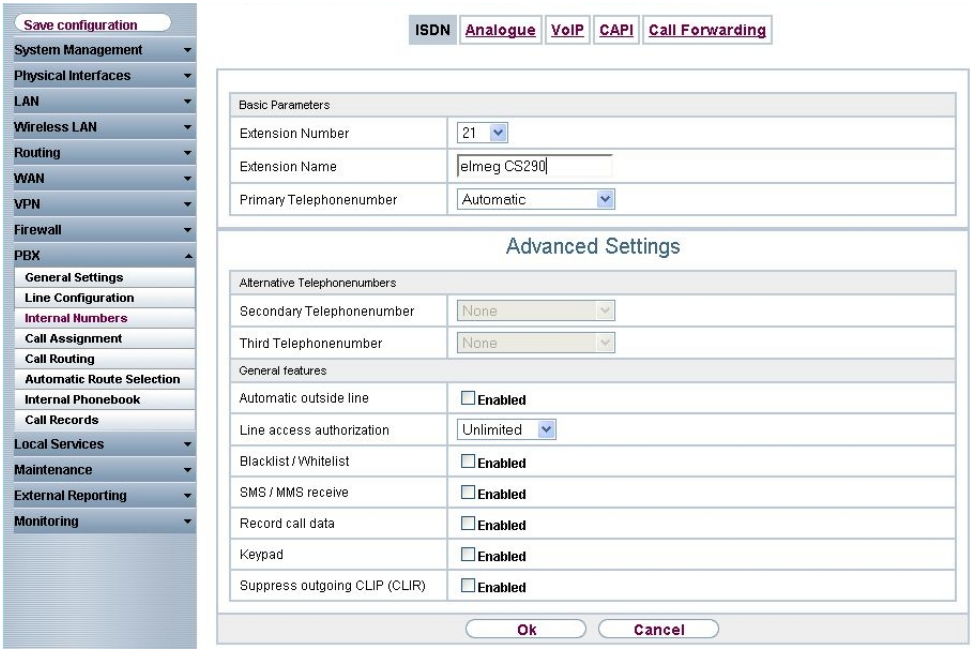

Fig. 88: **PBX** -> **Internal Numbers** -> **Extensions** -><21>

Relevant fields in the Extensions menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *21*, and click .

(2) Under **Extension Name** enter *elmeg CS290* for example.

(3) Under **Primary Telephonenumber** select *Automatic*, for example.

(4) The number is enter under **User Name** by default.

(5) Press **OK** to confirm your entries.

9.2.2 Manual call routing VoIP / ISDN / POTS for each extension

If the routing for the internal call is manual, the selling must be modified in the **PBX**-> **Internal Numbers** -> **Extensions** menu. This enable an individual outgoing line or outgoing subscriber number to be defined for each extension. In addition, two alternative paths can be set up, which are used if the previous paths fail.

For this, go to the following menu:

(1) Go to **PBX** -> **Internal Numbers** -> **Extensions** -><21> .

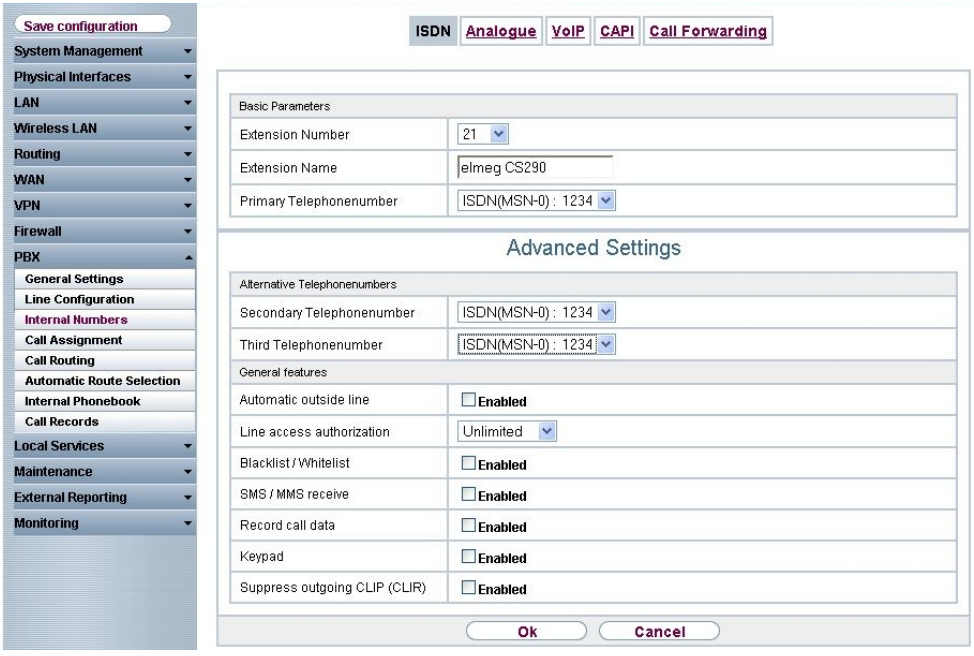

Fig. 89: **PBX** -> **Internal Numbers** -> **Extensions** -><21>

Relevant fields in the Extensions menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.

Field	Meaning
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
Secondary Telephonenumber	Select another connection over which the external connection should be established. If the primary number/line is not operating, the secondary line/telephone number is used for outgoing connections. The alternative telephone number acts as a backup connection for the primary line.
Third Telephonenumber	Select another connection over which the external connection should be established.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *21*, and click  .

(2) Under **Extension Name** enter *elmeg CS290* for example.

(3) Select the **Primary Telephonenumber**, e.g. *sip-provider-1: 123457*.

(4) Under **Secondary Telephonenumber** enter the subscriber number of the second sip-provider, e.g. *sip-provider-2: 123458*.

(5) Under **Third Telephonenumber** enter the subscriber number of the ISDN exchange line, e.g. *ISDN (MSN-0): 123456*.

(6) Press **OK** to confirm your entries.

9.2.3 Selective call routing

By using code procedures you can select an ISDN, POTS or SIP line for the next call from each extension.

- Selective assignment of the external analogue or ISDN connection: *8#00 + extension
- Selective assignment of the ISDN connection with a telephone number (MSN): #81 + 0...9 (MSN index) + extension
- Selective assignment of an SIP provider: *8#1 + 0...9 (SIP provider index) + extension

The index values for MSN/SIP providers can be found in the **GUI**.

Go to **PBX** -> **Line Configuration** -> **External Numbers** (ISDN-MSN-Index) or to **PBX** -> **Line Configuration** -> **VoIP Configuration** (SIP Provider Index).

9.2.4 Manual call routing vs. automatic route selection (automatic call routing)

In general, the settings made within automatic route selection take priority over the extension settings in the **PBX** -> **Internal Numbers** -> **Extensions** menu and over selective call routing.

Note

Example: If settings are made via the **Automatic Route Selection** menu, e.g. always route mobile numbers over the SIP line, whilst the primary telephone numbers are assigned an ISDN subscriber number under extension settings, the settings for automatic route selection take priority. In other words, the call is always routed over the SIP line with the outgoing number of the SIP line.

9.3 Overview of configuration steps

Extension Automatic

Field	Menu	Value
Extension Name	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *elmeg CS290*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *Automatic*

Extension Manual

Field	Menu	Value
Extension Name	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *elmeg CS290*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *sip-provider-1: 123457*
Secondary Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *sip-provider-2: 123458*
Third Telephonenumber	**PBX** -> **Internal Numbers** -> **Extensions** -><21>	e.g. *ISDN (MSN-0): 123456*

Chapter 10 IP - Internet access with T4x4 and external DSL modem

10.1 Introduction

The following describes configuration of Internet access using a DSL modem. You thus are able to navigate the Internet using one or more PC's or other Internet-capable devices.

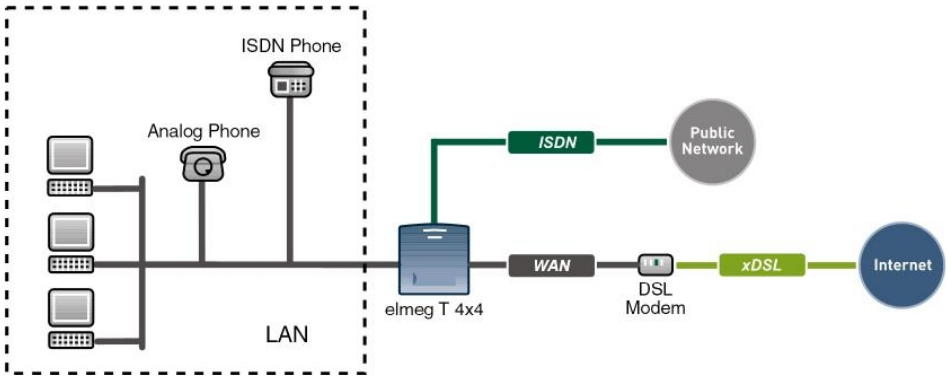

Fig. 90: Example of Internet access with DSL modem

Software version

Testing has occurred with the following software version:

- **elmeg T484** system with Firmware version 7.50
- **elmeg T444** system with Firmware version 7.50
- Win Tools **elmeg ICT system** with version 7.50

10.2 Configuration

To configure Internet access, the **Professional Configurator** version 7.50 must be installed, and an**elmeg T 484** or **elmeg T444**must be connected to the PC via a LAN- or USB cable. Launch the **Professional Configurator**; a window opens displaying the **access control**.

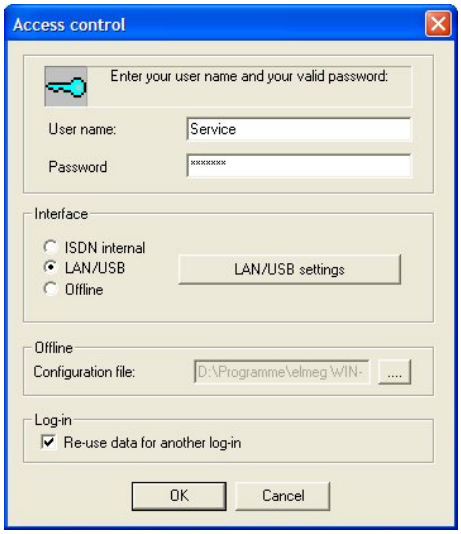

Fig. 91: Access control

First read out the PABX, then click **Readout** on the menu bar. After configuration readout, the system type is automatically recognised and the **Professional Configurator** correspondingly adjusted.

Relevant fields in the Access control menu

Field	Meaning
User Name	Enter *Service* for **User name**. Make sure you use the right notation.
Password	Also enter *Service* for **Password**. Make sure you use the right notation.
Interface	If the PC is connected to the PABX via a network- or USB cable, select the *LAN/USB***interface**. Click **LAN/USB Settings** to perform TCP/IP settings.
Logon	Enable *Use data for a new login*.

Locate the PABX router with **Search**. You may have to modify the Windows XP and Windows Vista firewall! Click **OK** to launch the Configurator.

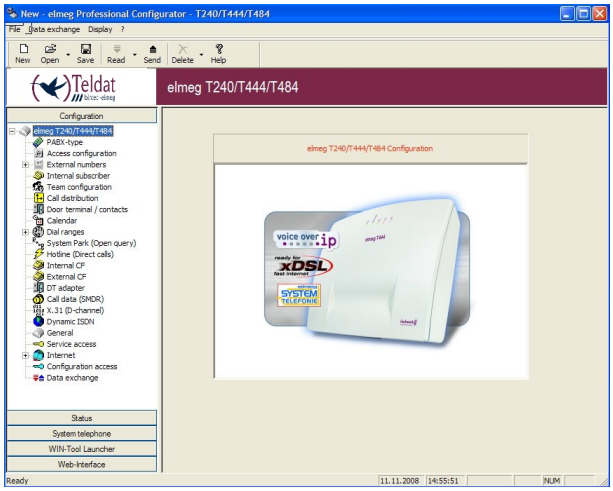

Fig. 92: elmeg Professional Configurator

10.2.1 Configure Internet access (DSL)

Go to **Network** -> **Internet access**. Here, you can select predefined providers from a list. By cancelling the window **Select predefined providers...**, you can configure an Internet provider which does not appear on the list. You can select more than one provider from the list, and configure these later. The list can be selected according to DSL Internet providers, or according to ISDN Internet providers. In the ISDN Internet provider list, you will also find several "call-by-call" entries. If **Only show call-by-call providers without login...** is selected, only providers not requiring login are displayed.

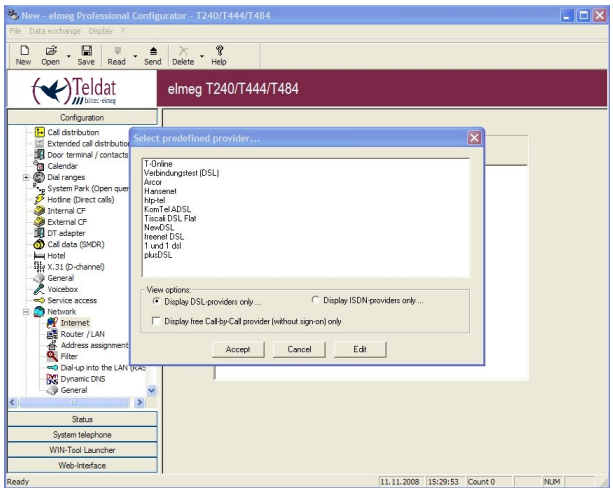

Fig. 93: Configure Internet access

If, for example, your Internet provider is **T-Online DSL**, select the entry in the list, then click on **Apply**. This entry then appears in the **Network**->**Internet Access** list. By double-clicking on this entry, you can now modify the **properties of the new Internet service provider**, enter your T-Online access data and password, as well as modify the dial-in parameters.

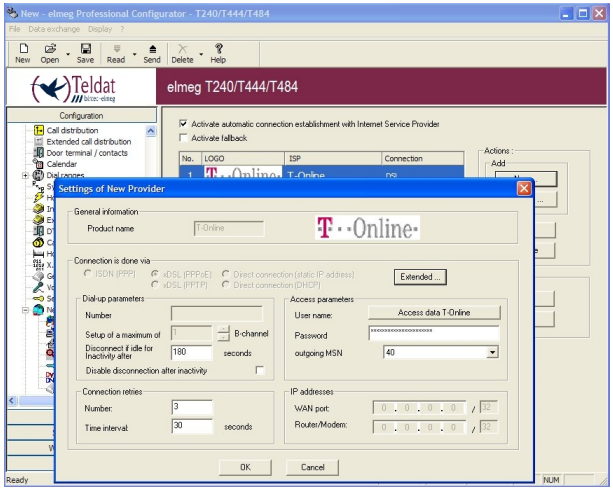

Fig. 94: Properties of the new Internet Service Provider

Release when inactive after

This value determines how much time, in seconds, elapses before the Internet connection is released in a case of inactivity. This setting is useful if the DSL access is not flat-rate, in which case the Internet connection is released after the configured time, only to be re-established if a request is sent out on the Internet (e.g., a website is called up via an Internet browser).

Disable release after inactivity

Enable this check-box if you've ordered flat-rate DSL.

Connection attempts

The **Number** value displays the number of dialling retries, how often the attempt was made to connect to the provider. **Time** indicates the value in seconds after which there is a renewed attempt to connect to the provider.

Important

If you modify these values and have entered the access data incorrectly, your access to T-Online will be blocked for 24 hours. During this interval, Internet dialin will not be possible.

T-Online access data

You receive your personal access data from your ISP. The terms used for the required access data may vary from provider to provider. However, the type of information you need for dialin is basically the same.

Enter the access data in the appropriate fields. Press **OK** to confirm your entries.

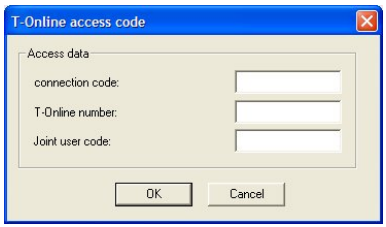

Fig. 95: T-Online access key

When all settings have been performed, send configuration to PABX. Click **Send** on the menu bar. After sending, the PABX is initialised and restarts; this process takes about 30 seconds.

10.2.2 Control Internet access

After the PABX has restarted, an Internet connection is established. To check whether there is an Internet connection, the **Control Center**program was installed during **WinTools**installation.

The **Control Center** is automatically launched when booting the computer; you'll find it in the taskbar at lower right, next to the clock. The small bar underneath it indicates the status of the Internet connection.

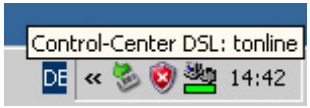

Fig. 96: Control Internet access

If the bar is...		then...
gray		there is no Internet connection.
green		there is a DSL Internet connection.
red left half		there is a 1-channel ISDN Internet connection.
red left and right half		there is a 2-channel ISDN Internet connection.
blocked		the router is blocked and there is no Internet connection.

You can get more information by right-clicking the  (Control Center DSL: tonline) icon.

Fig. 97: Control Center

System Messages	In **System messages**, you will find current information concerning the system.
Set up connection	Here, you can set up the Internet connection.
Terminate connection	Here, the Internet connection is terminated.

Router Status displays information on the Internet connection.

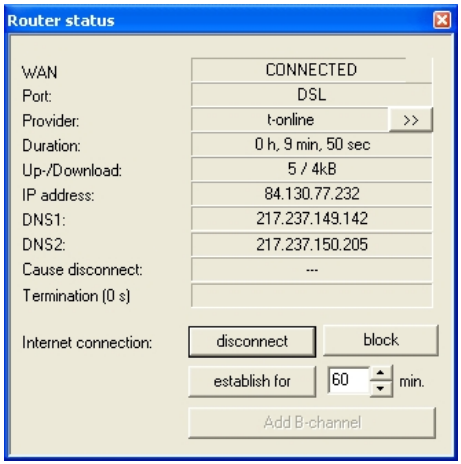

Fig. 98: Router Status

WAN	Indicates whether or not the PABX is connected to the Internet.
Port	Indicates whether the Internet connection is over DSL or ISDN.
Provider	Indicates which ISP you're currently logged in with. With the small **>>** button, you can switch to other ISP's, if available.
Duration	Indicates duration of the Internet connection.
Up- / Download	Displays up- and download volume.
IP address	Displays the current IP address assigned to you by the ISP.
DNS 1	Displays the first dynamic name server address.
DNS 2	Displays the second dynamic name server address.
Release cause	In case of disconnection, the cause is displayed here.
Release (0 s)	Here, the time to automatic disconnection of the Internet connection is displayed; the relevant settings are made in the ISP configuration (**release if inactive after/disable release if inactive**).
Internet connection	The **disconnect** and **establish for**buttons are used for manual disconnection or establishment of the Internet connection. With **lock**, the PABX router is locked; the Internet connection is terminated. Via **unblock**, the router is unblocked (also via a reboot). The Internet connection can now be established.

10.3 Overview of Configuration Steps

Access control

Field	Menu	Value
User Name	**Access control**	*Service*
Password	**Access control**	*Service*
Interface	**Access control**	e. g. *LAN/USB*
Logon	**Access control**	Enable *Use data for a new login*.

Configure Internet access

Field	Menu	Value
Display only DSL providers...	**Network** -> **Internet access**	Enable
Only display call-by-call providers without login...	**Network** -> **Internet access**	poss. enable

ISP properties

Field	Menu	Value
Release when inactive after	**Network** -> **Internet access** -> **T-Online DSL** -> **Dialin parameters**	e. g. *180* seconds
Disable release when inactive	**Network** -> **Internet access** -> **T-Online DSL** -> **Dialin parameters**	poss. enable (if DSL flat-rate available)
Number	**Network** -> **Internet access** -> **T-Online DSL** -> **Connection attempts**	*3*
Interval	**Network** -> **Internet access** -> **T-Online DSL** -> **Connection attempts**	*30*

T-Online access data

Field	Menu	Value
Connection ID	**Network** -> **Internet access** -> **T-Online DSL** -> **Login parameters**	e. g. *000123456789*
T-Online number	**Network** -> **Internet access** -> **T-Online DSL** -> **Login parameters**	e. g. *061112345678*
Joint user account	**Network** -> **Internet access**	e. g. *0001*

Field	Menu	Value
	-> **T-Online DSL** -> **Login parameters**	

Chapter 11 IP - Internet access with T4x4 and another router in LAN

11.1 Introduction

You already have an existing network on premises with several PC's connected to a router. You wish to integrate an **elmeg T444** or **elmeg T484** into your existing network.

The following describes configuration of the PABX to guarantee operation in your existing network.

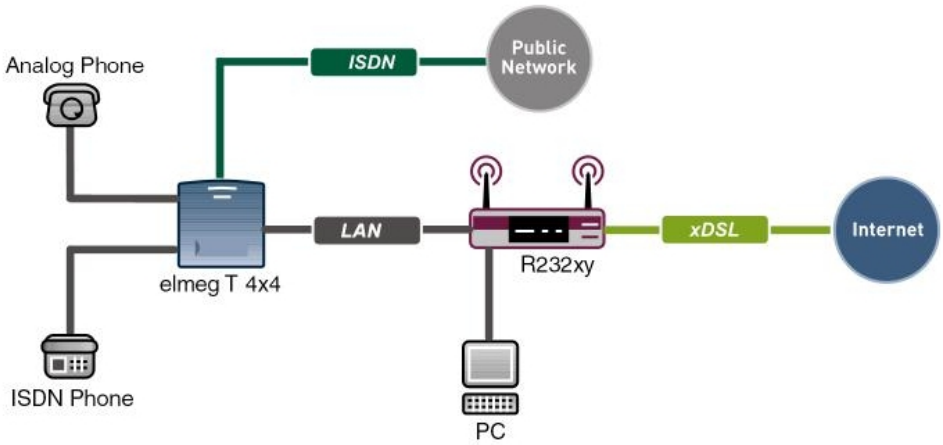

Fig. 99: Example scenario for Internet access with other router in LAN

Software version

Testing has occurred with the following software version:

- **elmeg T484** system with Firmware version 7.50
- **elmeg T444** system with Firmware version 7.50
- Compact Win Tools **elmeg ICT system** with version 7.50

11.2 Configuration

To configure Internet access, the **Professional Configurator** version 7.50 must be installed, and an **elmeg T 484** or **elmeg T444** must be connected to the PC via a LAN- or USB cable. Launch the **Professional Configurator**; a window opens displaying the **access control**.

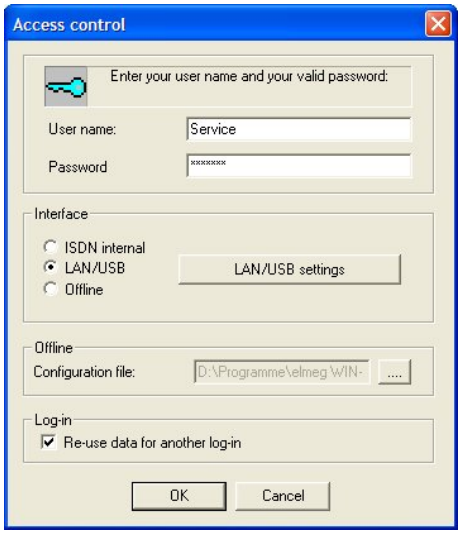

Fig. 100: Access control

Relevant fields in the Access control menu

Field	Meaning
User Name	Enter *Service* for **User name**. Make sure you use the right notation.
Password	Also enter *Service* for **Password**. Make sure you use the right notation.
Interface	If the PC is connected to the PABX via a network- or USB cable, select the *LAN/USB***interface**. Click **LAN/USB Settings** to perform TCP/IP settings.
Logon	Enable *Use data for a new login*.

Locate the PABX router with **Search**. You may have to modify the Windows XP and Windows Vista firewall! Click **OK** to launch the Configurator.

11.2.1 Configuration steps for the elmeg T4x4 system

Upgrading the **elmeg T4x4**requires a built-in VOIP DSP module for VoIP telephony in LAN and over WAN (e.g., via SIP providers).

Note

The **elmeg T4x4**'s WAN port is no longer necessary, as only the LAN port is used. The system thus no longer has any NAT function! The NAT function is taken over by the upstream router.

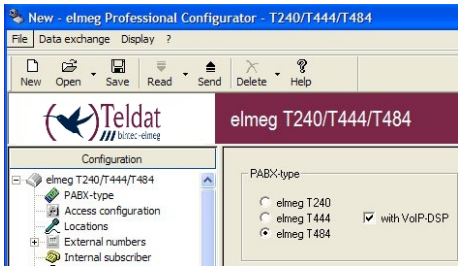

Fig. 101: System type

In the **Network**-> **Router / LAN** menu, the IP address and corresponding netmask are entered under **System parameters**. In the example, the fixed**IP address** `192.168.0.250` and the **Netmask** `255.255.255.0` are used. In the submenu **DNS Proxy Parameter**, `Use system as DSN proxy` is switched off for name resolution; this is taken over by the **external router in LAN**.

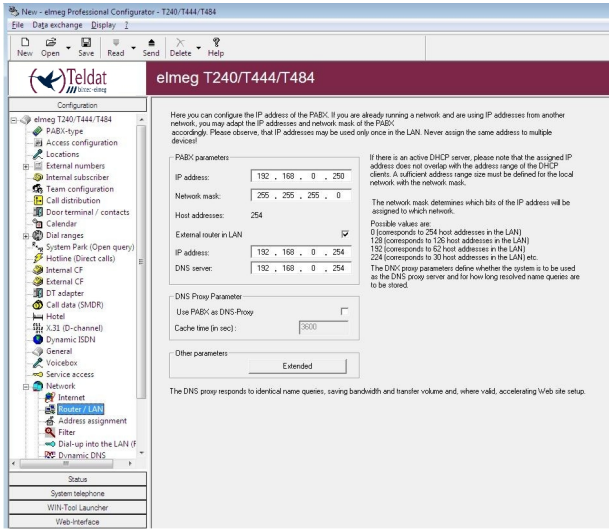

Fig. 102: **Network-> Router / LAN**

In the **Network->Address Assignment** menu, the DHCP server is disabled/switched off at **Parameters for dynamic IP address assignment**.

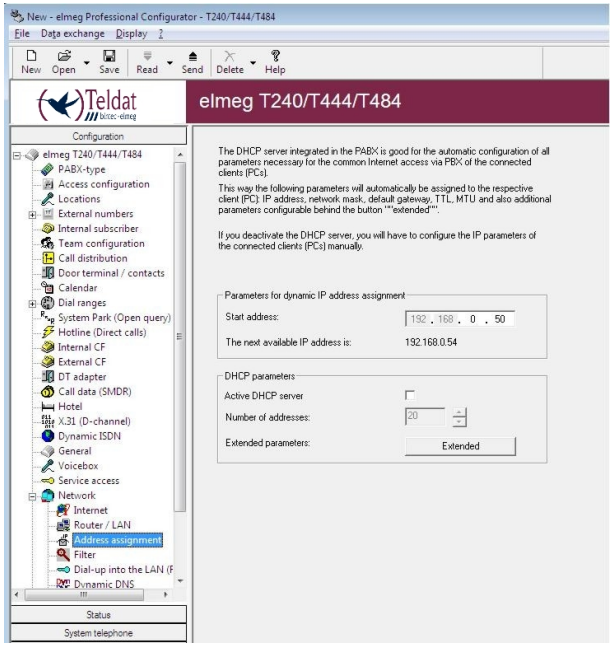

Fig. 103: Address assignment

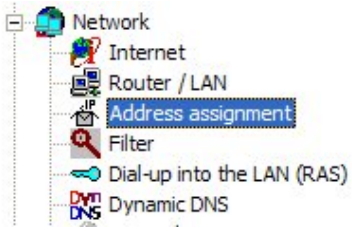

Fig. 104: Network

General settings in the **Network**menu:

Internet access	not possible
Address assignment with DHCP	switched off
DNS	do not configure
Dynamic DNS	not possible
Filter	not possible

All above positions are administered by the upstream router.

11.3 Overview of Configuration Steps

Access control

Field	Menu	Value
User Name	**Access control**	*Service*
Password	**Access control**	*Service*
Interface	**Access control**	e. g. *LAN/USB*
Logon	**Access control**	Enable *Use data for a new login*.

Select system type

Field	Menu	Value
System type	**Configuration** -> **System type**	e. g. *elmeg T484*
System type	**Configuration** -> **System type**	Enable *with VoIP-DSP*

System parameters

Field	Menu	Value
IP address	**Network** -> **Router / LAN** -> **System parameters**	e. g. *192.168.0.250*
Netmask	**Network** -> **Router / LAN** -> **System parameters**	e. g. *255.255.255.0*
External router in LAN	**Network** -> **Router / LAN** -> **System parameters**	Enable
IP address	**Network** -> **Router / LAN** -> **System parameters**	e. g. *192.168.0.254*
DNS Server	**Network** -> **Router / LAN** -> **System parameters**	e. g. *192.168.0.254*
Use System as DNS Proxy	**Network** -> **Router / LAN** -> **DSN Proxy Parameters**	Disable

Address assignment

Field	Menu	Value
DHCP Parameters	**Network** -> **Address Assignment**	Disable *DHCP server enabled*

Chapter 12 ISDN Dialin Connections

12.1 Introduction

The configuration of various ISDN dialin connections is described in the following chapters.

In the first scenario (*Windows Client Dialin* on page 137) you dial into the corporate network from a Windows PC over ISDN and receive an IP address from the IP subnet.

In the second scenario (*Connection of Field Office* on page 141) you configure a LAN connection over ISDN to a field office to access the remote network.

Configuration in this scenario is carried out using the **GUI** (Graphical User Interface).

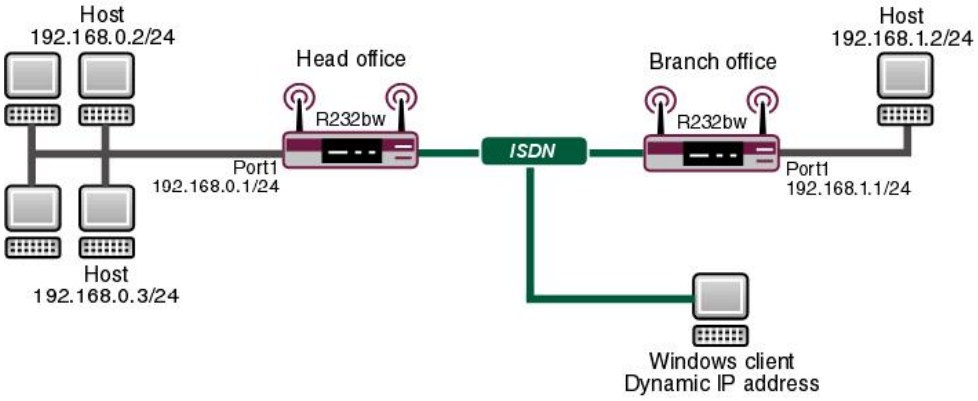

Fig. 105: Example scenario ISDN dialin connections

Requirements

The following are required for the configuration:

- An IP address on your LAN interface.
- A boot image of version 7.10.1
- Your device must be connected to an ISDN line
- You need at least one MSN (Multiple Subscriber Number)

12.2 Configuration

12.2.1 Windows Client Dialin

Entering own subscriber numbers

Once you have connected your device to the ISDN, configure your own subscriber numbers (MSN) for the ISDN interface.

Go to the following menu for this:

(1) Go to **Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**.

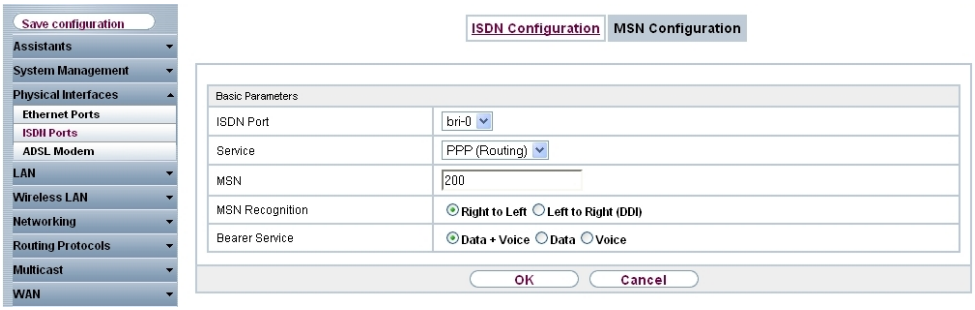

Fig. 106: **Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**

Configure the entry as follows:

(1) Select the **ISDN port** for which the MSN is to be configured, e. g. `bri-0`.

(2) Select the **Service** which will respond to your own number, here `PPP (Routing)`. Includes automatic detection of the PPP connections listed below except PPP DOVB.

(3) Enter your subscriber number under **MSN**, e.g. `200`.

(4) Under **MSN Recognition**, select the mode your device is to use to do the numbers comparison for MSN with the called party number of the incoming call, here `Right to Left`.

(5) For **Service attribute**, select the type of the incoming call (service recognition), here e. g. `Data + voice`.

(6) Confirm with **OK**.

Note

If you only have one number available on the connection, which you also need for telephoning, you can set the **Service attribute** to `Data`.

Defining the IP Address Pool

When dialling in to a Windows client your device assigns an IP address from your network.

To create a pool of IP addresses, select the following menu options:

(1) Go to **WAN** -> **Internet + Dialup** -> **IP Pools** -> **Add**.

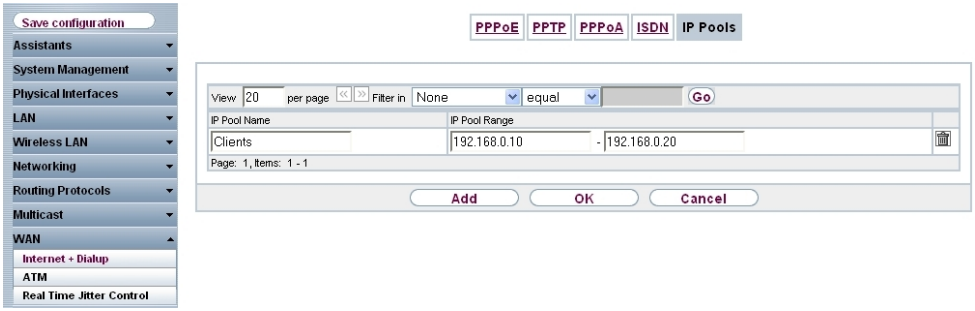

Fig. 107: **WAN** -> **Internet + Dialup** ->**IP Pools** -> **Add**

Configure the entry as follows:

(1) Under **IP pool name**, enter the name of the pool that you can later select in the dialin connection, e. g. `Clients`.

(2) For **IP pool range**, enter the IP addresses from which the client gets one when dialing in, e. g. `192.168.0.10` and `192.168.0.20`.

(3) Confirm with **OK**.

Creating an ISDN dialin connection

Select the following menu options to create an ISDN connection:

(1) Go to **WAN** -> **Internet + Dialup** -> **ISDN** -> **New**.

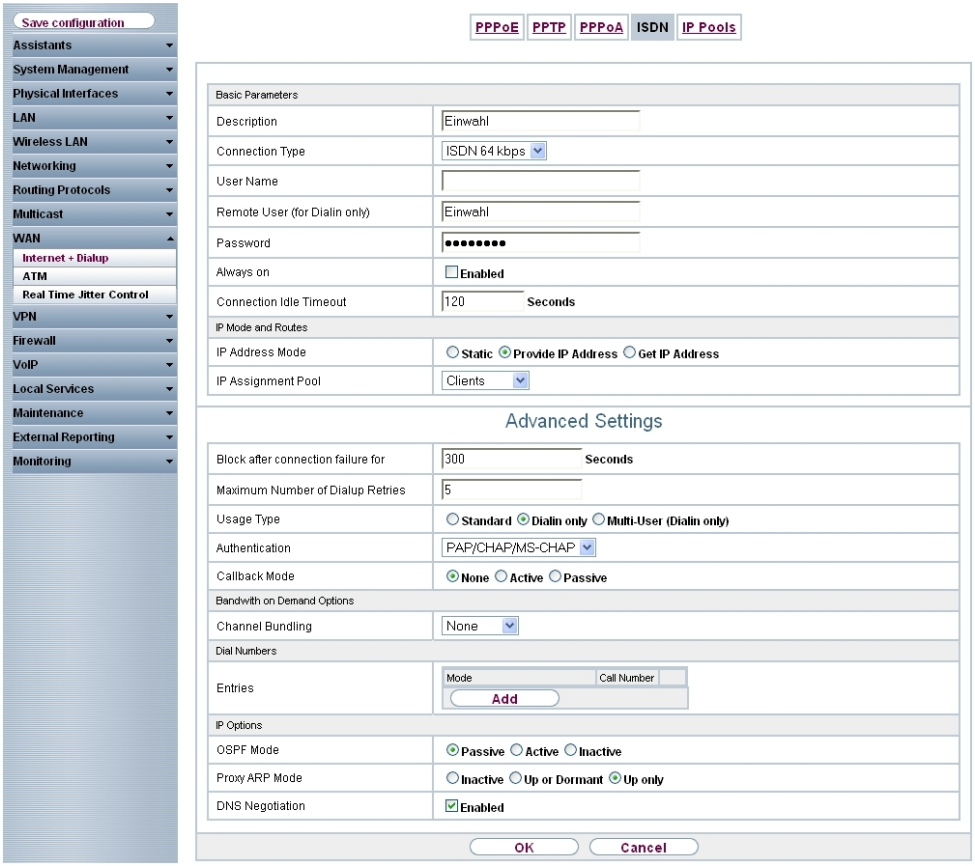

Fig. 108: **WAN** -> **Internet + Dialup** -> **ISDN** -> **New**

Configure the entry as follows:

(1) Under **Description**, enter a name which uniquely identifies the connection partner, e. g. *Dialin*.

(2) For **Connection type**, select the layer 1 protocol that your device will be using, here e. g. *ISDN 64kbit/s*.

(3) In **Remote User (for Dialin only)** enter the remote terminal's ID, e. g. *Dialin*.

(4) Enter the **password** for the connection, e. g. *secret*.

(5) Under **Connection Idle Timeout**, specify the duration of the connection if there is no user data, e. g. *120*seconds.

(6) For **IP address mode**, enter the type of IP address assignment, e. g. *Provide IP Address*. Your device dynamically assigns an IP address to the remote terminal.

(7) Under **IP Assignment Pool** select the configured IP pool, here *Clients*.

Note

The user name you enter here is not a Windows log-in account, but only intended for the connection to your device.

Now you must make a few advanced changes for this connection.

To do this, remain in the Configuration menu for this dialin connection and go to the menu **Advanced Settings**

Configure the entry as follows:

(1) Set **Usage Type** to *Dialin only*. The interface is used for incoming dialup connections and callbacks initiated externally.

(2) Switch **Proxy ARP Mode** to *Active Only*. Your device answers ARP requests with its MAC address on behalf of the dialled-in client if this is located in the same IP subnet.

(3) Leave the remaining settings unchanged and confirm them with **OK**.

Activating Proxy ARP

You must activate Proxy ARP, as the Windows client that is dialling in receives an IP address from the same subnet it is accessing.

To use Proxy ARP you must activate this function for all of the interfaces involved, in this example for the dialin connection and for the LAN interface.

Go to the configuration menu in the LAN interface to activate Proxy ARP:

(1) Go to **LAN** -> **IP Configuration** -> **<en5-0>** ->  -> **Advanced Settings**.

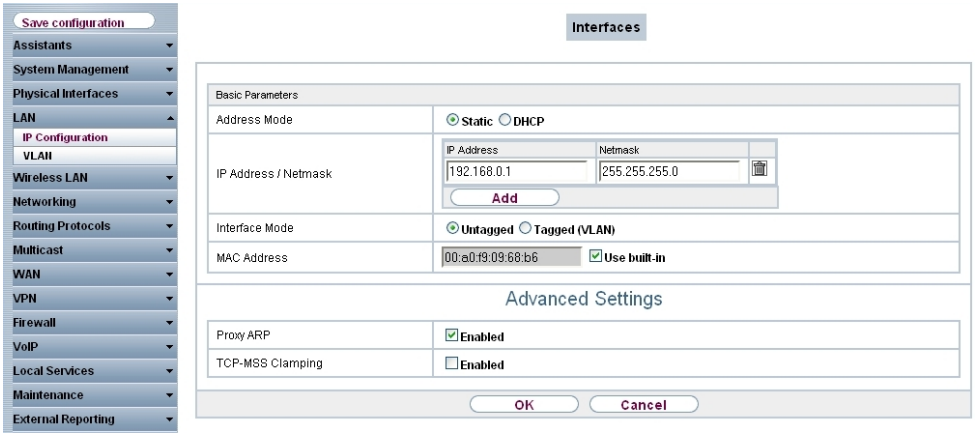

Fig. 109: **LAN** -> **IP Configuration** -> **<en5-0>** ->  -> **Advanced Settings**.

Configure the entry as follows:

(1) Under **Proxy ARP** select *Enabled*. The gateway answers ARP requests on behalf of the dialled-in client.

(2) Confirm with **OK**.

12.2.2 Connection of Field Office

Entering own subscriber numbers

Proceed as described in the section **Entering own subscriber numbers** in chapter *Windows Client Dialin* on page 137.

Creating a dialin connection

Select the following menu options to create an ISDN connection:

(1) Go to **WAN** -> **Internet + Dialup** -> **ISDN** -> **New**.

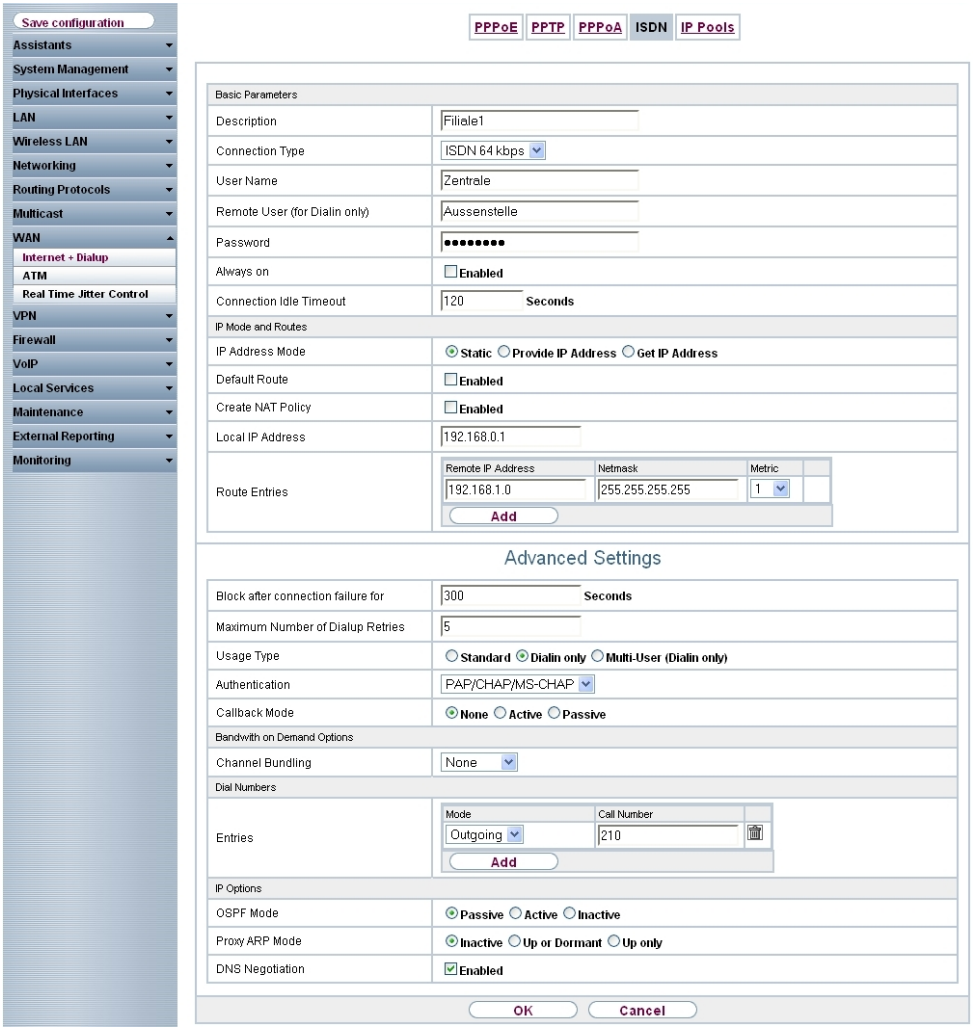

Fig. 110: **WAN** -> **Internet + Dialup** -> **ISDN** -> **New**

Configure the entry as follows:

(1) Under **Description**, enter a name which uniquely identifies the connection partner, e. g. *Branch1*.

(2) Under **User Name** enter your own username, e. g. *Head Office*.

(3) In **Remote User (for Dialin only)** enter the ID of the remote terminal (remote PPP user name), e. g. *Field Office*.

(4) Enter the **password** for the connection, e. g. *secret*.

(5) Under **Connection Idle Timeout**, specify the duration of the connection if there is no user data, e. g. *120*seconds.

(6) Under **IP Address Mode** select *Static*.

(7) Under **Local IP address**, assign to the ISDN interface the IP address of your LAN which will be used as the internal source address of your device, e. g. *192.168.0.1*.

(8) Click the **Add** button under **Route Entries**.

(9) In the fields **Remote IP Address** and **Netmask** enter, for example, *192.168.1.0* and *255.255.255.0*.

Now you must make a few advanced changes for this connection. To do this, remain in the Configuration menu for this dialin connection and go to the menu **Advanced Settings**

Configure the entry as follows:

(1) Under **Entries** click **Add** to generate a new entry.

(2) Under **Mode** select *Outgoing* , and in **Call Number (MSN)** enter the number, e.g. *210*.

(3) Leave the remaining settings unchanged and confirm them with **OK**.

Note

Bear in mind that this is an example configuration for the head office. The configuration in the field office follows the same steps based on the values used.

12.3 Result

You have now configured a remote dialin for a Windows client on your device. The Windows client receives an IP address from the same subnet on dialling in.

You have connected your field office to the head office over ISDN.

12.4 Checking the connection

To check the connections, activate the command prompt on a PC in the field office or on the dialin PC and send a ping to the head office network:

e. g. `ping 192.168.0.2`

You should then receive the following messages:

```
Ping wird ausgeführt für 192.168.0.2 mit 32 Bytes Daten:

Antwort von 192.168.0.2: Bytes=32 Zeit&lt;1ms TTL=63
Antwort von 192.168.0.2: Bytes=32 Zeit&lt;1ms TTL=63
Antwort von 192.168.0.2: Bytes=32 Zeit&lt;1ms TTL=63
Antwort von 192.168.0.2: Bytes=32 Zeit&lt;1ms TTL=63

Ping-Statistik für 192.168.0.2:
    Pakete: Gesendet = 4, Empfangen = 4, Verloren = 0 (0% Verlust),
Ca. Zeitangaben in Millisek.:
    Minimum = 0ms, Maximum = 0ms, Mittelwert = 0ms
```

12.5 Overview of Configuration Steps

Windows Client Dialin

Field	Menu	Value
ISDN Port	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	e. g. *bri-0*
Service	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	*PPP (routing)*
MSN	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	e. g. *200*
Service attribute	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	*Data + Voice*
IP pool name	**WAN** -> **Internet + Dialup** ->**IP Pools** -> **New**	e. g. *Clients*
IP pool range	**WAN** -> **Internet + Dialup** ->**IP Pools** -> **New**	e. g. *192.168.0.10* and *192.168.0.20*
Description	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Dialin*
Connector Type	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *ISDN 64 kbit/s*
Remote User (for Dialin only)	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Dialin*
Password	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *secret*
Connection Idle Timeout	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *120*
IP address mode	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Provide IP Address*
IP Assignment Pool	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Clients*
Usage Type	**WAN** -> **Internet + Dialup** -> **ISDN** -> **Advanced Settings**	*Dialin only*
Proxy ARP Mode	**WAN** -> **Internet + Dialup** -> **ISDN** -> **Advanced Settings**	*Active Only*
Proxy ARP	**LAN** -> **IP Configuration** -> **<en5-0>** ->  -> **Advanced Settings**	*Enabled*

Connection of Field Office

Field	Menu	Value
Service	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	*PPP (routing)*
MSN	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	e. g. *200*
Service attribute	**Physical Interfaces** -> **ISDN Ports** -> **MSN Configuration** -> **New**	*Data + Voice*
Description	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Branch1*
User Name	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Head Office*
Remote User (for Dialin only)	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Field Office*
Password	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *secret*
Connection Idle Timeout	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *120*
IP address mode	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Static*
Local IP Address	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *192.168.0.1*
Route Entries	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *192.168.1.0* and *255.255.255.0*
Entries	**WAN** -> **Internet + Dialup** -> **ISDN** -> **Advanced Settings**	e. g. **Mode***Outgoing* and **Call Number***210*

Chapter 13 ISDN DSL backup

13.1 Introduction

The following section describes how to configure an ISDN backup connection for a xDSL connection with a **bintec R232bw**. Configuration is performed with the **GUI** (Graphical User Interface).

The Internet traffic normally runs over xDSL access. If xDSL access fails, an ISDN connection should be set up. The `Metric` variable should be used to control the setup of the backup connection.

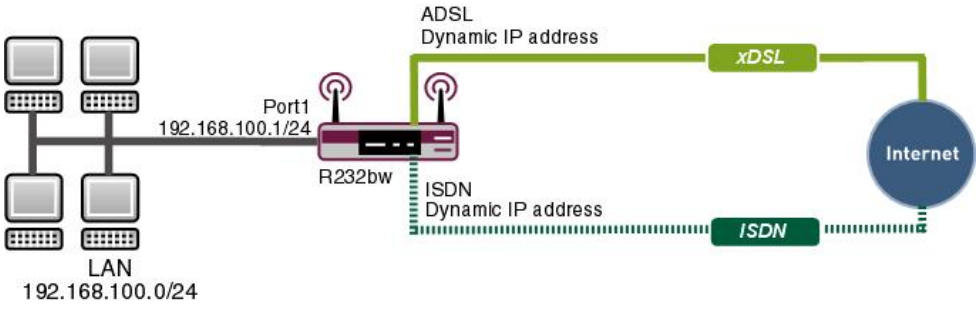

Fig. 111: Example scenario ISDN backup

Requirements

The following are required for the configuration:

- A **bintec R232bw** gateway
- A boot image of version 7.8.2
- xDSL Internet access
- ISDN Internet access
- Your LAN must be connected to one of ports **1** to **4** on the gateway.

13.2 Configuring Internet connections

An entry is created for both Internet connections over xDSL and ISDN.

xDSL Internet access

PPP over Ethernet (PPPoE) is the use of the Point-to-Point Protocol (PPP) network protocol over an Ethernet connection. Today, PPPoE is used for ADSL connections in Germany. In Austria, the Point To Point Tunnelling Protocol (PPTP) was originally used for ADSL access. However, PPPoE is now offered here too by some providers.

Go to the following menu to set up an Internet access over xDSL with PPPoE:

(1) Go to **WAN** -> **Internet + Dialup** ->**PPPoE**-> **New**.

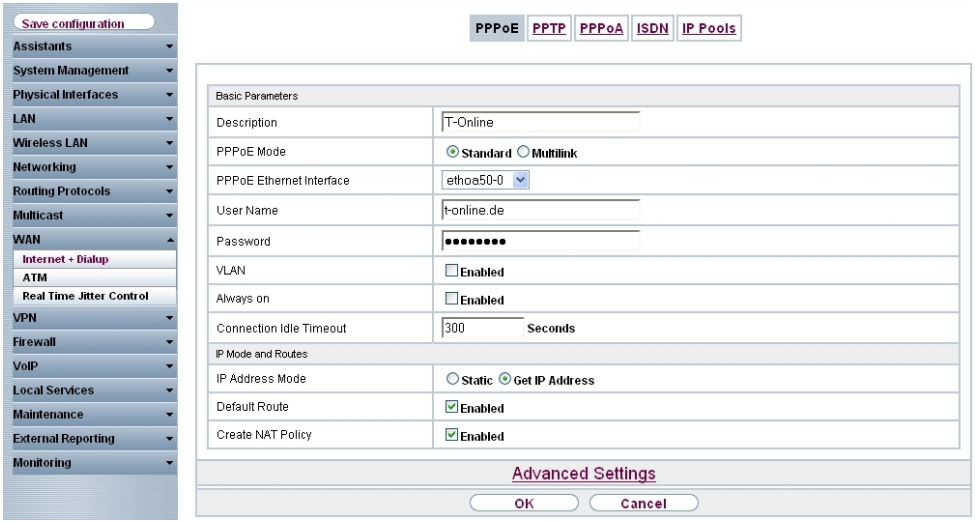

Fig. 112: **WAN** -> **Internet + Dialup** ->**PPPoE** -> **New**

To set up Internet access over xDSL, proceed as follows:

(1) Under **Description** enter the name for the connection, e.g. *T-Online*. The first character in this field must not be a number No special characters or umlauts must be used.

(2) For **PPPoE Ethernet interface**, specify the interface for your gateway over which the xDSL connection is to be established, e. g. *ethoa50-0* .

(3) For **User Name**, enter the name that your provider has sent you, e. g. *t-online.de*.

(4) Enter the **password** for your Internet access which your provider has sent you, e. g. *secret*.

(5) Leave the default setting *Not activated* for **Always on** if you do not have a DSL connection with flatrate. If you have an Internet access with flatrate, check the **Always on** box If selected the gateway will never clear the Internet connection automatically.

(6) If you have an Internet access without flatrate enter the time in seconds after which

the gateway should clear the Internet connection when there is no further data exchange under **Connection Idle Timeout**, for example *300*.

(7) Under **IP Address Mode** select *Get IP Address*. Your device is dynamically assigned an IP address.

(8) Keep **Default Route** selected. For this connection, a standard route is automatically created.

(9) Select **Create NAT Policy** . NAT is enabled for this connection.

(10) Leave the remaining settings unchanged and confirm them with **OK**.

ISDN Internet access

Go to the following menu to set up an Internet access over ISDN:

(1) Go to **WAN** -> **Internet + Dialup** -> **ISDN**-> **New**.

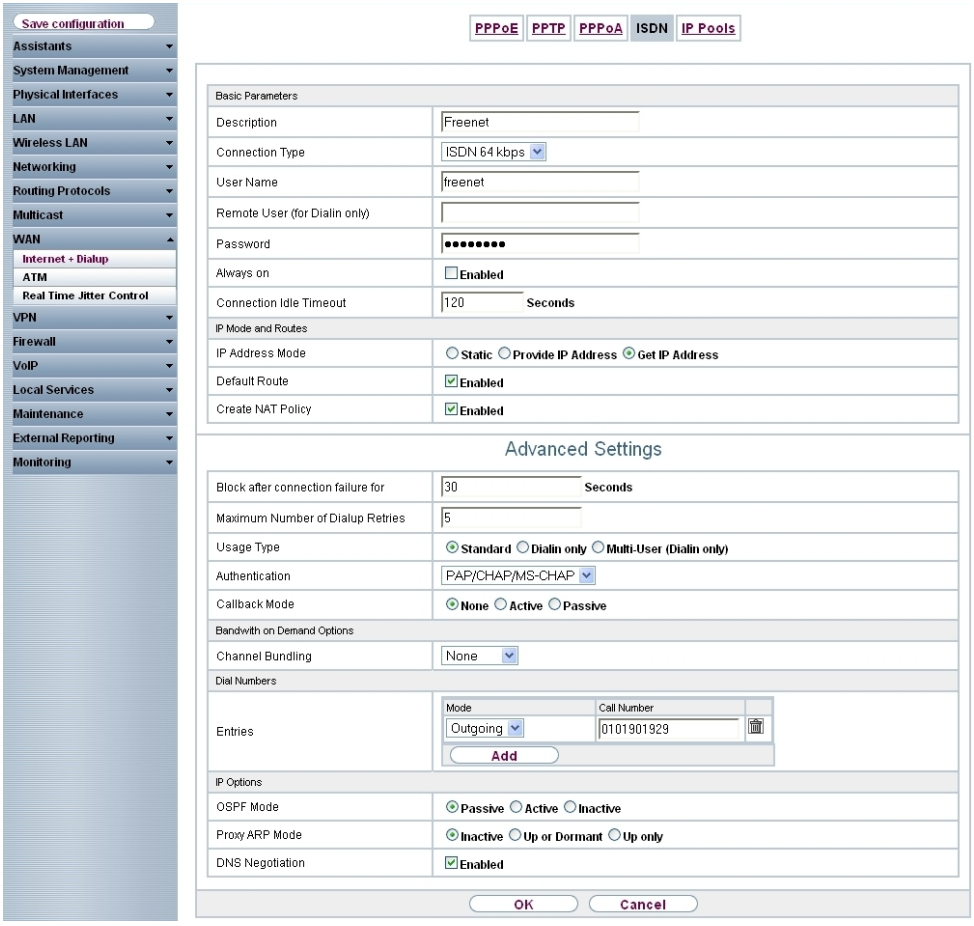

Fig. 113: **WAN -> Internet + Dialup ->ISDN -> New**

Proceed as follows to set up Internet access over ISDN:

(1) Under **Description** enter the name for the ISDN Internet connection, e. g. *Freenet*.

(2) Leave the **Connection Type** set to *ISDN 64kbps*.

(3) For **User Name**, enter the name that your provider has sent you, e. g. *freenet*.

(4) Enter the **password** for your Internet access which your provider has sent you, e. g. *secret*.

(5) Enter the time in seconds after which the gateway should clear the Internet connection when there is no further data exchange under **Connection Idle Timeout**, for example *300*.

(6) Under **IP Address Mode** select *Get IP Address*.

(7) Keep **Default Route** selected. For this connection, a standard route is automatically created.

(8) Select **Create NAT Policy** . NAT is enabled for this connection.

(9) Click **Advanced Settings** and under **Block after Connection Failure for** enter a time in seconds for which the connection should be blocked if the Internet connection cannot be established, e.g. *30*.

(10) Under **Entries** click **Add**.

(11) Select *Outgoing* under **Mode**.

(12) Enter the subscriber number of the provider under **Number**, e.g. *0101901929*.

(13) Leave the remaining settings unchanged and confirm them with **OK**.

Note

The **Connection Idle Timeout** for the ISDN connection should be kept relatively short to prevent any unnecessary costs.

13.3 Adjusting the metric

The route metric must be set higher than the ISDN connection so that the ISDN connection is only established if the xDSL connection has failed.

Go to the following menu to set the metric for the route higher than the ISDN connection:

(1) Go to **Network** -> **Routes** ->**IP Routes**.

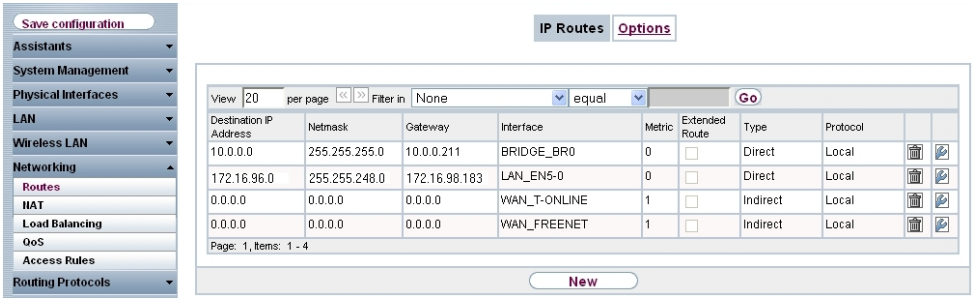

Fig. 114: **Network** -> **Routes** ->**IP Routes**

Go to the following menu to set the metric for the route higher than the ISDN connection:

Go to **Network** -> **Routes** -> **IP Routes**-> **<WAN_T-ONLINE>** ->.

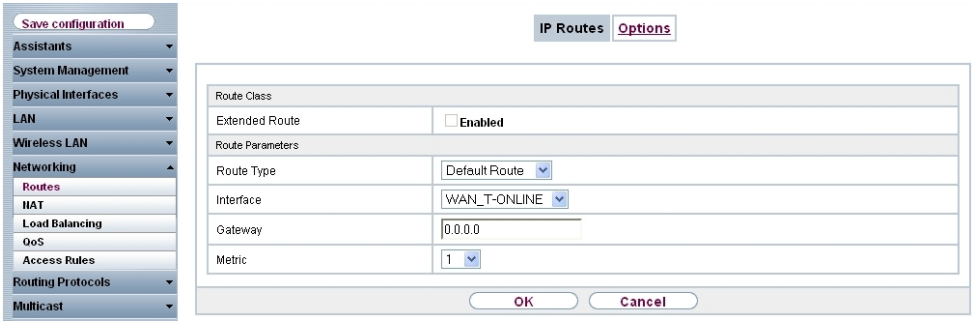

Fig. 115: **Network** -> **Routes** -> **IP Routes**-> **<WAN_T-ONLINE>** ->

Proceed as follows:

(1) Under **Metric** select a value, e. g. `1`.

(2) Confirm with **OK**.

As for the first entry, set up the metric for the second connection.

(1) Under **Interface <WAN_FREENET>** click the icon.

(2) Under **Metric** select a higher value than the value for your route over xDSL, e. g. `2`.

(3) Confirm with **OK**.

Click **Save Configuration** and confirm with **OK** to save the configuration permanently.

13.4 Result

You have now created a back-up connection over ISDN that is enabled automatically when required.

13.5 Checking the configuration

If you enter the command `debug all` in the command line for the gateway you can track how the connections are set up and cleared in the event of a failure. To simulate a failure, remove the cable for the respective connection from the port.

Enter the following in the command line of the gateway and confirm with **Return**:

```
r232bw:> debug all
```

Connection setup over xDSL

```
r232bw:> debug all
01:11:48 INFO/INET: dialup if 10001 prot 1 192.168.100.2:2048->62.146.2.103:19036
01:11:48 DEBUG/PPP: T-Online: event: 3, status: 0 (5) -> 1 (5)
01:11:48 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:11:48 DEBUG/PPP: T-Online 1/0/2/1: PPPoE call identified
01:11:55 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:11:55 DEBUG/PPP: T-Online 2/0/2/1: PPPoE call identified
01:11:55 DEBUG/PPP: T-Online 2/2542/2/5: PPPoE session established
01:11:55 DEBUG/PPP: layer 1 type pppoe
01:11:55 DEBUG/PPP: T-Online: event: 16, status: 1 (5) -> 8 (1)
01:11:55 DEBUG/PPP: T-Online: outgoing connection established
01:11:55 DEBUG/PPP: T-Online 2/2542/2/5: PPPoE call identified
01:11:56 INFO/PPP:  T-Online: local IP address is 84.146.232.180,remote is 217.0.116.91
01:11:56 DEBUG/INET: NAT: new outgoing session on ifc 10001 prot 1
                     192.168.100.2:512/84.146.232.180:32769 -> 62.146.2.103:0
```

xDSL link fails

```
01:12:09 DEBUG/ATM: DSP_ATM_TC_NOSYNC
01:12:12 DEBUG/ATM: adsl3-0:ATM delineation lost; initiating DSL retrain
01:12:12 DEBUG/ATM: adsl3-0:link down
01:12:12 DEBUG/PPP: T-Online 2/2542/2/6: PPPoE session terminated
01:12:12 DEBUG/PPP: T-Online: event: 18, status: 8 (1) -> 0 (5)
01:12:12 INFO/PPP:  T-Online: outgoing connection closed, duration 17 sec,555 bytes received, 871 bytes sent,
                    0 charging units, 0 charging amounts
01:12:15 INFO/INET: dialup if 10001 prot 1 192.168.100.2:2048->62.146.2.103:16220
01:12:15 DEBUG/PPP: T-Online: event: 3, status: 0 (5) -> 1 (5)
01:12:15 DEBUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000
01:12:15 DEBUG/PPP: T-Online 3/0/2/1: PPPoE call identified
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: SHOWTIME
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: FAIL_
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE
01:12:16 DEBUG/ATM: DSP_IDLE
01:12:16 DEBUG/ATM: ADSL TRAINING STATE: IDLE
01:12:16 DEBUG/ATM: DSP_OVERLAY_START: 1
01:12:16 DEBUG/ATM: DSP_OVERLAY_END: 1
01:12:16 DEBUG/ATM: adsl3-0: RSTATE IDLE
01:12:40 DEBUG/INET: NAT: delete session on ifc 10001 prot 1192.168.100.2:512/84.146.232.180:32769 &lt;-&gt;
                     62.146.2.103:0
01:12:46 ERR/PPP: T-Online: no response to setup, dialout failed
01:12:46 DEBUG/PPP: T-Online: event: 11, status: 1 (5) -> 7 (8)
01:12:46 INFO/PPP: T-Online: interface is blocked for 60 seconds
```

ISDN connection

```
01:12:46 INFO/INET: dialup if 10002 prot 1 192.168.100.2:2048->62.146.2.103:15708
01:12:46 DEBUG/PPP: Freenet: event: 3, status: 0 (5) -> 1 (5)
01:12:46 DEBUG/PPP: Freenet: dial number &lt;00101901929&gt;
01:12:50 DEBUG/PPP: layer 1 type hdlc, 64000 bit/sec
01:12:50 DEBUG/PPP: Freenet: event: 16, status: 1 (5) -> 8 (1)
01:12:50 DEBUG/PPP: Freenet: outgoing connection established
01:12:50 INFO/PPP: Freenet: local IP address is 89.51.245.19,remote is 62.104.219.38
01:12:50 DEBUG/INET: NAT: new outgoing session on ifc 10002 prot 1 192.168.100.2:512/89.51.245.19:32770 -> 62.146.2.103:0
```

xDSL link is available again, ISDN is cleared

13.6 Overview of Configuration Steps

xDSL Internet access

Field	Menu	Value
Description	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	e. g. *T-Online*
PPPoE Ethernet Interface	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	*ethoa50-0*
User Name	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	e. g. *t-online.de*
Password	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	e. g. *secret*
Always Active	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	*Disabled*
Connection Idle Timeout	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	e. g. *300*
IP address mode	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	*Get IP Address*
Default Route	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	*Enabled*
Create NAT Policy	**WAN** -> **Internet + Dialup** -> **PPPoE** -> **New**	*Enabled*

ISDN Internet access

Field	Menu	Value
Description	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *Freenet*
Connector Type	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*ISDN 64kbps*
User Name	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *freenet*
Password	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *secret*
Connection Idle Timeout	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	e. g. *120*
IP address mode	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Get IP Address*

Field	Menu	Value
Default Route	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Enabled*
Create NAT Policy	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**	*Enabled*
Block after connection failure for	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**-> **Advanced Settings**	e. g. *30*
Entries	**WAN** -> **Internet + Dialup** -> **ISDN** -> **New**-> **Advanced Settings**	**Mode***Outgoing* with **Call Number** e.g. *0101901929*

Adjusting the metric

Field	Menu	Value
Metric	**Network** -> **Routes** -> **IP Routes** -> **<WAN_T-ONLINE>** -> 	e. g. *1*
Metric	**Network** -> **Routes**-> **IP Routes** -> **<WAN_FREENET>** -> 	e. g. *2*

Chapter 14 Media Gateway - TR200xw as Unified Messaging Gateway for Microsoft Exchange Server 2007

14.1 Introduction

The present chapter describes connection of the unified messaging roll for Microsoft Exchange Server 2007 to the public telephone network using a **bintec TR200aw**

The unified messaging roll for Microsoft exchange server 2007 offers the following functions:

- Access to e-mails and voice messages, appointments and contacts by voice control/tone dialling
- Server for fax reception
- Answering machine function with message delivery by e-mail
- Auto Attendant / call relay

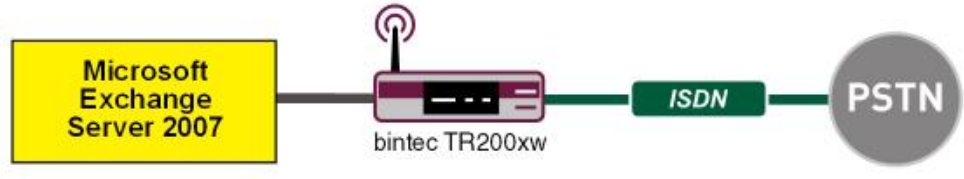

Fig. 116: Example scenario

Requirements

- A **bintec TR200aw**
- Microsoft Exchange Server 2007 with Unified Messaging Roll
- Access to public telephone network

14.2 Configuration

14.2.1 Configuration steps on Microsoft Exchange server

Configuration of the Microsoft Exchange server is performed with the **exchange administration console** :

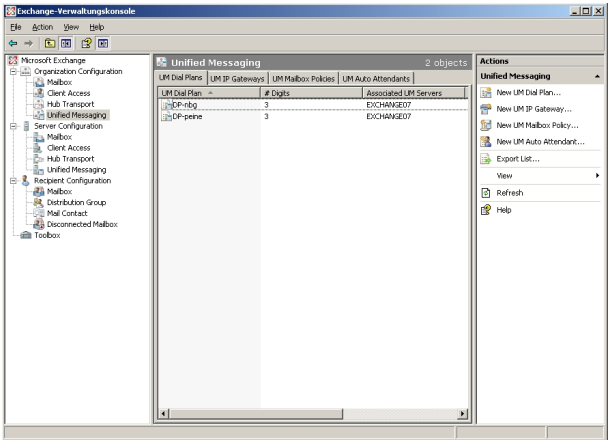

Fig. 117: **Exchange administration console**

Creation of a dial plan

In the **Unified Messaging** menu, you can launch the wizard to create a new UM dial plan.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan...**.

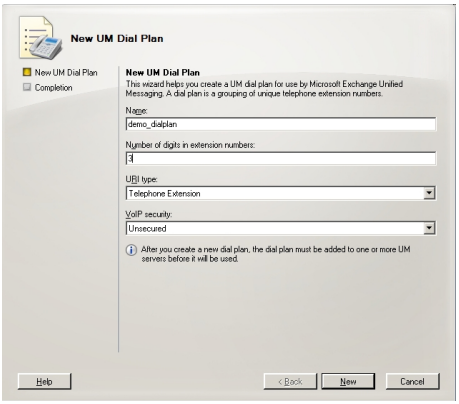

Fig. 118: New UM dial plan

To create a new UM dial plan, proceed as follows:

(1) Enter the dial plan name, e. g. `demo_dialplan`.

(2) In **Number of digits in extension numbers** set the number of direct dial-in numbers, e.g., *3*.

(3) In **URI type** select a designation for the resources, e.g. *Telephone Extension*.

(4) In **VoIP security** select *Unsecured*.

(5) With the option **New**, you create the new dial plan.

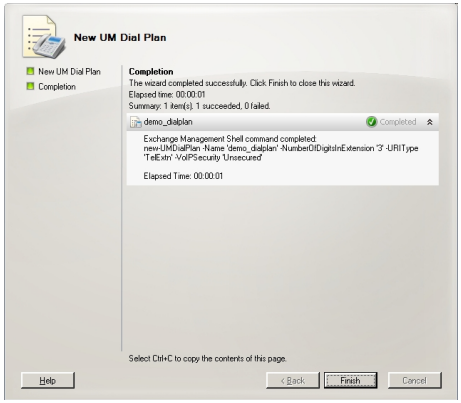

Fig. 119: New UM dial plan

Click on **Finish** to close the wizard.

After the wizard is closed, dial plan properties must be edited.

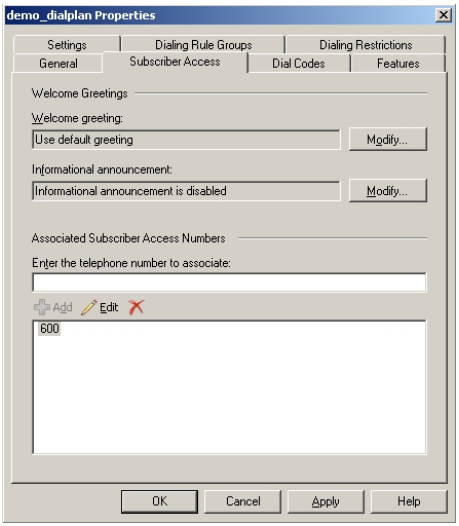

Fig. 120: Subscriber Access

Under **demo_dialplan Properties** -> **Subscriber Access** the call number under which the system may later be reached is saved, e.g., *600*.

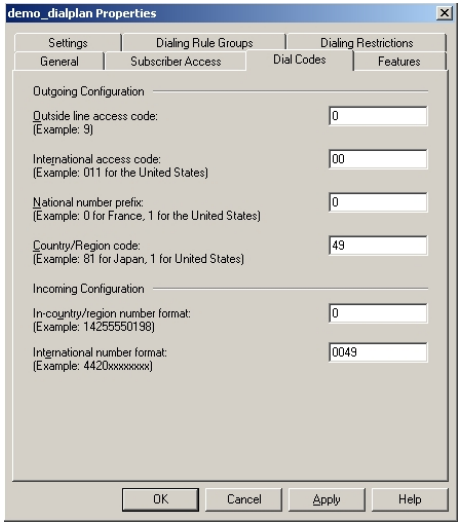

Fig. 121: Dial Codes

Under **demo_dialplan Properties** -> **Dial Codes** national and other prefixes are saved.

To save the prefixes, proceed as follows:

First, enter the numbers for outgoing calls.

(1) In the **Outside line access code**field, you can save a number for an outside line.

(2) In **International access code** enter the international access number *00*.

(3) In **National number prefix** enter the national prefix, here *0*.

(4) In **Country/Region code** enter the country code, e.g., *49* for Germany.

Now enter the numbers for incoming calls.

(1) In **In-country/region number format** enter *0*.

(2) In **International number format** enter the prefix, e.g., *0049* for Germany.

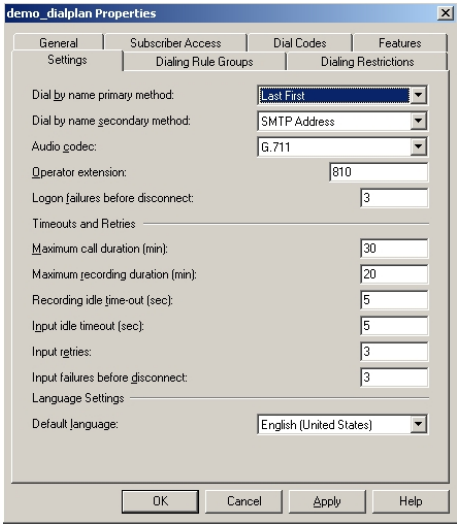

Fig. 122: Settings

In the **Settings** submenu, notably the language codecs and the language with which the system shall respond are saved.

To save additional settings, proceed as follows:

(1) In **Dial by name primary method** select, for example, *Last First*.

(2) In **Dial by name secondary method** select *SMTP Address*.

(3) In **Audio codec** enter language codec *G.711*.

(4) In **Operator extension** enter, for example, the switchboard number *810*.

(5) In **Default language** select the language in which the system shall subsequently answer, e.g., *English (United States)*.

In the submenu **Dialing Rule Groups** a UM dial plan is defined. This determines which type of calls the UM-enabled user can make. In our example, national and international connections are permitted. **Dialing Rule Groups** also allow transformation of destination numbers (e.g. setting of a specific prefix).

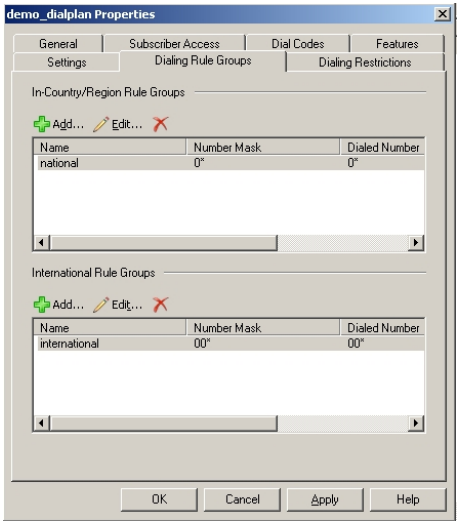

Fig. 123: Dialing Rule Groups

In the submenu **Dialing Restrictions**, it is determined which kinds of calls are permitted or, as the case arises, prohibited.

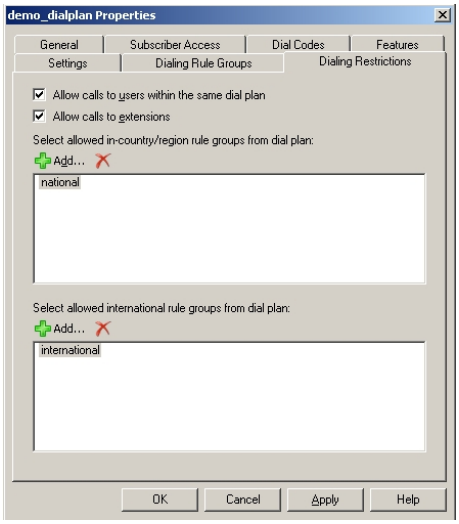

Fig. 124: Dialing Restrictions

The newly-created dial plan is subsequently allocated to a UM server. The dial plan can be added in Server Properties **UM Settings**. Here are administered the installed language packs and the restriction on the maximum possible number of voice and fax connections.

(1) Go to **Server Configuration** -> **Unified Messaging** -> **UM Settings**.

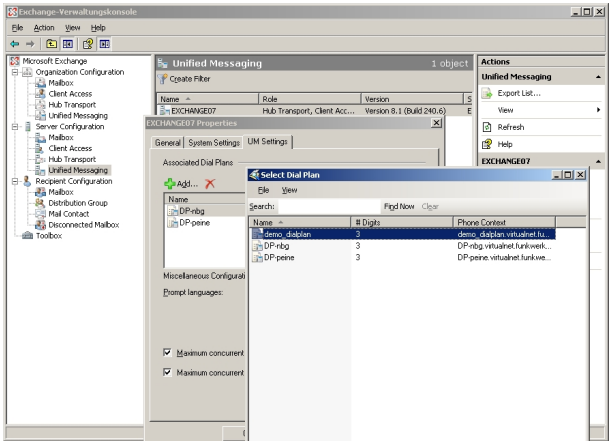

Fig. 125: UM Settings

Creation of a UM IP Gateway

A new UM IP gateway is created with the assistant in the **Unified Messaging** submenu.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**.

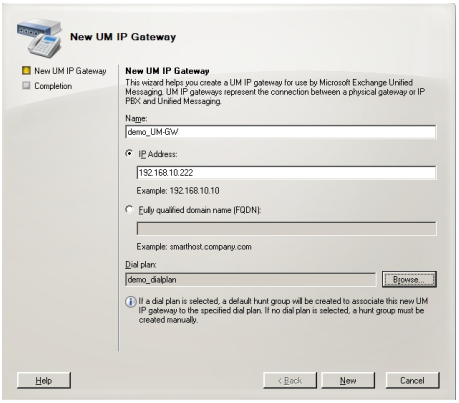

Fig. 126: New UM IP gateway

To create a new UM IP gateway, proceed as follows:

(1) In **Name** enter, for example, `demo_UM-GW`.

(2) Enter the IP address at which the UM gateway is accessible, e.g. `192.168.10.222`.

(3) In **Fully qualified domain name (FQDN)** you can enter the name under which the UM gateway is accessible.

(4) Next, the previously-created **Dial Plan** is assigned.

Creation of a UM hunt group

The **Hunt Groups** are required for drive of the exchange server by the UM gateway . The assistant for creation of a new UM hunt group is launched on the **exchange administration console**.

(1) Go to **Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**.

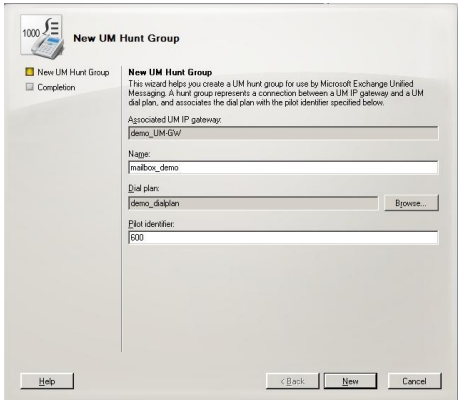

Fig. 127: New UM Hunt Group

To create a new UM hunt group, proceed as follows:

(1) In **Name** enter the name of the hunt group, e.g., *mailbox_demo*.

(2) In **Dial plan** select *demo_dialplan*.

(3) The number of the **Pilot identifier**, here *600*, for example, is later saved at the UM gateway as a VoIP extension in order to create a connection to the Exchange Server 2007.

You can view the completed configuration in the menu **Organization Configuration** -> **Unified Messaging** -> **UM IP Gateways**.

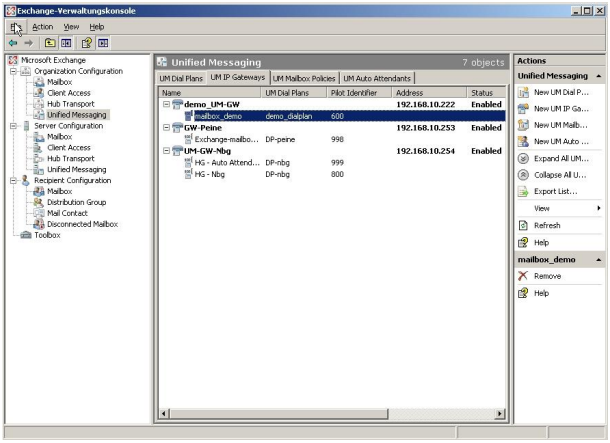

Fig. 128: UM IP Gateways

Configuration of a UM Mailbox Policy

Already when creating a **Dial Plan** a standard **UM Mailbox Policy** is created.

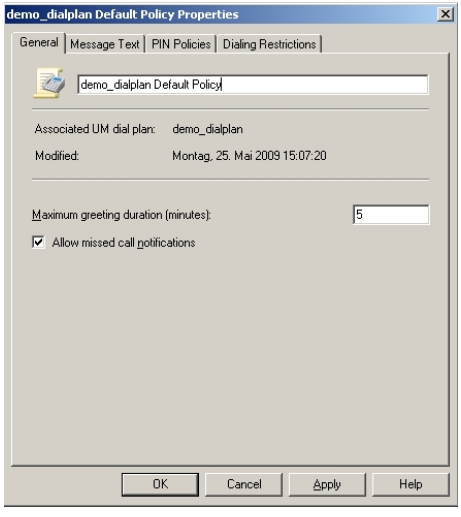

Fig. 129: Default Policy Properties

In properties of **UM Mailbox Policy**, in the **Message Text** submenu, various text templates can be saved; these can be sent to the UM user per e-mail (e.g., when activating the unified messaging mailbox or when resetting the unified messaging PIN).

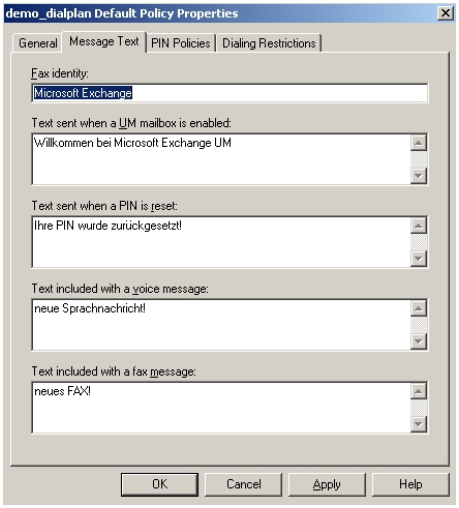

Fig. 130: Message Text

In the submenu **PIN Policies**, different properties of the UM PIN (e.g., PIN length) requested when accessing the UM system can be modified.

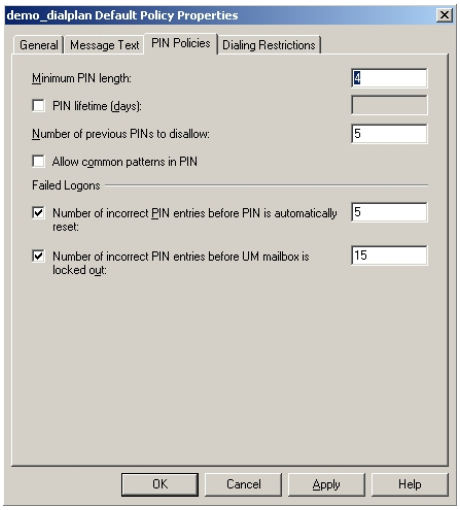

Fig. 131: PIN Policies

In the submenu **Dialing Restrictions**, it is determined which kinds of calls are permitted or, as the case arises, prohibited.

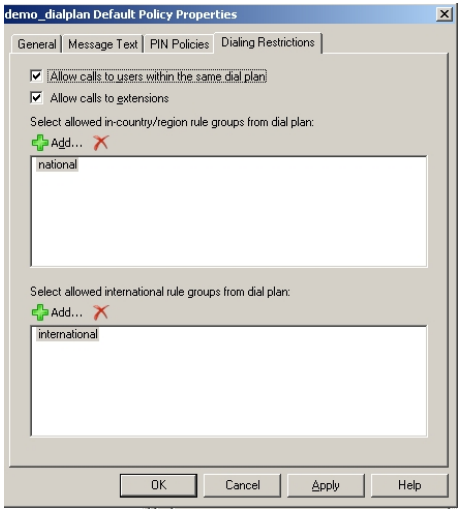

Fig. 132: Dialing Restrictions

Auto Attendants (optional)

Configuration of an **Auto Attendant**, a type of electronic telephone switchboard, is optional. For the **Auto Attendant** an additional **Hunt Group** should be created, under whose **Pilot Identifier** (extension number) the electronic switchboard position can be reached.

Activation of unified messaging for an exchange mailbox

In the **Mailbox** submenu, the unified messaging functions for an exchange mailbox/exchange user can be activated via an assistant. For this, the previously configured **Unified Messaging Mailbox Policy** must be saved, along with a **PIN** (for authentication).

(1) Go to **Organization Configuration** -> **Recipient Configuration** -> **Mailbox**.

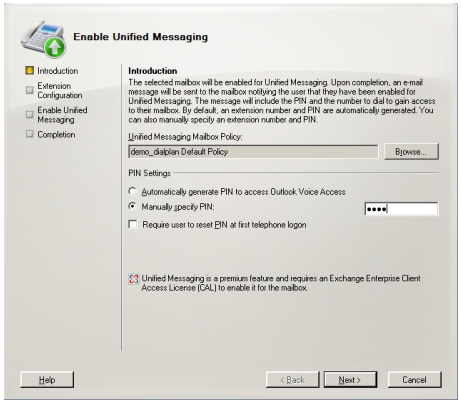

Fig. 133: Mailbox

In the assistant's second step, a **Mailbox Extension** (mailbox number) for the user must be saved. The **Mailbox Extension** should match the user's direct dial-in number.

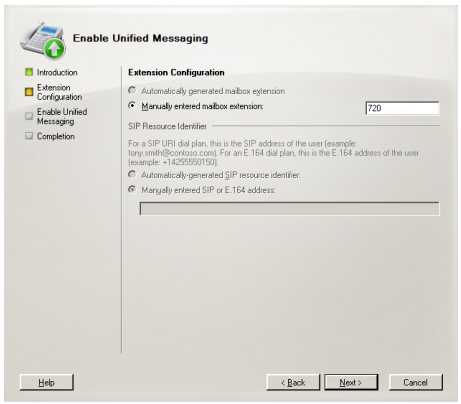

Fig. 134: Mailbox Extension

14.2.2 Configuration of the bintec TR200aw

In our example, the **bintec TR200aw** is connected to an ISDN point-to-multipoint via an external ISDN S0 interface. For this, the ISDN port as well as the MSN (Multiple Subscriber Number) on the **bintec TR200aw** must be configured.

(1) Go to **PBX** -> **Line Configuration** -> **External Numbers** -> **New**.

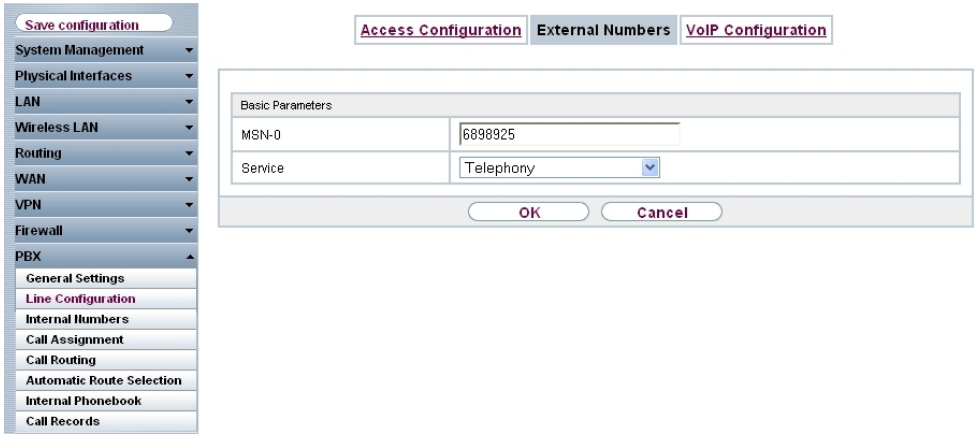

Fig. 135: **PBX** -> **Line Configuration** -> **External Numbers** -> **New**

Relevant fields in the External Numbers menu

Field	Meaning
MSN-0	For point-to-multipoint connections, you can enter up to 10 numbers (MSN, multiple subscriber number). These MSNs are the external phone numbers for your ISDN connection. The MSNs are consecutively numbered automatically from 0. Select the **New** button to enter the external number of your connection, e.g. *6898925*, *6898926* and *6898927*).
Service	In **Service**, choose *Telephony*.

Connection of the exchange server as VoIP/SIP subscriber

Microsoft Exchange Server 2007 is configured on the **bintec TR200aw** as a VoIP/SIP extension.

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** ->.

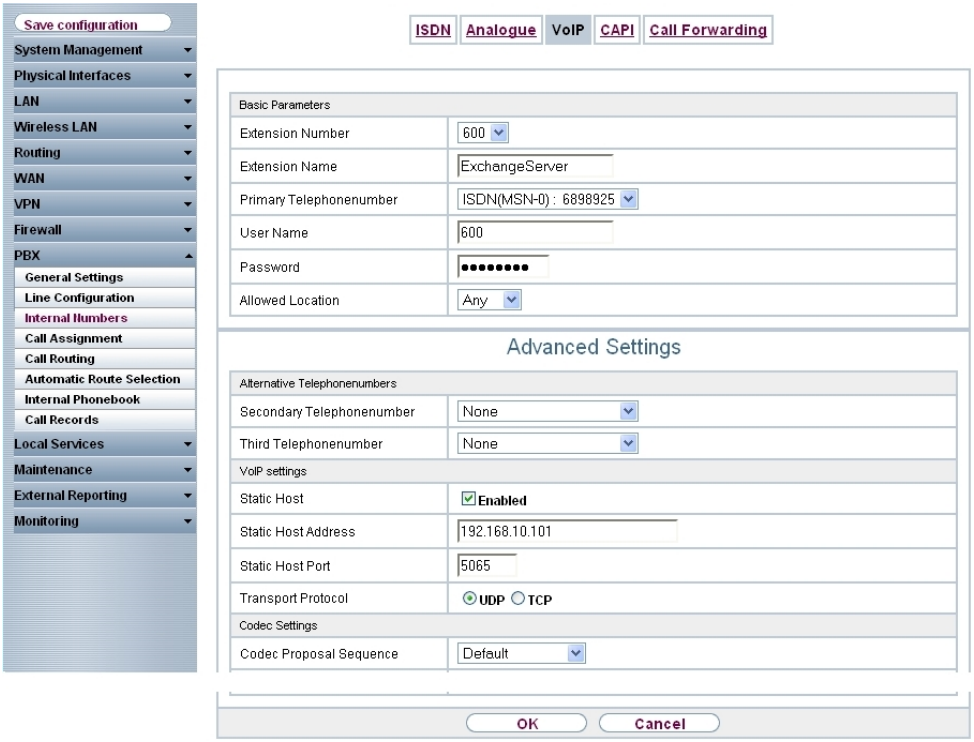

Fig. 136: **PBX** -> **Internal Numbers** -> **VoIP** ->

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	Select extension number *600* for the new subscriber.
Extension Name	Here you can assign the subscriber a name, e.g. *ExchangeServer*.
Primary Telephonenumber	Select a connection over which the external connection should be established. For example, select *ISDN(MSN-0) : 6898925*.
User name/Password	Values in the options **User name** and **Password** are not evaluated as no SIP authentication is used.

The **Advanced Settings** menu consists of the following fields:

Relevant fields in the menu Advanced Settings

Field	Meaning
Static Host	For the connection to be configured as a static host, **Static Host** must be *enabled*.
Static extension address	Here, enter the IP Microsoft exchange server *192.168.10.101*.
Static Host Port	For connection to the Microsoft exchange server identify port *5065*.
Transport protocol	Select the transport protocol for the connection, here *TCP*.

Configuration of call assignment

Call assignment of incoming connections to Microsoft exchange server 2007 via the ISDN outside line is configured over the **Teams** menu.

(1) Go to **PBX** -> **Call Assignment** -> **Teams**-> **New**.

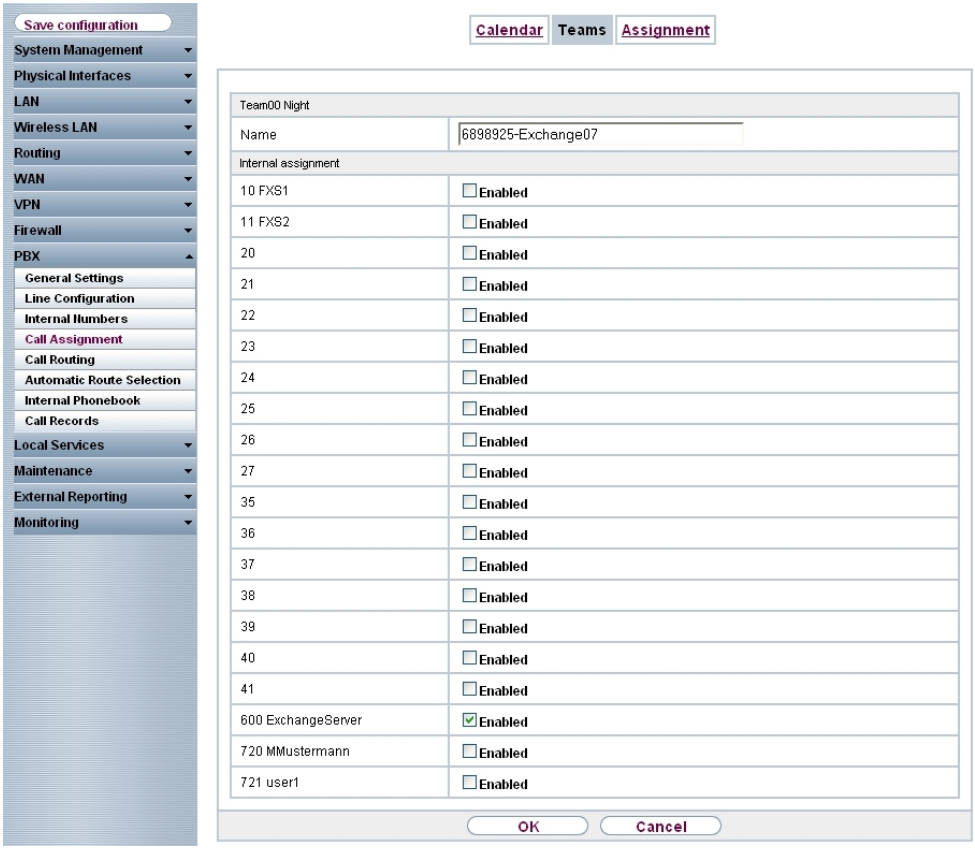

Fig. 137: **PBX** -> **Call Assignment** -> **Teams** -> **New**

Relevant fields in the Call Routing menu

Field	Meaning
Name	Here, you can enter an individual name for the teams, e.g. *6898925-Exchange07*.
Internal assignment	Select the members of the call group. The internal number is activated by choosing *Enabled*.

The complete configuration looks like this:

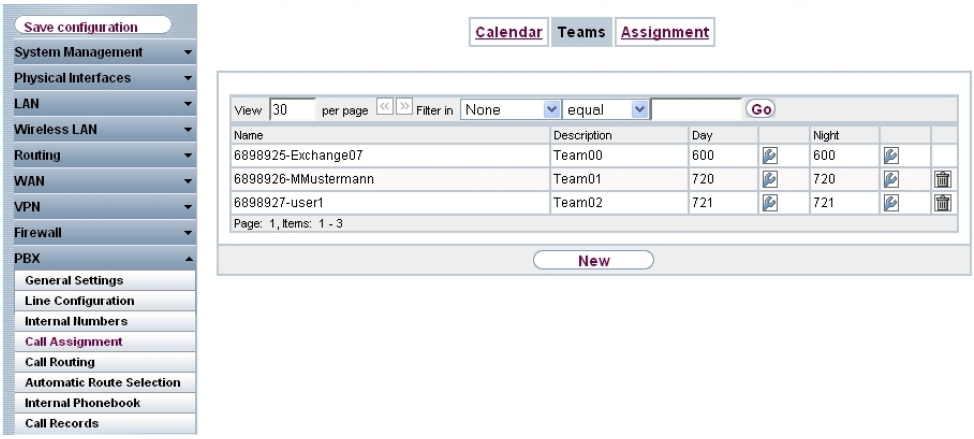

Fig. 138: **PBX** -> **Call Assignment** -> **Teams**

14.2.3 Function test

At the first function test, it is possible to call from the telephone extension of the unified messaging user (e.g., demo user *John Everyman* with extension number *720*) to the extension of the exchange server (e.g., extension *600*). Microsoft Exchange server 2007 should respond with a PIN request and permit access to e-mails, contacts, etc.

At the second function test, a unified messaging user (e.g., demo user *John Everyman* with extension number *720*) should configure a call diversion to the Microsoft Exchange extension (call number *600*). With an incoming call to the user call number, the call/fax is put through to the user mailbox on the Microsoft Exchange server.

14.3 Overview of configuration steps

Creation of a dial plan

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	e.g. *demo_dailplan*
Number of digits in extension numbers	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	e.g. *3*
URI type	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	*Telephone Extension*
VoIP security	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**	*Unsecured*
Subscriber Access	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Subscriber Access**	e.g. *600*
Outside line access code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
International access code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*00*
National number prefix	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
Country/Region code	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*49*
In-country/region number format	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0*
International number format	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dial Codes**	*0049*
Dial by name primary method	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *Last First*
Dial by name secondary method	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**->	*SMTP Address*

Field	Menu	Value
	Settings	
Audio codec	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	*G.711*
Operator extension	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *810*
Logon failures before disconnect	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *3*
Default language	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Settings**	e.g. *English (United States)*
In-Country/Region Rule Groups	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Rule Groups**	*national*, *0**, *0**
International Rule Groups	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Rule Groups**	*international*, *00**, *00**
Allow calls to uses within the same dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Restrictions**	*Aktiviert*
Allow calls to extensions	**Organization Configuration** -> **Unified Messaging** -> **New UM Dial Plan..**-> **Dialing Restrictions**	Aktiviert

Creation of a UM IP Gateway

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	e.g. *demo_UM-GW*
IP Address	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	e.g. *192.168.10.222*
Dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM IP Gateway**	*demo_dialplan*

Creation of a UM hunt group

Field	Menu	Value
Associated UM IP gateway	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *demo_UM-GW*

Field	Menu	Value
Name	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *mailbox_demo*
Dial plan	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *demo_dialplan*
Pilot identifier	**Organization Configuration** -> **Unified Messaging** -> **New UM Hunt Group**	e.g. *600*

Configuration of a UM Mailbox Policy

Field	Menu	Value
Fax identity	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	*Microsoft Exchange*
Text send when a UM mailbox is enabled	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *Welcome to Microsoft Exchange UM*
Text send when a PIN is reset	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *Your PIN has been reset!*
Text included with a voice message	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	z. B. *new voice message!*
Text included with a fax message	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *new fax!*
Minimum PIN length	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **PIN Policies**	e.g. *4*
Number of previous PINs to disallow	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *5*
Number of incorrect PIN entries before PIN is automatically reset	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *5*
Number of incorrect PIN entries before UM mailbox is locked out	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Message Text**	e.g. *15*
Allow calls to uses	**Organization Configuration** -> **Unified**	Aktiviert

Field	Menu	Value
within the same dial plan	**Messaging** -> **New UM Mailbox Policy** -> **Dialing Restrictions**	
Allow calls to extensions	**Organization Configuration** -> **Unified Messaging** -> **New UM Mailbox Policy** -> **Dialing Restrictions**	Aktiviert

Activation of unified messaging for an exchange mailbox

Field	Menu	Value
Unified Messaging Mailbox Policy	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	e.g. *demo_dialplan Default Policy*
Manually specify PIN	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	Your PIN
Manually entered mailbox extension	**Organization Configuration** -> **Recipient Configuration** -> **Mailbox**	e.g. *720*

Configure multiple subscriber number

Field	Menu	Value
MSN-X	**PBX** -> **Line Configuration** -> **External Numbers** -> **New**	e.g. *6898925*, *6898926* and *6898927*
Service	**PBX** -> **Line Configuration** -> **External Numbers** -> **New**	Telephony

VoIP subscriber Configuration

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** ->	*600*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** ->	e.g. *ExchangeServer*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** ->	e.g. *ISDN (MSN-0): 6898925*
Static Host	**PBX** -> **Internal Numbers** -> **VoIP** ->	*Aktiviert*
Static extension address	**PBX** -> **Internal Numbers** -> **VoIP** ->	e.g. *192.168.10.101*
Static Host Port	**PBX** -> **Internal Numbers** -> **VoIP** ->	*5065*
Transport protocol	**PBX** -> **Internal Numbers** -> **VoIP** ->	*TCP*

Configure call assignment

Field	Menu	Value
Name	**PBX** -> **Call Assignment** -> **Teams** ->	e.g.

Field	Menu	Value
	New	*6898925-Exchange07*, *6898926-JEveryman* and *6898927-user1*
Internal assignment	**PBX** -> **Call Assignment** -> **Teams** -> **New**	e.g. *600 ExchangeServer Activated*, *720 JEveryman Activated* and *721 user1 Activated*

Chapter 15 Security - Configuration management

15.1 Introduction

The following chapters present various possible ways of handling configuration files in the device.

This describes operations such as copying, renaming and deleting configurations in the flash ROM memory. It also describes how you transfer configurations to a local computer and import them from there back to the gateway.

Configuration in this scenario is carried out using the **GUI** (Graphical User Interface).

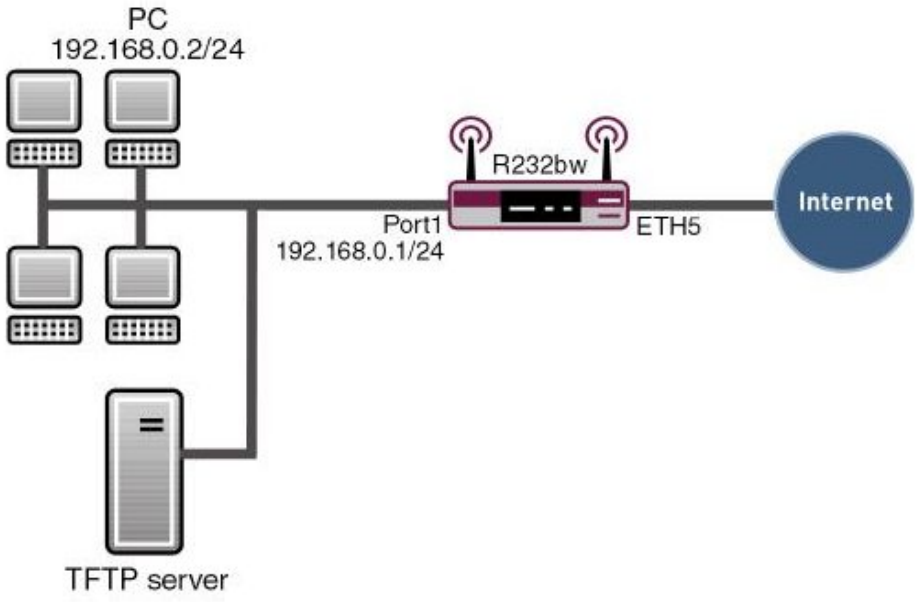

Fig. 139: Example scenario configuration management

The procedure for exporting and importing a configuration file via TFTP is described in the appendix. However, this operation can only be carried out on the shell.

Requirements

The following are required for the configuration:

- Basic configuration of the gateway
- Boot image from version 7.8.2

15.2 Configuration

Configuration management options can be found in the **Maintenance** -> **Software & Configuration** ->**Options** menu.

Important

Please note that the configuration is immediately active after loading it into the memory. You could, for example, lock out settings in the firewall!

15.2.1 Configurations in flash ROM

Copy

You would like to copy your configuration named `boot` in the flash ROM memory and assign the copy the name `Firewall`.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

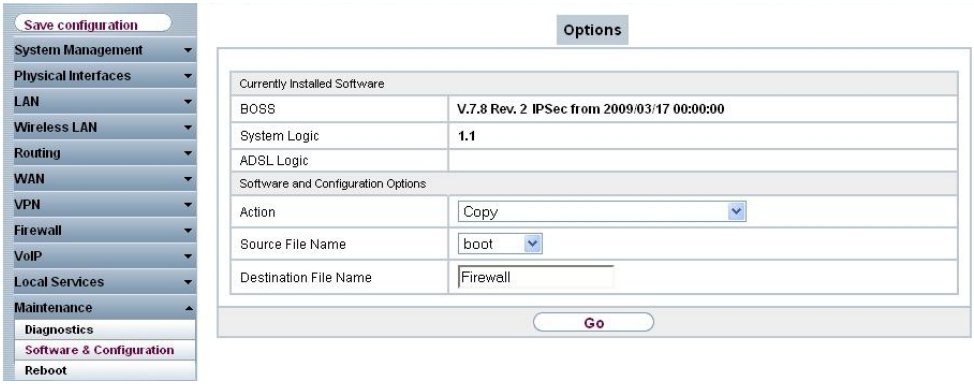

Fig. 140: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Source File Name	Select an existing configuration from the flash ROM memory.
Destination File Name	The configuration data is saved as **Destination File Name**.

Proceed as follows to save a configuration:

(1) Set **Action** to *Copy*.

(2) Set **Source File Name** to *boot*.

(3) Under **Destination File Name**enter the name, e.g. *Firewall*.

(4) Press **Go**. The systems reboots.

Delete configuration

You would like to delete your configuration named *Firewall* from the flash ROM memory.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

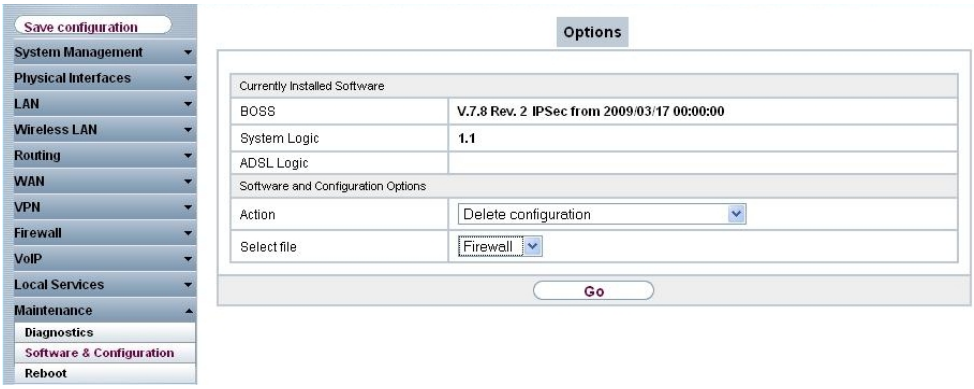

Fig. 141: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Select File	Select an existing configuration from the flash ROM memory.

Proceed as follows to delete a configuration:

(1) Set **Action** to *Delete Configuration*.

(2) Set **Select File** to *Firewall*.

(3) Press **Go**. The systems reboots.

Rename

You would like to rename your configuration in the flash ROM memory from `boot` to `Firewall`.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

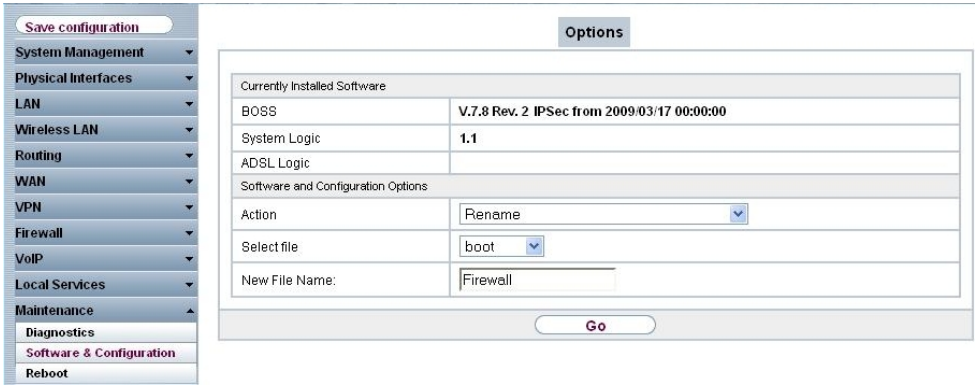

Fig. 142: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Select File	Select an existing configuration from the flash ROM memory.
New File Name	Enter a name to save the configuration in the flash ROM memory.

Proceed as follows to rename a configuration:

(1) Set **Action** to `Rename`.

(2) Set **Select File** to `boot`.

(3) Under **New File Name** enter the name, e.g. `Firewall`.

(4) Press **Go**. The systems reboots.

15.2.2 Exporting and importing configurations

You can export the configuration files in the flash ROM memory of your gateway to a local PC or import files from there.

Export configuration

You wish to export your configuration, named *Firewall*, in the flash ROM memory to a local PC under the name *Firewall.cf*.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

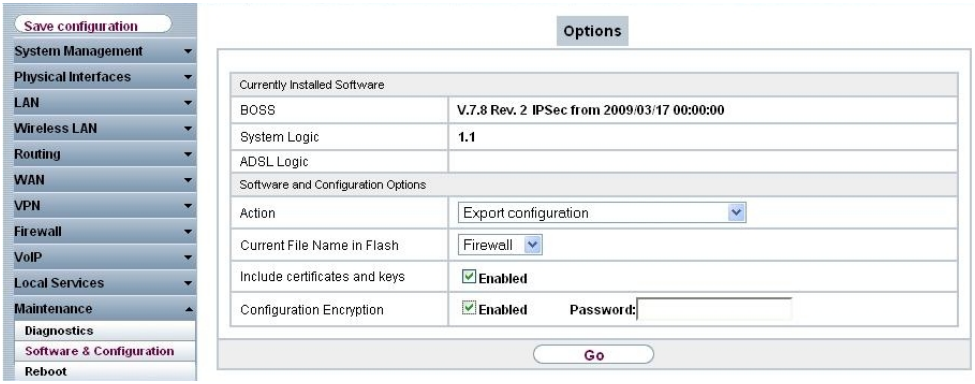

Fig. 143: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Current File Name in Flash	Select an existing configuration from the flash ROM memory.
Include certificates and keys	Here, define whether the selected action should also be applied to certificates and keys.
Configuration Encryption	Define whether the data of the selected action are to be encrypted.. If the function is active, you can enter the **password** in the text field.

Proceed as follows to save a configuration to a local PC:

(1) Set **Action** to *Export Configuration*.

(2) Set the **Current File Name in Flash** to *Firewall*.

(3) Click on the **Go** button.

(4) Follow the save dialogue for your browser. The systems then reboots.

Note

The configuration file you have saved on the PC is a normal ASCII file. This can be opened and edited without problems using a text editor, e.g. Notepad.

Import configuration

You would like load your configuration under the name `Firewall.cf` from a local PC and save it under the name `Firewall` in the flash ROM.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

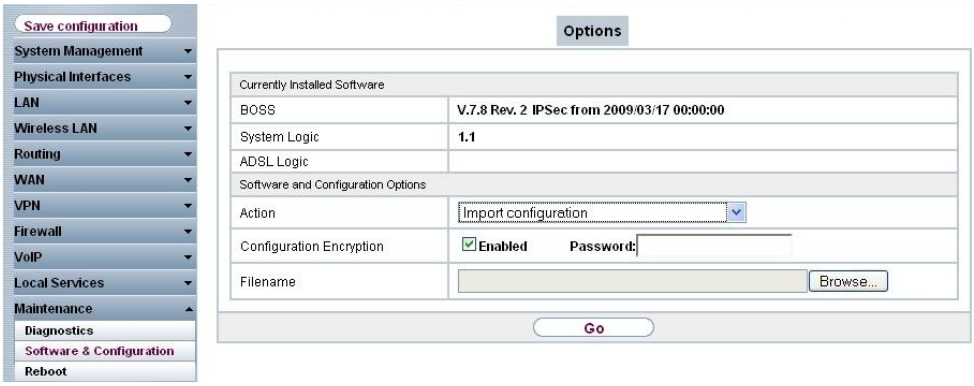

Fig. 144: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Configuration Encryption	Define whether the data of the selected action are to be encrypted.. If the function is active, you can enter the **password** in the text field.
Filename	Select the file with **Browse...** via the file browser.

Proceed as follows to import a configuration from a server:

(1) Set **Action** to `Import Configuration`.

.

(2) Under **File Name** select the name of your configuration, e.g. `C:\Firewall.cf`.

(3) Press **Go**. The systems then reboots.

Update system software

You wish to start an update of the system software, the ADSL logic and the BOOTmonitor.

(1) Go to **Maintenance**-> **Software & Configuration** ->**Options** .

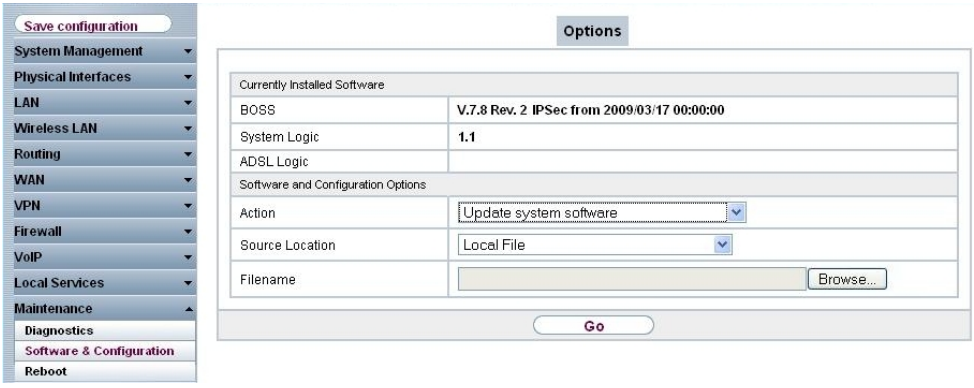

Fig. 145: **Maintenance** -> **Software & Configuration** ->**Options**

Relevant fields in the Options menu

Field	Meaning
Action	For selecting the operation you wish to perform.
Source Location	Select the source for the update. Possible values: • *Local File*: The system software file is stored locally on your PC. • *HTTP server*: The file is stored on a remote server specified in the **URL**. • *Current software from update server*: The file is on the official update server.
Filename	Select the file with **Browse...** via the file browser.

To update system software, proceed as follows:

(1) Set **Action** to *Update system software*
.

(2) Under **Source** search for the update source, e.g. *Local File*

(3) Press **Go**. The systems then reboots.

15.3 Overview of configuration steps

Copy

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Copy*
Source File Name	**Maintenance** -> **Software & Configuration** ->**Options**	*boot*
Destination File Name	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *Firewall*

Delete configuration

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Delete configuration*
Select File	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *Firewall*

Rename

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Rename*
Select File	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *boot*
New File Name	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *Firewall*

Export configuration

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Export configuration*
Current File Name in Flash	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *Firewall*

Import configuration

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Import configuration*

Field	Menu	Value
Filename	**Maintenance** -> **Software & Configuration** ->**Options**	Browse...

Update system software

Field	Menu	Value
Action	**Maintenance** -> **Software & Configuration** ->**Options**	*Update system software*
Source Location	**Maintenance** -> **Software & Configuration** ->**Options**	e.g. *Locale File*
Filename	**Maintenance** -> **Software & Configuration** ->**Options**	Browse...

15.3.1 Appendix: Exporting and importing configurations over TFTP

SNMP Shell

A TFTP server must be running in your network before you can transfer configurations from the shell over TFTP to a PC. A TFTP server is available if you start **DIME Tools**, which can be installed with the **BRICKware** on the bintec **Companion PC**.

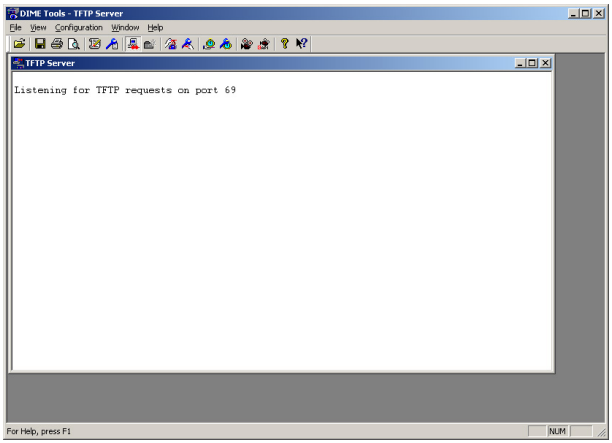

Fig. 146: DIME Tools - TFTP Server

Make sure the TFTP Deamon is running. To start the TFTP server, press the following key combination in **DIME Tools**: **CTRL + T**

You can use the *Configuration* menu item in **DIME Tools** to assign the TFTP server a

path, which it uses to import or export the configurations.

Proceed as follows to transfer a configuration to or from a TFTP server via the shell:

(1) Open the table for configuration management with the following command in the shell:

```
biboAdmConfigTable
```

```
inx Cmd(*rw)          Object(rw)        Path(rw)          PathNew(rw)
    Host(rw)          State(ro)         File(rw)          Timeout(rw)

 00 save              .0.0              "boot"
    0.0.0.0           done                                0
```

Relevant fields in the biboAdmConfigTable menu

Field	Meaning
Cmd	For selecting the operation you wish to perform.
Path	Enter the name of the existing configuration.
Host	Enter the IP address of your TFTP server.
File	Enter the file name.

You would like to take your configuration named *boot* in the flash ROM memory and save it under the name *Firewall.cf* in a TFTP server.

Enter the following command in the shell to save a configuration to a TFTP server:

```
Cmd=put Path=boot Host=192.168.0.2 File=Firewall.cf
```

You would like load your configuration under the name *Firewall.cf* from a TFTP server and save it under the name *boot* in the flash ROM.

Enter the following command in the shell to load a configuration from a TFTP server:

```
Cmd=get Path=boot Host=192.168.0.2 File=Firewall.cf
```

Note

The commands *put* or *get* do not secure any preshared keys and host keys. This was changed in software version 7.1.4. For this purpose, use the commands *put_all* and *get_all* instead of *put* or *get*.

15.3.2 Other Shell Operations

List of Configurations

If you would like a list of the configurations in the flash ROM memory, open the following table in the shell:

```
biboadmconfigdir
```

```
inx Name(*ro)                Count(ro)          Content(ro)

 00 "boot"                   160                "&lt;all&gt;"
 01 "Basic"                  140                "tblno:1:3:8:9:10:11:12:
 02 "ipsec-callback"         140                "tblno:1:3:8:9:10:11:12:
 03 "dyn_enc"                140                "tblno:1:3:8:9:10:11:12:
 04 "Firewall"               160                "&lt;all&gt;"
 05 "&lt;bytes free&gt;"     137778
```

Here you will find a list with the names of the configurations in the flash ROM, the space occupied and the free flash ROM memory.

Sorting the flash ROM memory

It is sometimes possible that no space is available for storing more configurations in the flash ROM memory. This may be because you have renamed, saved, copied or deleted configurations too often.

This means the configurations are scattered throughout the memory. It recommended that you reorganise the free memory in the flash ROM with the following command to make this memory available as a block:

```
Cmd=reorg
```

Saving by Xmodem

If TFTP is not available for saving the configuration to a PC, you can also cause the gateway to transfer the file over the serial interface to a terminal program using a command in the shell.

Enter the following in the shell to transfer the *boot* configuration:

```
Cmd=put Path=boot File=xmodem
```

After you have executed the command, you must set your terminal program to receive mode to be able to save the file on the PC.

Select the *Xmodem* protocol for the transfer.

Chapter 16 Security - Monitoring

16.1 Introduction

How to monitor your gateway is explained in the following chapters.

This workshop covers system logging, the **Activity Monitor** and SNMP traps.

Configuration in this scenario is carried out using the **GUI** (Graphical User Interface).

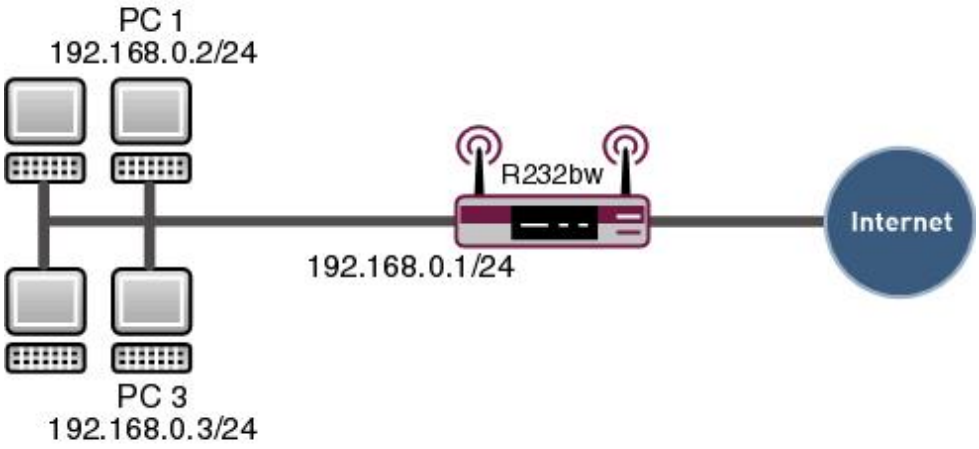

Fig. 147: Example scenario surveillance of the gateway

Requirements

The following are required for the configuration:

- Basic configuration of the gateway
- Boot image from version 7.8.2
- **BRICKware** version 7.1.14 or later for system logging and **Activity Monitor**.

16.2 Configuration

Surveillance requires changes in the following menus:

- **External Reporting** ->**Syslog**
- **External Reporting** -> **Activity Monitor**
- **External Reporting** ->**SNMP**

16.2.1 Syslog

The Syslog Daemon is used to log the debug messages and accounting information on a computer.

Start the **DIME Tools** under Windows in the following menu:

(1) Go to **Start** -> **Programs** -> **BRICKware**-> **DIME Tools**.

Make sure the Syslog Daemon is running once you have opened the **DIME Tools**. Start the Syslog Daemon by pressing the key combination **CTRL + L** in the **DIME Tools**.

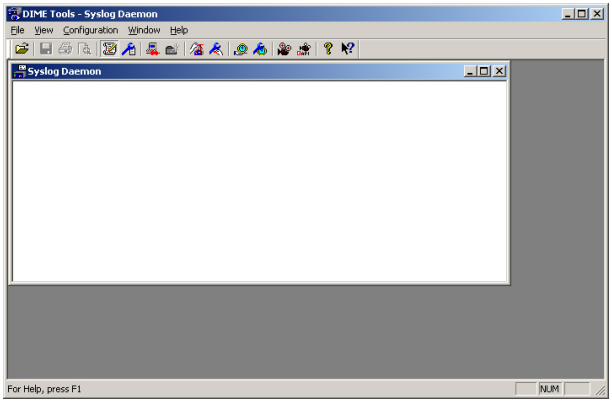

Fig. 148: System Logging

The configuration is made in the **Configuration** -> **Syslog Daemon** menu.

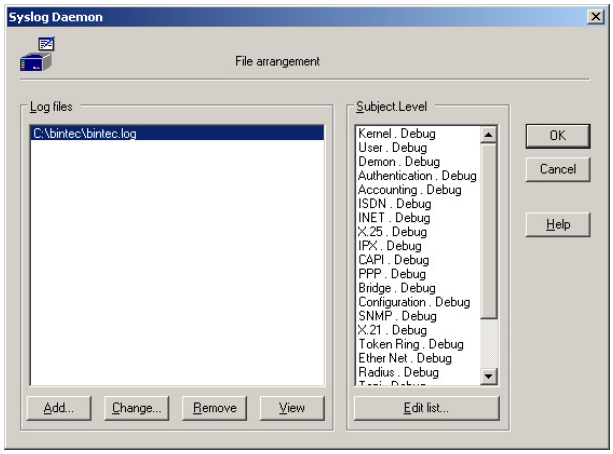

Fig. 149: Syslog Daemon

Proceed as follows to configure an entry:

(1) Click **Add** and enter a file name, e.g. `bintec.log`.

(2) Go to the **Edit List** field to continue the configuration.

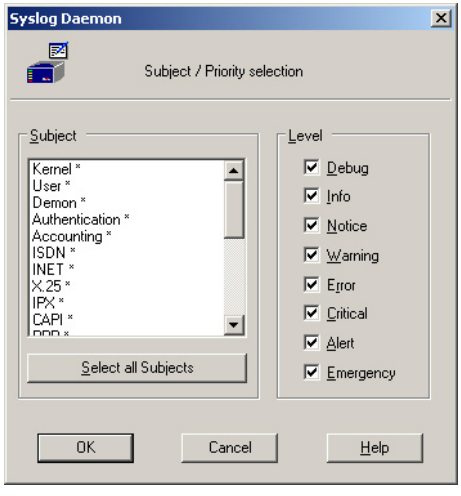

Fig. 150: Syslog Daemon

Proceed as follows if you would like to log all the messages sent by the gateway:

(1) Click the **Select all Subjects** field.

(2) Tag **Debug**.

(3) Leave both windows by pressing **OK**.

You must add an entry in the following menu in the **GUI** to make the gateway send the de-

bug messages to the Syslog server:

(1) Go to **External Reporting** -> **Syslog**-> **Syslog Servers** -> **New**.

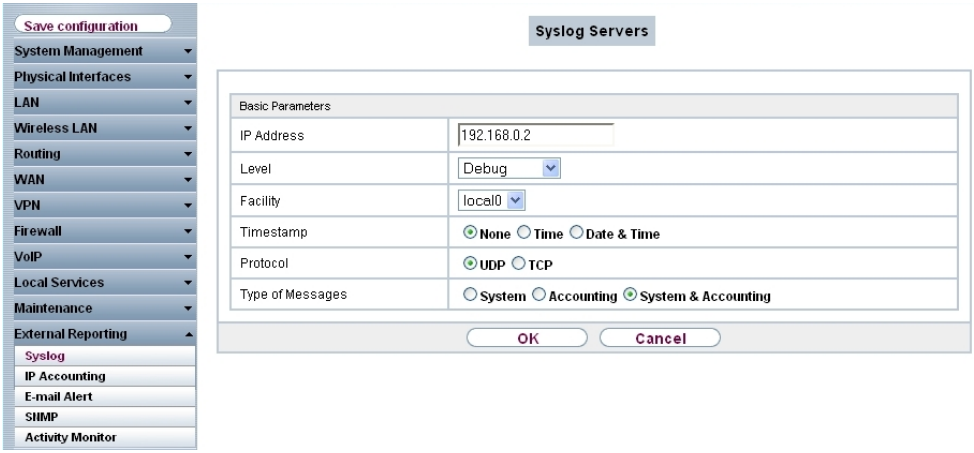

Fig. 151: **External Reporting** -> **Syslog**-> **Syslog Servers** -> **New**

Relevant fields in the Syslog Servers menu

Field	Meaning
IP Address	Enter the IP address of the Syslog server.
Level	Select the type of messages you wish to send. In Syslog Level *Debug* all generated messages are forwarded to the host.

Proceed as follows:

(1) Under **IP Address** enter the IP address of the server, e.g. *192.168.0.2*

(2) Set **Level** to *Debug*.

(3) Confirm with **OK**.

If the gateway is active, you should now receive a number of messages in the Syslog Servers window.

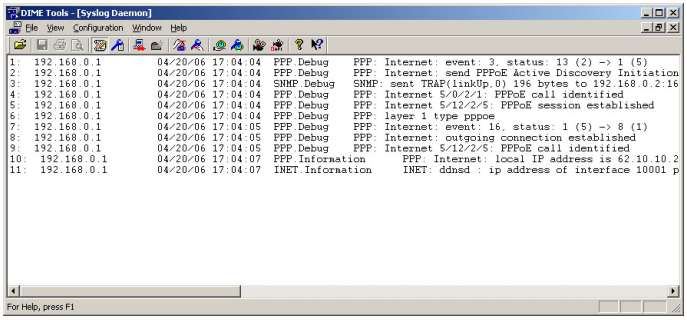

Fig. 152: Syslog Daemon

The last twenty messages at `Information` level are displayed in the following menu in the **GUI**:

(1) Go to **Monitoring** -> **Internal Protocol** -> **System Messages**.

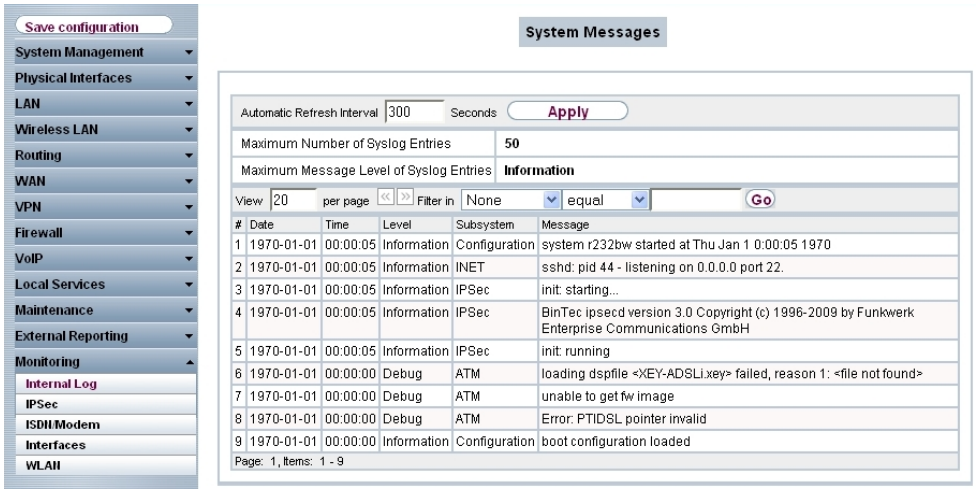

Fig. 153: **Monitoring** ->**Internal Log**->**System Messages**

16.2.2 Activity Monitor

In addition to DIME Tools, the **BRICKware** also includes an **Activity Monitor**. The **Activity Monitor** is for the monitoring and administration of interfaces in Windows.

You must first activate the **Activity Monitor** in the gateway before you can use it.

Go to the following menu for the configuration:

(1) Go to **External Reporting** -> **Activity Monitor** -> **Options**.

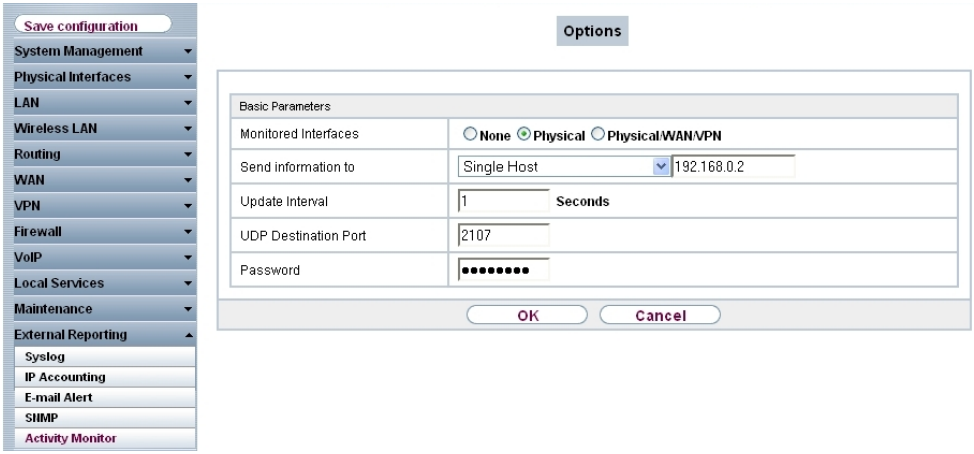

Fig. 154: **External Reporting->Activity Monitor->Options**

Relevant fields in the Options menu

Field	Meaning
Monitored interfaces	Determine which type of interface you would like to monitor.
Send information to	This is the IP address of the Windows PC.
Update Interval	Defines the update interval in seconds.

Proceed as follows:

(1) Under **Monitored Interfaces** select e. g. *Physical*.

(2) Set **Send Information to** to *Single Host*, for example, and enter *192.168.0.2*.

(3) Under **Update Interval** enter *1*.

(4) Confirm with **OK**.

If you have left the menu with **OK**, you can start the **Activity Monitor**.

You should now see your active gateway in the list.

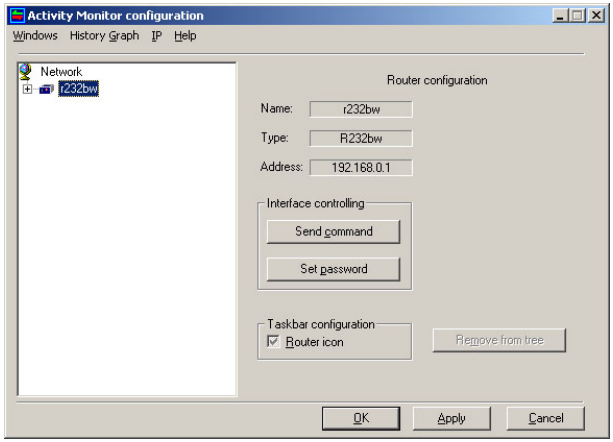

Fig. 155: Activity Monitor configuration

Proceed as follows to show the Internet access permanently in the task bar to indicate the current status of the interface:

(1) Extend the view by pressing + before **r232bw**.

(2) Select the internet access.

(3) Place a tick against **Display in status area**.

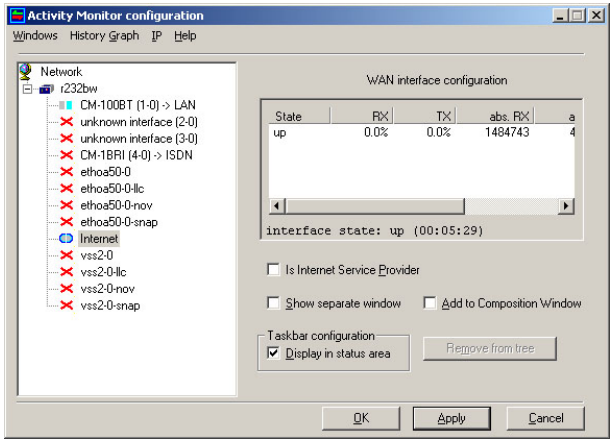

Fig. 156: Activity Monitor configuration

As soon as you press the **Apply** button, your task bar changes and shows a symbol for the status of the Internet interface.

Fig. 157: Status display

16.2.3 SNMP traps

If the status of the interface changes, you can allow SNMP messages to be sent from the gateway to a host.

Go to the following menu to enable this option:

(1) Go to **External Reporting** -> **SNMP** ->**SNMP Trap Options**.

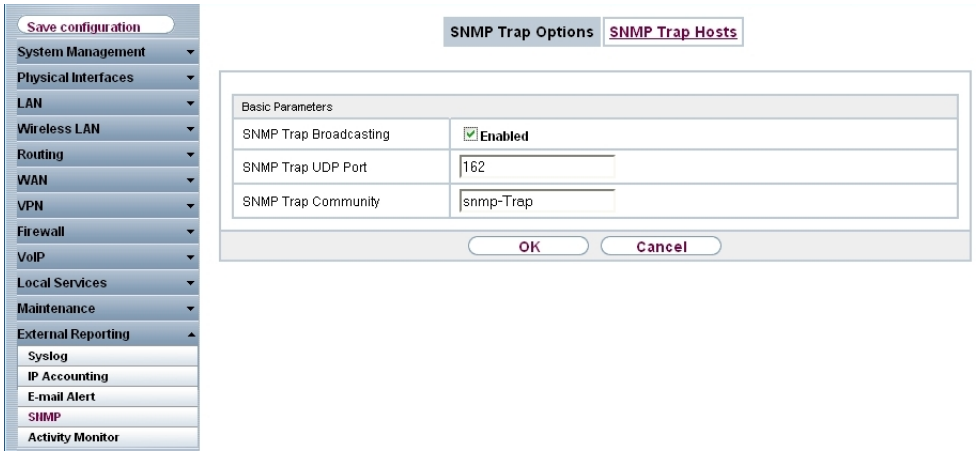

Fig. 158: **External Reporting** -> **SNMP**-> **SNMP Trap Options**

Relevant fields in the SNMP Trap Options menu

Field	Meaning
SNMP Trap Broadcasting	Specify whether or not SNMP traps are sent.

Proceed as follows:

(1) Under **SNMP Trap Broadcasting** select *Enabled*.

(2) Confirm with **OK**.

Next go to the following menu to enter the IP address of an SNMP host:

(1) Go to **External Reporting** -> **SNMP** ->**SNMP Trap Hosts**-> **New**.

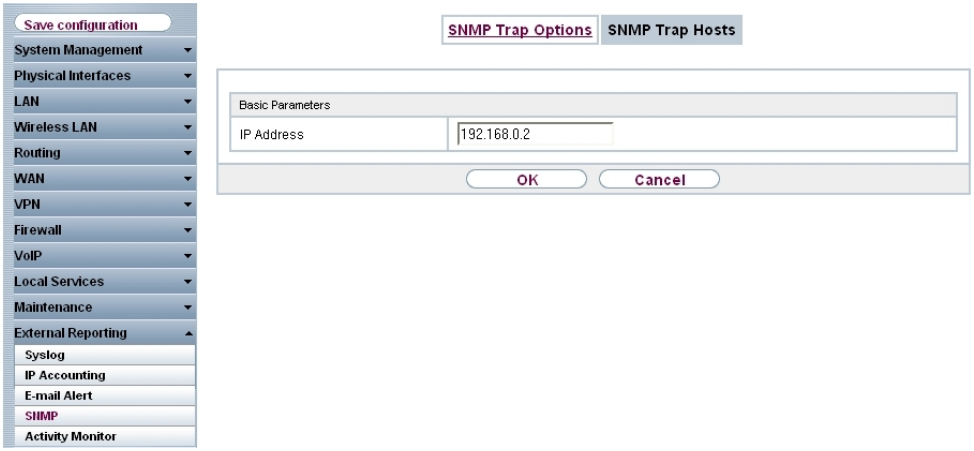

Fig. 159: **External Reporting** -> **SNMP**-> **SNMP Trap Hosts** -> **New**

Relevant fields in the SNMP Trap Hosts menu

Field	Meaning
IP Address	Enter the IP address of the SNMP host.

Proceed as follows:

(1) Under **IP Address** enter *192.168.0.2* for example.

(2) Confirm with **OK**.

Now open your **SNMP Manager** from **BRICKware** and add the IP address of the gateway in the following menu:

(1) Go to **Network** -> **ADD Brick**

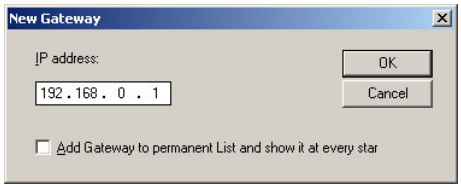

Fig. 160: New Gateway

Now start the trap monitor in the following menu to receive SNMP messages from gateways if an interface changes status:

(1) Go to **Monitor** -> **TRAP Monitor**.

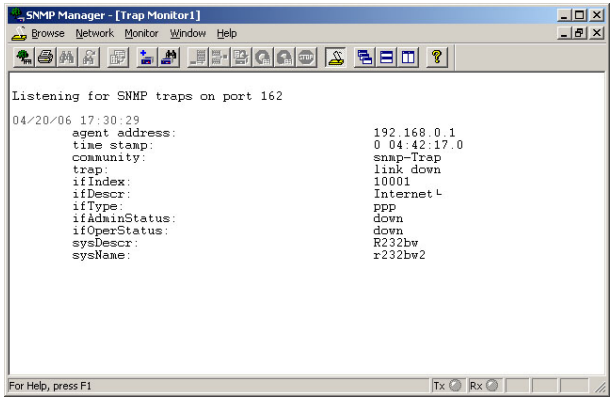

Fig. 161: **Monitor -> TRAP Monitor**

16.3 Overview of configuration steps

System Logging

Field	Menu	Value
IP Address	**External Reporting -> Syslog-> Syslog Servers -> New**	e.g. *192.168.0.2*
Level	**External Reporting -> Syslog-> Syslog Servers -> New**	*Debug*

Activity Monitor

Field	Menu	Value
Monitored interfaces	**External Reporting->Activity Monitor->Options**	e.g. *Physical*
Send information to	**External Reporting->Activity Monitor->Options**	e.g. *Single Host* with *192.168.0.2*
Update interval	**External Reporting->Activity Monitor->Options**	e.g. *1*

SNMP traps

Field	Menu	Value
SNMP Trap Broadcasting	**External Reporting -> SNMP-> SNMP Trap Options**	Enabled
IP Address	**External Reporting -> SNMP-> SNMP Trap Hosts -> New**	e.g. *192.168.0.2*

Chapter 17 Security - Trace analysis with Wireshark

17.1 Introduction

Ethereal/Wireshark is a program for analysing network communication links.

In Release 7.5 and above the bintec devices support the export of trace information in so-called PCAP format, which can be read by the network analyser and therefore permits extremely detailed packet analysis. A direct trace is also possible, e.g. on a DSL interface, which would otherwise be extremely time-consuming to analyse.

Requirements

Tracing in PCAP format is possible on all devices in the bintec R series (e.g. **R232b** / **R1200** / **R3000**), TR series (e.g. **TR200bw**) and W/WI series (e.g. **W1002** / **WI2040**) in software version 7.5 and above. To perform a trace you require a trace client that collects the trace data from the device and can save it in PCAP format.

- Client for Microsoft Windows operating systems:

  For Windows this is included in the **BRICKware** software kit (**BRICKware** version 7.5.1 and above) in the **Dime Tools** program.
- Client for Linux operating systems:

  For Linux systems you must load and execute the "bricktrace-linux" binary.

17.2 Installation

Windows platform

Download the latest version of **BRICKware** from:

www.bintec-elmeg.com/dl_bintec_brickware_de.html

You do not have to install all Brickware components, only the **Dime Tools**.

Install **Ethereal/Wireshark**. The latest version can be found at *www.wireshark.org*.

Linux platform

Download the "bricktrace-linux" binary by entering the following in the address bar of your Web browser

ftp://ftp.bintec-elmeg.com or

www.bintec-elmeg.com/dl_bintec_unix_tools_de.html

Install the **Ethereal/Wireshark** packet for your Linux distribution or download the corresponding packet from *www.wireshark.org* .

If necessary, update your bintec device to version 7.5 or higher.

17.3 Performing a trace

Make sure that an IP connection can be established between the trace client and the bintec device. The IP connection can be set up over LAN, WLAN, VPN or ISDN. Check the reachability of the bintec device using a ping command.

Windows platform

(1) Start **Dime Tools**.

(2) Go to **File** -> **New Trace**.

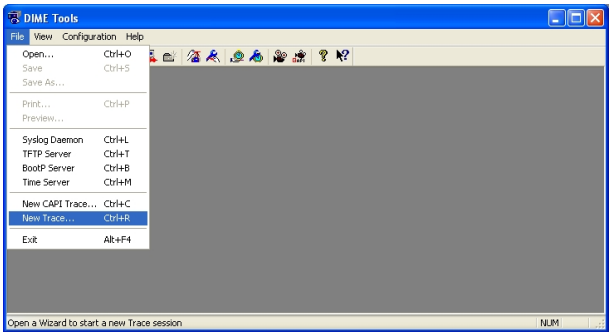

Fig. 162: **Dime Tools** -> **New Trace**

(3) Enter the IP address of the bintec device and press **Connect**.

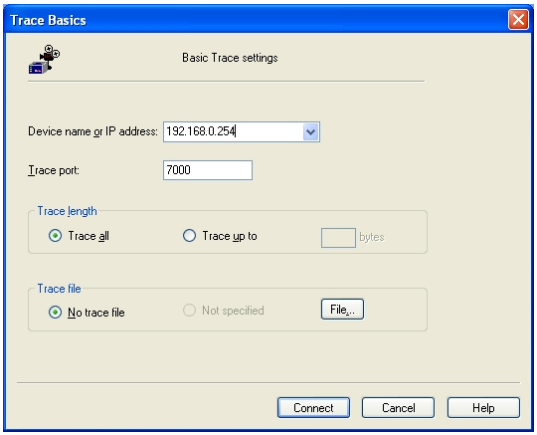

Fig. 163: IP address

(4) Enter the admin password of the bintec device in the **Enter password** field and click **OK**.

Fig. 164: Enter password

(5) Select the trace settings under **Detailed Trace Settings**.
Select the interface from which the trace is to be performed (e.g. LAN-Port 1001 or ATM-Port 3000 (integrated ADSL modem for R23x series).
Ethereal/Wireshark can only interpret data from the following interface type in PCAP format:
+ LAN 802.3
+ WLAN
+ ATM (ADSL / SDSL Modem Port)
+ IPSec interfaces
ISDN D- or B-channel information should be analysed in ASCII format.

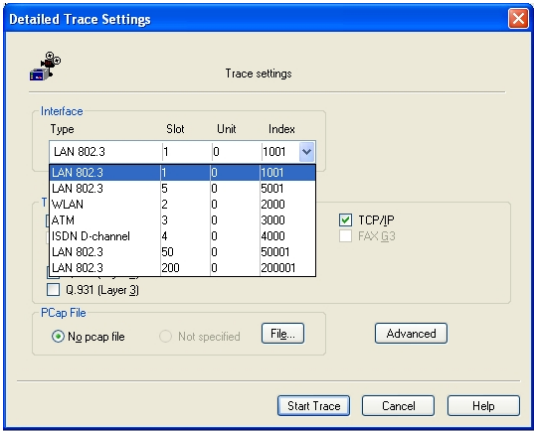

Fig. 165: Detailed Trace Settings

(6) Under **PCap File** select a file name to save the output. Click **Start Trace**.
The trace is started and saves all of the data packets until the window is closed.

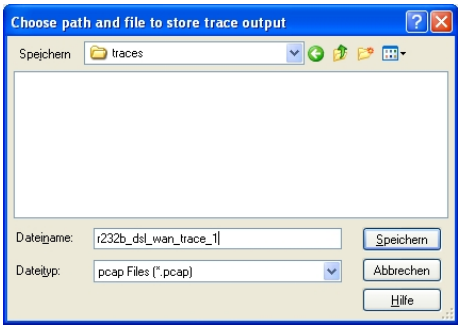

Fig. 166: Save data

(7) To end the trace, close the trace window or exit **Dime Tools**.

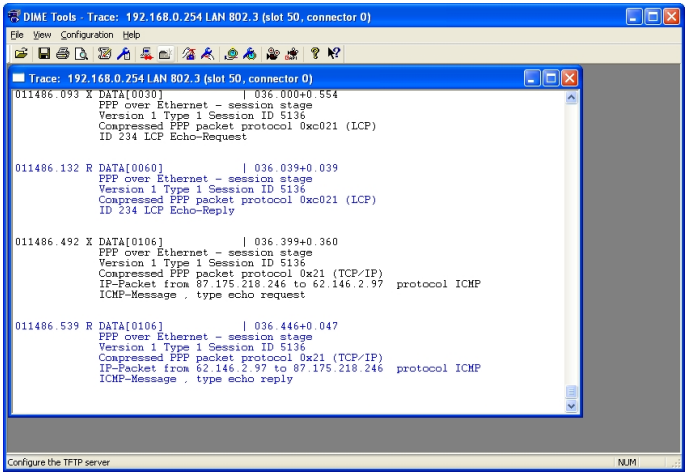

Fig. 167: End trace

(8) Open the saved PCAP file on completion of the trace using the **Ethereal/Wireshark** program.

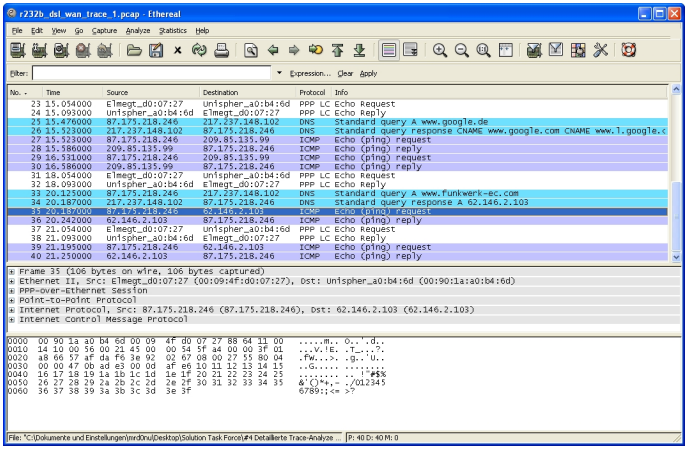

Fig. 168: PCAP file

Note

If the trace is performed on ATM interfaces (e.g. ADSL/SDSL) port, which are operated with PPPoA-ATM-PVC (e.g. in England), you must edit the saved PCAP file before opening with the **editcap** tool and set the link type to *ppp*. The **editcap** application is located in the installation directory for **Ethereal/Wireshark**.

Command: editcap -T ppp trace-3000.pcap trace-3000-ppp.pcap

The Linux variant bricktrace-linux allows the link type to be specified directly when creating the PCAP file.

Ethereal/Wireshark offer powerful filter functions. For information on use read the documentation at *www.wireshark.org/docs* .

Linux platform

Using the Linux version of the trace client offers two additional advantages over the Windows version.

- Real-time trace:

  Output from bricktrace-linux can be sent directly to **Ethereal/Wireshark** instead of first being saved in a file and then opened. This allows you to monitor the trace in real time.

- Prefilter:

  Output from bricktrace-linux can be filtered before being sent to **Ethereal/Wireshark**. This is particularly useful if only a small part of the entire data traffic is of interest (e.g. a specific TCP protocol) or the trace session has to run between the trace client and device over a slow connection (e.g. ISDN) and a quicker link is being analysed (e.g. DSL or Ethernet).

The syntax of the bricktrace-linux tool with all of its options can be viewed with "bricktrace-linux -?":

user@linux:~/bricktrace-linux> bricktrace-linux -?

```
Usage:
bricktrace-linux [opts] <routerip>[<channel><unit><slot>or<ifindex>]
        -h      hexadecimal output (-! for full length)
        -2      layer 2 output
        -3      layer 3 output
        -a      asynchronous HDLC (B-Channel only)
        -e      ETS300075 (EuroFileTransfer) output (B-channel only)
        -F      FAX (B-Channel only)
        -A      FAX + AT Commands (B-Channel only)
        -D      delta time
        -p      PPP (B-Channel only)
        -f      Frame Relay (B-Channel only)
        -i      IP output
        -N      Novell(c) IPX output
        -t      ascii text output (B-Channel only)
        -x      raw dump mode
        -X      asynchronous PPP over X.75
        -T < tei>         set tei filter (D-Channel only)
        -c < cref>        set callref filter (D-Channel only)
        -r < cnt>         capture only cnt bytes per paket
        -v      increase debug verbose level
        -V 1..3 trace protocol version (default: 3)
        -P< port>         specify trace tcp port (default: 7000)
        -I ipsrc:ipdst:proto:srcport:dstport      IPsession filter
        -B ip1:ip2:proto:port1:port2     bidirect IPsession filter
        -o      OR for LAN filter
        --src=< addr>     LAN filter for source MAC address
        --dst=< addr>     LAN filter for destination MAC address
        --llc            LAN filter for LLC packets
        --help           extended help (environ vars &amp;amp; filter)
        --vpi=< vci>      VPI for ADSL connections
        --vci=< vpi>      VCI for ADSL connections
        --ethereal       start ethereal (implies --pcap-pipe)
        --pcap-pipe      write data in pcap-format into named pipe
        --pcap-file      write data in pcap-format into file
        --ofile=< fname>  out filename (pipe/file)
        --pwd=< passwd>   remote admin-password

        < routerip>       trace host (router's name or IP-address)
        < channel>        0 = D-Channel or no ISDN, 1..31 = Bx-Channel
        < unit>           0..15
        < slot>           0..9
        < ifindex>        interface index (instead of chan/unit/slot)
        if no chan/unit/slot or ifindex given: list all interfaces

Examples:
  bricktrace-linux router                 : list all interfaces
  bricktrace-linux router 0 1 2           : D-Channel(0) of ISDN Slot 2, Unit 1
  bricktrace-linux router 1000            : LAN Interface 1000 (Slot 1)
  bricktrace-linux router 100001          : virtual IPsec interface 100001
  bricktrace-linux --ethereal router 1000 : write PCAP &amp;amp; start ethereal
  bricktrace-linux --pcap-file router 1000: write PCAP file
```

To see an overview of the traceable interfaces for a device, use the command without specifying an `ifindex`:

```
user@linux:~>  bricktrace-linux --pwd funkwerk 192.168.1.1
bricktrace-linux: connected to 192.168.1.1:7000
Ifc: 1000   Type: 7 (LAN 802.3)
Ifc: 5000   Type: 7 (LAN 802.3)
Ifc: 2000   Type: 4 (WLAN)
Ifc: 3000   Type: 3 (ATM)
Ifc: 4000   Type: 0 (ISDN D-channel)
Ifc: 50000  Type: 7 (LAN 802.3)
Ifc: 200000 Type: 7 (LAN 802.3)
end
user@linux:~>
```

Use the `ifstat` command on the telnet console of the router (not on the Linux system) to keep the assignment of the interface index values (Ifc).

```
r232bw:>  ifstat
Index  Descr         Type Mtu  Speed St Ipkts Ies Opkts Oes PhyAddr/ChgTime
000000 REFUSE       othr 8192     0 up 0       0   0     0    0 00:00:00
000001 LOCAL        othr 8192     0 up 0       0   0     0    0 00:00:00
000002 IGNORE       othr 8192     0 up 0       0   0     0    0 00:00:00
001000 en1-0        eth  1500  100M up 104467 0   91    0  00:a0:f9:09:7d:f8
001001 en1-0-llc    eth  1496  100M up 0       0   0     0  00:a0:f9:09:7d:f8
001002 en1-0-snap   eth  1492  100M up 0       0   0     0  00:a0:f9:09:7d:f8
005000 en5-0        eth  1500   10M dn 0       0   0     0  00:a0:f9:09:7d:f8
005001 en5-0-llc    eth  1496   10M dn 0       0   0     0  00:a0:f9:09:7d:f8
005002 en5-0-snap   eth  1492   10M dn 0       0   0     0  00:a0:f9:09:7d:f8
050000 ethoa50-0    eth  1500   10M dn 0       0   0     0  00:a0:f9:89:7d:f8
050001 ethoa50-0-ll eth  1496   10M dn 0       0   0     0  00:a0:f9:89:7d:f8
050002 ethoa50-0-sn eth  1492   10M dn 0       0   0     0  00:a0:f9:89:7d:f8
200000 vss1-0       eth  1500   54M dn 0       0   0     0  00:00:00:00:00:00
200001 vss1-0-llc   eth  1496   54M dn 0       0   0     0  00:00:00:00:00:00
200002 vss1-0-snap  eth  1492   54M dn 0       0   0     0  00:00:00:00:00:00
  total: 15
r232bw:>
```

The interface indices are numbered according to the following scheme:

```
    IfIndex     Description
-------------------------------------------------------------------

Special Interfaces:

    1       REFUSE
    2       LOCAL
    3       IGNORE

Hardware Interfaces:

    0100-8999   Slot Unit Channel Channel
    9000-9999   Bundles (S0, S2M)

Beispiele:

    1000        Ethernet en1-0 bei R23x-Serie
    5000        Ethernet en1-4 bei R232b-Serie
    3000        ADSL-Interface bei R23x-Serie


Software Interfaces:

    10001-14999     Dial-Up ISDN
    15001-15999     RADIUS Dial-In
    18001-19999     Frame Relay über ISDN
    20000-          Multiprotocol over X.25
    25000-          X.25 WAN Partner
    26000-          GRE
    27000-29999     X.25 over ISDN
    30000-49999     RADIUS Dial-Out
    50000-79999     ETHOA, Ethernet over ATM
    80000-89999     PPPOA, PPP over ATM
    90000-99999     RPOA, Routing Protocols over ATM
    100000-109999   IPSec
    110000-         IPSec over RADIUS
    200000-         WLAN
    210000-         WDS (Wireless Distrib. System)
```

To trace a specific interface and to display the output in ASCII format, add the interface index to the command (abbreviated: `ifindex / ifc`):

```
user@linux:~/bricktrace-linux> bricktrace-linux --pwd=funkwerk 192.168.1.1 1000
bricktrace-linux: connected to 192.168.1.1:7000
Ifc:1000 (Chan:0 Unit:0 Slot:1) Type: 7 (LAN 802.3)

020596.164 R DATA[0074]
    0000: 00 a0 f9 09 7d f8 00 a0  d1 de d7 8b 08 00 45 00  ....}.......E.
    0010: 00 3c 0f 71 00 00 80 01  a7 9a c0 a8 01 64 c0 a8  .&lt; .q.......d..
    0020: 01 01 08 00 46 5c                                 ....F\
          IP-Packet from 192.168.1.100 to 192.168.1.1  protocol ICMP
          ICMP-Message , type echo request

020596.164 X DATA[0074]
    0000: 00 a0 d1 de d7 8b 00 a0  f9 09 7d f8 08 00 45 00  ..........}...E.
    0010: 00 3c 02 d8 00 00 3f 01  f5 33 c0 a8 01 01 c0 a8  .&lt; ....?..3.....
    0020: 01 64 00 00 4e 5c                                 .d..N\
          IP-Packet from 192.168.1.1 to 192.168.1.100  protocol ICMP
          ICMP-Message , type echo reply


user@linux:~/bricktrace-linux>
```

Using the filter options, e.g. with the options "-I" and "-B", you can restrict the output:

```
Syntax:

-I ipsrc:ipdst:proto:srcport:dstport IPsession filter

-B ip1:ip2:proto:port1:port2 bidirect IPsession filter
```

Example: Trace only ICMP packets (IP Protocol 1)

```
bricktrace-linux --pwd funkwerk -I ::1 192.168.1.1 1000
```

Example: Trace only Telent packets (TCP (IP protocol 6), Port 23)

```
bricktrace-linux --pwd funkwerk -B ::6:23 192.168.1.1 1000
```

Example: Trace only packets between two host IP addresses:

```
bricktrace-linux --pwd funkwerk -B 192.168.1.1:192.168.1.100
192.168.1.1 1000
```

17.4 Using Ethereal /Wireshark with bricktrace-linux

To output a file in PCAP format with **bricktrace-linux**, use the options `--pcap-file` and `--ofile`:

```
bricktrace-linux --pwd funkwerk --pcap-file --ofile=testtrace.pcap
192.168.1.1 1000
```

Open the PCAP file in Ethereal / Wireshark.

Note

If the trace is performed on ATM interfaces (e.g. ADSL/SDSL) port, which are operated with PPPoA-ATM-PVC (e.g. in England), you must set the link type of the PCAP file to *ppp*. Use the option `--pcap-linktype=9` to do this.

Alternatively, you can modify the saved PCAP file using the **editcap** before opening in Ethereal and can then correct the link type:

Command: `editcap -T ppp trace-3000.pcap trace-3000-ppp.pcap`

To send the trace output in real time from bricktrace-linux to **Ethereal/Wireshark**, use the option `--ethereal`. All data is sent to **Ethereal** in real time and can be analysed in real time.

Additional information on bricktrace options can be found using help, Example:

```
bricktrace --ethereal router-ip 1000
```

Starts the trace on LAN interface 1000 and automatically starts Ethereal at the same time via a pipe.

```
export TRACE_EXEC="wireshark -Sk -i"
```

Help with the command -? or using advanced help with `--help`.

starts the wireshark program instead of the ethereal program under the --ethereal option.

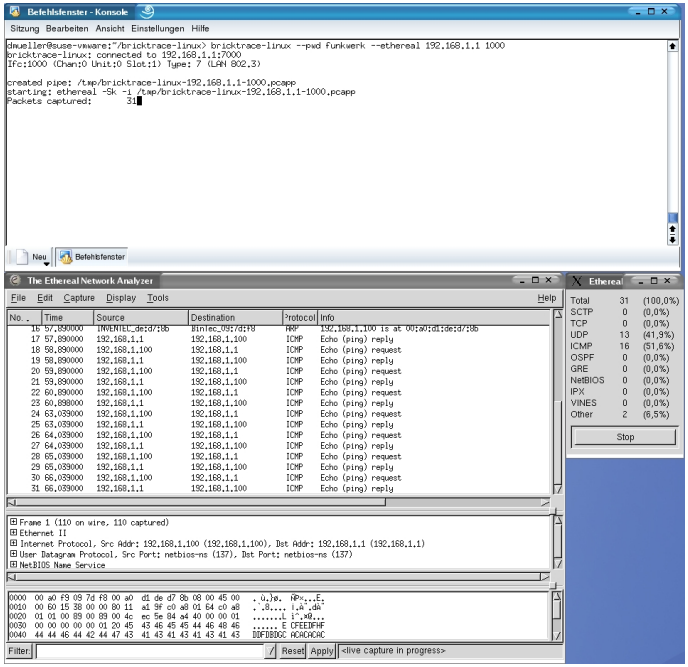

Fig. 169: Bricktrace-linux ethereal

Chapter 18 VoIP - Connecting local VoIP terminals to bintec TR200

18.1 Introduction

The following chapters describe how to connect internal VoIP (SIP) terminals to **bintec TR200**. In this example an **elmeg IP-290**, a **bintec IP-50** and a **bintec V102** are used. Internal telephone calls can be made once the VoIP terminals are registered to **bintec TR200** (including any other ISDN /analogue telephones).

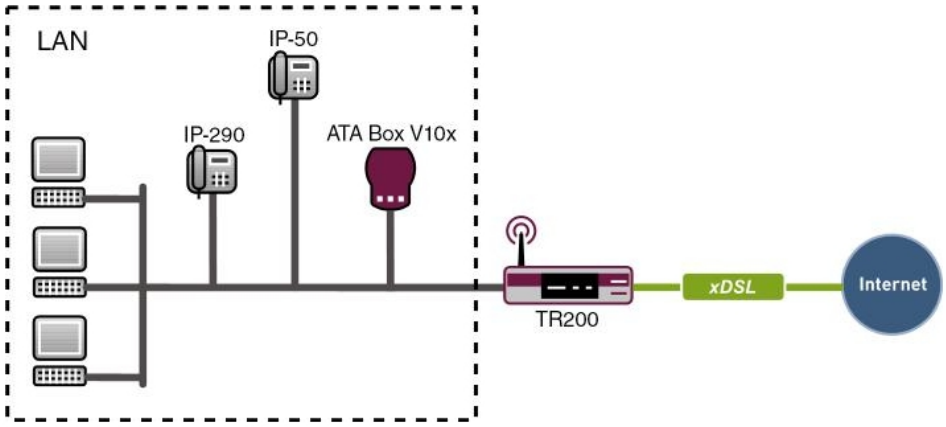

Fig. 170: Example scenario connecting local terminals

Requirements

- In this example a **bintec TR200** with software version 7.5.1 Patch 1 is used.
- Ethernet connection of VoIP (SIP) terminals to the switch for **bintec TR200**.
- IP addresses for the terminals are assigned by the **bintec TR200** via DHCP.
- Basic configuration of the device (e.g. country setting).
- Advanced settings for the internal extensions (e.g. automatic outside line, dialling authorisation) are not used here.

18.2 Configuration

18.2.1 Connecting an elmeg IP-290 to bintec TR200

Configuring bintec TR200

Internal extensions are configured in the **PBX** -> **Internal Numbers** -> **VoIP** menu. In this example the internal extension 30 is used for the **elmeg IP-290**:

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>**.

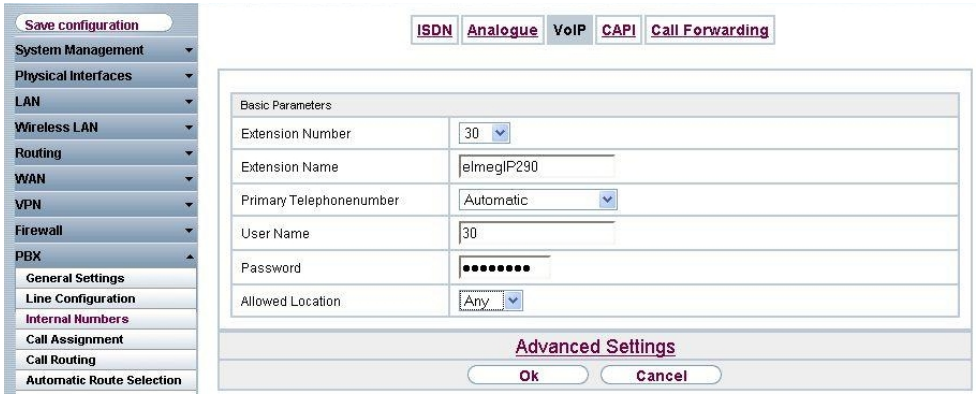

Fig. 171: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *30*, and click .

(2) Under **Extension Name** enter *elmegIP290* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring elmeg IP-290

You can configure **elmeg IP-290** conveniently via the Web browser.

To access the configuration interface enter the IP address **elmeg IP-290** in your Web browser.

Before configuring the **elmeg IP-290** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Set up**-> **Line 1** -> **Login**

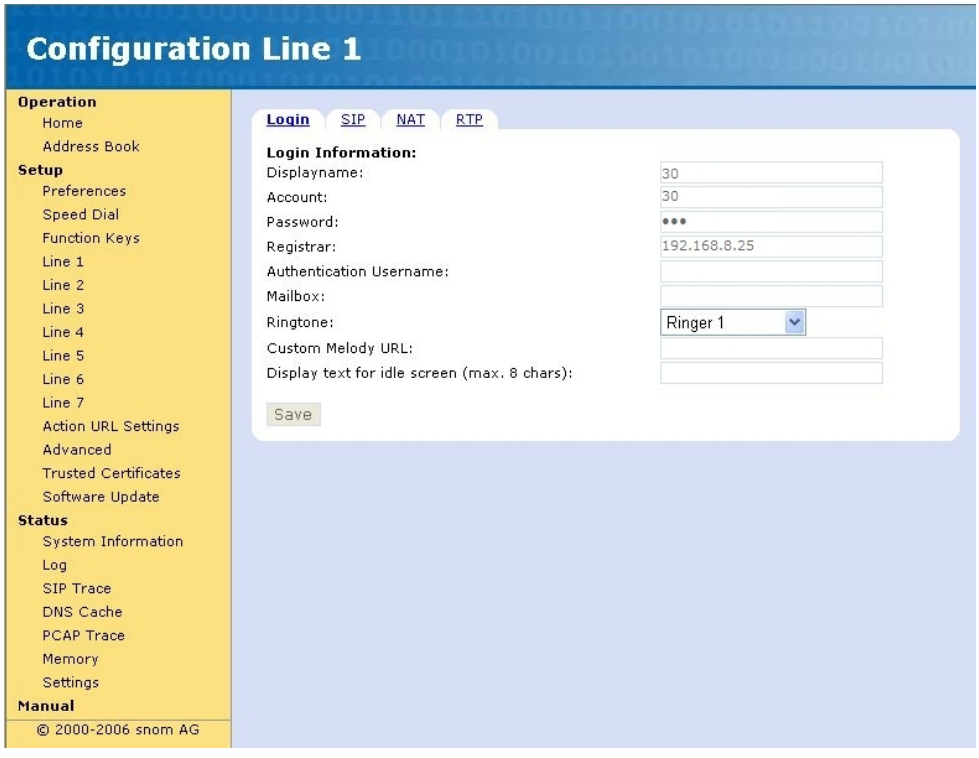

Fig. 172: **Set up**-> **Line 1** -> **Login**

Relevant fields in the Login Information menu

Field	Meaning
User ID	The extension number is entered here.
Password	Enter the password here.
Registrar	Enter the IP address of **elmeg IP-290** here.

System messages for registration:

```
VOIP: Registration request:(8365) 30@192.168.8.25, location 0 (192.168.8.50)
VOIP: Registration reject: (8365) 30@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request:(8366) 30@192.168.8.25, location 0 (192.168.8.50)
VOIP: Registration reject: (8366) 30@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:30@192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 30 from 192.168.8.50:2051
DHCP: discover from client 0:4:13:22:17:f0 on interface 150000
DHCP: offering IP-Address 192.168.8.50 to client 0:4:13:22:17:f0 on interface 150000 for 7200 sec
DHCP: request from client 0:4:13:22:17:f0 for IP 192.168.8.50 on interface 150000 for DHCP server 192.168.8.25
DHCP:assigned IP-Address 192.168.8.50 to client 0:4:13:22:17:f0 for 7200 sec
```

18.2.2 Connecting bintec IP-50 to bintec TR200

Configuring bintec TR200

Internal extensions are configured in the **PBX** -> **Internal Numbers** -> **VoIP** menu. In this example the internal extension 33 is used for the **bintec IP-50**:

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**.

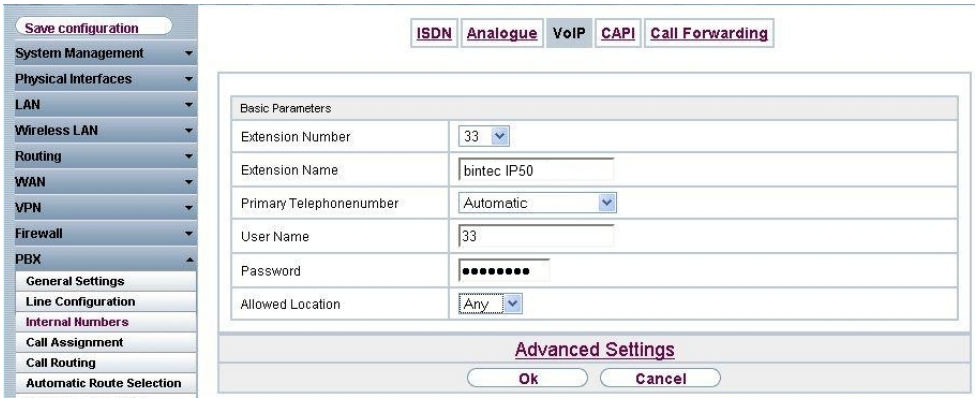

Fig. 173: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.

Field	Meaning
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *33*, and click  .

(2) Under **Extension Name** enter *bintec IP50* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring bintec IP-50

You can configure **bintec IP-50** conveniently via the Web browser.

To access the configuration interface enter the IP address **bintec IP-50** in your Web browser.

Before configuring the **bintec IP-50** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Service Domain Settings**.

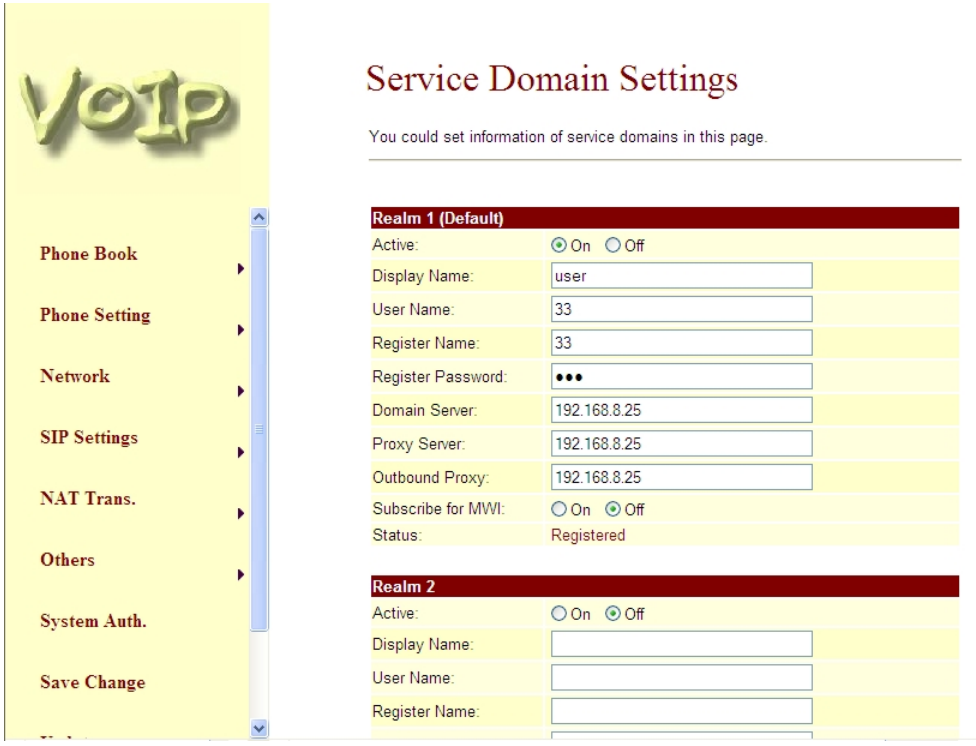

Fig. 174: **Service Domain Settings**

Relevant fields in the Service Domain Settings menu

Field	Meaning
User Name	Enter the user name.
Register Name	The extension number is entered here.
Register Password	Enter the password here.
Domain Server	Enter the IP address of **bintec IP-50** here.
Subscribe for MWI	This function is used to signal to terminals that new messages are stored on the virtual answering machine.

18.2.3 Connecting a bintec V102 adapter to bintec TR200

Configuring bintec TR200

The **bintec V102** adapter is assigned the internal number 31 in the **PBX** -> **Internal Numbers** -> **VoIP** menu.

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**.

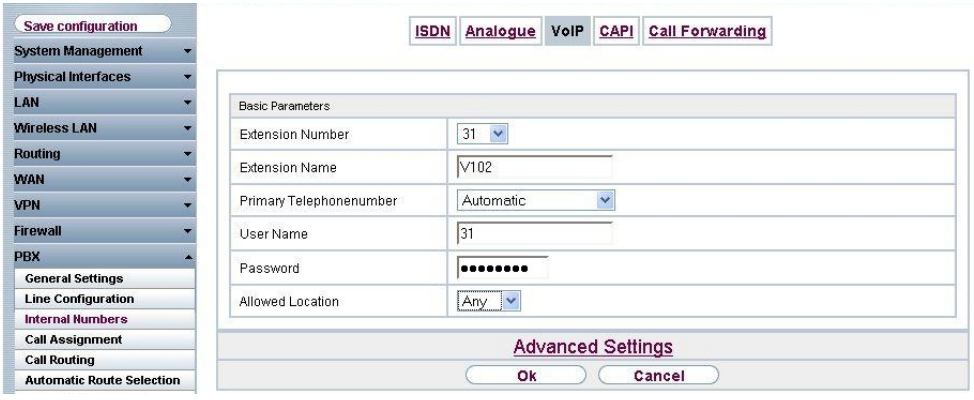

Fig. 175: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *31*, and click .

(2) Under **Extension Name** enter *V102* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring bintec V102

You can configure **bintec V102** conveniently via the Web browser.

To access the configuration interface enter the IP address **bintec V102** in your Web browser.

Before configuring the **bintec V102** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Service Domain Settings**.

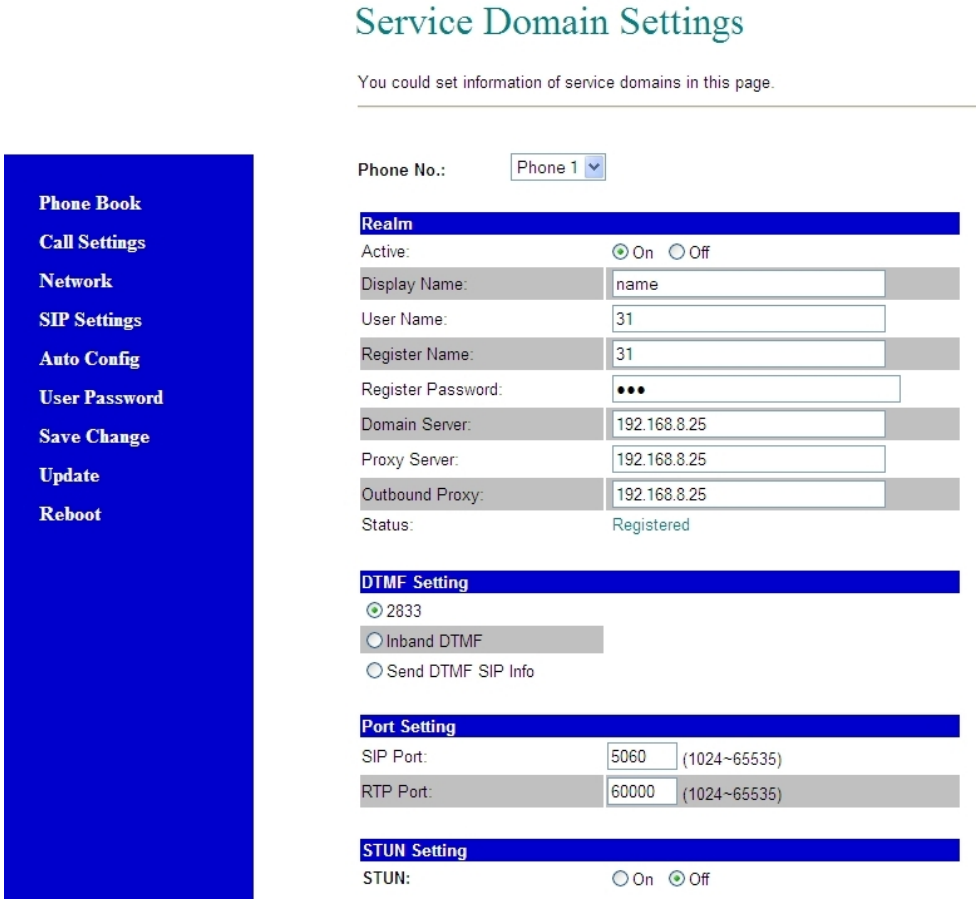

Fig. 176: **Service Domain Settings**

Relevant fields in the Service Domain Settings menu

Field	Meaning
User Name	Enter the user name.
Register Name	The extension number is entered here.

Field	Meaning
Register Password	Enter the password here.
Domain Server	Enter the IP address of **bintec V102** here.

System messages for registration:

```
VOIP: Registration request:(8389) 31@192.168.8.25, location 0 (192.168.8.51)
VOIP: Registration reject: (8389) 31@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request:(8390) 31@192.168.8.25, location 0 (192.168.8.51)
VOIP: Registration reject: (8390) 31@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:31@192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 31 from 192.168.8.51:5060
DHCP: discover from client 0:9:26:12:1:40 on interface 150000
DHCP: offering IP-Address 192.168.8.51 to client 0:9:26:12:1:40 on interface 150000 for 7200 sec
DHCP: request from client 0:9:26:12:1:40 for IP 192.168.8.51 on interface 150000 for DHCP server 192.168.8.25
DHCP:assigned IP-Address 192.168.8.51 to client 0:9:26:12:1:40 for 7200 sec
```

18.2.4 Configuring the VoIP Clients "Phoner" software to register with bintec TR200

In this example "Phoner 2.10" is used. The SoftPhone is assigned the internal number 32. The following settings are required to register a software VoIP client:

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>**.

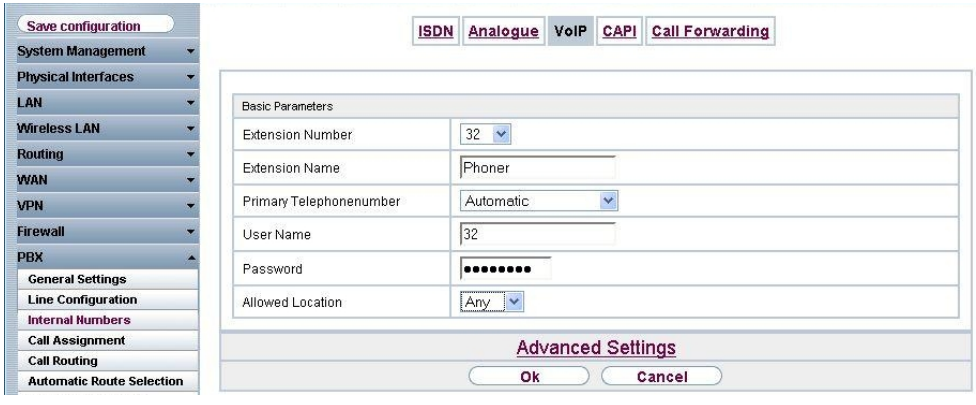

Fig. 177: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenum-	Select an ISDN/analogue line or an SIP provider account to be

Field	Meaning
ber	used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *32*, and click  .

(2) Under **Extension Name** enter *Phoner* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring the Phoner Software Client

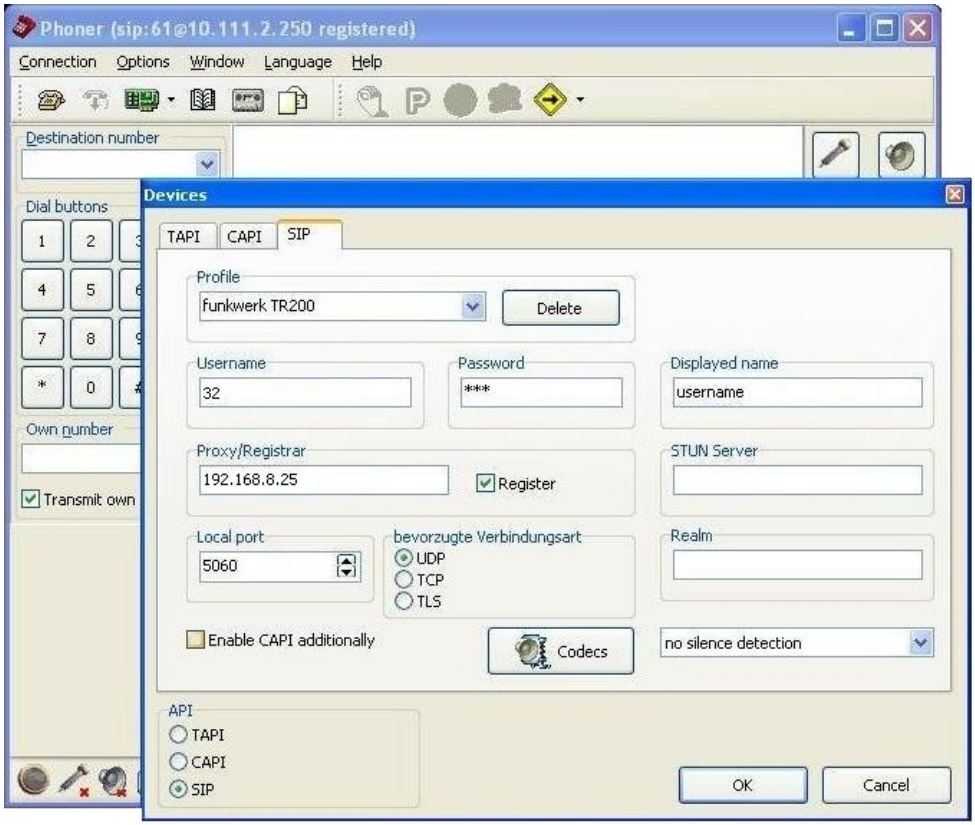

Fig. 178: Phoner Software Client

Relevant fields in the Devices SIP menu

Field	Meaning
Profile	Assign a name here, e.g. *bintec TR200*.
User Name	The extension number is entered here.
Password	Enter the password here.
Proxy/Registrar	Enter an IP address.

System messages for registration:

```
VOIP: Registration request:(8214) 32@192.168.8.25, location 0 (192.168.8.254)
VOIP: Registration reject: (8214) 32@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request:(8215) 32@192.168.8.25, location 0 (192.168.8.254)
VOIP: Registration reject: (8215) 32@192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:32@192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 32 from 192.168.8.254:20000
```

18.3 Overview of configuration steps

Extensions for elmeg IP-290

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *30*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *elmegIP290*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *30*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	*Any*

Settings on elmeg IP-290

Field	Menu	Value
User ID	**Set up** -> **Line 1** -> **Login**	e.g. *30*
Password	**Set up** -> **Line 1** -> **Login**	e.g. *secret*
Registrar	**Set up** -> **Line 1** -> **Login**	e.g. *192.168.8.25*

Extensions for bintec IP-50

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *33*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *bintec IP50*

Field	Menu	Value
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *33*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	*Any*

Settings on bintec IP-50

Field	Menu	Value
User Name	**Service Domain Settings**	e.g. *33*
Register Name	**Service Domain Settings**	e.g. *33*
Register Password	**Service Domain Settings**	e.g. *secret*
Domain Server	**Service Domain Settings**	e.g. *192.168.8.25*
Subscribe for MWI	**Service Domain Settings**	*Off*

Extensions for bintec V102

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *31*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *V102*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *31*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**	e.g. *secret*

Field	Menu	Value
		
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	*Any*

Settings on bintec V102

Field	Menu	Value
User Name	**Service Domain Settings**	e.g. *31*
Register Name	**Service Domain Settings**	e.g. *31*
Register Password	**Service Domain Settings**	e.g. *secret*
Domain Server	**Service Domain Settings**	e.g. *192.168.8.25*

Extensions for the Phoner Software Client

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *32*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *Phoner*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *32*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	*Any*

Configuring the Phoner Software Client

Field	Menu	Value
Profile	**Devices** -> **SIP**	e.g. *bintec TR200*
User Name	**Devices** -> **SIP**	e.g. *32*

Field	Menu	Value
Password	**Devices** -> **SIP**	e.g. *secret*
Proxy/Registrar	**Devices** -> **SIP**	e.g. *192.168.8.25*

Chapter 19 VoIP - Connecting VoIP clients to bintec TR200 externally

19.1 Introduction

The following chapters describe how to connect external VoIP (SIP) terminals to **bintec TR200**. An **elmeg IP-290**, a **bintec IP-50** and a **bintec V102** adapter and the "Phoner 2.10" softphone are described as VoIP clients. To minimise security risks, the connection should be set up over a VPN path. However, VPN configuration is not discussed in this section. Internal telephone calls can be made once the VoIP telephones are registered to **bintec TR200** (including any other ISDN /analogue telephones).

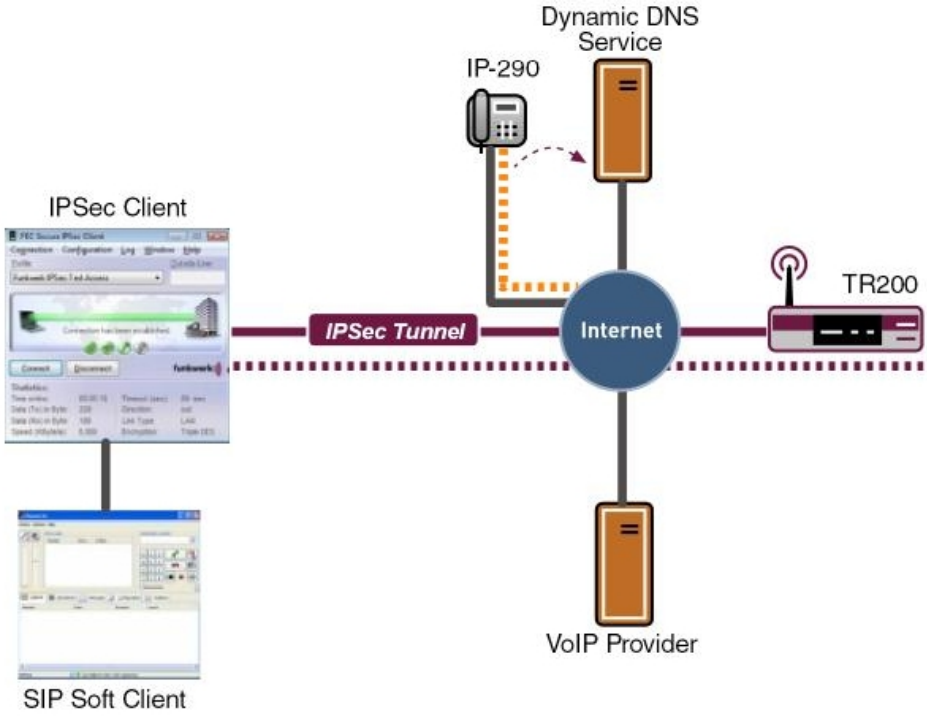

Fig. 179: Example scenario for external connection

Requirements

Note

bintec TR200 must be permanently accessible from the internet. A static, official IP address is recommended for this. If you use a dynamic WAN address and DynDNS, you must disable the wildcard option.

(1) In this example a **bintec TR200** with software version 7.5.1 Patch 1 is used.

(2) The VoIP telephones must be connected to the internet with a router, for example. This router must allow RTP data to be transmitted, for example, with a SIP proxy.

(3) If a VoIP telephone is connected over a VPN path, the private IP address of **bintec TR200** must be used as the registrar address.

(4) Advanced settings for the internal extensions (e.g. automatic outside line, dialling authorisation) are not used here.

(5) If an internet connection with low bandwidth is used, a codec with low bandwidth must also be used, for example G.729. This setting must be made on the telephone.

19.2 Configuration

19.2.1 Connecting an elmeg IP-290 to bintec TR200

Configuring bintec TR200

In this example the internal extension 30 is used for the **elmeg IP-290**. The internet connection of the IP telephone is established over a **bintec R232bw** router. The **Application Level Gateway** (ALG) is enabled on this router. If the telephone is connected to **bintec TR200** over a VPN tunnel, the private IP address of the registrar (TR200) must be used when configuring the telephone.

New extensions are configured on **bintec TR200** in the **PBX** -> **Internal Numbers** -> **VoIP** menu.

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>**.

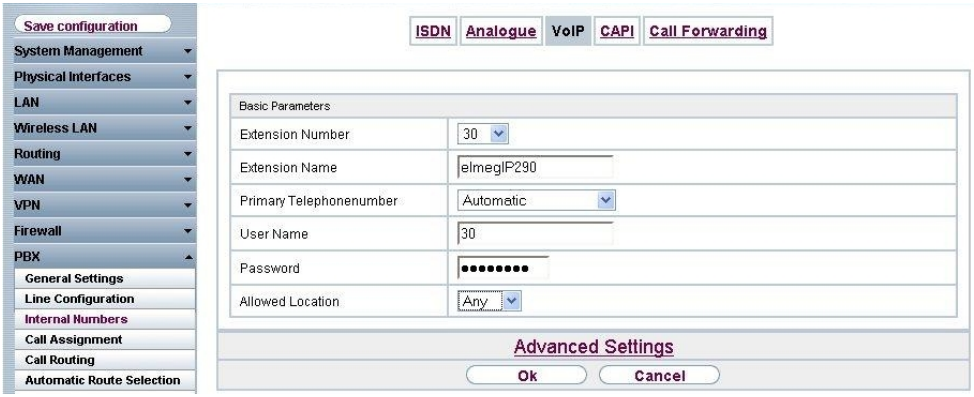

Fig. 180: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *30*, and click .

(2) Under **Extension Name** enter *elmegIP290* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring elmeg IP-290

You can configure **elmeg IP-290** conveniently via the Web browser.

To access the configuration interface enter the IP address **elmeg IP-290** in your Web browser.

Before configuring the **elmeg IP-290** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Set up**-> **Line 1** -> **Login**

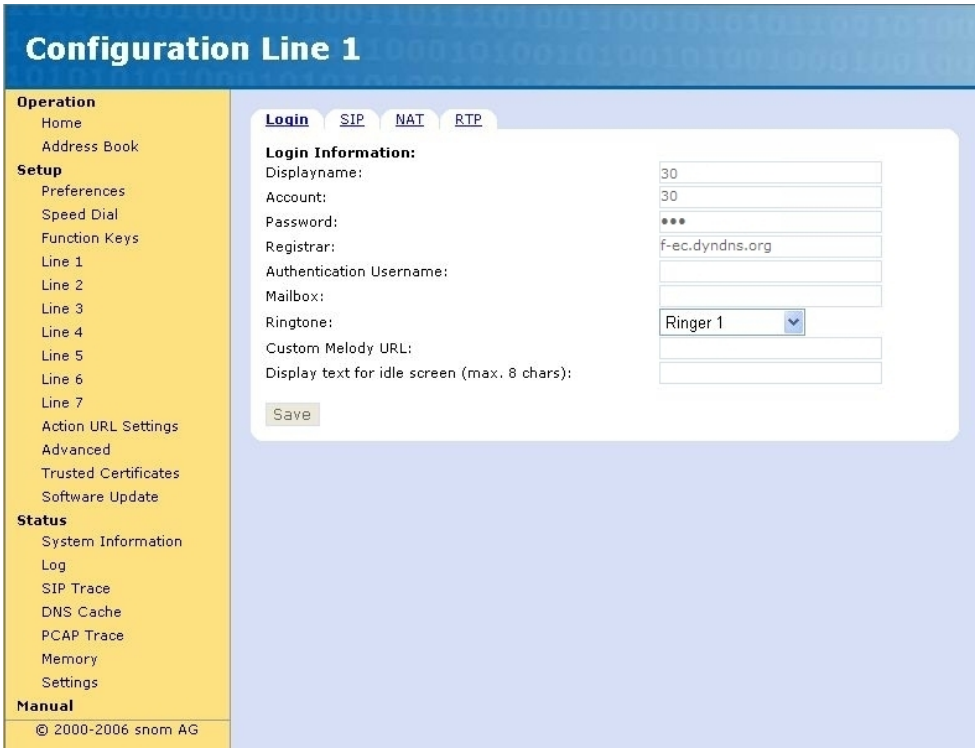

Fig. 181: **Set up**-> **Line 1** -> **Login**

Relevant fields in the Login Information menu

Field	Meaning
User ID	The extension number is entered here.
Password	Enter the password here.
Registrar	Under Registrar enter your own dynDNS account.

System messages for registration:

```
NAT: new incoming session on ifc 10001 prot 17 62.104.126.129:5060/62.104.126.129:5060 &lt;84.149.249.207:12002
VOIP: Registration request: (8297) 30@f-ec.dyndns.org, location 0 (84.149.249.207)
VOIP: Registration reject: (8297) 30@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request: (8298) 30@f-ec.dyndns.org, location 0 (84.149.249.207)
VOIP: Registration reject: (8298) 30@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request: (8299) 30@f-ec.dyndns.org, location 0 (84.149.249.207)
VOIP: Registration reject: (8299) 30@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request: (8300) 30@f-ec.dyndns.org, location 0 (84.149.249.207)
VOIP: Registration reject: (8300) 30@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:30@f-ec.dyndns.org, guest 0, expires 60, location 8
VOIP: Registration success: 30 from 84.149.249.207:12002
```

19.2.2 Connecting bintec IP-50 to bintec TR200

Configuring bintec TR200

The internal number 33 is used for **bintec IP-50**. The internet connection is established over a **bintec R232bw** router. The **Application Level Gateway** (ALG) is enabled on this router). If the telephone is connected to **bintec TR200** over a VPN tunnel, the private IP address of the registrar (TR200) must be used when configuring the telephone.

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**.

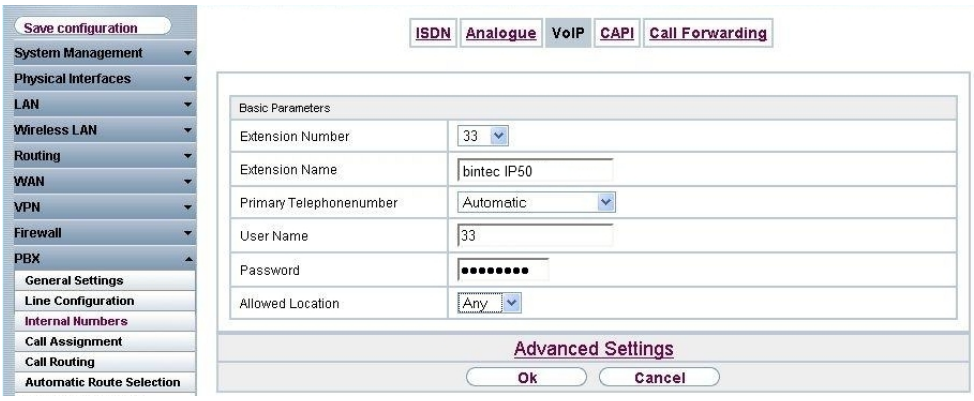

Fig. 182: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The

Field	Meaning
	extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *33*, and click  .

(2) Under **Extension Name** enter *bintec IP50* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring bintec IP-50

You can configure **bintec IP-50** conveniently via the Web browser.

To access the configuration interface enter the IP address **bintec IP-50** in your Web browser.

Before configuring the **bintec V102** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Service Domain Settings**.

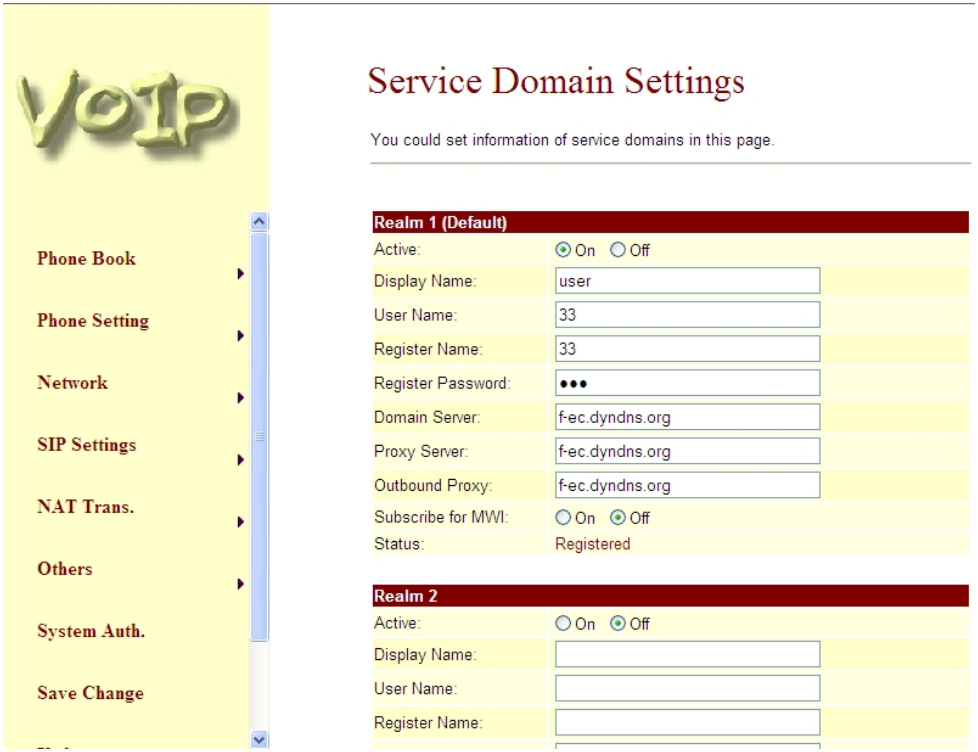

Fig. 183: **Service Domain Settings**

Relevant fields in the Service Domain Settings menu

Field	Meaning
User Name	Enter the user name.
Register Name	The extension number is entered here.
Register Password	Enter the password here.
Domain Server	Enter your own dynDNS account here.
Subscribe for MWI	This function is used to signal to terminals that new messages are stored on the virtual answering machine.

System messages for registration:

```
NAT: new incoming session on ifc 10001 prot 17 195.4.84.60:5060/195.4.84.60:5060 &lt;84.149.252.57:12000
VOIP: Registration request: (8320) 33@f-ec.dyndns.org, location 0 (84.149.252.57)
VOIP: Registration reject: (8320) 33@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request: (8321) 33@f-ec.dyndns.org, location 0 (84.149.252.57)
VOIP: Registration reject: (8321) 33@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:33@f-ec.dyndns.org, guest 0, expires 60, location 8
VOIP: Registration success: 33 from 84.149.252.57:12000
```

19.2.3 Connecting a bintec V102 adapter to bintec TR200

Configuring bintec TR200

The **bintec V102** adapter is assigned the internal number 31 in this example. If the **bintec V102** adapter does not established an internet connection independently, a router with an enabled **Application Level Gateway** (ALG), e.g. **bintec R232b**, must be used. To set up an encrypted connection for the **bintec V102** adapter you must first established a VPN IPSec tunnel to **bintec TR200** with a router.

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**.

Fig. 184: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *31*, and click  .

(2) Under **Extension Name** enter *V102* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring bintec V102

You can configure **bintec V102** conveniently via the Web browser.

To access the configuration interface enter the IP address **bintec V102** in your Web browser.

Before configuring the **bintec V102** the login data must be entered on the **Login** page.

For this, go to the following menu:

(1) Go to **Service Domain Settings**.

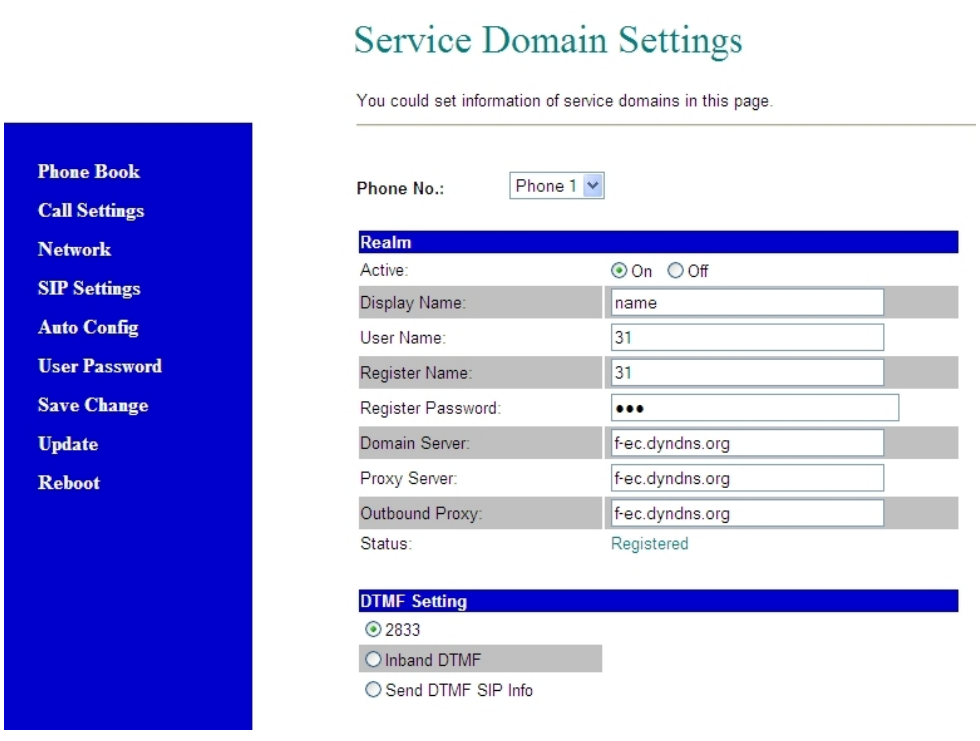

Fig. 185: **Service Domain Settings**

Relevant fields in the Service Domain Settings menu

Field	Meaning
User Name	Enter the user name.
Register Name	The extension number is entered here.
Register Password	Enter the password here.
Domain Server	Enter your own dynDNS account here.

System messages for registration:

```
NAT: new incoming session on ifc 10001 prot 17 62.104.127.104:5060/62.104.127.104:5060 &lt;-84.149.254.198:12003
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration request: (8231) 31@f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration reject: (8231) 31@f-ec.dyndns.org, guest 0,expires 60, location 8,
                                        cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration request: (8232) 31@f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration reject: (8232) 31@f-ec.dyndns.org, guest 0,expires 60, location 8,
                                        cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration request: (8233) 31@f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration reject: (8233) 31@f-ec.dyndns.org, guest 0,expires 60, location 8,
                                        cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration request: (8234) 31@f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration reject: (8234) 31@f-ec.dyndns.org, guest 0,expires 60, location 8,
                                        cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Authentication confirm: sip:31@f-ec.dyndns.org, guest 0, expires 60, location 8
11:48:31 NOTICE/VOIP: iwu: [MSG] VOIP: Registration success: 31 from 84.149.254.198:12003
```

19.2.4 Configuring the VoIP Clients "Phoner" software to register with bintec TR200

In this example the "Phoner 2.10" SoftPhone is used. The SoftPhone is assigned the internal number 32. If the SoftPhone establishes an internet connection via a router, the **Application Level Gateway** (SIP Proxy) must be enabled on this router. If the SoftPhone registers with **bintec TR200** over VPN the VPN tunnel must be established with the bintec Secure IPsec Client. Naturally, the private IP address of the registrar must be used when registering the SoftPhone over VPN.

The following settings are required to register a software VoIP client:

(1) Go to **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>**.

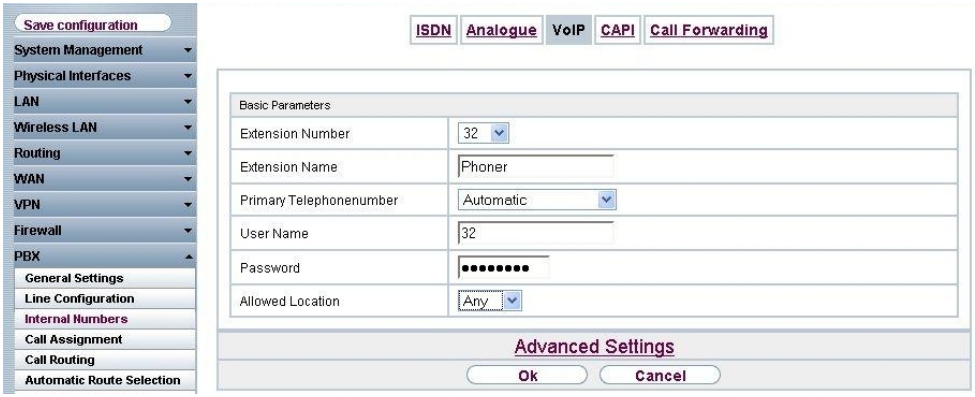

Fig. 186: **PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>**

Relevant fields in the VoIP menu

Field	Meaning
Extension Number	This shows which internal number is assigned to the extension.
Extension Name	Enter a name for the extension; a string of up to 20 characters is possible. The name is displayed on the internal system telephones.
Primary Telephonenumber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
User Name	The user name and extension number must be identical. The extension number is entered by default.
Password	At this point, you can assign a password.
Location	Select the location from which the VoIP user may register with the device.

Proceed as follows to edit the internal extensions:

(1) Select an IP telephone from the list, for example *32*, and click .

(2) Under **Extension Name** enter *Phoner* for example.

(3) Select the **Primary Telephonenumber**, e.g. *Automatic*.

(4) The number is enter under **User Name** by default.

(5) Enter the password, e.g. *secret*.

(6) Under **Locality** select *Any*.

(7) Leave the remaining settings unchanged and confirm your entries with **OK**.

Configuring the Phoner Software Client

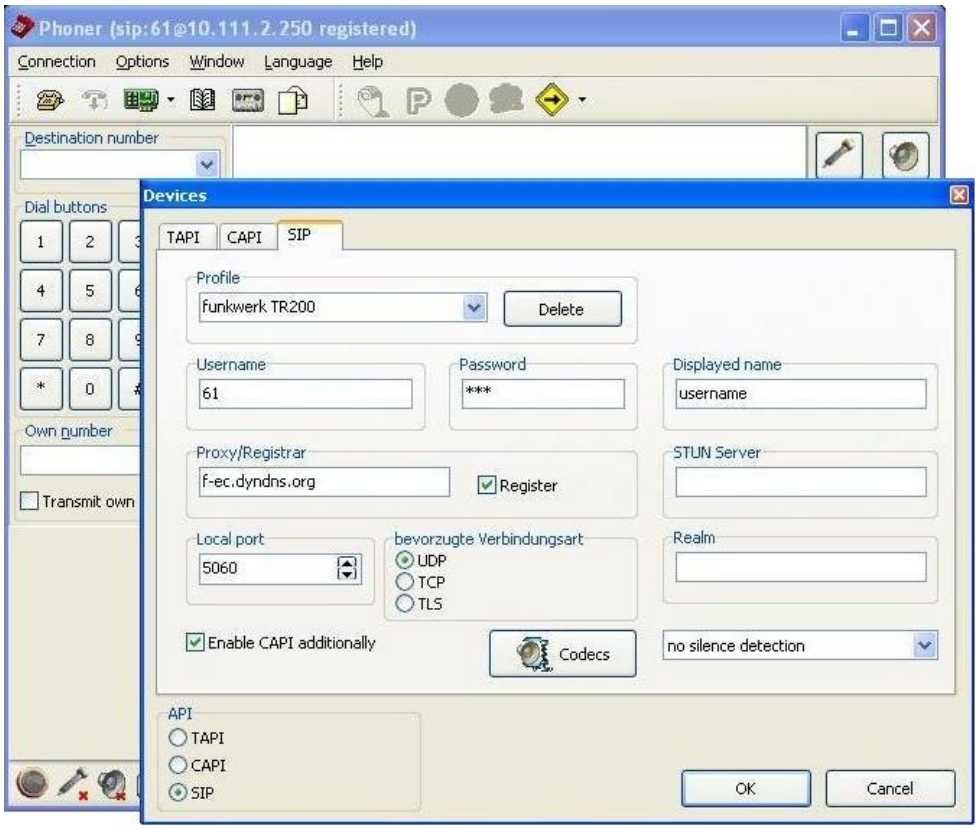

Fig. 187: Phoner Software Client

Relevant fields in the Devices SIP menu

Field	Meaning
Profile	Assign a name here, e.g. *bintec TR200*.
User Name	The extension number is entered here.
Password	Enter the password here.
Proxy/Registrar	Enter the dynDNS account of **bintec TR200** here.

System messages for registration:

```
NAT: new incoming session on ifc 10001 prot 17 62.104.127.104:5060/62.104.127.104:5060 &lt; 84.149.254.198:12004
VOIP: Registration request: (8371) 32@f-ec.dyndns.org, location 0 (84.149.254.198)
VOIP: Registration reject: (8371) 32@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request: (8372) 32@f-ec.dyndns.org, location 0 (84.149.254.198)
VOIP: Registration reject: (8372) 32@f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:32@f-ec.dyndns.org, guest 0, expires 60, location 8
VOIP: Registration success: 32 from 84.149.254.198:12004
```

19.3 Overview of configuration steps

Extensions for elmeg IP-290

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *30*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *elmegIP290*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *30*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<30>** 	*Any*

Settings on elmeg IP-290

Field	Menu	Value
User ID	**Set up** -> **Line 1** -> **Login**	e.g. *30*
Password	**Set up** -> **Line 1** -> **Login**	e.g. *secret*
Registrar	**Set up** -> **Line 1** -> **Login**	e.g. *f-ec.dyndns.org*

Extensions for bintec IP-50

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**	e.g. *33*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *bintec IP50*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *33*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<33>**	*Any*

Settings on bintec IP-50

Field	Menu	Value
User Name	**Service Domain Settings**	e.g. *33*
Register Name	**Service Domain Settings**	e.g. *33*
Register Password	**Service Domain Settings**	e.g. *secret*
Domain Server	**Service Domain Settings**	e.g. *f-ec.dyndns.org*
Subscribe for MWI	**Service Domain Settings**	*Off*

Extensions for bintec V102

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>**	e.g. *31*

Field	Menu	Value
		
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *V102*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *31*
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<31>** 	*Any*

Settings on bintec V102

Field	Menu	Value
User Name	**Service Domain Settings**	e.g. *31*
Register Name	**Service Domain Settings**	e.g. *31*
Register Password	**Service Domain Settings**	e.g. *secret*
Domain Server	**Service Domain Settings**	e.g. *f-ec.dyndns.org*

Extensions for the Phoner Software Client

Field	Menu	Value
Extension Number	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *32*
Extension Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *Phoner*
Primary Telephonenumber	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	*Automatic*
User Name	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>**	e.g. *32*

Field	Menu	Value
		
Password	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	e.g. *secret*
Location	**PBX** -> **Internal Numbers** -> **VoIP** -> **Extensions** -> **<32>** 	*Any*

Configuring the Phoner Software Client

Field	Menu	Value
Profile	**Devices** -> **SIP**	e.g. *bintec TR200*
User Name	**Devices** -> **SIP**	e.g. *32*
Password	**Devices** -> **SIP**	e.g. *secret*
Proxy/Registrar	**Devices** -> **SIP**	e.g. *f-ec.dyndns.org*

Chapter 20 VoIP - Registering TR200 with a SIP provider

20.1 Introduction

The following chapters show how to register a **bintec TR200** with different SIP providers.

The following providers are described in this example: sipgate, T-Online, 1&1, toplink and QSC. A **bintec TR200** with software version 7.5.1 Patch 1 was used for testing. Configuration in this scenario is carried out using the **GUI** (Graphical User Interface).

If registration is successful, the status symbol for the SIP provider will change to a green up arrow (see **PBX** -> **Line Configuration** -> **VoIP Configuration** menu).

The internal protocol shows the following entry when registration is successful:

```
iwu: [MSG] VOIP: Provider Registration success: Username@Registrar
```

There are several ways of setting up outgoing connections via the SIP provider:

- By defining the primary telephone number for internal extensions

  If the subscriber number of an SIP provider is selected for an internal extension, outgoing calls will be established via the SIP provider. Exceptions are telephone calls to subscriber numbers that are entered under automatic route selection.
- With code procedure

  Connections can be established via SIP providers directly by entering the code procedure 8# XX and the destination number (XX = two-digit bundle). The first digit of the bundle number is always "1" and the second digit corresponds to the index of the VoIP provider. Exceptions are telephone calls to subscriber numbers that are entered under automatic route selection.
- With automatic route selection

  Subscriber numbers can be assigned automatic route selection for specific external lines (VoIP, ISDN or FXO). In this case connections are routed according to automatic route selection. Automatic route selection takes priority over primary telephone numbers or target bundle assignment.
- If there is no automatic route selection and no primary telephone numbers are defined,

bintec TR200 first attempts to establish the external connections over SIP providers 0 to 9 (if these are configured) and then over ISDN or FXO.

20.2 Configuration

20.2.1 Registering bintec TR200 with provider sipgate

In the **PBX** -> **Line Configuration** -> **VoIP Configuration** menu, the current VoIP configuration is shown. It takes less than a minute to register a new SIP provider account with the provider. As soon as the enrolment process has been completed successfully, the status is set automatically to (active).

You change the status of VoIP configuration by pressing the button or button in the **Action** column.

Use the following option to create a new VoIP provider account:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

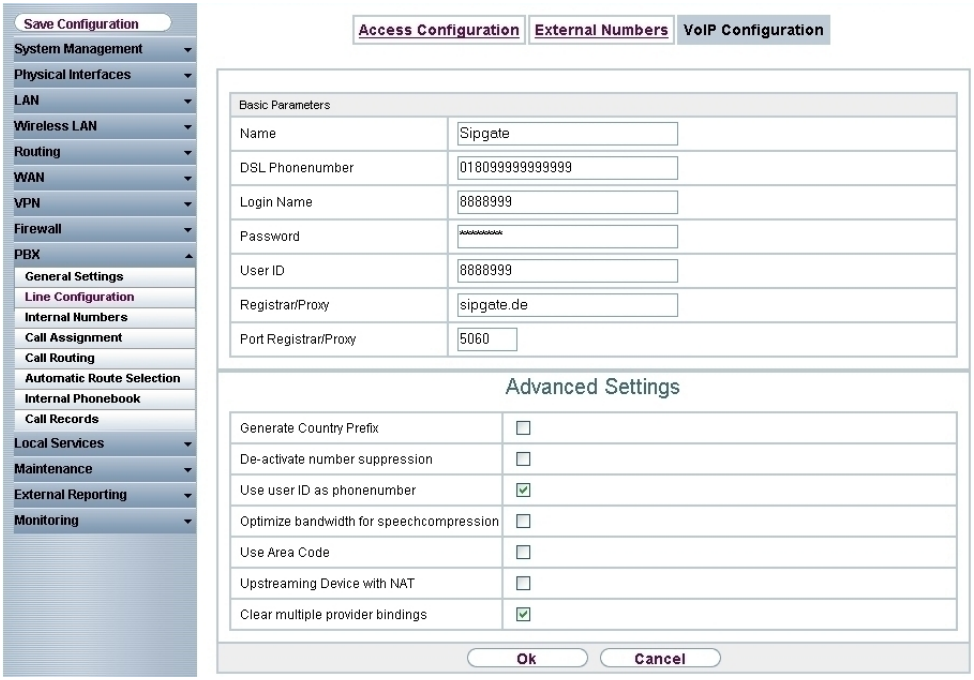

Fig. 188: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing *Enabled*.
Name	You can enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
User Name	Enter the seven-digit sipgate user number (SIP-ID) here.
Password	At this point, you can enter a sipgate SIP password.
User ID	Enter the seven-digit sipgate user number (SIP-ID) here.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.
Port Registrar/Proxy	The default value *5060* is predefined. The SIP port assigned by the SIP provider (1 to 65535) must be stored here.
Use user ID as phonenumber	This function must be enabled for outgoing connections if the VoIP number and user ID are different. This function is enabled by default.

Proceed as follows to create a VoIP configuration:

(1) Select **Status**.

(2) Under **Name** enter the name for your VoIP configuration, e.g. *Sipgate*.

(3) Enter the landline number under **DSL Phonenumber**, e.g. *018099999999999*.

(4) Under **User Name** enter *8888999* for example.

(5) Enter the Sipgate SIP password under **Password**.

(6) Under **User ID** enter the user number *8888999* for example.

(7) Under **Registrar/Proxy** enter *sipgate.de* for example.

(8) Leave the **Port Registrar/Proxy** set to *5060*.

(9) Select **Use user ID as phonenumber**.

(10) Confirm with **OK**.

20.2.2 Registering bintec TR200 with SIP provider T-Online

Go to the following menu to create a VoIP configuration:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

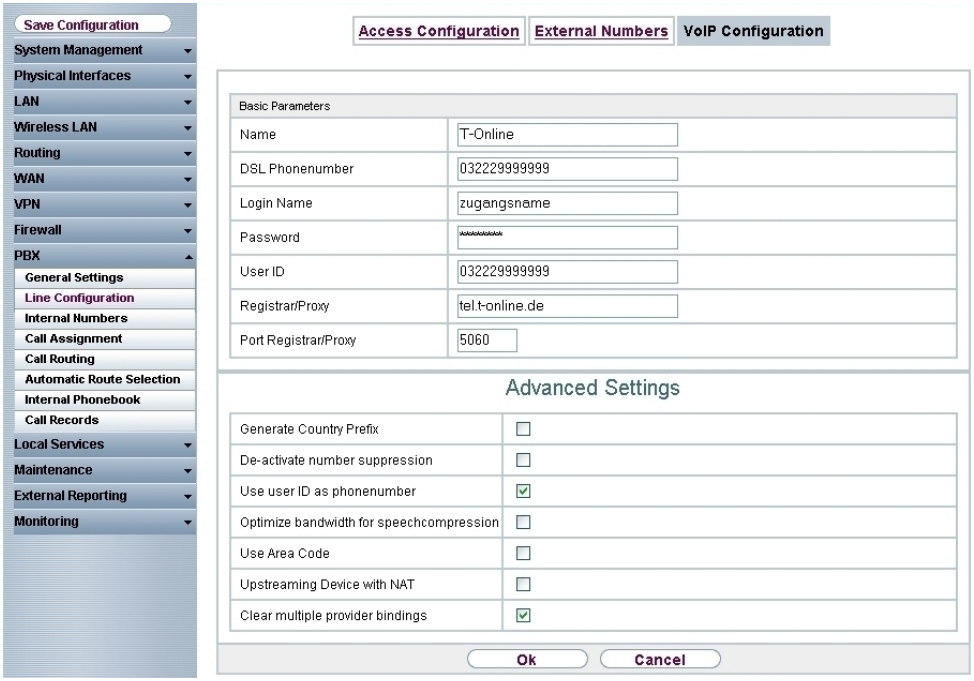

Fig. 189: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing *Enabled*.
Name	You can enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
User Name	Enter the T-Online access name here.
Password	At this point, you can enter a T-Online SIP password.
User ID	Enter the T-Online SIP subscriber number here.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.
Port Registrar/Proxy	The default value *5060* is predefined. The SIP port assigned by the SIP provider (1 to 65535) must be stored here.
Use user ID as phonenumber	This function must be enabled for outgoing connections if the VoIP number and user ID are different. This function is enabled by default.

Proceed as follows to create a VoIP configuration:

(1) Select **Status**.

(2) Under **Name** enter the name for your VoIP configuration, e.g. *T-Online*.

(3) Enter the T-Online SIP subscriber number under **DSL Phonenumber**, e.g. *032229999999*.

(4) Under **User Name** enter the access name.

(5) Enter the T-Online SIP password under **Password**.

(6) Enter the T-Online SIP subscriber number under **User ID**, e.g. *032229999999*.

(7) Under **Registrar/Proxy** enter *tel.t-online.de* for example.

(8) Leave the **Port Registrar/Proxy** set to *5060*.

(9) Select **Use user ID as phonenumber**.

(10) Confirm with **OK**.

20.2.3 Registering bintec TR200 with SIP provider 1&1

Go to the following menu to create a VoIP configuration:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

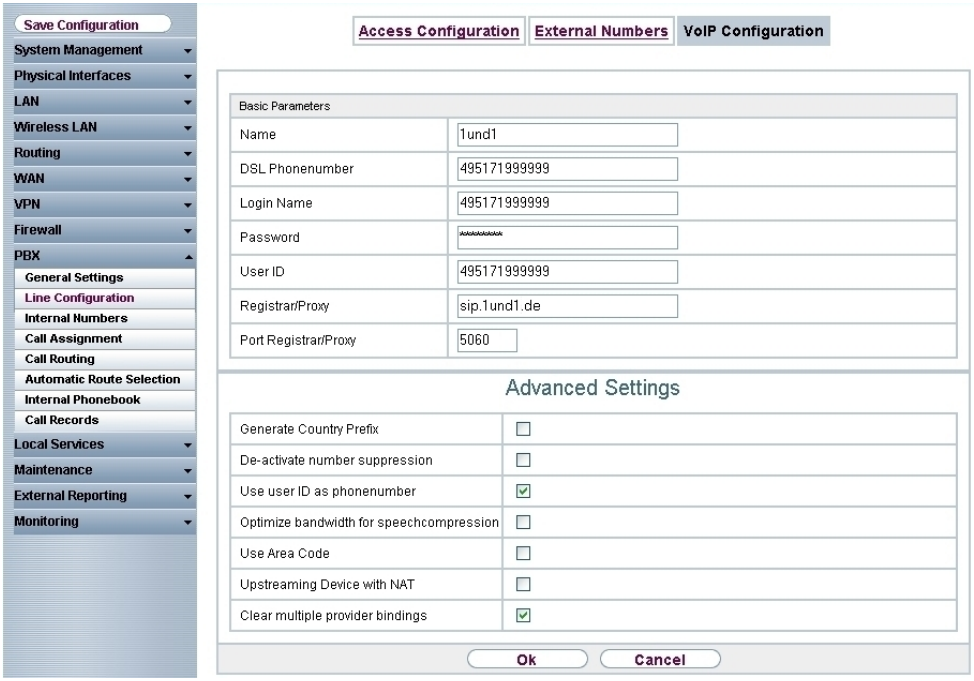

Fig. 190: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing `Enabled`.
Name	You can enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
User Name	Enter the 1&1 telephone number here.
Password	At this point, you can enter a 1&1 SIP password for SIP access.
User ID	Enter the 1&1 telephone number here.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.
Port Registrar/Proxy	The default value `5060` is predefined. The SIP port assigned by the SIP provider (1 to 65535) must be stored here.
Use user ID as phonenumber	This function must be enabled for outgoing connections if the VoIP number and user ID are different. This function is enabled by default.

Proceed as follows to create a VoIP configuration:

(1) Select **Status**.

(2) Under **Name** enter the name for your VoIP configuration, e.g. `1&1`.

(3) Enter the 1&1 subscriber number under **DSL Phonenumber**, e.g. `495171999999`.

(4) Under **User Name** enter the 1&1 subscriber number `495171999999` for example.

(5) Under **Password** enter the 1&1 password.

(6) Under **User ID** enter the 1&1 subscriber number `495171999999` for example.

(7) Under **Registrar/Proxy** enter `sip.1und1.de` for example.

(8) Leave the **Port Registrar/Proxy** set to `5060`.

(9) Select **Use user ID as phonenumber**.

(10) Confirm with **OK**.

20.2.4 Registering bintec TR200 with SIP provider toplink

Go to the following menu to create a VoIP configuration:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

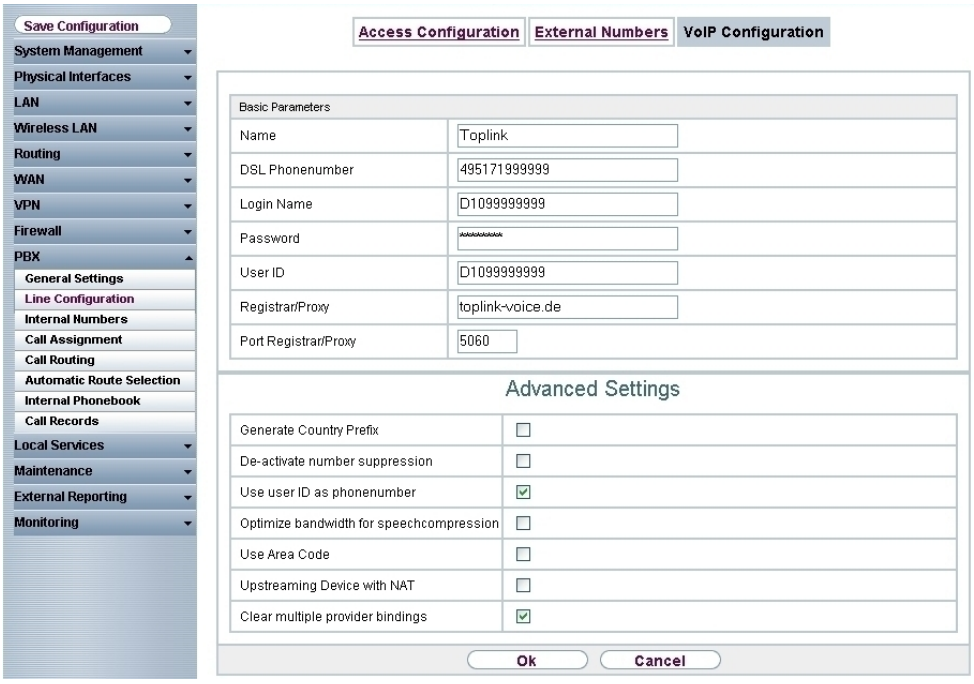

Fig. 191: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing *Enabled*.
Name	You can enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
User Name	Enter the eleven-digit Toplink access name (SIP-ID) here.
Password	At this point, you can enter a Toplink SIP password.
User ID	Enter the eleven-digit Toplink access name (SIP-ID) here.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.
Port Registrar/Proxy	The default value *5060* is predefined. The SIP port assigned by the SIP provider (1 to 65535) must be stored here.
Use user ID as phonenumber	This function must be enabled for outgoing connections if the VoIP number and user ID are different. This function is enabled by default.

Proceed as follows to create a VoIP configuration:

(1) Select **Status**.

(2) Under **Name** enter the name for your VoIP configuration, e.g. *Toplink*.

(3) Enter the landline number under **DSL Phonenumber**, e.g. *495171999999*.

(4) Under **User Name** enter the SIP ID *D1099999999* for example.

(5) Enter the Toplink SIP password under **Password**.

(6) Under **User ID** enter the SIP ID *D1099999999* for example.

(7) Under **Registrar/Proxy** enter *toplink-voice.de* for example.

(8) Leave the **Port Registrar/Proxy** set to *5060*.

(9) Select **Use user ID as phonenumber**.

(10) Confirm with **OK**.

20.2.5 Registering bintec TR200 with SIP provider QSC

Go to the following menu to create a VoIP configuration:

(1) Go to **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**.

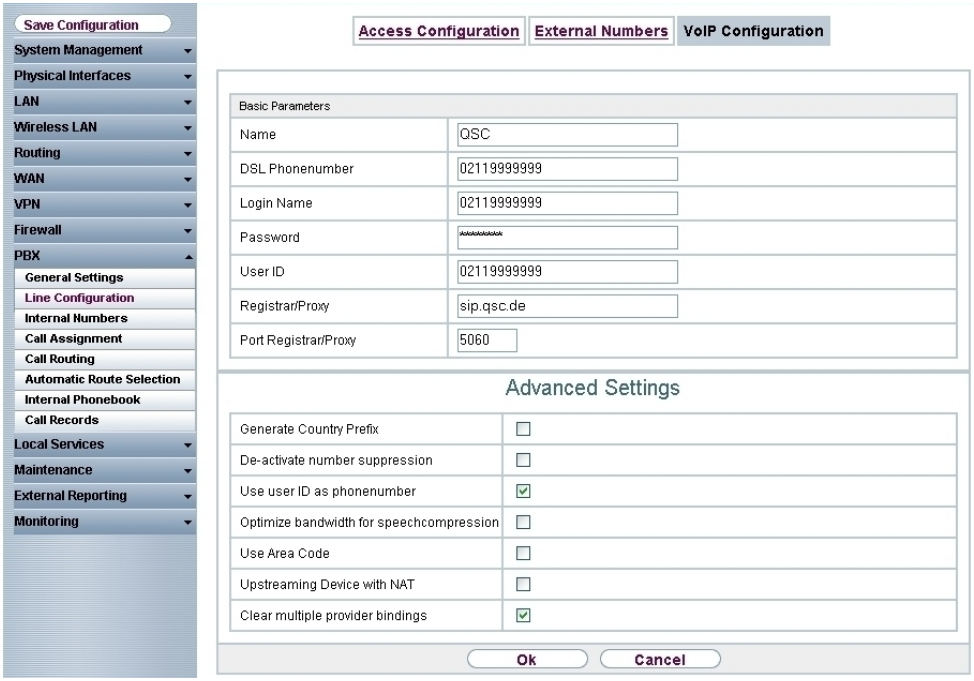

Fig. 192: **PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**

Relevant fields in the VoIP Configuration menu

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing `Enabled`.
Name	You can enter a name for your VoIP configuration. A 20 digit alpha-numeric sequence is possible (optional).
DSL Phonenumber	Enter the subscriber number assigned by your provider here. A 24 digit sequence is possible.
User Name	Enter the QSC number here.
Password	At this point, you can enter a QSC SIP password.
User ID	Enter the QSC number here.
Registrar/Proxy	Enter the IP address or DNS name of the SIP server. A 26 digit alpha-numeric sequence is possible.
Port Registrar/Proxy	The default value `5060` is predefined. The SIP port assigned by the SIP provider (1 to 65535) must be stored here.
Use user ID as phonenumber	This function must be enabled for outgoing connections if the VoIP number and user ID are different. This function is enabled by default.

Proceed as follows to create a VoIP configuration:

(1) Select **Status**.

(2) Under **Name** enter the name for your VoIP configuration, e.g. *QSC*.

(3) Enter the QSC number under **DSL Phonenumber**, e.g. *02119999999*.

(4) Enter the QSC number under **User Name**, e.g. *02119999999*.

(5) Enter the QSC SIP password under **Password**.

(6) Enter the QSC number under **User ID**, e.g. *02119999999*.

(7) Under **Registrar/Proxy** enter *sip.qsc.de* for example.

(8) Leave the **Port Registrar/Proxy** set to *5060*.

(9) Select **Use user ID as phonenumber**.

(10) Confirm with **OK**.

20.3 Overview of configuration steps

Registering with SIP provider sipgate

Field	Menu	Value
State	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled
Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *Sipgate*
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *018099999999999*
User Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *8888999*
Password	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *secret*
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *8888999*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *sipgate.de*
Port Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	5060
Use user ID as phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled

Registering with SIP provider T-Online

Field	Menu	Value
State	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled
Name	**PBX** -> **Line Configuration**	e.g. *T-Online*

Field	Menu	Value
	-> **VoIP Configuration** -> **New**	
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *032229999999*
User Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *accessname*
Password	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *secret*
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *032229999999*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *tel.t-online.de*
Port Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	5060
Use user ID as phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled

Registering with SIP provider 1&1

Field	Menu	Value
State	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled
Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *1&1*
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *495171999999*
User Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *495171999999*
Password	**PBX** -> **Line Configuration**	e.g. *secret*

Field	Menu	Value
	-> **VoIP Configuration** -> **New**	
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *495171999999*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *sip.1and1.de*
Port Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	5060
Use user ID as phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled

Registering with SIP provider toplink

Field	Menu	Value
State	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled
Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *Toplink*
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *495171999999*
User Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *D1099999999*
Password	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *secret*
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *D1099999999*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *toplink-voice.de*
Port Registrar/Proxy	**PBX** -> **Line Configuration**	5060

Field	Menu	Value
	-> **VoIP Configuration** -> **New**	
Use user ID as phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled

Registering with SIP provider QSC

Field	Menu	Value
State	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled
Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *QSC*
DSL Phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *02119999999*
User Name	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *02119999999*
Password	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *secret*
User ID	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *02119999999*
Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	e.g. *sip.qsc.de*
Port Registrar/Proxy	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	5060
Use user ID as phonenumber	**PBX** -> **Line Configuration** -> **VoIP Configuration** -> **New**	Enabled

Chapter 21 VoIP - T4x4 with SIP provider 1&1

21.1 Introduction

The following describes configuration of the SIP provider 1&1 using an **elmeg T484**. The illustrations below show the required settings for the individual tabs under menu item **External Numbers**. The pictured information is only provided as an example. Please use the data obtained from your SIP provider.

21.2 Configuration

First, select the desired system type. Go to **Configuration** -> **elmeg T240/T444/T484** -> **System Type**.

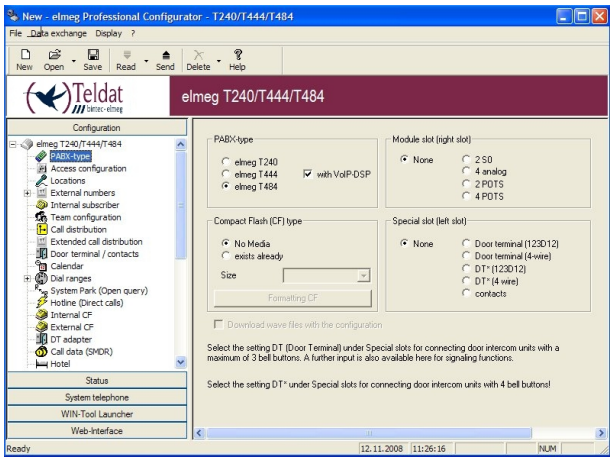

Fig. 193: Select system type

Relevant fields in the System Type menu

Field	Meaning
System type	Select the desired **System Type**. The **elmeg T444** and **elmeg T484** are VoIP-capable (the **elmeg T240** is not).
with VoIP-DSP	If a DSP module is installed, enable the checkbox. The module is automatically recognised at system readout.

21.2.1 Configure SIP provider

To configure the SIP provider, first go to **Configuration** -> **External Numbers** -> **SIP Provider**.

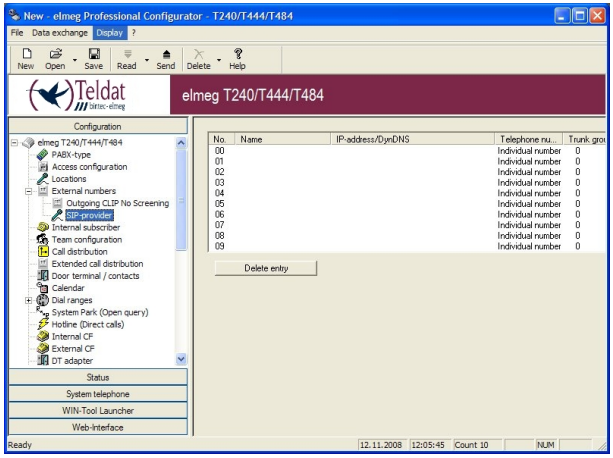

Fig. 194: Configure SIP provider

Access data

To create a connection, select the first entry in the list by double-clicking. You can then configure the SIP provider in the **Access Data**submenu.

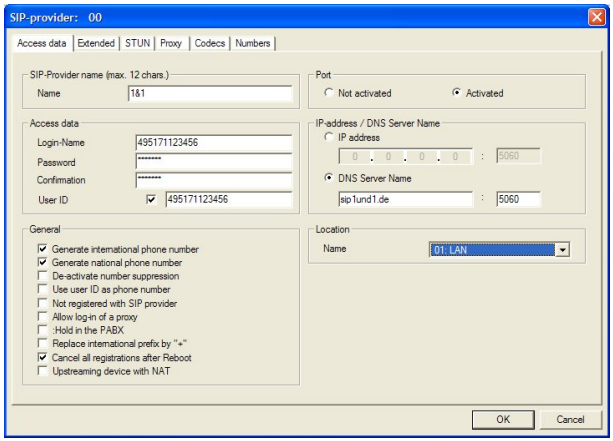

Fig. 195: Access data

Relevant fields in the SIP Provider menu

Field	Meaning
Connection	Enable the *Enabled* field.
SIP provider name	Enter the name of the SIP provider here.
Access data	Here, enter the access data given by your provider. With Provider 1&1, you're given a phone number as login name. Enter the password you received from the provider. In **Confirm**, re-enter your password. With Provider 1&1, there is no distinction between **User ID** and **Login Name**, hence, you need not enable the control box.
SIP registrar	The DNS server name of the provider is entered here.
Location	In **Name**, select as interface the locality of the system over which the SIP provider is accessible, in this case **LAN**.

Settings under **General** are dependent upon the selected SIP provider.

Relevant fields in the General menu

Field	Meaning
Generate international call number	Once you've enabled this function and entered the country code (49 for Germany) under **Configuration** -> **Dialling Ranges**, the program automatically generates 0049 before the call number for a number dialled with a prefix.
Create inland call number	Once you've enabled this function and entered the area code (e.g., 5171 for Peine) under **Configuration** -> **dialling ranges**, the program automatically generates the prefix 05171 before the dialled number.
Delete registration after reboot	If after registering with a provider, there should for example occur a reset of the PABX system or a power failure, depending on the provider, another registration may prove impossible. By switching on this feature, existing registrations (bindings) are deleted and a renewed registration becomes possible.

Advanced Configuration

To allow entry of the SIP provider number, the *Individual Call Number* must be enabled in the**Extended**-> **Call Number Configuration** menu.

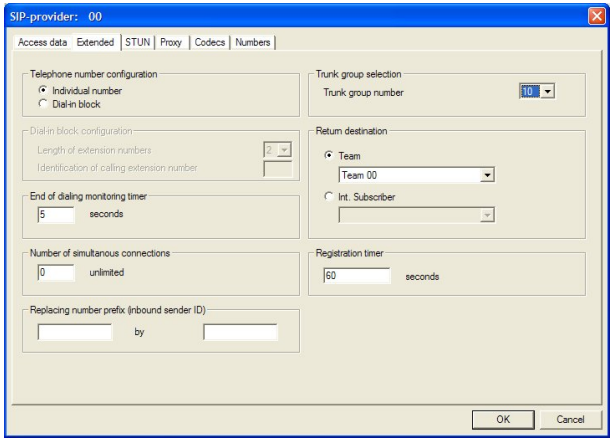

Fig. 196: Advanced Configuration

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *Individual Number* field.
Bundle association	Here, you assign the connection to a PABX system bundle. Using this bundle number, you can select the desired SIP provider for external dialling in the operation system.
End of dialling monitoring timer	Here, enter the time after which the system is to start to dialling.

Subscriber numbers

In the **Subscriber Numbers** submenu, the SIP number is now entered according to the SIP provider's specifications.

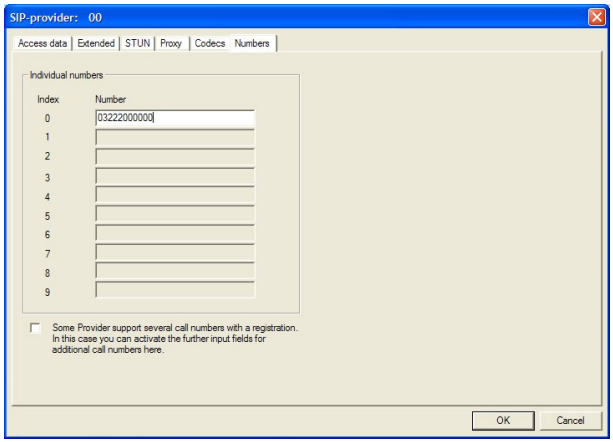

Fig. 197: Subscriber numbers

Relevant fields in the Subscriber Number menu

Field	Meaning
Individual Numbers	Here, enter the complete**Subscriber Number** which you have received from SIP Provider 1&1. After this, in the menu **Configuration** ->**Call Assignment** you can assign these numbers to individual extensions, teams or call through.

Dialling ranges

(1) Go to **Configuration** -> **Dialling ranges**

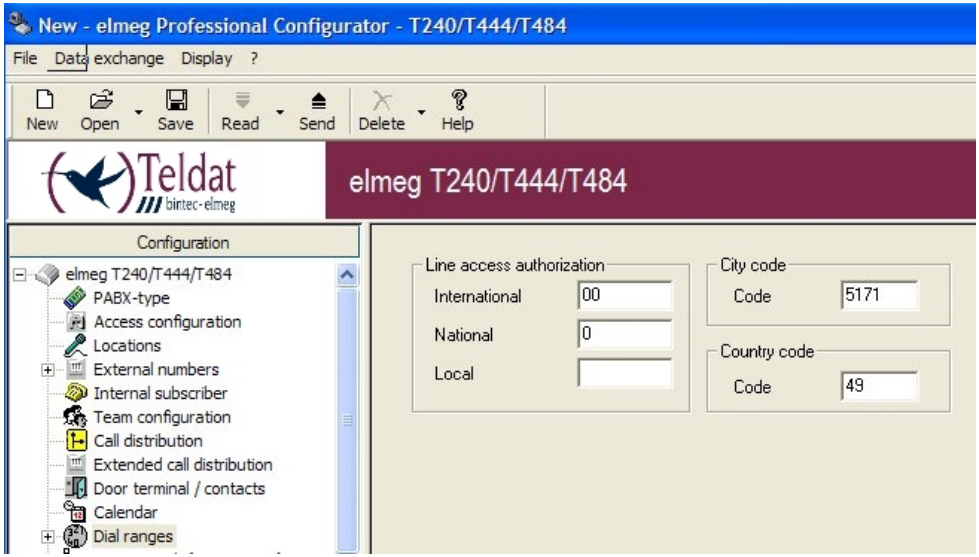

Fig. 198: Dialling ranges

Relevant fields in the Dialling ranges menu

Field	Meaning
Area code	Here, enter your area code without the initial 0 (e.g., 5171).
Country code	Here, enter your country code (e.g., 49).

Note

You must enter these codes if the **Create International and Inland Subscriber Number** settings are enabled, so that the correct subscriber numbers are sent.

Check registration with the SIP provider:

Registration with the SIP provider can be checked from the **Control Center**. Go to **Control Center** -> **System Messages**.

Fig. 199: **Control Center -> System Messages**

If, under **System Messages** of the **elmeg T4x4** router, the message `[MSG] VOIP: Provider Registration success: Login-Name@SipProvider.xxx:5060` appears, registration with the SIP provider was successful.

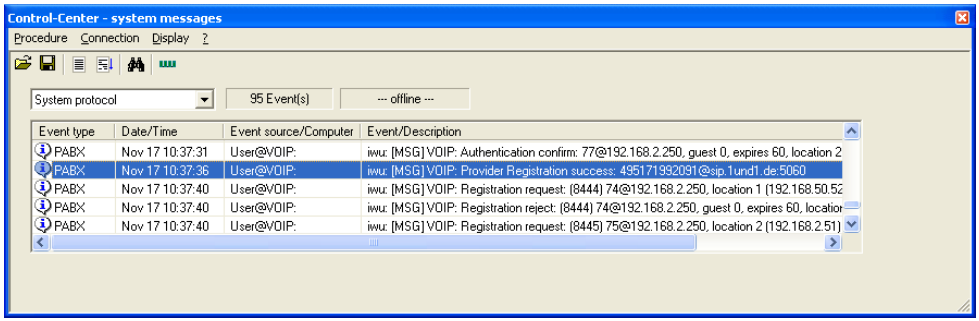

Fig. 200: Control Center System Messages

There are several ways of setting up outgoing connections via the SIP provider:

- With default bundles

  If the bundle of a SIP provider is selected in an internal extension, all outgoing calls will be exclusively set up via the SIP provider. In the **Configuration** -> **Internal Extension**-> **Performance Features** menu, the tariff manager (LCR) must be switched off.

- With code procedure

  With these settings, connections can be set up in a targeted manner via the SIP provider through entry of the code procedure **8# XX*(XX = two-digit bundle), or **8 X*(X = single-digit bundle) and the destination number.

  To determine the bundle number, go to **Configuration** -> **External Call Numbers**->**SIP Provider** and select the first entry in the list. In the submenu**Access data**, set **Connec-**

tion to *enabled*.

In the submenu **Extended**, under**Bundle Association**, select the **Bundle Number**. If automatic trunk prefix is programmed, an additional * must be dialled first. In the **Configuration** -> **Internal Extension**-> **Performance Features** menu, the tariff manager (LCR) must be switched off.

- With Tariff Manager (LCR)

  First, you must create a SIP provider with name and bundle in the LCR web interface under **Network Operator**.

  Then edit the previously entered provider for the desired zones and times in the LCR table.

  In **Configuration** -> **Internal Extension** ->**Call Number**, enter the bundle from the SIP provider as well as the bundles from ISDN or POTS for bundle assignment. The additionally entered bundles are necessary, for example, for the 2nd LCR fallback stage if no connections via SIP provider can be established.

  Next, under **Configuration** -> **Internal Extension**-> **Performance Features** enable the LCR and under**Configuration** -> **General**-> **LCR Configuration**, the item *LCR Professional*.

  With these settings, the connections will be automatically routed on the basis of the LCR table.

21.3 Overview of configuration steps

Select system type

Field	Menu	Value
System type	**Configuration** -> **System type**	e.g. *elmeg T484*
with VoIP-DSP	**Configuration** -> **System type**	Enable *with VoIP-DSP*

Enter SIP provider

Field	Menu	Value
Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *1&1*
Login name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *495171123456*

Field	Menu	Value
Password	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e. g. *Service*
Confirmation	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e. g. *Service*
Connection	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	Active
DNS Server Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *sip.1and1.de*
Location	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *00: LAN*

Define an individual number

Field	Menu	Value
Call Number Configuration	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e. g. enable *Individual number*
End of dialling monitoring timer	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e.g. *5*
Bundle Number	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e.g. *10*

Enter Extension Numbers

Field	Menu	Value
Individual Numbers	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Subscriber Numbers**	e.g. *495171123456*

Enter dialling range

Field	Menu	Value
Area code	**Configuration** -> **Dialling ranges**	e.g. *5171*
Country code	**Configuration** -> **Dialling**	e.g. *49*

Field	Menu	Value
	ranges	

Chapter 22 VoIP - T4x4 with SIP provider T-Online

22.1 Introduction

The following describes configuration of SIP provider T-Online using an **elmeg T484**. The illustrations below show the required settings for the individual tabs under menu item **External Numbers**. The pictured information is only provided as an example. Please use the data obtained from your SIP provider.

22.2 Configuration

First, select the desired system type. Go to **Configuration** -> **elmeg T240/T444/T484** -> **System Type**.

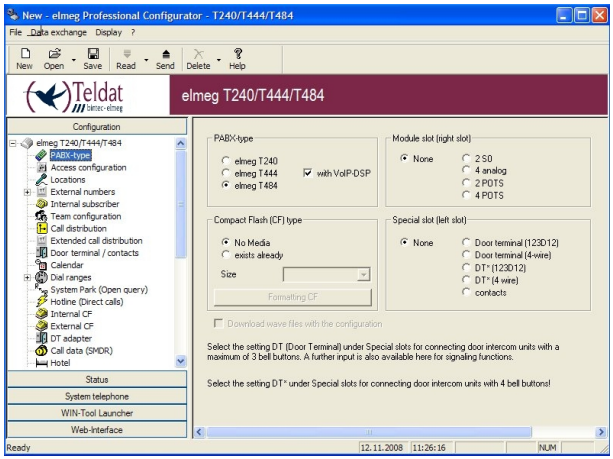

Fig. 201: Select system type

Relevant fields in the System Type menu

Field	Meaning
System type	Select the desired **System Type**. The **elmeg T444** and **elmeg T484** are VoIP-capable (the **elmeg T240** is not).
with VoIP-DSP	If a DSP module is installed, enable the checkbox. The module is automatically recognised at system readout.

22.2.1 Configure SIP provider

To configure the SIP provider, first go to **Configuration** -> **External Numbers** -> **SIP Provider**.

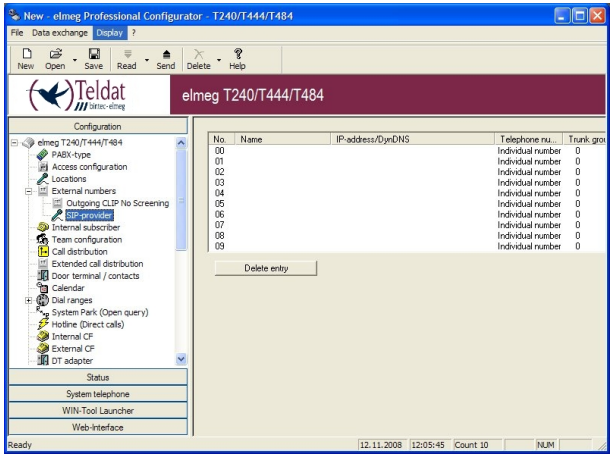

Fig. 202: Configure SIP provider

Access data

To create a connection, select the first entry in the list by double-clicking. You can then configure the SIP provider in the **Access Data**submenu.

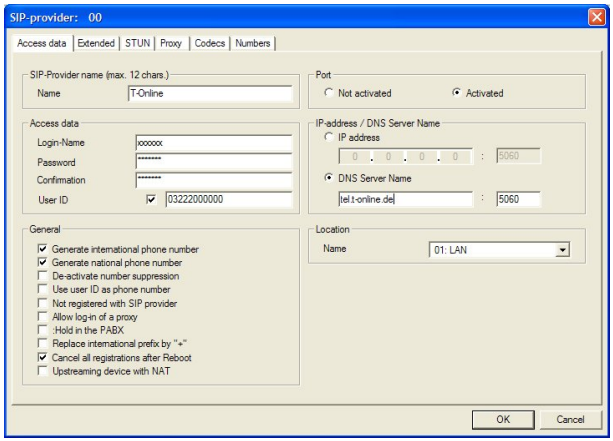

Fig. 203: Access data

Relevant fields in the SIP Provider menu

Field	Meaning
Connection	Set the field to *enable*.
SIP provider name	Enter the name of the SIP provider here.
Access data	Here, enter the access data given by your provider. With provider T-Online, as **Login Name**enter your T-Online E-mail Address without @t-online.de. Enter the **Password** that you received from T-Online. In **Confirm**, re-enter your password. Enable the **User ID**control box, and enter your T-Online Internet telephone number.
SIP registrar	Here, enter the DNS server name of the provider (*tel.t-online.de*).
Location	In **Name**, select as interface the locality of the system over which the SIP provider is accessible, in this case **LAN**.

Settings under **General** are dependent upon the selected SIP provider.

Relevant fields in the General menu

Field	Meaning
Generate international call number	Once you've enabled this function and entered the country code (49 for Germany) under **Configuration** -> **Dialling Ranges**, the program automatically generates 0049 before the call number for a number dialled with a prefix.
Create inland call number	Once you've enabled this function and entered the area code (e.g., 5171 for Peine) under **Configuration** -> **dialling ranges**, the program automatically generates the prefix 05171 before the dialled number.
Delete registration after reboot	If after registering with a provider, there should for example occur a reset of the PABX system or a power failure, depending on the provider, another registration may prove impossible. By switching on this feature, existing registrations (bindings) are deleted and a renewed registration becomes possible.

Advanced Configuration

To allow entry of the SIP provider number, the *Individual Call Number* must be enabled in the**Extended**-> **Call Number Configuration** menu.

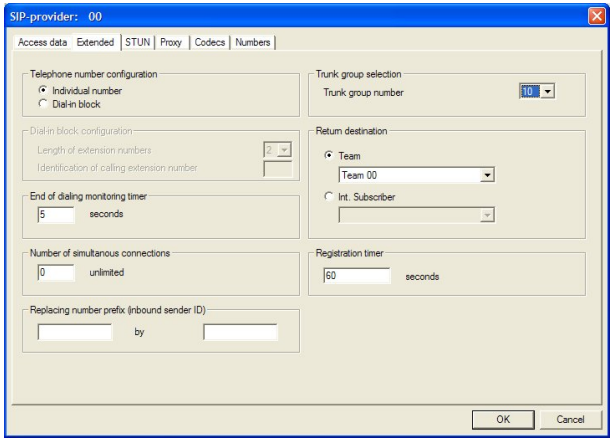

Fig. 204: Advanced Configuration

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configuration	Enable the *Individual Number* field.
Bundle association	Here, you assign the connection to a PABX system bundle. Using this bundle number, you can select the desired SIP provider for external dialling in the operation system.
End of dialling monitoring timer	Here, enter the time after which the system is to start to dialling.

Subscriber numbers

In the **Subscriber Numbers** submenu, the SIP number is now entered according to the SIP provider's specifications.

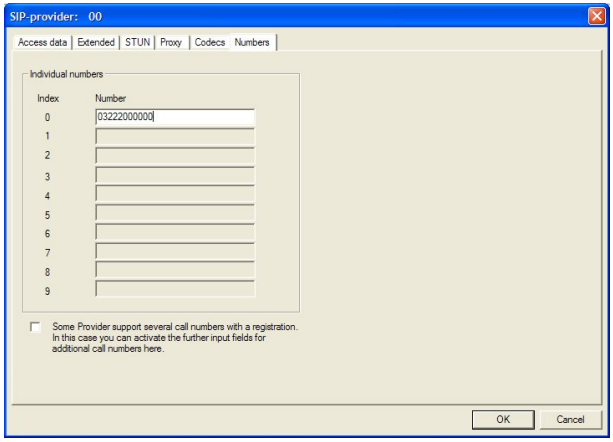

Fig. 205: Subscriber numbers

Relevant fields in the Subscriber Number menu

Field	Meaning
Individual Numbers	Here, enter the complete **Subscriber Number** which you received from SIP provider T-Online. After this, in the menu **Configuration** ->**Call Assignment** you can assign these numbers to individual extensions, teams or call through.

Dialling ranges

(1) Go to **Configuration** -> **Dialling ranges**

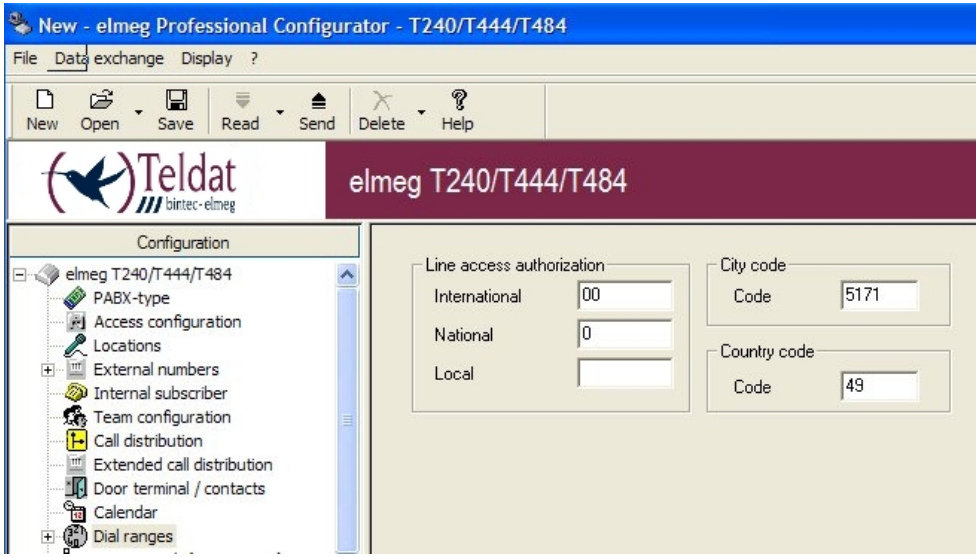

Fig. 206: Dialling ranges

Relevant fields in the Dialling ranges menu

Field	Meaning
Area code	Here, enter your area code without the initial 0 (e.g., 5171).
Country code	Here, enter your country code (e.g., 49).

Note

You must enter these codes if the **Create International and Inland Subscriber Number** settings are enabled, so that the correct subscriber numbers are sent.

Check registration with the SIP provider:

Registration with the SIP provider can be checked from the **Control Center**. Go to **Control Center** -> **System Messages**.

Fig. 207: **Control Center** -> **System Messages**

If, under **System Messages** of the **elmeg T4x4** router, the message `[MSG] VOIP: Provider Registration success: Login-Name@SipProvider.xxx:5060` appears, registration with the SIP provider was successful.

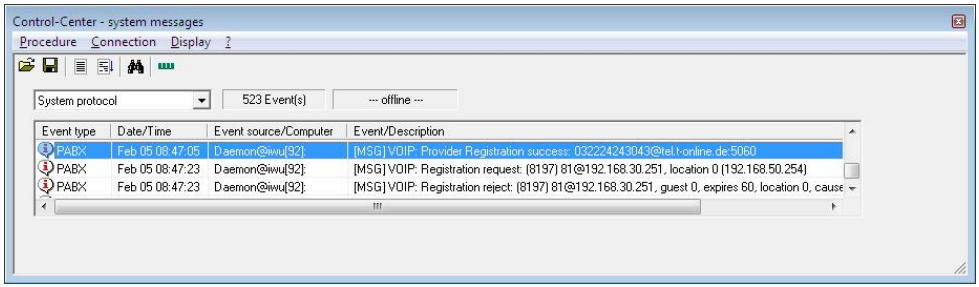

Fig. 208: Control Center System Messages

There are several ways of setting up outgoing connections via the SIP provider:

- With default bundles

  If the bundle of a SIP provider is selected in an internal extension, all outgoing calls will be exclusively set up via the SIP provider. In the **Configuration** -> **Internal Extension**-> **Performance Features** menu, the tariff manager (LCR) must be switched off.

- With code procedure

  With these settings, connections can be set up in a targeted manner via the SIP provider through entry of the code procedure **8# XX*(XX = two-digit bundle), or **8 X*(X = single-digit bundle) and the destination number.

  To determine the bundle number, go to **Configuration** -> **External Call Numbers**->**SIP Provider** and select the first entry in the list. In the submenu**Access data**, set **Connection** to *enabled*.

In the submenu **Extended**, under**Bundle Association**, select the **Bundle Number**. If automatic trunk prefix is programmed, an additional * must be dialled first. In the **Configuration** -> **Internal Extension**-> **Performance Features** menu, the tariff manager (LCR) must be switched off.

- With Tariff Manager (LCR)

  First, you must create a SIP provider with name and bundle in the LCR web interface under **Network Operator**.

  Then edit the previously entered provider for the desired zones and times in the LCR table.

  In **Configuration** -> **Internal Extension** ->**Call Number**, enter the bundle from the SIP provider as well as the bundles from ISDN or POTS for bundle assignment. The additionally entered bundles are necessary, for example, for the 2nd LCR fallback stage if no connections via SIP provider can be established.

  Next, under **Configuration** -> **Internal Extension**-> **Performance Features** enable the LCR and under**Configuration** -> **General**-> **LCR Configuration**, the item *LCR Professional*.

  With these settings, the connections will be automatically routed on the basis of the LCR table.

22.3 Overview of configuration steps

Select system type

Field	Menu	Value
System type	**Configuration** -> **System type**	e.g. *elmeg T484*
with VoIP-DSP	**Configuration** -> **System type**	Enable *with VoIP-DSP*

Enter SIP provider

Field	Menu	Value
Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *T-Online*
Login name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e. g. *email@t-online.de*
Password	**Configuration** -> **External**	e. g. *Service*

Field	Menu	Value
	Numbers -> **SIP Provider**-> **Access Data**	
Confirmation	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e. g. *Service*
User ID	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e. g. *03222000000*
Connection	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	Active
DNS Server Name	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *tel.t-online.de*
Location	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Access Data**	e.g. *00: LAN*

Define an individual number

Field	Menu	Value
Call Number Configuration	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e. g. enable *Individual number*
End of dialling monitoring timer	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e.g. *5*
Bundle Number	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Extended**	e.g. *10*

Enter Extension Numbers

Field	Menu	Value
Individual Numbers	**Configuration** -> **External Numbers** -> **SIP Provider**-> **Subscriber Numbers**	e. g. *03220000*

Enter dialling range

Field	Menu	Value
Area code	**Configuration** -> **Dialling**	e.g. *5171*

Field	Menu	Value
	ranges	
Country code	**Configuration** -> **Dialling ranges**	e.g. *49*