



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

🗞 New - elmeg Professional Configurator -	ICT •		_ 🗆 🛛
File <u>Da</u> ta exchange Display ?			
□ image: bit with the second secon	₹ ? Help		
Configuration	Activate Dynamic DNS		
Configuration characteristic configuration configuration of S0/Up0/S2M(USDN30) Configuration of S0/Up0/S2M(USDN30) Configuration of S0/Up0/S2M(USDN30) Calculation Calculation Calculation Calculation Calculation Calculation Calculation Configuration Configuration	Children Construction Construct	gyndns gyn.DNS.org FEC reserves reserves gyn.DNS.org FEC reserves gyn.DNS.org FEC reserves gyn.DNS.org PEC reserves gyn.DNS.org PEC reserves gyn.DNS.org ername and password yourself when you register with	
WIN-Tool Launcher			
VVeb-Interface			
Ready		10.11.2008 15:30:44	NUM

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

Relevant fields in the Parameters for Dynamic DNS men	u
---	---

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

Internal subscriber: Base S0-1 Subscr01	X
Numbers Line Access Features Communication Costs	Switching functions
Select your internal telephone number here. For external of selected.	calls the telephone number presented to the external calling partner can be
Internal number	Pick up Pick up group
Subscriber's name (12 characters)	Outgoing number
Name 80 Log in name 80 Permit configuration Image: Configuration PIN Image: Configuration Configuration Image: Configuration Line access digit assigned trunk groups	Outside line Outgoing number Base S0-2 Base S0-3 Base S0-4
1. 2. 3. 4. 5.	Pemit trunk group selection Trunk group number ok/no Trunk Group 0 Trunk Group 1 Trunk Group 2
	OK Cancel

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

Internal subscriber : Module-1 Vol	IP-VPN-1 Subscr01		X
Numbers Line Access Features Comm	unication Costs Switching functions	VoIP-VPN-settings]
Please enter your VoIP-settings here.			
Log-on authorization			
no location all locations incl. LAN			
C selected location	00: WAN 💌]	
G.726 Codec setting			
RFC3551 / X.420			
			OK Cancel

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 Gatewaymodule via an internet service provider (ISP) and dynDNS.

For this, go to the following menu:

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

	010300220312030033	
Configuratio	n Line 1	
Configuratio	n Line 1 Login Information: Displayname: Account: Password: Registrar: Authentication Username: Mailbox: Ringtone: Custom Melody URL: Display text for idle screen (max. 8 chars): Save	80 ee dyn.DHS.org;transport=UDP Ringer 1
System Information Log SIP Trace DNS Cache PCAP Trace Memory Settings Manual		
© 2000-2006 snom AG		

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 Exten- sion Name menu in the PIN field.

Field	Meaning
Registrar	Under Registrar enter your own dynDNS account with the ex- tension ;transport=UDP. Transport=UDP is used to transmit messages and communica- tion (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.

	01010011010101		
Configuratio	n Line 1		
Configuratio	n Line 1 Login SIP NAT RTP SIP Line Settings: Outbound Proxy: Music on hold server: Alert Info URL: User picture URL: Music on hold Streaming URL: Dial-Plan String: Proxy Require: Q-Value: Proposed Expiry: Auto Answer: Long SIP-Contact (RFC3840): Support broken Registrar: Save	dyn.DNS.org:transport=UDP	
Settings Manual			
© 2000-2006 snom AG			

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 -> Exten- sion Type VoIP-VPN	e.g. 80
Extension Name	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. 80
Login Name	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. 80
PIN	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. secret

VoIP-VPN Settings

Field	Menu	Value
Login authorisation	Configuration -> Internal Extension -> Internal Ex- tension -> VoIP-VPN Set- tings	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;t ransport=UDP

SIP

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

🗞 New - elmeg Professional Configurator -	іст	
File Data exchange Display ?		
D 22 - De Save Read Send Delete	? Нер	
New Open Save Read Send Delete Configuration PABX type / Module configuration PABX type / Module configuration Configuration of S0/Up0/S2M(ISDN30) Configu	Help Configure the IP address for your PABX system here. If you are already operating a network and are using IP addresses from different network, you can utilize your PABX system IP addresses and network mask. adapt corresponding/. Please note that IP addresses may only be used one time in the LAN, i.e. the same IP address may no assigned to several devices. PABX parameters IP-address: IP-address: I92 , 168 , 1 , 250 Netmask: 255 , 255 , 0 Host addresses: 254 Time server 0 , 0 , 0 , 0 ntp Timeserver: 0 , 0 , 0 , 0	a it be ess n, you cal
Schall Hell Tacks	Time zone: 0 Hours Other parameters Extended	
System telephones WIN-Tool Launcher		
Web-Interface	Control of the second se cond second s	>
Ready	13.11.2008 11:59:21 NUM	/



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.

Relevant fields in the System Parameters menu

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

🗞 New - elmeg Professional Configurator - I	іст 📃	
File Data exchange Display ?		
	Ŷ	
New Open Save Read Send Delete	Help	
Configuration Co	The DHCP server integrated into the PABX system provides automatic configuration of the networked clents (PCs) for all parameters required for common Internet access via the PABX system. You must reset the IP parameters for the networked clents (PCs) manually when you de-activate the DHCP server. Parameter for dynamic allocation of IP-addresses To DHCP-server active Start addresses: 192, 168, 1, 50 Number of addresses: 20 ÷ The next available IP-address is: 192, 168, 1.70 The DNS parameters define whether the system is to be used as the DNS proxy server, or whether an existing DNS server already present in the LAN is to be used. DNS server G Use pabx als DNS Proxy DNS server MINS (Windows Internet Name Service) Server in LAN WINS Server WINS Server WINS Server in the LAN IP-address of the WINS server: 0,00,00,00	
Peady.	13 11 2008 12·10·02 bu IM	
Reduy	13, 11, 2008 [12; 10;02] NUM	11

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

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 ad- dresses and determines the next available IP address. Here the VoIP-VPN Gateway module is used as the DHCP server. If an- other 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.

Relevant fields in the Address Assignment menu

Once you have enabled the ${\it DNS}~{\it Server}~{\it in}~{\it LAN}$ function under DNS Server, you can

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

DNS server in the LAN	×
DNS settings Indicate the IP address and the local domain name (example: home.local). DNS server: 192 . 168 . 1 . 254 Domain name:	
OK Cancel	



2.2.3 Internet Access

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

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

🗞 New - elmeg Professional Configurator -	ICT	
File Data exchange Display ?		
D 😂 - 🛄 ≡ - ≜ × New Open Save Read Send Delete	₹ ? Help	
Configuration	 Internet connection set up via: 	
A elmeg ICT ABX type / Module configuration Configuration of S0/Lp0/S2M(ISDN30) Locations External numbers SIP-provider SIP-provider Team configuration Configuration Extended call distribution Extended call distribution	Connection type: other LAN-Gateway General information: Dial-in parameter: Telephone number:	Select predefined provider Log-on parameter: User name: Password:
Boor terman/alam cal/switching order Cancel and ar Ca	Connection parameters Connection parameters PPP Encryption(MPP 128) Disconnecting Connection Hold (Keepalive) Connection Hold (Keepalive) Connection Hold (Keepalive) Connection Hold (Keepalive) Automatic disconnect at inactivity after: 180 Seconds Automatic WAN disconnect hours	Password confirmation:
VPN (IPSec) VPN (IPSec) Old-up into the LAN (RAS) Oringuration access Distinctive ringing (a/b) Z Audio Applications Veb Date exchange Status System telephones WIN-Tool Launcher Web-Interface		
Ready		14.11.2008 11:29:23 Count 25 NUM

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

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.

Relevant fields in the Internet Access menu

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:

SIP-provider: 00	
Access data Extended STUN Proxy Codecs Numbers SIP-Provider name (max. 12 chars.) Name SIP-Provider	Connection
Access data Login-Name Password Confirmation User ID Test Test	IP-address / DNS Server Name IP-address IP-address O . 0 . 0 . 0 : 5060 ONS Server Name SIP-Provider.de S060
General Generate international phone number Generate national phone number ✓ De-activate number suppression ✓ Use user ID as phone number Not registered with SIP provider Allow login of a proxy ✓ :Hold in the PABX ■ Replace international prefix by "+"	Location Name 01: LAN
	OK Cancel

(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 ex- ample 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

SIP-provider: 00	X
Access data Extended STUN Proxy Codecs Numbers	
Telephone number configuration	Trunk group selection Trunk group number
Dial-in block configuration Length of extension numbers Identification of calling extension number	Return destination Image: Constraint of the second seco
End of dialing monitoring timer 5 Seconds	C Int. Subscriber
Number of simultanous connections	Registration timer 60 Seconds
Replacing number prefix (inbound sender ID)	
<u></u>	OK Cancel

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

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the Individual Number field.
Bundle association	Enter a one-digit bundle number.
End of dialling monitor- ing 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

Individual n	umbers	
Index	Call number	
0	495171123456	
1		
2		
3		
4		
5		
6		
7		
8		
9		
Some	Provider support several call numbers with a registration.	
additio	onal call numbers here.	



Relevant fields in the Subscriber Number menu

Field	Meaning
Individual Numbers	Enter the SIP subscriber numbers according to the SIP pro-
	vider'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 -	Enable the entry DNS Serv-
	> Address Assignment	er 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

🗞 New - elmeg Professional Configurator -	ICT	
Hie Data exchange Display ?		
D D D Image: Save Image: S	- ? Help	
Configuration	Configure the IP address for your PABX system here. If yo different network, you can utilize your PABX system IP add	u are already operating a network and are using IP addresses from a resses and network mask
	Configure the IP address for your PABX system here. If you different network, you can utilize your PABX system IP add adapt correspondingly. Please note that IP addresses may assigned to several devices. PABX parameters	u are already operating a network and are using IP addresses from a freeses and network mask only be used one time in the LAN, i.e. the same IP address may not be With an active DHCP server ensure that the assigned IP address
Internal subscriber Team configuration	IP-address: 192 . 168 . 1 . 250	does not clash with the DHCP client address range. In addition, you must also defined a sufficiently wide address range for the local network using the network mask.
Call distribution	Netmask: 255 . 255 . 255 . 0	The number of IP addresses that can be used in the LAN is
Door terminal/Alarm call/Switching order	Host addresses: 254	defined in the network mask. Possible values:
Dial ranges	Time server	0 (= 254 host addresses in the LAN) 128 (= 126 host addresses in the LAN)
Hangeable access numbers For the second	ntp Timeserver: 0 . 0 . 0 . 0	192 (= 120 host addresses in the LAN) 192 (= 30 host addresses in the LAN), 224 (= 30 host addresses in the LAN), etc.
Internal CF	Time zone: 0 Hours	
DT adapter	Other parameters	
Hotel	Extended	
General		
Remote access		
Router / LAN		
internet		
Dynamic DNS		
VPN (IPSec)		
Dial-up into the LAN (RAS)		
Configuration access		
Distinctive ringing (a/b)		
Audio Applications		
Data exchange		
Status		
System telephones		
WIN-Tool Launcher		
Web-Interface		
Ready		13.11.2008 10:27:49 NUM //

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

Internal subscriber : Base S0-1 Subscr01	X
Numbers Line Access Features Communication Costs Swit Select your internal telephone number here. For external calls selected.	ching functions the telephone number presented to the external calling partner can be
Internal number	ck up
Subscriber's name (12 characters) O Name IP290 Log in name 20 Permit configuration Image: Configuration PIN Image: Confirmation Line access digit assigned trunk groups	utgoing number Outside line Outgoing number Base S0-2 Base S0-3 Base S0-4
1. • • • • • • • • • • • • • • • • • • •	ermit trunk group selection Trunk group number ok/no Trunk Group 0

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

Internal subscriber : Module-1 VoIP-VPN-1 Subscr01	
Numbers Line Access Features Communication Costs Switching functions VolP-VPN-settings]
Please enter your VoIP-settings here.	
Log-on authorization	
C no location	
- G. 726 Codec setting	
C I366	
RFC3551 / X.420	

Fig. 16: Configuration -> Internal Extension -> VolP-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

20
20
20
20
••
192.168.1.250
Pinger 1
Rillger i
rs):

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 Exten- sion 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

Configuratio	n Line 1	010100101001000100100
Operation		
Home	Login SIP NAT RTP	
Address Book	SIP Line Settings:	
Setup	Outbound Proxy:	
Preferences	Music on hold server:	
Speed Dial	Alert Info URL:	
Function Keys	User picture URL:	
Line 1	Music on hold Streaming URL:	
Line 2	Dial-Plan String:	
Line 3	Provy Requires	
Line 4	o Uslas	10
Line 5	Q-value:	1.0
Line 6	Proposed Expiry:	1 min 💌
Line 7	Auto Answer:	Con 🖲 off
Action URL Settings	Long SIP-Contact (RFC3840):	Con 🕫 off
Advanced	Support broken Registrar:	Con €off
Trusted Certificates		
Software Update	Save	
Status		
System Information		
Log		
SIP Trace		
DNS Cache		
PCAP Trace		
Memory		
Settings		
Manual		
© 2000-2006 snom AG		

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 <i>Off</i> . 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 -> Exten- sion Type VoIP-VPN	e.g. 20
Login Name	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. 20
PIN	Configuration -> Internal Extension ->New -> Exten- sion 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

Internal subscriber : Module-1 VolP-VPN-1 Subscriber	cr02	×
Numbers Line Access Features Communication Costs Select your internal telephone number here. For external selected.	Switching functions VoIP-VPN-settings calls the telephone number presented to the external calling partner can be	
Internal number 20 Subscriber's name (12 characters) Name IP-S400 Log-in name 20 Permit configuration PIN Confirmation Lice accessed finit accidence to relevance	Pick up group 00 Outgoing number Outgoing number Base S0-2 Base S0-3 Base S0-4 Outgoing number	
Line access digit assigned trunk groups	Pemit trunk group selection Trunk group number ok/no Trunk Group 0 OK Cancel	



Relevant fields in the Subsc	riber 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 -> VolP-VPN Settings

Internal subscriber : Module-1 VoIP-VPN-1 Subscr02	
Numbers Line Access Features Communication Costs Switching functions VoIP-VPN-settings	
Please enter your VoIP-settings here.	
Log-on authorization]
C no location C all locations incl. LAN	
Generaticted Generation OO: WAN	
G.726 Codec setting	
C 1366 © BEC3551 / X 420	
	OK Cancel



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

eImeg 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

Editing	MSN Entries		? 🛛
No. 1	MSN extension (max. 26 places)	Name (max. 5 places) MSN-1	Access parameters
	External call Melody Melody 1	Melody Melody	Log-In PIN
	- Volume +	- Volume +	Confirmation
	MSN extension call forwarding (max. 26 places)	Cost limit	
	Call Deflection number	Limit	
	ОК	Cancel	

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 -> Exten- sion Type VoIP-VPN	e.g. 20
Login Name	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. 20
PIN	Configuration -> Internal Extension ->New -> Exten- sion Type VoIP-VPN	e.g. 12345

VoIP-VPN Settings

Field	Menu	Value
Login authorisation	Configuration -> Internal	Unlimited
	Extension -> Internal Ex-	
	tension -> VoIP-VPN Set-	
	tings	

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.

New - elmeg Professional Configurator -	ІСТ			
File Data exchange Display ?				
D 🗃 및 ■ 🗮 → A X New Open Save Read Send Delete	• 🤗 Help			
Configuration Image: Configuration of S0/Up0/S2M(SDN30) Image: Configuration of S0/Up0/S2M(SDN30)	PABX type CICT880 CICT880 CICT880 CICT88 CICT88 CICT88 CICT89 Module 4 Stot left Onone C 4 so UV2 C 2 S0 V2 C 3 S0 V2 C 3 S0 V2 C 3 S0 V2 C 4 analog C 7 (2 S0 V2 C 7 (4 wire) C 0 Cr (4 wire) C	Extension (ICT890xt) Module 5 Slot right None 4.50 V2 2.50 V2 2.50 V2 2.50 V2 2.50 V2 C.1.50 V2 V2 C.1.50 V2 C.1.50 V2 V2 C.1.50 V2 V2 V2 C.1.50 V2 V2	Module 6 S2M-Modul 4 POTS-module 2 POTS-module 2 POTS-module 1 Stot left C None 4 450 C 2 50 C 4 analog C 1 50 C 1 50 C 7 4 Vice C 7 1 (122012) C 0 Tr (12 2012) C 0 Tr (12 3012) C 0 Tr (12 3012) C 0 Tr (12 wire) C 0	Module 7 Router module Module 2 Slot right None C 4 50 V2 C 2 50 V2 C 1 50 C 4 analog C 4 analog C 4 uplo C 4 uplo C 4 analog C 4 uplo C 4 uplo C 4 uplo C 4 uplo C 1 (2012) C D T (4 wie) C D T (12012) C D T (4 wie) C c contacts assimum of 3 bell buttons. A
Status	Select the setting DT* under Sc	pecial slots for connecting door in	tercom units with 4 bell buttons!	
System telephones	and of the second se	g door in		
WIN-Tool Launcher				
Web-Interface				
Web-intended			05 11 2008 12:20:20	

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

🗞 New - elmeg Professional Configurator - IC	cr 📃 🗖	
File Data exchange Display ?		
D B Image: Second condition Image: Second condition Image: Second condition New Open Save Read Second condition	- 8 Help	
Configuration Co	Configure the IP addresses from a different network, you can utilize your PABX system IP addresses and network mask adapt correspondingly. Please note that IP addresses may only be used one time in the LAN, i.e. the same IP addresses may not be assigned to several devices. PABX parameters IP addresse: 192, 168, 1, 250 With an active DHCP server ensure that the assigned IP address may not be assigned to several devices. With an active DHCP server ensure that the assigned IP address range. In additor, you must also defined a sufficiently wide address range. In additor, you must also defined a sufficiently wide address range. In additor, you must also defined a sufficiently wide address range for the local network mask. Netmask: 255, 255, 255, 0 Host addresses: 254 Time server 0, 0, 0, 0, 0 Into zone: 0 Other parameters (a 30 hout addresses in the LAN) 224 (= 30 host addresses in the LAN) 232 (= 62 host addresses in the LAN) 234 (= 30 host addresses in the LAN), etc.	z
		11,

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

SNew - elmeg Professional Configurator	- ICT	
File Data exchange Display ?		
D C </td <td>e Help</td> <td></td>	e Help	
Vein Open asino Detext Configuration Configuration Configuration PARX type (Module configuration PARX type (Module configuration Configuration of 50/Up0/S2M(ISDN30) Cocations Cocations Cocations Configuration occess numbers Configuration occess Configuration occess Configuration occe	The DHCP server integrated into the PABX system provides automatic configuration of the networked clients (PCs) for all parameters required for common Internet access via the PABX system. You must reset the IP parameters for the networked clients (PCs) manually when you de activate the DHCP server. Parameter for dynamic allocation of IP-addresses If DHCP-server active Start address: 192.168.1.1.50 Number of addresses: 20 The next available IP-address is: 192.168.1.70 The DNS parameters define whether the system is to be used as the DNS proxy server, or whether an existing DNS server already present in the LAN is to be used. DNS server O Use pabx als DNS Proxy DNS server O NS server WINS (Windows Internet Name Service) Server in LAN WINS Server WINS Server	
	05.11.2008 13:42:24	NUM MUN

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 en- able 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 ad- dresses 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

🗞 New - elmeg Professional Configurator -	ICT		
File Data exchange Display ?			
New Open Save Read Send Delete	· Help		
Configuration	- Internet connection set up via:		
Original CT Original Configuration	General information: Dial-in parameter: Telephone number:	Select predefined provider Log-on parameter: User name: accessdata-first.ICT Password: Password:	
Grangeable access numbers Serial interfaces Serial interfaces External CF	Connection parameters	Bandwidth management Traffic Shaping Transmission 128 in kBit/s	
	Disconnecting C Immediate restoration on disruption of connection C Connection Hold (Keepalive) C No autom. disconnect with inactivity	TCP download Rate control Oynamic Bandwidth Reservation Static Bandwidth Reservation n Bitt/s	
Couter /LAN Couter /L	C Automatic disconnect at inactivity after: 180 Seconds	IP-addresses WAN-port: 0 0 Router/Modem: 0 0	
VPN (IPSec) OPS OPS (IPSec) OPS O	03:00 v hours		
🛃 Distinctive ringing (a/b)			
Audio Applications			
Status			
System telephones			
WIN-Tool Launcher			
Web-Interface			
J		05.11.2008 14:01:28 NUM	-

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

🗞 New - elmeg Professional Configurator -	ст				
File Data exchange Display ?					
D B ↓ ↓ ↓ ↓ New Open Save Read Send Delete	- ? Help				
Configuration					
- Internet of the second secon	Activate Dynamic DNS				
PABX type / Module configuration	Parameter for dynamic DNS				
Configuration of S0/Up0/S2M(ISDN30)					
+ III External numbers	DynDns provider:	dyndns			
Internal subscriber	Host name:	first.ICT			
Team configuration	Hosenaner				
Call distribution	User name:	user name			
Door terminal/Alarm call/Switching order	Password:	************			
Calendar	- ussilor u				
🗄 🍘 Dial ranges	Password confirmation:	J *****			
Hating (Direct calls)	Wildcard log-on	Г			
Serial interfaces					
Internal CF	Enter the data for your Dynamic D	NS provider here.			
- A External CF	- Host name (e.g.: my-homepage	.dyndns.org)			
DT adapter	- User name				
Hotel	- Password				
1010 X.31 (D-channel)	You define the data nostname, username and password yourself when you register with your DynDNS-provider.				
- 🧼 General	,				
Remote access					
- Network Bouter / LAN					
Address assignment					
📕 Internet					
Dynamic DNS					
Filter					
Configuration access					
Distinctive ringing (a/b)					
→ Data exchange					
Status					
System telephones					
WIN-Tool Launcher					
Web-Interface					
		05.11.2008 14:57:2			

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 pro- vider.

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

New - elmeg Professional Configurato	r - ICT				×
File Data exchange Display ?					
D D D D D D New Open Save Read Send Del	ete Help				
	No Name	IP-address/DupDNS	Subnet mask	Bandwidth	BTPJtraffic
PABY type / Module configuration	00 WAN	II dddcoorbynorio	255.255.255.255	max.	100%
Configuration of S0/Up0/S2M(ISDN30)	01 LAN		255.255.255.255	max.	100%
Locations	03		255.255.255.255	max.	100%
External numbers	04		255.255.255.255	max.	100%
Internal subscriber			X	max.	100%
Call distribution				max.	100%
Extended call distribution General Co	odecs			max.	100%
Door terminal/Alarm call/	pame (12 chars)	- IP-address / DNS Name		max.	100%
Calendar Calendar		in dations / bits haits		max.	100%
🗉 💮 Dial ranges 🛛 🛛 Name	ICT1	C IP-address		max.	100%
① 小崎 Changeable access numb		0 0 0 0		max.	100%
Fotine (Direct calls)		Submet mark		max. max	100%
Toternal CE	dtri (iri Ndils/s)		-	max.	100%
External CF Upstr	am 128	200 200 200 200		max.	100%
		ONS Server Name		max. max	100%
	stream 1024	second ICT	-		
Hotel		,			
General Max. R	TP-Traffic	Registration timer (in seconds)			
Remote access	_				
Network 70	Percent	60	-		
Configuration access					
Distinctive ringing (a/b)					
Audio Applications					
		OK	Cancel		
				•	
-					
Status					
WIN-Tool Launcher					
Web-Interface					
)	05.11.2	008 15:22:37 Cou	nt 20 NUI	и 👘 🦉

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 <i>Upstream</i> and <i>Downstream</i> are entered here. For a DSL 1000, for example, the values are 128 kbps up- stream 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 per- cent 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

🗞 New - elmeg Prot	fessional Configurator - ICT			
File Data exchange D	isplay ?			
New Open Save	e Read Send Delete Help			
Config	puration			
PABX type / N	Adule configuration	address/DynDNS	Telephone nu Trunk o Individual number 0 Individual number 0	In the second
Locations	Access data Extended STUN Proxy Codecs Numbers			
Internal su	- SIP-Provider name (max. 12 chars.) Name to ICT2OUT	Connection C not active	active	
Call distributer of the second s	Access data Login-Name ICT1 to ICT2 Password Confirmation User ID CT1 to ICT2	P-address / DNS Server Name P-address D-1 0 0 0 O DNS Server Name second ICT	: 5060	
	General Generate international phone number Generate national phone number De-ectivate number suppression Use user ID as phone number Not registered with SIP provider Allow login of a proxy Githold in the PABX Replace international prefix by "+"	Location 02: ICT	n 💌	
-			OK Can	sel
St System t WIN-Too Web-1	atus elephones Il Launcher riterface			
		05.11.2	008 15:30:21 Count 25	NUM

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

🗞 New - elmeg Professional Configurator - ICT	
File Data exchange Display ?	
□ 😂 💭 🖶 🗧 ▲ 🔀 😵 New Open Save Read Send Delete Help	
Configuration	
E Selence IF	-address/DynDNS Telephone nu Trunk group
PABX type / Module configuration	
Locations SIP-provider: 01	×
External n Access data Extended STUN Proxy Codecs Numbers	
SIP-pri	
Telephone number configuration	Trunk group selection
Call distribu	Trunk group number
Extended	
Calendar Dial-In block configuration	Return destination
Dial ranges Length of extension numbers 2	• Team
Hotine (Dir	Team 00 💌
Serial inter End of dialing monitoring timer	C Int. Subscriber
External C 3 Seconds	Y
DT adapte	
Hotel	Registration timer
	60 Seconds
Remote ac	
Replacing number prefix (inbound sender ID)	
by bistinctive	
- 🛃 Audio Appl	
	OK Cancel
Status	
System telephones	
WIN-Tool Launcher	
Vveb-Interface	
	05.11.2008 15:30:21 Count 25 NUM

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

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the <i>DDI Block</i> 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 monitor- ing 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

🗞 New - elmeg Professional Configurator - ICT	
File Data exchange Display ?	
D 23 ⋅ ⋅ 23 ⋅ ⋅ 23 ⋅ ⋅ 23 ⋅ ⋅ 23 ⋅ ⋅ 23 ⋅ ⋅ New Open Save Read Send Delete Help	
Configuration	
	IP-address/DynDNS Telephone nu Truck group Individual number 0 Individual number 0
Team cont Name ICT2IN Image: Control of the state of th	C not active C active IP-address / DNS Server Name C IP-address O 0 0 0 : 5060 O NS Server Name first ICT : 5060
General General General General Generate national phone number Generate national phone number	Location Name 02:ICT1
	OK Cancel
Status System telephones WIN-Tool Launcher Web-interface	
······································	05.11.2008 15:30:21 Count 25 NUM

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

🗞 New - elmeg Professional Configurator	- ICT	
File Data exchange Display ?		
New Open Save Read Send Dele	te Help	
Configuration Co	No. Name 00 00 dor: 01 ata Edended STUN Proxy Codecs Numbers ndividual number Numbers Jala block block configuration hof extension numbers 2 tification of calling extension number Image: Seconds er of simultanous connections unlimited unimited	Telephone nu Trunk group Individual number 0 Turnk group selection Image: Compare the selection Trunk group number 1 million Return destination 1 million © Team Image: Compare the selection C int. Subscriber Image: Compare the selection Fegistration timer Image: Compare the selection Image: Compare the selection Image: Compare the selection Registration timer Image: Compare the selection Image: Compare the selection Image: Compare th
Audio Applications Image: Status Status		OK Cancel
WIN-Tool Launcher		
Web-Interface		
		05.11.2008 15:30:21 Count 25 NUM

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

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the <i>DDI Block</i> 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 monitor- ing 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 **Change-able 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

👋 New - elmeg Professional Configurator	- ICT	
File Data exchange Display ?		
New Open Save Read Send Delet	е 19	
Configuration PABX type / Module configuration Configuration of S0/Up0/S24/(ISDN30) Coations Coations Internal subscriber Team configuration Call distribution Extended call distribution Configuration Configuration Call distribution Call distribution Coll distribution Configuration coll distribution Configuration access Configuration access Configuration access Configuration access Configuration access	Trunk Group Access number 00 12 02 12 03 04 04 05 05 06 06 07 08 0K	
Status		
System telephones		
WIN-Tool Launcher		
Web-Interface		
	05.11.2008 16:11:46 Count 9 NUM	1

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

Field	Meaning
Access number	Select the desired dialling code to establish an external connec- tion. You do not need to dial the long *8 bundle number + sub- scriber number.

Relevant fields in the Target Bundle Assignment menu

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

🏷 New - elmeg Professional Configurator	- ICT	- 0
File Data exchange Display ?		
D D D Image: Constraint of the second secon	e Help	
Configuration	- Search for subscriber	
elmeg ICT PABX type / Module configuration Gonfiguration of S0/Up0/S2M(ISDN30)	Number: Name: Start search	
✓ Locations	Subscriber list	
 Internal subscriber Team configuration Call distribution 	Internal S0 Internal subscriber Type No. Name Line access authorization analog Base S0-1 Subscr01 Internal S0 bus 10 Unlimited	
Extended call distribution	C CAPI Base S0-1 Subscr02 Internal S0 bus 11 Unlimited Internal subscriber : Base S0-1 Subscr01	×
- · · · · · · · · · · · · · · · · · · ·	Numbers Line Access Features Communication Costs Switching functions	
● 獅 Changeable access numbers 	Select your internal telephone number here. For external calls the telephone number presented to the external calling partner can selected.	n be
- 🧼 Internal CF - 🧶 External CF	Pick up	
	Internal number 10 💌 Pick up group 00	
Hotel	Subscriber's name (12 characters)	
Remote access	Name Outside line Outgoing number	
Configuration access	Login name Base 50-2 Base 50-3 Base 50-3	
Audio Applications	Permit configuration	
Data exchange	PIN	
	Lonimation	
	Line access digit assigned trunk groups	
	1.	
	Permit trunk group selection	
	4. Trunk group number ok/no Trunk Group 0 V	
Status	5.	
System telephones		
WIN-Tool Launcher		
vvep-interface	с	Cancel

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

Field	Meaning
Allow Target Bundle As- signment	The <i>Bundle 1</i> entry must be enabled for Target Bundle As- signment.

Relevant fields in the Internal Extension menu

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

🗞 New - elmeg Professional Configurator - IC	T IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
File ata exchange Display ?	
D D D D D D New Open Save Read Send Delete	8 Help
Configuration	
Configuration Configuration Configuration of S0/Up0/S2M(ISDN30) Configuration of S0/Up0/S2M(ISDN30) Configuration of S0/Up0/S2M(ISDN30) Configuration Configuration Call distribution Call distribu	Configure the IP address for your PABX system here. If you are already operating a network and are using IP addresses from a different network, you can utilize your PABX system IP addresses and network mask. adapt correspondingly. Please note that IP addresses and yorly be used one time in the LAN, i.e. the same IP address may not be assigned to server addresses. IP-address: 192 + 168 + 1 + 250 IP-address: 192 + 168 + 1 + 250 Netmask: 255 + 255 + 255 + 0 Host addresses: 254 Time server 0 + 0 + 0 + 0 intp Timeserver: 0 + 0 + 0 + 0 Time zone: 0 - Hours Other parameters Extended
Web-Interface	
Ready	06.11.2008 11:29:45 NUM

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

🗞 New - elmeg Professional Configurator	- ICT
File Data exchange Display ?	
D D D Image: Constraint of the second secon	e Help
Configuration PASK type / Module configuration Configuration of SU(Jub)/S24/(ISDN30) Configuration of SU(Jub)/S24/(ISDN30) Configuration Configuration Configuration Configuration Coll distribution Coll distrib	The DHCP server integrated into the PABX system provides automatic configuration of the networked dients (PCs) for all parameters required for common Internet access via the PABX system. You must reset the IP parameters for the networked dients (PCs) manually when you de-activate the DHCP server. Parameter for dynamic allocation of IP-addresses IP DHCP-server active Start address: 192, 168, 1, 50 Number of addresses: 20 * The next available IP-address is: 192.168, 1, 70 The DHS parameters define whether the system is to be used as the DNS proxy server, or whether an existing DNS server already present in the LAN is to be used.
Status	
System telephones	
With-100i Launcher	
vveb-interface	
Ready	06.11.2008 11:30:42 NUM

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

Field	Meaning
DHCP server enabled	Under Parameters for Dynamic IP Address Assignment en- able 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 ad- dresses and determines the next available IP address.
DNS Server	Enable the entry Use System as DNS Proxy.

Relevant fields in the Address Assignment menu

5.2.2.3 Internet Access

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

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

	ICT	
New - elmeg Professional Configurator		
File Data exchange Display ?		
D D D Image: Second condition Image: Second conditio	e Help	
Configuration	Internet connection set up via:	
	Connection type: xDsl (PPPoE) General information:	Select predefined provider
Team configuration	Dial-in parameter:	Log-on parameter:
Extended call distribution	Telephone number:	User name: accessoata-second.tc1
		Password:
		Password confirmation:
Hotine (Direct calls)	Connection parameters	Bandwidth management
Internal CF	PPP Encryption(MPP 128)	Traffic Shaping
External CF		Transmission 128 in kBit/s
DT adapter		
Call data (SMDR)	Disconnecting	I TCP download Rate control
1010 X.31 (D-channel)	Immediate restoration on disruption of connection	Opnamic Bandwidth Reservation
General	Connection Hold (Keepalive)	C Static Bandwidth Reservation
Remote access	O No autom. disconnect with inactivity	0 in kBit/s
Network	C Automatic disconnect at inactivity	•
Address assignment	afters land	IP-addresses
	arter: 180 Seconds	WAN-port: 0.0.0.0
Dynamic DNS		Router/Modem:
- Q Filter	Automatic WAN disconnect	
	03:00 • hours	
General		
Configuration access		
Distinctive ringing (a/b)		
2 Audio Applications		
Status		
System telephones		
WIN-Tool Launcher		
Web-Interface		
, Ready		06.11.2008 14:05:46 NUM

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

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.

Relevant fields in the Internet Access menu

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 pro- vider.

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

🗞 New - elmeg Professional Configurator -	- ICT	
File Data exchange Display ?		
D B □ ■ ▲ × New Open Save Read Send Delete	e Help	
A elneg ICT A A A A A A A A A A A A A A A A A	No. Name IP-address/DynDNS Subnet mask Bandwidth I 00 V/VA 255.255.255 max max	
Status		
System telephones		
WIN-Tool Launcher		
Web-Interface		
Ready	06.11.2008 16:38:00 Count 20 NUM	11.



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 <i>Upstream</i> and <i>Downstream</i> 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 per- cent 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

🗞 New - elmeg Professional Configurator - ICT	
File Data exchange Display ?	
□ 🛱 🔛 🥃 🚔 ≻ ? New Open Save Read Send Delete Help	
Configuration	
elmeg ICT No. Name IF	P-address/DynDNS Telephone nu Trunk group
Configura	Individual number 0
Locations SIP-provider: 00	
Access data Extended STUN Proxy Codecs Numbers	
SIP-pr	- Connection
Team con Name ItolCT1.0UT	C not active
Call distric	
Access data	IP-address / DNS Server Name C IP address
Calendar Login-Name ICT2toICT1	
Password	G DNS Server Name
Hotine (D Continuation	
Internal C	
General General	Location
Call data Generate international phone number	Name 01: LAN
Hotel Generate national priorie number	
General Use user ID as phone number	
Remote a I Not registered with SIP provider	
Configura :Hold in the PABX	
→ → → → → → → → → → → → → → → → → → →	
Data exct	
	OK Cancel
Status	
System telephones	
Web-Interface	
Ready	07.11.2008 10:37:10 Count 25 NUM

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

🗞 New - elmeg Professional Configurator - ICT	
File Data exchange Display ?	
D 22 . B ≡ ≜ × . ? New Oran Save Read Sand Delate Help	
elmeg ICT No. Name	IP-address/DynDNS Telephone nu Trunk group
PABX type / Module configuration	Individual number U
Locations SIP-provider: 00	
E-External r Access data Extended STUN Proxy Cod	ecs Numbers
SIP-pr	
Internal si I elephone number configuration	Trunk group selection
Call distrib	
Dial-in block configuration	C Return destination
Calendar Length of extension numbers	2 - 6 Tan
Identification of calling extension number	
✓ Hotline (D Serial inter End of dialing monitoring timer	
Internal C 3 Seconds	
External C	
Call data Number of simultanous connections	Registration timer
1월 X.31 (D-ch 0 unlimited	60 Seconds
General General General General	
Replacing number prefix (inbound sender ID)	
Distinctive	
₩ Audio App	
	OK Cancel
Status	
System telephones	
WIN-Tool Launcher	
Web-Interface	
Ready	07.11.2008 10:37:10 Count 25 NUM

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

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the <i>DDI Block</i> 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 monitor- ing 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





Relevant	fields	in	the	SIP	Provider	menu
----------	--------	----	-----	-----	----------	------

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

🗞 New - elmeg Professional Configurator	· ICT	
File Data exchange Display ?		
Image: Decision of the sector of the sec	e Help	
Configuration		
E 🦪 elmeg ICT	No. Name IP-address/DynDNS	Telephone nu Trunk group
PABX type / Module configuration	01 fromICT1 IN second ICT	Individual number 0
Locations	02	Individual number 0
External numbers	103	
Outgoing CLIP No Screen SIP-provi	ier: 01	
Internal subscriber Access da	ta Extended STUN Proxy Codecs Numbers	
Team configuration		
Call distribution	one number configuration	Trunk group selection
Door terminal/Alarm call/Swite	dividual number	Trunk group number 2 💌
Calendar	ain block	
Dial ranges	lock configuration	Return destination
Hotine (Direct calls)	h of extension numbers 2 💌	(Toom
	fication of calling extension number	
Internal CF		
External CF End of	dialing monitoring timer	C Int. Subscriber
Call data (SMDR)	Seconds	▼
Hotel		
General	r of simultanous connections	Registration timer
Remote access 0	unlimited	60 Seconds
Network		
Distinctive ringing (a/b)	ng number prefix (inbound sender ID)	
Audio Applications	by	
		OK Cancel
Status		
System telephones		
WIN-Tool Launcher		
Web-Interface		
Ready		07.11.2008 11:54:21 Count 25 NUM

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

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the <i>DDI Block</i> 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 monitor- ing 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 **Change-able 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

🎭 New - elmeg Professional Configurator	- ICT	
File Data exchange Display ?		
Image: Description of the sector of the	te Help	
Configuration Image: Configuration of S0/Up0/S2M(ISDN30) Image: Configuration occess	Trank Group Access number 00 00 02 8 03 04 04 05 05 06 07 08	
Status System telenhones		
WIN-Tool Launcher		
Web-Interface		
Ready	07.11.2008 12:07:16 Count 9 NUM	

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

Field	Meaning
Access number	Select the desired dialling code to establish an external connec- tion. You do not need to dial the long *8 bundle number + sub- scriber number.

Relevant fields in the Target Bundle Assignment menu

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

🗞 New - elmeg Professional Configurato	vr - ICT	
File Data exchange Display ?		
D D D D D New Open Save Read Send De	≻ ? lete Help	
Configuration	Search for subscriber	
elmeg ICT	the set of	
Configuration of S0/Up0/S2M(ISDN3	iternal subscriber : base 50-1 Subscr01	
External numbers	Numbers Line Access Features Communication Costs	Switching functions
Team configuration	Select your internal telephone number here. For external	al calls the telephone number presented to the external calling partner can be
Call distribution	selected.	
Extended call distribution	Internal number	Pick up
Calendar	Internal number	Pick up group
Dial ranges Hangeable access numbers		
Hotine (Direct calls)	Subscriber's name (12 characters)	Outgoing number
Serial interfaces	Name	Outside line Outgoing number
External CF	Login name	Base S0-2
DT adapter		Base S0-3 Base S0-4
Hotel	Permit configuration	
	PIN	
Remote access	Confirmation	
Configuration access		
Distinctive ringing (a/b) Audio Applications	Line access digit assigned trunk groups	
₽ Data exchange		
		Demittente enur estatter
		Permit trunk group selection
	4.	Trunk group number ok/no
	5.	Trunk Group 1
		Trunk Group 2
		OK Canad
Status		
System telephones		
WIN-Tool Launcher	New Remove	
Web-Interface		
Ready		10.11.2008 15:23:25 Count 2 NUM

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

Relevant fields in the Internal Extension menu

Field	Meaning
Allow Target Bundle As- signment	The <i>Bundle 2</i> entry must be enabled for Target Bundle As- signment.

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 <i>DHCP</i> server en- abled
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 pro- vider's specifications.
Connection Clearing	Configuration -> Network - > Internet Access	Enable re-establish connection immedi- ately.
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 Pro- vider -> Access Data	IP address and DNS name of the second ICT system.
Location	Configuration -> SIP Pro- vider -> Access Data	e.g. 02: ICT1
General	Configuration -> SIP Pro- vider -> Access Data	Select Holding in the PABX

Configuring a subscriber number (OUT connection)

Field	Menu	Value
Call Number Configuration	Configuration -> SIP Pro- vider -> Advanced	Enable DDI Block.
Bundle association	Configuration -> SIP Pro- vider -> 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 Pro- vider -> Access Data	IP address and DNS name of the first ICT system.
Location	Configuration -> SIP Pro- vider -> Access Data	e.g. 02: ICT1
General	Configuration -> SIP Pro- vider -> Access Data	Select Allow Proxy Re- gistration and Holding in the PABX

Configuring a subscriber number (IN connection)

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

Changing the bundle assignment

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

Allowing bundle assignment

Field	Menu	Value
Allow Target Bundle Assign-	Configuration -> Internal	Select Bundle 1
ment	Extension -> Internal Ex-	
	tension-> Subscriber Num-	
	bers	

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 <i>DHCP</i> server en- abled
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 <i>Use System as DNS Proxy</i> .

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 pro- vider's specifications.
Connection Clearing	Configuration -> Network - > Internet Access	Enable re-establish connection immedi- ately.
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 Pro- vider -> Access Data	IP address and DNS name of the second ICT system.
Location	Configuration -> SIP Pro- vider -> Access Data	e.g. 02: ICT2
General	Configuration -> SIP Pro- vider -> Access Data	Select Holding in the PABX

Configuring a subscriber number (OUT connection)

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

Creating a SIP provider (IN connection)

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

Field	Menu	Value
General	Configuration -> SIP Pro- vider -> Access Data	Select Allow Proxy Re- gistration and Holding in the PABX

Configuring a subscriber number (IN connection)

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

Changing the bundle assignment

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

Allowing bundle assignment

Field	Menu	Value
Allow Target Bundle Assign- ment	Configuration -> Internal Extension -> Internal Ex- tension-> Subscriber Num- bers	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** :

🔀 Exchange-Verwaltungskonsole				
Ele Action View Help				
⇔ → 🗈 🖬 😤 🖬				
23 Microsoft Exchange	👪 Unified Messaging	1	2 objects	Actions
Organization Configuration Mailbox	UM Dial Plans UM IP Gateway	rs UM Mailbox Policies UM A	uto Attendants	Unified Messaging
	UM Dial Plan 🗠	# Digits	Associated UM Servers	Rew UM Dial Plan
Hub Transport	DP-nbg	3	EXCHANGE07	🗭 New UM IP Gateway
Gerver Configuration	DP-peine	3	EXCHANGE07	1 New UM Mailbox Policy
Maibox				New UM Auto Attendant
				Export List
Unified Messaging				View
Recipient Configuration Mailhox				R Refrech
- 🦉 Distribution Group				M Hale
				B Hep
Toobox				
	<u>ш</u>		<u> </u>	<u> </u>

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...

🛄 New UM Dial Plan	New UM Dial Plan
Completion	This wizard helps you create a UM dial plan for use by Microsoft Exchange Unified Messaging. A dial plan is a grouping of unique telephone extension numbers.
	Na <u>m</u> e:
	demo_dialplan
	Number of digits in extension numbers:
	UHI type: Telephone Extension
	VolP security
	Unsecured
	(i) After you create a new dial plan, the dial plan must be added to one or more UM servers before it will be used.

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.

mo_dialplan Pro	perties		
Settings	Dialing Rule Groups	Dialin	g Restrictions
General	Subscriber Access	Dial Codes	Features
Welcome Greetir	ngs		
Welcome greetin	ig:		
Use default gree	ting		M <u>o</u> dify
Informational ann	nouncement:		
Informational an	nouncement is disabled		Modify
Add 🥖 Ed	it 🗡		
600			

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.

demo_dialplan Prop	oerties		×
Settings	Dialing Rule Groups	Dialing F	Restrictions
General	Subscriber Access	Dial Codes	Features
Outgoing Configur	ation		
<u>O</u> utside line acces (Example: 9)	ss code:	0	
International acce (Example: 011 for	ess code: the United States)	00	
<u>N</u> ational number p (Example: 0 for Fra	orefix: ance, 1 for the United States	:)	
Country/Region c (Example: 81 for J	ode: apan, 1 for United States)	49	
Incoming Configur	ation		
In-country/region (Example: 142555	number format: (50198)	0	
International numb (Example: 4420xx	per format: xxxxxx)	0049	
	OK Cance	el <u>Apply</u>	Help

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.

emo_dialplan Prop	erties			
General	Subscriber Access	Dial	Codes	Features
Settings	Dialing Rule Groups		Dialing	Restrictions
Dial <u>b</u> y name prim	ary method:	Last Fir	st	
Dial by name <u>s</u> eco	ondary method:	SMTP.	Address	-
Audio <u>c</u> odec:		G.711		-
Operator extension	n:		810	
Logon <u>f</u> ailures bef	ore disconnect:			3
Timeouts and Ret	ries			
<u>M</u> aximum call dura	ation (min):			30
Maximum recordin	g duration (min):			20
Recording idle tim	e-out (sec):			5
Input idle timeout	(sec):			5
Input r <u>e</u> tries:				3
Input failures befo	re <u>d</u> isconnect:			3
Language Setting	s			
Default Janguage:		English	(United Stat	es) 💌
	OK Cano	el	Apply	Help

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).

to_atalpian Pro	perties	
General	Subscriber Access D	ial Codes Features
Settings	Dialing Hule aroups	Utaling Hestrictions
In-Country/Regio	n Rule Groups	
🛟 A <u>d</u> d 🧪 E	dit 🗙	
Name	Number Mask	Dialed Number
national	0*	0×
International Rule	Groups	
Name	Number Mask	Dialed Number
internetional	008	Dialog Hambor
International	00	00*
		*00 •

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.

lemo_dialplan Prop	perties			×
General Settings	Subscriber Act	cess D ule Groups	ial Codes Dialing R	Features estrictions
Allow calls to Allow calls to Select allowed in-	users within the : extensions country/region ru	same dial plan Ile groups from di	al plan:	
national				
Select allowed int	ernational rule gr	oups from dial pla	n:	
	ок	Cancel	Apply	Help

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.

SExchange-Verwaltungskonsole					_ 🗆 ×
Elle Action View Help					
Microsoft Exchange	😽 Unified Messag	ing	1 obi	ect Actions	
Grganization Configuration Malbox	Y Create Filter			Unified Messaging	-
Client Access	Name A	Role	Version	5 Export List	
Hub Transport	EXCHANGE07	Hub Transport, Client Acc.	Version 8.1 (Build 240.6)	E View	•
E Server Configuration	EXCHANGE07 Properties		×	Refresh	
Client Access	General System Settings	UM Settings	(😭 Help	
Hub Transport	Associated Dial Plans			EXCHANGE07	· ·
E & Recipient Configuration	🖧 Add 🗙	💐 Select Dial Plan			<u>- I I X</u>
Mailbox	Name	Ele Yew			
Mail Contact	DP-nbg	Search:	Find Now Clear		
	DP-peine	Name A	# Digits	Phone Context demo_dialplan virtualpet fu	
		DP-nbg	3	DP-nbg.virtualnet.funkwerk	
		DP-peine	3	DP-peine virtualnet.funkwe	
	Miscellaneous Configurati				
	Prompt languages:				
	Maximum concurrent				
	Maximum concurrent				

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.

New UM	IP Gateway		
 New UM IP Gateway Completion 	New UM IP Gateway This wizard helps you create a UM IP gateway for use by Microsoft Exchange United Messaging, UM IP gateways represent the connection between a physical gateway or IP PRX and United Messaging. Name:		
	demo_UM-GW IP Address:		
	192.168.10.222 Example: 192.168.10.10		
	C Eully qualified domain name (FQDN):		
	Example: smathost.company.com Dial plan:		
	Image: demo_diaplan Browse Image: definition of the second seco		
Help	<back cancel<="" new="" td=""></back>		

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 administra-tion console**.

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

ns wizard helps you create a UM hunt group t essaging. A hunt group represents a connecti al plan, and associates the dial plan with the p ssociated UM IP gateway:	for use by Microsoft Exchange I ion between a UM IP gateway oilot identifier specified below.	Jnified and a UM
lemo_UM-GW		
a <u>m</u> e:		
nailbox_demo		
ial plan:		
emo_dialplan		Browse
lot identifier:		
00		
	essaging, A hunt group represents a connect a plan, and associates the dial plan with the p gaociated UM IP galeway: emo, UM-GW agne: analbox, demo aliphan: lemo, dialplan let identifier: 00	essaging A hunt group represents a connection between a UM IP gateway. gaociated UM IP gateway. gaociated UM IP gateway. enro_UM-Gw agne: iailbox_demo jaiplan: leor_dialplan lot identifier:

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.

demo_dialplan Defaul	t Policy Prop	erties		×
General Message Te	xt PIN Policie:	s Dialing Rest	rictions	
demo_dial	olan Default Pol	icy		
Associated UM dial	plan: demo_	dialplan		
Modified:	Montag), 25. Mai 2009	15:07:20	
Maximum greeting du	uration (minutes)		5	
	OK	Cancel	Apply	Help

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).

emo_dialp	lan Default Policy Properties	×
General N	dessage Text PIN Policies Dialing Restrictions	
<u>F</u> ax iden	tity:	
Microso	t Exchange	
Text sen	t when a <u>U</u> M mailbox is enabled:	
Willkom	men bei Microsoft Exchange UM	A
		-
Text sen	t when a PIN is <u>r</u> eset:	
Ihre PIN	wurde zurückgesetzt	A
		-
Text incl	uded with a <u>v</u> oice message:	
neue Sp	rachnachricht	-
		-
, Textincl	uded with a fax message:	
neues F		A
		-
1		
		Help
	Cancer Apply	neip

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.

demo_dialplan Defau	lt Policy Prop	erties		X
General Message Te	ext PIN Policie	s Dialing Rest	rictions	,
Minimum PIN length				
🔲 PIN lifetime (day	vs):		Г	
Number of previous	PINs to disallov	v:	5	
Allow common p	atterns in PIN			
Failed Logons				
Number of incor reset:	rect <u>P</u> IN entries	before PIN is a	utomatically 5	
Number of incor locked out:	rect PIN entries	before UM mail	box is	5
	ОК	Cancel	Apply	Help

Fig. 60: PIN Policies

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

demo_dialplan Default Policy Properties	×
General Message Text PIN Policies Dialing Restrictions	
Allow calls to users within the same dial plan Allow calls to extensions	
Select allowed in-country/region rule groups from dial plan:	
national	
Select allowed international rule groups from dial plan:	
international	
International	
OK Cancel Apply Help	

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 **Pi-Iot 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.

Introduction	Extension Configuration	
Extension Configuration	 Automatically generated mailbox extension 	
Enable Unified	Manually entered mailbox extension:	0
Messaging	SIP Resource Identifier	
Completion	For a SIP URI dial plan, this is the SIP address of the user (example: tony.smith@contoso.com). For an E.164 dial plan, this is the E.164 addres (example: +14255550150).	s of the user
	C Automatically-generated SIP resource identifier:	
	Manually entered SIP or E.164 address:	

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

Field	Meaning
MSN	For point-to-multipoint connections, you can enter up to 10 num- bers (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.

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

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.

bers Line Access Features Communication	Costs Switching functions VolP-VPN-settings
Select your internal telephone number here. For selected.	external calls the telephone number presented to the external calling partner can b
Internal number	Pick up Pick up group 00
Subscribe's name (12 characters) Name MS_Exchange Log in name Permit configuration PIN Internation	Outgoing number Outgoing number Bare 50.2 Bare 50.3 Bare 50.4 Module 6 ISD130 (52
Confirmation Contexts Line access digit assigned trurk groups 1. 1. Trurk Group 2 ¥ 2. ¥ ¥ 3. ¥ ¥ 4. ¥ ¥ 5. ¥ ¥	Permit trunk group selection
UK[Telefonsperre] UK[PIN] UK[Bestätigung]	

Fig. 65: Configuration -> Internal subscriber -> 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.	
Login Name	A login name is not required as the Microsoft Exchange server operates without authentication when logging in.	

Relevant fields in menu Numbers

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

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

nternal subscriber : Module-2 VoIP-VPN-1 Subscr02		×
Numbers Line Access Features Communication Costs Switching functions VolP-VPN-settings		
Please enter your VoIP-settings here.		
Log-on authorization C no location C all location C all location LAN C uncertified		
G.726 Codes setting		
C 1366 C RFC3551 /×420		
UK[Feste IP-Adresse für SIP-Clients]		
UK(IPAdesse) 192 . 168 . 10 . 101 : 5065 TCP 💌		
	Or	Canad
	UK	Lancer

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

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.

Relevant fields in the VoIP-VPN settings menu

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 Exten- sion
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 sec- ondary 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 be- fore 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> Di- aling Rule Groups	national, 0*,0*
International Rule Groups	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling Rule Groups	international,00*, 00*
Allow calls to uses within the same dial plan	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling Restrictions	Enabled
Allow calls to exten- sions	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling 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 en- abled	Organization Configuration -> Unified Messaging -> New UM Mailbox Policy - > Message Text	e.g. Welcome to Mi- crosoft 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 mes- sage!
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 exten- sions	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 -> Recipi- ent Configuration -> Mailbox	e.g. demo_dialplan Default Policy
Manually specify PIN	Organization Configuration -> Recipi- ent Configuration -> Mailbox	Your PIN
Manually entered mailbox extension	Organization Configuration -> Recipi- ent 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. <i>MS_Exchange</i>
UK (Fixed IP ad- dress 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.

Save configuration		PPPOE PPTP PPPOA ISDN IP Pools		
System Management 🔹 👻				
Physical Interfaces 🔹				
LAN 🔫	Basic Parameters			
Wireless LAN 🔹	Description	ADSL-line		
Routing 🔹	DDD-5 Made			
WAN 🔺	PPPOE Mode	[™] Standard [™] Multilink		
Internet + Dialup	PPPoE Ethernet Interface	br0 💌		
ATM	Uppr Nomo	ISPusor		
Real Time Jitter Control	Osermane	liarusei		
VPN -	Password	******		
Firewall 👻	Always on	✓ Enabled		
PBX 👻	IP Mode and Routes			
Local Services 🔹	IP Address Mode			
Maintenance 🔹	IF Address Mode	Static V Get IP Address		
External Reporting 🗾 👻	Default Route	✓ Enabled		
Monitoring 🗾	Create NAT Policy	✓ Enabled		
		Advanced Settings		
		Ok Cancel		

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

Relevant fields in the PPPoE menu

Field	Meaning
Description	Give the connection a name.
PPPoE ethernet inter- face	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.

Save configuration		Access Configuration	External Numbers	VoIP Configuration
System Management	-			
Physical Interfaces	•			
LAN	Basic Paramet	eters		
Wireless LAN	MSN-1	2557435		-
Routing	-			
WAN	- Service	Lelephor	y 🞽	
VPN	•		Canc	el
Firewall	-			
PBX	-			
General Settings				
Line Configuration				
Internal Numbers				

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 <i>0</i> . 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.

Save Configuration	Access Configuration	External Numbers	VolP Configuration
ystem Management 🛛 👻			
hysical Interfaces 🔹			
AN Basic Parameters			
vireless LAN - Name	VolP-Prov	ider	1
outing -]
AN DSL Phonenumb	per 091130839	3681	
PN - Login Name	1839681]
ewall Password	skakakakakakak]
3X A	100001		1
General Settings	1023001]
ine Configuration Registrar/Proxy	sipgate.de	э]
nternal Numbers	F0C0		1
Call Routing			
utomatic Route Selection	٨	dvanaad Sattings	
ernal Phonebook	A	uvanced Settings	
II Records Generate Country	v Prefix	7	
al Services 👻		2	
ntenance -	per suppression	_	
ernal Reporting 🗸 Use user ID as pl	uhonenumber		
onitoring Optimize bandwid	dth for speechcompression		
Use Area Code	E		
Upstreaming Dev	vice with NAT]	
Clear multiple pro	ovider bindings	2	

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 pro- vider. 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:

Go to PBX -> Internal Numbers -> Extensions ->

Save configuration		Extensions Call Forwarding	
System Management 🔹 👻			
Physical Interfaces 🔹 🔻			
LAN 👻	Basic Parameters		
Wireless LAN 🔹	Extension Number	20 💌	
Routing 🔹			
WAN 👻	Extension Name		
VPN 👻	Primary Telephonenumber	ISDN (MSN-0): 2557435	
Firewall 🔹			
PBX 🔺		Advanced Settings	
General Settings	Atternative Telephonenumbers		
Line Configuration	Secondary Telephonenumber	VolP-Provider: 091130839681	
Internal Numbers			
Call Routing	Third Telephonenumber	None	
Automatic Route Selection	General features		
Internal Phonebook	Automatic outside line	Enabled	
Call Records	Line access authorization	Unlimited V	
Local Services -	The statist (1976 Helica)		
Maintenance 🔹 🔻	Blacklist/ Willelist	L Enabled	
External Reporting 🔹 👻	SMS / MMS receive	Enabled	
Monitoring 👻	Record call data	Enabled	
	Keypad	Enabled	
	Suppress outgoing CLIP (CLIR)	Enabled	
		Ok Cancel	

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

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- ber	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 Tele- phonenumber	Select another connection over which the external connection should be established. If the primary number/line is not operating, the secondary line/

Relevant fields in the Extensions menu

Field	Meaning
	telephone number is used for outgoing connections. The altern- ative 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 [6].
- (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.

Save configuration		Calendar T	eams Assignment	
System Management	-		_	
Physical Interfaces	•			
LAN	▼ Description	Phone Number	Call Assignment	
Wireless LAN	 Italia VolP Provider 	003912345678	30	
Routina	VolP-Provider	091130839681	30	
10(0N	ISDN (MSN-0)	2557435	20, 30	
VPN	ISDN (MSN-1)	2556295	ISDN Login / Service Login	
Firewall	*			
PBX	•			
General Settings				
Line Configuration				
Internal Numbers				
Call Assignment				
Call Routing				

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 sub- scriber 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 ac- count.
Call Assignment	Displays the numbers of the internal telephones that ring in the event of an external incoming call.

Click the pi icon to edit existing call groups.

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

Save configuration		Calendar Teams Assignment
System Management 🔹		
Physical Interfaces •		
LAN 👻	Team01 Day	
Wireless LAN 👻	Name	
Routing 🔹	Internal assignment	
VAN 👻	10 FXS1	Enabled
PN 🔻		
irewall 🔻	11 FXS2	Enabled
BX 🔺	20	Enabled Enabled
General Settings	21	Enabled
Line Configuration	22	
Call Assignment		
Call Routing	23	Enabled
Automatic Route Selection	24	Enabled
Internal Phonebook	25	Enabled
Call Records	26	
laintenance -	27	
xternal Reporting 🔹 👻	30 elmen IP-200	
lonitoring 🗸 👻	31	
	31	
	32	Enabled
	33	Enabled
	34	Enabled
	35	Enabled
	36	Enabled
	37	Enabled
	38	Enabled
	39	Enabled
	40	Enabled
	41	Enabled
		Ok Cancel

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:

- 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** -> **Cal-endar** 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**.

Save configuration		Calendar Teams Assignment
System Management 🔹 🔻		
Physical Interfaces 🔹		
AN 🔻	Basic Parameters	
Mireless LAN 👻	Operating status	Enabled
Routing 🔹	Active mode	Day O Nickt
VAN 👻		
/PN 👻	Calendar Settings	
irewall 🔹	Monday	08 : 00 16 : 00
BX 🔺		00 : 00 00 : 00
General Settings	Tuesday	
Line Configuration	racoday	
Call Assignment		
Call Routing	Wednesday	08 : 00 16 : 00
Automatic Route Selection		
Internal Phonebook		
Call Records	Thursday	08 : 00 16 : 00
tointononon		00 : 00 00 : 00
external Reporting	Friday	08 : 00 16 : 00
Aonitoring 👻		
	Saturday	
	Sunday	

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 peri- ods are automatically assigned to the <i>Day</i> switching type. The system uses the gaps between the entered periods for the <i>Night</i> 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 .

ve Configuration		Extensions Call Forwa	rding	
em Management 🔹	·		-	
sical Interfaces				
less LAN 🔹	View JOU per page	Filter in All		
ng .	Extension Number	Extension Name	Port Location	12
	20	ISDN	Internal SU	
	21		Internal SU	
- 11	22		internal S0	
	23		internal S0	ø
	24		internal S0	B
neral Settings	25		internal S0	
e Configuration			internal S0	
ernal Numbers	20		Internal CO	
l Assignment	2/		Internal SU	
l Routing	10	Answerphone	analog	P
ernal Phonebook	11	FXS2	analog	
l Records	30	elmeg IP-290	SIP	
l Services	31		SIP	
tenance .	22		CID	
rnal Reporting	32		or	
	33		SIP	
turing	40		CAPI	ø
	41		CAPI	

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.
Curtain Management				Calendar Call Group	s		
system management							
Physical Interfaces	-						
LAN	-	Name	Phonenumber	Day		Night	
Avireless LAN	-	Italia VoIP Provider	003912345678	30	ø	10	P
Routing	-	VoIP-Provider	091130839681	30	ø	10	ø
A/AN	-	ISDN (MSN-0)	2557435	20, 30		10	P
/PN	-	ISDN (MSN-1)	2556295	ISDN Login / Service Login		ISDN Login / Service Login	
irewall	-						
эвх	-						
General Settings							
Line Configuration							
Internal Numbers							
Call Assignment							
Call Routing							



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:

 Go to PBX -> Automatic Route Selection -> Subscriber Numbers / Routings -> New.

Save configuration System Management		Numbers / Routing	Provider
Physical Interfaces 🔹 👻			
LAN 🔫	Basic Parameters		
Wireless LAN 👻	Description	015-mobile	
Routing 🔹		1	
WAN +		Description	Call Number
VPN -	Numbers		015
Firewall 🔹		Add	
PBX 🔺			
General Settings	Call Route	VoIP-Provider: 09113083	9681
Line Configuration			
Internal Numbers			Cancel
Call Assignment			
Call Routing			
Automatic Route Selection			
Internal Phonebook			
Call Records			

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 num- bers 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:

Save configuration		Numbers / F	Routing Provider	
System Management 🔹 👻				
Physical Interfaces 🔹 👻				
LAN 👻	View 30 per p	age 🏾 🔊 Filter in None 🔽 (equal V Go	
Wireless LAN 🔹	Description	Area Code / Number Prefix	Provider	
Routing 👻	015-mobile	015	VolP-Provider: 091130839681	💼 🖉
WAN +	016-mobile	016	VolP-Provider: 091130839681	💼 🖉
VPN +	017-mobile	017	VolP-Provider: 091130839681	💼 🖉
Firewall 🔹	calls to italy	0039	Italia VolP Provider: 003912345678	💼 🖉
PBX	Page: 1, Items: 1 - 1			
General Settings			New	
Line Configuration		_	HCH	
Internal Numbers				
Call Assignment				
Call Routing				
Automatic Route Selection				
Internal Phonebook				
Call Records				

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. <i>ADSL-line</i>
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. <i>sipgate.de</i>

VoIP Configuration (international)

Field	Menu	Value
Name	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. Italia VoIP Pro- vider
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 Telephonenum- ber	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 Telephonenum- ber	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/Rout- ing -> New	e.g . 015-mobile
Number	PBX -> Automatic Route Selection -> Numbers/Rout- ing -> New	e.g. 015
Routing	PBX -> Automatic Route Selection -> Numbers/Rout- ing -> 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.

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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.

Save configuration	>		Access Cont	iguration	External Numbers	VoIP Configuration
System Management	-			•		
hysical Interfaces	-					
IN	-	Basic Parameters				
ireless LAN	-	Access Configurat	ion	Point-to-m	ultipoint 💌	
outing	-			IODN		
VAN	- L	Description		JISDIN		
PN	-			0	k Cance	
rewall	-					
BX	-					
General Settings						
Line Configuration						
Internal Numbers						

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.

Save configuration			Access Configuration	External Numbers	VoIP Configuration
System Management	-				
Physical Interfaces	-				
AN	-	Basic Paramete	rs		
Wireless LAN	-	MSN-0	123456		-
Routing	-				
WAN	-	Service	Lelepho	ny 🔛	
VPN	-		(Ok Canc	el
Firewall	-	S			
РВХ	-				
General Settings					
Line Configuration					
Internal Numbers					

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

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 <i>0</i> . A 24 digit sequence is possible.
Service	Select the desired service.

Relevant fields in the External Numbers menu

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.

Save Configuration	Access Con	nfiguration External Numbers VoIP Configuration
System Management 🔹 👻		
Physical Interfaces 🔹 👻		
LAN 👻	Basic Parameters	
Wireless LAN 👻	Name	sip-provider-1
Routing 🗸 🗸		
WAN 👻	DSL Phonenumber	123457
VPN 👻	Login Name	123457
Firewall 🗸 🗸	Password	Received and the second s
PBX 🔺		
General Settings	UserID	123457
Line Configuration	Registrar/Proxy	sip-provider.de
Internal Numbers		
Call Assignment	Port Registrar/Proxy	5060
Call Routing		
Automatic Route Selection		Advanced Settings
Internal Phonebook		
Call Records	Generate Country Prefix	
Local Services 🔹	De-activate number suppression	
Maintenance -		
External Reporting 🚽 👻	Use user ID as phonenumber	
Monitoring 🗾 👻	Optimize bandwidth for speechcom	mpression
	Use Area Code	
	Upstreaming Device with NAT	
	Clear multiple provider bindings	V
		Ok Cancel

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 <i>Enabled</i> .
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.

Save Configuration		Extensions Call Forwar	rding	
stem Management 💦 🧃				
vsical Interfaces				
N -				
eless LAN 🔹	View 30 per page	Filter in All equal	U0	
ting .	Extension Number	Extension Name	Port Location	(A)
N .	20		internal Su	
	21		internal SU	
wall -	22		internal S0	
wan	23		internal S0	P
κ .	24		internal S0	ø
eneral Settings	25		internal S0	
ine Configuration	26		internal S0	
ternal Numbers	20		Internal CO	P.
all Assignment	27		Internal SU	
all Routing	10	FXS1	analog	(Contraction)
ternal Phonebook	11	FXS2	analog	<i>p</i>
all Records	30		SIP	6
al Services	31		SIP	
ntenance	22		CID	
ernal Reporting	32		or	
	33		SIP	
nitui ing	40		CAPI	P
	41		CAPI	

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 ex- tension (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.

Save configuration			Calendar Teams #	ssignment	
System Management	-				
Physical Interfaces	-				
LAN	-	Description	Phone Number	Call Assignment	
Wireless LAN	-	sip-provider-1	123457	10, 27	6
Routing	-	ISDN (MSN-0)	123456	10, 27	£
WAN	-				
VPN	-				
Firewall	-				
PBX	-				
General Settings					
Line Configuration					
Internal Numbers					
Call Assignment					
Call Routing					

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

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

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).

Save configuration	IS	DN Analogue VolP CAPI Call Forwarding
System Management	•	
Physical Interfaces	•	
LAN	Basic Parameters	
Wireless LAN	Extension	27
Routing	Time	Immodiately
WAN	- Type	
VPN	Target Number (Immediately)	017123456789
Firewall	•	
PBX	A	Ok Cancel
General Settings		
Line Configuration		
Internal Numbers		
Call Assignment		

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.		
Туре	Select the type of call forwarding you want to define for the sub- scriber. Choose whether call forwarding is <i>Direct</i> (immediate), <i>On</i> <i>busy</i> , or <i>On no reply</i> (after approx 15 seconds) or <i>On</i>		
	busy/no repry.		
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.

D 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		
The Lat	NA	Malaa

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. <i>sip-provider-1</i>
DSL Phonenumber	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. 123457
Registrar/Proxy	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. sip.de

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	
Туре	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>
```

Save configuration	ISD	N Analogue VoIP CAPI Call Forwarding	
System Management 🔹 👻			
Physical Interfaces 🔹			
LAN 👻	Basic Parameters		
Wireless LAN 🗸	Extension Number	21 🗸	
Routing -	Extension reamber		
WAN -	Extension Name	elmeg CS290	
VPN -	Primary Telephonenumber	Automatic 💌	
Firewall 🗸			
PBX 🔺	Advanced Settings		
General Settings	Alternative Telephonenumbers		
Line Configuration	Secondary Tolephononymber	Nava	
Internal Numbers	Secondary relephonendriber		
Call Assignment	Third Telephonenumber	None 👻	
Call Routing	General features		
Internal Phonebook	Automatic outside line	Enabled	
Call Records			
Local Services -	Line access authorization		
Maintenance -	Blacklist / Whitelist Enabled		
External Reporting 🗾 👻	SMS / MMS receive	Enabled	
Monitoring 🗾	Record call data	Enabled	
	Keypad	Enabled	
	Suppress outgoing CLIP (CLIR)	Enabled	
		Ok Cancel	

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 tele- phones.
Primary Telephonenum- ber	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>

Save configuration	ISI	ON Analogue	VolP 0	CAPI	Call Forwarding
System Management 🔹 👻					
Physical Interfaces -					
LAN 👻	Basic Parameters				
Wireless LAN 👻	Extension Number	21 🗸			
Routing -				_	
WAN +	Extension Name	elmeg CS290			
VPN -	Primary Telephonenumber	ISDN(MSN-0): 1234	~	
Firewall 🔹					
PBX 🔺		Adv	anced	Sett	ings
General Settings	Atternative Telephonenumbers				
Line Configuration			1024		
Internal Numbers	Secondary Telephonenumber): 1234	~	
Call Assignment	Third Telephonenumber	ISDN(MSN-0): 1234	~	
Call Routing	General festures				
Automatic Route Selection					
Internal Phonebook	Automatic outside line	Enabled			
Call Records	Line access authorization	Unlimited	~		
Local Services 🔹			-		
Maintenance 🔹	Blacklist / Whitelist	Enabled			
External Reporting 🔹 👻	SMS / MMS receive	Enabled			
Monitoring 🔹	Record call data	Enabled			
	Keypad	Enabled			
	Suppress outgoing CLIP (CLIP)	Enabled			

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 tele- phones.

Field	Meaning
Primary Telephonenum- ber	Select an ISDN/analogue line or an SIP provider account to be used to set up the outgoing connections.
Secondary Tele- phonenumber	Select another connection over which the external connection should be established. If the primary number/line is not operat- ing, 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 sipprovider, 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 Telephonenum- ber	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**.

< Enter you	r user name and your valid password:
User name:	Service
Password	
nterface	
C ISDN internal	
C LAN/USB	LAN/USB settings
C Offline	
)ffline	
Configuration file:	D:\Programme\elmeg WIN-
.og-in	
Re-use data for a	nother log-in

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.

Field	Meaning
User Name	Enter <i>Service</i> for User name . Make sure you use the right notation.
Password	Also enter <i>Service</i> 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 <i>LAN/USB</i> 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.

🗞 New - elmeg Professional Config				_ 🗆 🗙
File Data exchange Display ?				
New Open Save Read Sens	Delete Help			
	elmeg T240/T444/T	484		
Configuration	Activate automatic conne Activate fallback	ction establishment with Inter ISP T-Online	Connection Addien	
General information	T-Online	T ··Or	nline-	
Connection is done via	xDSL (PPPoE) C Direct connel		Extended	
Setup of a maximum o	B-channel	Access parameters User name: Password	Access data T-Online	
Disable disconnection	180 seconds after inactivity	outgoing MSN	40 •	
Connection retries	3 30 seconds	IP addresses WAN port Router/Modem:	0.0.0.0 / 32	
Ready	OK.	Cancel		

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 reestablished 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.

Access data	
connection code:	
T-Online number:	
Joint user code:	

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.

System messages	
Router status	
Establish	
Disconnect	
Properties	
About Control-Center	
Help	
Exit	

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.

Router status	×
WAN	CONNECTED
Port:	DSL
Provider:	t-online >>
Duration:	0 h, 9 min, 50 sec
Up-/Download:	5 / 4kB
IP address:	84.130.77.232
DNS1:	217.237.149.142
DNS2:	217.237.150.205
Cause disconnect:	
Termination (0 s)	
Internet connection:	disconnect block
	establish for 60 🗙 min.
	Add B-channel

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 con- nection is displayed; the relevant settings are made in the ISP configuration (release if inactive after/disable release if inact- ive).
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

Configure Internet access

Field	Menu	Value
Display only DSL providers	Network -> Internet access	Enable
Only display call-by-call pro- viders 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 inact- ive	Network -> Internet access -> T-Online DSL-> Dialin parameters	poss. enable (if DSL flat-rate available)
Number	Network -> Internet access -> T-Online DSL-> Connec- tion attempts	3
Interval	Network -> Internet access -> T-Online DSL-> Connec- tion 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**.

Access control	Access control		
Enter yo	ur user name and your valid password:		
User name:	Service		
Password	******		
⊂ Interface ⊂ ISDN internal	LAN/USB settings		
Offline Configuration file:	D:\Programme\elmeg WIN-		
Log-in Re-use data for	another log-in		
	OK Cancel		

Fig. 100: Access control

Relevant fields in the Access control menu

Field	Meaning
User Name	Enter <i>Service</i> for User name . Make sure you use the right notation.
Password	Also enter <i>Service</i> 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 <i>LAN/USB</i> 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.

Constraints Constrain	New Open Save Read Sen	∑ ∛ Delete Help
PAR-type: Access configuration Access configuration Access configuration Access configuration Calif activity Calif activity Ca	Configuration 	Primeg T240/T444/T484 Here you can configue the IP address of the PARX. If you are already summing a network and are using IP addresses from another network, you may addre the IP addresses and network stack of the PARX.
Califord	Access configuration Access configuration Locations Edernal numbers Joint External subscriber Sem configuration Go (Utable access)	accord yr, Mese dorwr, frui IP sodensen my be uad o'n yr ar en m'e LAN. Nere anging he same addest in an targer Mellon anging fel ann an ann an an ann an ann an ann an a
Internet (C Dis server 1/2 , 10 , 0 , 0 , 0 Internet (C Dis server 1/2 , 10 , 0 , 0 , 0 Internet (C Dis server 1/2 , 10 , 0 , 0 , 0 Internet (C Dis server 1/2 , 10 , 0 , 0 , 0 Internet (C Dis server 1/2 , 10 , 0 , 0 , 0 Internet (C Dis server 1/2 , 10 , 0 , 0 Internet Dis server 1/2 , 10 , 0 , 0 Internet Dis server Internet Internet Dis server Internet Internet Server intern	Lail alstroution Lail alstroution Lail Door terminal / contacts Calendar Dial ranges System Park (Open query) Hotline (Direct calls) E	Hot addresse: 254 Extend router is UAN Provides: who had contenses who had of the IP address will be any of the IAN in the induction of the IAN in the induction of the IAN in the induction of the IAN induction. IP address: 192, 190, 0, 254 192 content is UAN 192 content is UAN induction. IP address: 192, 190, 0, 254 192 content is UAN induction. 122 content is UAN induction. 192 content is UAN induction. 120 content is UAN induction. 192 content is UAN induction. 120 content is UAN induction. 192 content is UAN induction. 120 content is UAN induction.
Organic SDN Other parametes Deter	- Seinternal CP - Seiternal C	OIS Peop Parameter Coll Peop Parameter User Peop Parameter Each Pion Each Pion Each Pion Cache rise (no.c) 500 500 Each Pion
The DIIS progressionals to identical name queries, sowing bandwidth and transfer volume and, where valid, accelerating Web site set Address assignment Subtraction of the set		Other parameters Estended
Status System telephone	Network Internet Monter(LAN Address assignment Giller Filter Dramic DNS	The DNS progresponds to identical name queries, saving bandwidth and transfer volume and, where volid, accelerating Web alls se
System telephone	Status	
	System telephone	
	Web latednos	

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**.

File Data exchange Dipley 2 Configuration	🌯 New - elmeg Professional Configurato	or - T240/T444/T484	
Image: Save Read Sond Delete Heip New Open Save Read Sond Delete Heip Configuration Configuration Configuration PARK-type Plances: configuration Contremail CF	Eile Data exchange Display 2		
Configuration Configuration e dense T240/T44/T484 e dense T240 e dense dense e dense dense dense	D 23 → 10 = 10 New Open Save Read Se	nd Delete → 18	
Configuration B ◆ dirage T240/T444/T484 P ABX: Kypte B ◆ dirage T240/T444/T484 P ABX: Kypte B ◆ dirage T240/T444/T484 Configuration C to cations B ◆ distribution C to cations B ◆ distribution B ◆ distribution B ◆ Dial ranges C to catal B ◆ bitmang CF D bit ranges B ◆ bitmang CF D bitmang CF		elmeg T240/T444/T4	484
Status	Configuration Co	The DHCP server integrated in the PAB parameter necessary for the common in clients (PCa). The way the following parameters will as do a server of the common in the parameters configurable behind the buff of you deactivate the DHCP server, you the connected clients (PCs) manually. Parameters for dynamic IP address as Start address: The next available IP address is: DHCP parameters Active DHCP server Number of addresses: Extended parameters:	K is good for the automatic configuration of all ternet access via FBX of the connected acrossically be assigned to the respective acrossically be assigned to the respective acrossically be assigned to the respective on "extended" will have to configure the IP parameters of ignment I 192 1 1680 0 . 50 192 1 1680.54 Extended

Fig. 103: Address assignment



Fig. 104: Network

General settings in the Networkmenu:

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 <i>Use</i> 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 As-	Disable DHCP server en-
	signment	abled

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.

Save configuration			ISDN Configuration MSN Configuration
Assistants	-		
System Management	-		
Physical Interfaces		Basic Parameters	
Ethernet Ports ISDN Ports		ISDN Port	bri-0 💌
ADSL Modem		Service	PPP (Routing) 💙
LAN	-	MSN	200
Wireless LAN	-	MON Decognition	
Networking	-	Montrecognition	Cagne to Left C Left to ragne (DDI)
Routing Protocols	-	Bearer Service	
Multicast	-		OK Cancel
WAN	-		

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.

Save configuration		PPPOE PPTP PPPOA ISDN IP Pools
Assistants	-	
System Management	-	
Physical Interfaces	-	View 20 per page 🔍 🖹 Filter in None 💙 equal 💙 🛛 🚱
LAN	-	IP Pool Name IP Pool Range
Wireless LAN	-	Clients 192.168.0.10 - 192.168.0.20
Networking	-	Page: 1, Items: 1 - 1
Routing Protocols	-	
Multicast	-	
WAN		
Internet + Dialup		
ATM		
Real Time Jitter Contro	ol	

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.

Save configuration		PPPOE PPTP PPPOA ISDN IP Pools
ssistants 👻		
stem Management 🔹 👻		
ysical Interfaces 🔹 👻	Basic Parameters	
-	Description	Einwahl
eless LAN 👻	Connection Type	ISDN 64 kbps
orking 👻	Lies Name	
ng Protocols 🔹 👻	Oser Name	
cast 👻	Remote User (for Dialin only)	Einwahl
•	Password	•••••
rnet + Dialup	Always on	Enabled
Time Jitter Control	Connection Idle Timeout	120 Seconds
-	IP Mode and Routes	1
II -	IP Address Mode	Static Provide IP Address Get IP Address
-	IR Assignment Real	
Services -	IF Assignment Fool	
tenance 👻		Advanced Settings
nal Reporting 🔹 👻		
toring 👻	Block after connection failure for	300 Seconds
	Maximum Number of Dialup Retries	5
	Usage Type	◯ Standard ⑧ Dialin only ◯ Multi-User (Dialin only)
	Authentication	PAP/CHAP/MS-CHAP
	Callback Mode	None ○ Active ○ Passive
	Bandwith on Demand Options	
	Channel Bundling	None 💌
	Dial Numbers	
	Entries	Mode Call Number
	IP Options	
	OSPF Mode	
	Proxy ARP Mode	◯ Inactive ◯ Up or Dormant ④ Up only
	DNS Negotiation	Enabled
		OK Cancel

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

Configure the entry as follows:

- 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> -> is -> Advanced Settings.

Save configuration Assistants +		Interfaces
System Management 🛛 👻		
Physical Interfaces 🔹	Basic Parameters	
LAN	Address Mode	Static ○ DHCP Static ○ DHCP
IP Configuration VLAN		IP Address Netmask
Wireless LAN -	IP Address / Netmask	192.168.0.1 255.255.25 I
Routing Protocols 🔹	Interface Mode	© Untagged (VLAN)
Multicast -	MAC Address	00;:a0:f9:09:68:b6 🛛 Use built-in
VPN -		Advanced Settings
Firewall 🔻	Proxy ARP	Enabled
VoIP	TCP-MSS Clamping	Enabled
Maintenance -		OK Cancel
External Reporting 🔹 🔻		

Fig. 109: LAN -> IP Configuration -> <en5-0> -> is 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.

ave configuration		PPPOE PPTP PPPOA ISDN IP Pools					
istants 🗸							
tem Management 🛛 👻							
rsical Interfaces 🔹 👻	Basic Parameters						
، ۲	Description	Filiale1					
eless LAN 👻	Connection Type	ISDN 64 kbps					
working 👻	LiearName	Zantelo					
rting Protocols 🔹 🔻	Oseriname						
ticast 👻	Remote User (for Dialin only)	Aussenstelle					
N -	Password	•••••					
ternet + Dialup FM	Always on	Enabled					
eal Time Jitter Control	Connection Idle Timeout	120 Seconds					
ب ا	IP Mode and Postes						
wall 🗸 🗸	IP Address Mode	Static O Dravida ID Addrass O Gat ID Addrass					
• •	Précult David						
al Services 👻	Detault Route	L Enabled					
ntenance 👻	Create NAT Policy	Enabled					
ernal Reporting 🔹 🔻	Local IP Address	192.168.0.1					
nitoring 🗸 🗸		Remote IP Address Netmask Metric					
	Route Entries	192.168.1.0 255.255.255 1 💌					
		Add					
		Advanced Settings					
	Block after connection failure for	300 Seconds					
	Maximum Number of Dialup Retries	5					
	Usage Type	🔿 Standard 💿 Dialin only 🔿 Multi-User (Dialin only)					
	Authentication	PAP/CHAP/MS-CHAP					
	Callback Mode	One ○ Active ○ Passive					
	Bandwith on Demand Options						
	Channel Bundling	None 💌					
	Dial Numbers						
		Mode Call Number					
	Entries	Outgoing 🛩 210 🛍					
		Add					
	IP Options						
	OSPF Mode	● Passive ○ Active ○ Inactive					
	Proxy ARP Mode	Inactive ○ Up or Dormant ○ Up only					
	DNS Negotiation	✓ Enabled					

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

Configure the entry as follows:

- 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 Zeit6lt;1ms TTL=63
```

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

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</en5-0>	Enabled

.

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. ModeOutgoing and Call Number210

Connection of Field Office

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 AD-SL 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.

Save configuration			PPPOE PPTP PPPOA ISDN IP Pools		
Assistants	-				
System Management	-				
Physical Interfaces	-	Basic Parameters			
LAN	-	Description	T-Online		
Wireless LAN	-	PPPoE Mode	Standard Multilink		
Networking	-				
Routing Protocols	-	PPPoE Ethernet Interface	ethoa5U-U 💟		
Multicast	-	User Name	t-online.de		
WAN	•	Password	••••••		
Internet + Dialup ATM		VLAN	Enabled		
Real Time Jitter Control		Always on	Enabled		
VPN	-	Connection Idle Timeout	300 Seconds		
Firewall	-	D Made and Darker			
VolP	-	iP Wode and Rodles			
Local Services	-	IP Address Mode	◯ Static		
Maintenance	-	Default Route	✓ Enabled		
External Reporting	-	Create NAT Policy	✓ Enabled		
Monitoring	-		Advanced Settings		

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.

ave connightation 🥖		PPPOE PPTP PPPOA ISDN IP Pools
listants 👻		
tem Management 🛛 👻		
sical Interfaces 🔹 Basic Pa	rameters	
Descrip	tion	Freenet
eless LAN - Conner	tion Type	ISDN 64 kbps
working -		
iting Protocols -	ame	
ticast - Remote	e User (for Dialin only)	J
N A Passwr	ord	•••••
ternet + Dialup Always	on	Fnabled
al Time Jitter Control	tion Idla Timoout	120 Seconds
	and Postas	
wall TP Mode :	anu noulds	Onest Operate Distance Operation States
P -	ess mode	Static O Provide IP Address @ Get IP Address
al Services - Default	Route	Enabled
ntenance - Create	NAT Policy	✓ Enabled
ernal Reporting 🗾 👻		Advanced Settings
nitoring 👻		Advanced Settings
Block at	fter connection failure for	30 Seconds
Maximu	m Number of Dialup Retries	5
Usage	Туре	⊙ Standard ○ Dialin only ○ Multi-User (Dialin only)
Authent	ication	
Callbac	k Mode	None ○ Active ○ Passive
Bandwitt	h on Demand Options	
Channe	el Bundling	None
Dial Num	bers	· · · · · · · · · · · · · · · · · · ·
Entries		Mode Call Number Outgoing ♥ 0101901929
IP Option	s	
OSPF N	lode	Passive Active Inactive
Proxy A ¹	RP Mode	© Inactive ○ Up or Dormant ○ Up only
DNS N	egotiation	✓ Enabled

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.

Save configuration		IP Routes Options								
Assistants 🔹					•					
System Management 🔹 👻										
Physical Interfaces 🔹 👻	View 20 p	erpage 🔍 🚿 Filter	in None	💌 equal	v		Go			
LAN -	Destination IP Address	Netmask	Gateway	Interface	Metric	Extended Route	Туре	Protocol		
Wireless LAN 🔹	10.0.0	255.255.255.0	10.0.0.211	BRIDGE_BR0	0		Direct	Local	<u></u>	
Networking 🔺	17216960	255 255 248 0	17216 08183	LAN EN5-0	0		Direct	Local	龠	
Routes	172.10.30.0	233.233.240.0	172.10.30.103		-					
NAT	0.0.0	0.0.0	0.0.0.0	WAN_T-ONLINE	1		Indirect	Local	面	\mathbb{P}
Load Balancing	0.0.0.0	0.0.0.0	0.0.0.0	WAN_FREENET	1		Indirect	Local	盦	
QoS	Page: 1 Items: 1	- 4			-					_
Access Rules										
Routing Protocols 🔹 👻				New	\supset					

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

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

Save configuration -			IP Routes Options
System Management 🛛 👻			
Physical Interfaces 🔹	Rou	ute Class	
LAN -	Ext	tended Route	Enabled
Wireless LAN 👻	Rou	ute Parameters	
Networking 🖌	Ro	ute Type	Default Route 🕑
Routes NAT	Inte	erface	WAN_T-ONLINE
Load Balancing	Ga	teway	0.0.0.0
QoS Access Rules	Me	tric	1 💌
Routing Protocols 🔹			
Multicast 🗸			(OK) Cancel

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 image 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

O1:11:46 INFO/INET: dialup if 10001 prot 1 192.168.100.2:2048->62.146.2.103:19036

O1:11:48 DEEUG/PPP: T-Online: event: 3, status: 0 (5) \rightarrow 1 (5)

O1:11:48 DEEUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000

O1:11:48 DEEUG/PPP: T-Online: send PPPoE call identified

O1:11:55 DEEUG/PPP: T-Online: send PPPoE Active Discovery Initiation (PADI,interface: 50000

O1:11:55 DEEUG/PPP: T-Online: 2/0/2/1: PPPoE call identified

O1:11:55 DEEUG/PPP: T-Online 2/0/2/1: PPPoE session established

O1:11:55 DEEUG/PPP: layer 1 type pppoe

O1:11:55 DEEUG/PPP: T-Online: event: 16, status: 1 (5) \rightarrow 8 (1)

O1:11:55 DEEUG/PPP: T-Online: outgoing connection established

O1:11:55 DEEUG/PPP: T-Online: 0.022542/2/5: PPPoE call identified

O1:11:55 DEEUG/PPP: T-Online: 0.022542/2/5: PPPoE call identified

O1:11:55 DEEUG/PPP: T-Online: local IP address is 84.146.232.180,remote is 217.0.116.91

O1:11:55 DEEUG/INET: NAT: new outgoing session on ifc 10001 prot 1

192.168.100.2:512/84.146.232.180.32769 \rightarrow 62.146.2.103:0
```

xDSL link fails

```
01:12:09 DEBUG/ATM: DSP_ATM_TC_NOSYNC
01:12:12 DEBUG/ATM: ads13-0:ATM delineation lost; initiating DSL retrain
01:12:12 DEBUG/ATM: ads13-0: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,
                   O charging units, O 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 (PADL 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: ads13-0: 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;->
                    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 61t;001019019296gt;

01:12:50 DEBUG/PPP: Iayer 1 type hdic, 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 Inter- face	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	ModeOutgoing with Call Number e.g. 0101901929

Adjusting the metric

Field	Menu	Value
Metric	Network -> Routes -> IP Routes -> <wan_t-online> -></wan_t-online>	e. g. 1
Metric	Network -> Routes-> IP Routes -> <wan_freenet> -></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 adminis**tration console :

Bit Acton Serve Serve Configuration Serve Configuration Serve Configuration Matcher Serve Configuration Bell Contact Bell Contact Bell Contact Bell Contact Bit Matcher Bell Contact Bell Contact Bell Contact Bell Contact Bit Contact Bell Contact Bell Contact Bell Contact Bell Contact Bit Contact Bell Contact Bell Contact Bell Contact Bell Contact Bit Contact Bell Contact Bell Contact Bell Contact Bell Contact	Exchange-Verwaltungskonsole			_ _ _×
	Elle Action Yew Help			
Microsoft Educacy Be Unified Metssaging 2 object Actives Corporation Configuration Microsoft Microsoft Microsoft Microsoft Actives Microsoft Microsoft Microsoft Actives Actives Microsoft Sever Configuration 2 DPC-Microsoft Microsoft Sever Configuration 2 DPC-Microsoft Microsoft Behaviored Microsoft DPC-Microsoft Microsoft Microsoft Sever Configuration 2 DPC-Microsoft Microsoft Behaviored Microsoft DPC-Microsoft Microsoft Microsoft Behaviored Microsoft DPC-Microsoft DPC-Microsoft Microsoft Behaviored Microsoft Disconected Microsoft Microsoft Microsoft Behaviored Microsoft				
Image: Second	23 Microsoft Exchange	👫 Unified Messaging		Actions
Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configuration Image: Sever Configurati	- 2 Melhox	UM Dial Plans UM IP Gateways UM Mailbox Polic	ies UM Auto Attendants	Unified Messaging
Abdresserver	- Client Access	UM Dial Plan # Digits	Associated LM Servers	Rev UM Dial Plan
Control Model and a second secon	Hub Transport	DP-nbg 3	EXCHANGE07	🗬 New UM IP Gateway
Motor Gord Access Gord Acces Gord A	E- Server Configuration	DP-pene 3	EXCHANGE07	1 New UM Mailbox Policy
Ho fork Access Ho forkactor Mode Access Mode Acce	- Malbox			New LIM Auto Attendant
Were Respect of Organization Beck Respect of Organization Model Beck Beck Beck Beck Beck Beck Beck Beck Beck Beck Beck Beck <td>Client Access</td> <td></td> <td></td> <td>Byport List</td>	Client Access			Byport List
Mathewine Graphics	- Infied Messaging			View •
Bothston Group Machine Machine Tradbox Tradbox	- 👪 Malbox			🖻 Refresh
T cobox				😭 Help
	Lang Deconnected Malbox	1		
				1

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...

Name UNA Diret Plan	New UM Diel Dies
Completion	This wizard helps you create a UM dial plan for use by Microsoft Exchange Unified
Completion	Messaging. A dial plan is a grouping of unique telephone extension numbers.
	Name:
	demo_dialplan
	Number of digits in extension numbers:
	3
	101 hours
	Telephone Extension
	VolP security:
	Unsecured
	(j) After you create a new dial plan, the dial plan must be added to one or more UM servers before it will be used.

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.

Completion	The wizard completed successfully. Click Finish to close this wizard. Elapsed time: 00:00:01 Summary: 1 tentish 1 successful (Jalied	
	The demo_dialplan Of Completed	*
	Exchange Management Shell command completed: new-UMDialPlan-Name 'demo_dialplan' Number0/DigitsInExtension '3'-URIType 'TeExtn'-VoIPSecurity Unsecured'	
	Elapsed Time: 00:00:01	

Fig. 119: New UM dial plan

Click on Finish to close the wizard.

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

emo_dialplan f	Properties			2
Settings	Dialing I	Rule Groups	Dialir	ng Restrictions
General	Subscriber A	ccess	Dial Codes	Features
Welcome Gre	etings			
Welcome gre	eting:			
Use default g	greeting			Modify
Informational.	announcement			
Informational	announcement is d	isabled		Modify
1				
Associated St	ubscriber Access N	mbers		
Enter the tole	abona number to po	encipto:		
	priorie riumber to as	suciale.		
Add /	Edit 🗙			
600				
1				
		-		
	OK	Cancel		Help

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.

demo_dialplan Prop	erties		×
Settings General	Dialing Rule Groups Subscriber Access	Dialing Re Dial Codes	strictions Features
Outgoing Configur <u>O</u> utside line accee: (Example: 9) International acce (Example: 011 for <u>National number p</u> (Example: 0 for fro	ation ss code: the United States) refix ance, 1 for the United States) onte	0	
Econitry/Hegion c (Example: 81 for J Incoming Configur	ode: apan, 1 for United States) ation	43	
In-country/region (Example: 142555 International numb (Example: 4420xx;	number format: 50198) ver format: xxxxxx)	0	
	OK Cancel	Apply	Help

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 codefield, 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.

no_dialplan Pro	perties		
General Settings	Subscriber Access	Dial Codes	Features
Dial <u>by</u> name prim Dial by name <u>sec</u> Audio <u>codec</u> : <u>Operator</u> extensio	n:	Last First SMTP Address G.711 810	
Logon <u>f</u> ailures be Timeouts and Re <u>M</u> aximum call dur Maximum <u>r</u> ecordir	fore disconnect: tries ation (min): ng duration (min):		3 30 20
Recording idle tin Input idle timeout Input r <u>e</u> tries:	ie-out (sec): (sec):		5 5 3
Input failures befo Language Setting Default Janguage	rre <u>d</u> isconnect: ;s:	English (United St	3 ates)
	OK Cano	el Apply	Help

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).

demo_dialplan Pro	perties			
General Settings	Subscriber Dialing	Access g Rule Groups	Dial Codes	Features ng Restrictions
In-Country/Regio	n Rule Groups Edit 🗡			
Name		Number Mask		Dialed Number
International Rule	e Groups —			<u>}</u>
Name		Number Mask		Dialed Number
international		00 [×]		00*
	OK	Cancel		Help

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.

emo_dialplan Pro	perties				×
General	Subscriber Act	cess D	ial Codes	Features	1
Settings	Dialing R	ule Groups	Dialing F	Restrictions	
Allow calls to users within the same dial plan					
Allow calls to	Allow calls to extensions				
Select allowed in	-country/region ru	le groups from di	al plan:		
🛟 A <u>d</u> d 🗡					
Select allowed international rule groups from dial plan:					
international					
	OK	Cancel	Apply	Help	

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.

ie Action View Help → 🔁 🗷 😭 🖬					
	Suthified Messee Casho Fiker Name - EXCHANGED7 EXCHANGED7 Progeriles General System Settings Associated Dia Plans - Cashod Dia Plans - Cashod Dia Plans - Cashod Dia Plans - D Plans D Plans	Ing Role Hub Transport, Clent Acc UM Seting: Select: Dial Plan Elle Year Search: None ~	1 obji Version 9.1 (Build 240.6) Xersion 9.1	Cet Actions Unified Mess E Very t Very B Refresh B Refresh E E Help EXCHANGEO	rz metłu
	Miscelaneous Configural Prompt languages: I Maximum concurrent	in Ornos in OPpone	33	DP-rog virtualities (or DP-peine virtualities for	Kwelk

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.

Completion	This missed halos new search a LIM ID estamon for use he Missess's Fush man Hullad			
	Missaging UM IP gateways represent the connection between a physical gateway or IP PBX and United Messaging.			
	Name:			
	demo_UM-GW			
	IP Address:			
	192 168 10 222			
	5 1 4004022			
	Example: 192.168.10.10			
	C Euly qualified domain name (FQDN):			
	Example: smarthost.company.com			
	Dial plan			
	demo dialolan			
	If a dial plan is selected, a default hunt group will be created to associate this new UM.			

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 administra-tion console**.

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

 New UM Hunt Group Completion 	New UM Hunt Group This wizad helps you create a UM hunt group for use by Microsoft Exchange United Messaging. A hunt group represents a connection between a UM IP gateway and a dial plan, and associates the dial plan with the pilot identifier specified below.
	Associated UM IP gateway:
	demo_UM-GW
	Name:
	mailbox_demo
	Dial plan:
	demo_dialplan Brow
	Pilot identifier:
	600

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**.

🔀 Exchange-Verwaltungskonsole						<u>_</u> _×
Et Action Yew Help						
Microsoft Exchange	👪 Unified Messaging					Actions
Grganization Configuration Gild Mailbox Gild Client Access	UM Dial Plans UM IP Gateway	s UM Malbox Po	icies UM Auto Atb	endants		Unified Messaging 🔺
	Name	UM Dial Plans	Pilot Identifier	Address	Status	Rew UM Dial P
Hub Transport	🖻 📅 demo_UM-GW			192.168.10.222	Enabled	Mew UM IP Ga
Server Configuration	malbox_demo	demo_dialplan	600	102 169 10 252	Enabled	New UM Mailb
- 🔁 Malbox	Exchange-mailto	DP-peine	998	192.100.10.255	Enabled	New IMALto
- R. Client Access	🗆 📅 UM-GW-Nbg			192.168.10.254	Enabled	
- Do Hub Transport	HG - Auto Attend	DP-nbg	999			S Expand All UM
E- & Recipient Configuration	🖀 HG - Nbg	DP-nbg	800			Collapse Al U
- Maibox						By Export List
- Mail Contact						View +
Disconnected Mailbox						Refresh
sitti Toolbox						😭 Help
						mailbox_demo 🔺
						X Remove
						😭 Help
						1254
				1		
						I

Fig. 128: UM IP Gateways

Configuration of a UM Mailbox Policy

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

mo_dialplan Defa	ult Policy Prope	rties		×
General Message T	ext PIN Policies	Dialing Restr	rictions	
demo. du	Jolan Dafault Rolic			
	apian b craak r oik	-21		
Associated UM dia	l plan: demo_di	ialplan		
Modified:	Montag,	25. Mai 2009	15:07:20	
Maximum greeting (duration (minutes):		[5
Allow missed c	all <u>n</u> otifications			
	04	e 1 (A 1	1

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).

demo_dialplar	n Default Policy Properties	×
General Me:	ssage Text PIN Policies Dialing Restrictions	
Eax identity	x.	
Microsoft E	Exchange	
Text sent w	vhen a UM mailbox is enabled:	
Willkomme	en bei Microsoft Exchange UM	
		-
Text sent w	when a PIN is reset:	
Ihre PIN w	urde zurückgesetzt!	A
		-
Text include	led with a <u>v</u> oice message:	
neue Spra	chnachricht!	<u> </u>
		-
Text include	led with a fax <u>m</u> essage:	
neues FAX	4	<u>^</u>
		-
,		
	OK Cancel Apply	Help

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.

demo_dialplan Defa	ult Policy Prop	oerties		×
General Message T	ext PIN Policie	es Dialing Rest	ictions	
Minimum PIN lengt	h:		2	
PIN lifetime (da	iys):			
Number of previous	s PINs to disallo	AC	5	
Allow common	patterns in PIN			
Failed Logons				
Number of inco reset:	orrect <u>P</u> IN entrie	s before PIN is a	utomatically 5	
Number of inco locked out:	orrect PIN entrie	s before UM mail	pox is 15	5
	OK	Cancel	Apply	Help

Fig. 131: PIN Policies

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

demo_dialplan Default Policy Properties	×			
General Message Text PIN Policies Dialing Restrictions				
Allow calls to users within the same dial plan				
Allow calls to extensions				
Select allowed in-country/region rule groups from dial plan:				
4g Add 🗡				
national				
Select allowed international rule groups from dial plan:				
🛟 Add 🗡				
international				
OK Cancel Apply Help				

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 **Pi-Iot 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.

moduction	Extension Configuration	
Extension Corrigutation Enable United Metasging Completion	 A Atomatically generated mabbin externion ¹ groundly entered mabbins externion: ¹ BP Resource dentifier For a SPI UTIL data jata, their the SJP address of the ous the SIP UTIL data jata, their the SJP address of the ous the start address of the output data jata. Their for Automatically-generated SJP encourse dentifier Manyaby entered SJP or E. 164 address 	720 In (noampe) the E. 154 address of the user

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.

Save configuration	Ac	ccess Configuration External Numbers VolP Configuration
System Management 🔹 👻		
Physical Interfaces 🔹 👻		
LAN 🔫	Basic Parameters	
Wireless LAN 👻	MSN-0	6898925
Routing 🔹		
WAN -	Service	Telephony
VPN -		
Firewall 👻		
PBX 🔺		
General Settings		
Line Configuration		
Internal Numbers		
Call Assignment		
Call Routing		
Automatic Route Selection		
Internal Phonebook		
Call Records		

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.
	neodon, e.g. 0090920, 0090920 and 0090927 J.
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 ->

Save configuration	ISD	N Analogue VolP CAPI Call Forwarding
System Management 🔹 👻		
Physical Interfaces 🔹 👻		
LAN 👻	Basic Parameters	
Wireless LAN 👻	Extension Number	600 🗸
Routing 🗸 🗸		
WAN -	Extension Name	ExchangeServer
VPN -	Primary Telephonenumber	ISDN(MSN-0) : 6898925 💌
Firewall 👻	User Name	600
PBX 🔺	Recoword	
General Settings	Fassword	
Line Configuration	Allowed Location	Any 💌
Internal Numbers		
Call Assignment	Advanced Settings	
Call Routing Automatic Poute Selection	·	
Internal Phonebook	Alternative Telephonenumbers	
Call Records	Secondary Telephonenumber	None
Local Services 👻	Third Telephonenumber	None
Maintenance 🗾 👻	VolP settings	
External Reporting 🗾 👻	Static Host	✓ Enabled
Monitoring 👻	Static Host Address	192.168.10.101
	Static Host Port	5065
	Transport Protocol	[®] UDP ○ TCP
	Codec Settings	
	Codec Proposal Sequence	Default 💌
		OK Cancel

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. <i>Ex- changeServer</i> .
Primary Telephonenum- ber	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 evalu- ated 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 <i>enabled</i> .	
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**.

ve configuration		Calendar Teams Assignment
em Management 🔹 👻		
ical Interfaces 🔹 👻		
•	Team00 Night	
less LAN 👻	Name	6898925-Exchange07
ing 👻	Internet assistant	Josoboza Excitatigost
	internarassignment	
-	10 FXS1	Enabled
/all 👻	11 FX82	Enabled
	20	Enabled
ieral Settings	21	Enabled
Configuration		
rnal Numbers	22	Enabled
Assignment	23	Enabled
omatic Route Selection	24	Enabled
rnal Phonebook	25	Enabled
Records	25	
Services 🔹	26	Enabled
tenance 👻	27	Enabled
nal Reporting 🔹 👻	35	Enabled
toring 👻	36	Enabled
	37	Enabled
	38	Enabled
	39	Enabled
	40	Enabled
	41	Enabled
	600 ExchangeServer	✓ Enabled
	720 MMustermann	Enabled
	721 user1	Enabled

Fig. 137: PBX -> Call Assignment -> Teams -> New
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 <i>Enabled</i> .

Relevant fields in the Call Routing menu

The complete configuration looks like this:

Save configuration	Calen	dar Teams Assic	inment				
System Management 🛛 👻							
Physical Interfaces 🔹 👻							
LAN 🔫	View 30 per page < >> Fitter in None	V equal V		Go			
Wireless LAN 👻	Name	Description	Day		Night		
Routing 🗸 🗸	6898925-Exchange07	Team00	600	6	600		
WAN -	6898926-MMustermann	Team01	720		720		盦
VPN -	6898927-user1	Team02	721	\$	721	ø	盦
Firewall 👻	Page: 1, Items: 1 - 3						
РВХ		New					
General Settings							
Line Configuration							
Internal Numbers							
Call Assignment							
Call Routing							
Automatic Route Selection							
Internal Phonebook							
Call Records							

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 Exten- sion
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 sec- ondary 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 be- fore 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> Di- aling Rule Groups	national,0*,0*
International Rule Groups	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling Rule Groups	international,00*, 00*
Allow calls to uses within the same dial plan	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling Restrictions	Aktiviert
Allow calls to exten- sions	Organization Configuration -> Unified Messaging -> New UM Dial Plan> Di- aling 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	Organization Configuration -> Unified	e.g. demo_UM-GW
gateway	Messaging -> New UM Hunt Group	

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 en- abled	Organization Configuration -> Unified Messaging -> New UM Mailbox Policy - > Message Text	e.g. Welcome to Mi- crosoft 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 mes- sage!
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 exten- sions	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 -> Recipi- ent Configuration -> Mailbox	e.g. demo_dialplan Default Policy
Manually specify PIN	Organization Configuration -> Recipi- ent Configuration -> Mailbox	Your PIN
Manually entered mailbox extension	Organization Configuration -> Recipi- ent 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 Tele- phonenumber	PBX -> Internal Numbers -> VoIP ->	e.g . ISDN (MSN-0): 6898925
Static Host	PBX -> Internal Numbers -> VoIP ->	Aktiviert
Static extension ad- dress	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 Ex- changeServer Ac- tivated, 720 JEveryman Activ- ated 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

Сору

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 .

Save configuration		Options
System Management 🛛 👻	-	
Physical Interfaces 🔹 👻	Currently Installed Software	
AN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00
/ireless LAN 👻	System Logic	11
outing 👻	ADSL Logic	
/AN 🔫	Software and Configuration Options	
PN 🔫	Action	Conv
rewall 👻		
olP 👻	Source File Name	boot
ocal Services 👻	Destination File Name	Firewall
aintenance 🔺		
Diagnostics		Go
Software & Configuration		
Reboot		

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 .

Save configuration		Options
System Management 🔹 👻		
Physical Interfaces 🔹 👻	Currently Installed Software	
_AN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00
Vireless LAN 👻	System Logic	11
Routing 👻		
VAN 👻	Software and Confiduration Options	
/PN 🔫	Action Delete configuration	
irewall 🔻		
′olP ▼	Select file	Firewall
ocal Services 👻	Go	
Aaintenance 🔺		
Diagnostics		
Software & Configuration		
Reboot		

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 .

Save configuration		Options	
System Management 🛛 👻			
Physical Interfaces 🔹 👻	Currently Installed Software		
AN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00	
Vireless LAN 👻	System Logic	11	
outing 👻	ADSL Logic		
IAN 🔫	Software and Configuration C	Software and Configuration Options	
PN 🔫	Action	Rename	
rewall 👻			
olP 👻	Selectfile		
ocal Services 👻	New File Name:	Firewall	
laintenance 🔺	-		
Diagnostics		Go	
Software & Configuration			
Reboot			

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 .

Save configuration		Options	
System Management 🛛 👻	-		
Physical Interfaces 🔹 👻	Currently Installed Software		
LAN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00	
Wireless LAN 🔹	System Logic	11	
Routing 🔹	ADSL Logic		
WAN -	Software and Configuration Options		
VPN -	Action	Export configuration	
Firewall 🔹			
VolP -	Current File Name in Flash	Firewall	
Local Services 🔹 👻	Include certificates and keys	✓ Enabled	
Maintenance 🔺	Configuration Encryption	Enabled Password:	
Diagnostics		,	
Software & Configuration		Go	
Reboot			

Fig. 143: Maintenance -> Software & Configuration -> Options

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.

Relevant fields in the Options menu

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.



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 .

Save configuration		Options
System Management 🛛 👻		
hysical Interfaces 🔹 👻	Currently Installed Software	
AN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00
Vireless LAN 👻	System Lonic	11
touting 👻 👻	ADSL Logic	
WAN -	Software and Configuration Options	
VPN 👻	Action	Import configuration
irewall 👻		
/oIP 👻	Configuration Encryption	✓ Enabled Password:
.ocal Services 🚽	Filename	Browse
Maintenance 🔺		
Diagnostics		Go
Software & Configuration		
Rehoot		

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 .

Save configuration		Options		
System Management 🔹 👻				
Physical Interfaces 🔹 👻	Currently Installed Software			
LAN 🔫	BOSS	V.7.8 Rev. 2 IPSec from 2009/03/17 00:00:00		
Wireless LAN 🔹	System Logic	1.1		
Routing 🔹 🔻	ADSL Logic			
WAN 👻	Software and Configuration C	Software and Configuration Options		
VPN -	Action	Update system software		
Firewall 👻	0			
∕oIP ▼	Source Location			
Local Services 🔹 👻	Filename	Browse		
Maintenance 🔺				
Diagnostics	(Go)			
Software & Configuration				
Reboot				

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

Сору

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Сору
Source File Name	Maintenance -> Software & Config- uration ->Options	boot
Destination File Name	Maintenance -> Software & Config- uration ->Options	e.g. <i>Firewall</i>

Delete configuration

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Delete configura- tion
Select File	Maintenance -> Software & Config- uration ->Options	e.g. Firewall

Rename

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Rename
Select File	Maintenance -> Software & Config- uration ->Options	e.g. boot
New File Name	Maintenance -> Software & Config- uration ->Options	e.g. Firewall

Export configuration

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Export configura- tion
Current File Name in Flash	Maintenance -> Software & Config- uration ->Options	e.g. <i>Firewall</i>

Import configuration

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Import configura- tion

Field	Menu	Value
Filename	Maintenance -> Software & Config- uration ->Options	Browse

Update system software

Field	Menu	Value
Action	Maintenance -> Software & Config- uration ->Options	Update system software
Source Location	Maintenance -> Software & Config- uration ->Options	e.g. Locale File
Filename	Maintenance -> Software & Config- uration ->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)	<pre>File(rw)</pre>	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 "<all>" 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 "<all>" 05 "<bytes free>" 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.

Syslog Daemon		X
File arrangement		
Log files C\bintec\bintec.log Add Change Remove View	Subject Level Kernel. Debug User. Debug Demon. Debug Authenicistion. Debug SiDN. Debug INET. Debug INET. Debug INET. Debug CAPI. Debug Bridge. Debug Configuration. Debug SIMP. Debug X.21. Debug Token Ring. Debug Token Ring. Debug Ether Net. Debug Radius. Debug Z.21. Debug Configuration. Debug Configura	OK Cancel Help

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.

Subject / Priority selv	c Level
Kernel * ▲ User * Demon * Authentication * Accounting * ISDN * ISDN * ISDN * INET * X25 * IPX * CAPI * CAPI * ⊂	✓ Debug ✓ Info ✓ Notice ✓ Maning ✓ Error ✓ Critical ✓ Adat
Select all Subjects	Emergency

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.

Save configuration		Syslog Servers
System Management	•	
Physical Interfaces	-	
LAN	Basic Parameters	
Wireless LAN	P Address	192.168.0.2
Routing	• [1] [
WAN	- Level	Debug
VPN	- Facility	local0 💌
Firewall	- Timestamp	None ○ Time ○ Date & Time
VolP	Protocol	
Local Services	Type of Meesages	O Suptan O Accounting @ Suptan & Accounting
Maintenance	-	System C Accounting System & Accounting
External Reporting	•	OK Cancel
Syslog		
IP Accounting		
E-mail Alert		
SHMP		
Activity Monitor		

Fig. 151: External Reporting -> Syslog-> Syslog Servers -> New

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.

Relevant fields in the Syslog Servers menu

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.

😴 DIME Tools - [Syslog Daemon]	×
🚔 Elle View Configuration Window Help	_ _ 8 ×
🛎 🖬 🕾 🔯 🥕 🌉 🖭 🔏 🗶 🧶 🆓	2 🟦 🛛 🛠 😽
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{llllllllllllllllllllllllllllllllllll$
x	
For Help, press F1	

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.

Save configuration	System Messages
System Management 🔹 👻	,,
Physical Interfaces 🔹 👻	
LAN -	Automatic Refresh Interval 300 Seconds Apply
Wireless LAN 👻	
Routing -	Maximum Number of Syslog Entries 50
WAN -	Maximum Message Level of Syslog Entries Information
VPN -	View 20 per page 💷 Filter in None 💌 equal 💌 😡
Firewall 🗸 🗸	# Date Time Level Subsystem Message
VolD	1 1970-01-01 00:00:05 Information Configuration system r232bw started at Thu Jan 1 0:00:05 1970
VOIP V	2 1970-01-01 00:00:05 Information INET sshd: pid 44 - listening on 0.0.0.0 port 22.
Local Services 🔹	3 1970-01-01 00:00:05 Information IPSec init: starting
Maintenance 🔹 👻	4 1970-01-01 00:00:05 Information IPSec BinTec ipsecd version 3.0 Copyright (c) 1996-2009 by Funkwerk
External Reporting 🚽	Enterprise Communications GmbH
Manifesting	5 1970-01-01 00:00:05 Information IPSec init: running
Monitoring	6 1970-01-01 00:00:00 Debug ATM loading dspfile <xey-adsli.xev> failed, reason 1: <file found="" not=""></file></xey-adsli.xev>
Internal Log	7 1970-01-01 00:00 Debug ATM unable to get five image
IPSec	
ISDN/Modem	8 1970-01-01 00:00:00 Debug ATM Error: PTIDSL pointer invalid
Interfaces	9 1970-01-01 00:00:00 Information Configuration boot configuration loaded
WLAN	Page: 1, Items: 1 - 9

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.

Save configuration		Options
System Management	-	
Physical Interfaces	-	
AN	Basic Parameters	
Vireless LAN	Monitored Interfaces	○ None ● Physical ○ Physical/WAN/VPN
outing	Condinformation to	Circle Heat 1021020
NAN	- Send information to	
/PN	 Update Interval 	1 Seconds
irewall	UDP Destination Port	2107
olP	- Desculard	
ocal Services	r Password	
Aaintenance	-	OK Cancel
External Reporting	•	
Syslog		
IP Accounting		
E-mail Alert		
SNMP		
Activity Monitor		

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.

- 1232bw		Route	er configuration
	Name: [r232bw	
	Туре: [R232bw	
	Address:	192.168.0.1	
	Ser	d <u>command</u>	
	□ Taskbard	ricon	Remove from tree

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**.

Activity Monitor configuration Windows History Graph IP Help					
Y Network ⊡ @ r232bw		WAN in	terface confi	guration	
	State	RX	т×	abs. RX	a
× unknown interface (2-0) × unknown interface (3-0) × CM-1BRI (4-0) → ISDN × ethoa50-0 × ethoa50-0-llc	up	0.0%	0.0%	1484743	4
× ethoa50-0-nov	<u> </u>				•
ethoa5U-U-snap	interface :	state: up	(00:05:2	9)	
× vss2-0 × vss2-0-lic × vss2-0-lic	🔲 Is Internet S	Service <u>P</u> rovi	der		
× vss2-0-snap	🔲 <u>S</u> how sepa	rate window	🗖 Add t	o Composition	Window
	Taskbar config	uration tatus area	Reg	jove from tree	
		ок (Apply		incel

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.

Save configuration		SNMP Trap Options SNMP Trap Hosts
System Management		
Physical Interfaces		
LAN -	Basic Parameters	
Wireless LAN 👻	SNMP Trap Broadcasting	✓ Enabled
Routing 🔹	SNMP Trap UDP Port	162
WAN .		
VPN -	SNMP Trap Community	snmp-Trap
Firewall -		
VolP -		
Local Services 🚽		
Maintenance -		
External Reporting		
Syslog		
IP Accounting	4	
E-mail Alert		
SHMP Antibit Manifest	4	
Activity Monitor		

Fig. 158: External Reporting -> SNMP-> SNMP Trap Options

Relevant fields in the SNMP Trap Options menu

Field	Meaning
SNMP Trap Broadcast- ing	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.

	-		
Save configuration			SNMP Trap Options SNMP Trap Hosts
System Management	-		
Physical Interfaces	-		
LAN	-	Basic Parameters	
Wireless LAN	-	IP Address	192.168.0.2
Routing	-		
WAN	-		OK Cancel
VPN	-		
Firewall	-		
VolP	-		
Local Services	-		
Maintenance	-		
External Reporting	-		
Syslog			
IP Accounting			
E-mail Alert			
SNMP			
Activity Monitor			

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

w Gateway	
IP address:	OK
192.168.0.1	Cancel

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.

SNMP Manager - [Trap Monitor1]		
Browse Network Monitor Window Help		_ <u>_</u>
<u>*</u> @ @ & # # # # # # # # # # # # # # # # #		
Listening for SNMP traps on port 162 04/20/06 17:30:29 agent address: time stamp: crap: if Index: if Descr: if Index: ifOperStatus: ifOperStatus: sysDescr: sysName:	192.168.0.1 0 04:42:17.0 mmp-Trap link down 0001 Internet ppp down R232bw r232bw2	
For Help, press F1	Tx @ Rx @	

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 Monit- or->Options	e.g. <i>Physical</i>
Send information to	External Reporting->Activity Monit- or->Options	e.g . <i>Single Host</i> with 192.168.0.2
Update interval	External Reporting->Activity Monit- or->Options	e.g. 1

SNMP traps

Field	Menu	Value
SNMP Trap Broadcast- ing	External Reporting -> SNMP-> SN- MP Trap Options	Enabled
IP Address	External Reporting -> SNMP-> SN- MP 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 socalled 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.

Basic Trace settings Device name gr IP address: 192.168.0.254 I acce port Trace Jength Trace gil Trace gil Trace gil Not specified File	race Basics			
Device name gr IP address: 192.168.0.254	 ■	Basic Trace setting	\$	
Irace port 7000 Trace jength ⓒ Trace gil ○ Trace gp to bytes Trace file ⓒ No trace file ○ Not specified File	Device name <u>o</u> r IP addres	s: 192.168.0.25 4	~	
Trace length	Irace port	7000		
Trace all Trace file Not specified File	Trace length			
Trace file Not specified File,	● Trace <u>a</u> ll	O Trace up to	bytes	
No trace file Not specified File	Trace file			
	No trace file	 Not specified 	File	
			Connect Cancel	Help

Fig. 163: IP address

(4) Enter the admin password of the bintec device in the Enter password field and click OK.

Enter password
Please give the admin password of the device
Remember password for current session
OK Cancel

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.

Detaile	ed Trace Setting	S			×
	20 F		Trace	e settings	
C Ir	nterface Type	Slot	Unit	Index	
	LAN 802.3	1	0	1001 🗸	
Ţ	LAN 802.3 LAN 802.3 WLAN ATM ISDN D-channel LAN 802.3 LAN 802.3	1 5 2 3 4 50 200	0 0 0 0 0 0	1001 5001 2000 3000 4000 50001 200001	✓ ТСРИР FAX <u>©</u> 3
F	Q.931 (Layer 3) Cap File No pcap file	O Not	specified	Filg	Advanced
				Start T	race Cancel Help

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.

Speichern	🚞 traces	💌 🔾 🥬	ب 📰 🔁
Dateiname:	1232h del wan trace 1		Speichern

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.

@ 17	32h delw	an trac	e 1 ncan	Ethereal																E	
File	Edit View	60 Ca	nture Analy	a Statistics	Help																<u>مار کار</u>
	6	01	16	×	¢9 📇	A	•	ŵ	Ŧ :	₽ (\$	€,	Q, (0, 🖭] [🛃	I 🕅	5	*	Ø	
Biter:							• Do	ression	gear	Apply											
No. +	Time		Source		Destination	1	F	Protocol	Info												-
	23 15.05	4000	Elmegt_	0:07:27	Unisph	er_a0:b4:	6d F	PPP LC	Echo	Requ	lest										
	24 15.09	5000	07 175	a0:04:0	a Elmegt.	00:07:27		ADD TC	ECNO	кер	y autors		w		do						_
	26 15.52	3000	217.237	148,102	87,175	218,246		ONS	Stan	dard	query	resp	onse	CNAM	E WWW.	accale	. com Ci	NAME	www.	. 0000]	8.4
	27 15.52	3000	87.175.3	218.246	209.85	135.99	1	ECMP	Echo	(pir	1g) re	quest									
	28 15.58	6000	209.85.3	L35.99	87.175	218.246	1	ECMP	Echo	(pir	1g) ne	ply									
	29 16.53	1000	87.175.	218.246	209.85	135.99		CMP	Echo	(pir	1g) ne	quest									
	21 18 05	4000	209.85.	10:07:27	87.175 Unienh	218.240 ar a0-64-	64 5		Echo	(pir	IG) FE	piy									
	32 18.09	3000	Unispher	a0:b4:6	d Elmeat	d0:07:27	,	PPP LC	Echo	Rep	lv l										
	33 20.12	5000	87.175.	218.246	217.23	.148.102	2 0	DNS	stan	dard	query	A WW	w.fur	ikwenl	k-ec.c	011					
	34 20.18	7000	217.237.	148.102	87.175	218.246		DNS	stan	dard	query	resp	onse	A 62	.146.2	.103					
	35 20.18	7000	87.175.	218.246	62.146	2.103		ECRP	Echo	(p1r	ig) ne	equest									
	36 20.24	2000	62.146.	2.103	87.175	218.246	I Gol I	ICMP	Echo	(p)	ig) re	epiy									
	38 21 09	3000	unispher		d Elment	d0:07:27	7 6	000 LC	Echo	Pan	lest.										
	39 21.19	5000	87.175.1	218,246	62.146	2.103		ECMP	Echo	(p1r	ia) ne	auest									
	40 21.25	0000	62.146.3	2.103	87.175	218.246	1	ECMP	Echo	(p1r	ng) re	ep'ly									
± Fr	ame 35 (:	106 by	tes on w	ire, 106	bytes cap	tured)															
🗄 Et	hernet I	I, Sho	: Elmegt,	_d0:07:27	(00:09:4	F:d0:07:2	27), I	Dst: U	inisph	ner_a	0:b4:	6d (00	:90:	la:a0	:b4:60	0					
	P-over-E	therne	t Session	n																	
± P0	int-to-P	DINC P	rotocol			4.75. 34.0															
± 10	ternet Pi	otoco	I, SPC: I	57.175.21	8.246 (8/	175.218.	246)	, DST:	62.1	140.2	. 103	(02.14	10.2.	rosj							
# 10	cernet c	SHEPDI	Message	Protocol																	
0000	00.90.1	2 20 1	1 6d 00	09 4f do	07 27 88	64 11 0	0	121	0	- d											_
0010	14 10 0	0 56 1	00 21 45	00 00 54	5f a4 00	00 31 0	ă.	v. !	Е. Т												
0020	a8 66 5	7 af i	da f6 3e	92 02 67	08 00 27	55 80 0	4.	fw:	>g	'U.											
0030	00 00 4	7 00	ad e3 00	0d at e6	10 11 12	13 14 1	ş.,	. G		12422											
0040	26 27 2	8 29 3	La 10 10 2a 2h 2c	2d 2e 2f	30 31 32	33 34 3	ŝ	204		m 232	120										
0060	36 37 3	8 39	3a 3b 3c	3d 3e 3f			Ĩ	5789:;	<= >?												
File: "C	:Dokumente	und Einst	ellungen\mrd0	nulDesktop\So	lution Task For	e\#4 Detailie	rte Trac	e-Analyzi	e P:	40 D: 4	0 M: 0										
				- Harrison State	april or				and the second second				_					_			

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)
             layer 2 output
       -2
       -3 layer 3 output
             asynchronous HDLC (B-Channel only)
       -a
       -e ETS300075 (EuroFileTransfer) output (B-channel only)
       -\mathbf{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
       -\mathbf{N}
             Novell(c) IPX output
       -t
             ascii text output (B-Channel only)
       -x
             raw dump mode
       -X
             asvnchronous PPP over X.75
       -T < tei> set tei filter (D-Channel only)
                       set callref filter (D-Channel only)
       -c < cref >
       -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
                     extended help (environ vars & 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 0 1 2
                                        : list all interfaces
                                        : D-Channel(O) 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 & start ethereal
```

To see an overview of the traceable interfaces for a device, use the command without specifying an ifindex:

bricktrace-linux --pcap-file router 1000: write PCAP file

```
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 (lfc).

r232bw	> ifstat									
Index	Descr	Type	Mtu	Speed	St	Ipkts	Ies	Opkts	Oes	PhyAddr/ChgTime
000000	REFUSE	othr	8192	0	up	0	0	ο	0	0 00:00:00
000001	LOCAL	othr	8192	Ο	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	en1-0-11c	eth	1496	100M	up	0	0	0	0	00:a0:f9:09:7d:f8
001002	en1-0-snap	eth	1492	100M	up	0	Ο	Ο	Ο	00:a0:f9:09:7d:f8
005000	en5-0	eth	1500	10M	dn	0	0	0	0	00:a0:f9:09:7d:f8
005001	en5-0-11c	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	Ο	0	0	00:a0:f9:89:7d:f8
050001	ethoa50-0-11	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	Ο	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
tota.	1: 15									
r232bw	:>									

The interface indices are numbered according to the following scheme:

IfIndex Description _____ Special Interfaces: REFUSE 1 LOCAL 2 3 IGNORE Hardware Interfaces: 0100-8999 Slot Unit Channel Channel 9000-9999 Bundles (SO, S2M) Beispiele: 1000Ethernet en1-0 bei R23x-Serie5000Ethernet en1-4 bei R232b-Serie3000ADSL-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 GRE 26000-27000-29999 X.25 over ISDN 30000-49999 RADIUS Dial-Out 50000-79999 ETHOA, Ethernet over ATM 80000-89999 PPPOA, PPP over ATM 90000-999999 RPOA, Routing Protocols over ATM 100000-109999 IPSec 110000- IPSec over RADIUS 200000-ULAN 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 Of 71 00 00 80 01 a7 9a c0 a8 01 64 c0 a8 .slt; .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]
   0010: 00 3c 02 d8 00 00 3f 01 f5 33 c0 a8 01 01 c0 a8 .4lt; ....?..3.....
                                                     .d..N\
   0020: 01 64 00 00 4e 5c
           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.



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.

🖏 Befehlsfenster - Konsole 🎱			-	- 🗆 X 🗌
Sitzung Bearbeiten Ansicht Einstellungen Hilfe				
dmueller@suse-vwware:"/bricktrace-linux/ bricktrace-linuxpwd funkwerkethereal 192.168.1.1 1000 bricktrace-linux; connected to 122.168.1.17000 Fr:1000 (Dherno Uhnito Sloti) Tupe: 7 (LNH 902.3)				٠
reeded plast //wap/bricktenese_luwe-192.168 1.1-1000 peope ist-lug: elbergen 1 Sk - 1 / Apy/bricktenese-linue-192.168.1.1-1000.peope Packets captured: 31				*
Ney Betehtlenster The Ethereal Network Analyzer	. 🗆 × 🗋	X Ether	eal	. 🗆 × 🕯
<u>File Edit Capture Display Tools</u>	Help	Total	31	(100.0%
No. Time Source Destination Protocol [mo 15 <t< td=""><td></td><td>SCTP TCP UDP OSPF GRE NetBIOS IPX VINES Other</td><td>0 0 13 16 0 0 0 2 Stop</td><td>(0,0%) (0,0%) (41,9%) (51,6%) (0,0%) (0,0%) (0,0%) (0,0%) (0,0%) (6,5%)</td></t<>		SCTP TCP UDP OSPF GRE NetBIOS IPX VINES Other	0 0 13 16 0 0 0 2 Stop	(0,0%) (0,0%) (41,9%) (51,6%) (0,0%) (0,0%) (0,0%) (0,0%) (0,0%) (6,5%)
Image: I (10 on wire, 110 captured) B Eterment I (110 on wire, 110 captured) B Eterment Victorol, Sce Addr. 192,158,1.100 (152,158,1.100), Jbr. Addr. 152,158,1.11 (152,158,1.11) B Table I (110 on wire, 110 captured) B Eterment Victorol, Sce Addr. 192,158,1.100 (152,158,1.100), Jbr. Addr. 152,158,1.11 (152,158,1.11) B HellOS Have Service Image: Internet Victor I (120, 110, 110, 110, 110, 110, 110, 110,				

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>

Save configuration		ISDN Analogue	VOIP CAP	1 Call Forwarding			
System Management 🔹 👻	L		Contraction (
Physical Interfaces 🔹 👻							
LAN 👻	Basic Parameters						
Nireless LAN 🔹	Extension Number	30 🗸					
Routing 🔹 👻							
WAN 👻	Extension Name	leimegiP290					
/PN 🔻	Primary Telephonenumber	Automatic	~				
irewall 🔹 👻	User Name	30					
BX 🔺							
General Settings	Password	1					
Line Configuration	Allowed Location	Any 🗸					
Internal Numbers		Annual Lines					
Call Assignment		Adv	anced Se	ttings			
Call Routing		7.003	uneca oc	tunga			
Automatic Route Selection		Ok		Cancel			

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 tele- phones.
Primary Telephonenum- ber	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 [3].

- (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

11001000100	010100110111010011	
Configuratio	n Line 1.00010100010	
Operation	R10101A1AAAAAA	
Home	Login SIP NAT RTP	
Address Book	Login Information:	
Setup	Displayname:	30
Preferences	Account:	30
Speed Dial	Password:	***
Function Keys	Registrar:	192.168.8.25
Line 1	Authentication Username:	
Line 2	Mailbox:	
Line 3	Ringtone:	Ringer 1
Line 4	Custom Melody URL:	
Line 5	Display text for idle screep (may 8 chars):	
Line 6	Display text for fale screen (max. o chars).	
Line 7	Save	
Action URL Settings		
Advanced		
Trusted Certificates		
Software Update		
Status System Information		
Log		
SIP Trace		
DNS Cache		
PCAP Trace		
Memory		
Settings		
Manual		
© 2000-2006 snom AG		

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) 300192.168.8.25, location 0 (192.168.8.50)
VOIP: Registration reject: (8365) 300192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration reject: (8366) 300192.168.8.25, location 0 (192.168.8.50)
VOIP: Registration reject: (8366) 300192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:300192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 30 from 192.168.8.25.251
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
DHCPassigned 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>

Save configuration		ISDN Analogue VoIP CAPI Call Forwarding				
System Management 🛛 👻						
Physical Interfaces 🔹 👻						
LAN 🔫	Basic Parameters					
Wireless LAN 👻	Extension Number	33 💌				
Routing 👻						
WAN +	Extension Name	bintec IP50				
VPN +	Primary Telephonenumber	Automatic 💌				
Firewall 👻	User Name	33				
PBX 🔺	Decouverd					
General Settings	Password	J				
Line Configuration	Allowed Location	Any 💙				
Internal Numbers						
Call Assignment		Advanced Settings				
Call Routing	7	Carolinga				
Automatic Route Selection		Ok Cancel				

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 Telephonenum- ber	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.

Voip	You could set informati	omain Settings on of service domains in this page.
Phone Book	Active:	⊙ On ◯ Off
•	Display Name:	user
Phone Setting	User Name:	33
- +	Register Name:	33
Network	Register Password:	•••
,	Domain Server:	192.168.8.25
SIP Settings	Proxy Server:	192.168.8.25
,	Outbound Proxy:	192.168.8.25
NAT Trans.	Subscribe for MWI:	On ⊙Off
	Status:	Registered
Others •		
C	Active:	On Off
System Auth.	Display Name:	
Save Change	User Name:	
Save Change	Register Name:	
· · · · ·	Register Marile.	

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>

Save configuration		ISDN	Analogue	VolP	CAPI	Call Forwarding	
System Management 🛛 👻			Concession of the local division of the loca	and the second			
Physical Interfaces 🔹							
LAN 🔫	Basic Parameters						
Wireless LAN 🔹	Extension Number		31 💌				
Routing 🔹 👻	Patron Den Manage		100		_		
wan 👻	Extension Name		VIUZ				
/PN 👻	Primary Telephonenumber		Automatic		~		
irewall 🔹	User Name		31				
BX 🔺							
General Settings	Password		•••••				
Line Configuration	Allowed Location		Any 🗸				
Internal Numbers			hannadianand				
Call Assignment			Adv	ance	d Sett	ings	
Call Routing	-		/141	untee			
Automatic Route Selection			Ok		(Cancel	

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 tele- phones.
Primary Telephonenum- ber	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.

Service Domain Settings

You could set information of service domains in this page.

	Phone No.: Phone	1 💌
Book		
ettings	Realm Active:	On OOff
k	Display Name:	name
ttings	User Name:	31
onfig	Register Name:	31
ssword	Register Password:	•••
	Domain Server:	192.168.8.25
lange	Proxy Server:	192.168.8.25
	Outbound Proxy:	192.168.8.25
	Status:	Registered
	DTMF Setting	
	2833 Inhand DTME	
	Send DTME SIP Info	
	Port Setting	
	SIP Port:	5060 (1024~65535)
	RTP Port:	60000 (1024~65535)
	STUN Setting	0.0.0
	STUN:	◯ On ⓒ Off

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) 318192.168.8.25, location 0 (192.168.8.51)
VOIP: Registration reject: (8389) 318192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration reject: (8390) 318192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:318192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration success: 31 from 192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 31 from 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 or IP 192.168.8.51 on interface 150000 for DHCP server 192.168.8.25
DHCP: asigned IP-Address 192.168.8.51 to client 0:9:26:12:1:40 or 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>

Save configuration		ISDN	Analogue	VolP	CAPI	Call Forwarding
System Management 🔹 👻				The second second		
Physical Interfaces 🔹 👻						
LAN 👻	Basic Parameters					
Nireless LAN 👻	Extension Number	ĺ	32 🗸			
Routing 👻		I			_	
WAN +	Extension Name	1	Phoner			
/PN 👻	Primary Telephonenumber	[Automatic		*	
irewall 👻	User Name	1	32			
BX 🔺	Barryweid	Í				
General Settings	Password	1	•••••			
Line Configuration	Allowed Location		Any 🔽			
Internal Numbers						
Call Assignment			Adv	ance	1 Sett	ings
Call Routing	Advanced Settings					
Automatic Route Selection			Ok		(ancel



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

Destination number			
Dial huttons	evices		
1 2 3	TAPI CAPI SIP		
	Profile		~
456	funkwerk TR200	Delete	
7 8 9	To an		
*	Username	Password	Displayed name
	32		username
Own number	Proxy/Registrar		STUN Server
	192.168.8.25	Register	
Transmit own			
	Local port	bevorzugte Verbindungsart	Realm
	5060		
	Enable CAPI additionally	Codecs	no silence detection
		and a second	

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) 328192.168.8.25, location 0 (192.168.8.254)
VOIP: Registration reject: (8214) 328192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Registration request:(8215) 328192.168.8.25, location 0 (192.168.8.254)
VOIP: Registration reject: (8215) 328192.168.8.25, guest 0, expires 60, location 8, cause AUTH REQUIRED
VOIP: Authentication confirm: sip:328192.168.8.25, guest 0, expires 60, location 8
VOIP: Registration success: 32 from 192.168.8.25, succes 0, expires 60, location 8
```

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. <i>elmegIP290</i>
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 ->	Any
	VoIP -> Extensions -> <31>	

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>

Save configuration		ISDN Analogue	VoIP CAPI	Call Forwarding	
System Management 🔹 👻	5				
Physical Interfaces 🔹					
LAN 🝷	Basic Parameters				
Wireless LAN 🔹	Extension Number	30 💌			
Routing 🗾 👻					
WAN 👻	Extension Name	leimegih530			
VPN 👻	Primary Telephonenumber	Automatic	*		
Firewall 👻	User Name	30			
PBX 🔺		r r	-		
General Settings	Password				
Line Configuration	Allowed Location	Any 💙			
Internal Numbers		buundhuund			
Call Assignment		Adv	anced Set	lings	
Call Routing	<u>Auvanceu Gettings</u>				
Automatic Route Selection	Ok Cancel				

Fig. 180: PBX -> Internal Numbers -> VoIP -> Extensions -> <30>

Re	levant	fields	in 1	the	VolP	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 tele- phones.
Primary Telephonenum- ber	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

Operation		
Home	Login SIP NAT RTP	
Address Book	Login Information:	
Setup	Displayname:	30
Preferences	Account:	30
Speed Dial	Password:	•••
Function Keys	Registrar:	f-ec.dyndns.org
Line 1	Authentication Username:	
Line 2	Mailbox:	
Line 3	Distance	Dinger 1
Line 4		Ringer i
Line 5	Custom Melody URL:	
Line 6	Display text for idle screen (max. 8 chars):	
Line 7	Cava	
Action URL Settings	29/6	
Advanced		
Trusted Certificates		
Software Update		
Status		
System Information		
Log		
SIP Trace		
DNS Cache		
PCAP Trace		
Memory		
Settings		

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 61t;84.149.249.207:12002 VOIP: Registration request: (8297) 300f-ec.dyndns.org, location 0 (84.149.249.207) VOIP: Registration reject: (8298) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8298) 300f-ec.dyndns.org, location 0 (84.149.249.207) VOIP: Registration reject: (8298) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8299) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8299) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8309) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8300) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8300) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8300) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8300) 300f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED 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>

Save configuration	5	SDN Analogue VolB CABI Call Forwarding	
System Management -	L ²	Shi Anarogue von CAT Santorwarding	
Physical Interfaces 🔹			
LAN 👻	Basic Parameters		
Wireless LAN 🔹	Extension Number 33 💌		
Routing 👻	Extension Name		
WAN +	Extension Name	bintec IP50	
VPN 👻	Primary Telephonenumber	Automatic 💌	
Firewall 🔹	User Name	33	
PBX 🔺	Bernard		
General Settings	Password		
Line Configuration	Allowed Location	Any 💙	
Internal Numbers			
Call Assignment		Advanced Settings	
Call Routing	7	Auvanced Settings	
Automatic Route Selection	Ok Cancel		

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 tele- phones.
Primary Telephonenum- ber	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.

Voip	Service Do	omain Settings ion of service domains in this page.
<u>^</u>	Realm 1 (Default)	
Phone Book	Active:	⊙ On ◯ Off
•	Display Name:	user
Phone Setting	User Name:	33
· · · ·	Register Name:	33
Network	Register Password:	•••
	Domain Server:	f-ec.dyndns.org
SIP Settings	Proxy Server:	f-ec.dyndns.org
	Outbound Proxy:	f-ec.dyndns.org
NAT Trans.	Subscribe for MWI:	◯ On ⊙ Off
	Status:	Registered
Others		
	Realm Z	On On
System Auth.	Display Name:	
	Display Name.	
Save Change	User Name:	
✓	Register Name:	

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 &1t;84.149.252.57:12000 VOIP: Registration request: (8320) 338f-ec.dyndns.org, location 0 (84.149.252.57) VOIP: Registration reject: (8321) 338f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration reject: (8321) 338f-ec.dyndns.org, location 0 (84.149.252.57) VOIP: Registration reject: (8321) 338f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Registration confirm: sip:338f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED VOIP: Authentication confirm: sip:338f-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>

Save configuration		ISDN	Analogue	VolP	CAPI	Call Forwarding
System Management 🔹 👻			[-
Physical Interfaces 🔹 👻						
LAN 🔫	Basic Parameters					
Wireless LAN 👻	Extension Number		31 🗸			
Routing 🔹			Luco.		_	
WAN +	Extension Name		JV102		_	
VPN -	Primary Telephonenumber		Automatic		~	
Firewall 👻	User Name		31			
PBX 🔺		-	, 	-		
General Settings	Password					
Line Configuration	Allowed Location		Any 🗸			
Internal Numbers		_	hannation			
Call Assignment	1		Adv	ance	d Sett	inas
Call Routing		Auvanced Settings				
Automatic Route Selection			Ok		(Cancel

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 Telephonenum- ber	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 [3].
- (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.



Service Domain Settings

You could set information of service domains in this page.

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) 310f-ec.dyndns.org, location O (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration reject: (8231) 310f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration request: (8232) 310f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration reject: (8232) 310f-ec.dyndns.org, guest 0,expires 60, location 8, cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration request: (8233) 310f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration reject: (8233) 310f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration request: (8234) 310f-ec.dyndns.org, location 0 (84.149.254.198)
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Registration reject: (8234) 310f-ec.dyndns.org, guest 0, expires 60, location 8, cause AUTH REQUIRED
11:48:31 NOTICE/VOIP: iwu: [MSG]	VOIP: Authentication confirm: sip:310f-ec.dyndns.org, guest 0, expires 60, location (
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>

(Save configuration	ISDN Ana	logue VoIP CAPI Call Forwarding		
System Management	-			
Physical Interfaces	-			
LAN	 Basic Parameters 			
Wireless LAN	Extension Number 32	v		
Routing	Extension Neural			
WAN	Extension Name			
VPN	 Primary Telephonenumber Auto 	matic 💌		
Firewall	▼ User Name 32			
PBX	A December 1			
General Settings	Password			
Line Configuration	Allowed Location Any	v		
Internal Numbers				
Call Assignment		Advanced Settings		
Call Routing		Auvanceu Settings		
Automatic Route Selectio		Ok Cancel		

Fig. 186: PBX -> Internal Numbers -> VoIP -> Extensions -> <32>

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 tele- phones.
Primary Telephonenum- ber	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.

Relevant fields in the VoIP menu

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

Phoner (sip:	61@10.111.2.250 registered)	
Connection Optic	ns <u>W</u> indow Language <u>H</u> elp	
🔊 🕆 🖽) · 🛍 📼 🗗 🕴 🍳 P 🌑 🏛 🧇 ·	
Destination numbe	ar.	
Dial buttons	Devices	X
1 2 3	TAPI CAPI SIP	
4 5 6	Profile	
789	runkwerk 1R200 Delete	
	Username	Displayed name
	61 ***	username
Own number		
	Proxy/Registrar	STUN Server
Transmit own	F-ec.dyndns.org	
	Local port bevorzugte Verbindungsart	Realm
	5060 SUDP CTCP TLS	
	Enable CAPI additionally	no silence detection
620	API O TAPI O CAPI	,
	() SIP	OK Cancel

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 61t; 84.149.254.198:12004

VOIP: Registration request: (8371) 328f-ec.dyndms.org, location 0 (84.149.254.198)

VOIP: Registration reject: (8372) 328f-ec.dyndms.org, guest 0, expires 60, location 8, cause AUTH REQUIRED

VOIP: Registration reject: (8372) 328f-ec.dyndms.org, location 0 (84.149.254.198)

VOIP: Registration reject: (8372) 328f-ec.dyndms.org, guest 0, expires 60, location 8, cause AUTH REQUIRED

VOIP: Registration reject: (8372) 328f-ec.dyndms.org, guest 0, expires 60, location 8, cause AUTH REQUIRED

VOIP: Registration reject: (8372) 328f-ec.dyndms.org, guest 0, expires 60, location 8

VOIP: Registration success: 32 from 84.149.254.198:12004
```

19.3 Overview of configuration steps

Field Menu Value **Extension Number** PBX -> Internal Numbers -> e.g. 30 VoIP -> Extensions -> <30> ø Extension Name PBX -> Internal Numbers -> e.g. elmegIP290 VoIP -> Extensions -> <30> ø PBX -> Internal Numbers -> Automatic Primary Telephonenumber VoIP -> Extensions -> <30> ß User Name PBX -> Internal Numbers -> e.g. 30 VoIP -> Extensions -> <30> ø Password PBX -> Internal Numbers -> e.g. secret VoIP -> Extensions -> <30> ø Location PBX -> Internal Numbers -> Any VoIP -> Extensions -> <30> ø

Extensions for elmeg IP-290

```
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. <i>V102</i>
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. <i>f-ec.dyndns.org</i>

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 full button or status of VoIP configuration by pressing the full button or status of the status of VoIP configuration by pressing the full button or status of the status of VoIP configuration by pressing the full button or status of the status of the

Use the following option to create a new VoIP provider account:

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

Save Configuration	Access Cor	onfiguration External Numbers VoIP Configuration
System Management 🔹 👻		
Physical Interfaces 🔹 👻		
LAN 👻	Basic Parameters	
Wireless LAN 👻	Name	Sipgate
Routing 🗸 👻		
WAN 👻	DSL Phonenumber	0180333333333
VPN 👻	Login Name	8888999
Firewall 🗸 🗸	Password	aucadoso a
PBX 🔺		
General Settings	UserID	8888333
Line Configuration	Registrar/Proxy	sipgate.de
Internal Numbers		
Call Assignment	Port Registrar/Proxy	5060
Call Routing		
Automatic Route Selection	Advanced Settings	
Call Records	Generate Country Profiv	
Local Services 🗸 👻	Cenerale Country Frenk	
Maintenance 🗸 🗸	De-activate number suppression	
External Reporting 🗾 👻	Use user ID as phonenumber	
Monitoring 👻	Optimize bandwidth for speechcom	ompression
	Use Area Code	
	Upstreaming Device with NAT	
	Clear multiple provider bindings	V
	Ok Cancel	

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 <i>Enabled</i> .
Name	You can enter a name for your VoIP configuration. A 20 digit al- pha-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. 01809999999999999.
- (4) Under User Name enter 88889999 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.

Save Configuration	Access	Configuratio	on External Numbers	VoIP Configuration
stern Management 🔹 👻				-
ysical Interfaces 🔹 👻				
AN 👻	Basic Parameters			
Vireless LAN 👻	Name	T-Onlin	e	7
Routing 👻			-	
VAN 👻	DSL Phonenumber	032229	999999	
/PN 👻	Login Name	zugang	sname	
irewall 🗸 🗸	Password	solababababa]
BX 🔺				
General Settings	UserID	032229	999999	
Line Configuration	Registrar/Proxy	tel.t-on	ine.de	7
Internal Numbers			_	
Call Assignment	Port Registrar/Proxy	5060		
Call Routing				
Automatic Route Selection			Advanced Setting	S
Internal Phonebook			,	
Call Records	Generate Country Prefix			
ocal Services 🔹	De-activate number sunnression			
faintenance 👻	De-activate number suppressi	on		
xternal Reporting 🔹 👻	Use user ID as phonenumber		¥	
Aonitoring 🗸 🗸	Optimize bandwidth for speech	ncompression		
	Use Area Code			
	Upstreaming Device with NAT			
	Clear multiple provider binding	IS	\checkmark	
		(Ok Cano	el

Fig.	189:	PBX ->	Line	Configuration -	> VolP	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 <i>Enabled</i> .
Name	You can enter a name for your VoIP configuration. A 20 digit al- pha-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 -> VolP Configuration -> New.

e Configuration	Access Configur	ation	External Numbers	VoIP Configuration
Management -				
al Interfaces 🔹				
 Basic Parameters 				
ess LAN - Name	1un	d1		
g –				
DSL Phonenum	Jer 495	17199	9999	
👻 🛛 Login Name	495	17199	9999	
Password		alalak		
A Hear P	405	17100	0000	7
ral Settings	435	17199:	3333	
Configuration Registrar/Proxy	sip."	lund1	.de	
nal Numbers				
enting Port Registrar/Pl	0XY 506	J		
natic Route Selection			1.0.00	
al Phonebook		A	dvanced Setting	IS
ords Generate Count	v Prefix	Т	1	
ervices 👻			-	
ance	De-activate number suppression			
Reporting 🗸 Use user ID as p	honenumber	E	×	
ring 👻 Optimize bandw	idth for speechcompressi	on [
Use Area Code		0		
Upstreaming De	vice with NAT			
Clear multiple p	ovider bindings	E	v	
			Dk Can	cel

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 <i>Enabled</i> .
Name	You can enter a name for your VoIP configuration. A 20 digit al- pha-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.lundl.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.

onfiguration	Access Conf	iguratior	n External Numbers	VoIP Configuration
nagement 👻				-
iterfaces 👻				
-	Basic Parameters			
AN 👻	Name	Toplink		1
•		Горшик]
-	DSL Phonenumber	49517199	99999	
-	Login Name	D109999	9999]
-	Password	kokokokokok]
-	Liass D	D100000	0000]
Settings	UseriD	D103333	9999]
figuration	Registrar/Proxy	toplink-v	oice.de]
lumbers	· · · · · · · · · · · · · · · · · · ·	[1]
Inment	Port Registrar/Proxy	5060		
ting tic Poute Selection				
Phonebook		A	Advanced Settings	S
ords	Commente Constru Darifi			
rvices -	Generate Country Pretix			
	De-activate number suppression			
eporting 👻	Use user ID as phonenumber		V	
g –	Optimize bandwidth for speechcomp	pression		
	Use Area Code			
	Upstreaming Device with NAT			

Fig. 191: PBX -> Line Configuration -> VoIP Configuration -> New

Field	Meaning
State	This field is only displayed if you edit an existing entry. The function is enabled by choosing <i>Enabled</i> .
Name	You can enter a name for your VoIP configuration. A 20 digit al- pha-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.

Relevant fields in the VoIP Configuration menu

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 -> VolP Configuration -> New.

Save Configuration	Access (Configuratio	on External Numbers	VoIP Configuration
System Management 🛛 👻				
Physical Interfaces 🔹 👻				
LAN 👻	Basic Parameters			
Wireless LAN 👻	Name	QSC		7
Routing 🗸 🗸]
VAN 👻	DSL Phonenumber	021199	199999	
/PN 👻	Login Name	021199	199999	
Firewall 🔹	Password	kolokokokokok	1	7
PBX 🔺		001100		7
General Settings	UserID	021199	199999	
Line Configuration	Registrar/Proxy	sip.qsc	de	7
Internal Numbers				
Call Assignment	Port Registrar/Proxy	5060		
Call Routing				
Automatic Route Selection			Advanced Setting	S
Internal Phonebook			-	
Call Records	Generate Country Prefix			
zintenance -	De-activate number suppression	on		
external Reporting	Use user ID as phonenumber			
lonitoring 🗸 🗸	Optimize bandwidth for speech	compression		
	Use Area Code			
	Upstreaming Device with NAT			
	Clear multiple provider binding	s		
		-		

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 <i>Enabled</i> .
Name	You can enter a name for your VoIP configuration. A 20 digit al- pha-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. <i>Sipgate</i>
DSL Phonenumber	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. 0180999999999999
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 . <i>sipgate.de</i>
Port Registrar/Proxy	PBX -> Line Configuration -> VoIP Configuration -> New	5060
Use user ID as phonenum- ber	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. 0322299999999
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 phonenum- ber	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. <i>sip.landl.de</i>
Port Registrar/Proxy	PBX -> Line Configuration -> VoIP Configuration -> New	5060
Use user ID as phonenum- ber	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. <i>D1099999999</i>
Password	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. secret
User ID	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. <i>D1099999999</i>
Registrar/Proxy	PBX -> Line Configuration -> VoIP Configuration -> New	e.g. <i>toplink-voice.de</i>
Port Registrar/Proxy	PBX -> Line Configuration	5060

Field	Menu	Value
	-> VoIP Configuration -> New	
Use user ID as phonenum- ber	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. <i>QSC</i>
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 phonenum- ber	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**.

🗞 New - elmeg Professional Configuration	or - T240/T444/T484				E	
File Data exchange Display ?						
D D D D D New Open Save Read Send D	X 8 elete Help					
Teldat el	meg T240/T444/T484					
Configuration						
	No. Name 00 01 02 03 03 04 04 06 05 06 06 07 08 09	IP-address/DynDN:	3		Telephone nu Individual number Individual number Individual number Individual number Individual number Individual number Individual number Individual number	Trunk grov 0 0 0 0 0 0 0 0 0 0 0 0 0
Extended cal detribution Galendar Calendar Calendar Calendar Calendar Setter mark (Open query) Hotine (Direct cale) External CF External CF External CF Calendar	Delete entry					
Status						
System telephone						
WIN-Tool Launcher						
Web-Interface						
Ready		12.11.2008	12:05:45	Count 10	NUM	

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.

SIP-provider: 00	
Access data Extended STUN Proxy Codecs Numbers	
SIP-Provider name (max. 12 chars.) Name 18.1	Port C Not activated C Activated
Access data Login-Name 495171123456 Password	IP-address / DNS Server Name 0 IP-address 0 0 0 0 DIS Server Name sp1und1.de :
General General Generate ratemational phone number Generate national phone number Generate national phone number Use user ID as phone number Not regarded with SIP provider Allow login of a praxy Hidd in the FABX Replace international prafix by "*" Cencel all englatations after Feboot Upstreaming device with NAT	Location Name (01: LAN
	OK Cancel

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 num- ber	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 oc- cur 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.

IP-provider: 00 Access data Extended STUN Proxy Codecs Numbers	
Telephone number configuration for Individual number C Dial-in block	Trunk group selection Trunk group number
Diałin block contiguiation Length of extension numbers Identification of calling extension number Find of daling monitoring timer For excends	Feture destination Feture destination Team Team 00 Team Int. Subscriber Y
Number of simultanous connections	Registration timer
Replacing number prefix (inbound sender ID) by	
	OK Cancel

Fig. 196: Advanced Configuration

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the Individual Number field.
Bundle association	Here, you assign the connection to a PABX system bundle. Us- ing this bundle number, you can select the desired SIP provider for external dialling in the operation system.
End of dialling monitor- ing 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.

03222000000			
OCLEGOODO			
	with a registration		

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**.

System messages	
Router status	
Establish	
Disconnect	
Properties	
About Control-Center	
Help	
Exit	

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.

ontrol-Center -	system messages			(
<u>P</u> rocedure <u>⊂</u> onn	ection <u>D</u> isplay <u>?</u>			
🗳 🔒 🔳 🗟	ļ (14)			
System protoc	ol 💌	95 Event(s)	offline	
Event type	Date/Time	Event source/Computer	Event/Description	~
PABX	Nov 17 10:37:31	User@V0IP:	iwu: [MSG] VOIP: Authentication confirm: 77@192.168.2.250, guest 0, expires 60, location 2	
PABX	Nov 17 10:37:36	User@V0IP:	iwu: [MSG] VOIP: Provider Registration success: 495171992091@sip.1und1.de:5060	
PABX	Nov 17 10:37:40	User@V0IP:	iwu: [MSG] VOIP: Registration request: (8444) 74@192.168.2.250, location 1 (192.168.50.52	
PABX	Nov 17 10:37:40	User@V0IP:	iwu: [MSG] VOIP: Registration reject: (8444) 74@192.168.2.250, guest 0, expires 60, location	-
PABX	Nov 17 10:37:40	User@V0IP:	iwu: [MSG] VOIP: Registration request: (8445) 75@192.168.2.250, location 2 (192.168.2.51)	✓
<				

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 underConfiguration -> General-> LCR Configuration, the item *LCR Pro-fessional*.

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. <i>elmeg</i> 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. <i>sip.landl.de</i>
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.

🗞 New - elmeg Professional Configu	rator - T240/T444/T484	
File <u>Da</u> ta exchange Display ?		
D 2≩	≻ ? Delete Help	
Teldat	elmeg T240/T444/T484	
Configuration		
🖃 🕢 elmeg T240/T444/T484	PABX-type	Module slot (right slot)
Access configuration Cocations External numbers Cocations	C elmeg T240 C elmeg T444	None C 250 C 4 analog C 2POTS C 4POTS
Team configuration	- Compact Flack (CE) type	- Second dist (lat)
Call distribution	compact riasin (cr) type	opecial societ soci
Extended call distribution	No Media	None Opor terminal (123D12)
	exists already	Door terminal (4-wire)
🕀 🚯 Dial ranges	Size	C DT*(123012)
System Park (Open query)	Formalius CE	C contacts
Hotine (Direct calls)		
External CF	Download wave files with the configuration	
DT adapter		
🕥 Call data (SMDR)	Select the setting DT (Door Terminal) under Spe maximum of 3 bell buttons. A further input is also	icial slots for connecting door intercom units with a available here for signaling functions
Hotel		
Status	Select the setting DT* under Special slots for co	nnecting door intercom units with 4 bell buttons!
System telephone		
WIN-Tool Launcher		
Web-Interface	<	>
Ready	12.1	L2008 11:26:16 NUM

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**.

🗞 New - elmeg Professional Configurat	or - T240/T444/T484					
File Data exchange Display ?						
New Open Save Read Send D	× • ? elete Help					
Teldat el	meg T240/T444/T484					
Configuration						
	No. Name 00 01 02 03 04 05 05 06 07 08 09 09	IP-address/DynDN:	ô		Telephone nu Individual number Individual number Individual number Individual number Individual number Individual number Individual number Individual number	Trunk grou 0 0 0 0 0 0 0 0 0 0 0 0
Extended all alsoftwithin Door termal / contacts Calendar Galendar Go Dal ranges System Park (Open query) Holine (Direct cale) External GP External GP External GP	Delete entry					
Status						
System telephone						
WIN-Tool Launcher						
Web-Interface						
Ready		12.11.2008	12:05:45	Count 10	NUM	

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.

SIP-provider: 00	
Access data Extended STUN Proxy Codecs Numbers	
SIP-Provider name (max. 12 chars.) Name T-Online	Port C Not activated C Activated
Access data Logn-Name roccox Password remain Confirmation remain User ID IP 03222000000	IP-address / DNS Server Name 0 IP address 0 0 0 0 DIS Server Name pathese 1 pathese 1 0 DIS Server Name pathese 1 5050 1
General Generate international phone number Generate national phone number De-activate number suppression Use user 10 as phone number Not registered with SIP provider Allow login of a praxy Hidd in the FABX Replace international perfix by "*" Cancel all registrations after Reboot Upstreaming device with NAT	Location Name 01: LAN
	OK Cancel

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 Nameenter 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 IDcontrol 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.

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 num- ber	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 oc- cur 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.

Relevant fields in the General menu

Advanced Configuration

To allow entry of the SIP provider number, the *Individual Call Number* must be enabled in the **Extended**-> **Call Number Configuration** menu.

SIP-provider: 00	
Access data Extended STUN Proxy Codecs Numbers	
Telephone number configuration Individual number Dial-in block	Trunk group selection Trunk group number
Dial in block configuration Length of extension numbers Identification of calling extension number End of dalarg monotoring timer Seconds	Return destination C Team Team 00 C Int Subscriber T
Number of simultanous connections	Registration timer
Replacing number prefix (inbound sender ID)	
	OK Cancel

Fig. 204: Advanced Configuration

Relevant fields in the Advanced menu

Field	Meaning
Call Number Configura- tion	Enable the Individual Number field.
Bundle association	Here, you assign the connection to a PABX system bundle. Us- ing this bundle number, you can select the desired SIP provider for external dialling in the operation system.
End of dialling monitor- ing 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.

03222000000			
OCLEGOODO			
	with a registration		

Fig. 205: Subscriber numbers

Relevant fields in the Subscriber Number menu

Field	Meaning
Individual Numbers	Here, enter the complete Subscriber Number which you re- ceived from SIP provider T-Online. After this, in the menu Con- figuration -> 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**.

System messages	
Router status	
Establish	
Disconnect	
Properties	
About Control-Center	
Help	
Exit	

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.

ocedure <u>C</u> o	nnection <u>D</u> ispla	y <u>2</u>		
	1 #4			
System protoc	ol 👤	523 Event(s)	offline	
Event type	Date/Time	Event source/Computer	Event/Description	
PABX	Feb 05 08:47:05	Daemon@iwu[92]:	[MSG] VOIP: Provider Registration success: 032224243043@tel.t-online.de:5060	
PABX	Feb 05 08:47:23	Daemon@iwu[92]:	[MSG] VOIP: Registration request: (8197) 81@192.168.30.251, location 0 (192.168.50.254)	
PABX	Feb 05 08:47:23	Daemon@iwu[92]:	[MSG] VOIP: Registration reject: (8197) 81@192.168.30.251, guest 0, expires 60, location 0, cause 👻	
₹			4 11	

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 underConfiguration -> General-> LCR Configuration, the item *LCR Pro-fessional*.

With these settings, the connections will be automatically routed on the basis of the LCR table.

22.3 Overview of configuration steps

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

Select system type

Enter SIP provider

Field	Menu	Value
Name	Configuration -> External Numbers -> SIP Provider-> Access Data	e.g. <i>T-Online</i>
Login name	Configuration -> External Numbers -> SIP Provider-> Access Data	e.g .email@t-online.de
Password	Configuration -> External	e.g. Service

Workshops (Excerpt)

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	e.g. 03220000
	Numbers -> SIP Provider->	
	Subscriber Numbers	

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