Loudness To GSM

Configures the loudness to the mobile network. The range is 0 (quiet) to 3 (loud).

ATTENTION

A change becomes not valid before a reboot has been done to the specific channel.

Loudness to PCM

Configures the loudness to the fixed network. The range is 0 (quiet) to 3 (loud).

ATTENTION

A change becomes not valid before a reboot has been done to the specific channel.

Fieldstrength limit

If the received power level under-runs a specific level then the voice quality suffers from it. So the user can define that specific value. If the level under-runs this level then the concerning channel will be blocked terminating calls until the value exceeds this level.

10.3.2.2 Channel

This filed contains means affecting one specific channel

Reboot

Pressing this button reboots the specific channel. The channel will be registered out and the GSM module is switched off and on. Active calls over this channel will be abandoned. After reboot the channel will register automatically and is available again. This feature can be useful to resume incorrect channels.

Reregister

Pressing this button registers the channel out of the network an in again. The GSM module is not switched off. After reregistering the channel is available again. Active calls will be abandoned. This feature is useful to get a better registration on a other visible base station with better receive power level or less traffic.

Freeze

This button causes the specific channel to register out and not in anymore. The GSM module is not switched off. To resume register state the “Reboot” button has to be pressed. This feature is useful if the base station is overloaded. Then it is possible to reduce the load by the **ECOTEL® VTMpro** from the basestation.

Switch Off

This button has the same effect like the freeze button plus switching off the GSM module.

Channel Paramters

Provides a set of GSM channel and module parameters

Field strength

Shows the receive power level in a bar and in letters. The value is dBm.

IMEI

Shows the IMEI of the mounted GSM module. This number characterizes one individual module.

Manufacturer

Shows the manufacturer of the mounted GSM module.

Model

Shows the model of the mounted GSM module

Revision

Shows the firmware revision of the mounted GSM module

BCCH

Shows the Broadcast Control Channel. The logical channel the basestation sends parameters necessary for communication.

LAC

Location Area Code or Local Area ID (LAI). Represents the geographical area the mobile is registered.

BCC

Base Station Color Code

CID

Displays the GSM Cell ID the module is registered to.

10.3.2.3 Layer2Trace

This field provides the possibility to select certain processes at debugging the GSM port. The meaning of the most used are following:

GREG: (GSM Registration)	Registration information. Interesting at registering problems, to find out blocked or disturbed sim cards. Also interesting to monitor gathering cell paramters. Causes continuing trace information even when there is no call on the channel.
GCON: (GSM Control)	Provides information about the calling procedure. Causes only trace information when there is a call establishing or finishing, not during the call. Interesting to find out problems at establishing calls.
GIF: (GSM Interface)	Displays the message flow between the controller on the GSM card and the mounted GSM module. Causes continuing trace information even when there is no call on the channel.
GSMS: (GSM SMS interface)	Displays processes concerning SMS receiving and transmitting.
PTS: (PCM Time Slot)	Displays the coupled time slot from the specific board to the internal PCM bus.

To get trace information refer also to chapter “Layer2&3 Trace”, because there must additional switched on the specific channel on debugging level 2.

ATTENTION

Traces must be handled very carefully not to overload the system. To much trace information influent the system severe. In normal operation traces should be switched off!

10.3.2.4 Sim Properties

Generally the **ECOTEL® VTMpro** knows two ways to handle SIM cards for the GSM channels. For basic functions it is possible to handle the SIMs manually. In this way it is possible to enter a PIN or switch between several provided SIMs on a Multi-SIM-Carrier. To use more sophisticated functions the SMC (Sim Management Center) must be used. This functions are described later in this document.

10.3.2.4.1 Register SIM / Release SIM

This buttons provides the function to enable or disable a SIM on this specific channel. The SIM is not really registered out of the network after pressing “Release SIM”, so it will be available right in the moment “Register SIM” has been pressed. If a SIM is released no calls will be routed over the relevant channel.

10.3.2.4.2 Manual SIM Switching

This check box enables the manual SIM switching already described.

Default Destination

For special routing features it is sometimes necessary to assign a GSM channel a individual number. This number can be a individual SIM party number or any other. At further routings e.g. into fixed network this number will be sent as originator.

SMSC

In this filed the individual SMSC (Short Message Service Center) must be entered. This entry belongs to the mobile network provider and is necessary for using SMS send and receive services.

ATTENTION

There can be entered only one SMSC for each GSM channel. If there is a switching between SIMs from different mobile network providers, then SMS services may not work using every SIM!

PIN

If PIN entering is not deactivated on the SIM card normally there is a PIN for registering into mobile network needed. This PIN must be entered or changed **before** the SIM is put into the gateway. Otherwise it can happen, that the wrong PIN is entered. In this case the **ECOTEL® VTMpro** lets for safety reason always one trial free. The SIM must be taken out of the gateway and PIN must be inserted to a mobile phone to use last chance to enter the PIN and set free three more trials of entering.

ATTENTION

There can be entered only one PIN for each GSM channel. If there is a switching between SIMs from different mobile network providers, then this PIN will be used for all SIMs. For this reason it is strongly recommended to use the same PIN for all available SIM cards.

LAIN

The **ECOTEL® VTMpro** GSM channels provide the chance to register to a network automatically or to force registering to a specific network. This choice is only available if the SIM card supports roaming on any level. In this case the LAIN (Location Area Identity Network) code must be entered into the specific field. If no code is entered automatic net search is activated.

SIM

If there are more SIM cards available on the used SIM carrier, the SIM can be chosen by this element.

10.3.2.5 Sim Parameters

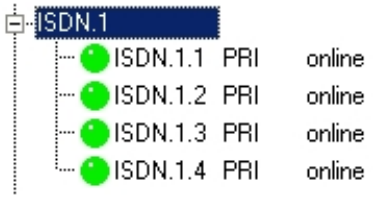
Attribut:	Description:
IMSI	Displays the IMSI (International Mobile Subscriber Idendity) for each SIM. With this number each SIM can be identified unambiguously. The IMSI has following elements: xxx yyy zzzzzzzzzz xxx: Mobile Country Code yy: Mobile network code zzzzzzzzzz: Subscriber identification
State	Shows the register state of the SIM card. Following register states are possible: • SIM released • Not logged in • SIM OK • Searching for Network • Registered • Registered Roaming
SIM	Displays the actual selected SIM.
PLMN	Displays the network the channel is registered to actually. ***ATTENTION*** *Normally this PLMN should correspond to the first 5 digits of the IMSI to confirm registering into home network. Otherwise there is the danger of paying to expensive fees at using the GSM channel!*
Codec	Displays the used codec on the channel. The following codecs are possible: • Half rate (low speech quality) • Full rate (good speech quality) • Enhanced full rate (best speech quality) The rate is dictated by the base station. Sometimes network providers reduce to half rate in order to save bandwidth.
TCH	Displays the TCH (Traffic Channel). Via this channel the user data is transferred between GSM module and base station

TADV	Displays the TADV (Time Advance). This parameters indicates the distance between GSM module and base station. One digit represents about 550 meters. The value range is 0 to 63.
PWR	Displays the actual output sending power of the module in dBm
BER	Displays the BER (Bit Error Rate). Normally the value should be cero. Otherwise the are problems in the channel or low receive power level.

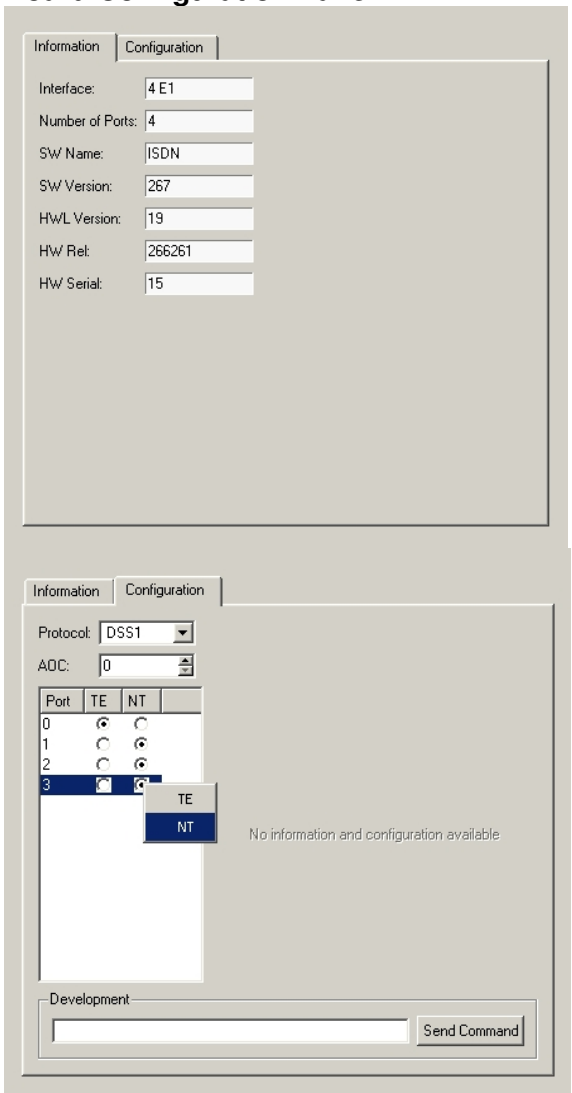
10.4 ISDN

After connecting a port of the **ECOTEL® VTMpro** to any other equipment the corresponding button in the vertical icon bar must turn green. Otherwise the port can not be used. If the port will not become active the settings and the cable pinning must be checked!

Vertical Tree View:



Board Configuration Panel:



10.4.1 Information

Attribut:	Description:

Interface	Name of the card. Normally is the name 4E1. Further developments can also be named different.
Number of Ports	Displays the number of available ports. License models can also generate a different number of physical available and useable ports.
SW Name	Name of the running firmware. The name can vary with the set protocol.
SW Version	Version of the installed firmware.
HWL Version	Hardware layout version of the mounted board
HW Rel.	Release of the installed hardware.
HW Serial	Serial number of the installed hardware

10.4.2 Configuration

Attribut:	**Description:**
Protocol	This setup allows to choose different protocols running on the card. Available protocols are: DSS1: European ISDN signaling NI1: National ISDN 1 (US standard) ISUP: Signaling System 7 (SS7)
AOC	Provides the possibility to send AOC (Advice Of Charge) information in NT mode. This feature is not available in general in ISUP mode. When AOC is selected the value in the specific field determines the time between two AOC messages are sent.
Port	Provides the available ports and its function. The change between NT (Network Termination) and TE (Terminal Equipment) can be established be moving the mouse arrow over the radio button, pressing the right mouse button and selecting TE or NT. This procedure is for security reason, that the mode is not changed by chance.

ATTENTION

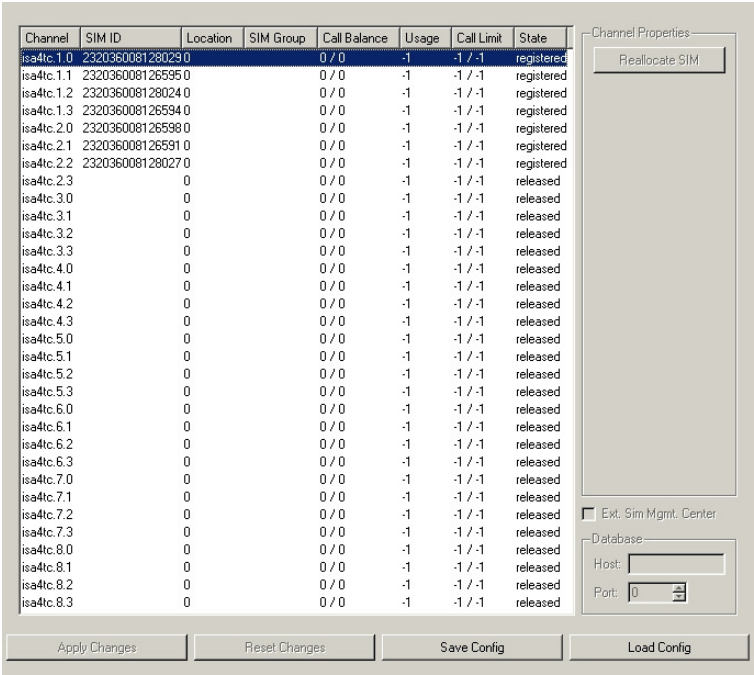
After any change the "Apply" button must be pressed and the ***ECOTEL® VTMpro*** *must be rebooted*

10.5 Simcontrol

10.5.1 Overview

The SIMcontrol window provides a view over the available SIMs, its parameters and states.

Vertical Tree View: Configuration Panel:



10.5.2 Functions in detail

Attribut:	**Description:**
Channel	Shows the specific GSM channel in the syntax GSM.<Board>.<Channel>
SIM ID	Provides the ID of the SIM for distinct assignment. The ID is represented by the IMSI
Location	
SIM Group	Shows the group the SIM is assigned to. If no assignment is available the field is empty.
Call Balance	Shows the traffic load of the specific SIM in the format Incoming/Outgoing minutes.
Usage	
Call Limit	Shows the limit in the format Incomming/Outgoing traffic if a limit has been set in the SMC->Local SIMs->Limit view. If there is no limit set – 1 is displayed
State	Shows the registering state. Only if the states displays “registered” the SIM can be really used.

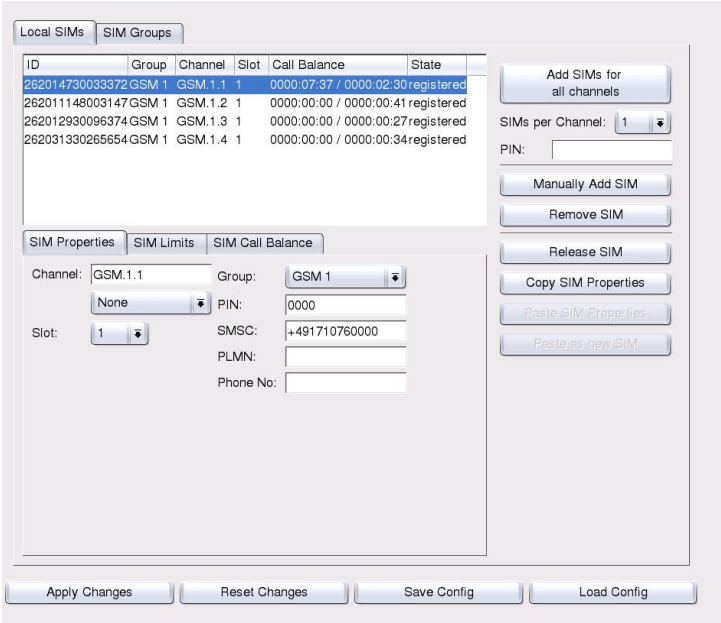
10.6 SMC Sim Management Center

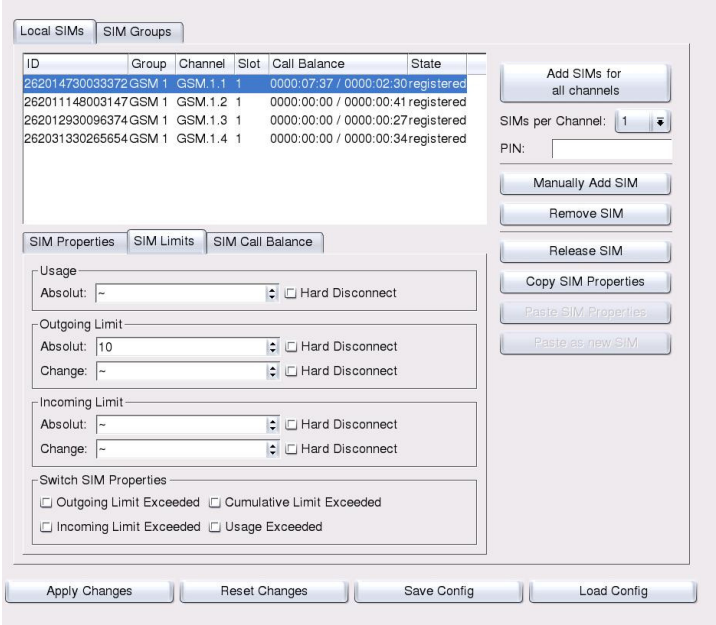
10.6.1 General

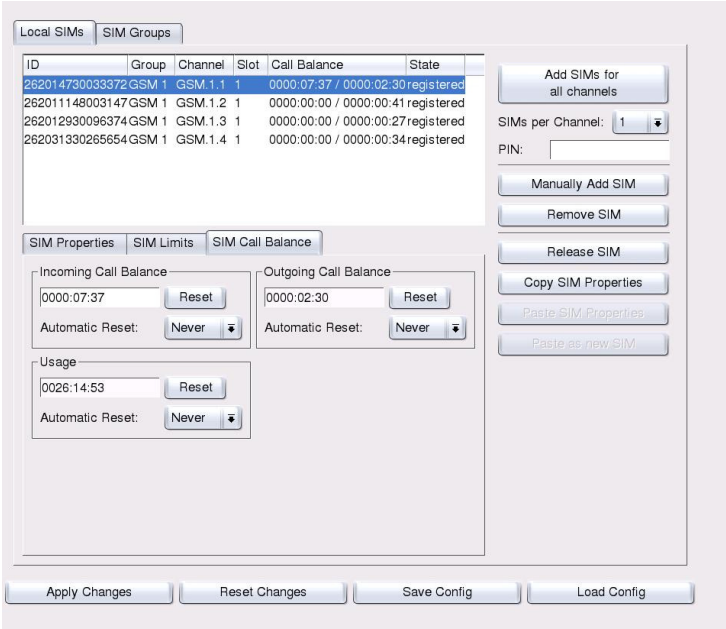
The SMC provides enhanced possibilities of administration and switching of SIMs. The SIMs are automatically parsed and its data can be fulfilled manually. There are also the option to associate specific limits to each SIM and to create groups of SIMs.

Vertical Tree View :

Configuration Panel:







10.6.2 Local SIMs

The Local SIMs sheet provides administration of the local SIMs and its traffic limits.

10.6.2.1 Sim Data Status Box

The main box lists all in the system available SIMs, the active ones and also the SIMs on reserved positions.
The provided information are:

Attribute	**Description**
Idx:	Index number oft the specific SIM
Id:	Individual identification number represented by the IMSI
Group:	The group the SIM is assigned to (refer to SIM groups view)
Channel:	The GSM channel the SIM is put in
Slot:	The position the SIM is put in the SIM carrier of the GSM channel
Call Balance:	The accumulated traffic of the SIM separated in Incoming/Outgoing
State:	The working condition the SIM is at the moment

10.6.2.2 Manual SIM adding

The buttons on the right side of the SMC – Local SIMs view provide to add SIMs manually.

Attribute:	**Description:**
Add SIMs for all channels	This button provides the option to insert SIMs for all available GSM channels. The parameters of the SIMs will be filled with default values. This values can be corrected manually or will be partly updated when the SIM is registered.

SIMs per channel	Together with the “Add SIMs for all channels” there can be set how many SIMs are provided per channel.
PIN:	There can be set a PIN value for all added SIMs
Manually Add SIM	Using this button there can be added one single SIM. The parameters of the SIMs will be filled with default values. This values can be corrected manually or will be partly updated when the SIM is registered.
Remove SIM	The selected SIM will be removed by pressing this button.
Release SIM	
Copy SIM Properties	For easier editing parameters for each SIM card there is a copy and paste function provided. With this function it is for example possible to copy SIM limits from one SIM and paste it to all others
Paste SIM Properties	See “Copy SIM Properties”

ATTENTION

All changes and inputs must be confirmed by the “Apply” button, otherwise changes will take no affect!

10.6.2.3 SIM Properties

Attribute:	**Description:**
Channel:	If a already registered SIM has to be changed by its channel reference it can be entered here in conjunction with the “Manual Override” check box or it must be used if a SIM has to be added manually at all.
Slot:	The slot can be specified the actual SIM is physically entered in the SIM carrier of the GSM channel
Group:	The SIM can be assigned to a specific group. The group must have be defined before in the SIM groups view.
PIN:	The SIM specific PIN can be entered
SMSC:	The number of the SMS Servicecenter the SIM can work with can be entered here. This is vital for sending and receiving SMS via this SIM.
PLMN:	Public Land Mobile Network can be entered to force the SIM to register only into the specified network. This is useful when the SIM can also roam into other networks because this can cause tremendous fees.
Phone No:	Every SIM has a phone number. For information and to enable incoming test calls to specific GSM channels the number can be entered here.

10.6.2.4 SIM Limits

The limit function provides the possibility to use SIMs with monthly limits or limited minutes contingent at all. It gives also the chance to distribute the total call traffic to more SIMs.

Attribute:	Description:
Hard Disconnect	If this Checkbox is aktivated, an outgoing call is disconnected if the limit exceeds.
Usage:	This field provides the option to enter a time limit in minutes the SIM may be registered at all independent from the amount of terminated incoming and outgoing minutes.
Absolute	Max. Time the SIM can be registered
Outgoing Limit	Limit for outgoing Calls for the SIM
Absolute	Max. Time to use the SIM for outgoing Calls
Change	Change the SIM after this Limit is reached
Incomming Limit	Limit for incomming Calls for the SIM
Absolute	Max. Time to use the SIM for incomming Calls
Change	Change the SIM after this Limit is reached
Switch Sim Properties:	In this field there the limits can be selected that will cause a SIM change if the limit has been exceeded.
Outgoing Call Limit Exceeded	If this check box is selected the SIM will be changed when the “Call Balance (Out)” counter has exceeded the “Out. Limit” value.
Incoming Call Limit Exceeded:	If this check box is selected the SIM will be changed when the “Call Balance (In)” counter has exceeded the “In. Limit” value.
Cumulative Limit exceeded	Don´t differ between outgoing and incomming Limit. Add the two Limit´s and test again this value.
Usage exceeded	Disconnect the SIM after the Usage-Limit is exceeded

10.6.2.5 SIM Call Ballance

Usage Counter for the SIMs.

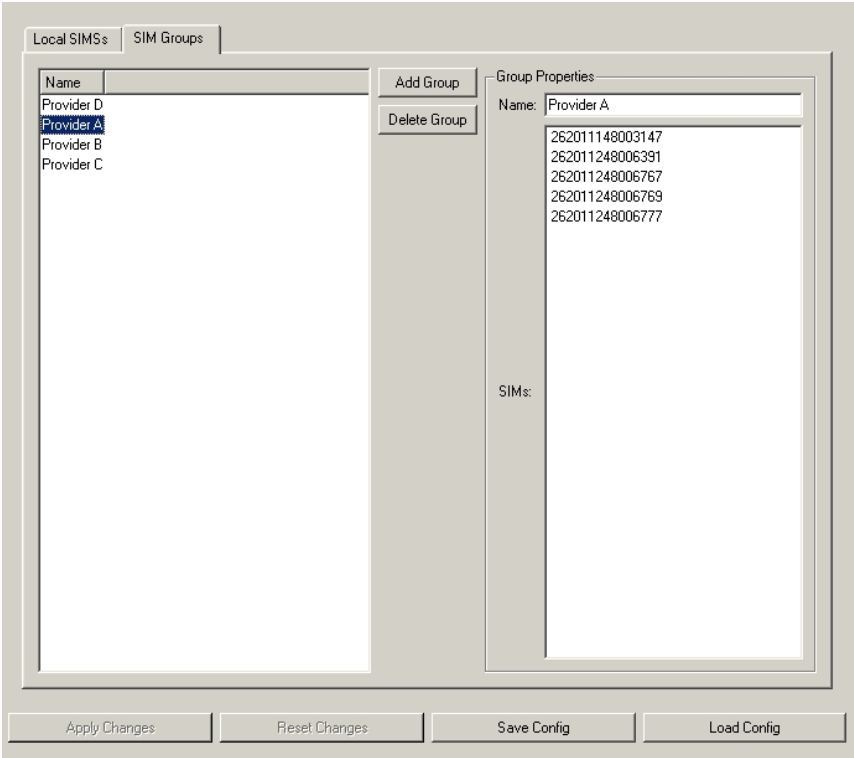
Attribute:	Description:
Incomming Call Balance	Counts and shows the absolute incoming traffic amount in minutes. This counter is compared with the specific incoming limits to check whether the SIM must be changed.
Outgoing Call Balance	Counts and shows the absolute outgoing traffic amount in minutes. This counter is compared with the specific outgoing limits to check whether the SIM must be changed.
Usage	Counts and schows the absolute time, the SIM is registered.

Reset	With this buttom the selected Counter is reseted
Automatic Reset	Configuration if the given counter should be reseted automatically.
Never	No automatic reset
Daily	Reset the counter on daychange
Weekly	Automatic Reset every week
monthly	Automatic Reset every mnth

10.6.3 SIM Groups

The SIM Groups view provides the option to define groups of SIMs. This groups of SIMs have typically the same similarities, for instance same provider, same limit conditions and so on. For routing generation the whole group can be selected.

Vertical Tree View: **Configuration Panel:**



10.6.3.1 Overview

For adding a new group the following steps have to be fulfilled:

1. Press the button “Add group”.
2. Enter a name for the group in the Group Properties -> Name field.
3. Repeat the steps 1 and 2 as often as new groups wanted
4. If a group must be removed select the group in the SIM Groups -> Name list and press the button “Delete Group”.
5. To add SIMs to the specific groups switch to the Local SIMs view
6. Select a SIM in the list box
7. Assign the selected SIM to a group by the Local SIMs->SIM->Groups function.
8. Repeat step 7 until all SIMs that have to be assigned are done.
9. Use the groups in routing by selecting a group in Routing -> Port Properties -> SIM Routing -> SIM Group Routing -> Add Group.

10.6.3.2 Functions in detail

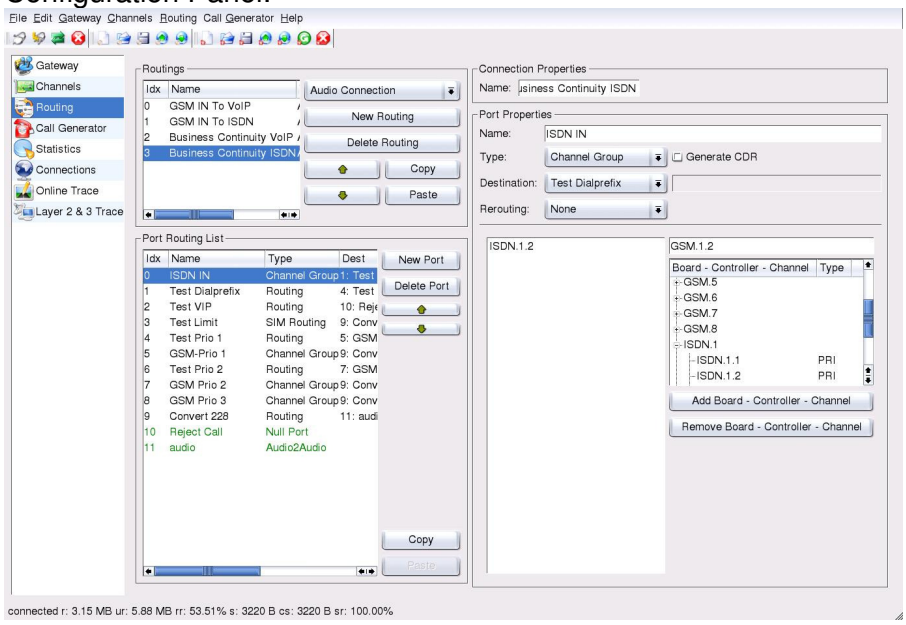
Attribute:	Description:
Name	Lists all the already defined groups
Add Group	For adding a new group this button must be pressed.
Delete Group	If a group is selected in the SIM Groups – Name view it can be deleted by pressing this button.
Group Properties - Name	IN order to create a new group the groups name must be entered here. A already defined groups name can be changed also if the specific group is selected in the SIM Groups – Name view.
Group Properties - SIMs	Lists all SIMs that belong to the selected group. The SIMs can be assigned to a group in the Local SIMs -> SIM -> Group view.

11. Routing

To get routing setup select “Routing” with the mouse on the vertical icon bar.

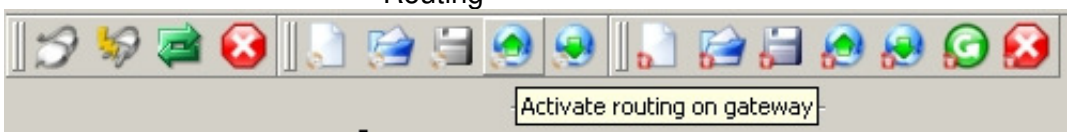
Vertical Icon Bar:

Configuration Panel:



In conjunction with the routing panel there are also buttons in the horizontal icon bar important:

Routing



11.1 Establishing a new routing step by step

For a quick introduction there is assumed a simple example where calls come from fixed network via E1 and have to be terminated to GSM. There are no further options like number crunching or differentiating between more carriers needed.

1. First press the button “New Routing” in the “Routings” field.
2. Select a connection type. Normally “Audio Connection” is selected for voice functions.
3. Give the routing a name in the “Connection Property” field.
4. The settings are confirmed in the “Routings” list box.
5. Create a new port by pressing the “New Port” button in the “Port Routing List”. The new port brings new options in the right side of the window.
6. In the “Port Property” filed you can give the new port a individual name. If you do not name the port a default name will be given.
7. Give the port also a type. For typical routing tasks type “Channel Group” is suitable. The options in the right under part of the window belongs individual to the type and changes with the type.
8. If “Channel Group” has been selected, a specific kind of channels must be selected too from the tree view. The channels can be selected on a different depth, from whole controller to a single channel. There can also selected more than one

item. Confirm selection by pressing the button “Add Board-Controller-Channel”. In this example the select the “npci8280.0”.

9. Create another port by repeating the steps 5 to 8. In this example choose the channel group “isa4tc.1” in the tree view.
10. Every port must also have a destination or even a alternative destination. Select a destination in the “Destination” list. The lists “Destination” and “Rerouting” grow with the created ports.
11. Finish the simple routing by adding another port. This port must have the type “Audio2Audio” for a audio connection. In the area bottom right there can be selected when the voice path shell be coupled.
12. Every new routing or every change must be confirmed by the “Activate Routing on Gateway” in the horizontal icon bar.
13. There can be provided more routings within one routing list. For a alternative routing list repeat the steps 1 to 12. The search sequence can be selected be the green arrows.
14. Now there can be terminated calls from fixed network in to mobile network.

11.2 Routing features in detail

11.2.1 Philosophy

The routing concept is based of ports and virtual ports. Ports are linked with physical ports like E1 or GSM. Virtual ports are steps in routing between two physical ports and can influent the behavior of the routing. Every port has a source and a destination. It is also possible to jump within the port list in dependence of a result or setting.

11.2.2 Routings

The routing filed contents features to create new or manipulate existing routings. Every routing consists of ports and virtual ports. In the routing list box there are displayed the existing routings and its options:

Idx: Every routing entry has its own index number

Name: Every routing line has its individual name

Type: Every routing has its individual type. See also chapter “Routing type”.

11.2.2.1 Routing Type

The routing is basically characterized by its type. The following types and its functions are available. The type refer to the kind of incoming connection:

Attribute:	Description:
Audio Connection	If incoming traffic is audio signal then this type must be selected
Data Connection	For incoming traffic data, this type must be selected
SMS Connection	For incoming SMS messages to be routed or converted this type must be selected
Email Connection	For incoming Email messages to be routed or converted this type must be selected

11.2.2.2 New Routing -Delete Routing – Copy –Paste – Sequence

Attribute:	Description:
New Routing:	To create a new routing this button must be pressed. For confirmation of a new routing in the list box a raw line must be visible.
Delete Routing:	To delete a routing the specific line within the table must be selected and the delete button must be pressed.
Copy:	Routings can also be copied. To copy a routing the specific line must be selected and the “Copy” button must be pressed. See also “Paste”.
Paste:	A earlier copied routing line can be inserted by pressing “Paste”. The details of the routing can be adapted afterwards. See also “Arrows – Sequence”
Arrows – Sequence	The routing machine handles the list in a sequence. Therefore sometimes it is important in which sequence the routing is stored in the list. To change the sequence the green buttons can be used.

11.2.2.3 Connection Properties

The connection property is just the name of the routing. If no name is given the **ECOTEL® VTMpro** provides a automatic generated name.

11.2.3 Port Routing List

Contents of the list box:

Attribute:	Description:
Idx	Every routing port gets its own index number
Name	Every port can be assigned a name. The name has to be entered in the “Name” input in the “Port Properties” field. If no name is provided the system assignes its own name. Anyway this name has to be used for further references.
Type	Shows the type of the specific port. The type has to be selected in the “Type” input in the “Port Properties” field.
Destination	Specifies the next port the routing machine jumps to if the actual port has finished its job. If the jobs result are not valid the Rerouting is accessed. The destination has to be selected in the “Destination” input in the “Port Properties” field.
Rerouting	The rerouting provides a alternative if the default destination can not be taken. The rerouting has to be selected in the “Rerouting” input in the “Port Properties” field.
CDR	For administration reason there can be entered a line in to CDR (Call Data Record) file for every port passed through during the routing. If a entry for the specific port is wanted the check box in the “Port Properties” has to be selcted.

11.2.3.1 Port Properties

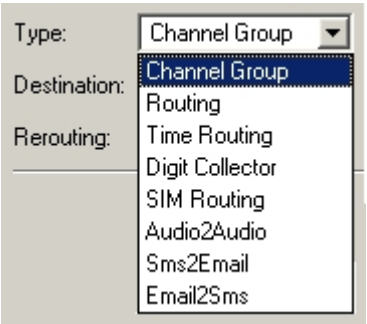
The port properties are only visible if a port in the routing list is selected. The lower part of the options belong fix to a specific port type.

The upper part is fix. The elements are:

Attribute:	Description:
Name	Provides the possibility of giving every port its individual name. If no name is provided the system assignes its own name.
Type	Every port has its own type. The type influents the behavior of the routing basically. Available Types are: • Channel Group • Routing • Time Routing • Digit Collector • Sim Routing • Audio2Audio • Sms2Email • Email2Sms The detailed functions of the specific types are described below.
Destination	Provides the possibility to enter the next port to manage after the actual has been done.
Rerouting	If the default next port, entered in “Destination” has failed a alternative port can be entered.
Generate CDR	Provides the possibility to generate for each port a individual CDR (Call Data Record) entry in to the cdr.log file.

11.2.3.2 Channel types in detail

Every port must be assigned a type. This type can be selected from the “Channel Type” menu:

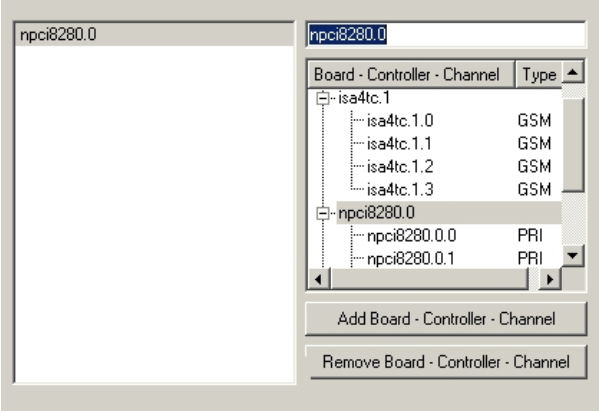


11.2.3.2.1 Channel Group

To receive connections from extern or terminate them to external, the channel group is the necessary type. There can be selected all available ports. This types are displayed in the “Board-Controller-Channel” list view. To add a new port to a empty list the following steps must be done:

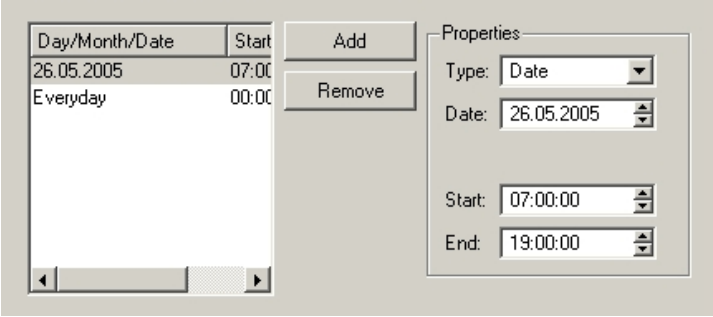
- Any type of board, controller or channel must be selected in the tree view.
- The “Add Board-Controller-Channel” must be pressed. The selection is now visible in the list box.

- To add another group press the “Add Board-Controller-Channel” again.
- To remove a group select it in the list box and press the “Remove Board-Controller-Channel” button.



11.2.3.2.2 Time Routing

There is a time depending routing provided. If the actual time of the call is within of any time period defined in the list box the call will be established. Otherwise it will be rejected.



To define a new period the add button must be pressed. A selected period can be removed by pressing the remove button. After adding a new period the specific type and the depending dates must be entered. The available types are:

Type	Settings/Range	Description
Every Day	Starttime: 00:00:00 to 23:59:59 Endtime: 00:00:00 to 23:59:59	The call is permitted independent from the day when the actual time is between start and end otherwise it is rejected
Weekday	Weekday: Monday to Sunday Starttime: 00:00:00 to 23:59:59 Endtime: 00:00:00 to 23:59:59	The call is permitted when the actual day is matching the configured day and the time is between start and end. Otherwise it is rejected.
Month	Month: January to December Starttime: 00:00:00 to 23:59:59 Endtime: 00:00:00 to 23:59:59	The call is permitted when the actual month matches the configured month and the time is between start and end. Otherwise it is rejected.

Date	Date: 01.01.1792 to 31.12.8000 Starttime: 00:00:00 to 23:59:59 Endtime: 00:00:00 to 23:59:59	The call is permitted when the actual date is matching the configured date and the time is between start and end. Otherwise it is rejected.
Ranged Date	Startdate: 01.01.1792 to 31.12.8000 Enddate: 01.01.1792 to 31.12.8000 Starttime: 00:00:00 to 23:59:59 Endtime: 00:00:00 to 23:59:59	The call is permitted when the actual date is between start date and end date and the time is between start and end. Otherwise it is rejected.

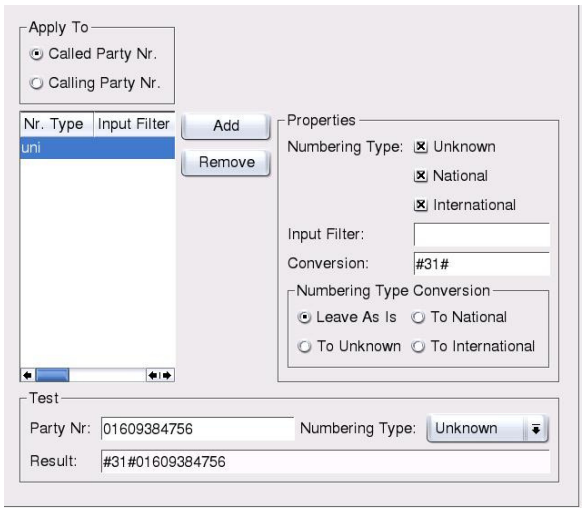
In the list box can be provided more time ranges. The call must pass all ranges, otherwise it is rejected.

Example: The calls may be terminated to the following port weekends and celebration days in may between 7.00 am and 8.00 pm. The following table shows the necessary entries. The call will only be successful if all conditions are fulfilled.

Type	Data	Time
Month	May	00:00:00 to 23:59:00
Weekday	Saturday	07:00:00 to 20:00:00
Weekday	Sunday	07:00:00 to 20:00:00
Date	05.05.2005	07:00:00 to 20:00:00
Date	16.05.2005	07:00:00 to 20:00:00
Date	26.05.2005	07:00:00 to 20:00:00

11.2.3.2.3 Routing

The routing port provides filtering and manipulating called or calling party numbers. In this way a routing can be achieved.



Apply To

The following manipulation can be applied to the called party number or the calling party number. The specific number is selected by the radio button.

List Box

In the list box the created conversions are shown. Its just for information and overview:

Attribute:	Description:
Nr. Type	Shows the numbering types selected in properties
Input Filer	Shows the reserved input filter
Conversion	Shows the applied conversion for the selected filter string

Another filter entry can be added by using the “Add” button. In the same way a entry can be removed by selecting it and pressing the “Remove” button.

Properties

Number Type

Within ISDN protocol there is a attribute for called and calling numbers available. The manipulating can be limited to a specific type of numbers.

Number Type:	Explanation
Unknown	The number type attribute is not used
National	The number type within ISDN is set to national format
International	The number type within ISDN is set to international format

Input Filter

The input filter provides the possibility to search for strings within a string. Normally there are searched for numbers within a called or calling party number but this function is very universal, so it works also with letters. In conjunction with the “Conversion” function the found strings can be replaced by another string entered in the “Conversion” part. For search mechanism the “Regular Expressions” syntax is used. This is a standardized language for filtering in strings and used in informatics at all. The syntax is as following:

Pattern:	Description:	Example		
		Input	Search Expression	Found
<string>	Finds exact the given string	017345678	345	345
.	Finds exact one arbitrary sign	01735678	.1.3	0173
?	Finds the precede token cero or once	0173173	173?	173
+	Finds the precede token once or more	017335678	3+	33
*	Finds the precede token cero or more times	017355678	74*35*	7355
[ ]	Searches one of the signs included in brackets	01735678	[56]	5

[2-4]	One of the signs from 2 to 7, it can also be from a to z	01735678	[2-4]	3
[^]	No one of the signs included in brackets	23	[^3]	2
^	Searches a pattern at the beginning of the line	1234321	1^	1 (at the beginning)
$	Searches a pattern at the end of the line	1234321	1$	1 (at the end)
\	Locks the special determination of the following sign	+491735678	\+	+

Conversion

The conversion function provides the possibility to substitute the found string by another given string. The substitution can be entered in the specific conversion field. If there is no suitable string found the string is set before the dialed string.

Example1: For CLI suppression the GSM command #31# can be set before the dialed number. In this case there is no search expression needed and in the conversion field the string #31# must be entered.

Example2: The international format in the +49… writing shell be changed to 0049…In this case the + must be replaced by the 00 string. Therefore in the search field the \+ must be entered and in the conversion field the 00.

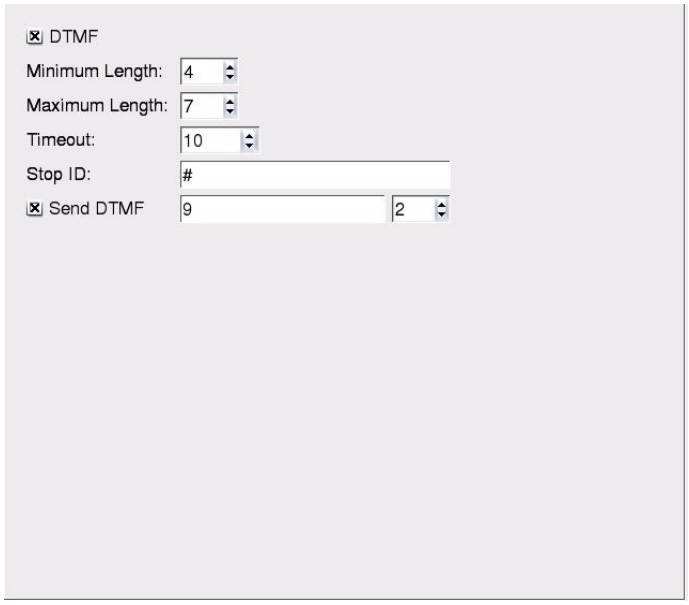
Numbering Type Conversion

It´s possible to convert the type of Number of the selected number.

Field	**Action**
Leave as is	Don´t change the type of Number
To unknown	Change the Type of Number to “unknown”
To national	Change the Type of Number to “national”
To international	Change the Type of Number to “international”

11.2.3.2.4 Digit Collector

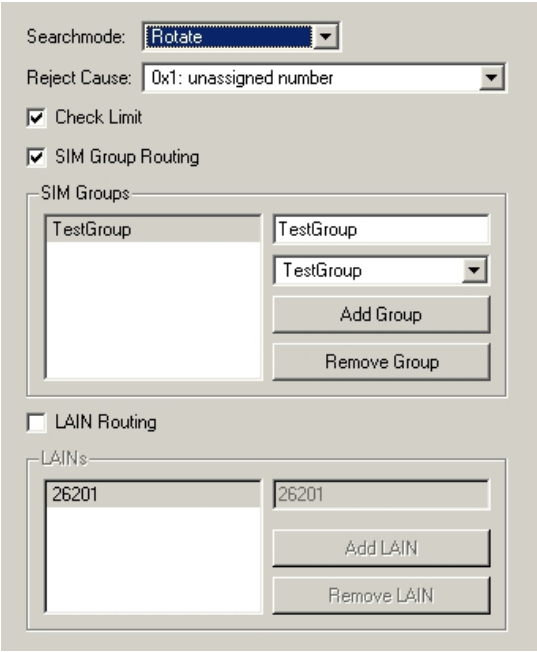
The digit collector provides the option to collect a called party number after a connect. The following routing is based on the post dialed number. Only if there is a valid number entered and the routing fits, then the call will go on. Otherwise it is rejected.



Attribute:	Description:
DTMF	If the check box is selected, the collector accepts digit only in band in DTMF tone format. Otherwise the digits are expected within the signaling path.
Minimum Length	The digit collector must decide the moment the number is complete. The minimum length must be always reached before the number can be complete.
Maximum Length	If the maximum length is reached the collector considers the number as complete
Timeout	If the count of the numbers is within min and max the number is considered to be complete if the timeout is reached.
Stop ID	If the number is between minimum and maximum it´s possibel with the “Stop ID” to stop the Timeout. The connection to the destination is started. The Stop ID is not deleted from the Called Party Number!
Send DTMF	If the check box is selected, the collector sends the number as DTMF-Signal X sekonds after the entry.

11.2.3.2.5 SIM Routing

The SIM-Routing port provides two enhanced functions of SIM routing: SIM Group Routing and Network Routing. Both modes provide routing not to a specific SIM but to a group of SIMs.



Searchmode: If calls are pointed to the group there are more modes available how the calls are distributed to the specific SIMs.

- First: The first free GSM port within the group is selected. In this case it can happen, that some ports terminate more minutes than other. If there is only one call simultaneously than all calls will be accumulated to the first GSM port.
- Rotate: The GSM ports will be rotated. First call is directed to the first port, second to the second ports and so on. The traffic is better distributed than in mode “First”.
- Fewest Call Balance: The next call is directed to the next free port with the fewest terminated minutes of traffic. This ensures, that all SIMs have nearly the same load.

Reject Cause: If there is no valid routing within the SIM Routing port no matter for which reason and there is no rerouting provided the call is rejected. The cause the call is rejected can be set free from the list.

SIM Group Routing

In the SMC (SIM Management Center) there is the possibility provided to define groups of SIM with common attributes. Often it makes sense not to route calls to specific GSM ports, but to ports that use SIMs from one group (e.g. SIMs from one provider and the same contract conditions). If SIM Group routing is wanted the appropriated check box must be selected. For more details of creating SIM groups refer to chapter SIM Management Center.

Network Routing

Network Routing provides the option to route calls to GSM ports that uses the same network. The provider is identified by its PLMN (Public Land Mobile Network), that

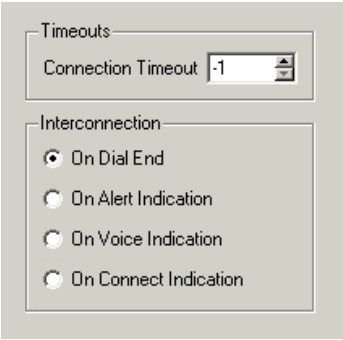
consists of MCC (Mobile Country Code) plus MNC (Mobile Network Code). This code can be also viewed in the information sheet of every GSM channel. There can be provided more codes to cover even roaming conditions if wanted.

ATTENTION

Some SIMs provide the option of international or even national roaming. When there is roaming active the PLMN differs from the home network PLMN. In this case there will be no calls directed to the affected channels in Network Routing mode if there is only the PLMN from the home network provided. Roaming can be prohibited by entering a PLMN code at the SIM properties within a specific GSM channel.

11.2.3.2.6 Audio2Audio

For audio connections the is a coupling of time slots at a specific moment necessary. This coupling is provided by the Audio2Audio port. This port is the terminating port of any routing of voice calls.



Timeout: This parameter provides the option to cancel a connection after a specific time. The value is set in seconds. If the parameter is set to –1 then there is no timeout selected. The time starts counting after the Audio2Audio port is reached within the routing and stopped when connect to the b-party is performed.

Interconnection: The exact moment of coupling the time slots during establishing a connection can be selected.:

- On Dial End: The voice is coupled when dialing has finished and before first alert.
- On Alert Indication: The voice is coupled after first alert has been recognized.
- On Voice Indication: The timeslots are coupled when there has a in band voice message recognized. Voice is defined a in band message that is not typically a alert or busy signaling before connect.
- On Connect Indication: The voice is coupled when there has been recognized a connect at the p-party. In this case any in band information will not be transferred to the a-party.

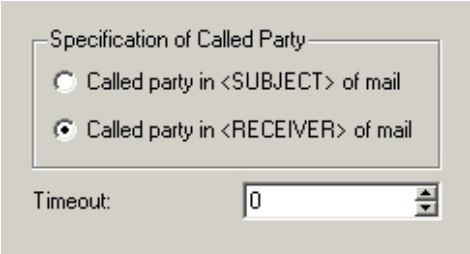
11.2.3.2.7 Sms2Email

In order to receive SMS, convert and send it as email there is a Sms2Email port provided.

Attribute:	Description:
Default Receiver	In the SMS can be set a receiver email address. If no address can be found within the SMS the **ECOTEL® VTMpro** sends it to the default receiver address . If whether a address I the SMS can be found nor a default address is given the SMS can not be sent as email!
Sender	In SMS2Email conversion there is no origin email address given. The sender can set one in the text. If no sender email address is given the **ECOTEL® VTMpro** sets the default address. If nor a sender address can be found in the email address nor there is a default, the **ECOTEL® VTMpro** sets the CLI of the origin mobile if provided.
Timeout	The timeout in seconds can be set different to cero, when there shell be made a new attempt when no confirm is received from the mail server that the email has been sent.

11.2.3.2.8 Email2Sms

In order to receive emails, convert and send it as SMS there is a Email2Sms port provided.



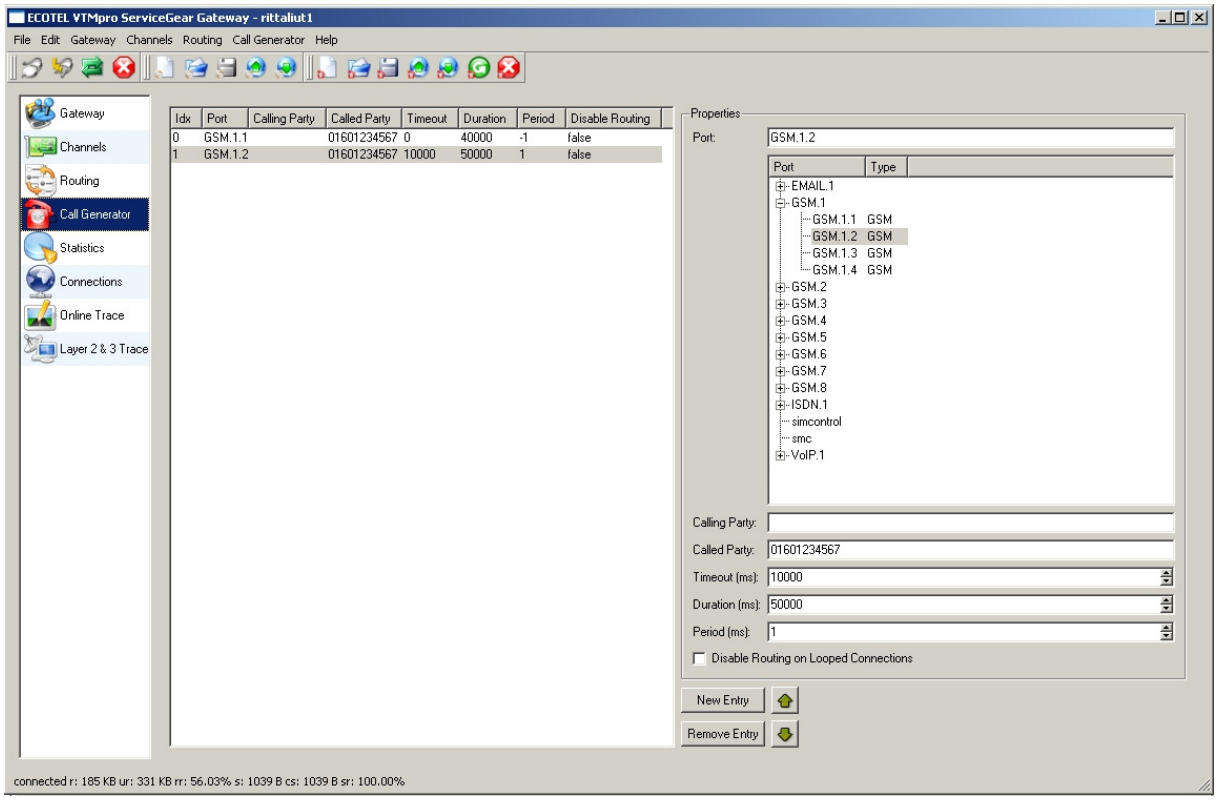
Attribute:	Description:
Called party in <SUBJECT> of mail	The email that has to be sent as SMS must carry the CLI of the destination. This can be set in the <SUBJECT" of the email
Called party in <RECEIVER> of mail	or in the <RECEIVER> field of the email.
Timeout	The timeout in seconds can be set different to cero, when there shell be made a new attempt when no confirm is received from the provider that the SMS has been sent.

12. Call Generator

The Call Generator is a very useful tool for system setup, maintenance or debugging

ATTENTION

The Call Generator is only able to simulate calls by signaling not by in band voice simulation!



12.1 Overview

The Call Generator provides the option to program a list of calls that will be performed. The calls can also be looped back and used for routing tests.

To establish a Call Generator entry the following steps must be done:

1. Press the button “New Entry” from the main view. A new entry will be visible in the list box.
2. Give the entry a optionally name in the properties line.
3. Select a channel from the tree list the call shall be generated from.
4. Give the call a Calling Party e.g. for using it in further routings (A-party).
5. Give the call a Called Party (B-party).
6. Give the call a timeout for start the call. If no delay between start call generator and start the specific call is wanted the default cero can be let.

7. Give the call a max. duration. After the duration time the call generator hooks the call on.
8. If the call shell be performed in period the pause between two repetitions can be set.
9. If there is a extern loop back available (e.g. cross cable on ISDN-E1) then there can be set whether the looped back connection shell be routed or not.
10. Press the “Download/Activate” button at the horizontal icon bar
11. Start the Call Generator by pressing the “Start” button at the horizontal icon bar.

12.2 Functions in details

12.2.1 Horizontal Icon bar

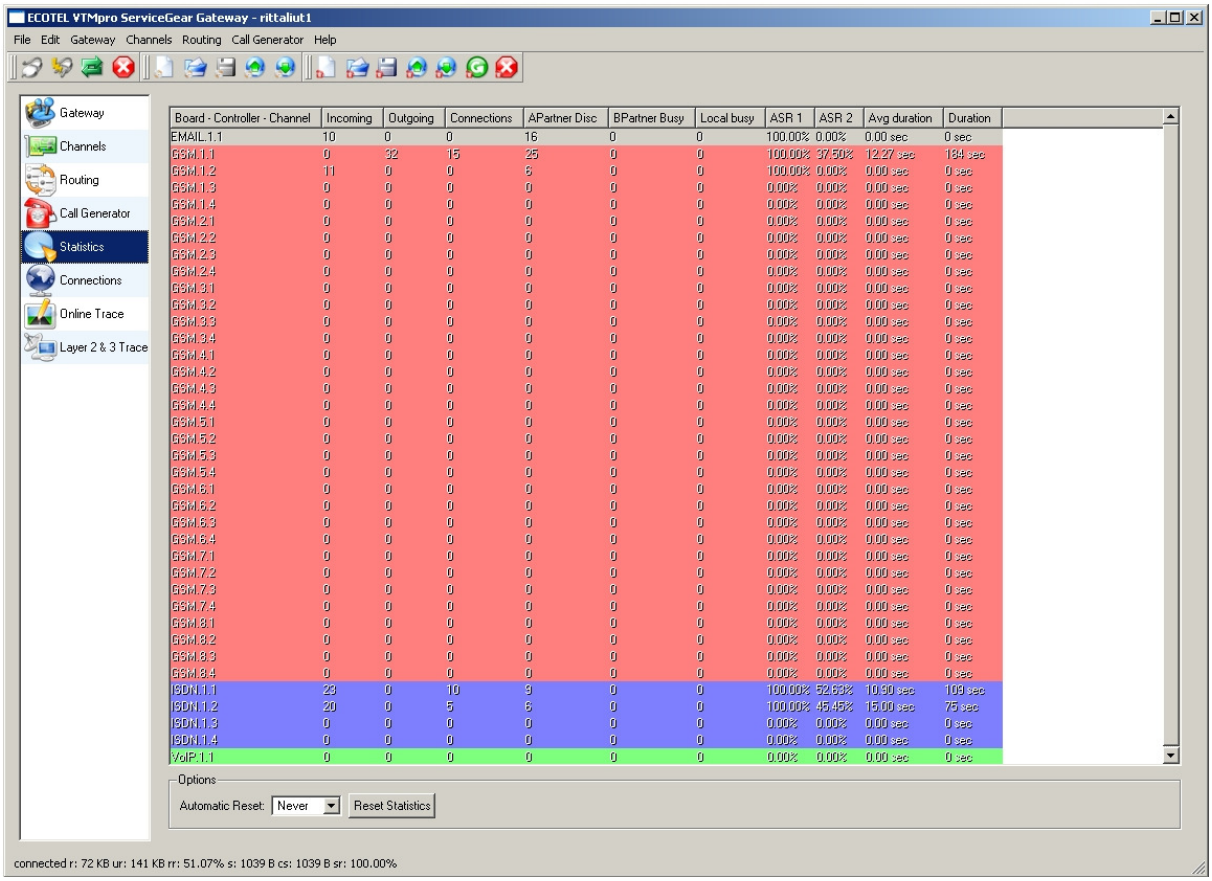
Attribute:	Description:
New config	Creates a new Call Generator configuration.
Load config	Loads a already established Call Generator configuration from the local machine.
Save config	Saves a Call Generation configuration. The configuration is saved in XML format on the local machine.
Upload config	Upload a Call Generator configuration from the **ECOTEL® VTMpro** in to the maintenance gear for viewing and modification.
Download/ Activate	Loads a established Call Generator configuration down to the **ECOTEL® VTMpro** and activates it
Start call gen	Starts the call generator. Action can be monitored simultaneously at the Connections view or the Layer 2&3 debugging view.
Stop call gen	Stops the Call Generator. The Call Generator must always be stopped by the user even when the call has already been finished by the B party before it can started again.

12.2.2 Elements from main view

Attribute:	Description:
List Box	The list box shows all configured calls. Arbitrary number of calls can be programmed. The calls are worked in the sequence of listing, started with one. The sequence can be manipulated by using the green up/down arrows.
New Entry	A new call entry is established by this button
Remove Entry	A selected entry can be removed by pressing this button.
Port	The call can be given a optionally a individual name. Essentially a channel from the tree view must be selected via the call can be established
Calling Party	The Calling Party (A-party) number can be set optionally.
Called Party	The Called Party number (B-party) must be set mandatory.
Timeout (ms)	The timeout (in milliseconds) for a delayed starting of the call can be set optionally.
Duration(ms)	The maximum overall call duration (in milliseconds) must be set mandatory. Without a time the call will not be started.
Period (ms)	The calls can be repeated periodically optionally. If this is wanted a time between two repetitions must be set here.
Disable routing…	If there is a extern loop back available (e.g. cross cable on ISDN-E1) then there can be set whether the looped back connection shell be routed or not.

13. Statistics

The statistics view provides detailed information over the passed calls. The channel types are colored different because of a better readability.



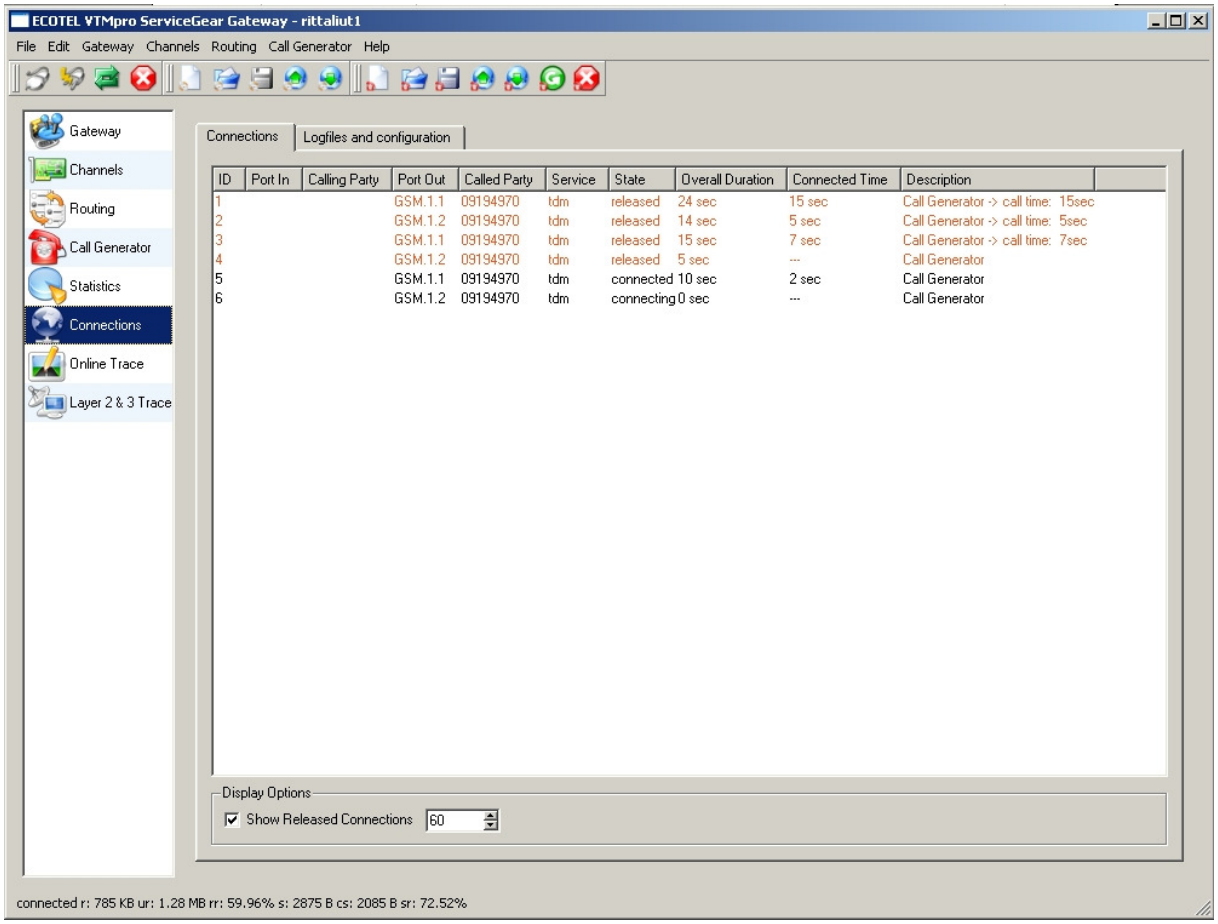
Attribute:	**Description:**
Board-Controller-Channel	Names the specific channel in the syntax <Board>.<Controller>.<Channel>
Incoming	Counts the total number of incoming calls
Outgoing	Counts the total number of outgoing calls
Connections	Counts the total number of connected calls
APartnerDisc	Counts the number of calls that have been finished by the A-partner
BPartnerBusy	Counts the number of calls that have been finished by the B-partner
Local Busy	Counts the number of calls that could not been routed because of a lack of GSM channels
ASR1	Average Seizure Ratio 1: Quotient between successful calls and all calls whereas the calls that are abolished by the A-party before connect are counted as successful calls.

ASR2	Average Seizure Ratio 1: Quotient between successful calls and all calls whereas the calls that are abolished by the A-party before connect are counted as failed calls. Example: 10 calls, 3 disc by network, 1 disc by A-party ASR1= (10-3)/10*100=70% ASR2=(10-4)/10*100=60%
Average duration	Displays the average duration in seconds of the calls.
Duration	Displays the over all minutes that have been terminated through this port.

The statistic values can be reset automatically by setting the Automatic Reset parameter from never to daily, weekly or monthly. The statistic can also be retted by pressing the Reset Statistics button.

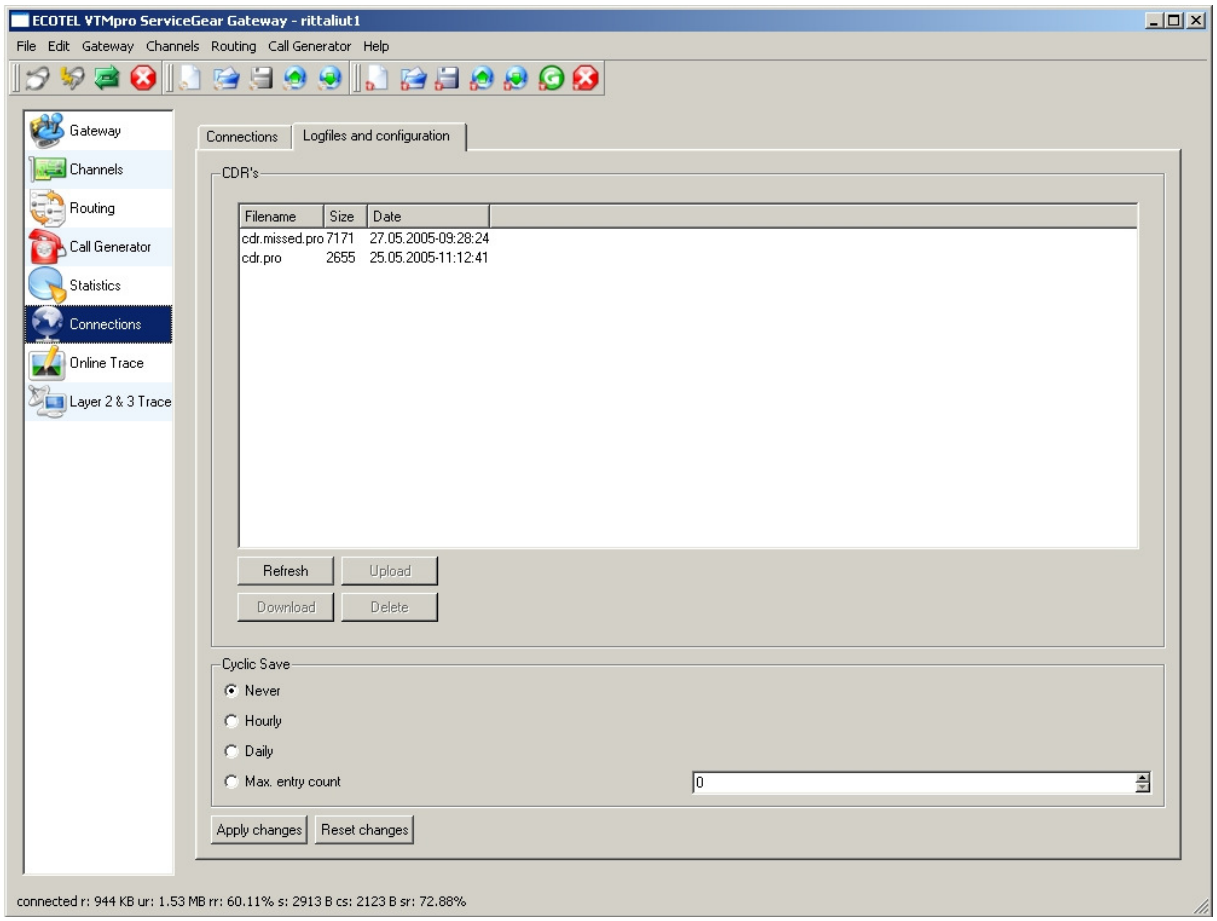
14. Connections

14.1 Connections view



The connection view provides online the current connection on the VTMpro. To ease the monitoring of the flow the “Show Released Connections” box can be checked on. This function provides the display of the released connections for the time in the box beside set.

14.2 Logfiles and configuration



The “Logfiles and configuration” view provides the administration of call data records. The call data records are separated in cdr.pro for successful calls and cdr_missed.pro for the unsuccessful calls.

The files can be uploaded and downloaded between the **ECOTEL® VTMpro** and the local machine. To refresh the display of the files, e.g. to monitor the files size the “Refresh” button is provided. A selected file can be deleted by pressing the “Delete” button.

The files can also be cyclic saved and renamed. The period of doing this can be set by time parameters or maximum contents of lines within the file. The files are renamed from:

cdr.pro to cdr_<Year><Month><Day>_<Hour><Minute><Second>.pro

Example: When the file is renamed at 29. Mai 2005 at midday the file will be renamed to:

Cdr.pro > cdr_20050529_120000.pro

The default location the files will be downloaded to the local machine is:

C:\documents and settings\<username>\VTMpro_ServiceGear\<Gatewayname or IP address>\..

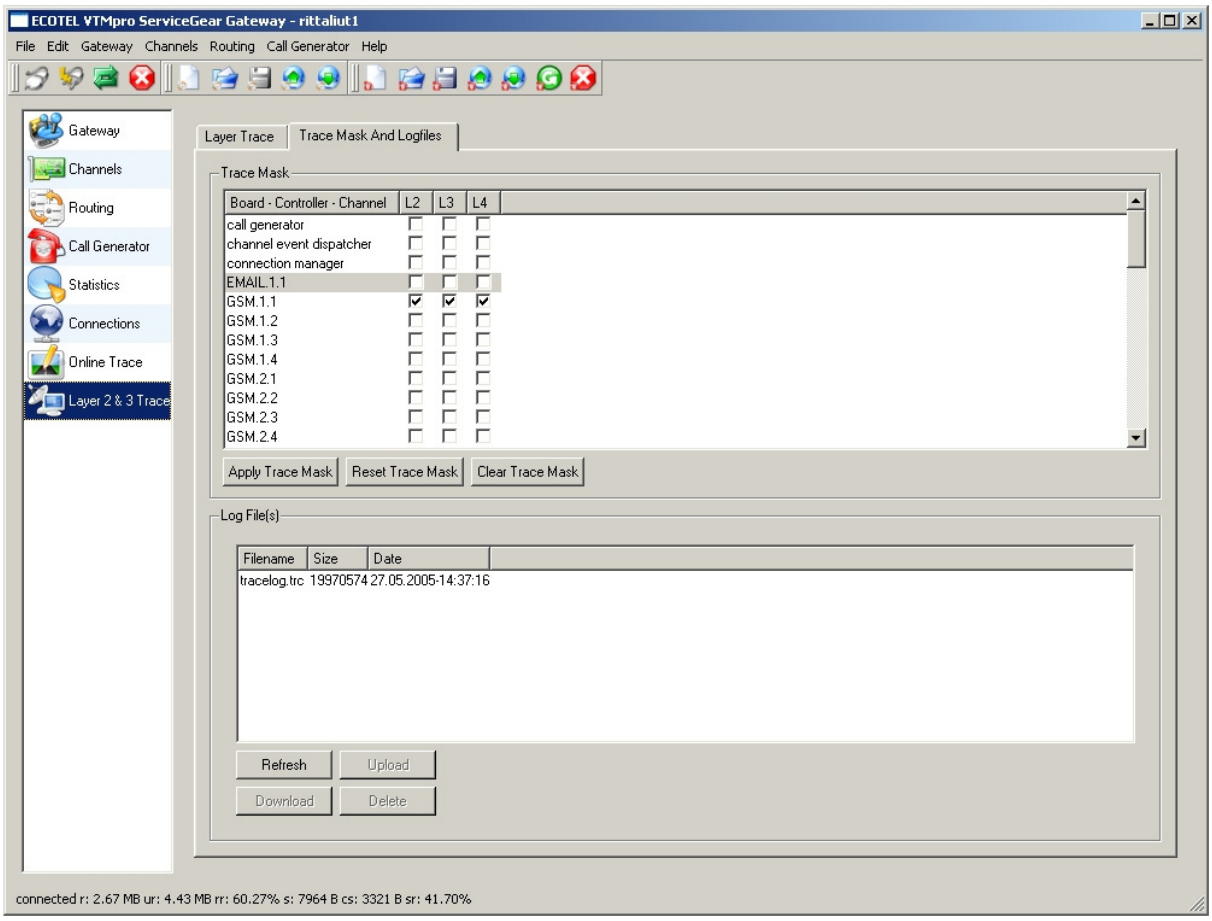
15. Online Trace

The Online Trace view contents enhanced trace functions that helps the VIERLING technical support and developers retrieving internal problems. This tool is only used on order of this two groups. The user trace functions consists of the following described “Layer 2&3 Trace”

16. Layer 2&3 Trace

The Layer 2&3 Trace provides sophisticated trace functions for retrieving especially GSM and interconnection problems.

16.1 Offline trace and settings



The trace options can be set very detailled by the “Trace Mask And Logfiles” panel.

16.1.1 Trace Mask

The Trace mask provides the option to switch traces on in a detailed depth. Every channel has there levels of traces. L1 means very low level and detailed trace, L3 means higher abstracter level traces. After setting a trace mask press “Apply Trace mask” to confirm the settings.

For the GSM channels there is another settings for L1 trace configuration on boars level. Therefore select: Channels -> GSM.<Board> -> GSM.<Board>.<Channel> -> Layer2Trace

ATTENTION

Traces always affects a system. Handle switching on traces very carefully. To many traces can paralyze the system in case of too high load. Normally all traces should be switched off.

16.1.2 Offline Trace

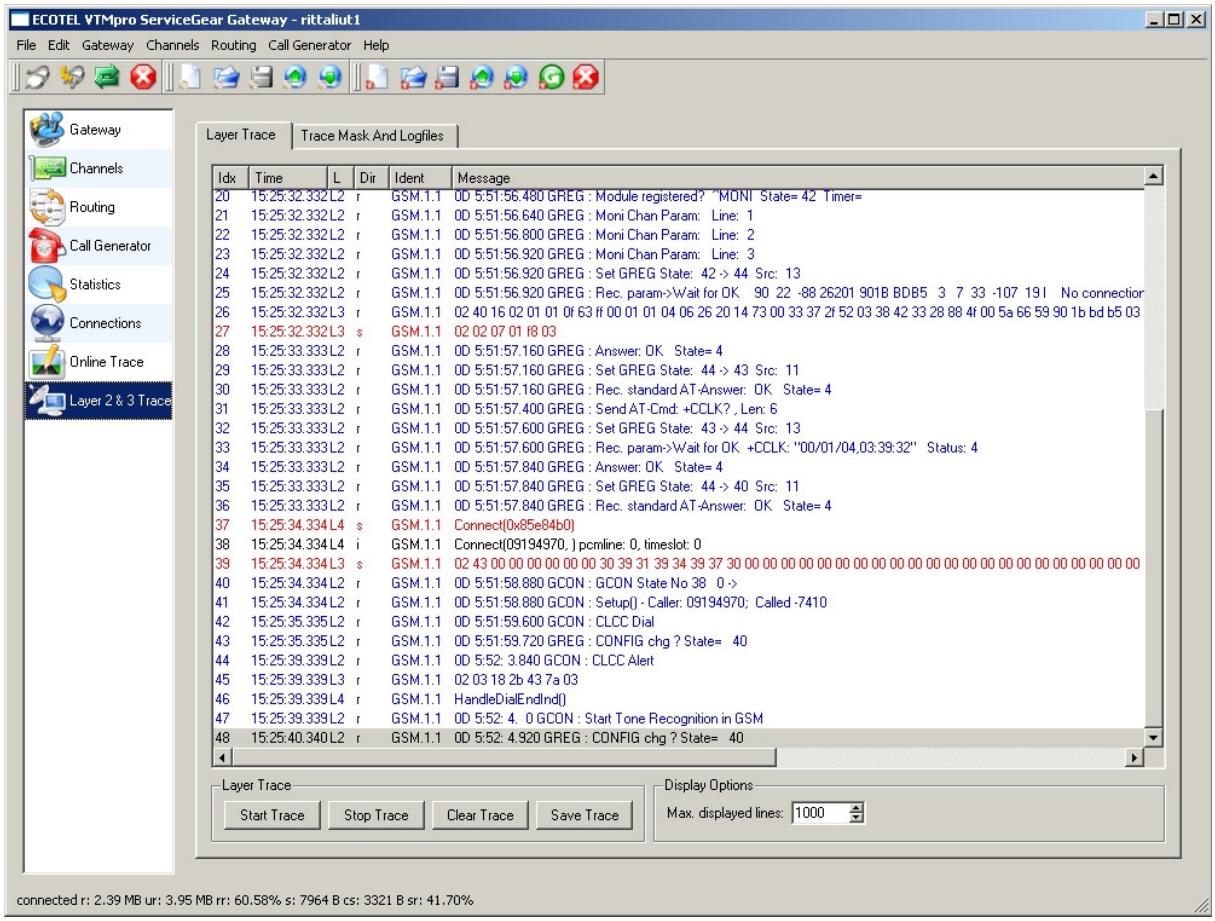
There is always offline a tracefile logged name tracelog.trc. The depth of information depends on the set trace mask. The files can be uploaded and downloaded between the **ECOTEL® VTMpro** and the local machine. To refresh the display of the files, e.g. to monitor the files size the “Refresh” button is provided. A selected file can be deleted by pressing the “Delete” button.

ATTENTION

To many switched on traces do not only affect the systems behavior in reaction time and performance it will also create huge amounts of data waste that will fill the harddisc space quite fast

16.2 Online trace

For viewing traces online a “layer trace” window is provided:



To start a trace the “Start Trace” button from the layer trace must be pressed. To stop the running trace the “Stop Trace” button must be pressed. The online trace can also be saved by using the “Save Trace” button. The window is cleared by pressing the “Clear Trace” button. The contents within the trace file is thereby not affected.

A limit can be set for the max displayed lines.

17. CDR – Call Data Records

17.1 General

Every call causes a entry into a logfile. The successful calls are logged into cdr.pro, the unsuccessful calls into cdr_missed.pro.

The files can be downloaded from the gateway to the local host for further working with. The files are loaded down by following steps:

- Logging into the gateway by using ServiceGearGateway.
- Changing to the “Connections” view from the vertical icon bar.
- Changing to the view “Logfiles and configuration”
- Selecting a file from the CDR´s list box.
- Pressing the “Download” button
- Selecting a folder for the file or using the default folder.
- Editing a name and press “Save”.

The CDR´s can be renamed automatically by selecting a mode from the “Cyclic Save” menu. The file is therefore renamed at midnight to the name: cdr_<Year><Month><Day>_<Hour><Minute><Second>.pro

The CDR files are located at the **ECOTEL® VTMpro** in the folder:

//vierling/var/cdr/..

17.2 Format

The CDR consists of strings separated by comma and terminated by carriage return at the end of the line.

No.	String	Description	Example
1	Starttime	Start time of the call	19.05.05-12:05:16
2	Endtime	End time of the call	19.05.05-12:05:21
3	IncommingPort	Is represented by a string. It can be numbers or letters. It belongs to how the incoming port is be named in the routing. The name is given in :Routing->Port Properties->Name	10 (or ISDN)
4	A-party No.	The CLI of the A-party	12345
5	Outgoing Port	Is represented by a string. It can be numbers or letters. It belongs to how the outgoing port is be named in the routing. The name is given in :Routing->Port Properties->Name	20 (or GSM)
6	B-party No.	The CLI of the B-party	01733667123
7	IMSI	The IMSI of the SIM card	262014730033372
8	IMEI	The IMEI of the GSM module the call has been terminated	520338416255177
9	Call Mode	The Mode of the call : 0101 = ISDN	0101
10	Duration	The length of the call in seconds	5
11	Billing Info	Provides the billing information, that has been sent. (Only in ISDN mode if selected)	0

18. Tools

18.1 Secure Shell-Tool-PuTTY

On the **ECOTEL® VTMpro** CD there is provided the freeware programme PuTTY. This programme enables to login to the **ECOTEL® VTMpro** by secure shell SSH. Because of **ECOTEL® VTMpro** is based on LINUX there is the option to control the system on a deep level.

ATTENTION

Linux or Unix knowledge is severe recommended for using this tool!

18.2 Secure Copy-Tool-PSCP

To copy a file (e.g. a new **ECOTEL® VTMpro** software release) from a Windows system to the LINUX based **ECOTEL® VTMpro** there can be used the freeware programme PSCP. This tool is command line based and must be run in a command box. To copy a file from Windows to **ECOTEL® VTMpro** the following steps must be done:

- Locate the folder PSCP is locate on the windows system by using the dos box an the commands cd <foldername>
- Type into the dos box:
  pscp c:\<foldername>\<filename> <username>@<VTMpro Name or IP address>
- Default the username is “Vierling”
- Then there is asked for a password. The default password is “neuneu”.
- The file will be copied

ATTENTION

Linux is very sensitive in permissions to file actions. To copy successfully there must be provided, that the user name is used, owns the necessary permissions.