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Handbook

IP configuration with CLI

Version 1.2 of Dezember 07th, 2011

document is subject to changes



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1 Overview

1.1 Changes relating to previous version

This document was extended by a description of the CLI commands enabling you to administrate call diversions and by a description of the activation of CLI in the Trace Info Client.

1.2 Reference list

not applicable

1.3 Predictable changes

not applicable

1.4 Abbreviations

not applicable

1.5 Introduction

This document describes how NovaTec systems can be configured and controled via CLI. It is furthermore described how the connection via Telnet or COM-Port can be established and how CLI can be launched remote via Trace Info Client. A description of all supported CLI commands is also included. Finally it is described how the system can be made accessible over IP for NMS or NMP using the CLI commands.

1.6 Compendium

This document describes how NovaTec systems can be configured and controled with CLI and how these commands may be used in possible service cases.



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2 Dependency to SW/FW

The commands and features as described in this document are not accessible in all software- and firmwareversions. As of this please find here a short description of the software- and firmware dependencies.

2.1 TELNET-Client

Dependencies to certain TELNET-Clients are not known. But NovaTec cannot preclude problems as it is impossible to test with all of the existing clients. It has been tested with the standard Windows TELNET-Client in the Windows Command Prompt.

2.2 Terminal

Dependencies to a certain terminal software are unknown. But NovaTec cannot preclude problems as it is impossible to test with all of the existing terminals. This document describes the connection establishment with the Microsoft ® Hyper Terminal.

2.3 Trace Info Client

To use CLI over Trace Info Client a special version of the Trace Info Client is required, which is liable to pay costs. Please contact our sales department for an offer. The article number of the needed Trace Info Client with CLI is 2F8600. Trace Info Client backs CLI from version 6.8.0.3.



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2.4 Firmware

The following table shows which firmware supports which features.

Firmwareversion	Feature
00.07.01.XX and older	no CLI support
from 00.07.02.00	1. release with CLI support: <ul style="list-style-type: none">- dial-in via TELNET and COM-Port- commands:<ul style="list-style-type: none">• help• exit• setpasswd• dhcpconf• netconf• ifconfig
from 00.07.04.00	<ul style="list-style-type: none">- features as of 00.07.02.00- support for Trace Info Client-CLI- new commands:<ul style="list-style-type: none">• showsub• showcf• activatecf• deactivatecf



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3 Dial-in to the system

CLI can be launched in three ways:

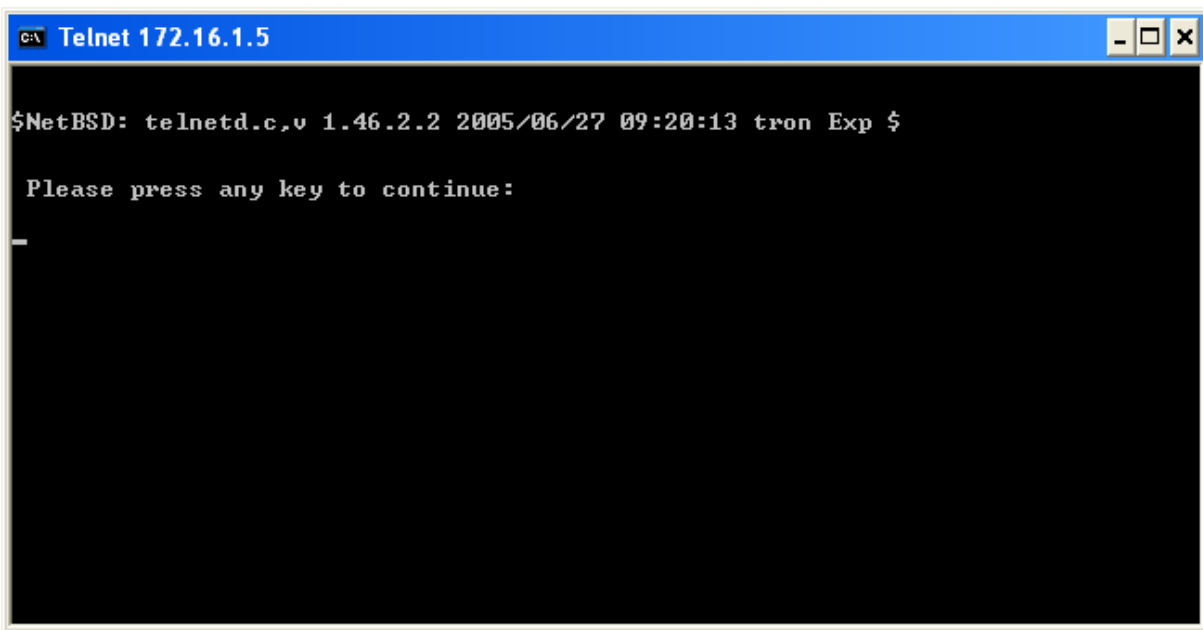
- Dial-in via Telnet (generally only possible if TLS is inactive)
- Dial-in via COM-Port (e.g. with HyperTerminal, generally only possible if TLS is inactive)
- Starting CLI with active Trace Info Client connection.
This is the only method enabling you to use CLI whilst encryption (TLS) is active. In this case CLI communication is transported via the encrypted TLS connection of the Trace Info Client.

3.1 Dial-in with TELNET or COM-Port

The following describes the connection and logg-in via TELNET and COM-Port.

3.1.1 Dial-in with Telnet via IP

The dial-in is effected and the DOS input window „telnet (current IP address)“ opens. The following text requests pressing any key.



picture 1: example of DOS input window: „telnet 172.16.1.5“

After pressing any key you can login with the login data for the account „TECHNIK“.



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3.1.2 Dial-in with HyperTerminal via the COM-Port

Dial-in via the Hyper-Terminal is effected as follows:

1. Start your Hyper-Terminal
(Start/Programme/Zubehör/Kommunikation/HyperTerminal/HyperTerminal)
2. Enter the name for the new connection:



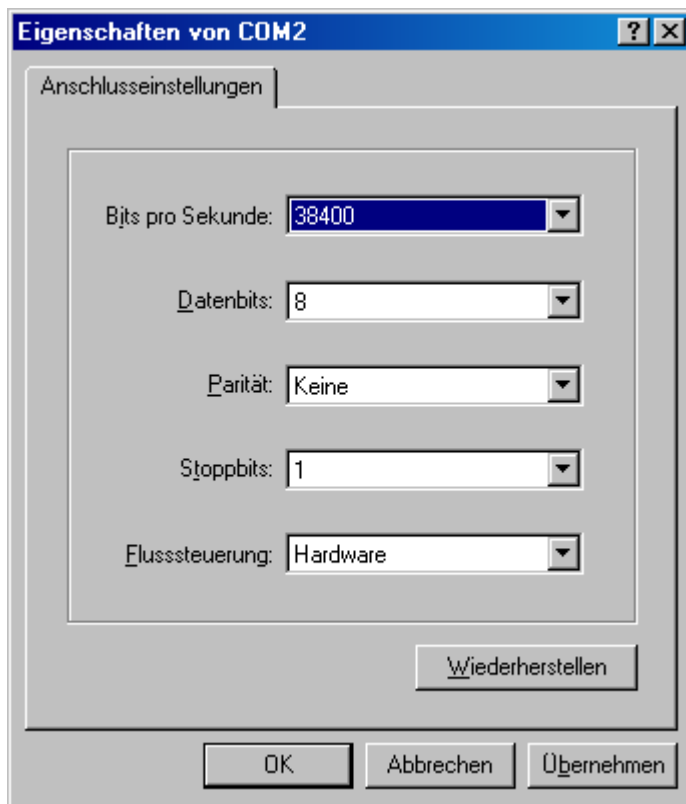
3. Chose the appropriate COM-Port:





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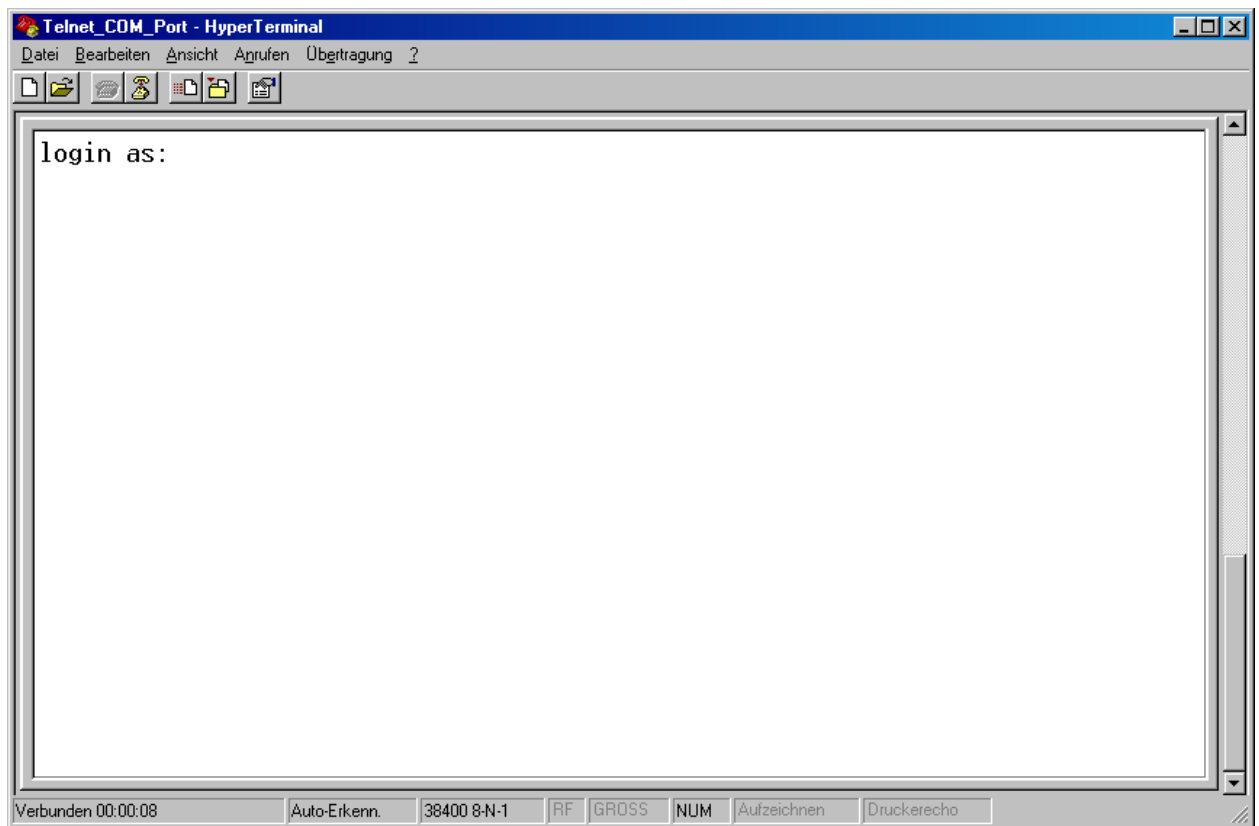
4. Set the characteristics for the COM-Port as given beneath:





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5. Press any key to be shown the login prompt:



6. Login with the data for the account „TECHNIK“.



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3.1.3 Login as user "TECHNIK"

When logging in you can only use the account data of the user „TECHNIK“. Login and password are case sensitive.

After successful login the following CLI prompt is shown:

```
Telnet 172.16.131
login as: technik
technik's password:
login successful type help to continue
TECHNIK > _
```

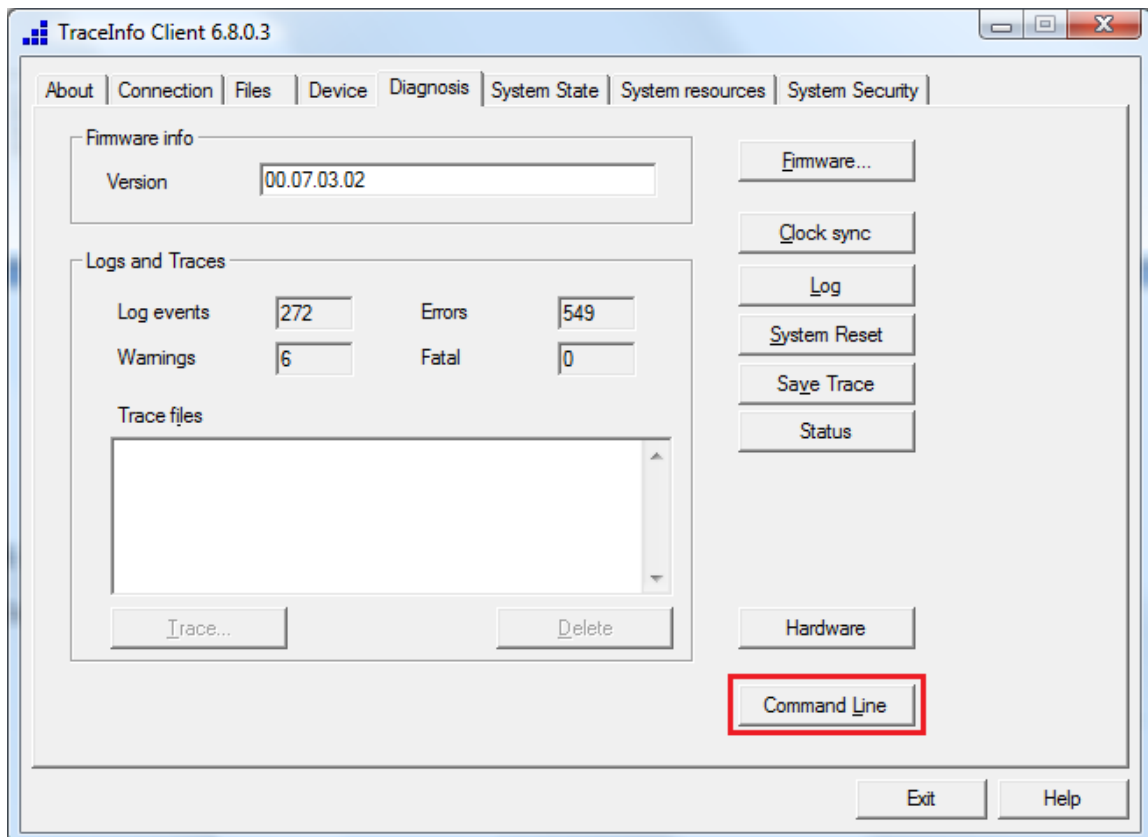


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3.2 Starting CLI in the Trace Info Client

CLI in the Trace Info Client can be started as follows:

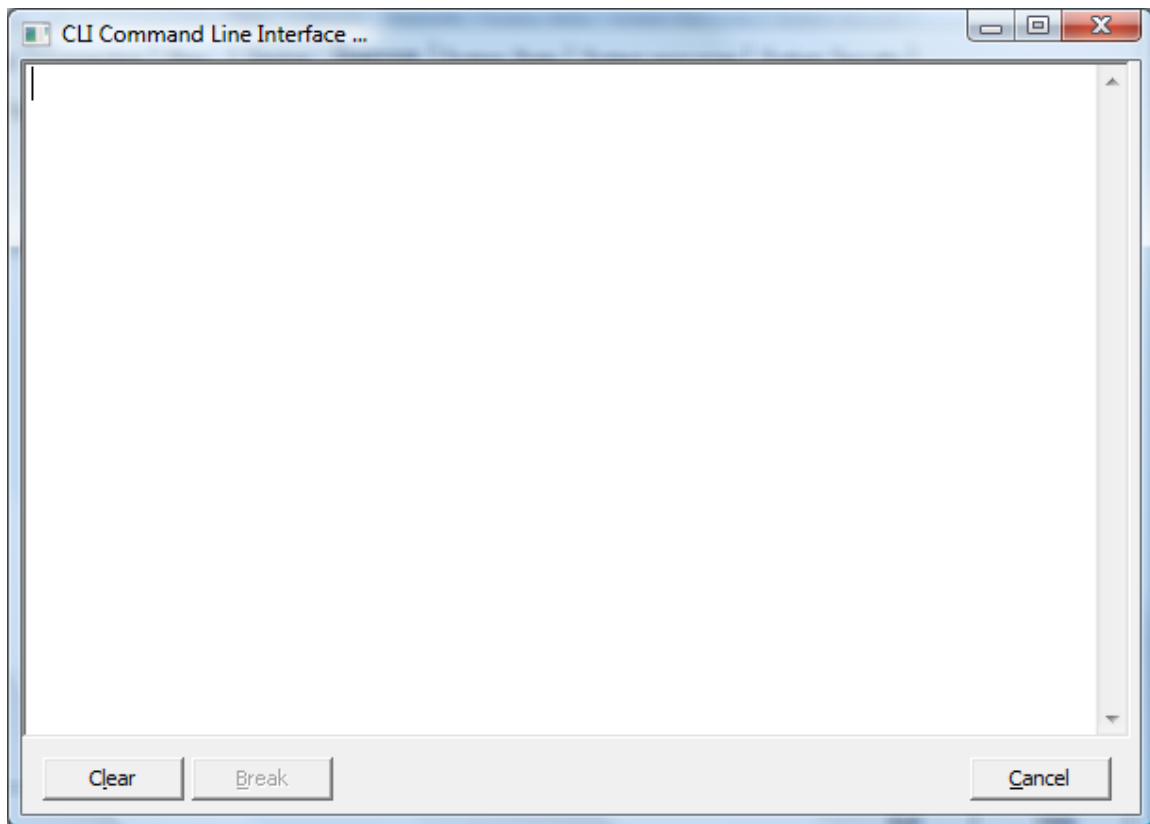
- Start your Trace Info Client (Start → All Programs → NovaTec → TracelInfo → TracelInfo)
- Connect with the target system (see also TracelInfo Client Online-Help under „Contents/Trace Info Client/The „Connection Page“)
- Change to flag „Diagnosis“ and click onto button „Command Line“





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- A new window is shown in which you can enter your CLI commands:



- Every command entered and every response received is broadcasted via Trace Info Client connection to the gateway, i.e.
 - o If the Trace Info Client connection is encrypted via TLS the entire CLI communication is automatically also encrypted.
 - o If the Trace Info Client connection is not encrypted the entire CLI communication is automatically not encrypted.
- In case you do not receive an response to your CLI command it is possible that the target system does not support CLI due to the installed FW version.



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4 CLI commands

In the following all known CLI commands are described. The screenshots are based on a TELNET connection in a Windows Command Prompt. But the syntax of the commands is always the same whether you use TELNET, COM-Port or Trace Info Client. Only the appearance of the CLI differs.

4.1 The command help

A list of all available commands can be requested with the command „help“:

```
C:\> Telnet 172.16.131
login as: technik
technik's password:
login successful type help to continue
TECHNIK > help
TECHNIK > Help-Menue
- help          this help menue
- dhcpconf     NovaTec command for the DHCP Client
- netconf      NovaTec command for the ethernet interface
- ifconfig     show configuration for the ethernet interface
- setpasswd    set password for user TECHNIK
- exit         terminate this telnet session

TECHNIK >
```



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4.2 The command exit

With the command „exit“ you cancel the current connection:

```
CAV. Command Prompt
login as: technik
technik's password:
login successful type help to continue
TECHNIK > help
TECHNIK > Help-Menue
- help          this help menue
- dhcpconf     NovaTec command for the DHCP Client
- netconf      NovaTec command for the ethernet interface
- ifconfig     show configuration for the ethernet interface
- setpasswd    set password for user TECHNIK
- exit         terminate this telnet session

TECHNIK > exit
Connection to host lost.
C:\>
```

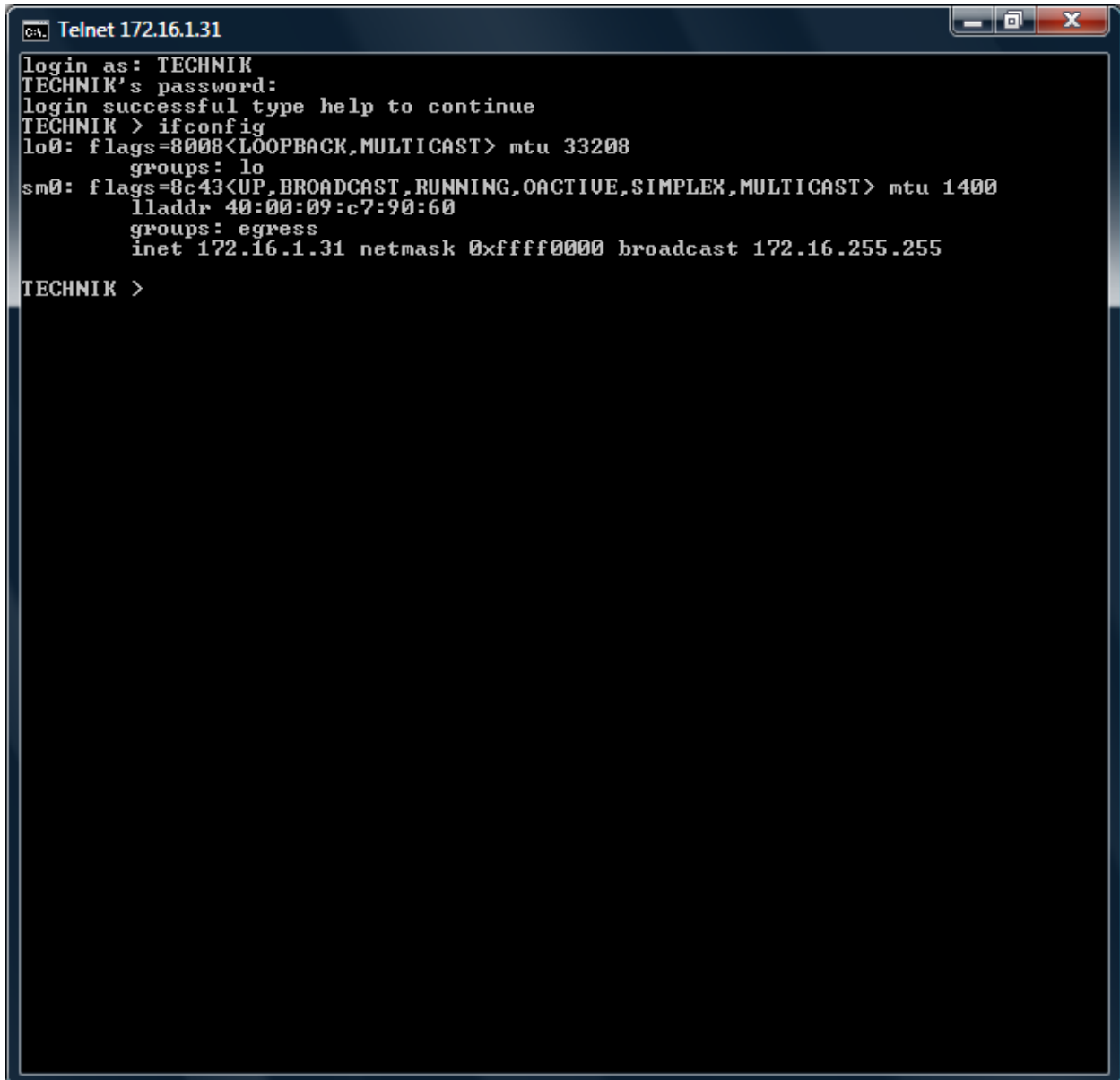
If the connection was established via HyperTerminal or COM-Port the command „exit“ is not available. In the HyperTerminal the connection is cancelled by hanging up or closing the HyperTerminal.



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4.3 The command ifconfig

The BSD interface config command can not be used to set but only to show all the current data of the TCP/IP stack:

A screenshot of a Telnet terminal window titled 'Telnet 172.16.131'. The terminal shows a login sequence for user 'TECHNIK'. After the login, the user enters the command 'ifconfig'. The output displays details for two network interfaces: 'lo0' (loopback) and 'sm0' (serial). The 'lo0' interface has flags 8008 and mtu 33208. The 'sm0' interface has flags 8c43, mtu 1400, MAC address 40:00:09:c7:90:60, and is configured with IP address 172.16.1.31, netmask 0xffff0000, and broadcast address 172.16.255.255. The prompt 'TECHNIK >' is visible at the end of the output.

```
Telnet 172.16.131
login as: TECHNIK
TECHNIK's password:
login successful type help to continue
TECHNIK > ifconfig
lo0: flags=8008<LOOPBACK,MULTICAST> mtu 33208
      groups: lo
sm0: flags=8c43<UP,BROADCAST,RUNNING,OACTIVE,SIMPLEX,MULTICAST> mtu 1400
      lladdr 40:00:09:c7:90:60
      groups: egress
      inet 172.16.1.31 netmask 0xffff0000 broadcast 172.16.255.255

TECHNIK >
```

The interface „sm0“ on S5, S6 and S20 or the interface „in0“ on the S3 show: mtu, MAC address, IP address, netmask and broadcast address.



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4.4 The command netconf

With the command „netconf“ you can change the following IPv4 parameters:
IP address, netmask and gateway IP address.

You have to use the following syntax to achieve this:
„netconf -h“ or a faulty entry will cause the following hint:

```
netconf [-h help] [-i ip-address] [-n netmask] [-g gateway-ip] [-s store]
```

Explanation:

„netconf -i xxx.xxx.xxx.xxx“	Set system IP address temporary.
„netconf -n xxx.xxx.xxx.xxx“	Set system netmask temporary.
„netconf -g xxx.xxx.xxx.xxx“	Set gateway IP address temporary.
„netconf -s	Save the temporary data as new active data. These parameters are activated by an automatically invoked LAN down/up. Should the system be in „Default“ the parameters stay as they are also after the next „System-Reset“ .
„netconf“ (new)	Shows the current data and future data as it will be set by netconf

```
TELNET 172.16.1.31
login as: technik
technik's password:
login successful type help to continue
TECHNIK > netconf

Config      IP          Netmask     Gateway
Current    172.16.1.31 255.255.0.0 172.16.0.1
New         0.0.0.0     0.0.0.0     0.0.0.0

TECHNIK > _
```



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4.5 The command dhcpconf

With the command „dhcpconf“ you can change the DHCP settings via the system.

The following syntax has to be used to achieve this:
„dhcpconf -h“ or a faulty entry will cause the following hint:

```
C:\ Telnet 172.16.1.5
login as: technik
technik's password:
login successful type help to continue
TECHNIK > dhcpconf -h
usage netconf [-h help] [-m mode] [-s store]

    Mode = 0: DHCP off
    Mode = 1: DHCP on
    Mode = 2: DHCP mit Option 129

TECHNIK >
```

Explanation:

„dhcpconf -m 0,1,2“
„dhcpconf -s

Set system DHCP mode temporary.
Save the temporary mode as new active data.
By an automatic LAN down/up these parameters are activated. Should the system be in „Default“ the parameters stay as they are also after the next „System-Reset“.

„dhcpconf“

Shows the current data and future data such as it will be set by dhcpconf (new) (see next page)

```
C:\ Telnet 172.16.1.5
login as: technik
technik's password:
login successful type help to continue
TECHNIK > dhcpconf

Current Mode: 0      DHCP off
New Mode:      0      DHCP off

TECHNIK >
```



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The command setpasswd

The command is used to set the password for the user „TECHNIK“. Giving a wrong option or the option `-h` will show the help function for the command:

A screenshot of a Telnet window titled 'Telnet 172.16.1.31'. The window shows a command-line interface with the following text:

```
login as: technik
technik's password:
login successful type help to continue
TECHNIK > setpasswd -h
usage: setpasswd [-h help] [-s set oldpasswd;newpasswd;newpasswd]
TECHNIK >
```

With the option `-s` the password is set. The procedure is the same as known from the Trace Info Client. Here are a few examples:

Example 1:

There is no password set in the system. The new password shall be “test”. The command has to be as follows:

```
setpasswd -s ;test;test
```

Example 2:

After executing Example 1 the password has to be deleted in the system. This entry will achieve this effect:

```
setpasswd -s test;;
```



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4.7 The command showsub

The command is used to show all configured subscribers of the target system. Giving a wrong entry or the entry `-h` will cause the following output:

```
ch: Telnet 172.16.1.31
TECHNIK > showsub -h
usage: showsub [-h help] [-p Port ID]
TECHNIK > _
```

If the command is given without parameters a list of all configured subscribers is stated:

```
ch: Telnet 172.16.1.31
TECHNIK > showsub
No.: 991, Name: Willibald, Interface: 0x301c
No.: 992, Name: <empty>, Interface: 0x301d
No.: 993, Name: <empty>, Interface: 0x301e
No.: 994, Name: <empty>, Interface: 0x301f
No.: 995, Name: <empty>, Interface: 0x3088
No.: 996, Name: <empty>, Interface: 0x3089
Number of subscribers found: 6
TECHNIK >
```

Should no name be defined for an subscriber, meaning the appropriate field in the configuration was left empty, the output will only state `<empty>` as name.

With the option `-p Port ID` you can limit the output to the subscribers of a certain interface:

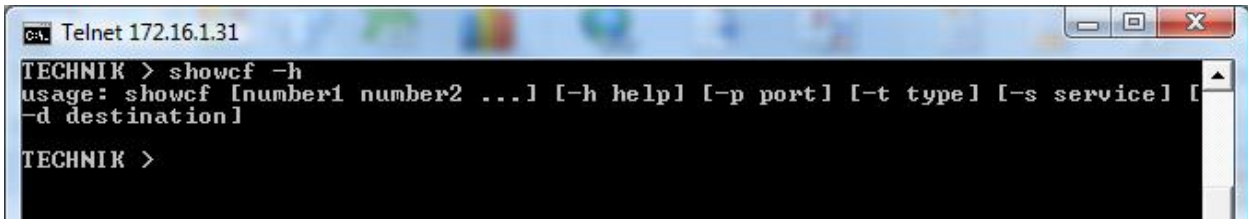
```
ch: Telnet 172.16.1.31
TECHNIK > showsub -p 0x301c
No.: 991, Name: Willibald, Interface: 0x301c
Number of subscribers found: 1
TECHNIK >
```



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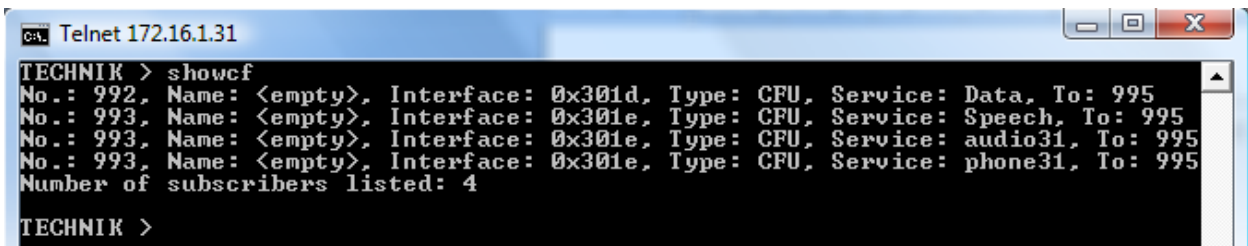
4.8 The command showcf

The command is used to show all active call diversions on the target system. Giving a faulty entry or the option `-h` will show the help text for this command:



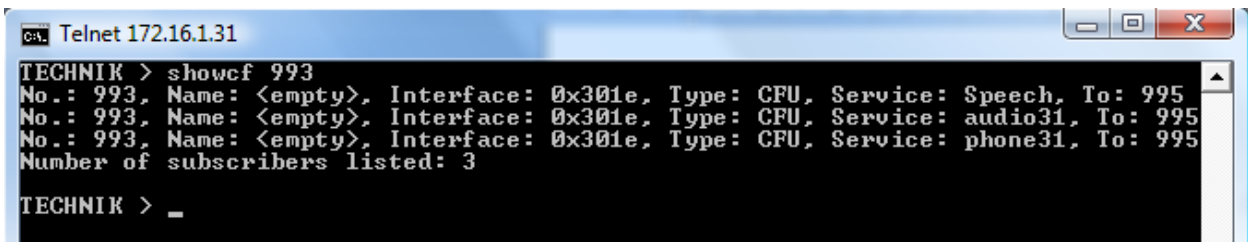
```
CA: Telnet 172.16.1.31
TECHNIK > showcf -h
usage: showcf [number1 number2 ...] [-h help] [-p port] [-t type] [-s service] [-d destination]
TECHNIK >
```

The entry of the command without option will show all active call diversions:



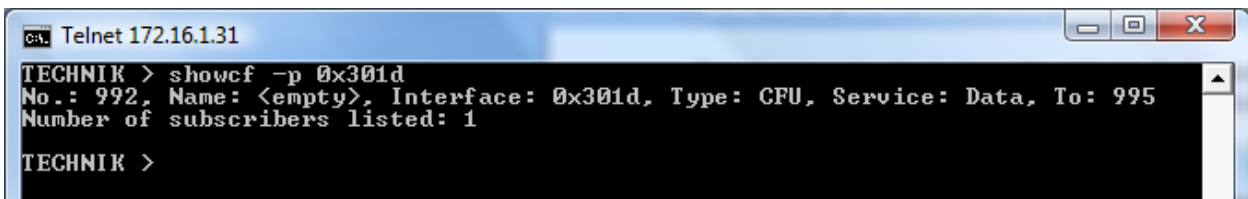
```
CA: Telnet 172.16.1.31
TECHNIK > showcf
No.: 992, Name: <empty>, Interface: 0x301d, Type: CFU, Service: Data, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: Speech, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: audio31, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: phone31, To: 995
Number of subscribers listed: 4
TECHNIK >
```

Entry of the command with a number will show all active call diversions for this number:



```
CA: Telnet 172.16.1.31
TECHNIK > showcf 993
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: Speech, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: audio31, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: phone31, To: 995
Number of subscribers listed: 3
TECHNIK > _
```

Entering the command with option `-p` will show all call diversions on a specific interface:



```
CA: Telnet 172.16.1.31
TECHNIK > showcf -p 0x301d
No.: 992, Name: <empty>, Interface: 0x301d, Type: CFU, Service: Data, To: 995
Number of subscribers listed: 1
TECHNIK >
```



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The entry of the command and option `-t` will show all call diversions of a specific type e.g. all permanent call diversions:

```
Telnet 172.16.131
TECHNIK > showcf -t cfu
No.: 992, Name: <empty>, Interface: 0x301d, Type: CFU, Service: Data, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: Speech, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: audio31, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: phone31, To: 995
Number of subscribers listed: 4
TECHNIK >
```

Entering the command and option `-s` will show all call diversions for a specific service e.g. all call diversions for the service „Speech“:

```
Telnet 172.16.131
TECHNIK > showcf -s speech
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: Speech, To: 995
Number of subscribers listed: 1
TECHNIK >
```

Entry of the command with option `-d` will show all call diversions to a specific destination:

```
Telnet 172.16.131
TECHNIK > showcf -d 995
No.: 992, Name: <empty>, Interface: 0x301d, Type: CFU, Service: Data, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: Speech, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: audio31, To: 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: phone31, To: 995
Number of subscribers listed: 4
TECHNIK >
```

It is also possible to combine the different options. The following example shows all call diversions for the service 'audio31' to destination 995:

```
Telnet 172.16.131
TECHNIK > showcf -s audio31 -d 995
No.: 993, Name: <empty>, Interface: 0x301e, Type: CFU, Service: audio31, To: 995
Number of subscribers listed: 1
TECHNIK >
```



4.9 The command activatecf

This command is used to setup call diversions in the target system. If a wrong option or option `-h` is entered this causes the output of the help text for this command:

```
Telnet 172.16.131
TECHNIK > activatecf -h
usage: activatecf number1 number2 ... [-h help] [-t type] [-s service] [-d destination]
enter "activatecf -h service" for detailed help about services
TECHNIK >
```

Adding 'service' to the option `-h` will show the extended help text. A tablet is issued which shows which service fits to which combination of BC and HLC. The tablet corresponds to the ETSI definition from ETSI EN 300196-1 (Version 1.3.2 (2001-06) page 112)

To setup a call diversion you have to give at least one number, the type of diversion (`-t`), the service that is diverted (`-s`) as well as the destination of the diversion (`-d`). The following example shows a call diversion on busy for number 996 and with the service 'speech' to destination 991:

```
Telnet 172.16.131
TECHNIK > activatecf 996 -t cfb -s speech -d 991
Activating Call Forwarding, Type: cfb, Service: speech, Destination: 991
For number 996...
...successful
TECHNIK >
```

A call diversion for a specific number and service is setup. In case you setup a call diversion for a number and service which is already diverted the existing call diversion is changed. The addition '(updated)' shows that an already existing diversion has been changed:

```
Telnet 172.16.131
TECHNIK > activatecf 996 -t cfb -s speech -d 992
Activating Call Forwarding, Type: cfb, Service: speech, Destination: 992
For number 996...
...successful (updated)
TECHNIK > _
```

If multiple numbers are given in front of the options the same diversion is setup for all numbers. The list of numbers is completely processed even if one of the numbers is wrong:

```
Telnet 172.16.131
TECHNIK > activatecf 994 995 996 997 -t cfu -s data -d 995
Activating Call Forwarding, Type: cfu, Service: data, Destination: 995
For number 994...
...successful
For number 995...
...failed: 995 is an unknown/invalid destination
For number 996...
...successful
For number 997...
...failed: 997 is an unknown subscriber
TECHNIK > _
```



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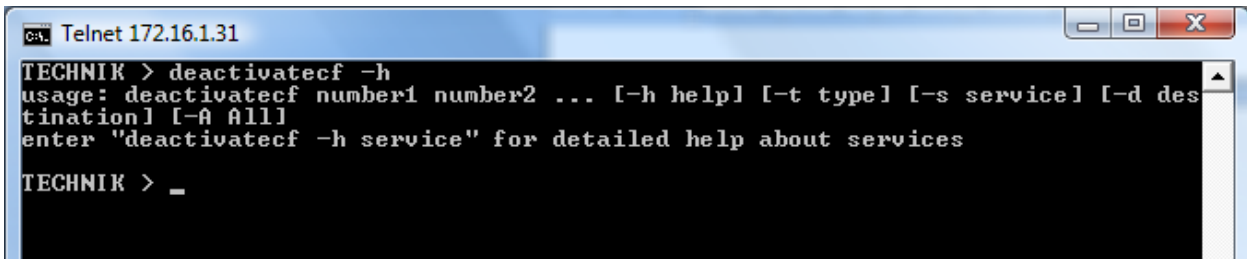
This example shows that only two out of four call diversions could be setup successfully. The call diversion for 995 could not be setup as you are not allowed to divert a number to itself. The diversion for 997 could not be setup as subscriber 997 does not exist.



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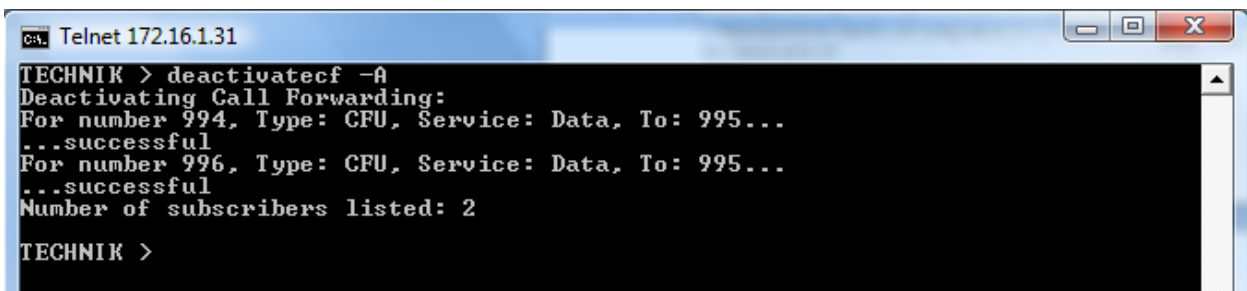
4.10 The command deactivatecf

This command is used to delete call diversions in a target system. Entry of a wrong option or option `-h` causes the output of the help text:

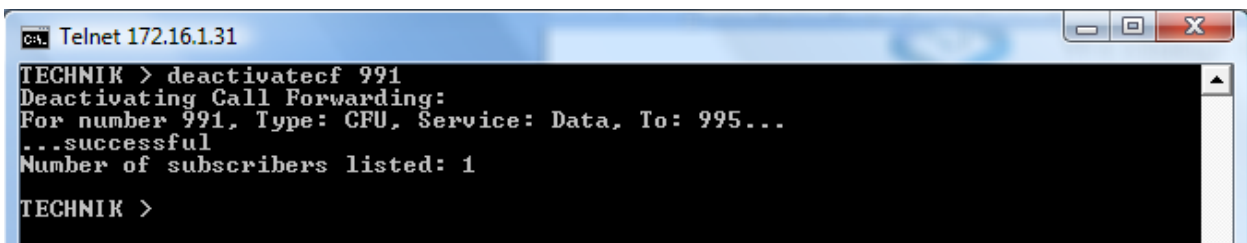
A screenshot of a Telnet window titled 'Telnet 172.16.131'. The prompt is 'TECHNIK >'. The user has entered 'deactivatecf -h'. The output shows the usage: 'usage: deactivatecf number1 number2 ... [-h help] [-t type] [-s service] [-d destination] [-A All]'. It also says 'enter "deactivatecf -h service" for detailed help about services'. The prompt is now 'TECHNIK > _'.

If you enter 'service' in addition to option `-h` the extended help text for the services is shown. A tablet is issued which shows which service corresponds to which combination of BC and HLC. The tablet corresponds to the ETSI definition from ETSI EN 300 196-2 (version 1.3.2 (2001-06) page 112).

With option `-A` all call diversions in the target system are deleted. The output informs you about the deleted diversions:

A screenshot of a Telnet window titled 'Telnet 172.16.131'. The prompt is 'TECHNIK >'. The user has entered 'deactivatecf -A'. The output shows 'Deactivating Call Forwarding:'. It lists two numbers: 'For number 994, Type: CFU, Service: Data, To: 995...' and 'For number 996, Type: CFU, Service: Data, To: 995...'. Both are followed by '..successful'. It then says 'Number of subscribers listed: 2'. The prompt is now 'TECHNIK >'.

By entering one or more numbers you achieve that only call diversions for the given numbers are deleted:

A screenshot of a Telnet window titled 'Telnet 172.16.131'. The prompt is 'TECHNIK >'. The user has entered 'deactivatecf 991'. The output shows 'Deactivating Call Forwarding:'. It lists one number: 'For number 991, Type: CFU, Service: Data, To: 995...' followed by '..successful'. It then says 'Number of subscribers listed: 1'. The prompt is now 'TECHNIK >'.



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Entering option `-t` will achieve the cancellation of call diversions of a specific type. E.g. `'-t cfu'` deletes all permanent diversions:

```
ca: Telnet 172.16.131
TECHNIK > deactivatecf -t cfu
Deactivating Call Forwarding:
For number 992, Type: CFU, Service: Data, To: 995...
...successful
For number 993, Type: CFU, Service: Data, To: 995...
...successful
Number of subscribers listed: 2
TECHNIK >
```

With option `-s` all call diversions for a specific service are deleted:

```
ca: Telnet 172.16.131
TECHNIK > deactivatecf -s data
Deactivating Call Forwarding:
For number 993, Type: CFU, Service: Data, To: 996...
...successful
Number of subscribers listed: 1
TECHNIK >
```

With option `-d` call diversions to a specific destination are deleted:

```
ca: Telnet 172.16.131
TECHNIK > deactivatecf -d 995
Deactivating Call Forwarding:
For number 991, Type: CFU, Service: Speech, To: 995...
...successful
For number 992, Type: CFU, Service: Speech, To: 995...
...successful
Number of subscribers listed: 2
TECHNIK > _
```

It is also possible to combine the different options. E.g. `,-s data -d 995'` deletes all call diversions for the service `'data'` with target 995:

```
ca: Telnet 172.16.131
TECHNIK > deactivatecf -s data -d 995
Deactivating Call Forwarding:
For number 991, Type: CFU, Service: Data, To: 995...
...successful
For number 992, Type: CFU, Service: Data, To: 995...
...successful
Number of subscribers listed: 2
TECHNIK > _
```



We change the shape of the world

5 Service examples

5.1 Example 1: On-site installation, configuration via DHCP and NMS

The technician wants to install a NovaTec system on-site via DHCP and NMS with help of the configuration saved on the NMS server.

1. Return NovaTec system to default state by pressing the front button twice. By doing so the password for the user 'Technik' is deleted and the LAN interface is operated with the default data:

IP address: 192.168.127.254

Netmask: 255.255.0.0

Gateway IP: 192.168.1.254

2. The technician dials into the NovaTec system via „telnet“ or COM port.
3. The technician sets up a new system password with the command „setpasswd -s ;NewPassword;NewPassword“.
4. The following command 'dhcpconf -m 2 -s' causes a call home to the NMS server (without TLS) as determined by DHCP option 129. The call home transfers the defined configuration.
5. The NovaTec system executes an automatic „system start“ (reset) and is – apart of TLS - now on standby.
6. In case of the usage of TLS you have to sign the certificates of the NovaTec system via TI-CA (remote via LAN).



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5.2 Example 2: On-site installation, configuration via NMP

The technician wants to install a NovaTec system on-site and set it up via LAN remotely later.

1. Return NovaTec system to default state by pressing the front button twice. By doing so the password for the user 'Technik' is deleted and the LAN interface is operated with the default data:

IP-Adresse: 192.168.127.254
Netmask: 255.255.0.0
Gateway-IP: 192.168.1.254

2. The technician dials into the NovaTec system via 'telnet' or COM port.
3. The technician sets up a new system password with the command „setpasswd -s ;NewPassword;NewPassword“.
4. The command
„netconf -i 192.168.1.10 -n 255.255.0.0 -g 192.168.0.1 -s“
sets up the customers gateway IP address and customers system IP address as well as the netmask.
5. After this action the system can be maintained remotely via LAN and with NMP the proper configuration can be transferred to the system.