Simotion Teleservice using the ISDN Ethernet Router

Contents

1   Description of the task

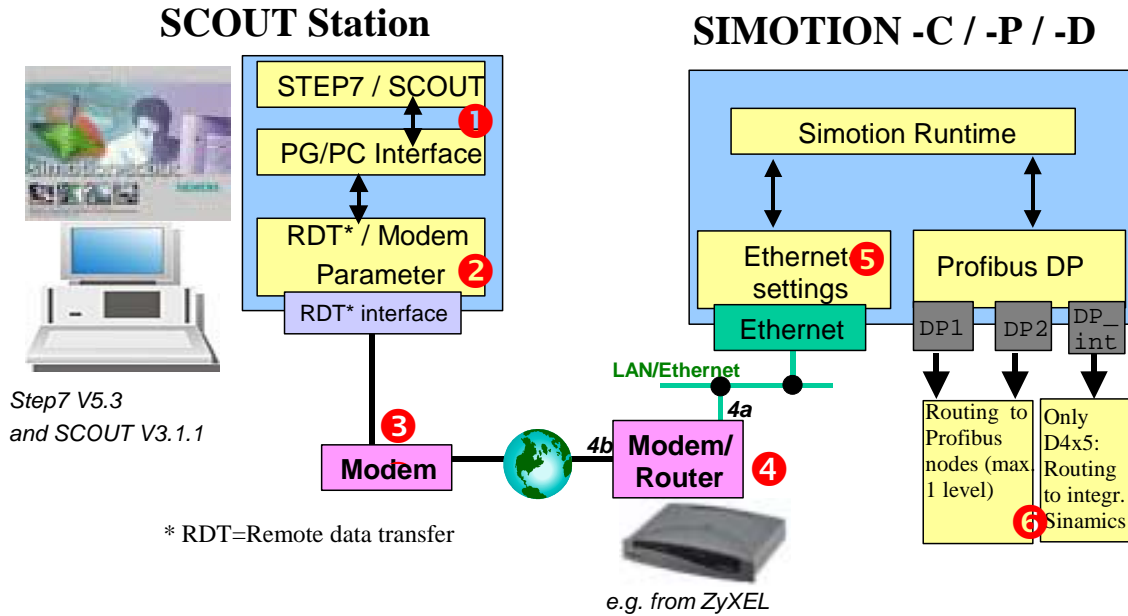The following diagram shows how a programming device accesses SIMOTION via a Teleservice link.

Fig. 1: Task description

Components and settings required:

❶ STEP7 V5.3 and SCOUT V3.1.1;
    Optional: DRIVE ES V5.3 (this is necessary to access Simodrive 611U / Masterdrive MC drives)

❷ Remote data transfer (RDT) / Modem software for the modem being used (this is supplied from the manufacturer)

❸ **ISDN** modem

❹ Ethernet/**ISDN** router (e.g. from ZyXEL Prestige 100IH, www.zyxel.de)

❺ Ethernet interface setting of the SIMOTION unit being used

❻ Setting for the routing e.g. to a drive

The following pages describe the procedure in detail using an actual configuration as an example.

2   Commissioning

Using a configuration example, the procedure in establishing and building-up a teleservice link will be shown in this Chapter. The necessary settings in the engineering PC and a SIMOTION C230-2 station with firmware Version V3.1.1 will be shown.
The described procedure and settings refer to the following configuration:

- Engineering PC: Notebook with WindowsXP operating system
- The correct project from the control must be installed on the engineering PC.
- SIMOTION SCOUT V3.1.1 (installed on the engineering PC)
- STEP 7 Version V5.3 (installed on the engineering PC)
- PCMCIA-ISDN modem: From Eicon (installed on the engineering PC)
- ISDN router: From ZyXEL, Type Prestige 100IH.

The addresses and passwords that we have used are listed together in Chapter 2.2 (Table of the settings used).
If you use other components, then the structure of the input windows, described in the following, can differ. However, the basic procedure is the same.

2.1   Commissioning sequence

| Step No.	Task	Described in Chapter
1	Make the necessary settings	2.2
2	Determine the IP address for the control	2.3
3	Configure the ISDN router (ZyXEL, Type Prestige 100IH)	2.4
4	Configure the modem (Eicon)	2.5
5	Configure the network link	2.6

2.2   Table of the settings used

You will require this data for the following commissioning steps. As preparation, you can think about the values that match your configuration and subsequently use these in the appropriate locations.

No.	Designation	Used in the example:	Your setting:
1	IP address Simotion (also refer to Chapter 2.3)	169.254.11.22	
2	Sub-network mask, Simotion (also refer to Chapter 2.3)	255.255.0.0	
3	User name to dial-in (this can be freely defined)	machine_01	
4	User password (this can be freely defined)	12345678	
5	Telephone number of the router connection	0815	

2.3 Determining the IP address of the control

In order to be able to subsequently communicate with the control, you must know which IP address has been set. The setting can be taken from the project data in the hardware configuration.
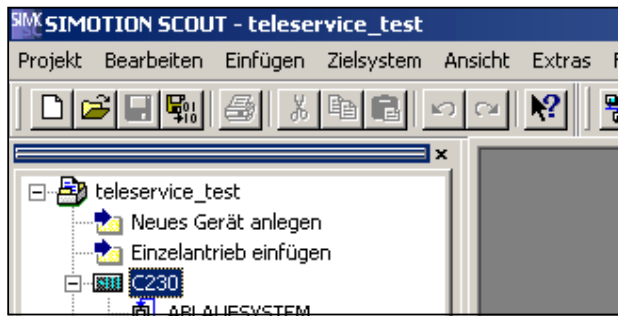
Open your system in Simotion SCOUT.

In the project navigator open the **HW-Config** under Project Navigator by double-clicking on the controller C230.

The dialog box **Properties…** opens by double-clicking on the C230 module

Under the "**General**" tag, press the **Properties** button of the Ethernet interface. The following dialog box opens **Properties – Ethernet interface...**.

Here, you can read-out the Ethernet settings. The following settings are used in our particular example:
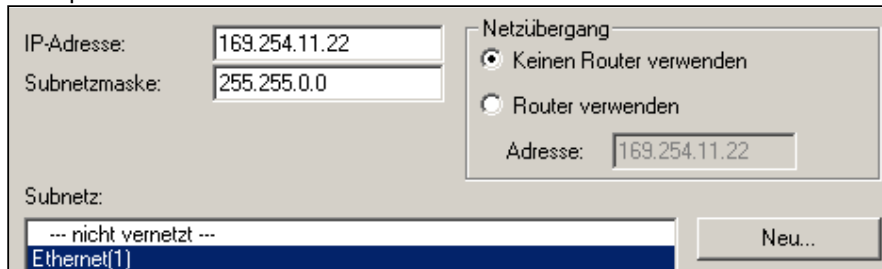
IP address: 169.254.11.22 (also refer to Table Point 1 in Chapter 2.2)
Sub-network mask: 255.255.0.0 (also refer to Table Point 2 in Chapter 2.2)

Network transition: Use no router. This entry only refers to the Ethernet network transition. In our particular example, the engineering PC, router and control are located in the same sub-network. Therefore select the "Use no router" setting!
Sub-network: If you only wish to reach the Simotion C230-2, you do not have to set-up a sub-network. If you wish to reach additional Profibus nodes via routing (for example, drives connected through Profibus, additional Simatic or Simotion control systems), then you must set-up an Ethernet sub-network.

> **Note:** **Before** the equipment is supplied, enter the required IP address and download the hardware configuration into the control system.

➢ Note the IP address on the unit.

➢ Now, re-close HW Config.

2.4 Configuring the router

In our example, the ISDN router Prestige 100IH from ZyXEL is used.
This router has two interfaces (ports): One modem side that is connected to the telephone socket and four Ethernet ports. SIMOTION C230-2 is connected to the first.
The router is initially parameterized with a V24-Terminal Program (in the example: Hyperterminal from Windows XP).
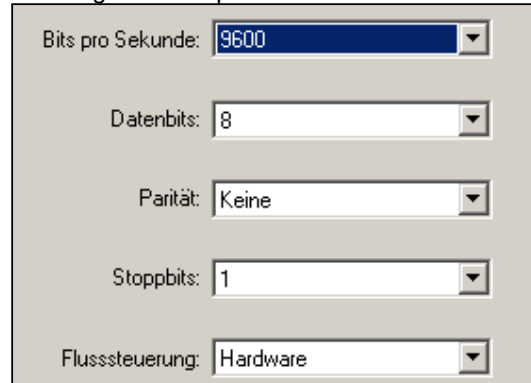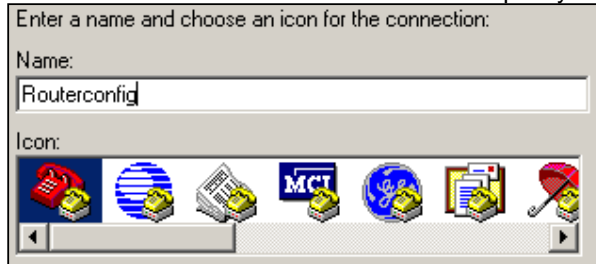**Note**: It is better if you configure the router before the unit is shipped!

When parameterizing the router, proceed as follows:
➢ Connect the router to the serial port (e.g. COM1) of the PC using the cable provided.

➢ Start the Hyperterminal using **Start → Programs → Accessories → Communications → HyperTerminal**.

➢ Set-up a new connection with the following settings. Follow the dialog boxes and acknowledge entries with **OK**.

1: Enter a name for the connection   **3:** Specify the following interface parameters

Enter a name and choose an icon for the connection:
Name: Routerconfig
Icon:

Bits pro Sekunde: 9600
Datenbits: 8
Parität: Keine
Stoppbits: 1

2: Select the COM port (interface)

Connect using: COM1

Flusssteuerung: Hardware

➢ After you have acknowledged the dialog boxes, the Hyperterminal logs-on with the input prompt (the data entry cursor flashes in the top lefthand corner).

Routerconfig - HyperTerminal
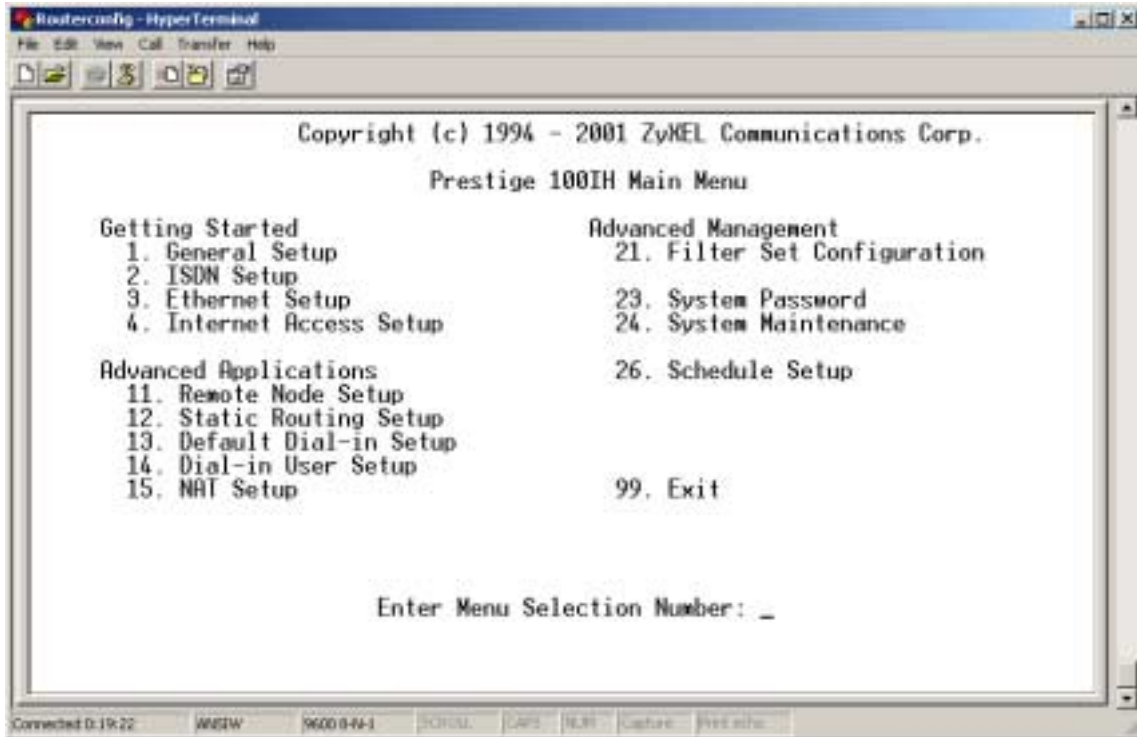File Edit View Call Transfer Help
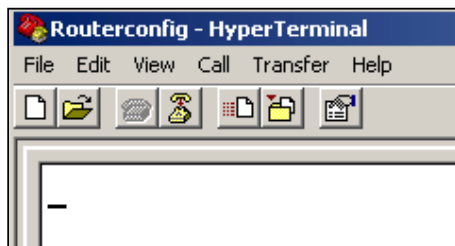
Press **Return** in order to establish the connection to the router.

router is then displayed. If you have not standard password, then enter **1234**.

Enter Password : XXXX_

The password prompt of the changed the

➢ The basic menu is displayed after you have logged-on.

```
Routerconfig - HyperTerminal
File Edit View Call Transfer Help

           Copyright (c) 1994 - 2001 ZyXEL Communications Corp.

                       Prestige 100IH Main Menu

       Getting Started                    Advanced Management
         1. General Setup                   21. Filter Set Configuration
         2. ISDN Setup
         3. Ethernet Setup                  23. System Password
         4. Internet Access Setup           24. System Maintenance

       Advanced Applications                26. Schedule Setup
         11. Remote Node Setup
         12. Static Routing Setup
         13. Default Dial-in Setup
         14. Dial-in User Setup
         15. NAT Setup                      99. Exit



                   Enter Menu Selection Number: _

Connected 0:19:22    ANSIW    9600 8-N-1    SCROLL   CAPS   NUM   Capture   Print echo
```

You can select the necessary sub-menus for making the appropriate settings from this menu. You can always return to this menu from the menu you are in by pressing **ESC** (it may be necessary to press this several times one after another).

➢ Open menu 3.2. Select the basic menu from Point 3 (Ethernet Setup). In the next menu, select Point 2 (TCP/IP and DHCP Setup).

```
Menu 3.2 - TCP/IP and DHCP Ethernet Setup

DHCP= Server
Configuration:
  Client IP Pool Starting Address= 169.254.11.20
  Size of Client IP Pool= 32
  Primary DNS Server= 0.0.0.0
  Secondary DNS Server= 0.0.0.0
  Relay Server Address= N/A

TCP/IP Setup:
  IP Address= 169.254.11.1
  IP Subnet Mask= 255.255.0.0
  RIP Direction= Both
    Version= RIP-1
```

The settings regarding the connected Ethernet are made in this menu.

DHCP= Server
Client IP Pool Starting Address= 169.254.11.20
This is the IP address that should be used to start the dynamic IP assignment for the client.
IP Address= 169.254.11.1
The router can be accessed in the network under this IP address.
Important: The router address must be located in the same sub-network as that set at the C230-2!
Recommendation: Use the number 1 as final number!
IP Subnet Mask= 255.255.0.0
The sub-network menu of the router must be set to the same value as the sub-network menu of the C230-2 (also refer to Table Point 2 in Chapter 2.2).

➢ Open menu 13. Here, from the basic menu, select Point 13 (Ethernet Setup).

```
              Menu 13 - Default Dial-in Setup

Telco Options:                    IP Address Supplied By:
  CLID Authen= None                 Dial-in User= Yes
                                    IP Pool= Yes
PPP Options:                          IP Start Addr= 169.254.11.20
  Recv Authen= CHAP/PAP               IP Count(1,2)= 1
  Compression= Yes
  Mutual Authen= No
  O/G Login=                       Session Options:
  O/G Password= ********             Edit Filter Sets= No
  Multiple Link Options:
    Max Trans Rate(Kbps)= 128

Callback Budget Management:
  Allocated Budget(min)=
  Period(hr)=
```

The dial-in settings are entered in this menu.

Dial-in User= YES
IP-Pool= YES
IP Start Addr= 169.254.11.20
Start address of the IP pool to assign IP addresses of the dial-in client. From this address onwards, the PC is assigned its address.
IP Count= 1

➢ Open menu 14.1. From the basic menu, select Point 14 (Dial–in User Setup). In the next menu, select Point 1 (1st connection).

```
         Menu 14.1 - Edit Dial-in User

User Name= machine_01
Active= Yes
Password= ********
Callback= No
  Phone # Supplied by Caller= N/A
  Callback Phone #= N/A
Rem CLID=
Idle Timeout= 600
```

The user settings for the dial-in are specified in this menu.

User Name= machine_01
User name to dial-in (also refer to the table Point 3 in Chapter 2.2)
Active= Yes
Activate the user account
Password= 12345678
User password (also refer to the table, Point 4 in Chapter 2.2)

➢ Return to the basic menu and terminate the connection by entering 99 (exit).

➢ Close the Hyperterminal and remove the serial cable between the PC and router.

➢ Now connect the modem side of the router to the telephone connection and the 1st Ethernet port to the Ethernet port (interface) of the C230-2. To do this, use the router cable supplied.

2.5   Configuring the modem

In order to be able to address the modem, the driver, supplied with the modem from the modem manufacturer must be installed. For the modem that we are using (from the Eicon), no additional changes or modifications have to be made.

➢   If required, you can adapt the modem using **Start → Settings → Telephone and Modem options**.
     The baud rate, protocol and dial technique are important settings that have to be made.

     Important: When connected to telephone switchboards, appropriate data of the telephone system has to be carefully observed!

➢   Now connect the modem to the telephone connection using the cables supplied with the modem.

2.6   Configuring the network connection

In order that you can establish an online connection using the router, you must set-up a network connection under Windows XP.

Using **Start → Settings → Control Panel**, open the dialog box for the **network connections**
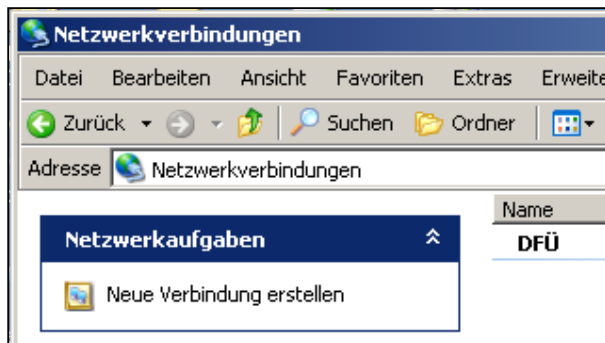
Click on the "**Create new connection"**.
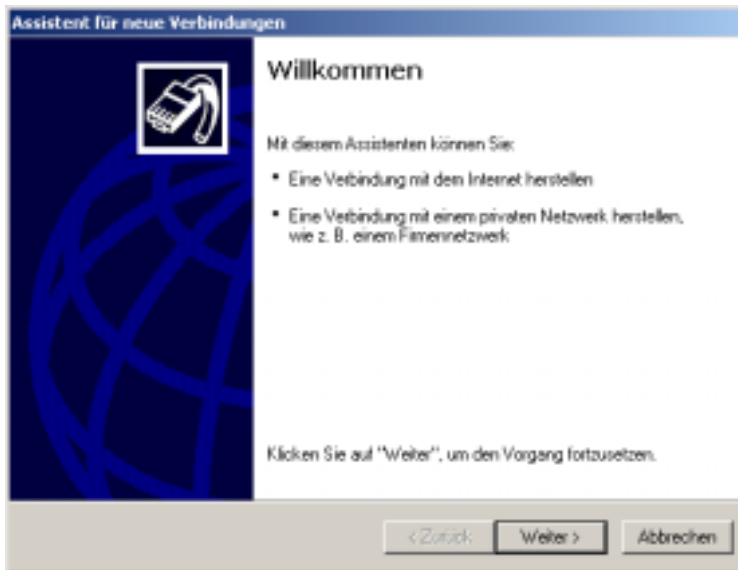
The Assistant opens to create a new network connection.

Acknowledge this dialog box with **"Continue".**
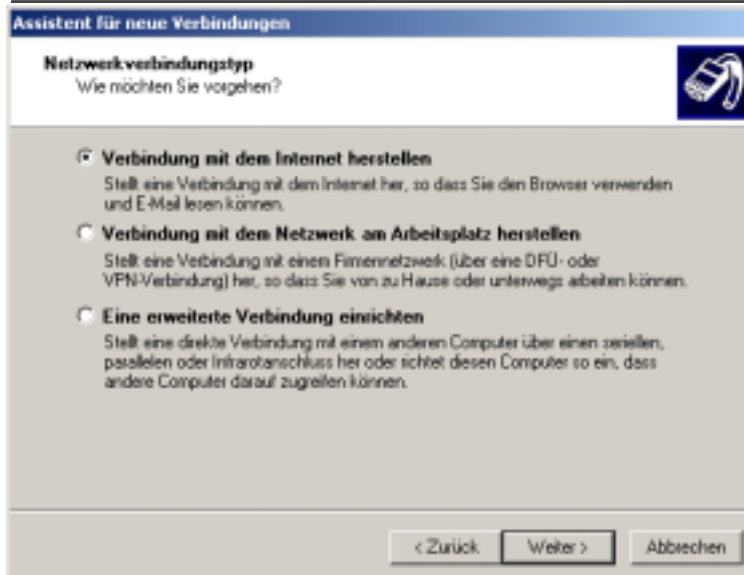
Select "**Establish a connection to the Internet"**.

Comment: If the route "Establish a connection with the Internet" is not available (because, this route is blocked), you can enter using the "Establish a connection with the network at the workstation". Then follow the dialog boxes (these are similar) and adapt the settings.

Acknowledge this dialog box with "**Continue"**.

Select "**Manually set-up connection**"

Acknowledge this dialog box with "**Continue"**.
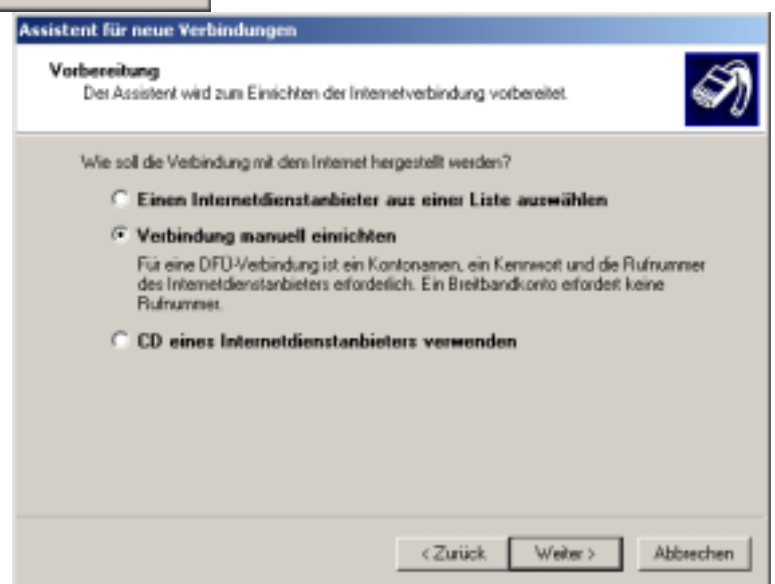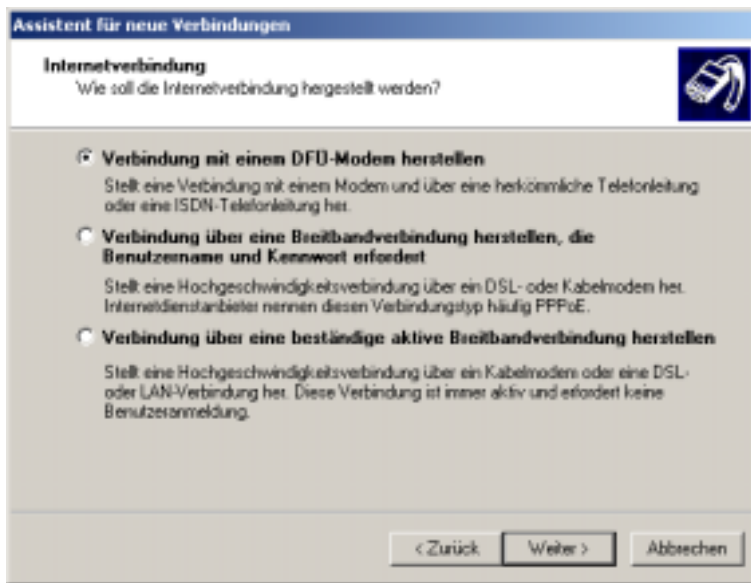
Select "**Establish a connection with a modem**"

Acknowledge this dialog box with "**Continue**".
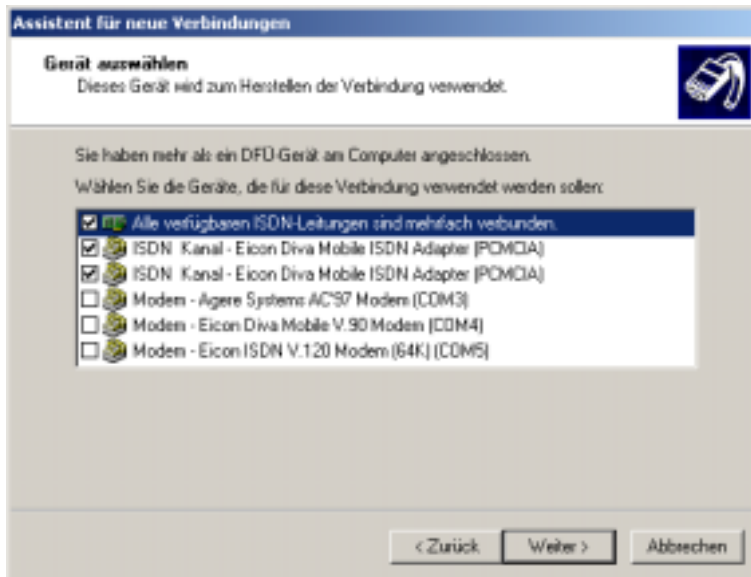
Select the modem that should establish the connection or the entry "**All available ISDN cables are connected a multiple number of times**".

Acknowledge this dialog box with "**Continue**".

Assign a name under which you can save the connection data. In the example, we selected the name **Teleservice for machine_1.** Later, you can open the dial-in menu for the connection under this name.

Acknowledge this dialog box with "**Continue**".
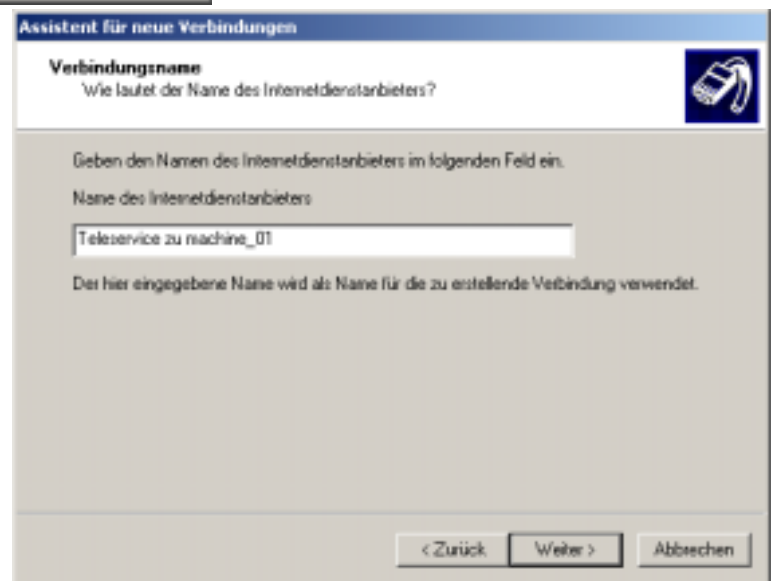
Here, enter the telephone number of the router (also refer to Table, Point 5 in Chapter 2.2).

Acknowledge this dialog box with "**Continue"**.

Please select to whom this connection should be made available.

Acknowledge this dialog box with "**Continue"**.

User name: machine_01
User name to dial-in (also refer to Table Point 3 in Chapter 2.2)
Password: 12345678
User password (refer to Table Point 4 in Chapter 2.2)
De-select "**Activate the Internet connection firewall for this connection**"

Acknowledge this dialog box with "**Continue"**.

Final menu of the Assistant.

If you wish to start the connection from the desktop, select "**Add link to the desktop**".

Acknowledge this dialog box with "**Complete"**.

➤ Now continue directly with Chapter 3.

3   Going online

The procedure when establishing a connection is explained in this Chapter.
It is assumed that the individual components have been completely commissioned according to
Chapter 2. Further, at the latest now, if this already hasn't been done, you must connect the modem
and the router.

3.1   Establishing a connection with the router

The dial-in menu opens using **Start → Settings → Remote data transfer network → Teleservice to
the machine_01** or by clicking on the **Teleservice to machine_01** link that has been created in the
desktop.
menu

1: Dial-in mask.

If you are attempting to establish a connection for the
first time, you must first select the two following
dialog boxes (**2** and **3**) by clicking on **Properties** and
adapting the settings.

Otherwise, you can skip these two dialog boxes,
establish the connection by clicking on **Dial** and then
continue with dialog box **4**.
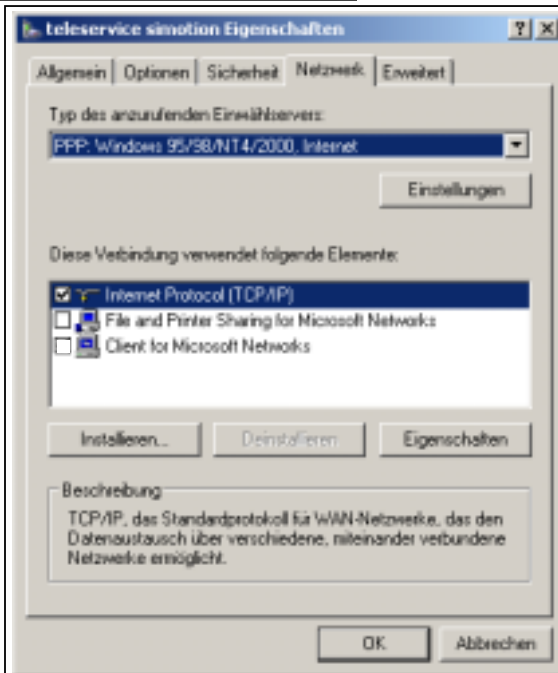
Note:
The following values must have been entered:
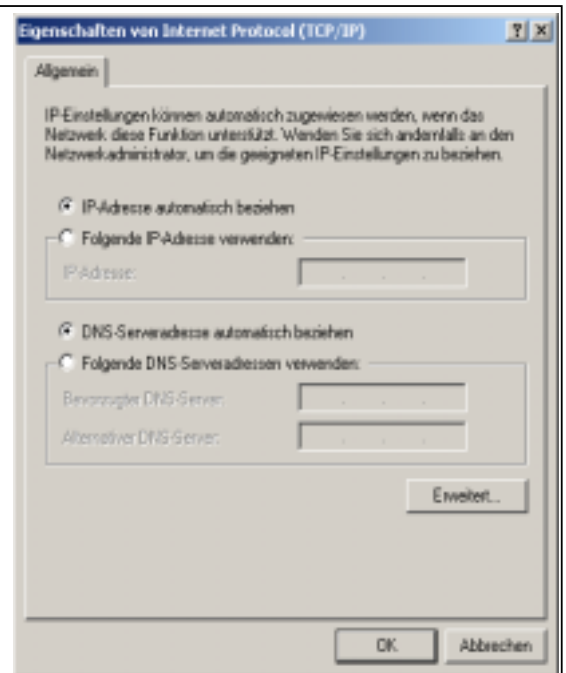User name: machine_01
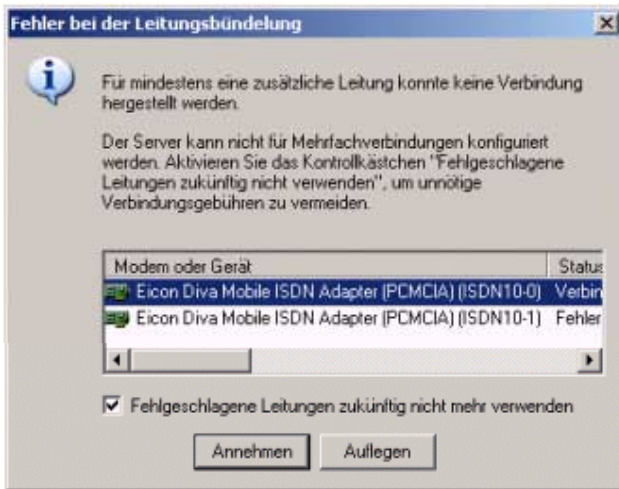Password: 12345678
Dial: 0815
(Also refer to the Table "Settings used" in Chapter
2.2)

2: Under the network tab, select the **TCP/IP**
protocol and then click on **Properties.**

3: Select **automatically source IP address**
and the return to the dial-in mask (**1**).

4: If only one line can be used, the adjacent dialog box is displayed.
There, select "**In the future, do not use unsuccessful lines**" and then click on **Accept**.
This means that when logging-on the next time, an attempt will not be made to connect using these lines.

➢ While dialing, a display window briefly showing that the connection is being established and the password is being checked. If everything is OK, the window closes itself automatically.
➢ The connection to the router must now have been established.

3.2 Testing the connection

This chapter describes how you can check that you actually access the control system.

➢ Open an MS-DOS window. Click on **Start**, go to **Programs**, to **Accessories**, and then click on the **Command Prompt**.

Checking whether the PC was assigned a valid IP address using the **IPCONFIG** command.

Checking the connection to the C230-2 using the **PING** command. In this case, the C230-2 must respond.

Note: If the connection to the C230-2 was negatively acknowledged, then you can still test the connection to the router using the command **PING 169.254.11.1** (169.254.11.1 = IP address of the router). If this result is positive, then there could be a problem with the router control system connection or that the control is incorrectly parameterized.

3.3   Establishing an online connection to Simotion C230-2

The access point for S7ONLINE must be set using TCP/IP under "Set PG/PC interface".
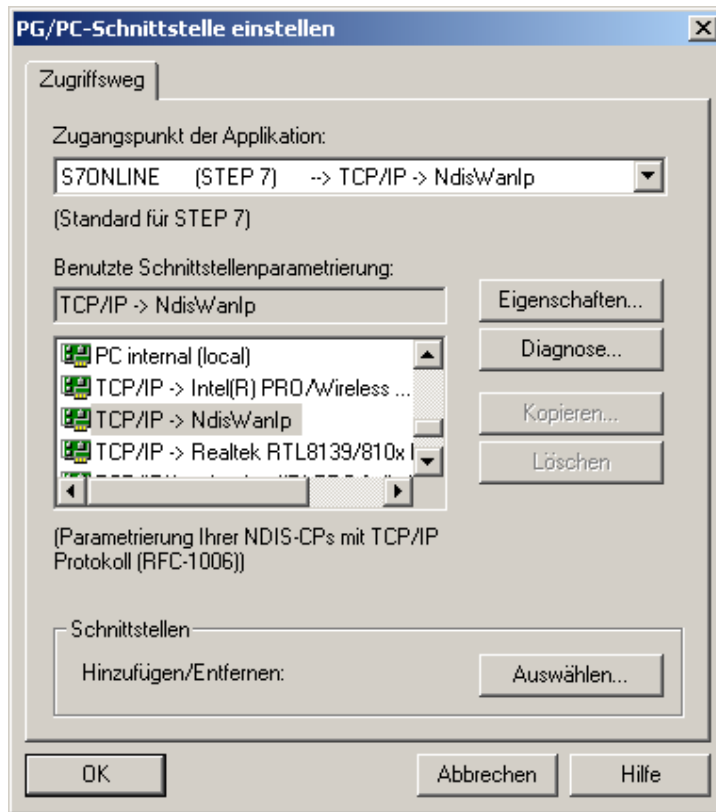
Select the adjacent entry under
**Start → Settings → Control Panel
→** Set **PG/PC interface**.

> ➢   **Complete!** You can now start Scout and - just as before - go online to Simotion C230-2.