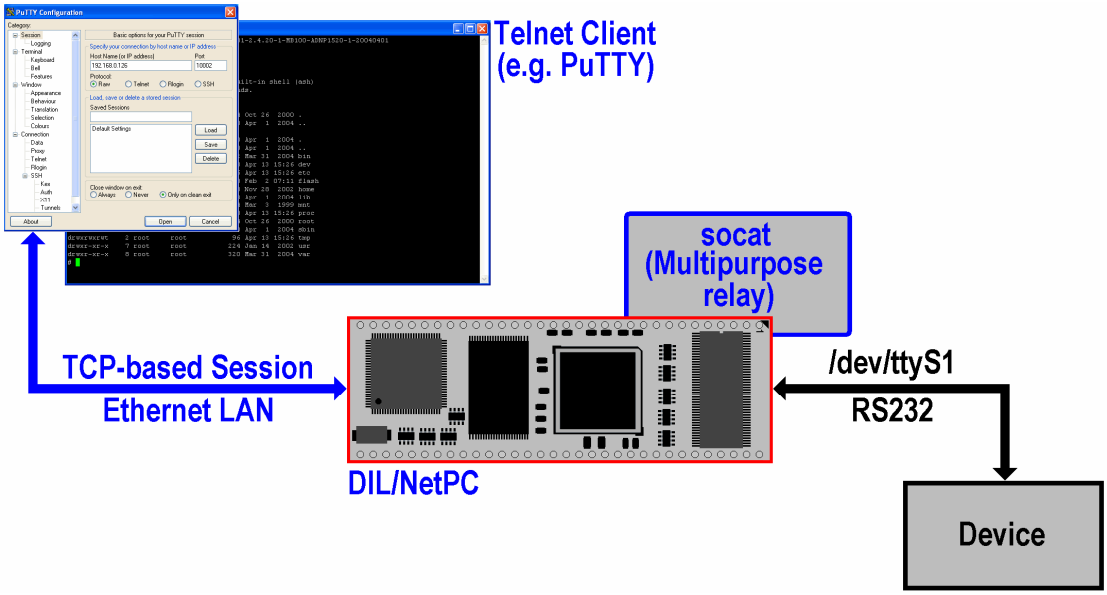
How to use the DNP/SK18 as a RS232-based Device Server

The DIL/NetPC ADNP/1520 starter kit DNP/SK18 comes with preinstalled ***socat*** utility for the COM2 RS232 serial port connector of the DNP/EVA7 evaluation board. This utility allows you to access an external device with RS232-based user interface on COM2 over a TCP-based Telnet session. The following picture illustrates the details (please note: the DNP/EVA7 COM2 port is the ADNP/1520 Linux device ***/dev/ttyS1***).



Socat is a command line based utility that establishes two bidirectional byte streams and transfers data between them. Because the streams can be constructed from a large set of different types of data sinks and sources (see address types), and because lots of address options may be applied to the streams, ***socat*** can be used for many different purposes (e.g. as bidirectional byte stream connection between a TCP-based socket and RS232-based serial port).

- **1. Step:** Setup a serial console or Telnet-based session to the DIL/NetPC ADNP/1520 of your DNP/SK18. Then display the content of the file ***/flash/autostart.sh***:

```
cd /flash
cat autostart.sh
#!/bin/sh
cd /flash
setserial /dev/ttyS1 irq 11
while true ; do
   ./socat TCP4-LISTEN:10002 /dev/ttyS1,b115200,raw,echo=0
done
```

This script file runs ***socat*** after each power-up or reset sequence. The first parameter ***TCP4-LISTEN:10002*** specifies a TCP server with socket number 10002. This server is one bi-directional byte stream endpoint for ***socat***.

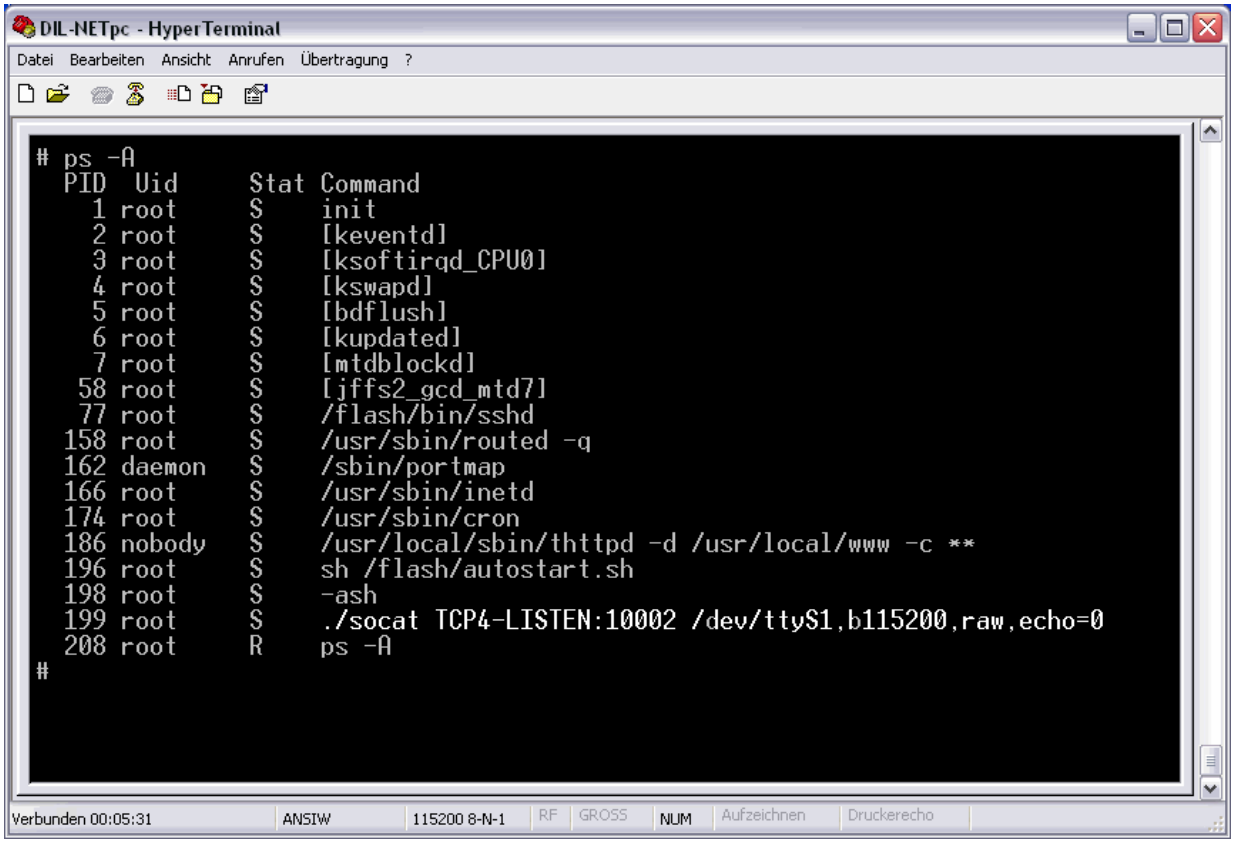
The second parameter ***/dev/ttyS1,b115200,raw,echo=0*** defines the serial interface ***/dev/ttyS1***

also as a bi-directional byte stream endpoint for ***socat***. This interface is the COM2 RS232 serial port connector of the DNP/EVA7. The parameter parts ***b115200***, ***raw*** and ***echo=0*** set special communication features for COM2 (e.g. ***b115200*** set the COM2 speed to 115.200 bps).

If a TCP-based session to the ADNP/1520 is active, ***socat*** receives bytes over the TCP socket 10002 and transmits these bytes over COM2 to an external device. On the other hand, all bytes which COM2 receives from the external device are transferred to the TCP socket.

Please note: The ADNP/1520 needs the BIOS file ***ADNP018T*** for using the DNP/EVA7 CON2 connector.

- **2. Step:** Enter ***ps –A*** within the serial console or Telnet-based session. This Linux command shows all processes. The ADNP/1520 runs ***socat*** as a process.



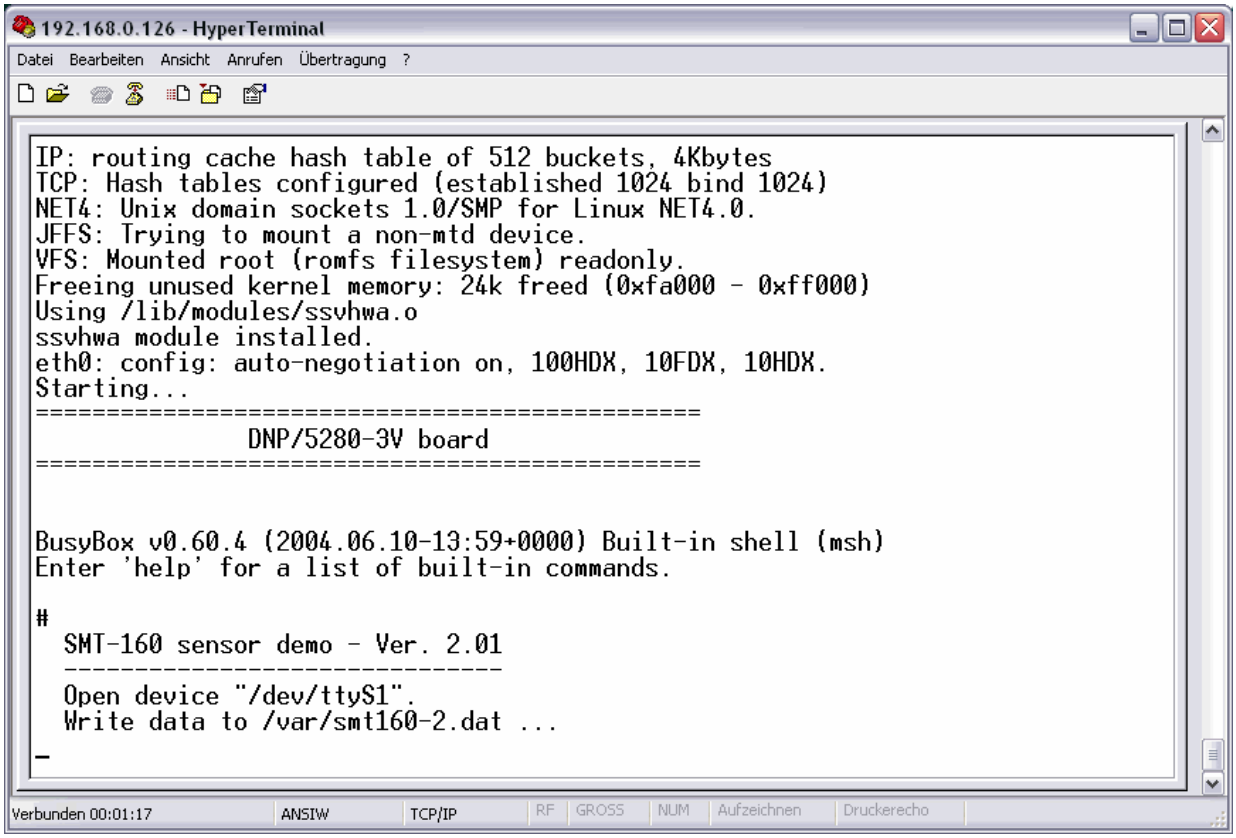
- **3. Step:** Connect an external device to the COM2 RS232 serial port connector of the DNP/EVA7. Make sure that this device is using the serial port parameters:

  - 115.200 bps
  - 8 data bits
  - 1 stop bits
  - No parity bit
  - Handshaking disabled

A second DIL/NetPC starter kit is good test equipment for an external device simulation.

- **4. Step:** Use the LAN connection to the ADNP/1520 Ethernet interface and run a Telnet client program. Please use ***PuTTY*** or ***HyperTerminal*** in TCP mode on your Windows-based PC. Connect this Telnet client to the IP address ***192.168.0.126*** and port ***10002***.

  Please note: The DIL/NetPC ADNP/1520 comes with factory setup ***192.168.0.126*** as IP address.



  It is now possible to control the external device on COM2 over the Telnet session. The picture above shows a sample with a DIL/NetPC DNP/5280 connected via a null modem cable to the COM2 RS232 serial port connector of the DNP/EVA7 evaluation board.

That's all.