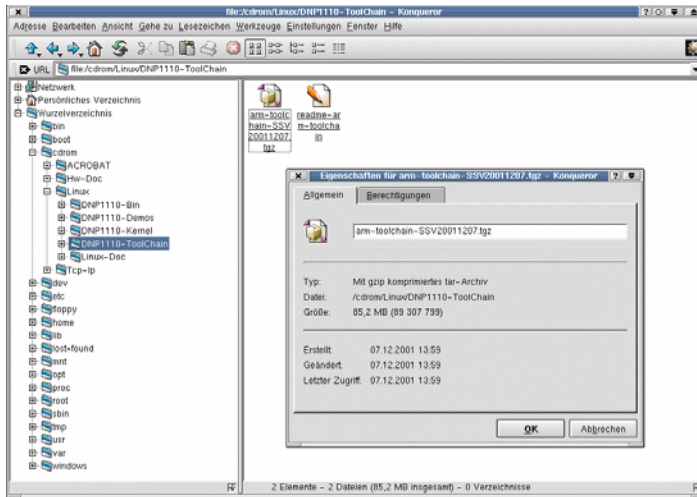


Installation of the GNU Cross Toolchain

- **1. Step:** The CD-ROM of the DNP/1110 starter kit offers a full pre-build GNU cross toolchain within a single tar archive file. The file name is *arm-toolchain-39SSV20011207.tgz*. Locate this file within the CD-ROM directory */Linux/DNP1110-ToolChain*.

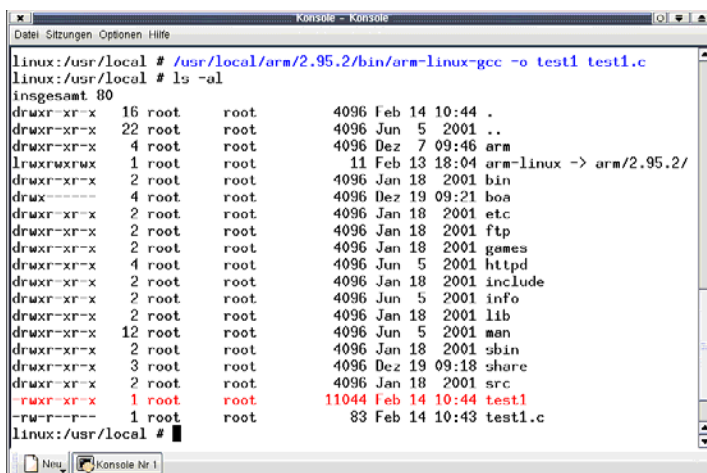


- **2. Step:** Install this tar archive file on your Linux-based development system. First move to the directory */usr/local* on your development system. Then execute the following Linux command line from a terminal window:

```
tar -xzf /cdrom/Linux/DNP1110-ToolChain/arm-toolchain-39SSV20011207.tgz
```

Use the name of your CD-ROM drive instead of *.../cdrom/...*. The Linux tar program needs some time for unpack all files from the CD-ROM to your hard disk.

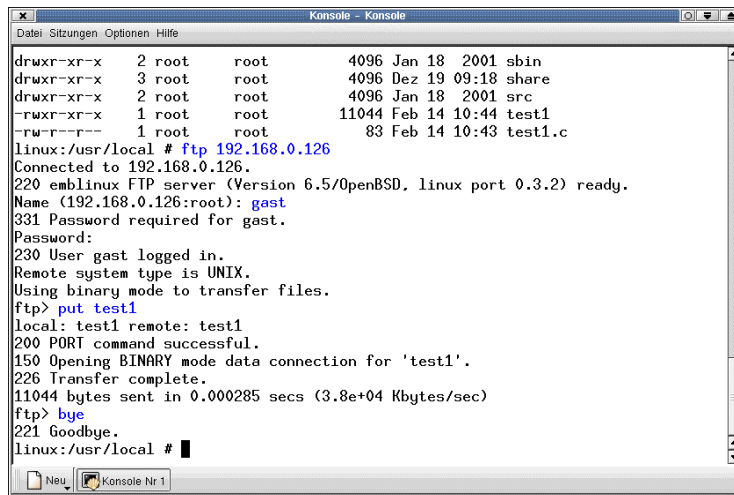
- **3. Step:** Check your new cross development environment. Write a simple *Hello World* program in C. Store the C source code within */usr/local*. Use the file name *test1.c* for your first program.
- **4. Step:** Run the GNU cross C compiler for build a executable binary file *test1* from *test1.c* within the directory */usr/local*.



For building a executable with the GNU cross toolchain for ARM processors please use following the Linux command line from a terminal window:

```
/usr/local/arm/2.95.2/bin/arm-linux-gcc -o test1 test1.c
```

- **5. Step:** Transfer the executable binary file within a FTP session from the development system to the DNP/1110 RAM disk.

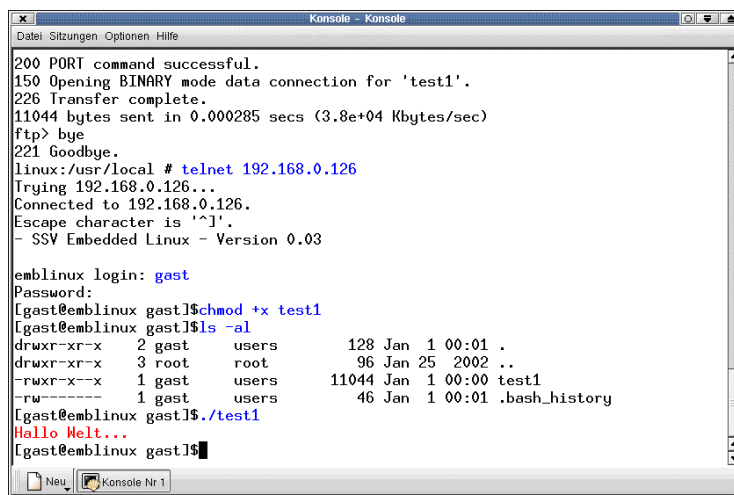


```

Konsole - Konsole
Datei Sitzungen Optionen Hilfe
drwxr-xr-x  2 root  root    4096 Jan 18  2001 sbin
drwxr-xr-x  3 root  root    4096 Dez 19 09:18 share
drwxr-xr-x  2 root  root    4096 Jan 18  2001 src
-rwxr-xr-x  1 root  root   11044 Feb 14 10:44 test1
-rw-r--r--  1 root  root     83 Feb 14 10:43 test1.c
linux:/usr/local # ftp 192.168.0.126
Connected to 192.168.0.126.
220 emlinux FTP server (Version 6.5/OpenBSD, linux port 0.3.2) ready.
Name (192.168.0.126:root): gast
331 Password required for gast.
Password:
230 User gast logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> put test1
local: test1 remote: test1
200 PORT command successful.
150 Opening BINARY mode data connection for 'test1'.
226 Transfer complete.
11044 bytes sent in 0.000285 secs (3.8e+04 Kbytes/sec)
ftp> bye
221 Goodbye.
linux:/usr/local #

```

- **6. Step:** Run the new binary file on your DNP/1110. Open a Telnet session and start the program. That is all. Your toolchain works.



```

Konsole - Konsole
Datei Sitzungen Optionen Hilfe
200 PORT command successful.
150 Opening BINARY mode data connection for 'test1'.
226 Transfer complete.
11044 bytes sent in 0.000285 secs (3.8e+04 Kbytes/sec)
ftp> bye
221 Goodbye.
linux:/usr/local # telnet 192.168.0.126
Trying 192.168.0.126...
Connected to 192.168.0.126.
Escape character is '^I'.
- SSV Embedded Linux - Version 0.03

emlinux login: gast
Password:
[gast@emlinux gast]$chmod +x test1
[gast@emlinux gast]$ls -al
drwxr-xr-x  2 gast  users    128 Jan  1 00:01 .
drwxr-xr-x  3 root  root     96 Jan 25 2002 ..
-rwxr-xr-x  1 gast  users   11044 Jan  1 00:00 test1
-rw-----  1 gast  users     46 Jan  1 00:01 .bash_history
[gast@emlinux gast]$./test1
Hallo Welt...
[gast@emlinux gast]$

```

Please note: during the FTP file transfer process the executable attribute of *test1* can get lost. For give your file *test1* this attribute back, please enter:

```
chmod +x test1
```

within your Telnet session. Some FTP clients programs watch the attributes. Then this step is unnecessary.