

How to write a CGI for the DNP/9200 Web server in C

The DIL/NetPC DNP/9200 default embedded Linux configuration comes with a preinstalled embedded Web server (the *thttpd* – see also <http://www.acme.com/software/thttpd/> for more information). This feature allows you to access Web pages and CGI programs (CGI = Common Gateway Interface) with a Web browser.

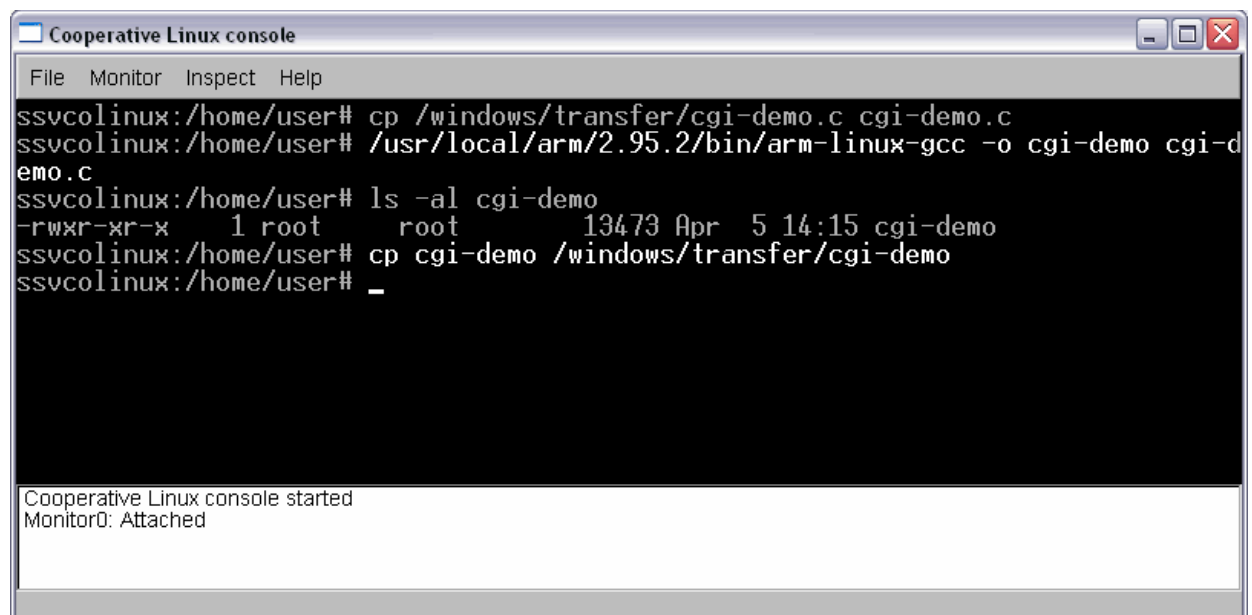
- **1. Step:** Run a Telnet client on your desktop PC (please see also: *mHT9200-08.pdf: How to use the DNP/9200 Linux Telnet Server*). Then enter the following command lines within this Telnet session and create the CGI directory for the DNP/9200 Web server:

```
cd /flash
mkdir www
cd www
mkdir cgi-bin
```

- **2. Step:** Reboot your DNP/9200. The Linux O/S restarts then the *thttpd* Web server with the new directory */flash/www*.
- **3 Step:** Download the file *cgi-demo.c* from the DIL/NetPC website at <http://www.dilnetpc.com>. This file is the C source code for a simple CGI sample.
- **4 Step:** Run your SSV coLinux environment on your development PC. Translate *cgi-demo.c* to an ARM Linux executable. Use the following command line

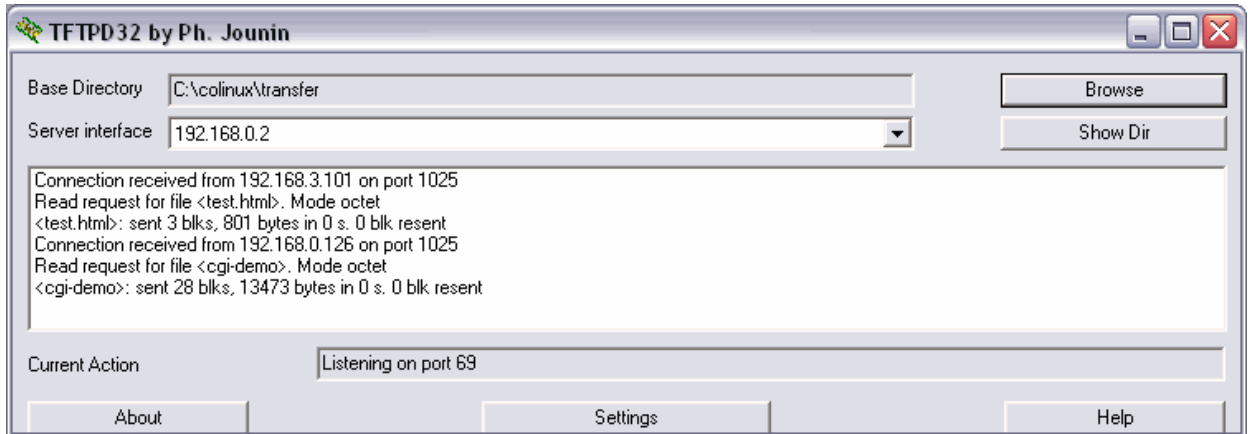
```
/usr/local/arm/2.95.2/bin/arm-linux-gcc -o cgi-demo cgi.demo.c
```

within the SSV coLinux environment. This command line runs the GNU C cross compiler for the DNP/9200 and creates the executable *cgi-demo*.



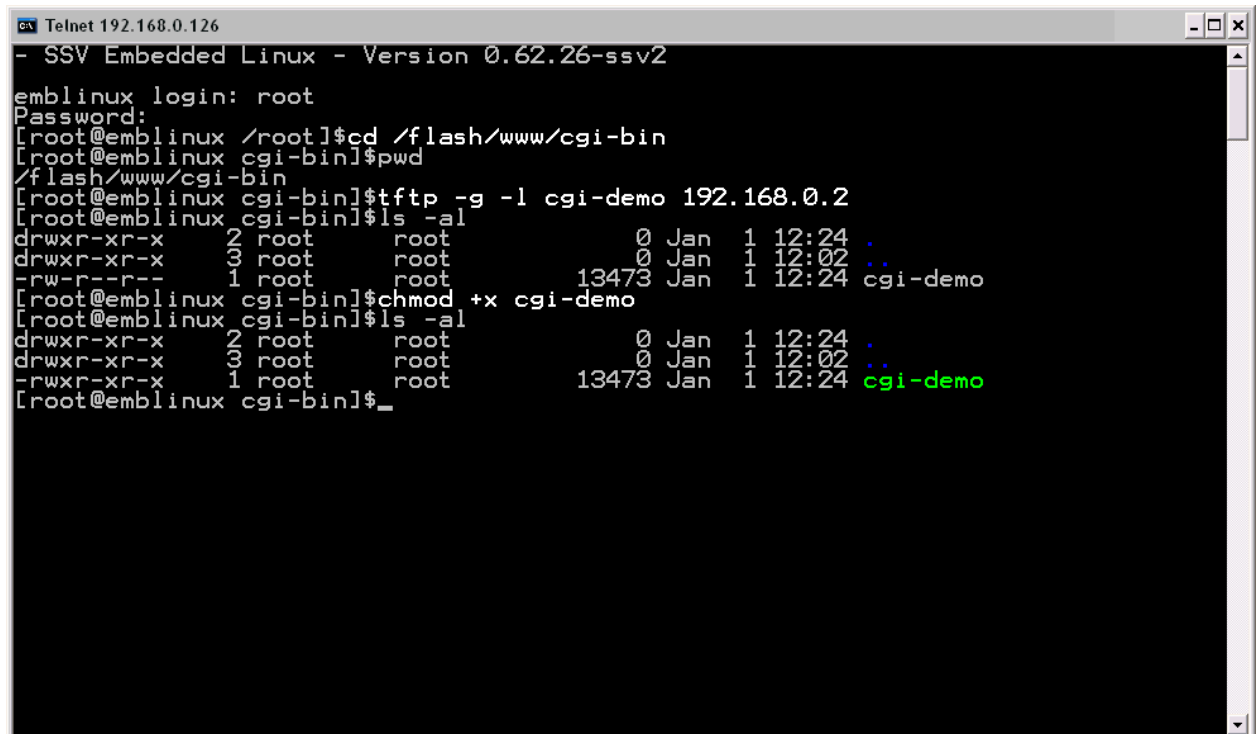
```
Cooperative Linux console
File Monitor Inspect Help
ssvcolinux:/home/user# cp /windows/transfer/cgi-demo.c cgi-demo.c
ssvcolinux:/home/user# /usr/local/arm/2.95.2/bin/arm-linux-gcc -o cgi-demo cgi-d
emo.c
ssvcolinux:/home/user# ls -al cgi-demo
-rwxr-xr-x  1 root  root    13473 Apr  5 14:15 cgi-demo
ssvcolinux:/home/user# cp cgi-demo /windows/transfer/cgi-demo
ssvcolinux:/home/user# _
Cooperative Linux console started
Monitor0: Attached
```

- **5 Step:** Transfer the executable *cgi-demo* from the coLinux directory to the Windows directory */windows/transfer*. Then run a TFTP server within the Windows environment.



- **6 Step:** Run a Telnet session. Then execute the following commands within the DNP/9200 Linux:

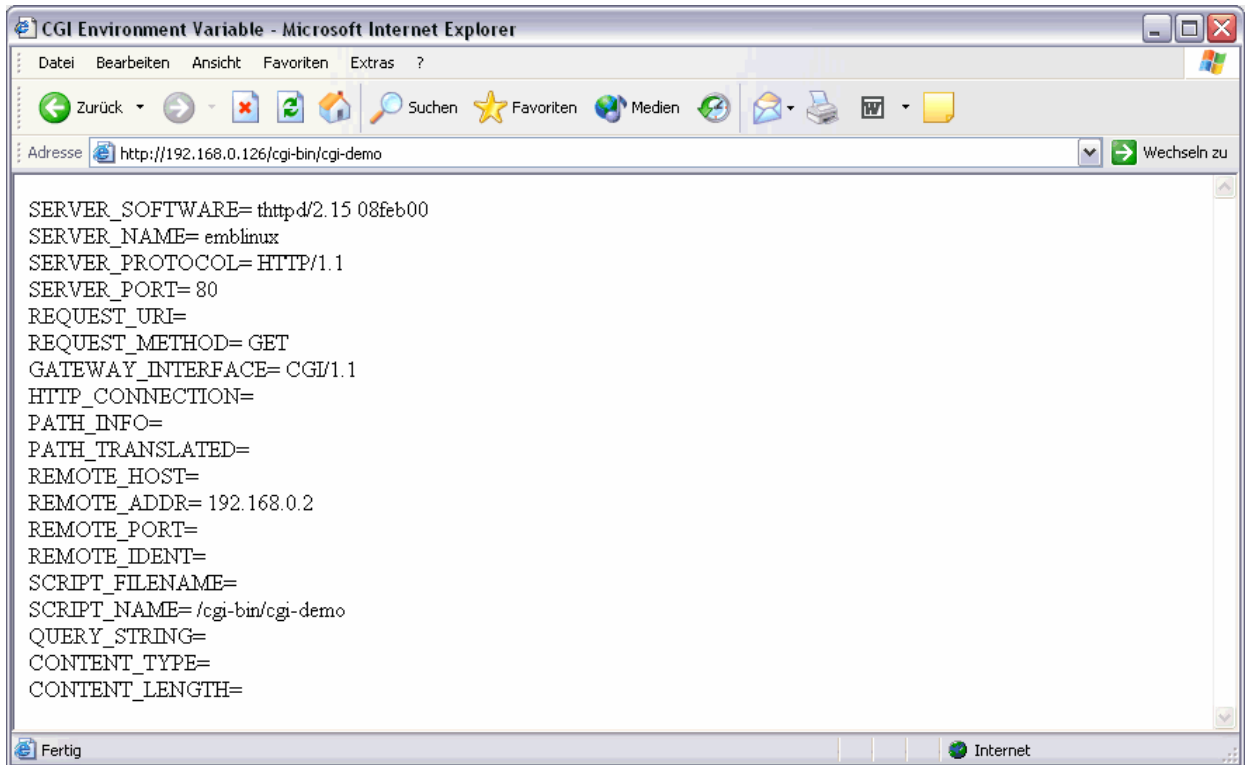
```
cd /flash/www/cgi-bin
tftp -g -l cgi-demo 192.168.0.2
chmod +x cgi-demo
```



Please note: This sample assumes that your development PC with Windows and coLinux is using the IP address *192.168.0.2*. Change this address if necessary.

- **7 Step:** Access the executable *cgi-demo* with your Web browser. The URL for this CGI on the DNP/9200 is:

http://192.168.0.126/cgi-bin/cgi-demo



This URL assumes that your DIL/NetPC DNP/9200 is using the IP address **192.168.0.126**. Change this address if necessary.

The *cgi-demo.c* source code:

```
// cgi-demo.c: Simple CGI demo program.
// Vers. 2.00 - 04.April 2007
// k.d.walter@t-online.de

// Includes

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

int main (int argc, char *argv[])
{
    char *pEnvPtr;

    printf ("Content-type: text/html\n");
    printf ("\n");
    printf ("<HTML>\n");
    printf ("<HEAD>\n");
    printf ("<TITLE>CGI Environment Variable</TITLE>\n");
}
```

```
printf ("</HEAD>\n");
printf ("<BODY>\n");

// SERVER_SOFTWARE

pEnvPtr= getenv ("SERVER_SOFTWARE");
printf ("SERVER_SOFTWARE= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// SERVER_NAME

pEnvPtr= getenv ("SERVER_NAME");
printf ("SERVER_NAME= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// SERVER_PROTOCOL

pEnvPtr= getenv ("SERVER_PROTOCOL");
printf ("SERVER_PROTOCOL= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// SERVER_PORT

pEnvPtr= getenv ("SERVER_PORT");
printf ("SERVER_PORT= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// REQUEST_URI

pEnvPtr= getenv ("REQUEST_URI");
printf ("REQUEST_URI= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// REQUEST_METHOD

pEnvPtr= getenv ("REQUEST_METHOD");
printf ("REQUEST_METHOD= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
```

```
printf ("<br>\n");

// GATEWAY_INTERFACE

pEnvPtr= getenv ("GATEWAY_INTERFACE");
printf ("GATEWAY_INTERFACE= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// HTTP_CONNECTION

pEnvPtr= getenv ("HTTP_CONNECTION");
printf ("HTTP_CONNECTION= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// PATH_INFO

pEnvPtr= getenv ("PATH_INFO");
printf ("PATH_INFO= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// PATH_TRANSLATED

pEnvPtr= getenv ("PATH_TRANSLATED");
printf ("PATH_TRANSLATED= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// REMOTE_HOST

pEnvPtr= getenv ("REMOTE_HOST");
printf ("REMOTE_HOST= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// REMOTE_ADDR

pEnvPtr= getenv ("REMOTE_ADDR");
printf ("REMOTE_ADDR= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");
```

```
// REMOTE_PORT

pEnvPtr= getenv ("REMOTE_PORT");
printf ("REMOTE_PORT= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// REMOTE_IDENT

pEnvPtr= getenv ("REMOTE_IDENT");
printf ("REMOTE_IDENT= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// SCRIPT_FILENAME

pEnvPtr= getenv ("SCRIPT_FILENAME");
printf ("SCRIPT_FILENAME= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// SCRIPT_NAME

pEnvPtr= getenv ("SCRIPT_NAME");
printf ("SCRIPT_NAME= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// QUERY_STRING

pEnvPtr= getenv ("QUERY_STRING");
printf ("QUERY_STRING= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

// CONTENT_TYPE

pEnvPtr= getenv ("CONTENT_TYPE");
printf ("CONTENT_TYPE= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");
```

```
// CONTENT_LENGTH

pEnvPtr= getenv ("CONTENT_LENGTH");
printf ("CONTENT_LENGTH= ");
if (!pEnvPtr)
    printf ("<NULL-POINTER>\n");
else
    printf ("%s\n", pEnvPtr);
printf ("<br>\n");

printf ("</BODY>\n");
printf ("</HTML>\n");
return (EXIT_SUCCESS);
}
```

That is all.