Networking Heidenhain controllers with MCIS DNC Cell / Plant

Contents:

1  SETTING UP THE ACCESS AUTHORIZATIONS ON THE DNC SERVER
   (EXAMPLE: WIN2003 SERVER) .................................................................2
   1.1  Installing the Services for UNIX on a Windows 2003 computer ..........2
   1.2  Configuring the Services for UNIX on a Windows 2003 computer ...7

2  ACCESSING A WIN2003 SERVER WITH HEIDENHAIN CONTROLLERS ....16
   2.1  Controller type TNC530.................................................................16
   2.2  Controller type TNC426.................................................................17

3  SETTING UP THE HEIDENHAIN CONTROLLER (TYPE “FILE SYSTEM“) ON
   THE DNC SYSTEM.................................................................................18
1 Setting up the access authorizations on the DNC server (example: Win2003 Server)

1.1 Installing the Services for UNIX on a Windows 2003 computer

The services for UNIX are included in the Windows 2003 Server Ressource Kit. They can also be downloaded from the following Microsoft site:


After starting the setup procedure, proceed as follows:
Security Settings

Setup needs to change low-level default security settings.

You have chosen to install Server for NFS. These features require support for case-sensitive file names to provide complete compatibility with UNIX. Setup can change a Windows security setting so that object names are handled in a case-sensitive manner. This has security implications, which are explained in Install.htm.

- Change the default behavior to case sensitive.

User Name Mapping

Configure the User Name Mapping server.

- Remote User Name Mapping Server
  
  Type the name of the User Name Mapping server that is already set up in your organization. If a User Name Mapping server is not already set up, it is recommended that you type the name of the server where you plan to install User Name Mapping.

- Local User Name Mapping Server
  
  If you have not decided to set up a remote User Name Mapping Server, it is recommended that you set up User Name Mapping on this computer. To install User Name Mapping on this computer, click Next. Setup will configure User Name Mapping to use simple mapping based on how you provide UNIX user and group names:
  
  - Network Information Service (NIS)
  - Password and group files
To identify UNIX user and group names, enter the file path and name of the password and group files for those users and groups.

**Password file path and name:**

```
C:\SFU\etc\passwd
```

**Group file path and name:**

```
C:\SFU\etc\group
```
The setup of Services for UNIX has been completed. You need not reboot the system.
1.2 Configuring the Services for UNIX on a Windows 2003 computer

All configurations are displayed in an example. The settings for other users or groups have to be adapted accordingly.

Please set up the following local users in the Windows user management and assign them at least to the "Users" group:

    AUDUSER
    DNCUSER

Set up the UNIX files group and passwd on the Windows server and copy them into the directory c:\SFU\etc:

**File contents of c:\SFU\etc\group:**
root:x:0:
users:x:300:

**File contents of c:\SFU\etc\passwd:**
root:x:0:root:/root:/bin/bash
AUDUSER:x:301:300:users:/auduser:/auduser/bash
DNCUSER:x:302:300:users:/dncuser:/dncuser/bash

Restart the service to import the new files and configure the UNIX Services:

- Log onto the DNC server as local Admin.
- Call up:
Set up the following parameters as described in the figures:
Press the “Client Groups” tab. The group you have entered in the file c:\SFU\etc\group should be displayed here:

Server settings:
Client settings for external access to the server:
Please ensure that the file access rights suit your requirements:
The users which have been configured in the file c:\SFU\etc\passwd are displayed here:

... the group configured is displayed here:
You must select the “passwd and group file“ here!

In this screenform, select “List Windows users“ and “List UNIX Users“; select the two users you wish to interconnect and press “Add“ → The users will be entered in the following list:
Actuate the Maps button and execute Mapping also for the user group required: Select “List Windows groups” and “List UNIX groups”; select the two groups you wish to interconnect and press “Add” → The groups will be entered in the list below:

When selecting “Apply“, the configuration is entered in the UNIX service:

To activate your settings, the “User Name Mapping“ service has to be restarted again (see figure above).

An NFS drive on the DNC server can be accessed from the Heidenhain controllers via the users “AUDUSER“ (ID: 301) or “DNCUSER (ID: 302) pro (user ID 301, Group ID 300) (in the given example).
Setting up an NFS share on a Windows 2003 server:

In the Windows Explorer, place the cursor on the directory you wish to release as the NFS drive in the network and select "properties". Go to the "NFS-Sharing" tab and set your access authorizations:
Enter, for example, the users mapped or complete groups and allocate the relevant read/write authorizations.

Proceed analogously for each network drive to be released separately.

Note the IDs for the NFS release groups you’ve defined and set up the relevant NFS accesses on the Heidenhain controllers.

In the given example:

- Group – ID: 300
- User – ID 1: 301
- User – ID 2: 302

The Windows 2003 server configuration has been completed.
2 Accessing a Win2003 server with Heidenhain controllers

2.1 Controller type TNC530

- Enter the network configuration via "NET123" (first, you have to activate the "Store/edit" mode of the user interface. Press “PRG MNT”)

- Actuate the "Define Net" softkey:

Assign IP address, name, etc. according to the machine list. For example:

<table>
<thead>
<tr>
<th>IP:</th>
<th>Netmask:</th>
<th>Broadcast:</th>
<th>Router:</th>
<th>Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.50.108.122</td>
<td>255.255.254.0</td>
<td>10.50.108.255</td>
<td>10.50.108.1</td>
<td>WIECNC67222</td>
</tr>
</tbody>
</table>

--> Exit via /END/

- Press the "Define mount" softkey
  - Place the cursor on [end] and select "Insert line"
  - Insert dummy line (is required!):
  - Insert network drive

Example:

<table>
<thead>
<tr>
<th>Mount device:</th>
<th>Mount point:</th>
<th>File system type</th>
<th>AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0) dncdummy</td>
<td>dncdummy</td>
<td>NFS</td>
<td>0</td>
</tr>
<tr>
<td>(1) 10.50.96.196:/DNCNFS</td>
<td>DNC:</td>
<td>NFS</td>
<td>1</td>
</tr>
</tbody>
</table>

[end]

**Explanation:**
The value displayed behind the IP is the machine NFS mount point specified on the Windows 2003 server (here: 3225). AM = 1 means that the drive is connected automatically after booting.
The dncdummy is required because the controller only accepts network drives with an ID higher than "1". If no local drive has been defined, counting starts at "0".

--> Exit via /END/

- Actuate the "Define UID/GID" softkey

  TNCUSERID: Enter 301
  OEMUSERID: Enter 301
  TNCGROUPID: Enter 300
  UID for Mount: USER (cannot be used as root !)
Explanation:
userid "301" corresponds to the local Windows user "AUDUSER" on the DNC server,
GroupID 300 corresponds to the local "user" group on the DNC server.

Exit via /END/

- Press again /END/ --> the controller is shut down. If it is not shut down, manually switch the
  system /OFF/.

2.2 Controller type TNC426
- Enter the network configuration via "NET123" (first, you have to activate the
  "Store/edit" mode of the user interface. Press “PRG MNT“)

- Actuate the "Define Net" softkey:

Assign the IP address, name, etc, according to the machine list. For example:

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>MASK</th>
<th>ROUTER</th>
<th>PROT</th>
<th>HW</th>
<th>HOST</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.50.108.137</td>
<td>255.255.255.0</td>
<td>10.50.108.1</td>
<td>RFC</td>
<td>10BASET</td>
<td>WIECNC19912</td>
</tr>
</tbody>
</table>

--> Exit via /END/  Controller is booted

- Enter once more the network configuration via "NET123" (first, you have to activate the
  "Store/edit" mode of the user interface. Then press “PRG MNT“)

- Actuate the "Define mount" softkey
  - Place the cursor on [end] and select "Insert line"
  - Insert dummy line (is required!):
  - Insert network drive with UID and GID (see example):

Example:

<table>
<thead>
<tr>
<th>NR</th>
<th>ADDRESS</th>
<th>RS</th>
<th>WS</th>
<th>TIMEOUT</th>
<th>HM</th>
<th>DEVICENAME</th>
<th>PATH</th>
<th>UID</th>
<th>GID</th>
<th>…</th>
<th>AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0)</td>
<td>dncdummy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>dncdummy</td>
<td>dummy</td>
<td>302</td>
<td>300</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>10.50.96.196</td>
<td>4096</td>
<td>4096</td>
<td>1000</td>
<td>1</td>
<td>DNC</td>
<td>/DNCNFS</td>
<td>302</td>
<td>300</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
[ end ]
Explanation:
The dncdummy is required because the controller only accepts network drives with an ID higher than "1". If no local drive has been defined, counting starts at "0".
The DNC server is entered together with its IP in ADDRESS.
DEVICENAME is the name which is displayed in the controller user interface (DNC).
Notice: Do not use ":" since otherwise the correct name will not be displayed!!!
The value displayed behind the "/" with PATH is the machine cost center (here: DNCNFS)
UID "302" corresponds to the local Windows user "DNCUSER" on the DNC server,
GID 300 corresponds to the local "user" group on the DNC server
AM = 1 means that the drive is connected automatically after booting.

- Exit via /END/
- Press again /END/ --> the controller is shut down. If it is not shut down, manually switch the system /OFF/.

3 Setting up the Heidenhain controller (type “file system”) on the DNC system

Open DNCAdmin and log in as DNC administrator:

Enter the configuration mode via the menu “View – Configuration“:

Place the cursor on the (sub)group in which you wish to enter the machine, right-click → New → Machine:

Enter the machine name required and press “OK”: 

[Image of DNCAdmin configuration window]
In the list provided (in the given example, under “Halle3”), search for the new machine. When you have found the machine, open the configuration by double-clicking the machine:

Perform the following steps, one after the other, as described in the figure above:

1. Delete the station name displayed under (1)
2. Select “file system” as transmission module
3. Select the higher-level group as retransmission directory
4. Actuate the “Edit” button and adapt the following values in the file displayed for the relevant machine:

   1. [SEND] section – Adapt the path indicated for the transfer of NC programs to the NFS directory of the machine. For example: d:\DNC\Data\Heidenhain\DNCDATA\Hin
   2. [SEND] section – Adapt the path indicated for the transfer of NC programs to the NFS directory of the machine. For example: d:\DNC\Data\Heidenhain\DNCDATA\Rueck

Save the editor via “File“ – “Save“ and exit.

Exit DNCAdmin.