

## TB099 (Rev1) - Networking Your Centroid Control

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### Introduction

This document will help you to connect a Centroid CNC control in a peer-to-peer network (one or more Centroid controls attached to a PC) for the first time. Centroid only supports running the Microsoft DOS Network Client. The only network protocol supported is the Microsoft NetBEUI protocol. No other DOS networking programs, methods or protocols will be supported by Centroid for a control running the DOS operating system. Centroid CNC controls can successfully share files with a Personal Computer on the network running Windows 95, 98, 98SE, ME, 2000, or XP that are using FAT32 or FAT16 file system; however, Windows 2000 and Windows XP running under NTFS may experience some problems. This Tech Bulletin supercedes all previous networking Tech bulletins and should be used for all your Centroid networking information. On machines running Windows XP you must refer to Tech Bulletin 140 for instructions on how to install the Microsoft NetBEUI protocol.

### Requirements

You need the following items:

- Cables - If connecting directly from a PC to a control a Cat 5 crossover cable is needed. If connecting to a network via a Hub/Switch/Router a regular non-crossover Cat 5 network cable is required.
- The Centroid Network Setup and Network Drivers disks to ease installation of Microsoft Network Client v3.0 and the appropriate drivers. The network client will be set up to use the Microsoft NetBEUI protocol. Note: Windows XP does not have the NetBEUI protocol installed but you can find details on how to install it in Tech Bulletin 140.
- If your control does not have a built in Network Interface Card (NIC) then you will need to acquire a NIC for the control. Older M400 or M15 consoles will require a motherboard upgrade if they do not have a built in NIC. To obtain either a NIC or motherboard upgrade contact Centroid Technical Support or your local Centroid Technical Representative
- Network software drivers, are determined by your control motherboard. Call Centroid Technical Support to help you determine which one your control has
  - \*\* Acrosser AR1564 motherboard uses the FETND.DOS driver set
  - \*\* Aaeon PCM-6890B motherboard uses the E100B.DOS driver set
  - \*\* MSI MS-6368 (ATX style) motherboard uses the RTSND.DOS driver set
  - \*\* older 486 motherboards use NE2000 compatible drivers (available with Microsoft Network Client v3.0 utility)
  - \*\* Controls with stand-alone PCs use drivers provided by network card supplier

You must follow every step one at a time (Do not skip any steps). A qualified network technician should only attempt networking. Centroid will not provide networking support to an unqualified end user. When this document refers to "Remote PC" this is referring to the desktop pc on which you wish to gain access from the Centroid CNC Control. When this document refers to "CNC Control" or "Control" it is referring to the Centroid CNC Control Console.

### Remote PC installation

1. Install the NIC into your PC (powered down). Install the software drivers as specified by your supplier's documentation. Power up the PC
2. Check that the NIC has the correct protocols installed, do this by going to the **Control Panel** and selecting **Networking**. Then select the NIC from the list, and open up its **Properties**.
3. If the correct protocols are not installed you must follow the following procedure to install them.
4. Double click on the following icons: *My Computer*, then *Control Panel*, then *Network*.
5. Add both IPX/SPX and NETBEUI protocols by: click on add, select *protocol*, select *Microsoft*, then select the appropriate protocol and click *add*.
6. In the same manner as adding the protocols, add the client, *Client for Microsoft Networks*. Make this the primary network logon.
7. Click on *file and print sharing* and check: *I want to be able to give others access to my files*.
8. Click on the Identification tab, and fill out the computer name and workgroup name. Be sure to make a note of these names, as you will need them later.
9. Click on OK at the bottom of the Network pop-up window. Most likely, the computer will need to reboot to allow changes to take affect.

10. Go to *My Computer*, right click on the drive to be shared, select *properties*, click on the *sharing* tab, select *Share As*, and fill in the name for the drive. The easiest name is just the drive letter. Allow the drive to be read from and written to.
11. Note: If using Windows NT, 2000 or XP log in as administrator, click on *Start, programs, admin. tools, user manager*, and add a new user with the login name to be used on the control. Leave the password blank for easiest use. If you skip this step you will not be able to establish network communications.

**Workgroup name** \_\_\_\_\_

**Computer (Server) name** \_\_\_\_\_

**User name** \_\_\_\_\_

**Password** \_\_\_\_\_

### **Centroid CNC Control Configuration**

1. At the control, press **ESC** until you are at the main screen.
2. Press and hold **Ctrl + Alt + X** to go to the DOS system.
3. Insert the Network Drivers diskette into the control.
4. Type **A:** press - **ENTER** to change to the floppy drive.
5. Type **INSTALL** press - **ENTER** to start the install batch file.
6. Press **ENTER** to continue.
7. Overwrite old directories if prompted to do so.
8. A menu will prompt for your motherboard type. Enter the number of the appropriate choice. Driver files will then be copied to the hard drive.
9. Insert the Network Setup disk and press a key when prompted. The files for Microsoft Network Client 3.0 will be extracted, and then the setup program will run.
10. Press **ENTER** to continue setup.
11. Press **ENTER** to accept C:\NET as the install directory.
12. You now need to select the type of NIC you have, dependant on the motherboard
  - 1. Older 486 motherboards, and AR-B1560 motherboards highlight "NE2000 Compatible" and press **ENTER**
  - 2. If using the a newer motherboard:
    - \*\* Highlight "Network card not shown on list below..." and press **ENTER**
    - \*\* Check the highlighted path is "C:\NETINST" and press **ENTER**
    - \*\* Check the highlighted adapter is:
      - i. "PCI Fast Ethernet 10M/100M Adapter" for the AR-B1564
      - ii. "Intel (R) PRO PCI Adapter" for the PCM-6890B
      - iii. "RTL8139 Fast Ethernet Adapter" for MS-6368
  - 3. Press **ENTER** to accept the driver.
13. Press **ENTER** at the "Set Network Buffers" window.
14. Assign a name to the control when prompted. This name must be unique for each control in the workgroup. Examples are Centroid, Centroid1, Centroid2, etc.
15. The main setup menu will now appear. Enter the "Change Names" option and change the workgroup name to match your workgroup.
16. Return to the main menu and choose "Change Network Configuration." Highlight the exist protocol (use **TAB** to switch between windows) in the upper window. Choose remove in the lower window. "Select the protocol used on your

network" list box will appear when all protocols have been removed. Choose Microsoft NetBEUI.

17. If using the MSI MS-6368 motherboard, you will need to go into Change Settings, and set the following: Bus No=0 and Device No=14

18. Return to the main screen. Choose "The listed options are correct" to continue. Press **ENTER** at the following screen to restart the computer.

19. After the restart, go back into DOS by pressing and holding **Ctrl + Alt + X**

20. At this point we are ready to perform a test to see if the network is now setup. You should be at a Dos prompt. To test the network:

- 1. Type **NET VIEW** press - **ENTER**
- 2. You should see a list of all the computers on your network, similar to the picture below

```
C:\>NET VIEW
Server Name          Remark
-----
\\KRAMER              Tech Soupport
\\MEMBICK
\\PCTECH              Pc Room
\\WINSERVER
The command completed successfully.
C:\>
```

- 3. If you do not see a list of computers on your network as above, see the Network Troubleshooting section of this document.

1. To setup the Control so that you can load files from a remote PC:

- 1. Type **CD \** press - **ENTER** to change to the root directory.
- 2. Type **EDIT AUTOEXEC.BAT** press - **ENTER**
- 3. Add the line **NET USE G: \\server\C /YES /PERSISTENT:NO** where "server" is the server name and "C" is the name of the shared resource set up on the desktop PC earlier in this document. "G:" is the letter that the network resource is mapped to on the control. Several letters can be mapped in this way if necessary.
- 4. **Make sure the network command lines are entered before the CNC7M4 command or networking will not be initialized at startup!** The **CNC7M4** command **MUST** be the last command in the AUTOEXEC.BAT file.
- 5. Save and exit the editor. Restart the control for changes to take effect.

2. Restart the control and let the CNC7 software start if you have not already done so.

3. At the main screen, press **F1 - Setup**, **F3 - Config**, and **F1 - Control**.

4. Check that the "Remote Drive & Directory" line shows "G:" If correct, you can press ESC until you return to the main screen.

Your Centroid CNC control is now connected to the network and can access drive C on your PC.

If you are using CNC7 software earlier than 7.51, you may have to free up memory by disabling any unused drivers. Version 7.51 and above will not have this concern since they utilize a DOS extender. Contact your local Centroid Technical Representative about upgrading your control software. You can locate the nearest technical representative by visiting the Centroid web site at <http://www.centroidcnc.com/support/>. You can also call Centroid Technical Support.

1. If you want to access files on the Control from the desktop PC, you need to enable File Sharing on the Control:

- 1. Type **CD \NET** press - **ENTER** to change to the NET directory.
- 2. Type **EDIT SYSTEM.INI** press - **ENTER**
- 3. Find the line that reads "filesharing=no"- Change this to "filesharing=yes"
- 4. Details of the editor usage can vary by DOS version, but make sure you save before exiting the editor.

- 5. Type **CD \** press - **ENTER** to change to the root directory.
2. Type **EDIT AUTOEXEC.BAT** press - **ENTER**
- 1. Add the line **LH C:\DOS\SHARE** to the AUTOEXEC.BAT.
  - 2. Add the line **NET SHARE C=C:\ /YES /SAVESHARE=NO /FULL** This will share the "C:\:"drive with a name of "C" on the network. Other shares can be added using this format. Make sure this line is added after the line containing "net start"
  - 3. Save and exit the editor. Restart the control for changes to take effect.

### **Troubleshooting the Network and Network Problems**

Troubleshooting a network running under the Microsoft DOS Network Client can be very difficult. The standard Microsoft error messages can be very hard to decipher at the best of times. Below is a list of common error messages and their causes.

#### **"System error 5 has occurred. Access is denied."**

This error is caused if the network is setup correctly, but the Username and/or password do not match on either the Remote PC or the Control.

#### **"System error 53 - The network path was not found."**

If when using NET VIEW \\computername, you get system error 53 then more than likely you have one of the following problems:

1. Incorrect Workgroup name on Remote PC or Control.
2. File and print sharing not enabled on Remote PC.

#### **"System error 6118 has occurred. The list of servers for this workgroup is not currently available."**

This is the most common error seen when trying to network. Causes are as follows:

1. Network cable problem. Either not connected or incorrect type of network cable.
2. Incorrect workgroup name on Remote PC or Control.
3. Username for Control is not defined on Desktop PC.
4. Password for Username on control does not match password defined on Desktop PC.
5. Workgroup defined for Control incorrect.
6. Incorrect NIC drivers being used.
7. NetBEUI protocol not installed on remote PC.

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#### **Document History**

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