Chapter 2
Installation and Setup

2.1 Installing NUSS

The **NetScanner™ Unified Startup Software (NUSS)** is made available to you on either a CD-ROM or as a self-extracting "zip" file (downloadable from PSI's website). It may be installed on as many host computers as desired. It requires a Windows® XP environment, that is properly configured to utilize necessary TCP/UDP/IP protocols, and an appropriate Ethernet Adapter (with its driver software). If you have problems getting NUSS to run on your PC, see **Section 2.7** (**In Case of Difficulty**) at the end of this chapter.

Notice: Before installing a *new* version of NUSS, be sure that ***any older versions of it have been removed first***. Use the **Add/Remove Programs** utility of the Windows **Control Panel**. Lookup program(s) named **NUSS (NetScanner Unified Startup Software)** in that utility's scrolling window (all are listed alphabetically). If you find one, highlight it (click with mouse), and then click the **[Add/Remove]** button below the window. If you find more than one copy of NUSS installed in the same path, you may be able to remove only the most recently installed one. **If you are installing Release #3 on top of a Release #2 of NUSS, be sure to read Section 2.1.4 after installation.**

Notice: The standard Windows installation program SETUP.EXE is used to install NUSS. It insists that it be the only application program active (other than simple file access forms like **My Computer** or **Windows Explorer**, which are permitted). ***Thus, before installing NUSS, you should exit all other applications***. Failing to do this may leave shared files (e.g., DLLs) active, causing confusing errors during installation. SETUP.EXE "expands" a "compressed" file (called NUSS.CAB) in a temporary folder, guided by a script file (SETUP.LST). It then installs the "uncompressed" parts. Files NUSS.EXE and psi_conv.dll are placed in the NUSS "installation" path (C:\WPSI\NUSS\) by default. If you change this path be sure to keep it short. File ST6UNST.LOG is also added there to aid later removal of NUSS. Other parts of NUSS (Visual Basic DLLs and OCX libraries) are installed in the folder \WINDOWS\SYSTEM. The temporary folder is erased when the installation is complete.

2.1.1 Installing NUSS And Its Manuals From CD-ROM

Skip to section **2.1.2** if you wish to *download* a version of NUSS, and its User's Manuals, via the PSI website instead.

2.1.1.1 Installing NUSS Executables From CD-ROM

First, **be sure to read and heed** the two **Notice:** boxes at the beginning of this chapter (previous page). Then, insert the CD labeled **NetScanner Products** into the CD drive of your PC. Use one of the following two methods to install it:

(1) Using **My Computer** or **Windows Explorer**, locate the file named "**SETUP.EXE**" in subfolder **\NetScanner\software\Nuss**. *Double-click* this setup file's name (or icon) to execute it. If you have suppressed the display of *file extensions (e.g., **.exe**)*, there is another file with the "setup" name (i.e, **SETUP.LST**), so be sure you *double-click* the **EXE** file, not the other one.

(2) Alternately, use the **Start Menu** and select **'Start | Run'**. Then, type **x:\NetScanner\software\Nuss\SETUP**, substituting the appropriate CD drive letter for ***x:***. Press <Enter> to execute the setup program.

Either method above loads a SETUP program, which guides you (if you read its instructions carefully) through the remainder of the installation process. If you have any trouble, you may need to re-read the two **Notice:** boxes at the beginning of this chapter. After installation of NUSS, it can be executed via the Windows ***Start*** menu — by selecting **'Start | Programs | Nuss (...) | Nuss (...)'**. See also section **2.1.3** for creating a desktop *shortcut* to NUSS.

If you are installing Release #3 on top of a Release #2 of NUSS, be sure to read Section 2.1.4 after installation.

2.1.1.2 Installing NUSS User's Manuals From CD-ROM

The CD (from which you have already installed a working NUSS) contains another subfolder labeled **\NetScanner\software\Nuss\UserMan**. If you navigate to that folder with **Windows Explorer** or **My Computer** you notice the files that constitute the NUSS User's Manual. The manual consists of several files, each providing access to a particular *chapter* or *appendix*, plus other required files including a special one named **nussindx.htm**. You may load that file directly into your "Internet" browser (e.g., into **Internet Explorer** using drag-and-drop) to gain access the manual. This file displays the PSI logo and all the necessary *links* to all the parts of the manual — which are all **.pdf** files readable by the universal Acrobat 4 (or later version) reader. This reader (and browser "plug in") is available to download free from Adobe's website at:

http://www.adobe.com

Once the Acrobat reader is installed on your PC you can access each of its **.pdf** files directly — or via your Internet browser (using the file **nussindx.htm** as an intermediary). You can either mount the CD each time you wish to access the manual — or you may copy all these files to a new hard disk folder that you create after NUSS is installed and running. A suggested path for such a folder is **C:\WPSI\NUSS\UserMan.** You find other NUSS folders already existing at the same level (under the Main Base (install) Path of C:\WPSI\NUSS). You must add **UserMan** manually with the ***New*** function on the folder's *context* (right-click) menu of **Windows Explorer** or **My Computer**.

You may configure NUSS, itself, to access this User's Manual (from hard disk or CD ROM drive) whenever its ***'Help | Manuals'*** menu function is executed from the NUSS "home-base" menu. To do this, use the ***'Configure | General Options (NUSS)'*** function, also on the "home-base" menu. On the configuration form, simply *double-click* the text box labeled: **Choose Path for NUSS Manuals.** This pops-up a common dialog box that allows you to navigate to where you have installed the manual. Locate the file **nussindx.htm** — and click it, so that its name appears in the **File name:** box — then click the **[Open]** button to save it. Finally, press **[OK]** to save this full path name in the text box on the ***General Options*** form. The User's Manual is then directly available from the NUSS ***Help*** menu — as long as the files were installed on your hard drive — or the NUSS CD ROM is mounted in the CD drive — and the Acrobat 4 reader is installed. See Section 2.6.2 for more detail.

2.1.2 Getting/Installing NUSS And Its Manuals From PSI's Website

Skip this section if you have installed NUSS from CD-ROM instead.

2.1.2.1 Getting/Installing NUSS Executables From PSI's Website

First, **be sure to read and heed** the two **Notice:** boxes at the beginning of this chapter. Next, use the **Windows Explorer** or **My Computer** application to locate any *temporary* folder on your hard drive. Remember the drive and path to this folder (e.g., **C:\temp** or "**C:\My Downloads**") so that you can download NUSS's installation files to it, after you locate them on the PSI website. You"expand" these "compressed" NUSS files and then copy them from this temporary folder to working folders later.

Use the **Internet Explorer** (or other configured browser) to locate the PSI website at:

http://www.pressuresystems.com

Once there, you may click on the link labeled**: Download NetScanner Unified Startup Software (NUSS)**. A self-extracting compressed ('zip') file named **NUSSINS.EXE** is made available to download from this web page to your PC. After the pop-up form appears, asking where it should put, specify the temporary folder you selected above. You can either type in its full path name or you can "navigate" to locate your temporary folder. This file is usually be between 4 Mbytes and 5 Mbytes in size, so you may wish to schedule the necessary time — depending on the speed of your Internet connection. After this download process is completed successfully, the file should be in the temporary folder.
After all downloading operations are completed and successful, you may exit the browser. You may also need to **re-read and heed** the two **Notice:** boxes at the beginning of this chapter. Next, use **Windows Explorer** or **My Computer** to locate your temporary folder again, then *double-click* the **NUSSINS.EXE** file to "expand" it into its constituent "uncompressed" files, including SETUP.EXE, NUSS.CAB, and several other files that govern the installation process. Other text files provide you with "last-minute" information about that version of NUSS.

You may have to "refresh" the form to see the new expanded files. Next, *double-click* the **SETUP.EXE** program, and follow all instructions. This installs the many parts of the NUSS software onto your hard drive. All the original downloaded and expanded elements in the temporary file may then be deleted.

If you are installing Release #3 on top of a Release #2 of NUSS, be sure to read Section 2.1.4 after installation.

2.1.2.2 Getting/Installing NUSS User's Manuals From PSI's Website

Use the **Internet Explorer** (or other configured browser) to locate the PSI website at:

http://www.pressuresystems.com

to find the main NUSS User's Manual installation file. There is a **.htm** file there containing the link: **Download NUSS User's Manual**. You only need to click this link to start the downloading process. The main manual file (**NUSSUMAN.EXE**) is about 11 Mbytes in length, so set aside a reasonable block of time for downloading it — depending on the speed of your Internet connection. The file is a self-extracting compressed ('zip') file that must be downloaded to a *temporary* or *permanent* folder of your choice. Then, it is expanded by executing it. A suitable *permanent* folder like **C:\WPSI\NUSS\UserMan** is suggested. Other NUSS folders already exist at the same Main Base Path level (the NUSS "installation" path) at C:\WPSI\NUSS. You must add **UserMan** manually with the ***New*** function on the folder's *context* (right-click) menu of **Windows Explorer** or **My Computer**.

The "expanded" manual contains several files, each providing access to a particular *chapter* or *appendix*. A file of particular note is one named **nussindx.htm**. You may load that file directly into your "Internet" browser (e.g., into **Internet Explorer** using drag-and-drop). This file displays the PSI logo and all the necessary linkages to all the other parts of the manual — which are all **.pdf** files readable by the universal **Acrobat Reader** (version 4 or later). This reader is available for free download from **Adobe's** website at:

http://www.adobe.com

Once the **Acrobat Reader** is installed on your PC you can access each of the **.pdf** files directly — or indirectly via your Internet browser (using file **nussindx.htm** as an intermediary directory).

You may configure NUSS itself to "find" this user manual (where you have saved it on your hard disk) whenever its ***'Help | Manuals'*** menu function is executed from the NUSS "home-base" menu. To do this, use the ***'Configure | General Options (NUSS)'*** function, also on the "home-base" menu. On the configuration form, simply *double-click* the text box labeled: **Choose Path for Nuss Manuals**. This pops-up a common dialog box that allows you to navigate to where you have installed the manual. Locate the file **nussindx.htm** — and click it, so that its name appears in the **File name:** box — then click the **[Open]** button to save it. Finally, press **[OK]** to save the full path name in the

text box on the ***General Options*** form. The manual is then directly available from the NUSS ***Help*** menu. See Section 2.6.2 for more detail

2.1.3 Creating A Shortcut To NUSS

If you have correctly installed NUSS on your hard disk, an executable **(NUSS.EXE**), a shared library (**psi_conv.dll**), and an "uninstall" support file (**st6unst.log**) appears in the "installation" path at:

C:\WPSI\NUSS

If you used some other hard disk path to install it, that path is usually displayed (as *CurDir=path*) on the **Status Bar** of the "home-base" strip form when NUSS starts.

You may start NUSS via the Windows ***Start*** menu. However, you can also create a more convenient *shortcut* to it on your Windows Desktop. Windows 98 (or later version) users may simply ***right****-drag* the existing shortcut (at the end of the ***Start*** menu hierarchy) to the Desktop. Windows 95 users must use one of the following two methods:

(1) Locate the path **C:\Windows\Start Menu\Programs\NUSS (NetScanner Unified Startup Software)** on your hard disk. An existing *shortcut* file is found there (with a bent arrow in its icon), also named "**NUSS (NetScanner Unified Startup Software)**".

(2) Use **Windows Explorer** or **My Computer** or **Find** to locate the **NUSS.EXE** file in the path where NUSS was installed (see above), then highlight it and *right-click* it to bring up a *context* menu. Select the *Create Shortcut* option on this menu. The newly created shortcut initially resides in the same folder where the program was installed. You may need to "refresh" the screen to see it there.

In either case (above), *right-drag* the Shortcut icon to approximately where you want it on your Windows Desktop. Select ***Copy*** (not ***Move***) from the context menu that pops-up after the drop, and a *copy* of that shortcut appears on the Desktop. You may now drag the new shortcut anywhere on the desktop you want it. Finally, *right-click anywhere in a blank area* of your desktop, and select ***Line Up Icons*** on the pop-up context menu.

To activate NUSS simply *double-click* the icon of the new **Desktop Shortcut**. You may *right-click* it to rename its label or view/change any of its Properties, as described below.

2.1.3.1 Changing the "Command Line" Options of NUSS Shortcut

The NUSS configuration capability described here applies to any NUSS *shortcut*, whether it is the one you created on the Windows Desktop (above), or the one installed at the end of the ***Start*** menu hierarchy (at **C:\Windows\Start Menu\Programs\NUSS (Net...)**\). It changes the behavior of NUSS by adding one or more optional "command line" options to the first field displayed on the pop-up **Shortcut Properties** form. For *Normal* users, only the **-sim** option switch is currently available.

2.1.3.1.1 Adding Simulated Modules to NUSS

If you need to demonstrate NUSS features without there being any "real" modules available, and particularly if you have no Ethernet adaptor or TCP/IP package installed, you can configure NUSS to add "simulated" (serial # 0) modules to its **Node Map** when it starts. This is accomplished by adding a special *command line switch* to the NUSS shortcut. To do this, *Right-click* the NUSS shortcut and then select ***Properties*** from the context menu that pops-up. A form with two selectable tabs is displayed. Select the **Shortcut** tab, then notice that the **Target** field contains the *highlighted* full "installation" path to NUSS.EXE. This is the so-called *command line*. Press the <Right> arrow key to *clear the highlight* (otherwise it erases if you type anything) and then position the entry cursor to the end of this path. If you accidentally clear to current path, then exit the **Shortcut Properties** form and try again. Add the following text to the end of this path (being sure to add at least one *space* character between it and the path name):

-sim

If your "install" path was set the default one, the final result looks like this:

C:\WPSI\NUSS\NUSS.EXE -sim

A *space* character is required between the *path name* and ***each*** *command line argument*. Finally, press the **[Apply]** and **[OK]** buttons to exit the **Shortcut Properties** form. If your "install" path was a "custom" one, containing one or more *blanks* anywhere in a folder name, then the entire path name is within parentheses ("path"). In that case, any added *command line switch* must be added "outside" these parentheses.

"D:\Example with Spaces\NUSS\NUSS.EXE" -sim

When you use "simulated" modules (those with serial # 0 for each model #) with NUSS they can perform most NUSS features "correctly". In some cases, however, they may do nothing or return a NAK code ('N'). Such modules have no "memory" of course, so if

you configure them, do not expect that configuration to be there the next time you use the same module. If you tire of using such modules, simply remove the **-sim** *switch* from the *command line* of the shortcut and these "simulated" modules no longer appear on the **Nodes Map** when you restart NUSS.

When there are multiple *command line switches* specified, they must *each* begin with a *space* character. For example:

C:\WPSI\NUSS\NUSS.EXE -sim -otheroption

You discover other command line switches should you become an *Advanced* user later.

2.1.4 Special Considerations For Installing Release #4 on Top of Release #2

If you are installing a new **Release #4** of NUSS (Version 1.2.0 – or any of its immediate prior Beta versions 1.1.12 and up) and you are installing it in the *same path* were a **Release #2** system (Version 1.1.0) had been previously running, there is **one extra step required** to insure successful operation.

There were enough significant changes to *internal historical files* between **Release #2** and **Release #4** that the user is advised to clear the **Ini** directory entirely of all old files – to be sure that they are then automatically replaced by new versions.

You should do this immediately after installing and starting your new **Release #3** system. Simply use the built-in ***'File | View Files (NUSS)'*** function or ***'File | Archive (NUSS)'*** function (or use Windows' **My Computer** or **Explorer** applications outside NUSS) to navigate to the path were you have installed the old and new NUSS copy (C:\WPSI\NUSS\ by default). Then navigate one subfolder deeper to:

C:\WPSI\NUSS\Ini

Delete all files stored in this path, and then **Exit** and **Restart** NUSS.

Of course, you lose all *special custom* **Run States** you may have created with the **Run State Editor** for various modules. All forms lose there *size* and *position* history. All ***Run*** forms for individual modules lose their *display field format* (Display Set) history. This requires you to click the **[More]** button again after you ***Run*** each module for the first time. Any non-default *display field formats* must be interactively reconfigured to set their custom *units, names,* and *precision* values.

2.2 Configuring Windows for Network Protocols

Your computer must have an Ethernet adapter card installed (with properly configured driver) before it can communicate with any NetScanner modules on your network. See the documentation for your particular Ethernet adapter for correct installation under your particular Windows version.

Next, you must insure that your particular Windows operating system is properly configured to utilize the necessary layered TCP/UDP/IP network protocols (which Windows simply calls TCP/IP, though UDP is included). Also, you must insure that your host computer's TCP/IP setup has a unique IP Address and Subnet Mask assigned to it. Finally, you must insure that each of the NetScanner modules on your Ethernet network has a unique IP address.

Windows 95 and Windows 98 screen examples are identical below, and are always shown first. Separate Windows NT screen examples are shown on subsequent pages when necessary.

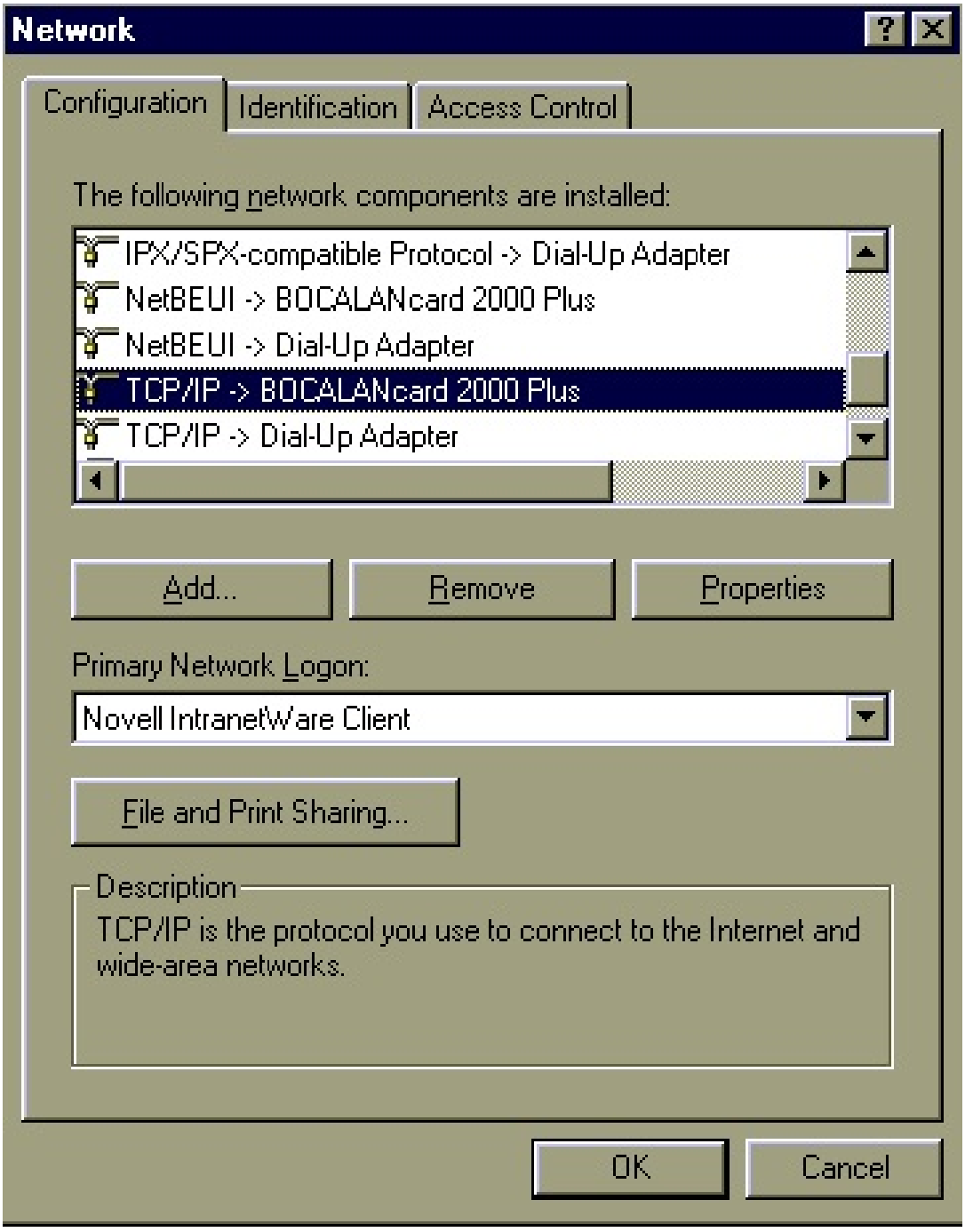
2.2.1 Configure Windows for TCP/IP Protocol Use

Locate the **Network** application, **Configuration** Tab, by one of two methods:

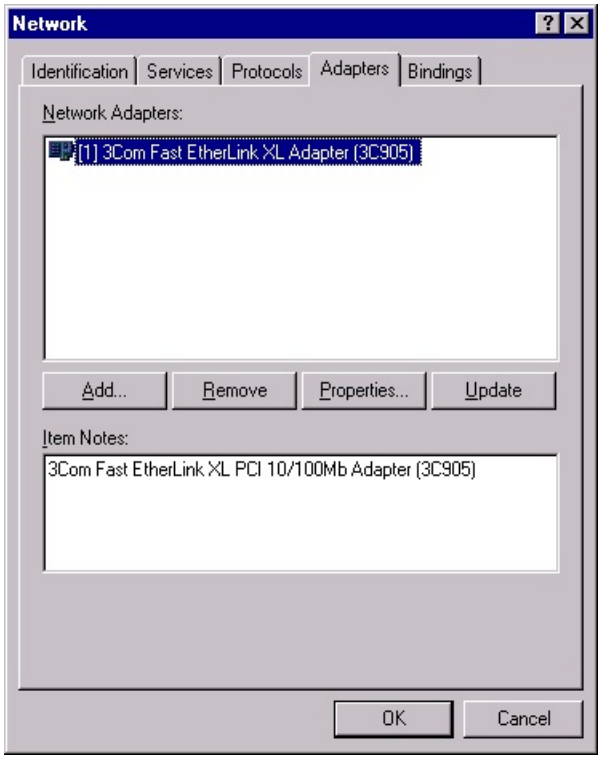
(1) Right-click the **Network Neighborhood** icon, and select ***Properties*** from the pop-up context menu; or,

(2) Double-click the **My Computer** icon, then double click the **Control Panel** selection, or similarly obtain it via the **Start Menu** via the **Settings**/**Control-Panel** selections. Double-click the **Network** selection.

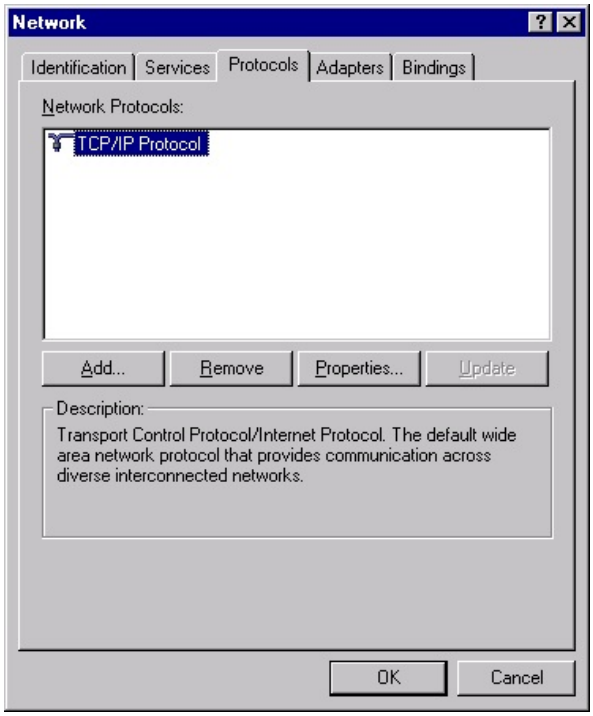
The Network form should then appear (for Windows 95 or 98) as shown in the following picture. Windows XP equivalent forms (two separate ones) start on subsequent pages:



Initial Network Screen for Windows®95/98



Initial Network Screen for Windows® XP



Screen Depicting Correct TCP/IP Protocol in Windows® XP

Windows® 95/98 users may determine if the correct protocol exists by scrolling down the Network/Configuration tab, and locating "TCP/IP". Verify that the name of your Ethernet adapter's manufacturer is shown immediately following "TCP/IP". Note that a dial-up adapter (e.g., modem) may also exist for Internet access with the "TCP/IP" designation, but this is not the protocol that we need to verify.

Windows® XP users may verify that your Ethernet adapter is shown under the Network/Adapters tab, and that the TCP/IP Protocol is shown under the Network/Protocols tab.

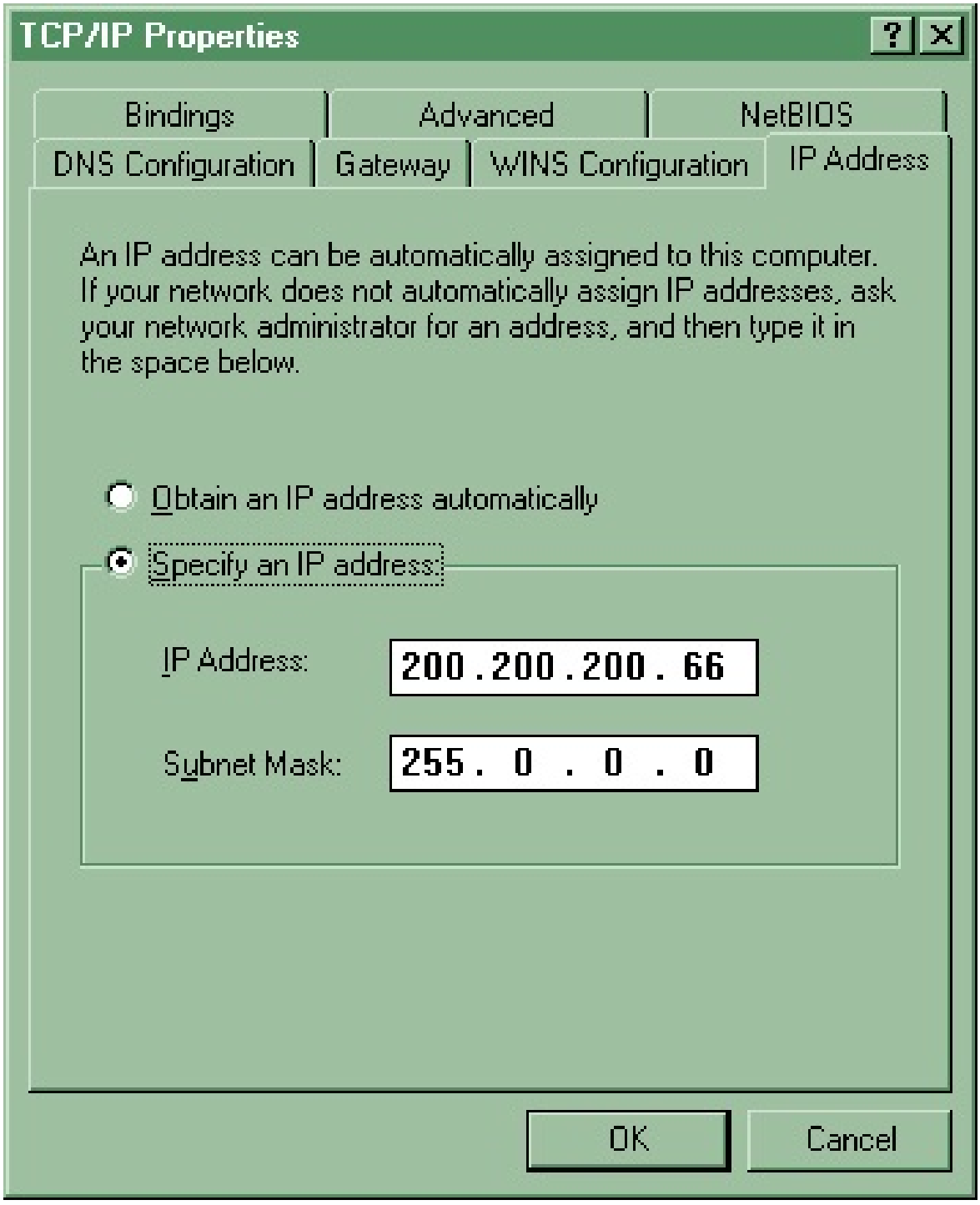
If the TCP/IP protocol is not found, it must be added by selecting the **[Add]** button. Select Protocol, Microsoft, and TCP/IP.

2.2.2 Configure Unique IP Address for Host

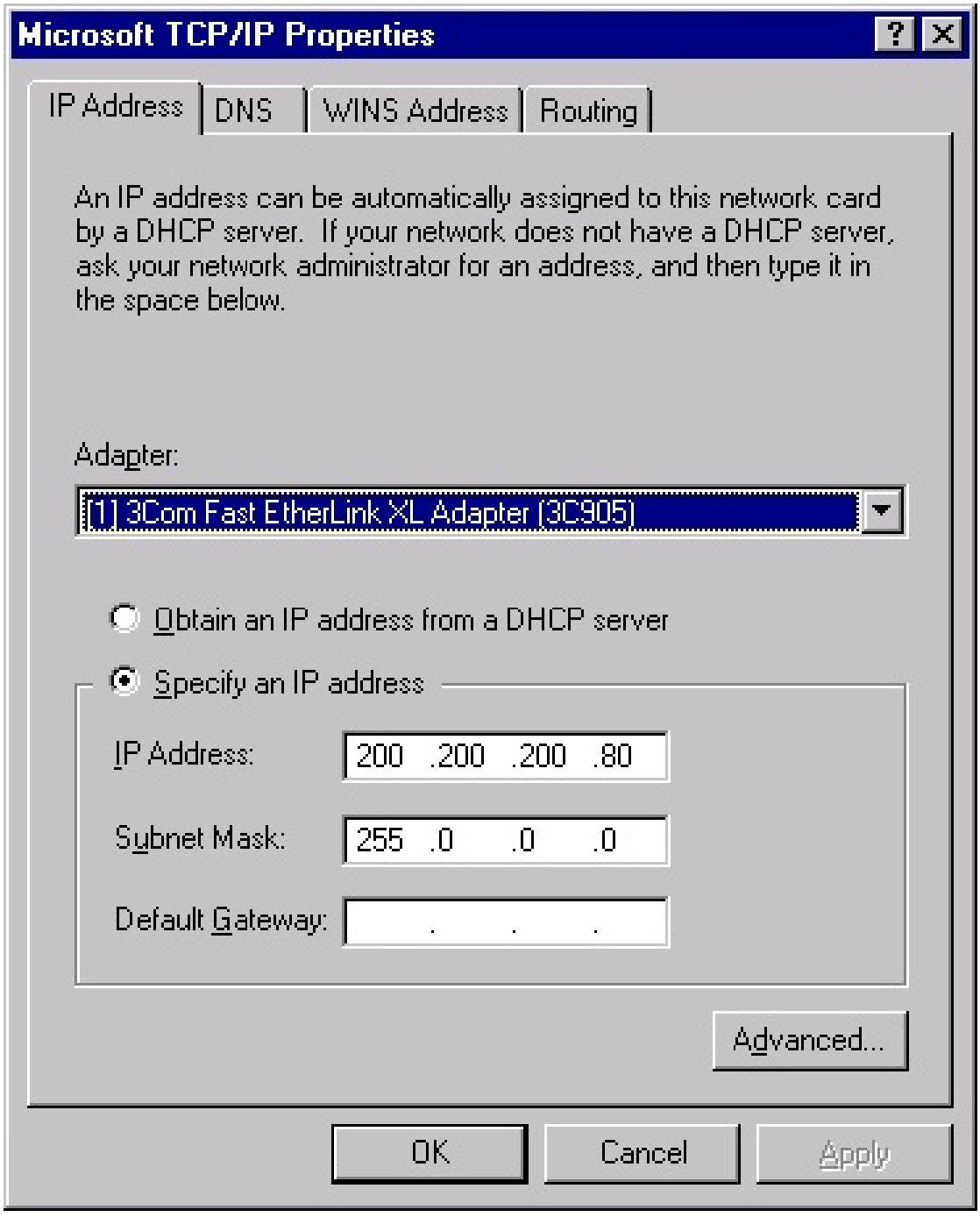
Once the correct TCP/IP protocol is installed and verified for the proper Ethernet card, the IP address (under TCP/IP Properties) must be set. This address must be unique for every *node* on your network (i.e., each host and each NetScanner module).

To set the PC's IP address, select a new (or keep the existing) TCP/IP address on the appropriate screen. It is suggested that the IP Address read 200.xxx.yyy.zzz where xxx, yyy, and zzz are unique locations that do not match any other address on the network. (Check with your network administrator to see that the numbers chosen do not conflict with any other addresses on the network.) It is suggested that the IP address of your first (or only) host be 200.1.1.1 — though others are shown in the examples on the following pages. This should allow you to talk with any other modules on the network. The Subnet mask *should* read 255.0.0.0. Select OK. The host computer is now set to communicate via the Ethernet card to your network of NetScanner modules.

These IP address conventions assume your network is a local one. IP addresses must be assigned by a "higher authority" if your network is directly connected to the Internet. Even then, nodes meant to be locally addressed only, are usually assigned in the special group range 192.xxx.xxx.xxx.



TCP/IP Properties Screen for Windows® 95/98



TCP/IP Properties Screen for Windows® XP

After you set the IP address and the Subnet mask, click "OK". You are then prompted to re-start your computer (Windows® 95/98) so that the inputs are recognized.

2.3 Managing Network and Module Addresses

Each host computer and each NetScanner module must have a unique *Ethernet hardware address* and a unique *IP address* before they can communicate with each other.

The *Ethernet hardware address* is generally fixed (at manufacturing time of the Ethernet microprocessor board inside the module). This address is shown on each **NetScanner™ System** module's label.

PSI's Intelligent Pressure Scanners and Temperature/Resistance Scanners are capable of supporting various methods for IP *address assignment*, using either a *Static IP address* (saved in module's non-volatile memory at time of manufacture) — or *Dynamic IP address* assignment. Dynamic assignment for NetScanner modules is through the use of special RARP or BOOTP protocols. These protocols are initiated by each module during its *startup* procedures, soon after *reset* (due to *reboot* or *power on*).

Unless your application requires the use of *Dynamic IP address* assignments, it is strongly suggested that each of your network modules be left configured to use the *Static IP address* (initially set at factory, but you may modify it with the NUSS ***Configure*** menu functions in the **Network Group**, as demonstrated in Section 2.5).

If you must use the *Dynamic IP address* method of assignment, a ***BOOTP Lite*** "server" application is available from the PSI Website for that purpose. It may also be found on the NUSS Installation CD-ROM in subfolder BootP. It must be separately installed from NUSS, and can be installed on the same PC with NUSS or on another PC located on the same network.. ***BOOTP Lite*** operates silently without any operator interaction once it is started. It keeps its configuration file (**bootp.ini**) in the C:\Windows folder. This is a simple text file that can be edited to supply and IP address to each known Ethernet address.

NUSS only supports Dynamic IP Address assignment when you configure it for Advanced users. See the **Advanced User Addendum** of the **NUSS User's Manual** for more information.

NOTICE: The remaining Sections of this Chapter 2 describe some advanced concepts that might better be understood after reading subsequent Chapters of this manual. Therefore, we suggest you skip reading these remaining sections if this your first reading of the manual.

2.4 Making NUSS Learn and Forget

After NUSS has operated for a while, on a particular host PC, and with a particular set of modules, it tends to remember your particular configurations of its various forms and functions, and even the way you configure various modules on your network. This is useful normally, in that you don't have to remember each time you invoke NUSS, to manually reconfigure it to your wishes. It just does it the way you did it last time.

These "memories" of NUSS are kept as a series of small text files, most with the '**.ini**' file extension. Most such files are located in subfolder **Ini** of the *Main Base Path* (i.e., NUSS install path). Other '**.ini**' files are located in subfolders **Dat** and **Report**. You may view these files with either the ***'File | View Files (NUSS)'*** or the ***'File | Archive (NUSS)'*** home-base menu functions. If for some reason these initialization files should become corrupted, or you simply don't like the way NUSS has remembered your wishes, you can easily *erase* its memory — by deleting all these '**.ini**' files. Use Windows' **My Computer** to remove these files (except for files noted with ***). After deletion, NUSS starts over, doing things the way it did originally when initially installed. Unfortunately, if you have invested some time in developing "run states", "display sets", or "module groups" unique to your configuration these may be lost too.

The following table indicates which specific '**.ini**' files are created for which memory function. A few **'.dat'** files are also shown, so that the '**.ini**' files associated with the automatic naming of '**.dat**' files and their playback secondary files are clearly distinguished from the data files from which they are derived. Refer to the table if you want to only delete selected '**.ini**' files without losing all your past configuration work. **Appendix F** details the format of these files, though most are readable text files that are somewhat self explanatory. Modifying them with a text editor is NOT recommended (except as noted following the table).

file name	purpose
NUSS.ini or [xxx]**NUSS.ini**	**Main NUSS Memory:** remembers **home-base** and **network-status** form sizes and locations, NUSS install path, and the Current Group assigned. Also remembers all the 'Configure | General Options (NUSS)' parameters. If more than one such file exists (with variations in leading characters [xxx] of name) then a pop-up dialog appears to let user select the file (to be used to both start and exit NUSS).
<*modid*>**R.ini** (e.g., **9816-284R.ini**) See Note (***)	**Module Run Memory:** remembers a module's ***Run*** form size and location, module name, record file path, and all its barometer/calibrator (LBN/LRN) associations per transducer
<*modid*>**rs**<*digit*>**.ini** (e.g., **9816-284rs2.ini** for a module's **Run State 2**) See Note (***)	**Default Run State** (0) or **User-Defined Run-State** (1-9) created by **Run State Editor:** remembers Run-State name, all its autonomous stream definitions and other acquisition/record options and states, for a single module
<*modid*>**rs**<*digit*>**.0** (e.g., **9816-284rs2.0** for a module's **Run State 2**) See Note (***)	**Default Display Set** (0) for Run State (0-9) of a module: remembers precision, name, units, for each channel of a module scanned in this Run State, plus other display parameters, interactively configured in the ***Run*** form
CGR.ini	**Coordinated-Group *Run*** form's size and location and type of display (single or individual modules). Its individual module Display forms use <modid>**R.ini**
G<*letter*>**.ini** (e.g., **GA.ini** for **Group A**)	**Module Group Definition** (A-Z) created by the **Group Editor** (Note: Group * (star) is not maintained in a file)
LBN.ini	Defines modules configured as Barometers for each LBN
LRN.ini	Defines modules configured as Calibrators for each LRN, and remembers all pressure calibration *set points* and other calibration parameters. Also remembers "default" options for the Zero-Only, Span-Only or Multi-point ***Calibration Adjustment*** form, the ***Leak Test*** form, and ***Pressure Accuracy Test*** form that all use LRNs.

RngCodes.Txt and **SenType9046.Txt**	Text files listing all known scanner module Ranges in order of their Range Codes (or Sensor Types for Model 9046). User can modify to add new Range Codes/Sensor Types added after your NUSS installation.
TComp.ini	Holds the default tolerances for use by the ***Compensation Accuracy Test*** form. May be changed by the user.
<*modid*>**TAcc.ini** (**) (e.g., **9816-284TAcc.ini**)	**Cumulative Rezero History Data** for a particular module — that was saved during a recent **Pressure Accuracy Test** form's run session using **[Put]** button..
<*modid*>**-**<run#>**.dat** (*) (e.g., **9816-284-12345.dat**)	**Recorded Data File** for a particular single module, where <run#> is assigned from the contents of file <modid>**TRN.ini**. Used by Record/Playback of Run.
CG<grpid>**-**<run#>**.dat** (*) (e.g., **CGA-321.dat** or **CGStar-123.dat**)	**Recorded Data File** for a Coordinated Group of modules, where <run#> is assigned from the contents of file <modid>**TRN.ini**. Used by Record/Playback of Group Run.
<*modid*>**TRN.ini** (*) (e.g., **9816-284TRN.ini**)	**Next Test Run Number** file for automatic naming of all Recorded Data Files made for a particular single module
CG<grpid>**TRN.ini** (*) (e.g., **CGATRN.ini** or **CGStarTRN.ini**)	**Next Test Run Number** file for automatic naming of all Recorded Data Files made for a **Coordinated Group** of modules.
<modid>-<run#><secid>**.txt** <modid>-<run#><secid>**.csv**	**Playback Secondary** file for a single module (simple text or spreadsheet (comma-separated-variable) files)
CG<grpid>-<run#><secid>**.txt** **CG**<grpid>-<run#><secid>**.csv**	**Playback Secondary** file for a **Coord.Group** (simple text or spreadsheet (comma-separated-variable) files)
<*modid*>**-**<run#>**SID.ini** (*) (e.g., **9816-284-123SID.ini**)	**Next Secondary ID** file for automatic naming of secondary files created during playback from a particular **single-module** data file.
CG<grpid>**-**<run#>**SID.ini** (*) (e.g., **CGA-321SID.ini** or **CGStar-123SID.ini**)	**Next Secondary ID** for automatic naming of secondary files created during playback from a particular **Coordinated Group** data file.

See **Table Notes** on next page...

Table Notes:

<modid> = <model#> and <serial#> separate by dash (-) for NetScanners;
<grpid> = uppercase letter "A" through "Z" (or "Star" for *) for a group ID;
<secid> = uppercase alphabetic string identifying a particular secondary file

(*) These files are not located in the **Ini** subfolder but in the **Dat** subfolder. Every module or module group that records live data for playback keeps its data files in **Dat.** The **<various>TRN.ini** files are also located in **Dat** too, since they control the *automatic naming* of each module's/group's recorded data files which include a unique *sequential run number*. These files simply contain the *next run number* to be assigned. If all the data files for a particular module or group are deleted from the **Dat** subfolder then the corresponding **.ini** file should be deleted too. This insures that all subsequent new files are generated with a new sequence of run numbers (starting at 1) after it is deleted. This is because these files always are recreated (with run #=1) if they are ever deleted.

(**) These files are not located in the **Ini** subfolder but in the **Report** subfolder where the report results of all Test forms and Calibration Adjustment forms are kept.

(***) These particular files of the **Ini** subfolder may be deleted by using the various convenient ***'Forget'*** functions added during Release #3 of NUSS. Deleting them is particularly useful after reconfiguring any modules with changeable transducers (such as the PSI Model 9021, 9022 pressure scanners, and the Model 9046 temperature scanners).

2.5 Reconfiguring Modules For NUSS

Often the default factory settings of NetScanner modules is not always ideal for best operation with NUSS. The procedures described in the subsections below are typical of module *options* that may need to be changed with the ***Configure*** functions when NUSS is first put to use, or when a new module is added to your configuration.

2.5.1 Making Module(s) Auto-Update Network Map On Reset

You may wish to "fix" all your modules so that they respond automatically (generate a "psi9000" UDP command response) each time they are *reset* (have power restored or are rebooted). This insures that all modules automatically update the **Nodes Map** pane of the **Network Status** form as they come and go. Changing the default behavior (no response on reset) obviates the need for you to frequently *query* the network *manually*.

To change this option in a single module, use the following procedure:

(1) Start NUSS and note that all your known NetScanner modules on your network appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2) Highlight a particular module's Serial Number on the **Nodes Map**, then ***right-click*** the mouse to get module's context menu.

(3) Select ***Connect*** on the top-section of the context menu that pops up, and note that the icon changes to a *yellow* color to indicate it is now connected.

(4) Again obtain the context menu, for the same module, and select ***'Configure | Network'*** (i.e., Click ***Configure*** on menu then ***Network*** on submenu).

(5) Locate the ***UDP Br@Reset*** (UDP Broadcast At Reset) option in the ***Network Options*** group form, and change it from the factory default **Disabled** state to the **Enabled** state. The field turns "dark pink" to indicate it changed. Then click the **[Save]** button for this form. This takes a few seconds. When status box indicates completion, press **[Exit]** button .

(6) Repeat the procedure steps (2) through (6) until all your modules are changed.

To change this option via the ***Configure Group*** *broadcast* function instead, follow this alternate procedure:

(1) Start NUSS and note that all your know network NetScanner modules appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2) Select the ***Groups*** menu item on the **Network Status** form, select any available empty Group *(e.g., G)*, or make one empty, then select and drag and drop every module to be changed to the target, to include it in that group. Click the **Make This The *Current Group*** *check box*, and exit the Group Editor. Then click the ***Connect*** menu item in the **Network Status** form to connect all these modules.

(3) On the *home-base* menu, select ***'Configure | Network Options (Group)***. Locate the ***UDP Br@Reset*** (UDP Broadcast At Reset) option from the **Network Options** form for the *first module* in group and change its value to **Enabled**. The field turns "dark pink" to indicate it changed. If change unnecessary (i.e., first module is already Enabled, but other modules may not be) click the frame around these options, and they turn "light pink" indicating that this value has been selected to be "broadcast" (i.e., sent to module(s) whether changed or not).

(4) Press **[Save to All]** button. This takes a few seconds.

(5) When status box indicates all modules have been updated, press **[Exit]** button .

2.5.2 Changing Pressure Units in Module(s)

You may change the native "units" in one (or all) of your pressure scanner, standard, and calibrator modules, so that all pressures are converted from their default "factory" units of *psi* – to some other native units (e.g., *kPa*) before the data is received by NUSS. This change persistently modifies a data coefficient called 'UnitsX' inside the module. Use one of the two procedures below to accomplish this. The first procedure changes the pressure units of a single module. The second procedure changes multiple modules to the same new pressure units.

To change this option in a **single module**, use the following procedure:

(1) Start NUSS and note that all your known NetScanner modules on your network appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2) Highlight a particular module's icon or Serial Number on the **Nodes Map**, then ***right-click*** the mouse to get module's context menu.

(3) Select ***Connect*** on the top-section of the context menu that pops up, and note that the icon changes to a yellow color – indicating it is now connected.

(4) Again obtain context menu, for same module, and select ***'Configure | Other'*** option.

(5) Locate the ***Units X*** (Units Multiplier) option on the ***Other Options*** form, click it, and enter a new number such as 6.894757 (a constant that converts "psi" units into kPa units). The ToolTip for this field gives several examples of its value. The field turns "dark pink" to indicate it changed. Then click the **[Save]** button on this form. After a few seconds a pop-up box asks you to verify that you want to change the 'UnitsX' option for the module, and that you are willing to sacrifice the persistent "history" files of this module. Click [OK]. When status box indicates completion, press **[Exit]** button . You are warned that continuing causes NUSS to Exit. After you restart NUSS the changed module operates in the new native units you have set (see **note at end).

(6) Repeat the procedure steps (2) through (6) to similarly change other modules.

To change this option for **multiple modules** via the ***Configure Group*** *broadcast* function, follow this alternate procedure (note that you have a choice of Step 2's):

(1) Start NUSS and note that all your know network NetScanner modules appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2A) Click anywhere in the white text box labeled **Group=** on the **Network Status** form and choose the Group option labeled "* (All Connected)" as the new current group. Click **[OK]** to dismiss the pop-up form. Now, click (select and highlight) each module to be changed, and ***Connect*** it via the module's right-click context menu (this automatically creates Group 'star' (*)) – OR alternately...

(2B) Select the ***Groups*** menu item on the **Network Status** form, select any available Group *(e.g., G)*, and insure that every module to be changed is included in that group using drag and drop. Delete any modules in the group not to be changed. Make this the *Current Group*, and exit the Group Editor. Then select the ***Connect*** menu item in the **Network Status** form to connect all these modules. Verify on the Nodes Map that all the modules are connected (module icons have yellow tops).

(3) On the *home-base* menu, select ***'Configure | Other Options (Group)'***. Locate the ***Units X*** (Units Multiplier) option for the *first module* in group from the Other Options form, click it, and enter a new number such as 6.894757 (a constant coefficient that converts "psi" units into kPa units). The field turns "dark pink" to indicate it changed. The ToolTip for this field gives several examples of its value.

(4) Press **[Save to All]** button. After a few seconds a pop-up asks you to verify that you want to change the 'UnitsX' option for the first module, and that you are willing to sacrifice the persistent "history" files of this module. Click [OK]. This pop-up repeats the same question for each of the modules in the group. Click [OK] to accept the change for each module.

(5) When status box indicates that the last module has been updated, press **[Exit]** button. A final pop-up reminds you that, as a result of these changes, that NUSS must exit. When you restart Nuss and reconnect these modules they run indefinitely with the new native units you selected (see **note at end).

Note: Upon restarting NUSS you may get bright-red warning messages in the "home base" status bar (accompanied by a bell) – if any *calibrator* modules that you have just changed *UnitsX* for are still assigned to one or more LRN's – and the set points of this (these) LRNs are still specified in the original pressure units from which you changed. Simply make a note to redefine the *pressure range* and all *set points* in the new units, for each of these LRN's (via the *'Configure | Calibrators'*** function). Once you do this these NUSS restart warning messages do disappear.

You can also use the above procedures for returning a module (or a group of modules) back to its default factory (psi) units, by simply changing the UnitsX option back to 1.

2.5.3 Changing Static IP Address in Module(s)

You may wish change the **IP Address** of a single module or group of modules.

To change this option in a single module, use the following procedure:

(1) Start NUSS and note that all your known NetScanner modules on your network appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2) Highlight a particular module's Serial Number on the **Nodes Map**, then ***right-click*** the mouse to get module's context menu.

(3) Select ***Connect*** on the top-section of the context menu that pops up, and note that the icon changes to a yellow color to indicate it is now connected.

(4) Again obtain the context menu, for the same module, and select '***Configure*** | ***Network'*** group of options.

(5) Locate the ***IP Address*** option (4 fields) in the ***Network Options*** form, and change it to the desired value. The field turns "dark pink" to indicate it changed. Then click the **[Save]** button for this form. This takes a few seconds. When status box indicates completion, press **[Exit]** button .

(6) Repeat the procedure steps (2) through (6) until all your modules are changed, but be sure that each module gets a unique IP Address.

To change this option via the ***Configure Group*** *broadcast* function instead, follow this alternate procedure:

(1) Start NUSS and note that all your know network NetScanner modules appear as "available, disconnected" icons (gray) in the **Nodes Map**.

(2) Select the ***Groups*** menu item on the **Network Status** form, select any available empty Group *(e.g., G)*, or make one empty, then select and drag and drop every module to be changed to the target, to include it in that group. Click the **Make This The *Current Group*** *check box*, and exit the Group Editor. Then click the ***Connect*** menu item in the **Network Status** form to connect all these modules.

(3) On the *home-base* menu, select ***'Configure | Network Options (Group)'***. Locate the **IP Address** option (4 fields) in the **Network Options** form for the *first module* in group, and change its to the desired value. The field turns "dark pink" to indicate it changed. If change unnecessary, just click its surrounding frame it to "broadcast" it as is (turns light pink)

(4) Press **[Save to All]** button. This takes a few seconds. Notice that the IP Address (low order byte) is incremented for the other modules in the group to insure that only unique IP Addresses are assigned.

(5) When status box indicates all modules have been updated, press the **[Next Module]** button several times to insure IP Addresses in all modules are unique, then press **[Exit]** button.

2.6 Managing Other NUSS Activities

Most NUSS configuration activities are automatic. However, a few features must be manually configured (normally only once) after NUSS is installed. Such activities are discussed in this section.

2.6.1 Configuring a Favorite Text Editor for Report Viewing/Printing/Etc.

When any report is generated by any ***Test*** form or ***Calibration Adjust*** form of NUSS, or any *secondary data files* are generated while using the *playback* feature of a ***Run*** form, human-readable plain text files are generated. NUSS usually provides a **[View]** button on that form to allow you to see a pop-up common dialog box — showing the most recent Report file (or using filters: other files as well). When a file is selected (highlighted) to be viewed, and the **[Open]** button is clicked, the configured *text editor* is loaded to view that file. If you do nothing, NUSS uses the simple DOS text editor called ***NotePad*** for this purpose — and a copy of **NotePad** pops-up in a window already containing the text of the file to be viewed. After viewing the file, you may also *print*, *rename*, *copy*, *move*, or *delete* the file — using other menu functions of **NotePad** itself.

Configuring a NUSS text editor is as simple as selecting ***'Configure | General Options (NUSS)'*** from the "home-base" menu of NUSS. On the form that pops-up, enter the full path name of the desired text editor application in the top text box labeled **Choose Path for Report Viewer**. To avoid typing in a full path name, simply *double-click* this text box, and a pop-up common dialog box appears — allowing you to navigate on any local drive to where the desired text editor's **.exe** file is located. Then highlight its file name, and press **[Open]**. The full path name of this program is then transferred to the text box on the configuration form. Finally, press **[OK]** on this form to save the path name. Thereafter, whenever you press a **[View]** button on any NUSS form, an instance of this editor pops-up with your selected Report file displayed. You can then use any of the other text facilities of the text editor to *view*, *print*, or do other file maintenance functions (*rename, copy*, *move*, *delete*).

2.6.2 Configuring NUSS to Display the Installed User's Manual

NUSS has a menu item ***'Help | Manuals'*** on its "home-base" menu that is normally used to access the NUSS **User's Manual**. To use this menu item, one must first *configure* NUSS to remember exactly where you have "installed" the User's Manual's files. This subject was covered in some detail in Sections **2.1.1.2** and **2.1.2.2**, but is repeated here for the general case.

Start by selecting ***'Configure | General Options (NUSS)'*** from the "home-base" menu of NUSS. A form appears that allows changing various ***General Options*** of NUSS. Locate the second text box labeled **Choose Path for NUSS Manuals** on this form.. In this box you must enter the full path name of a root **.htm** file — that when given to a browser — displays an index page of links to each *chapter* and *appendix* for the main User's Manual you have installed. This file is named **nussindx.htm** for *Normal* users.

To avoid typing in a full path name, simply **double-click** this text box. A pop-up common dialog box appears — allowing you to navigate to where the **nussindx.htm** file is located on any local or network disk drive. Use the Windows ***Find*** function if you forget where you installed the manual. Then highlight the file name, and press **[Open]**. The full path name of this file is then transferred to the *text box* on the configuration form. Finally, press **[OK]** on this form to save the path name. Thereafter, whenever you select menu item ***'Help | Manuals'*** your Internet browser pops-up in its own window, and is loaded with this **.htm** file. The browser screen then displays a set of links to all the *chapters* and *appendixes* of the NUSS User's Manual. If the required Acrobat 4 reader is also installed correctly, each link you click pops-up another window containing that *chapter* or *appendix*, in full color. Such files are all **.pdf** files. You may access them directly, outside of NUSS, using Adobe's Acrobat 4 reader as an independent application.

NOTE: The Adobe Acrobat Reader (version 4 or later) actually runs better under NUSS when it is not integrated with your browser. If it *is integrated*, the various chapters you select overlay the initial **.htm** file, in the same small browser window that pops up when ***'Help | Manuals'*** is selected. You then need to enlarge it to a reasonable document size. Also, you must use the **[Back]** button to find the **.htm** file again, to access another chapter. However, if the reader is *not integrated* into the browser, it pops-up in its own larger window, and even reveals other Adobe menu options (like ***'View | Continuous'***) that you might wish to use. You can achieve this latter result by independently starting the reader with its own Shortcut, then dragging and dropping the chapters of the manual you want from a My Computer window.

2.6.3 Configuring NUSS to Have An Archive Base Path

NUSS has a menu item ***'File | Archive (NUSS)'*** on its "home-base" menu. It activates a screen form used to perform various file maintenance functions on the many internal data files that NUSS manages behind the scenes These files are normally kept in a series of subfolders of the *Main Base Path* (i.e., subfolders that hang "hierarchically" off the path where NUSS itself is installed — which is normally "C:\WPSI\Nuss" for most users). NUSS is most efficient when allowed to access all its internal files from the default Main Base Path subfolders on the user's local hard drive at "C:\WPSI\Nuss\xxxxx", where 'xxxxx' stands for a particular subfolder name. For example, all generated reports of NUSS are normally kept in the Report subfolder ("C:\WPSI\Nuss\Report").

For archive or backup purposes a second set of subfolders (with the same 'xxxxx' names) may also be defined by specifying a different *Archive Base Path.* This alternate path allows all or certain NUSS files to be copied or moved to *like-named subfolders* on another disk drive (possibly a Network drive). When such an alternate base path is defined, the ***Archive*** screen form, mentioned above, is expanded to permit *Delete*, *Move*, and *Copy* file operations to be performed between *like-named subfolders* of the Main Base Path and the Archive Base Path. The ***Archive*** form's file manipulation operations are restricted to only these two sets of like-named folders. Use the ***My Computer*** or ***Windows Explorer*** applications for more extensive file maintenance operations. However, you may find the ***Archive*** form's **Filter** box much more flexible than those of these other applications.

Configuring the *Archive Base Path* uses the ***'Configure | General Options (NUSS)'*** function from the "home-base" menu. On the form that appears, enter the full path name of the desired base path in the third text box labeled **Choose Base Path for Archive Folders**. To avoid typing a full path name, simply *double-click* this text box, and a pop-up dialog frame appears – just below the *Archive Base Path* frame – allowing you to specify a particular Drive and Folder Path. It may be necessary to *double-click* one or more of the displayed hierarchical folders of the Directory control in order to reveal the desired path. The final full path name selected on the pop-up form is then transferred to the text box above it when you press the **[Done]** button — and the pop-up then disappears. A trailing "back-slash" is added to the path name if one was not supplied during entry. Finally, press **[OK]** on the configuration form to save the new path name. Please note that you are specifying only the *Base* path of the Archive subfolders. No particular subfolder or file name should be included in this path name, as these are added later in the proper context. Such Archive subfolders are also created as needed by the ***Archive*** form.

For information on actually using the ***Archive*** form, see documentation for the home-base ***'File | Archive (NUSS)'*** menu item in Chapters 1 and 3.

2.7 In Case of Difficulty

If you have any trouble getting NUSS to run reliably on your system, please review the particular problems that we at PSI have already solved — to see if any matches the symptoms of your problem. This list, though currently small, may continue to grow as more users try installing and running NUSS on diverse system configurations.

2.7.1 Modules Missing (or Appear Intermittently) on Nodes Map

Symptom: Both NUSS (and its predecessor UDP Query) start with a *blank* **Nodes Map** in the **Network Status** form (except for *simulated* modules which always appears if the **-sim** switch is included on the command line of you NUSS shortcut). Occasionally, one or more *real* modules may respond and appear on the Nodes Map, if you repeat the ***Query*** function often enough, but these real modules do not appear *reliably* with each ***Query***.

Solution: On some later versions of Windows (98 and above) a special *AOL binding* is often installed by default under **Network** properties of the Windows **Control Panel**, in addition to your required *LAN adaptor binding* and optionally a *Dial-up Modem binding*. If the *AOL binding* is *removed*, and the Windows system then *restarted*, the problem has disappeared on several systems that experienced this symptom. Removing the *Dial-up Modem* binding has solved the problem on some other systems.

Other Considerations: If you have many modules on your network, and only occasionally one or more modules do not appear after a ***Query*** function, then this may be normal, and due to the inherent unreliability of the UDP protocol used to assert each modules existence on the network. If any module's query response happens to collide with another module's query response then UDP does not retry such operations. Simply repeating the ***Query*** function usually solves this intermittent problem.

2.7.2 NUSS Beeps When Started

Symptom: Both NUSS (and its predecessor UDP Query) occasionally experience a Run Time Error 126 when they issue their very first *Query* command to stimulate all modules on the network to reply — but only on certain systems. When this occurs, a retry is necessary to insure success. NUSS does the necessary retries, but generates a Beep sound if this occurs. UDP Query simply fails. For this reason, users who cannot get UDP Query to run on their systems my find that NUSS works OK (but beeps).

Solution: Use NUSS instead when UDP Query does not function. The reason for the beep can always be verified by clicking the tiny "baton" box (indicating UDP receives) in the Tool Bar rectangle on the **Network Status** form just to the right of the **Group#:** box, and just below the this form's menu bar. This reveals "hidden" information about the status of the latest UDP transmit/receive operations, including the latest error detected. If the right-most error message box is not empty, and its message implies a retry of Run Time error 126, that was the reason for the beep. We do not know the cause, but only certain systems exhibit the problem.

2.7.3 NUSS Ignores Page Breaks in Printed Reports

There is an option on the home-base ***'Configure | Calibrators (NUSS)'*** menu item, called **Add Page Brks.** When selected, NUSS adds page break characters (ASCII FF (0x0C) characters) to the text files of some ***Test*** form or ***Calibration Adjust*** form reports. If you have selected this option, and any new reports that are generated (after you select it) refuse to break pages at these points (as indicated by a tiny *box* character on some editors), then read on.

This is not a problem of NUSS itself but of the particular Text Editor you configure for NUSS to use when it pops-up reports to view and/or print with its various **[View]** buttons on certain forms. Standard Windows text editors (e.g., NotePad and WordPad), as well as many older freeware editors simply ignore such page breaks.

See also **Section 2.6.1** above for more information on configuring the text editor.