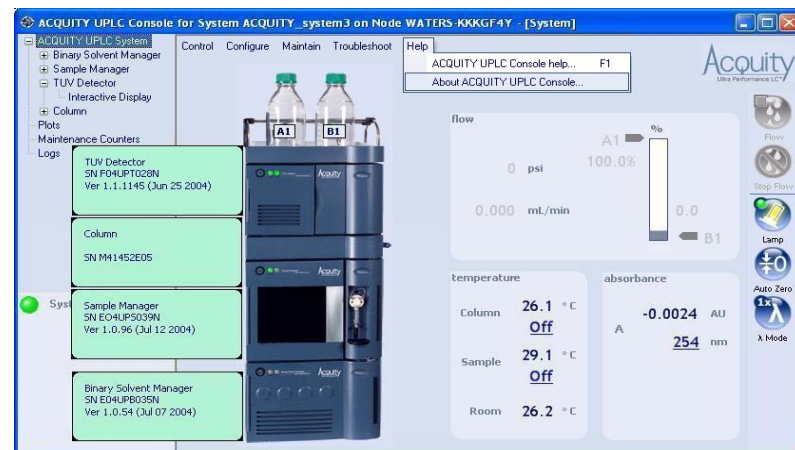


ACQUITY UPLC™ Software Installation and Functional Verification

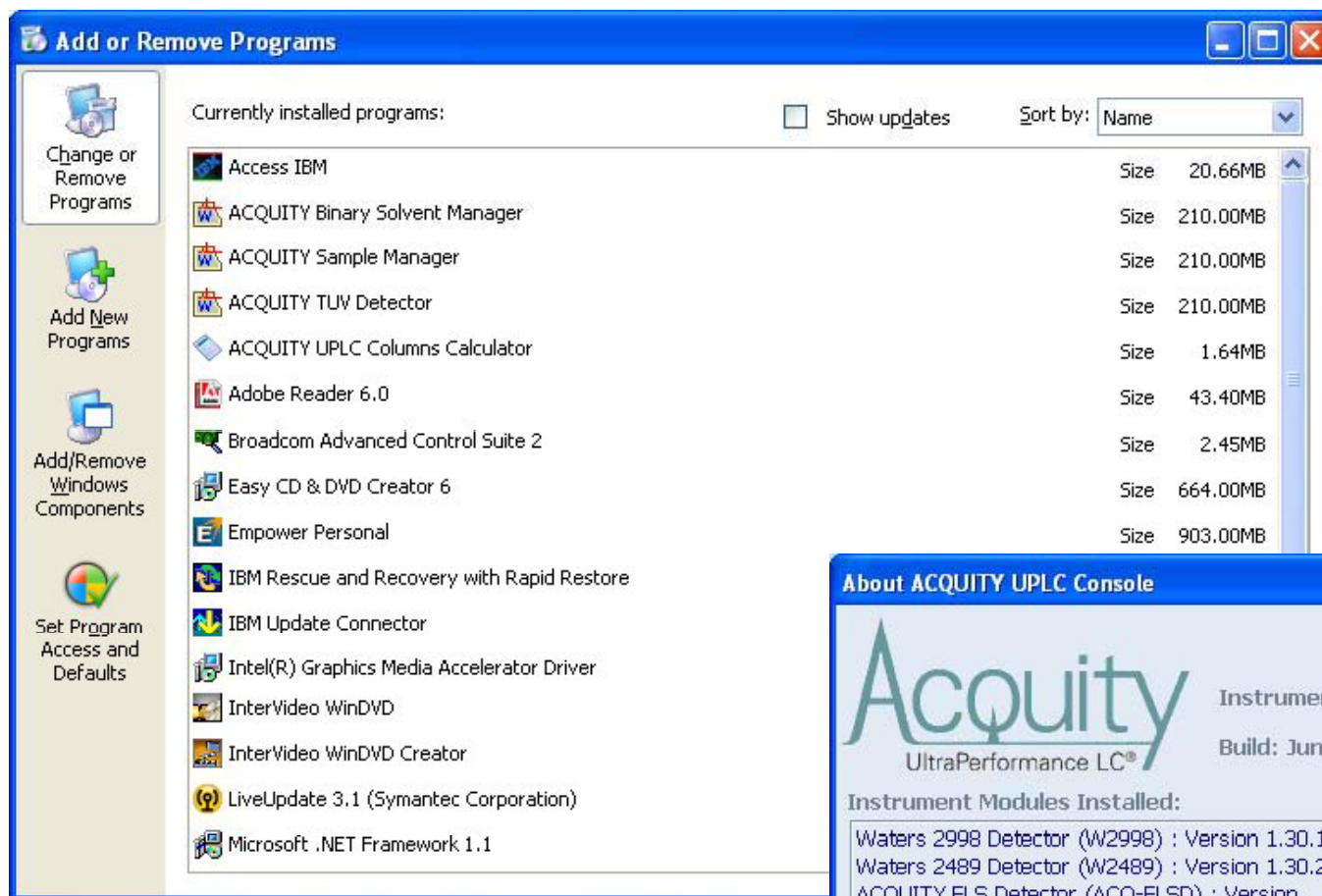
ACQUITY UPLC System

– ACQUITY Console / System Driver

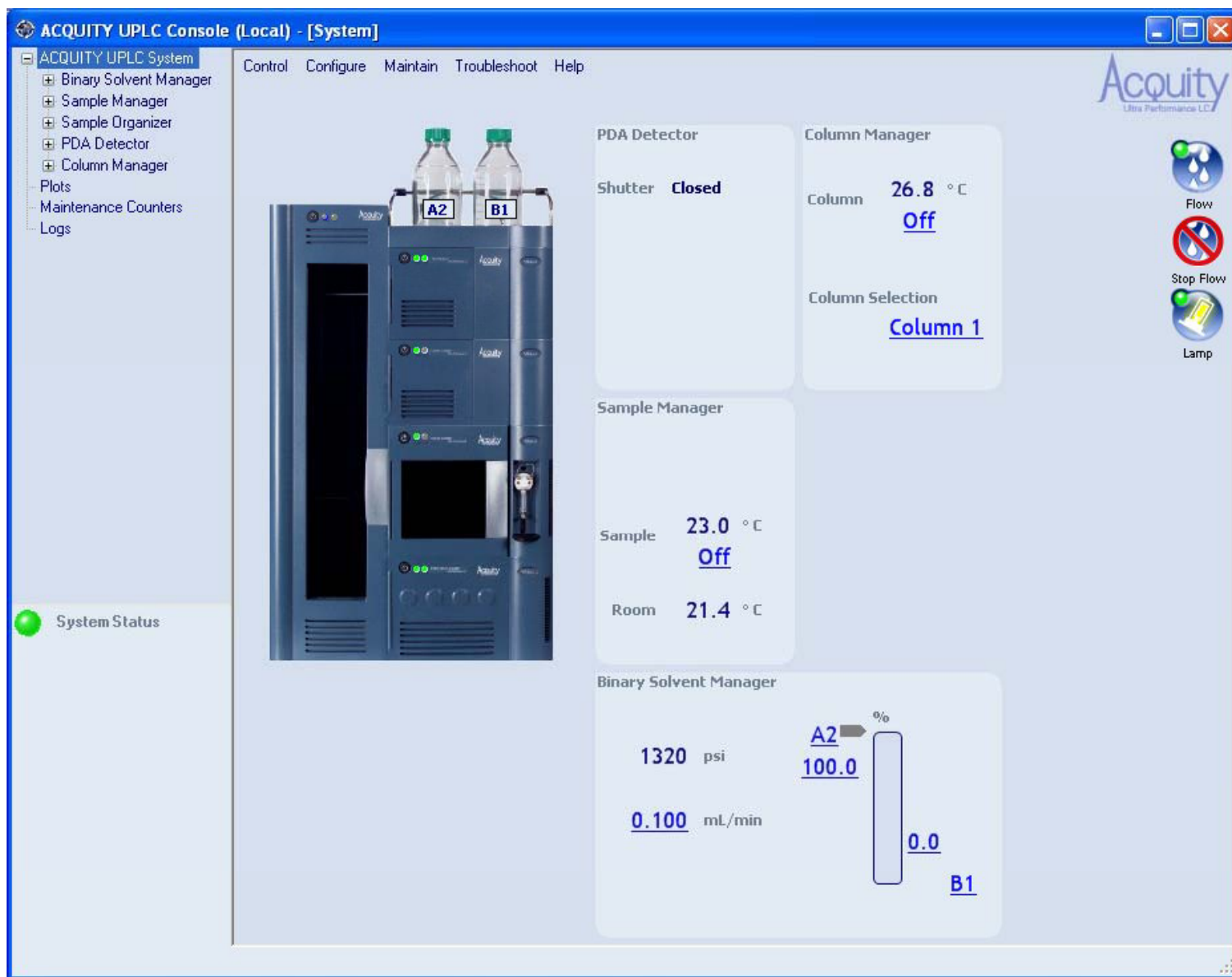
- Plug and Play open architecture
 - Software and firmware packaged together
 - Simple upgrade strategy
- Instrument Control Software
 - Separate portable application folds into:
 - MassLynx
 - Empower 1154 and 2154
 - Standalone
 - Other vendor's software



ACQUITY Instrument Drivers



ACQUITY UPLC Console



Agenda for This Section

- Data Specific Startup Tasks
- Instrument LAN and Ethernet Communications
- Physical Cable Connections
- Installing and Upgrading ACQUITY UPLC™ Software and Firmware Components
- Verifying Proper Instrument/Workstation Communications

Current Shipping Software Versions

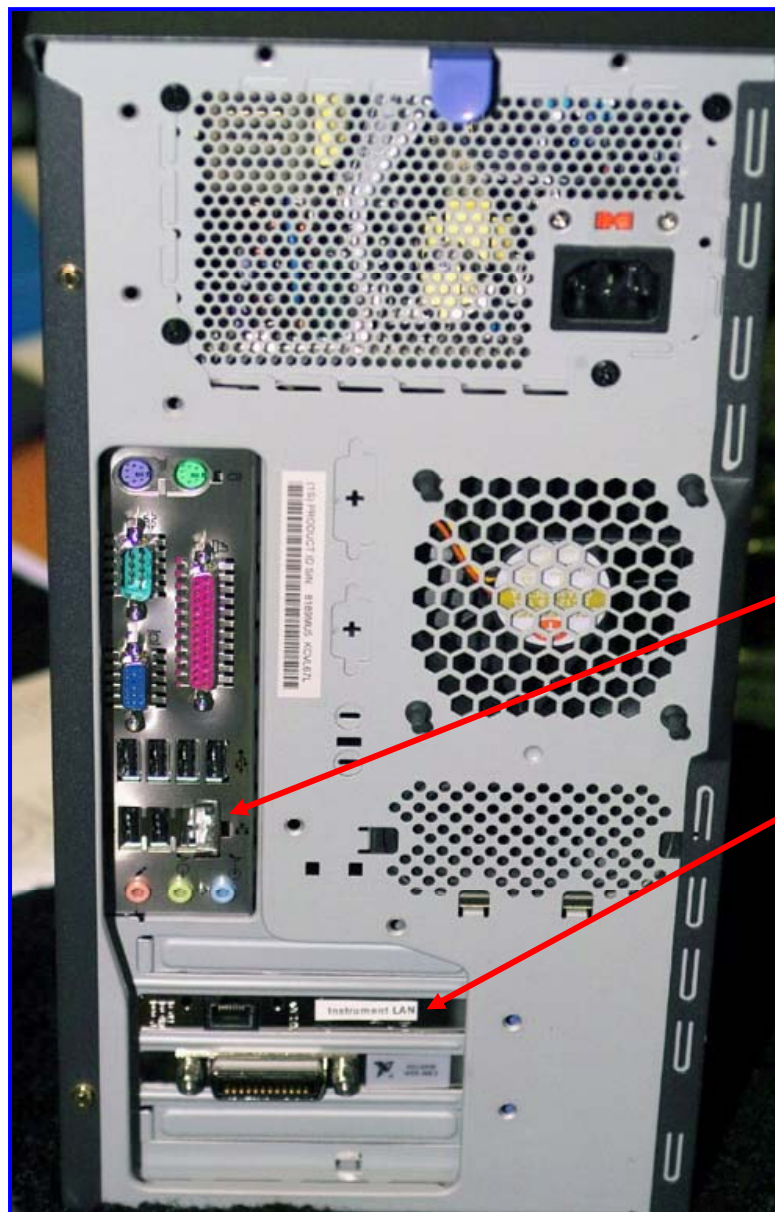
- Empower 2 Version 2154
 - Windows 2000 or Windows XP with TCP/IP installed
 - Empower 2 FR X
 - ACQUITY Instrument Control Option Pack v1.XX
 - .NET software (installed with ACQUITY Service Pack)
- MassLynx® 4.1
 - Windows XP with TCP/IP installed
 - ACQUITY Instrument Control Option Pack v1.XX
 - SCN 714
 - .NET software (installed with MassLynx 4.0 SP4)

Instrument LAN Physical Cable Connections

Instrument LAN Overview

- The ACQUITY UPLC™ modules are connected to the workstation via the Instrument LAN
 - Private network separate from any corporate network
 - A pre-configured system is shipped with all necessary networking equipment to support the system
- The communication protocol is TCP/IP
 - The Internet protocol
 - Very robust and reliable and familiar to IT departments
- The Waters DHCP Server handles all IP addressing for the ACQUITY UPLC™ system modules
- Consult the Waters Ethernet Getting Started Guide for configuration assistance

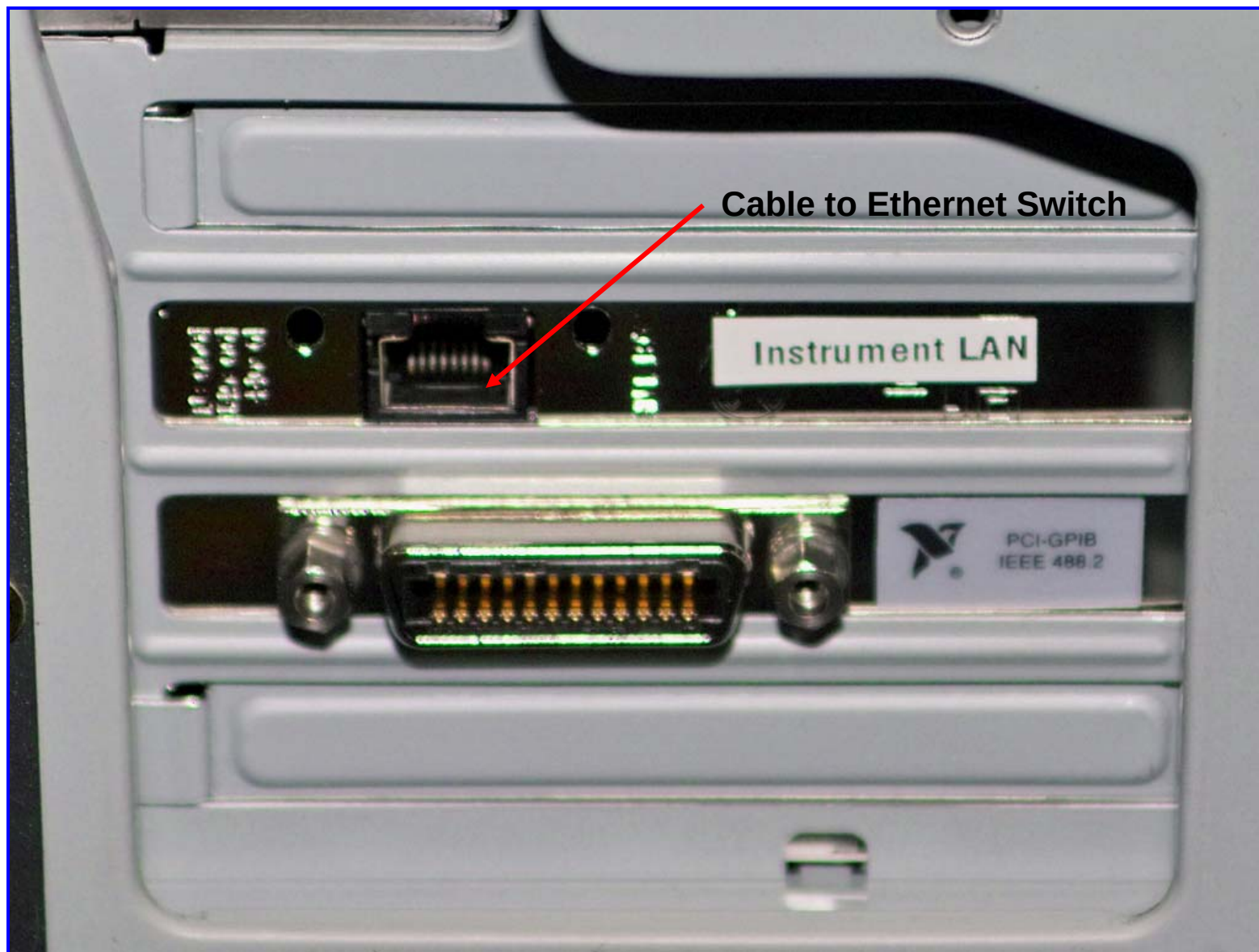
IBM Workstation Rear Panel



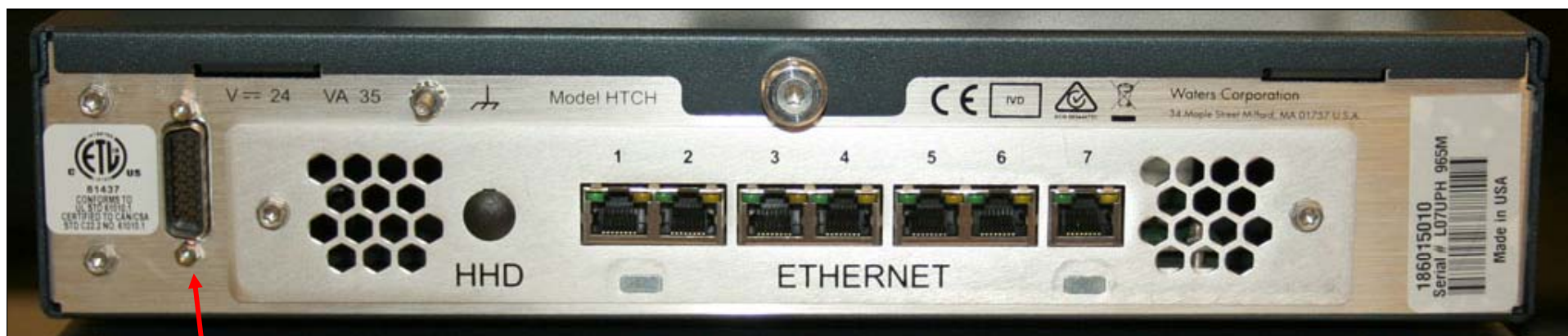
Corporate LAN Card

Instrument LAN Card

Instrument LAN Card

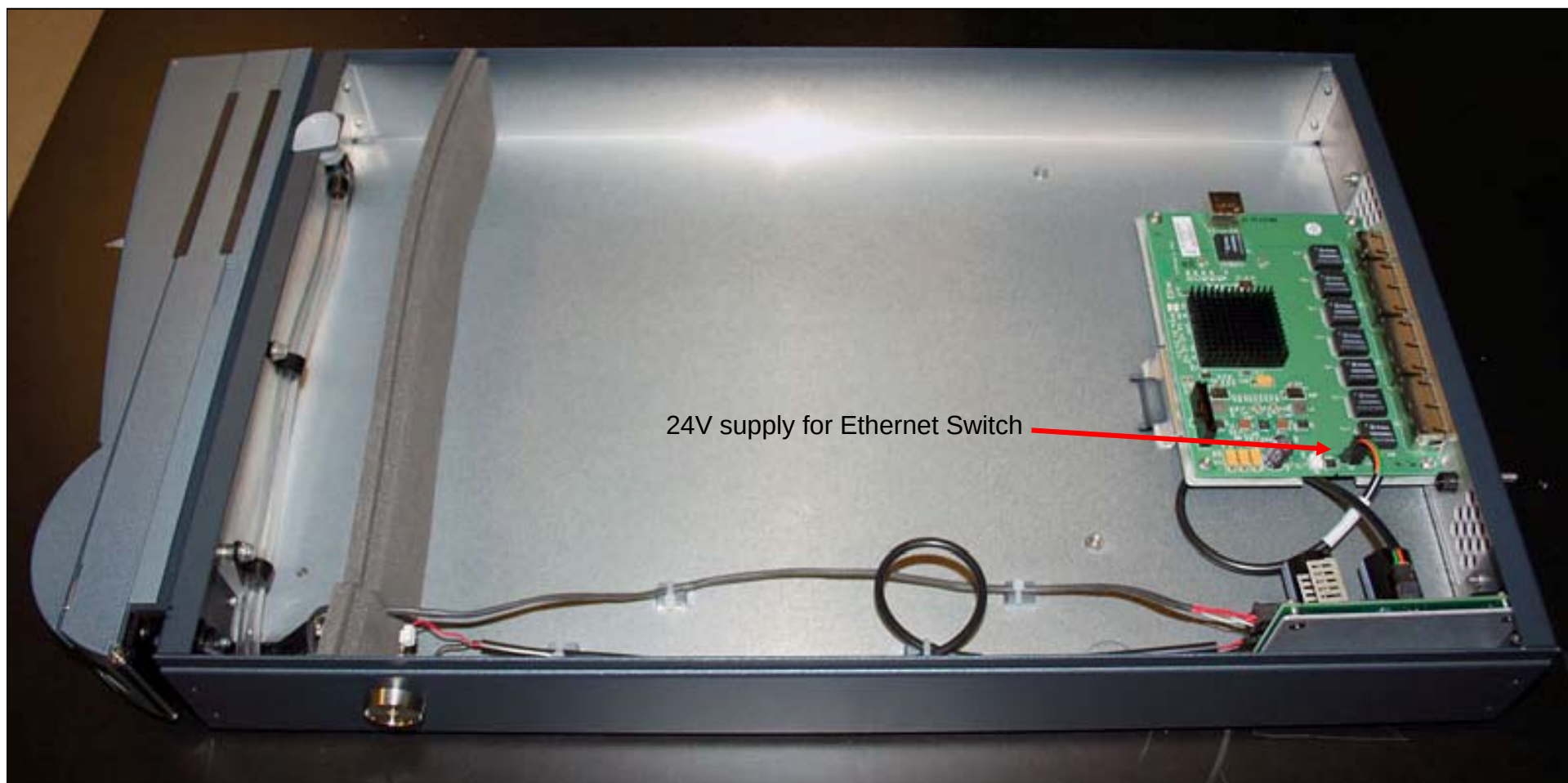


Column Heater- Ethernet Switch

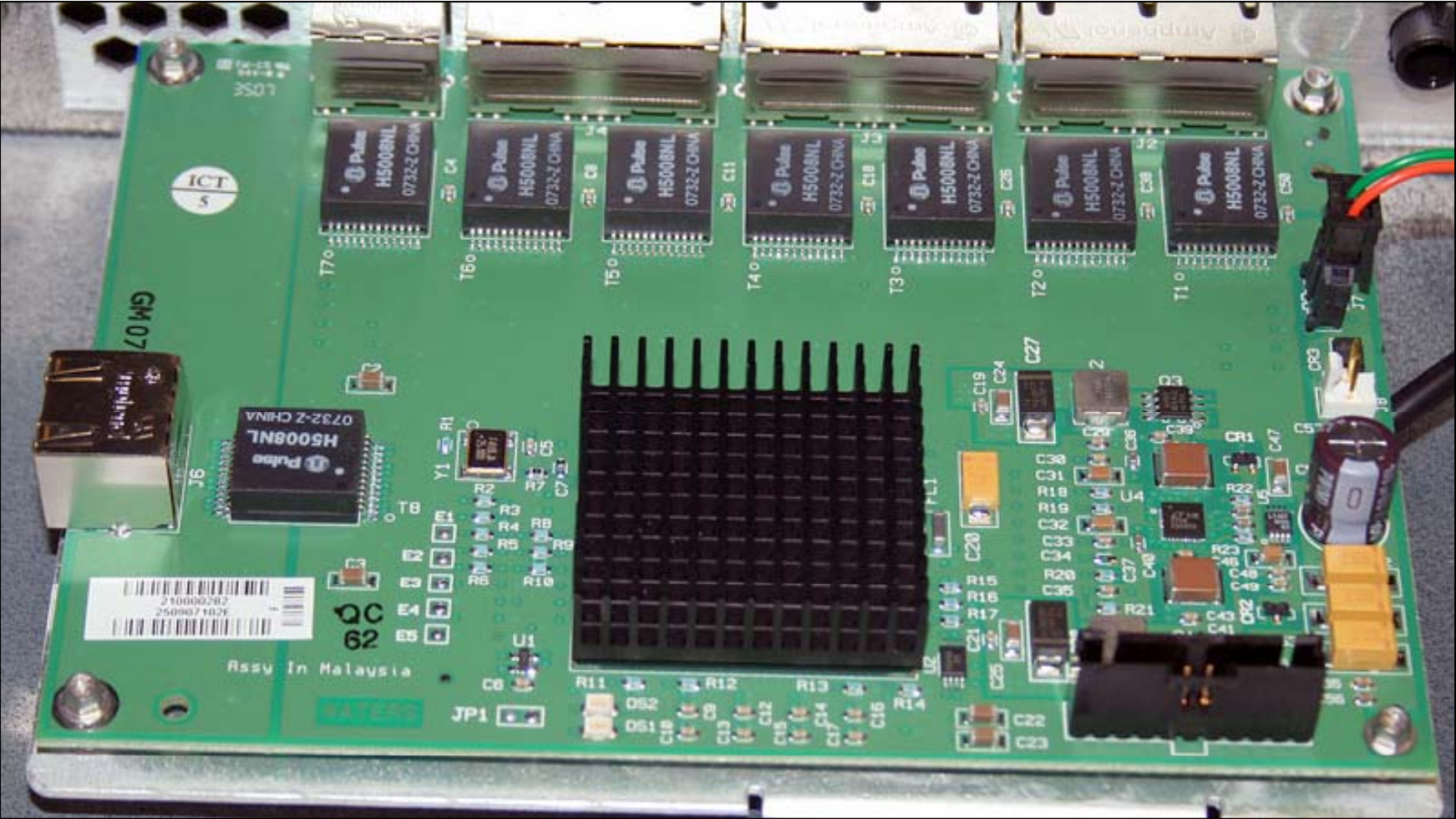


Cable connection to Sample Manager
(24V supply for ENET Switch)

Column Heater- Inside Top View



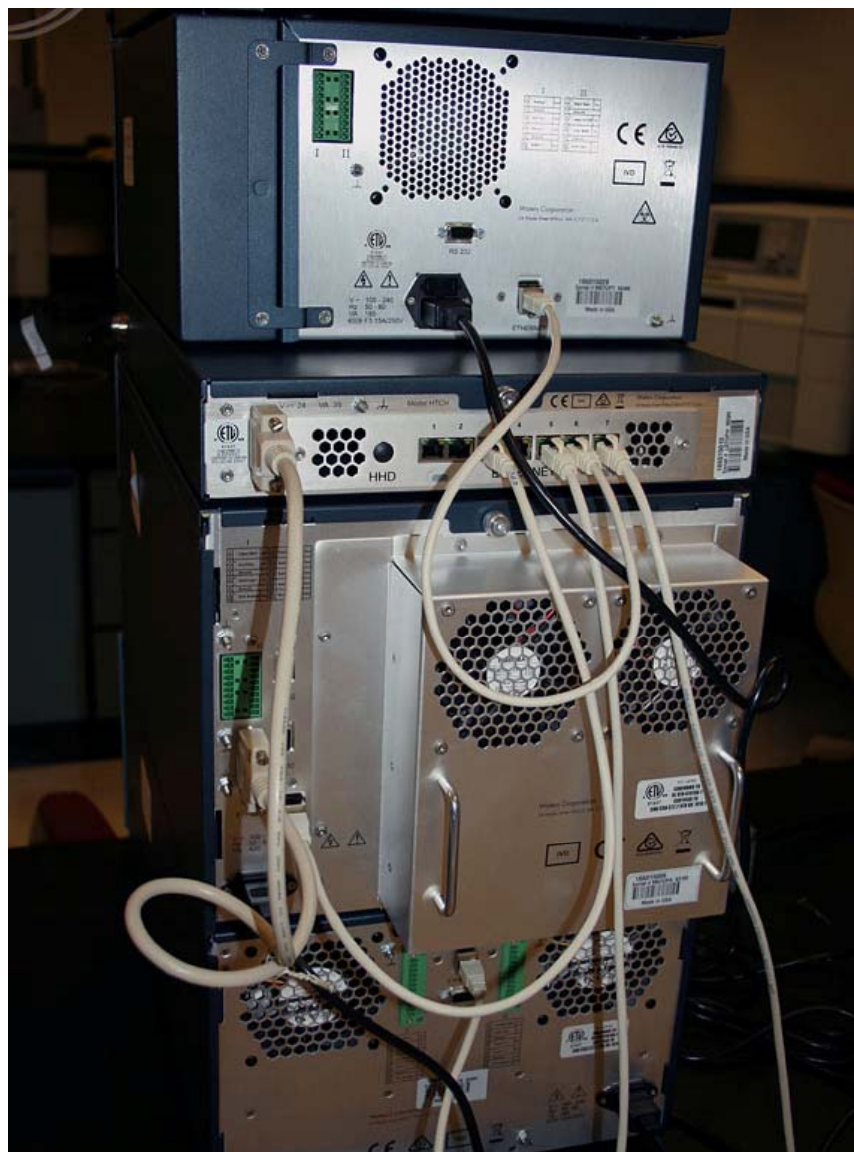
Ethernet PCB



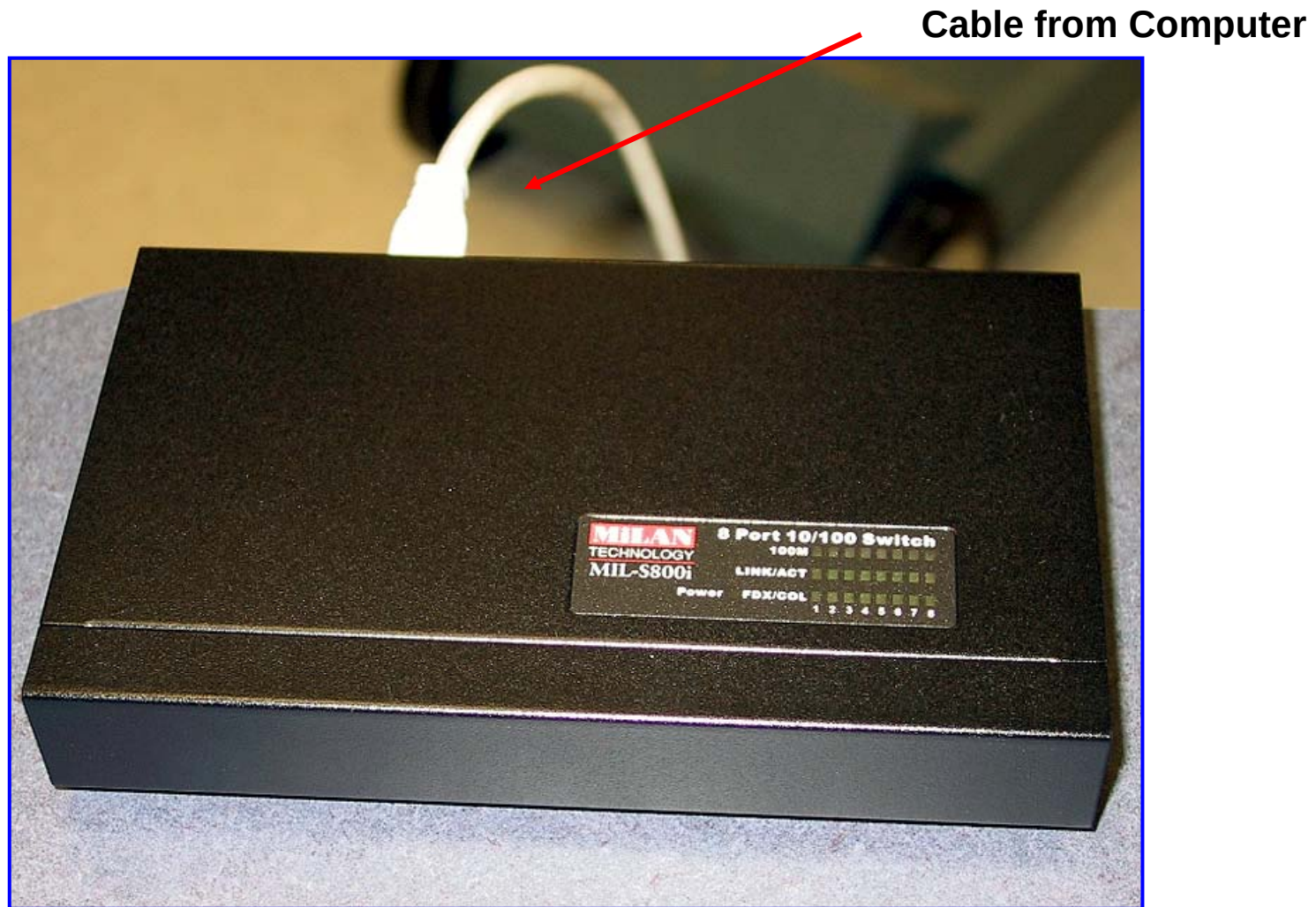
All Modules are Ethernet Controlled



Ethernet Switches are Built-in to Column Heaters

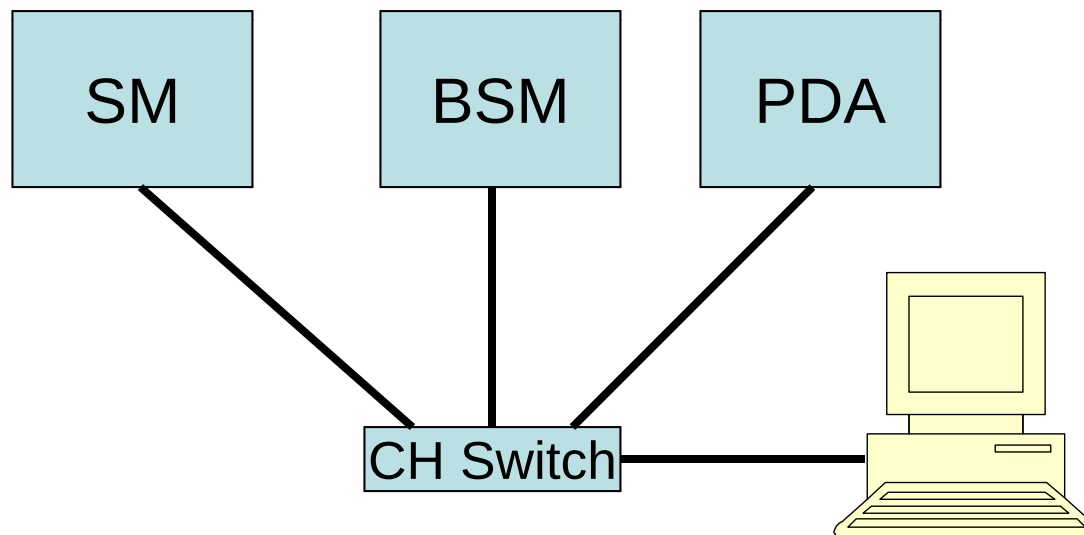


Old Milan Ethernet Switch



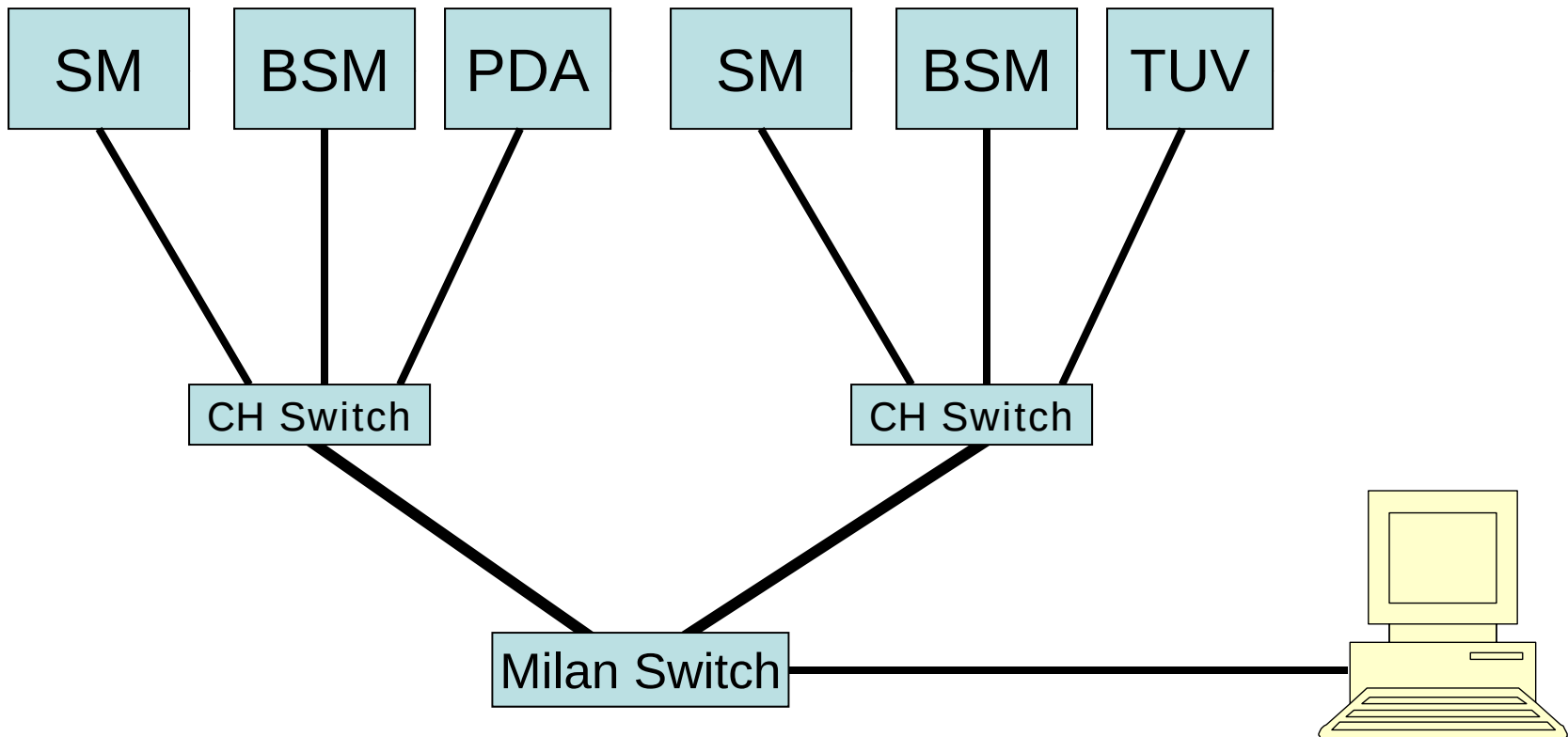
Supported Network Configurations

- One System per Workstation

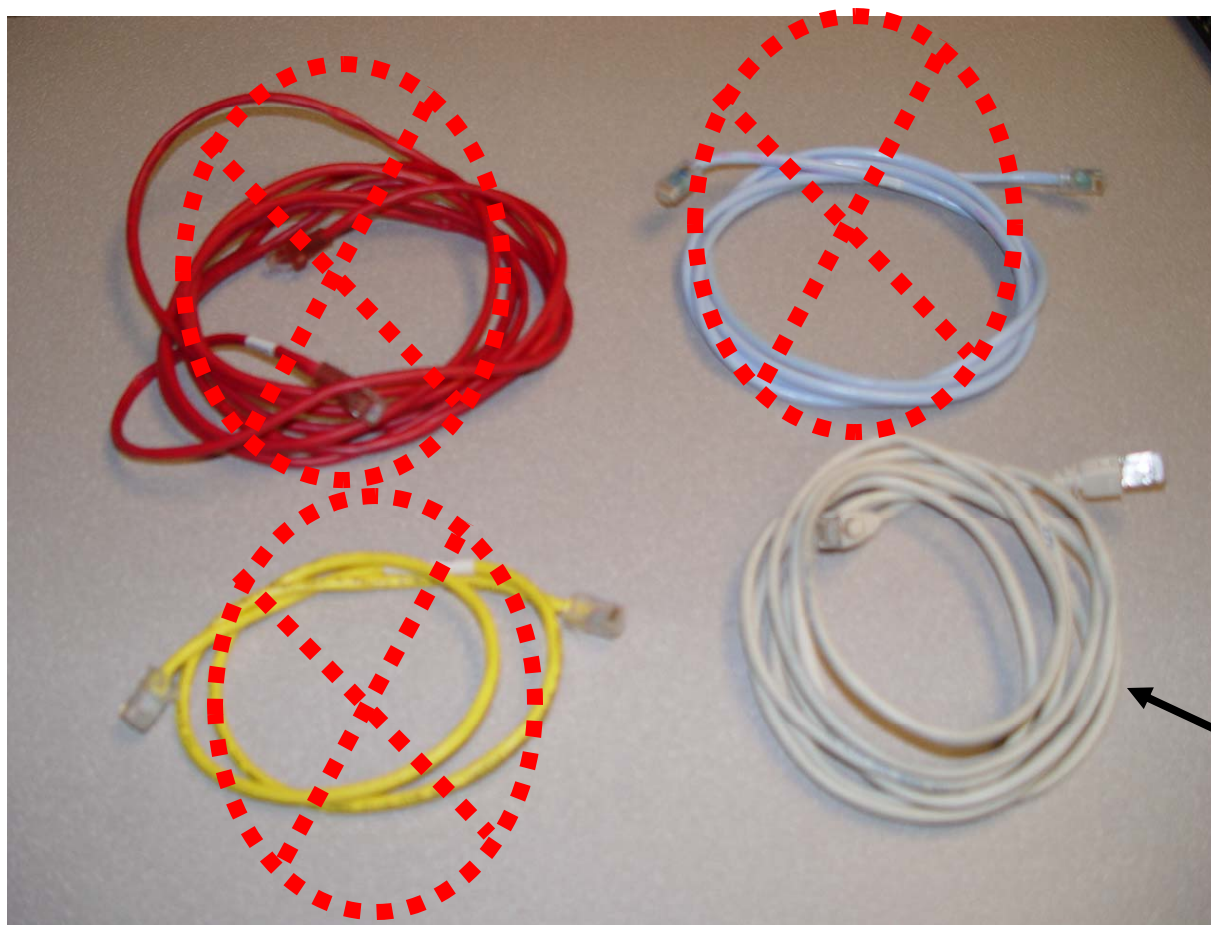


Supported Network Configurations

- Multiple Systems per Workstation (one switch per system)



ACQUITY Software Version 1.4



- ONLY Quality Shielded Cables Should be used!
- ACQUITY Ethernet Cable

Installing the ACQUITY UPLC™ Service Packs and ICOP

Empower Service Packs

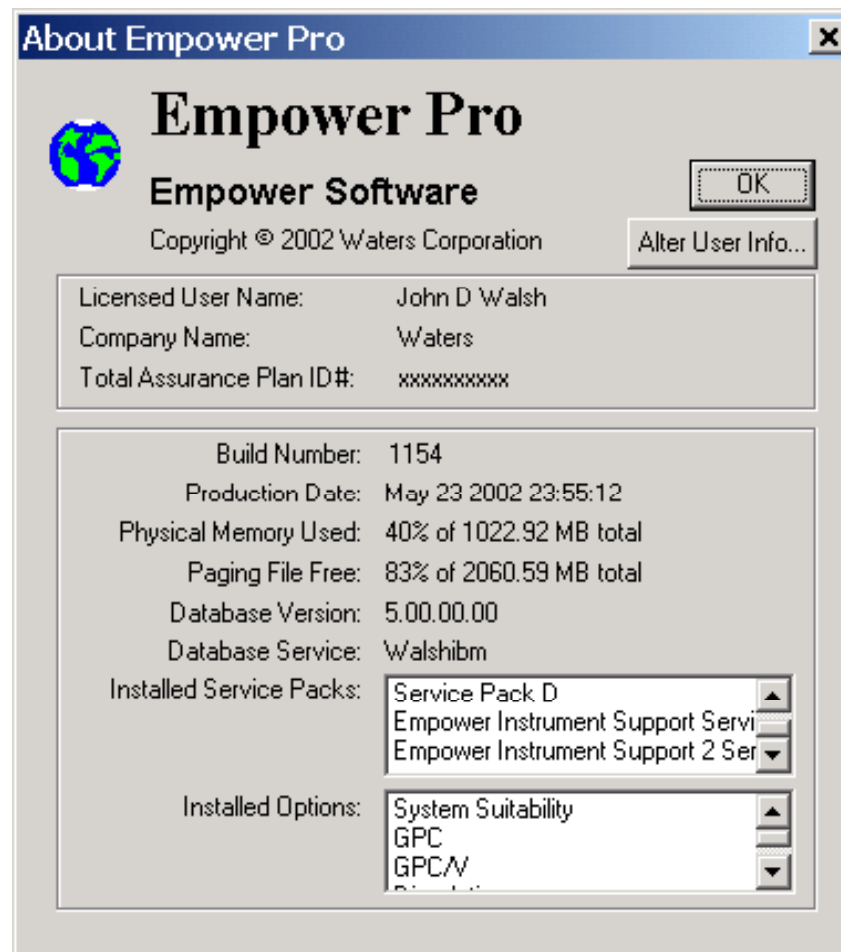
- Service Packs Required:
 - Empower FR3 or later for Empower 2 (Build 2154)
 - ACQUITY Service Pack L or later for Empower (Build 1154)
- Service Packs are cumulative (i.e. contain the previous SP's)

Installing the ACQUITY UPLC™ Service Pack for Empower

- Insert the ACQUITY UPLC™ Service Pack CD
- Run the Empower Update (*SP Name*).exe file
- Follow the install wizard
- Reboot after installation
- Full procedure documented in handout

How to check for Service Packs

- Empower
 - Verify Files
 - Help About from any screen
- MassLynx
 - Help About from the Main Page



Installing the ICOP for Empower

- If Upgrading remove previous ACQUITY Components from the ADD / Remove Programs in Control Panel
- Insert the ACQUITY ICOP CD
- Run the Setup.exe application
- Select instruments that are included in your system
- Software will be installed on the workstation
- Configure system in Empower as normal
- Firmware for each instrument will be copied to either:
 - \Empower\Instruments\Firmware (for Empower)
 - \Program Files\Waters Instruments\Firmware (for MassLynx)
- Full procedure is included in handout

Installing the ICOP for MassLynx

- If Upgrading from previous version of MassLynx remove ACQUITY UPLC Components from the ADD / Remove program directory then remove MassLynx
- Install MassLynx v4.1
- Install Instrument Driver v1.40
- Open Inlet Editor and configure ACQUITY instruments and then exit the editor
- When the ICOP installation is complete, exit MassLynx and reboot the PC
- Full procedure is included in release notes

Installing and Updating the ACQUITY UPLC™ Firmware

Installing the ACQUITY UPLC™ Firmware

- Same procedure for MassLynx® or Empower™
 - Run the Loader.exe utility
 - This application is found either in:
 - \Empower\Instruments\Firmware for Empower
 - \Program Files\Waters Instruments\Firmware for MassLynx
 - One ACQUITY module is loaded at a time
 - Verify that the firmware file name matches the module you are loading (i.e Sample Manager.sft for the SM)
 - Follow the prompts from the wizard
 - Current firmware will be erased and new version will be installed
 - Cycle the instrument power to complete the install
- Full procedure is included in handout

Configuring the Instrument LAN and Waters DHCP Server

Waters DHCP Server

- A Waters application that handles IP addressing for our instruments
- Installed as part of the ACQUITY Service Pack for Empower™
- Installed as part of MassLynx® v4.0 SP4
- Configuration is generally done in Milford for pre-configure systems but you should verify this on startup

Waters DHCP Server Operation

- As devices (instruments) are powered on, they will send a DHCP request across the Instrument LAN
- The Waters DHCP server will assign an address to the device
- This address will be used from that point on – it does not ordinarily change for the life of the device while attached to the node

Accessing the Waters DHCP Server

- Empower™
 - Accessed from the Configuration Manager
 - Go to Acquisition Server Properties then DHCP menu
- MassLynx®
 - Run as a standalone application
 - Go to the **\Program Files\Waters Instruments** folder
 - Run the “Waters DHCP Server Configuration.exe” program
- Configuration is the same procedure for both software packages

Configuring Waters DHCP Server-1

Acquisition Server 'Waters-kkgkz3f' Properties [?] [X]

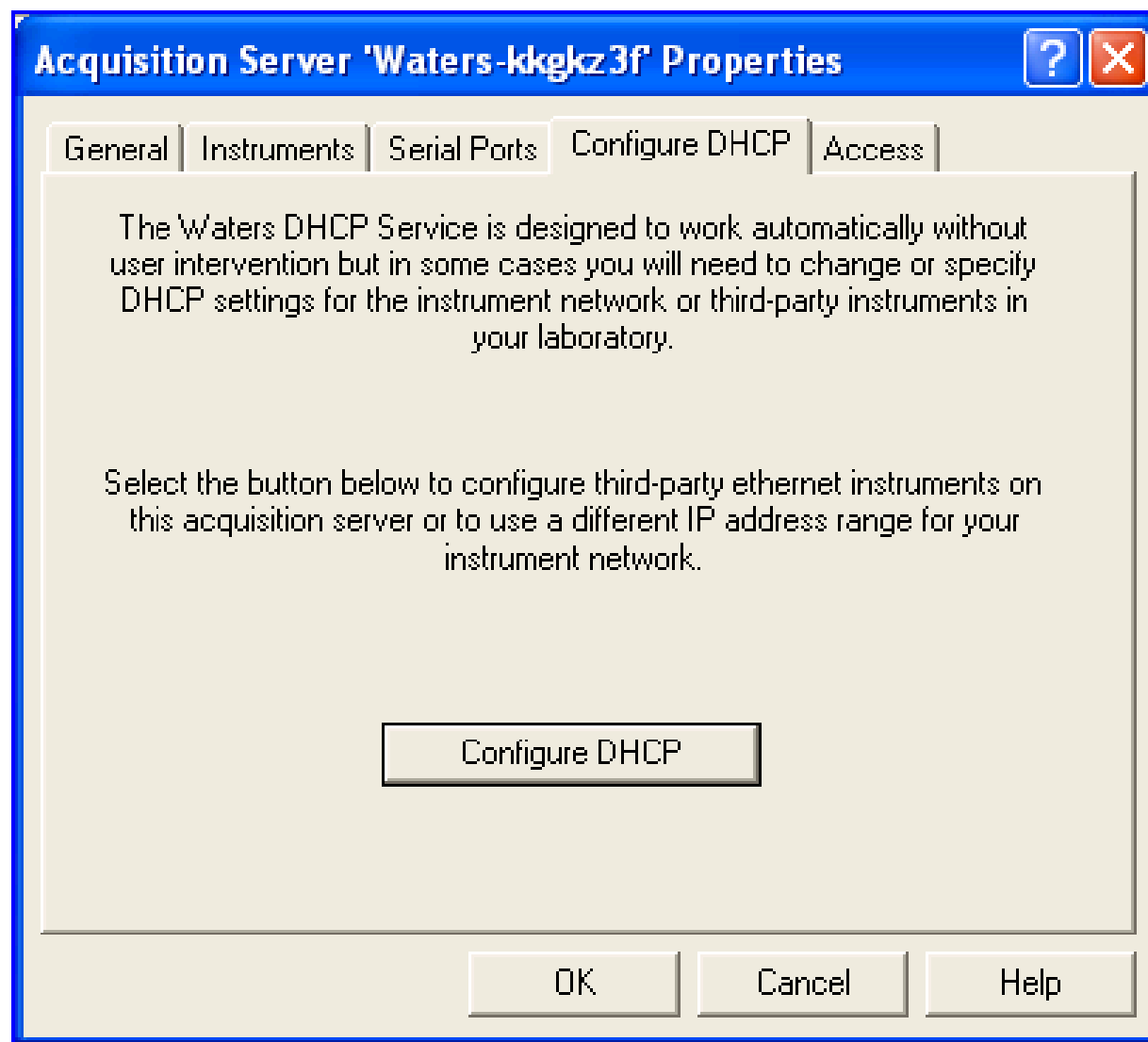
General | Instruments | Serial Ports | **Configure DHCP** | Access

Acquisition Server Name: Waters-kkgkz3f
Acquisition Server Type: Empower
BusLAC/E Status: BusLAC/E driver not loaded
BusLAC/E Type: Unknown
Serial Card Status: Serial card not present

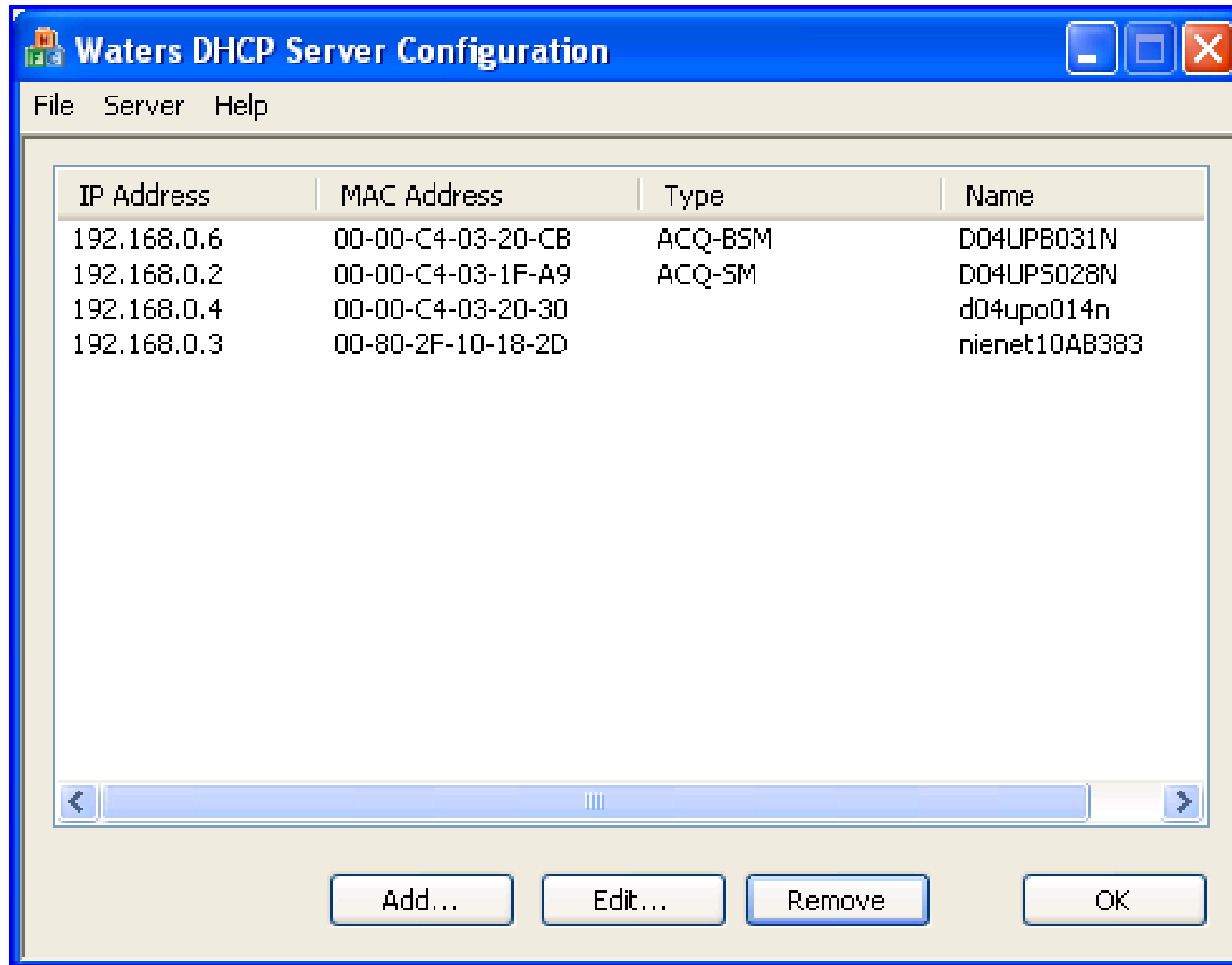
Comment:

BusLAC/E Not Booted !!

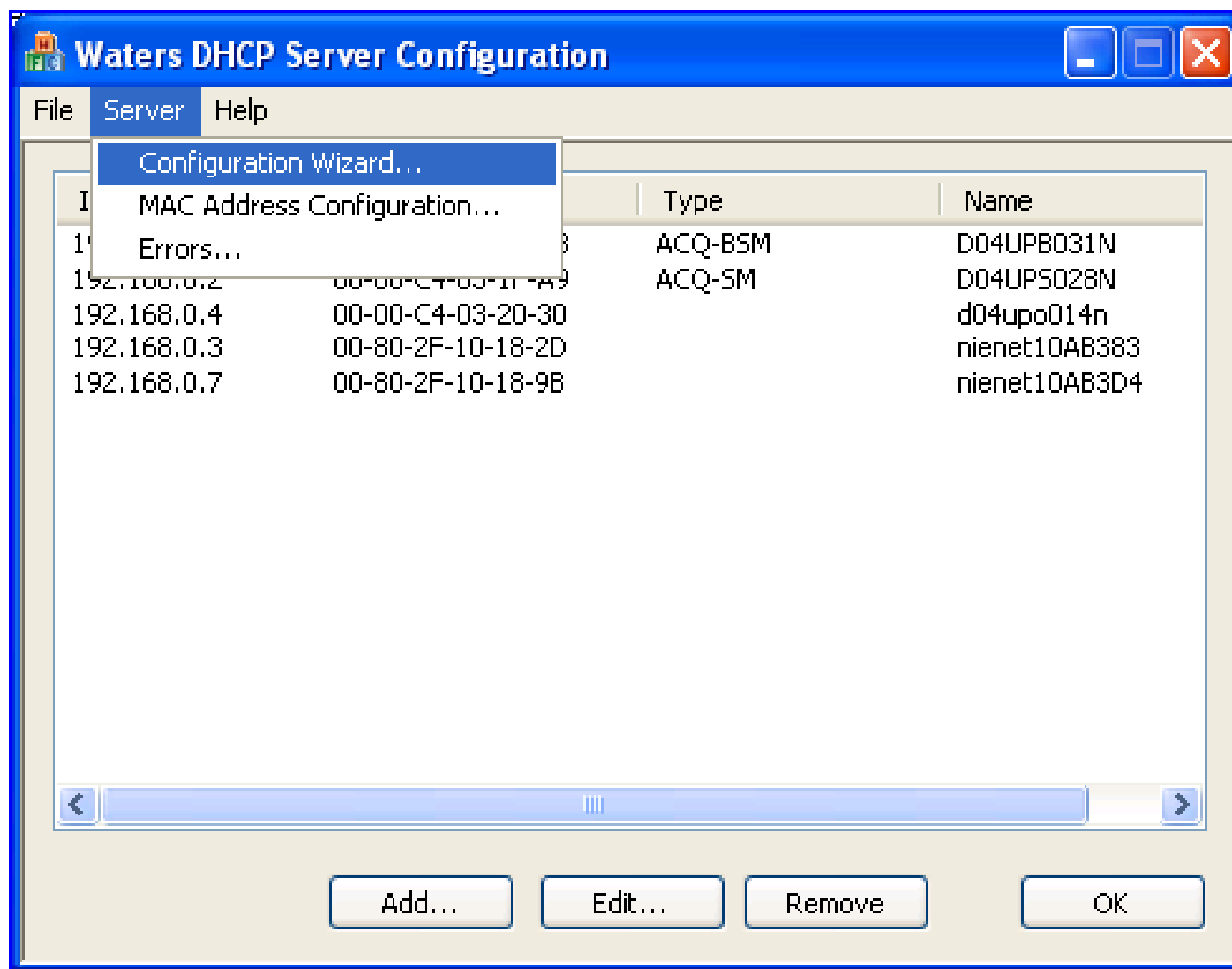
Configuring Waters DHCP Server-2



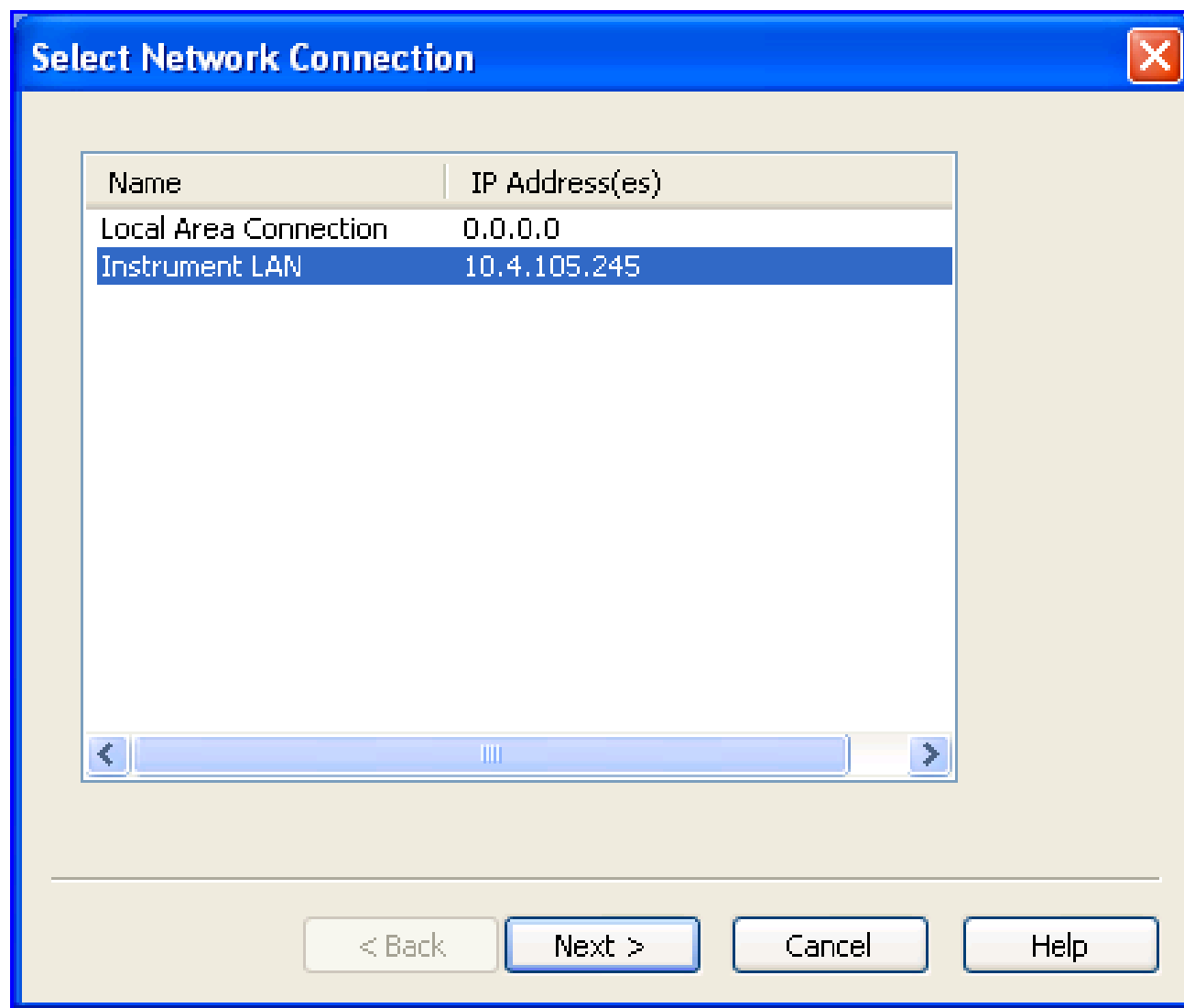
Configuring Waters DHCP Server-2



Configuring Waters DHCP Server-3



Configuring Waters DHCP Server-4

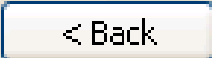
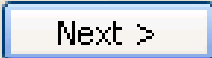


Configuring Waters DHCP Server-5

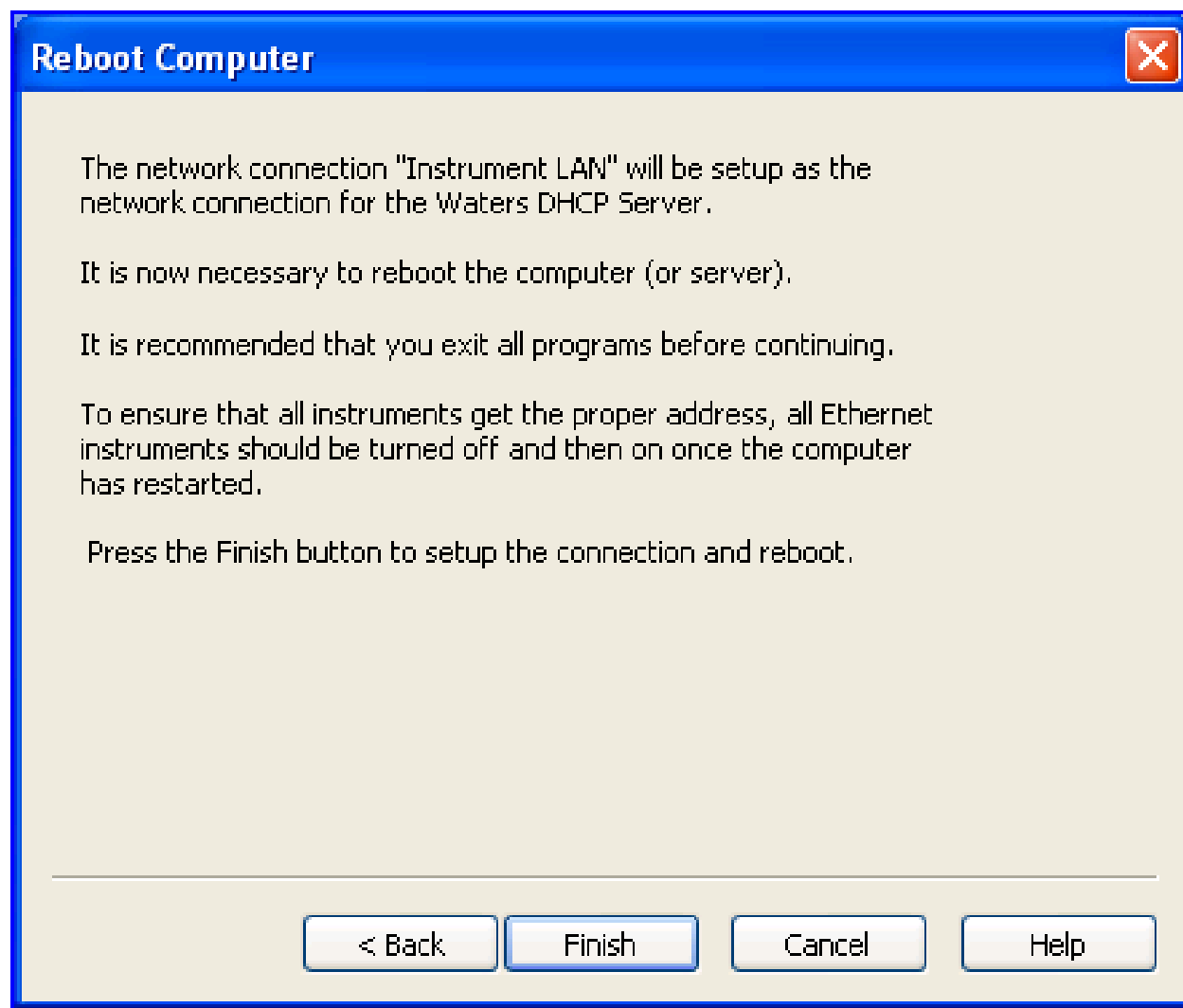
Select IP Address 

The recommended IP address to use is selected below. The selection was made based on the network cards currently installed on this computer.

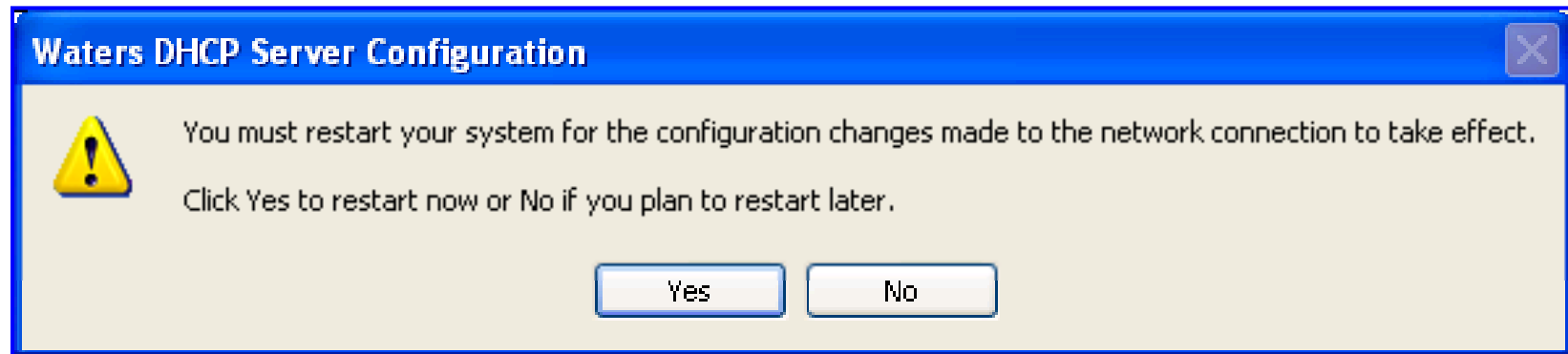
☒ Default	192 . 168 . 0 . 1
☐ Alternate	172 . 16 . 0 . 1
☐ Custom	. . .

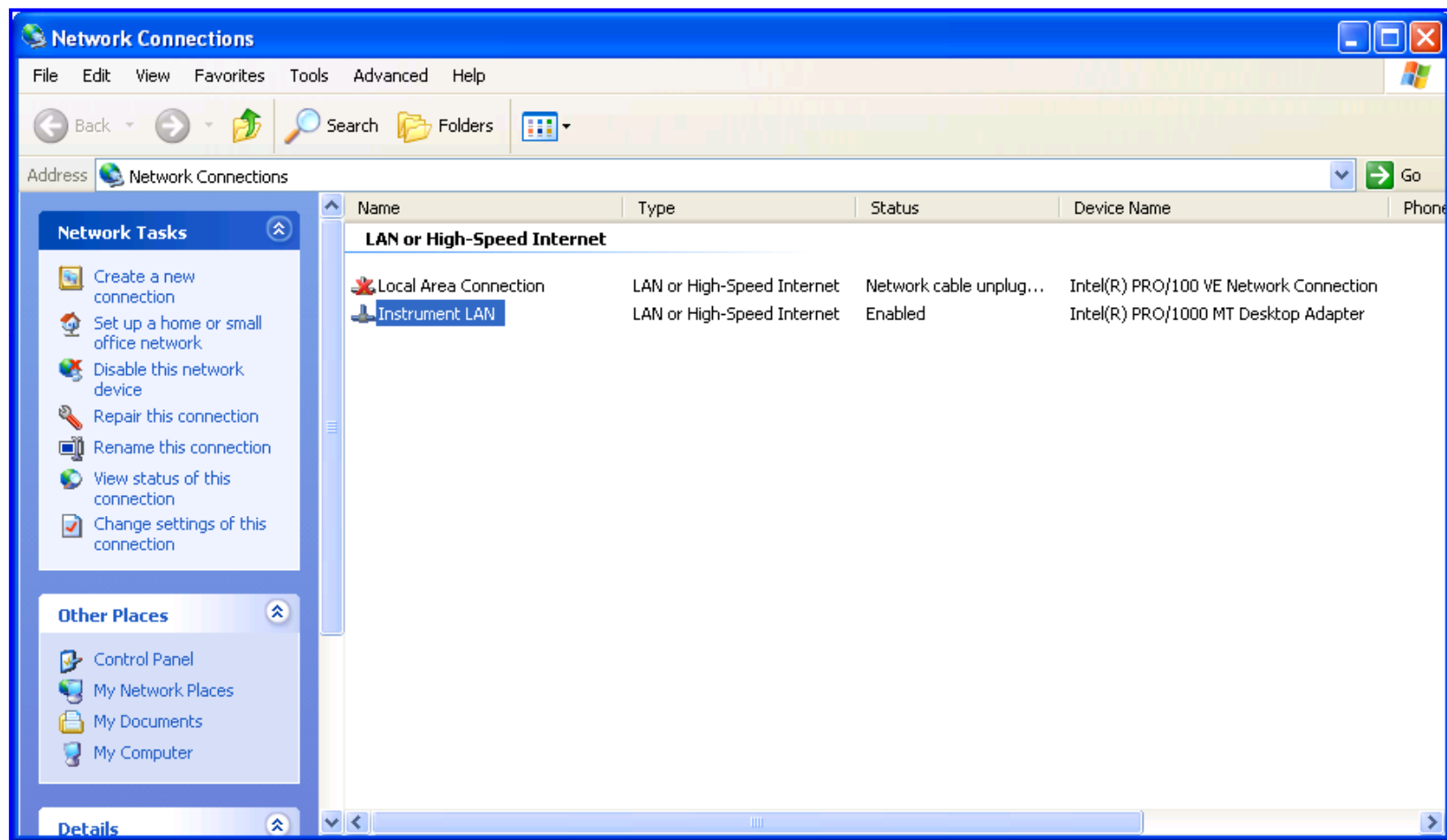
Configuring Waters DHCP Server-6



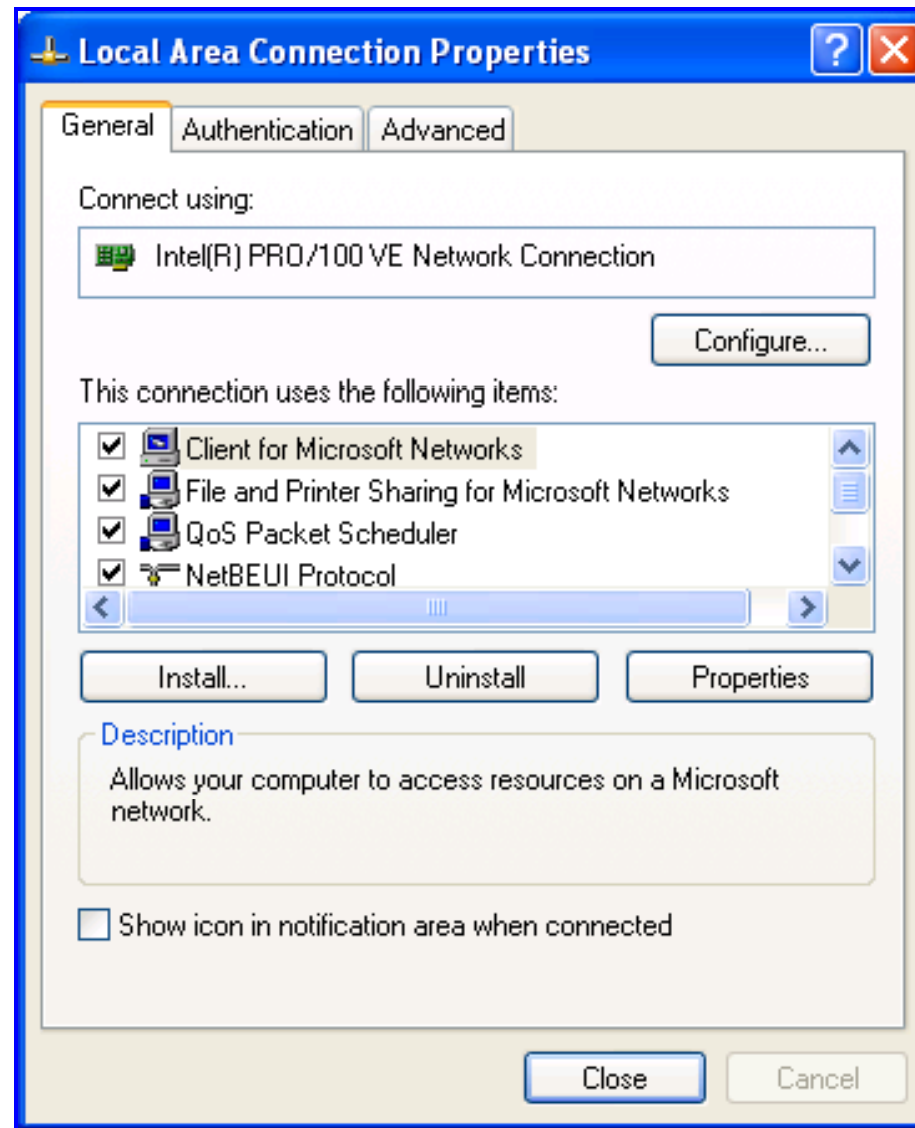
Configuring Waters DHCP Server-7



Configuring Waters DHCP Server-8



Checking DHCP Server Settings-1



Checking DHCP Server Settings-2

The screenshot shows the 'Internet Protocol (TCP/IP) Properties' dialog box with the 'General' tab selected. The dialog box has a blue title bar with a question mark and a close button. The 'General' tab is highlighted with an orange border. The text inside the tab reads: 'You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.'

There are two radio button options for IP address assignment:

- ☐ Obtain an IP address automatically
- ☒ Use the following IP address:

Below the second option, there are three text input fields:

- IP address: 192 . 168 . 0 . 1
- Subnet mask: 255 . 255 . 255 . 0
- Default gateway: . . .

There are two radio button options for DNS server address assignment:

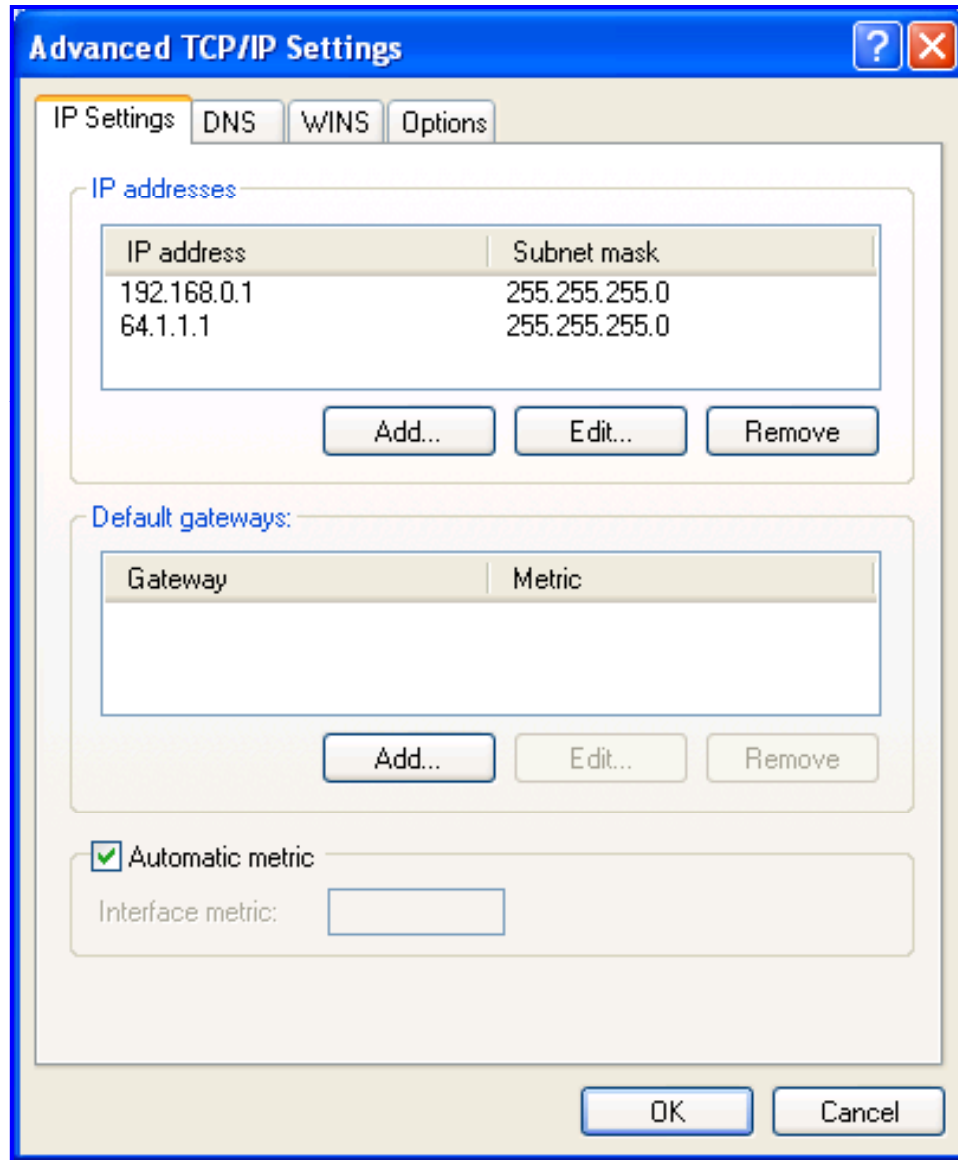
- ☐ Obtain DNS server address automatically
- ☒ Use the following DNS server addresses:

Below the second option, there are two text input fields:

- Preferred DNS server: . . .
- Alternate DNS server: . . .

At the bottom right of the dialog box, there is an 'Advanced...' button. At the very bottom, there are 'OK' and 'Cancel' buttons.

Checking DHCP Server Settings-3



The image shows a Windows-style dialog box titled "Advanced TCP/IP Settings". It has four tabs: "IP Settings" (selected), "DNS", "WINS", and "Options". The "IP Settings" tab contains two main sections. The first section, "IP addresses", has a table with two columns: "IP address" and "Subnet mask". It lists two entries: "192.168.0.1" with "255.255.255.0" and "64.1.1.1" with "255.255.255.0". Below the table are three buttons: "Add...", "Edit...", and "Remove". The second section, "Default gateways:", has a table with two columns: "Gateway" and "Metric". This table is currently empty. Below it are three buttons: "Add...", "Edit...", and "Remove". At the bottom of the dialog, there is a checkbox labeled "Automatic metric" which is checked, and a text field labeled "Interface metric:" which is empty. At the very bottom are "OK" and "Cancel" buttons.

IP address	Subnet mask
192.168.0.1	255.255.255.0
64.1.1.1	255.255.255.0

Gateway	Metric
---------	--------

☒ Automatic metric

Interface metric: