

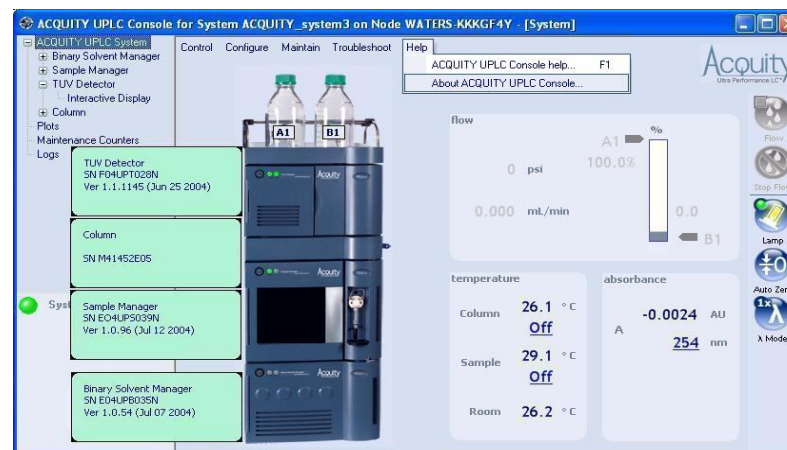
ACQUITY UPLC™ Software Installation and Functional Verification

ACQUITY UPLC™ System Service Training

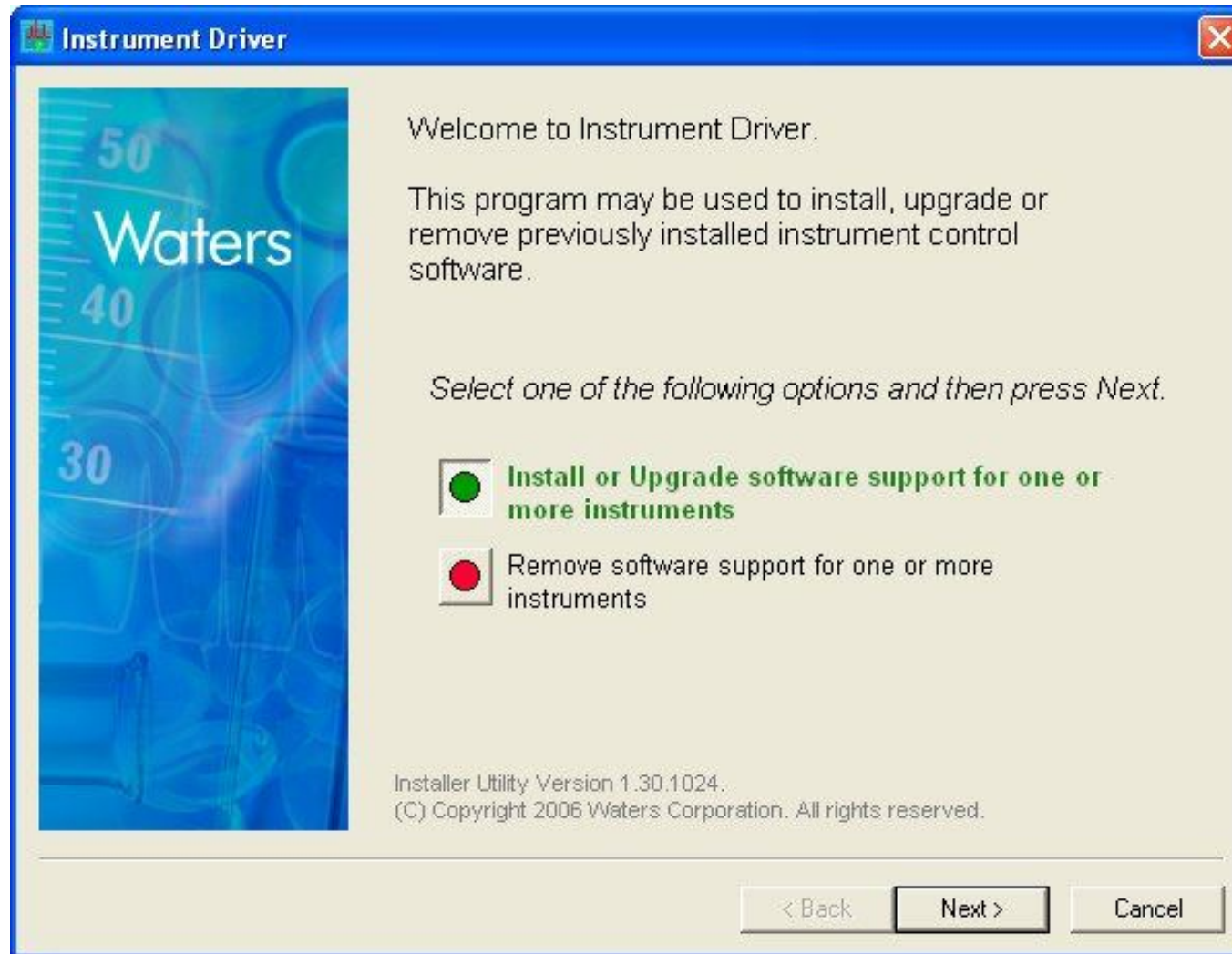
ACQUITY UPLC System

– 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



Instrument Driver Install Menu



ACQUITY Instrument Drivers

The screenshot displays a Windows XP 'Add or Remove Programs' window. The 'Currently installed programs' list includes:

- Access IBM
- ACQUITY Binary Solvent Manager
- ACQUITY Sample Manager
- ACQUITY TUV Detector
- ACQUITY UPLC Columns Calculator
- Adobe Reader 6.0
- Broadcom Advanced Control Suite 2
- Easy CD & DVD Creator 6
- Empower Personal
- IBM Rescue and Recovery with Rapid Restore
- IBM Update Connector
- Intel(R) Graphics Media Accelerator Driver
- InterVideo WinDVD
- InterVideo WinDVD Creator
- LiveUpdate 3.1 (Symantec Corporation)
- Microsoft .NET Framework 1.1

On the left sidebar, there are icons for 'Change or Remove Programs', 'Add New Programs', 'Add/Remove Windows Components', and 'Set Program Access and Defaults'. The 'About ACQUITY UPLC Console' dialog box is open in the foreground, showing the Acquity logo and the following information:

About ACQUITY UPLC Console

Instrument Driver Version 1.30.2130
Build: June 15, 2007

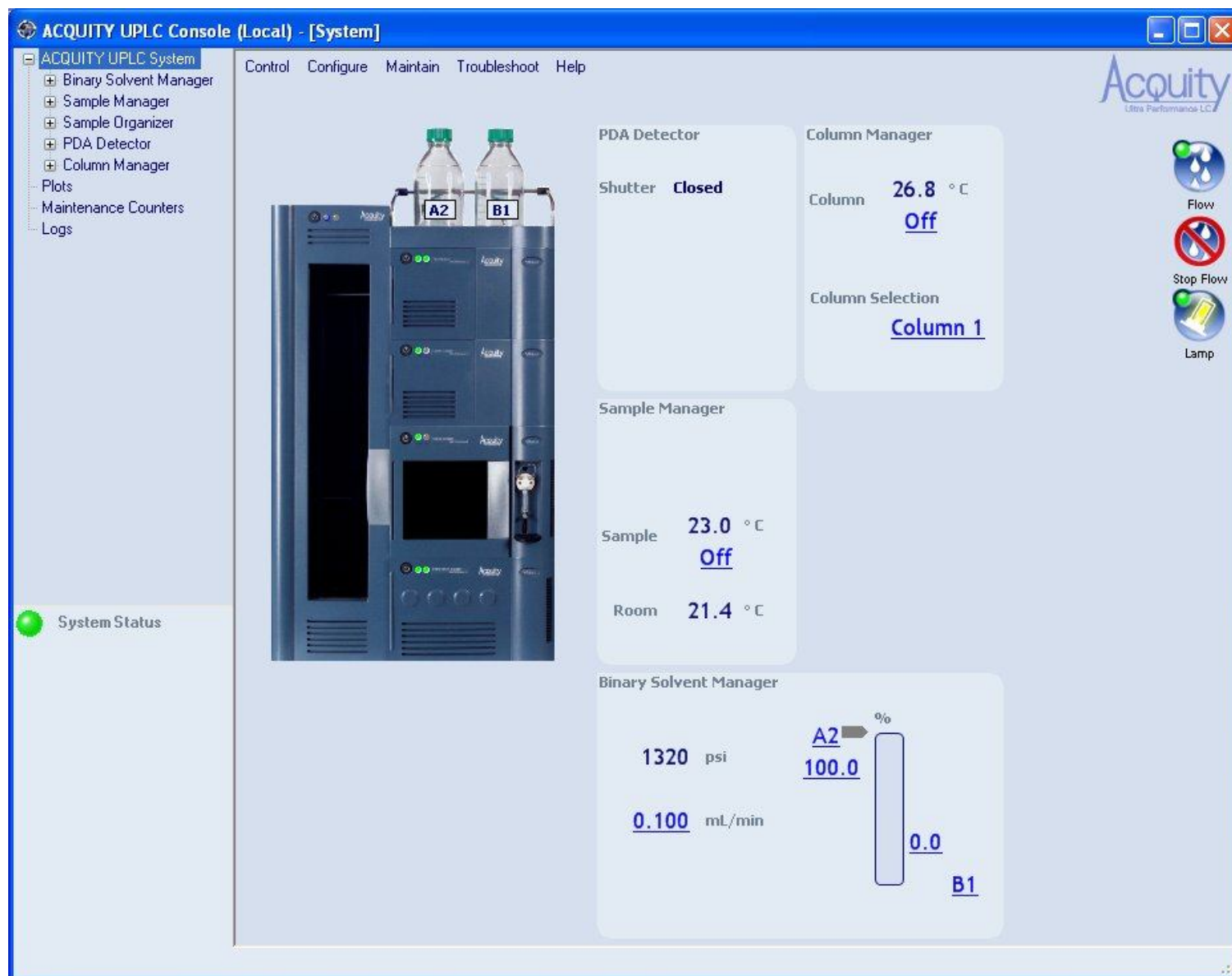
Instrument Modules Installed:

- Waters 2998 Detector (W2998) : Version 1.30.1166
- Waters 2489 Detector (W2489) : Version 1.30.2065
- ACQUITY ELS Detector (ACQ-ELSD) : Version
- 2420 Evaporative Light Scattering Detector (W2420) : Version
- 2424 ELS Detector (W2424) : Version
- ACQUITY Binary Solvent Manager (ACQ-BSM) : Version 1.30.2075
- ACQUITY Auxiliary Solvent Manager (ACQ-ASM) : Version 1.30.2062
- ACQUITY Sample Manager (ACQ-SM) : Version 1.30.2203
- ACQUITY TUV Detector (ACQ-TUV) : Version 1.30.2048

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Version Number: 2.1

ACQUITY UPLC Console



Version Number: 2.1

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 and Empower 3 3471
 - Windows 2000 or Windows XP or Windows 7 64Bit SP1 with TCP/IP installed
 - Empower 2 FR 3 ,Empower 2 FR 5,Empower 3
 - ACQUITY Instrument Control Option Pack v1.40(ICOP)
 - or Instrument Control Software V1.4(ICS)
 - or Instrument Control Software V1.5
 - .NET software (installed with ACQUITY Service Pack)
- MassLynx® 4.1
 - Windows XP with TCP/IP installed
 - ACQUITY Instrument Control Option Pack v1.40
 - SCN 562
 - SCN 639 (Now SCN 714,SCN 810)
 - .NET software (installed with MassLynx 4.0 SP4)

Previous Software Versions

- Empower™ Version 1154
 - Windows 2000 or Windows XP with TCP/IP installed
 - Service Pack L for Empower
 - ACQUITY Instrument Control Option Pack v1.30
 - .NET software (installed with ACQUITY Service Pack)
- MassLynx® 4.0 SP4 (does not support v1.2 ICOP)
 - MassLynx® 4.0 SCN 525 (Updates ICOP to v1.1)
 - Windows 2000 or Windows XP with TCP/IP installed
 - .NET software (installed with MassLynx 4.0 SP4)

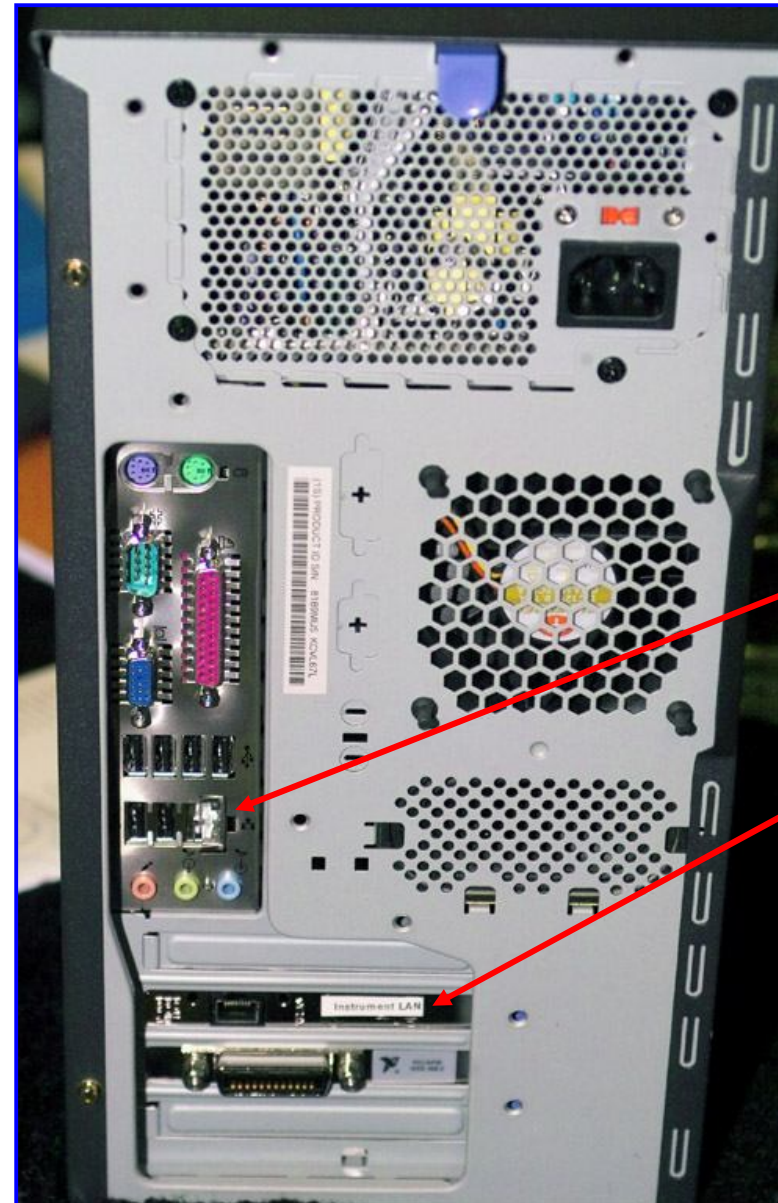
Instrument LAN Physical Cable Connections

ACQUITY UPLC™ System
Service Training

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

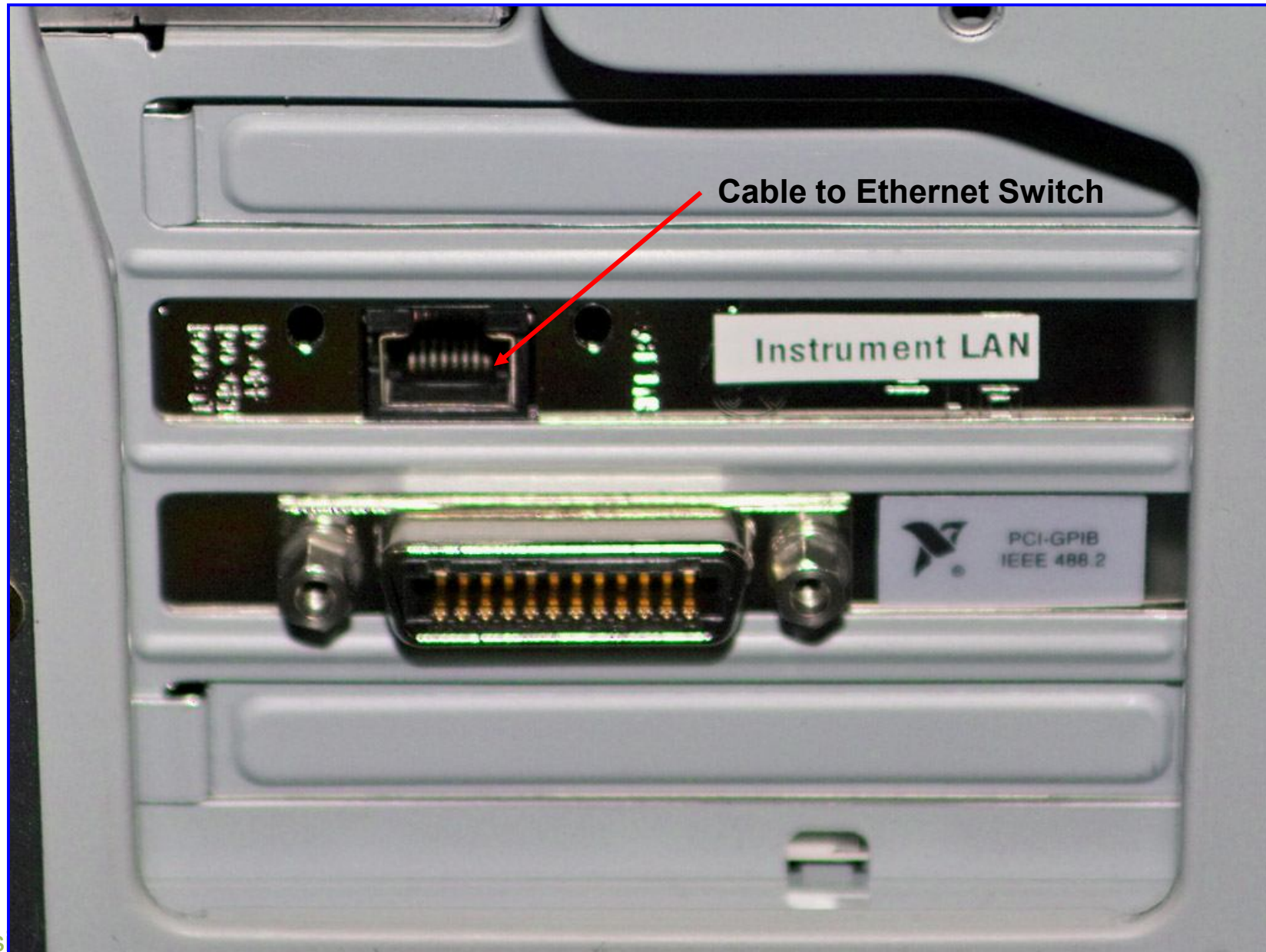
IBM Workstation Rear Panel



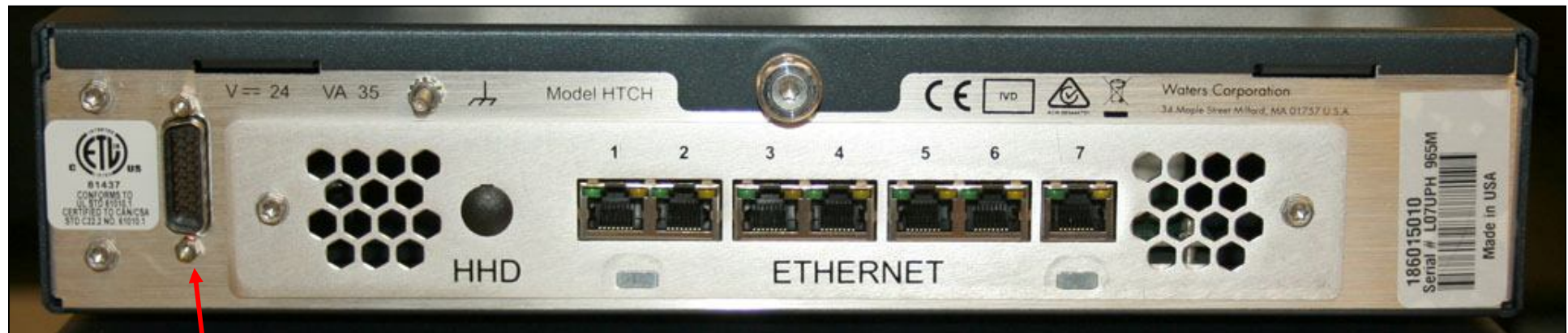
Corporate LAN Card

Instrument LAN Card

Instrument LAN Card



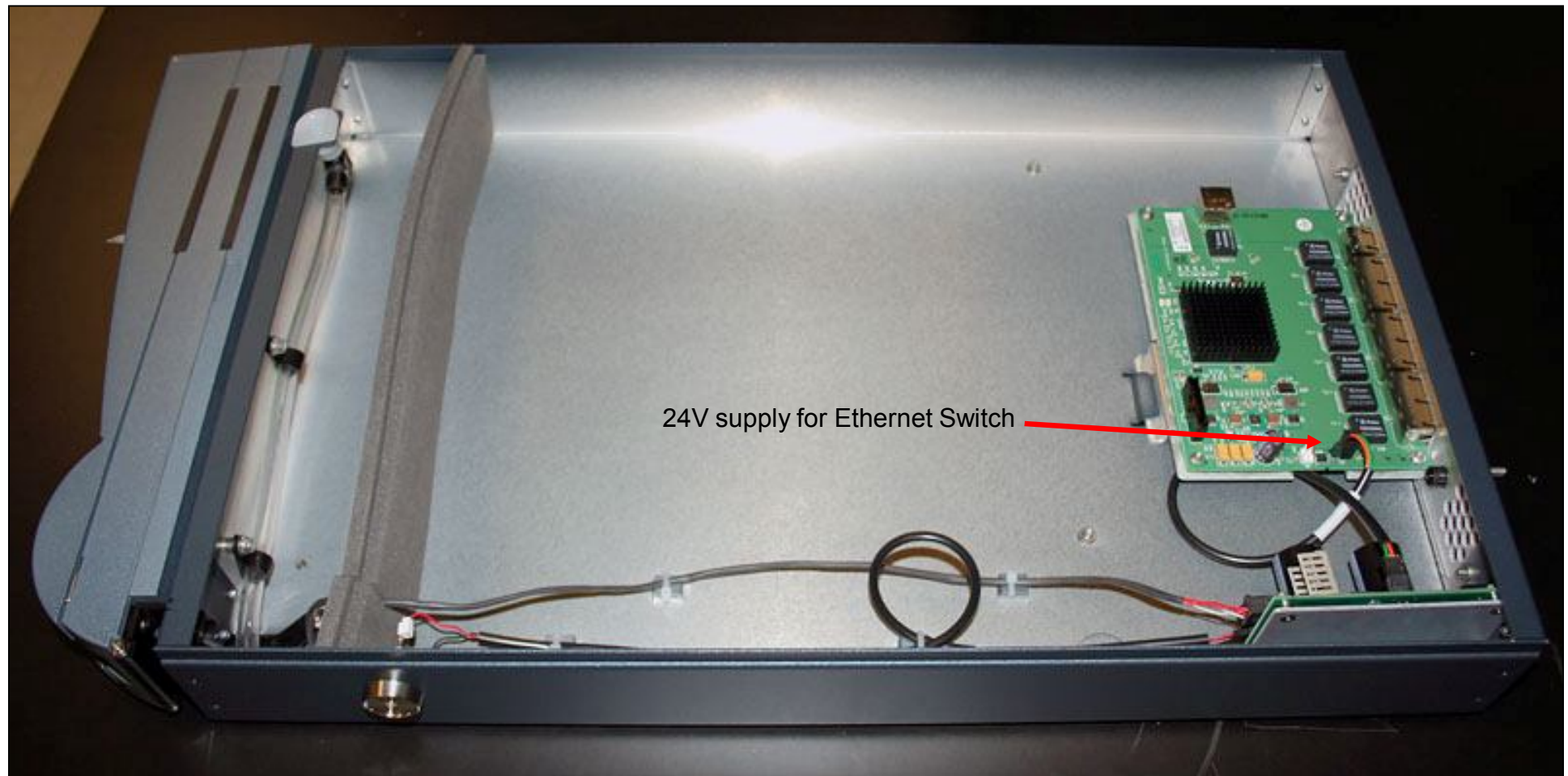
Column Heater- Ethernet Switch



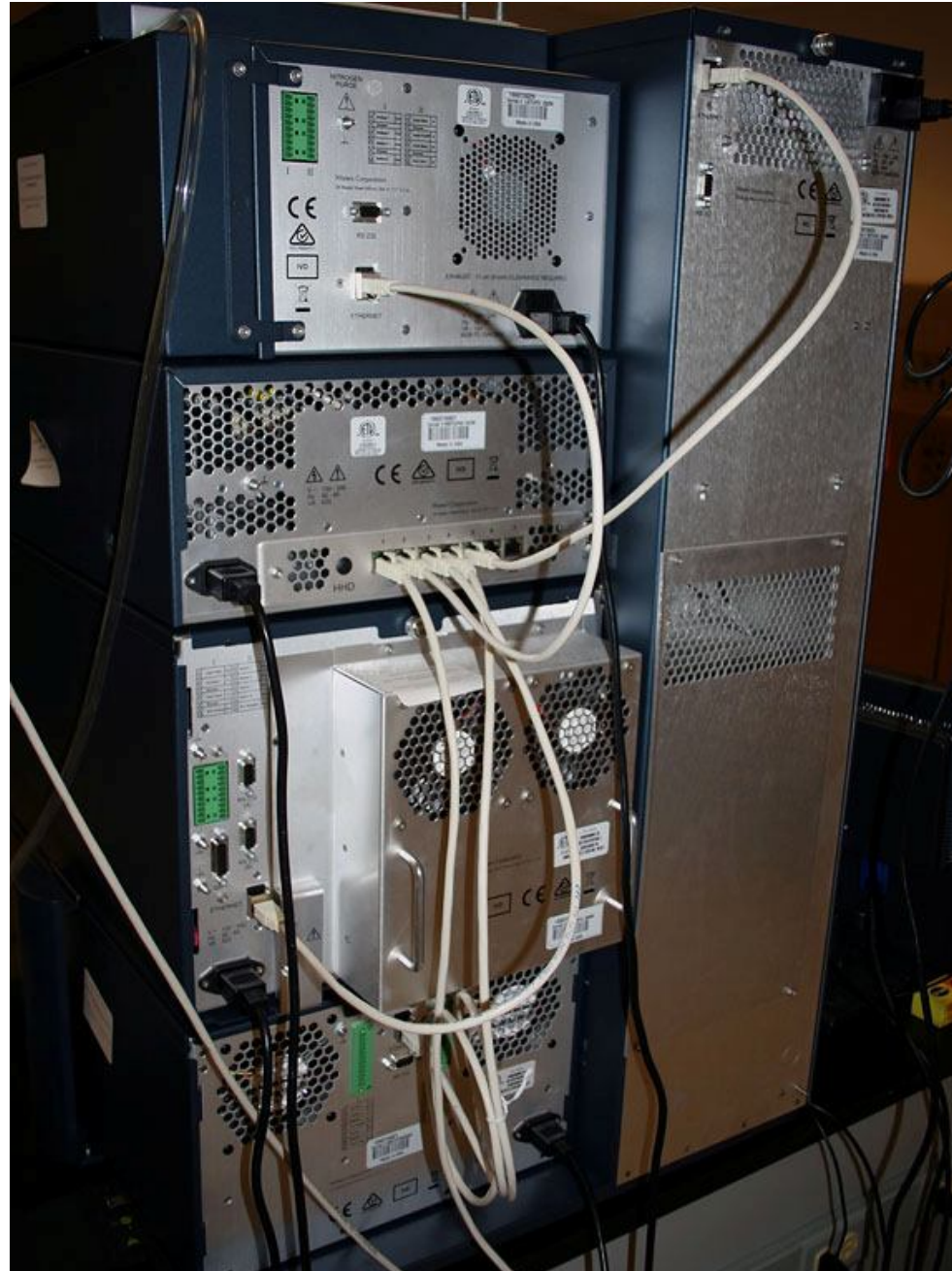
Cable connection to Sample Manager
(24V supply for ENET Switch)

Version Number: 2.1

Column Heater- Inside Top View

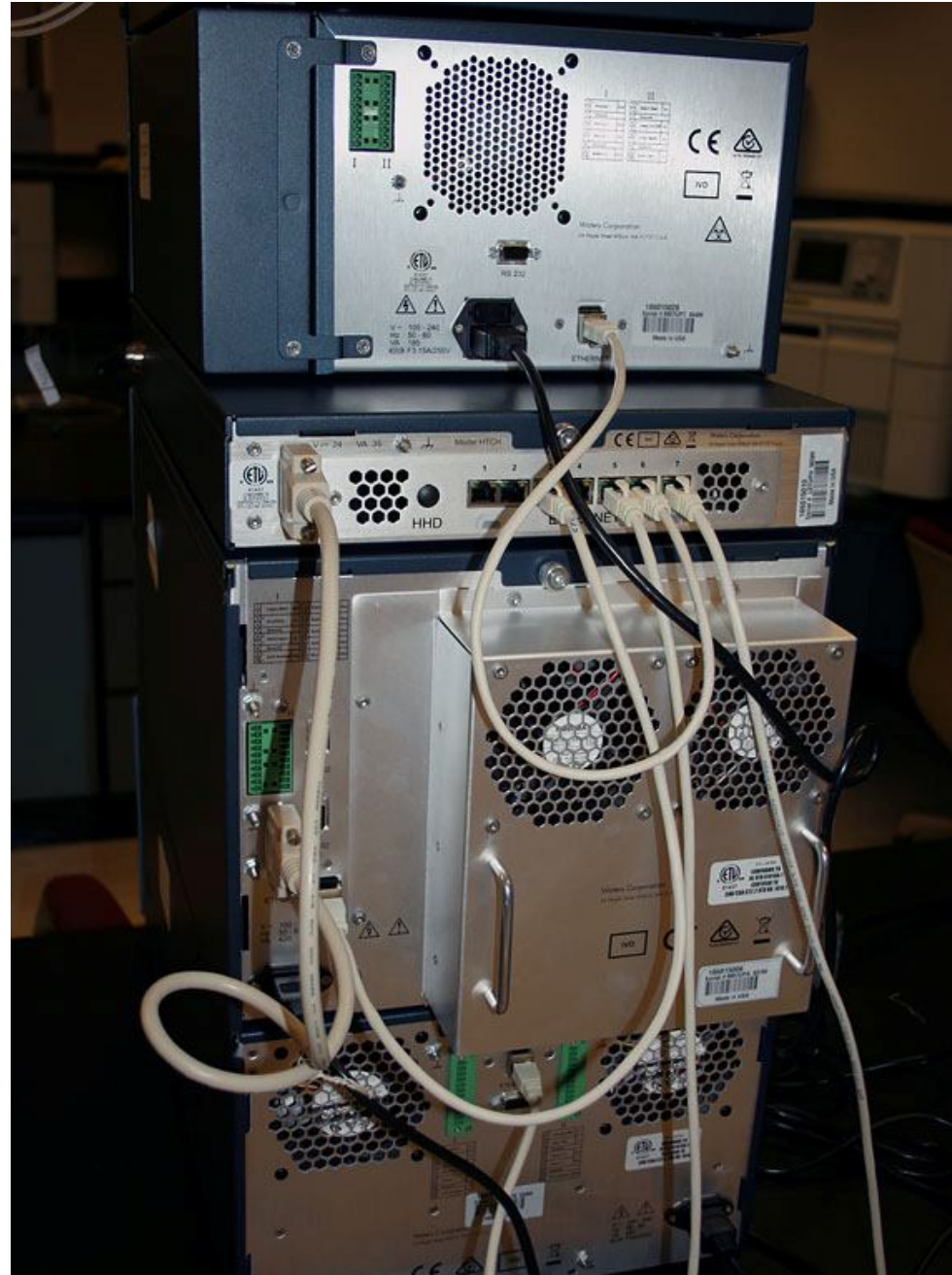


All Modules are Ethernet Controlled



Version Number: 2.1

Ethernet Switches are Built-in to Column Heaters



Version Number: 2.1

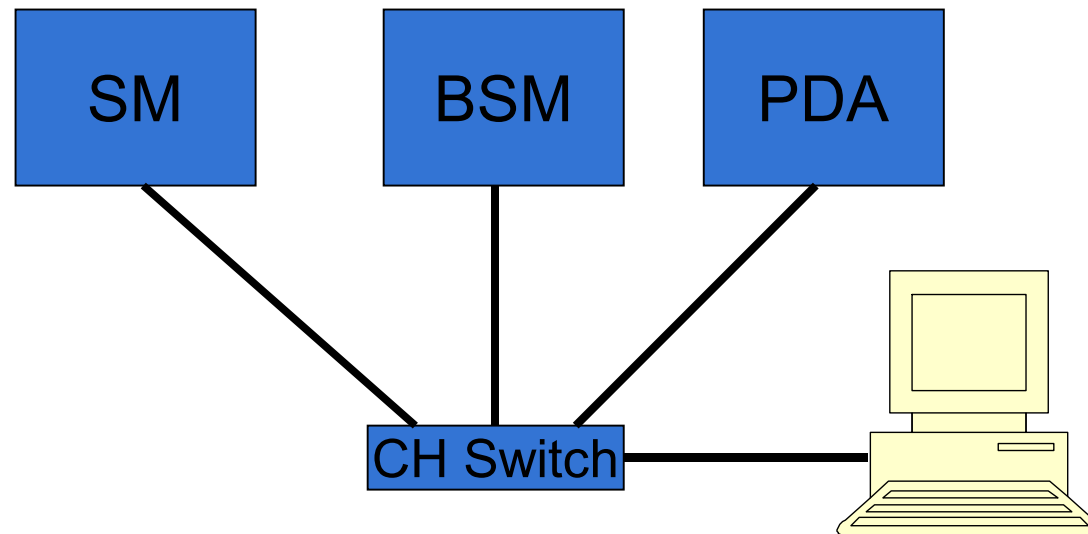
Old Milan Ethernet Switch

Cable from Computer



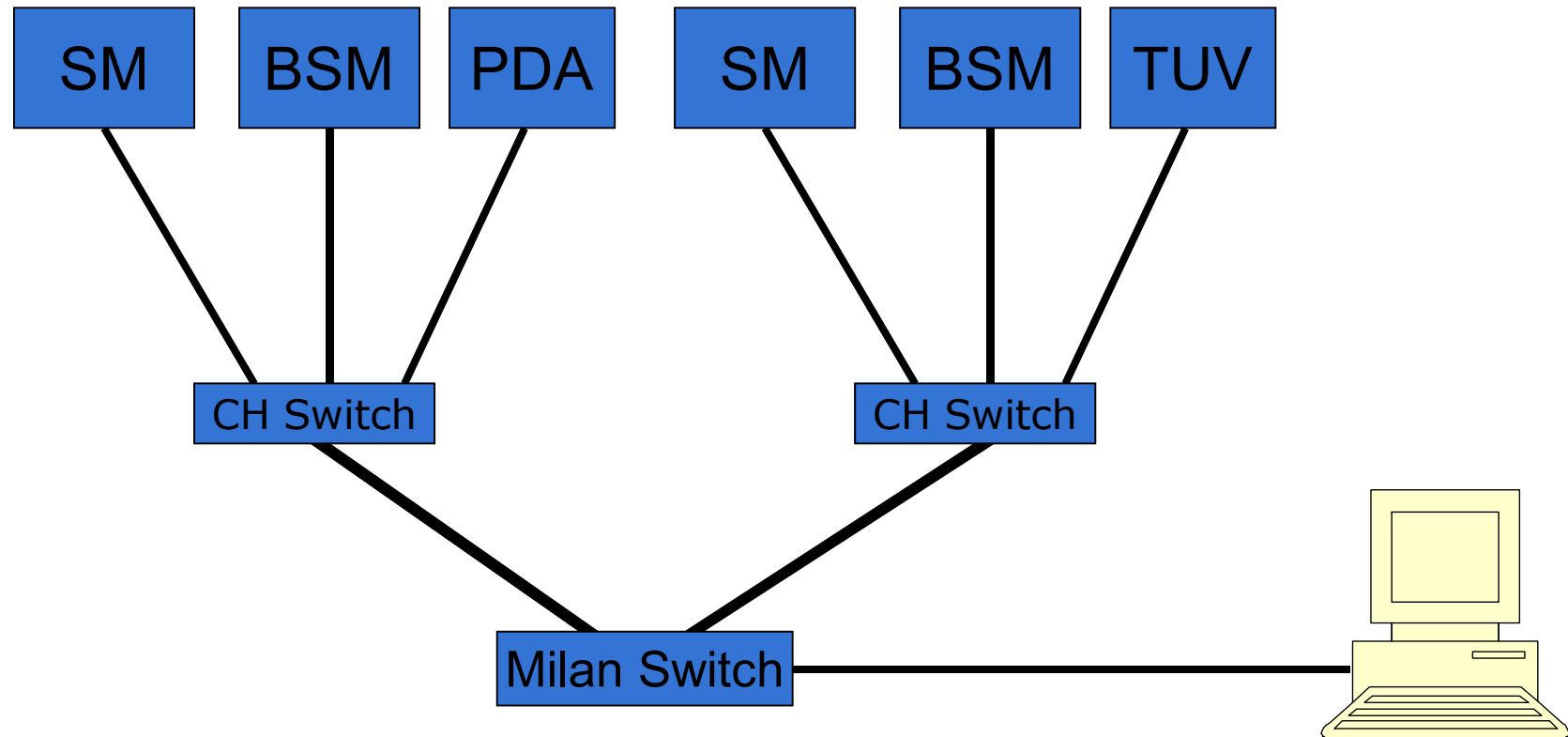
Supported Network Configurations

- One System per Workstation

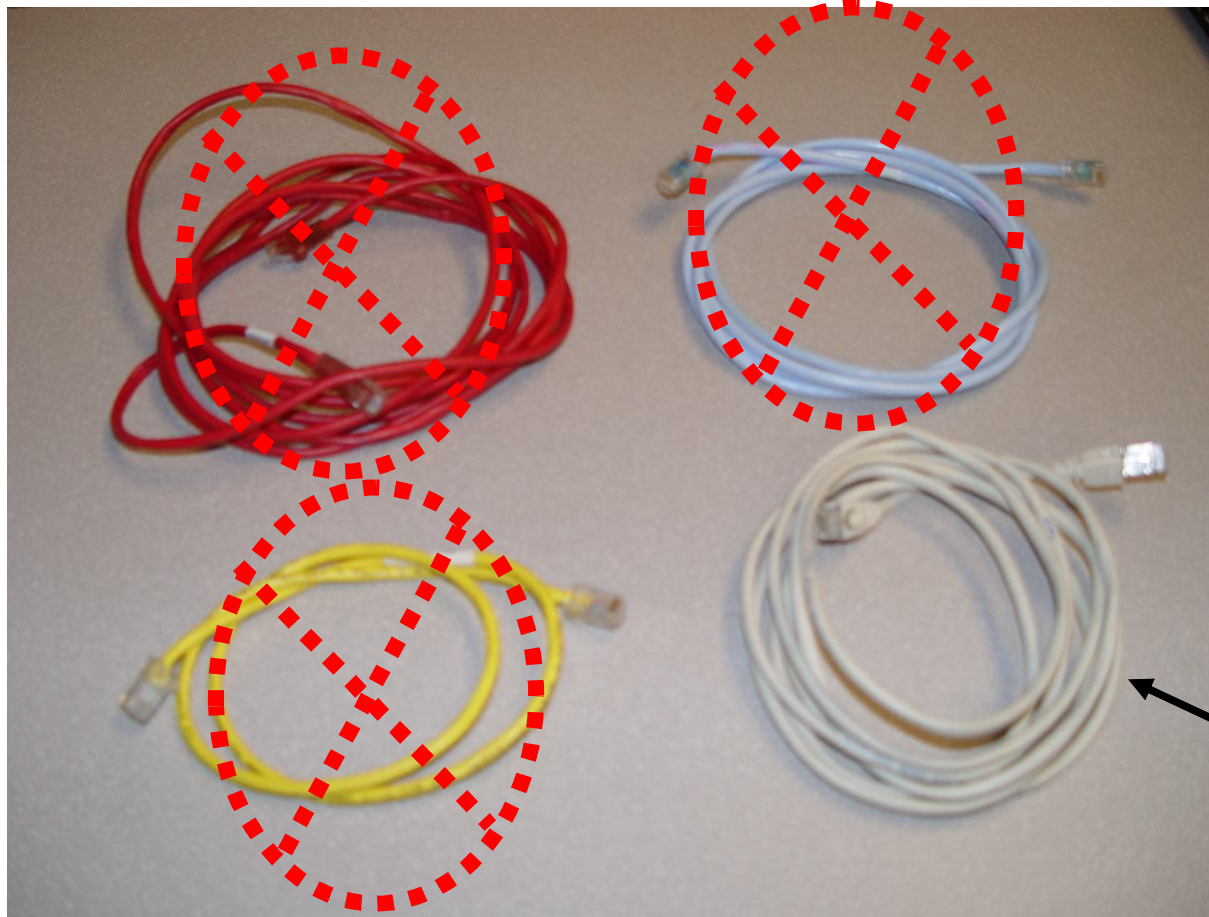


Supported Network Configurations

- Multiple Systems per Workstation (one switch per system)



ACQUITY Software Version 1.4

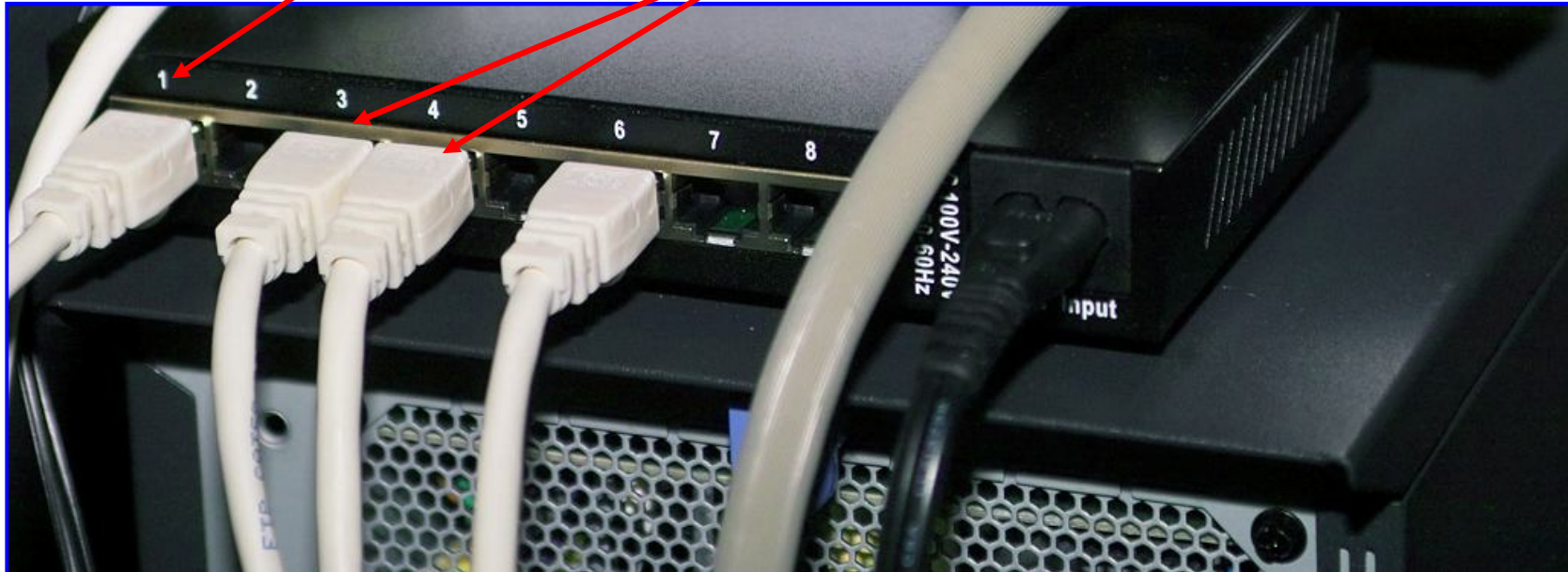


- ONLY Quality Shielded Cables Should be used!

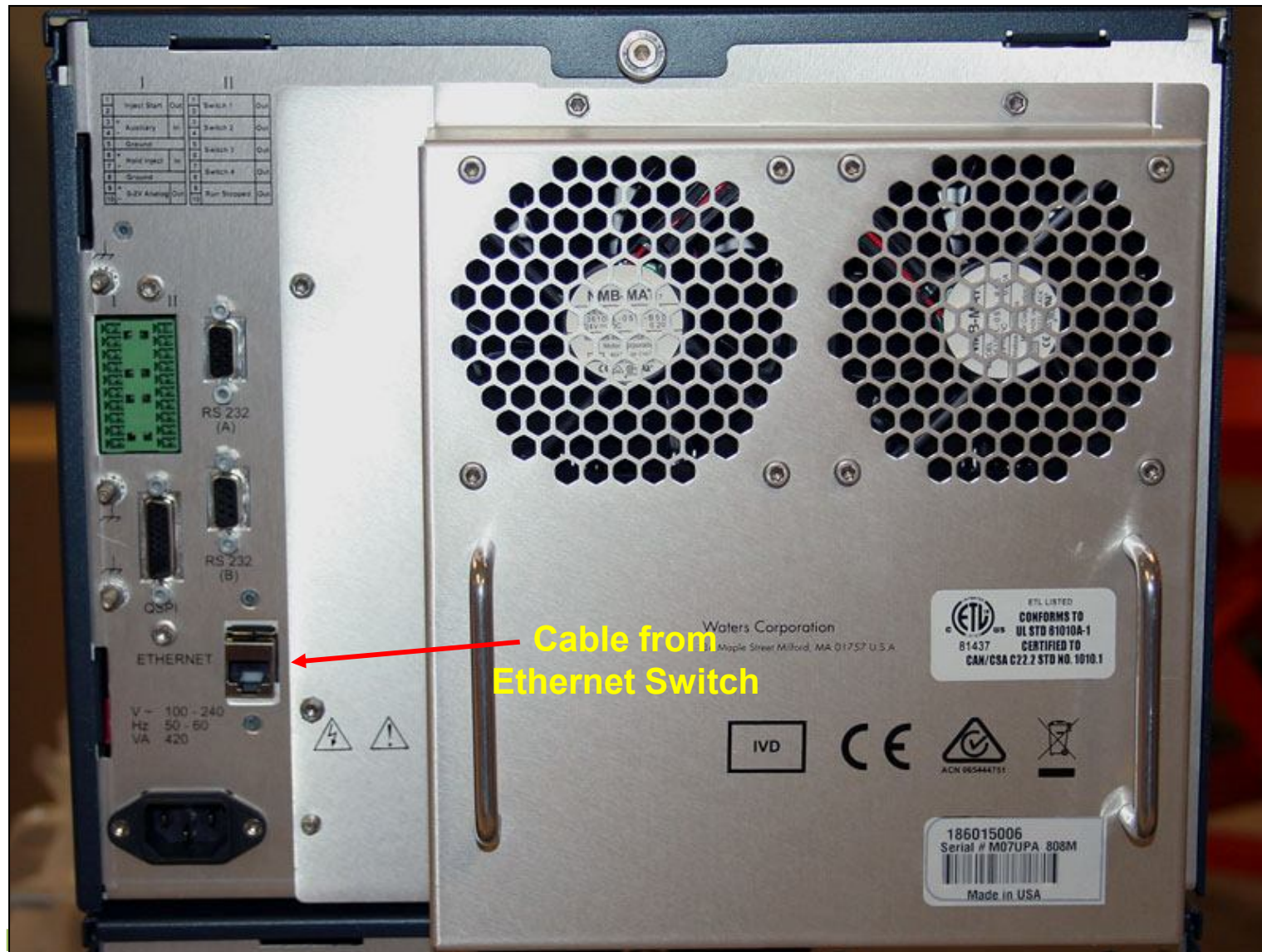
- ACQUITY Ethernet Cable

Ethernet Switch- Cable Connections

Ethernet Cables to
Workstation and ACQUITY Modules



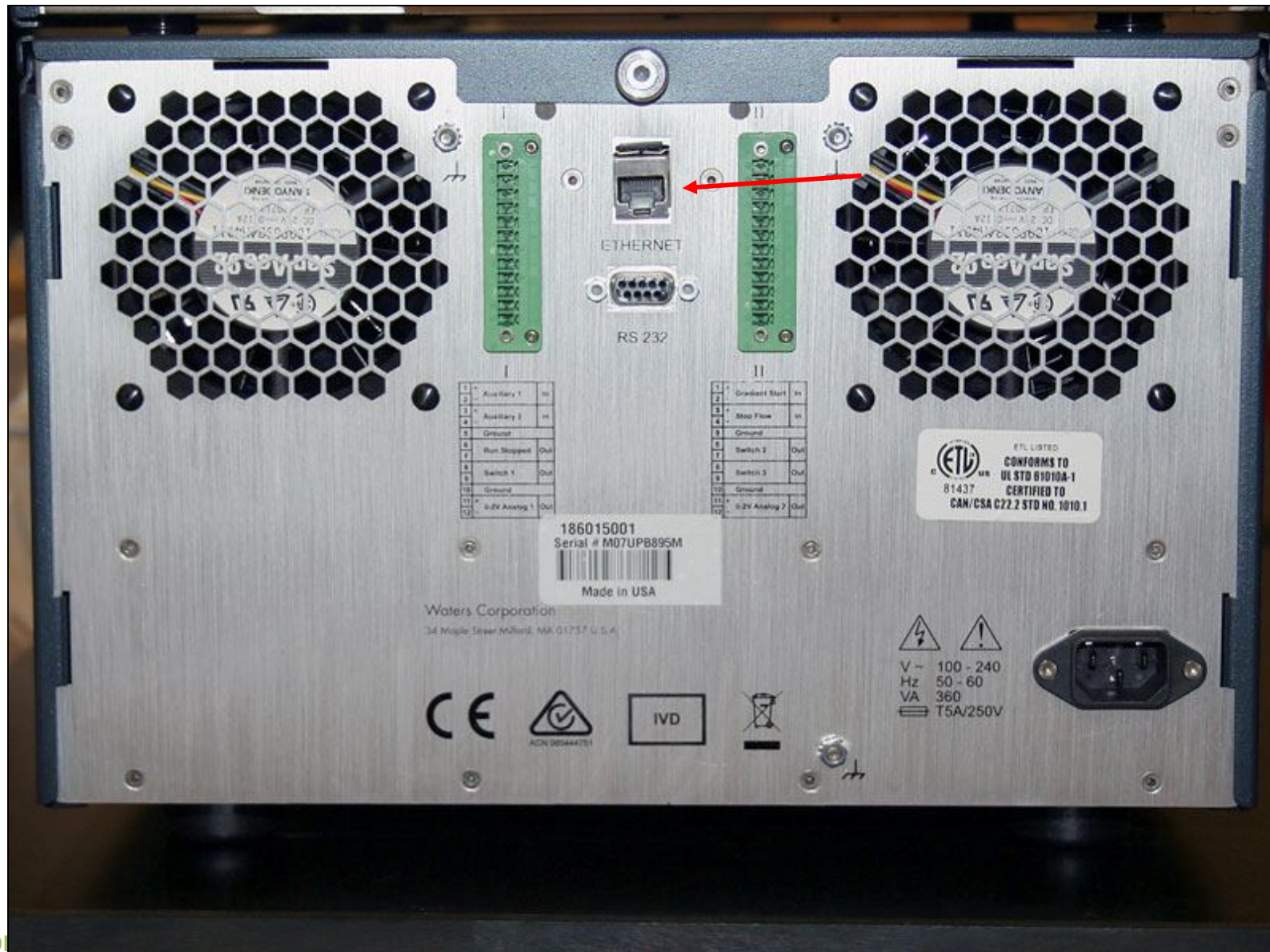
SM- Rear Panel- Ethernet Port



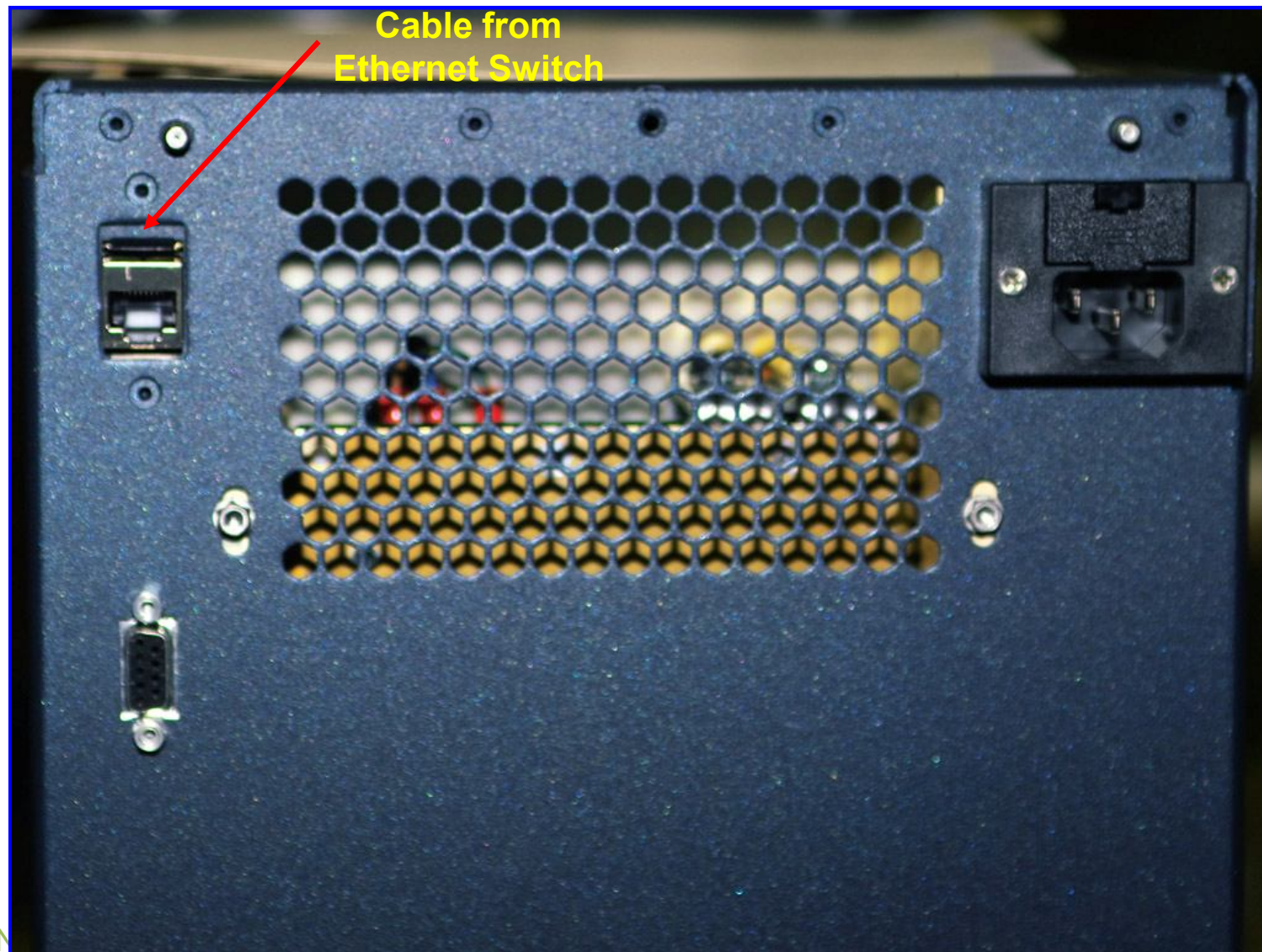
PDA Rear Panel- Ethernet Port



BSM Rear Panel- Ethernet Port



Sample Organizer- ENET Connector



Installing the ACQUITY UPLC™ Service Packs and ICOP

ACQUITY UPLC™ System
Service Training

Empower Service Packs

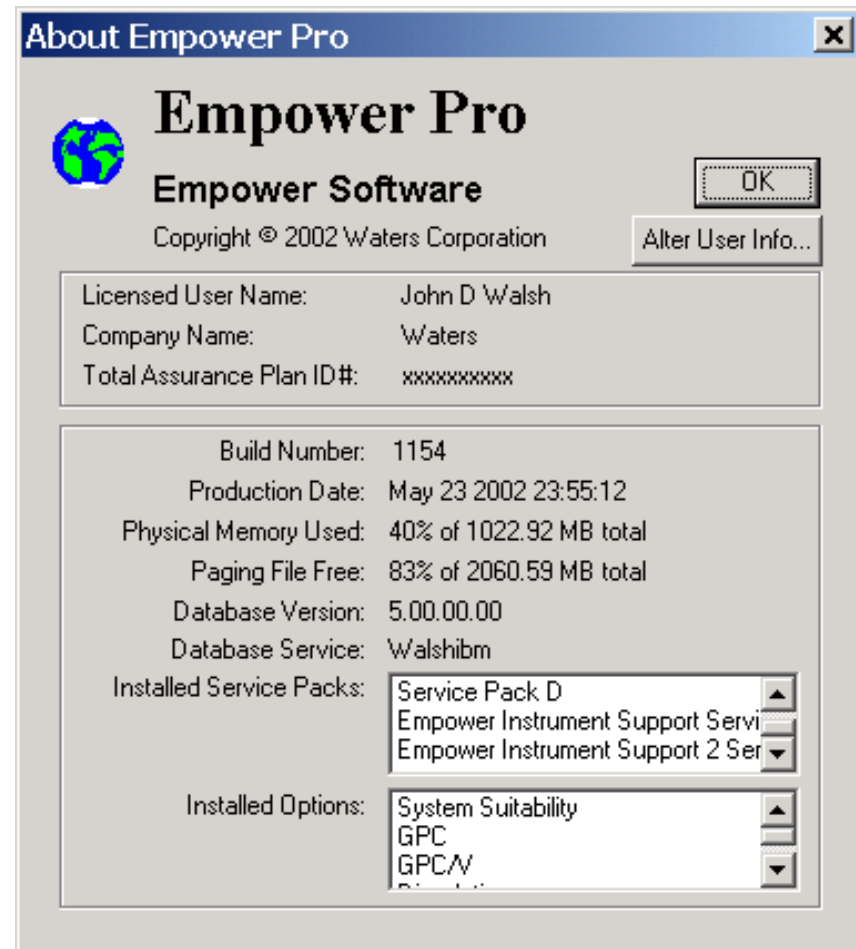
- Service Packs Required:
 - Empower FR3 or later for Empower 2 (Build 2154)
 - ACQUITY Service Pack L or later for Empower (Build 1154)
- Service Packs are cumulative (i.e. contain the previous SP's)
- ICS V1.4
- ICS V1.45
- ICS V1.5

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

ACQUITY UPLC™ System
Service Training

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

ACQUITY UPLC™ System
Service Training

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

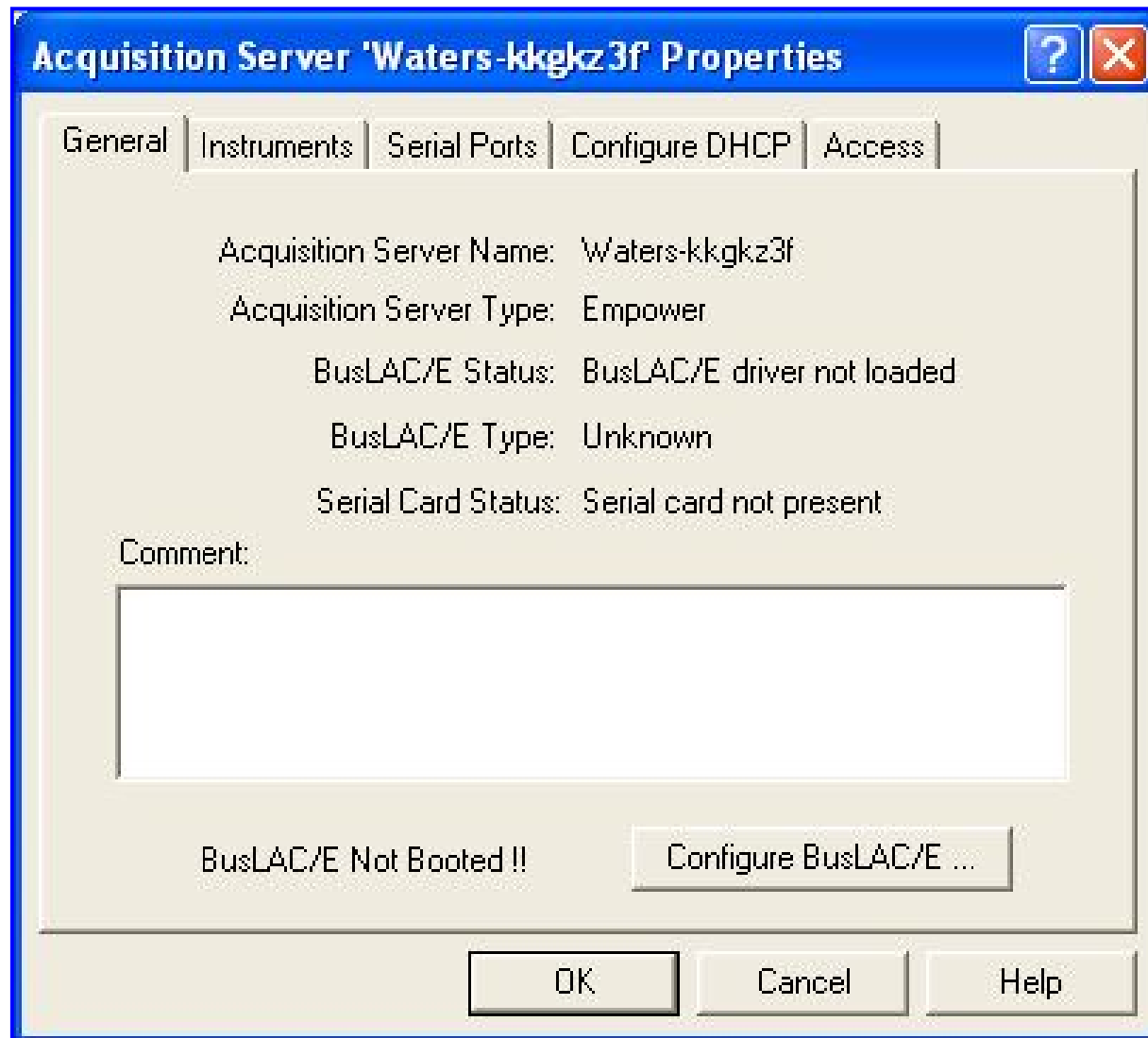
Waters DHCP Server Operation

- 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

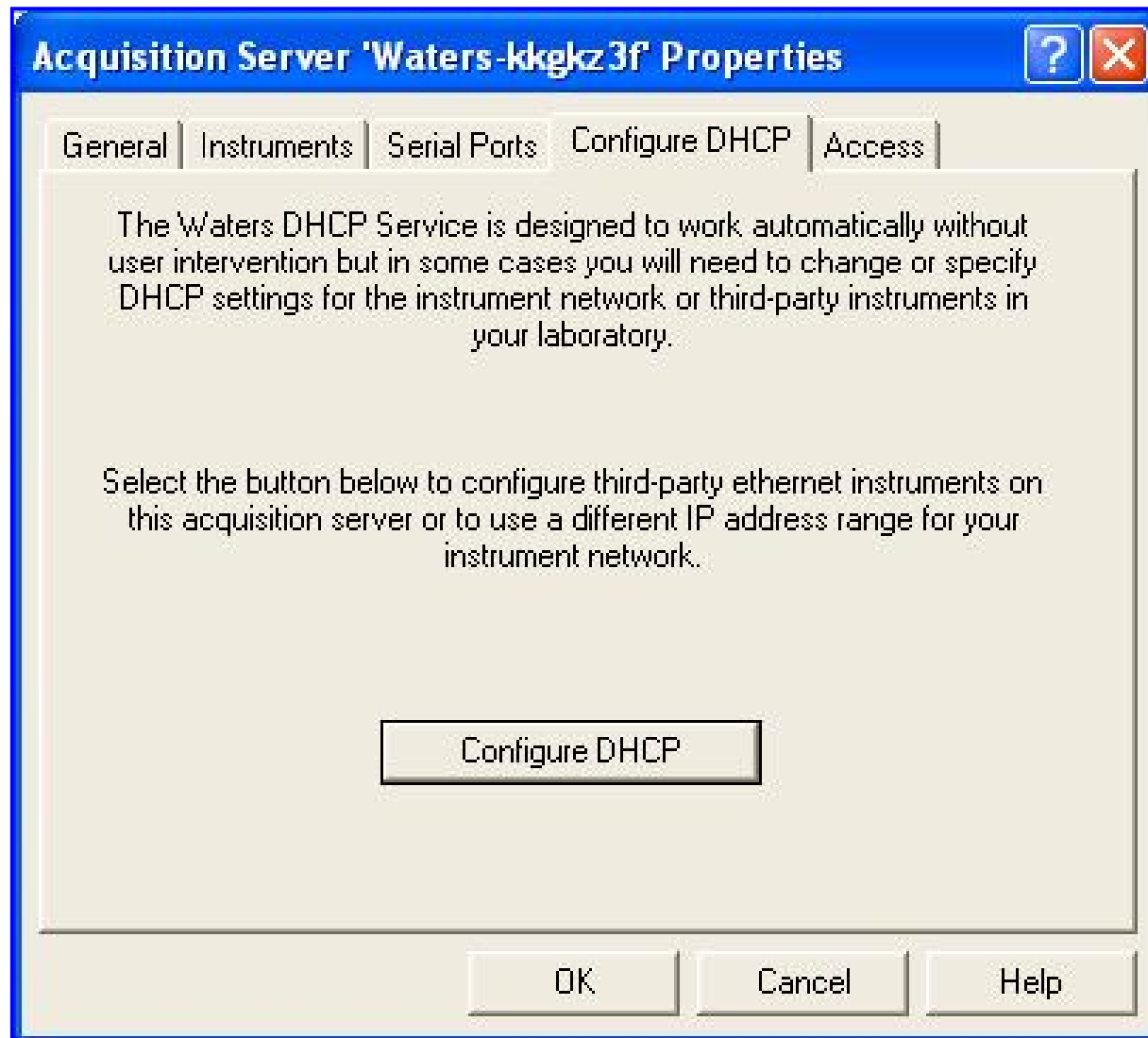
Accessing the Waters DHCP Server

- 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

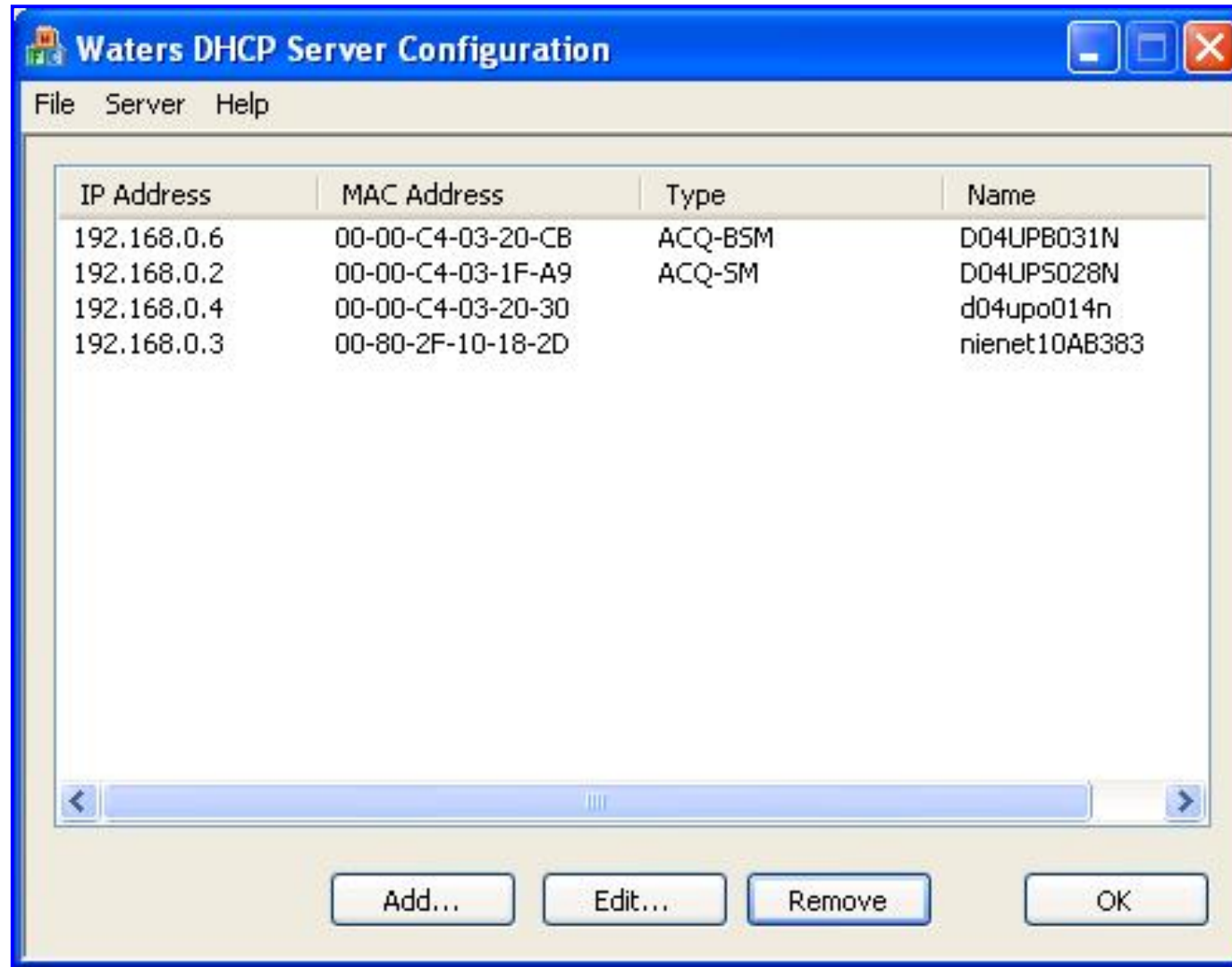
Configuring Waters DHCP Server-1



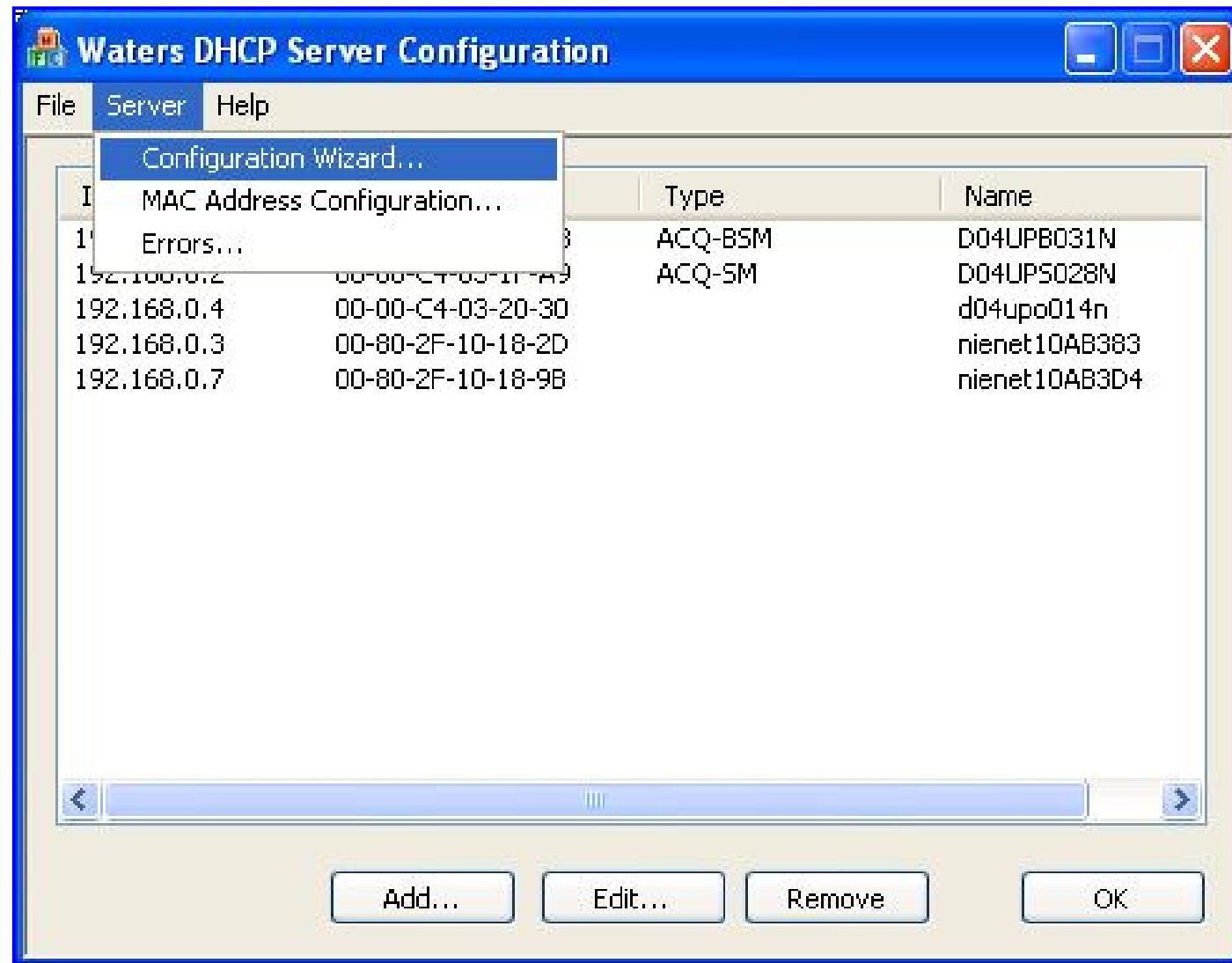
Configuring Waters DHCP Server-2



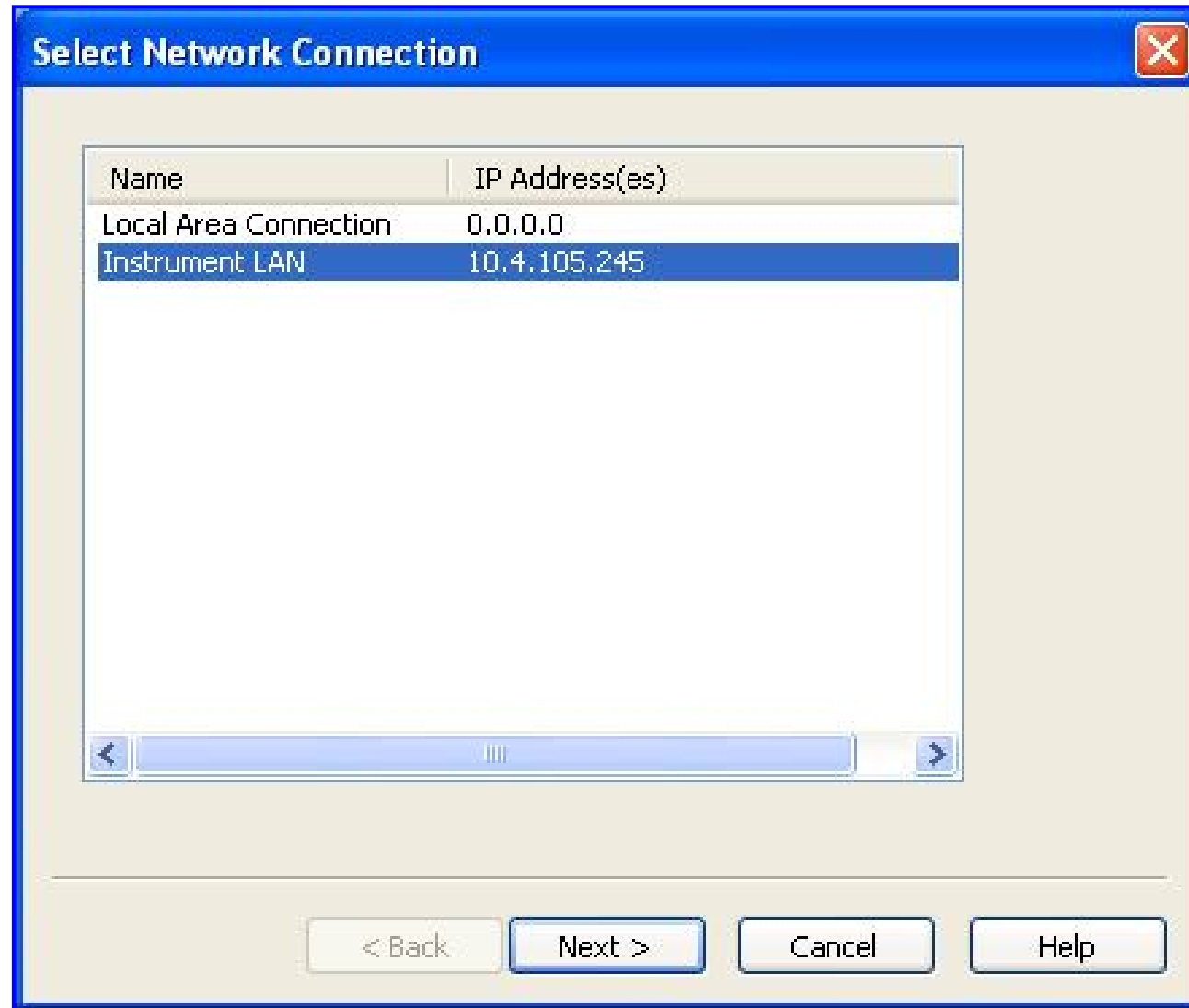
Configuring Waters DHCP Server-2



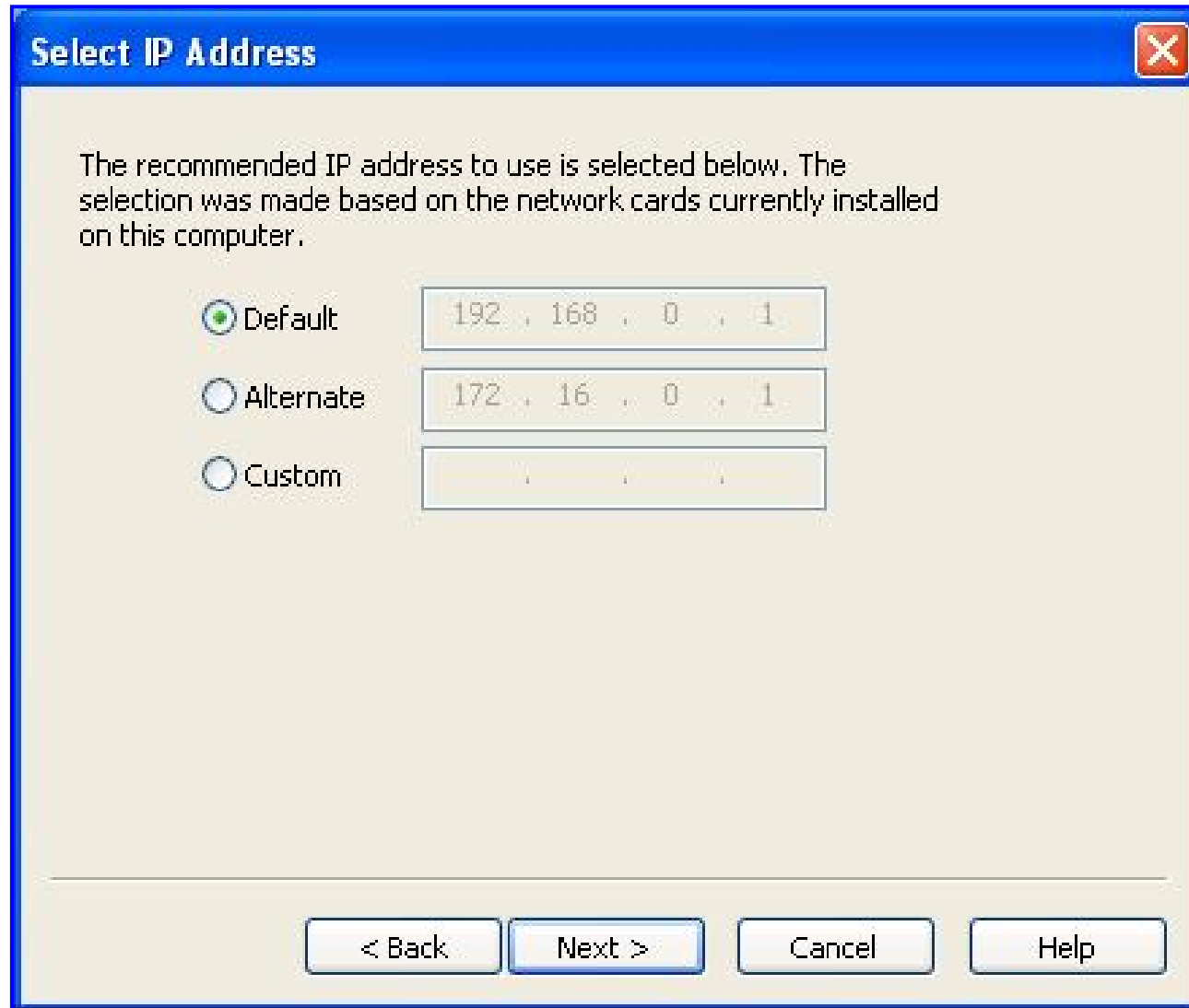
Configuring Waters DHCP Server-3



Configuring Waters DHCP Server-4



Configuring Waters DHCP Server-5



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

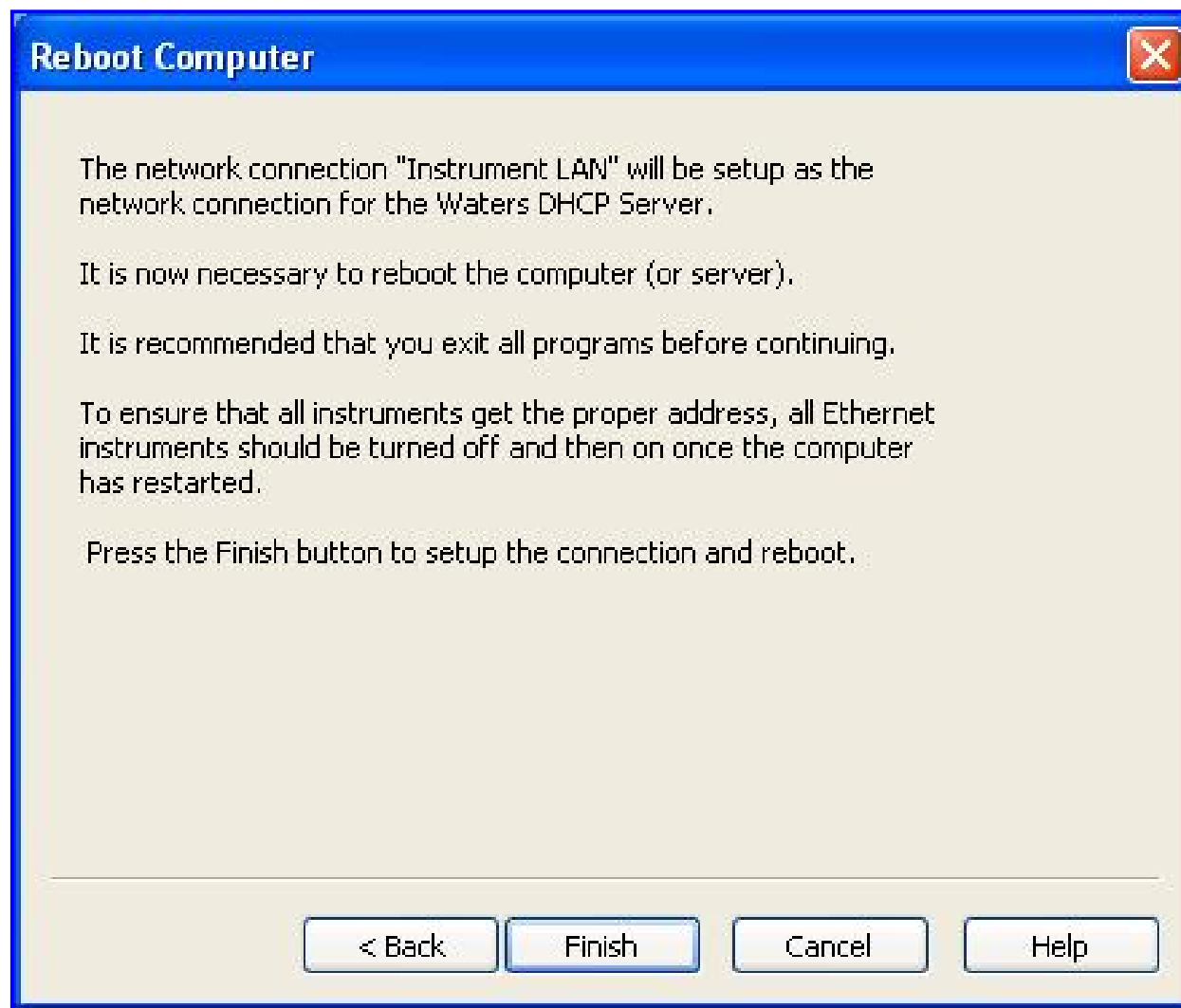
☐ Alternate 172 . 16 . 0 . 1

☐ Custom . . .

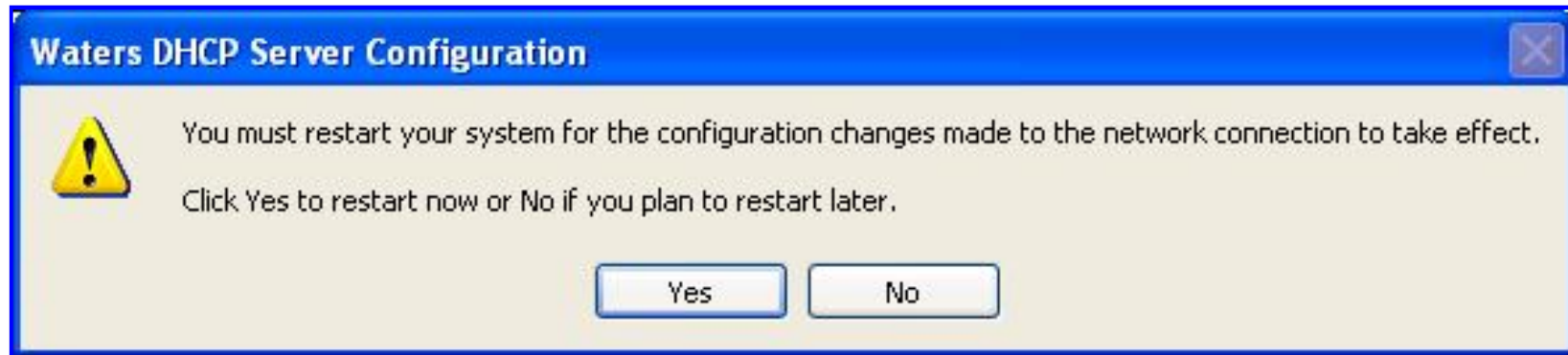
< Back Next > Cancel Help

Detailed description: This is a Windows-style dialog box titled "Select IP Address". It has a blue title bar with a close button (X) in the top right corner. The main area has a light beige background. It contains a paragraph of text explaining that the recommended IP address is selected based on installed network cards. Below this text are three radio button options: "Default", "Alternate", and "Custom". Each option is followed by an IP address field. The "Default" option is selected (radio button has a green dot) and shows the IP "192 . 168 . 0 . 1". The "Alternate" option shows "172 . 16 . 0 . 1". The "Custom" option shows four empty fields separated by dots. At the bottom of the dialog, there are four buttons: "< Back", "Next >", "Cancel", and "Help".

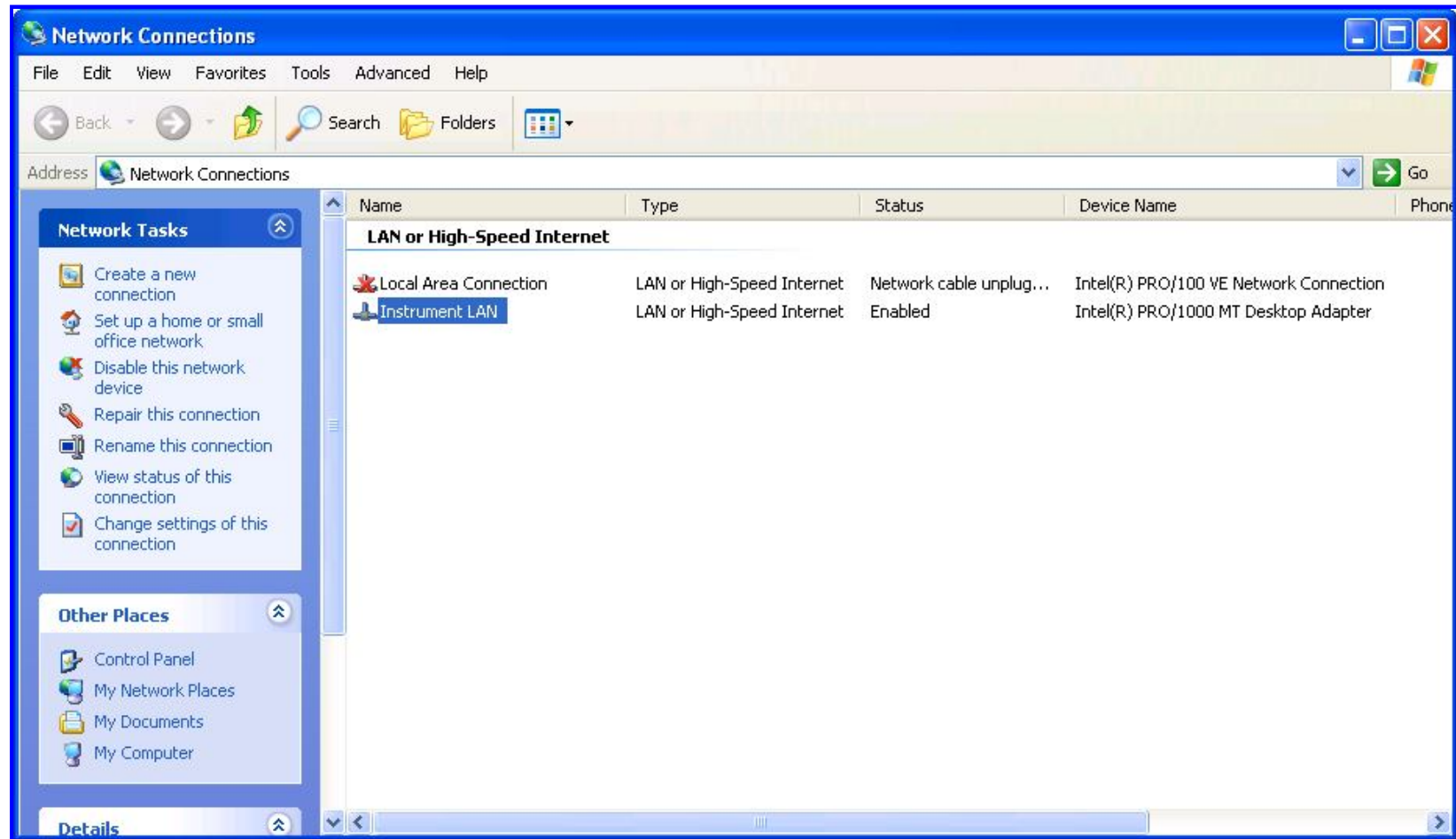
Configuring Waters DHCP Server-6



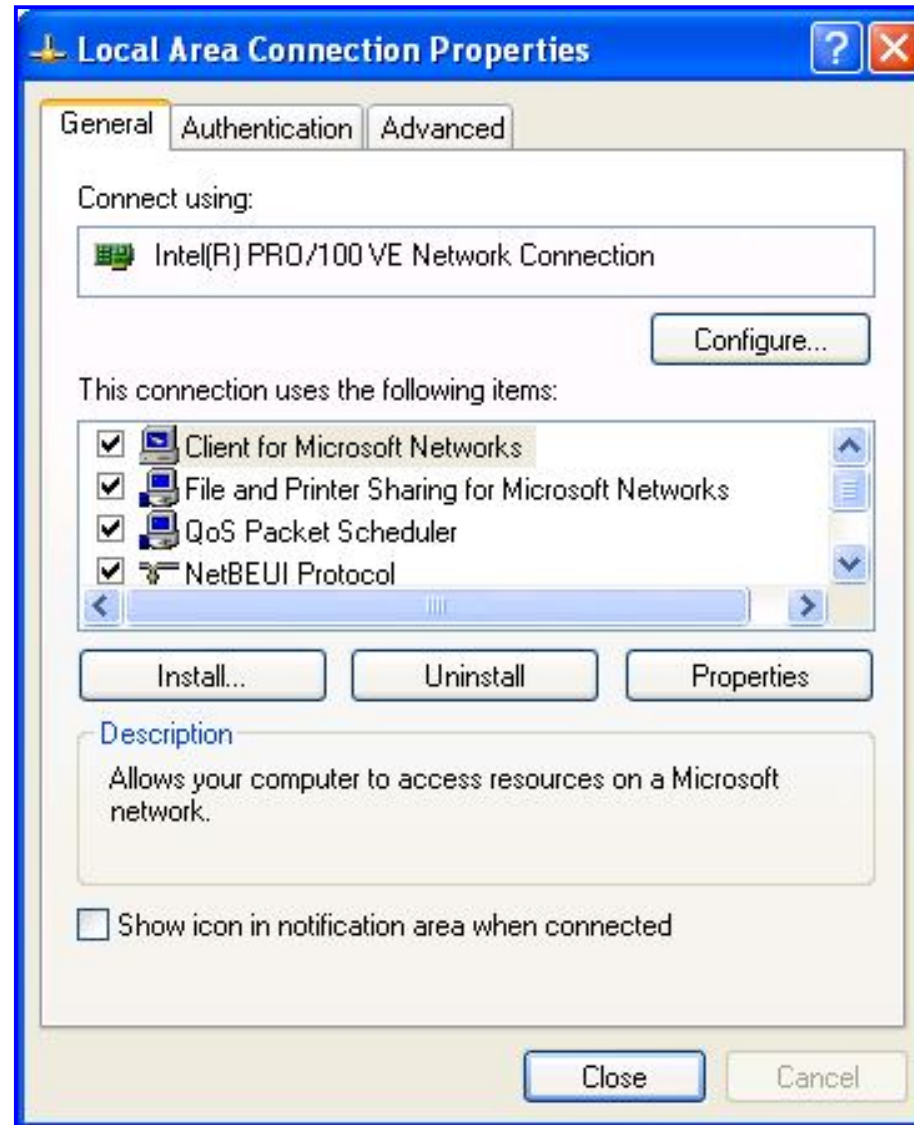
Configuring Waters DHCP Server-7



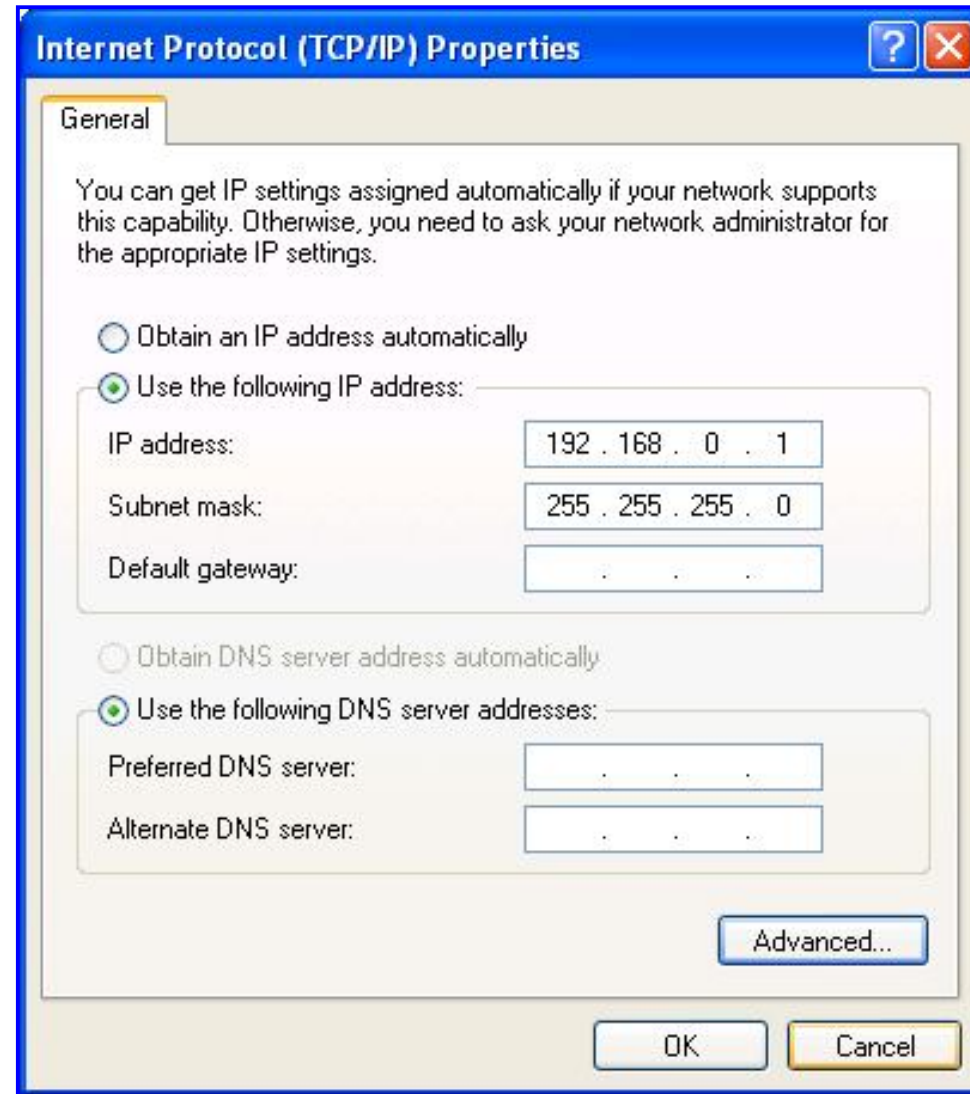
Configuring Waters DHCP Server-8



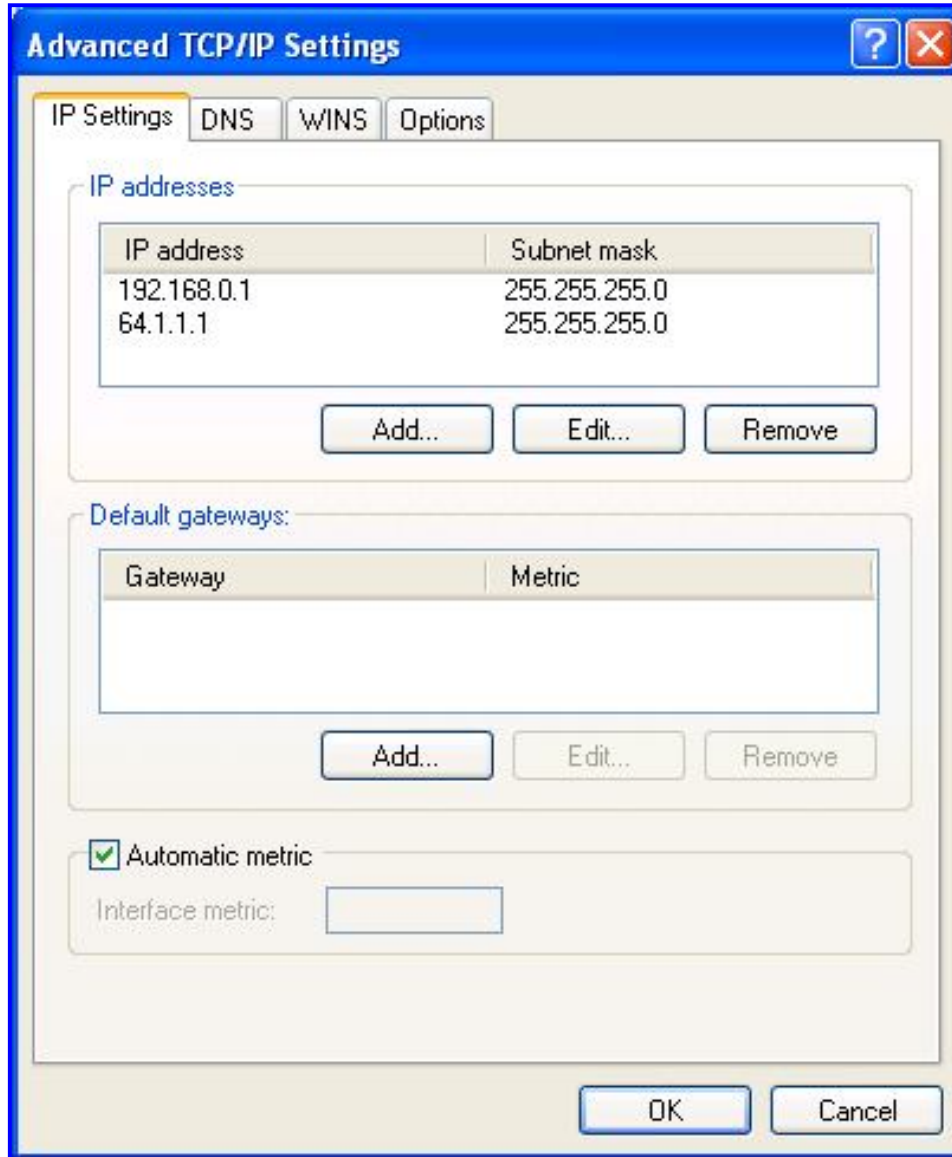
Checking DHCP Server Settings-1



Checking DHCP Server Settings-2



Checking DHCP Server Settings-3



The image shows a Windows XP-style dialog box titled "Advanced TCP/IP Settings". It has a blue title bar with a question mark icon and a close button. Below the title bar are four tabs: "IP Settings" (selected), "DNS", "WINS", and "Options".

Under the "IP Settings" tab, there is a section labeled "IP addresses" containing a table with two columns: "IP address" and "Subnet mask".

IP address	Subnet mask
192.168.0.1	255.255.255.0
64.1.1.1	255.255.255.0

Below the table are three buttons: "Add...", "Edit...", and "Remove".

Below the "IP addresses" section is a section labeled "Default gateways:" containing a table with two columns: "Gateway" and "Metric".

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

Below the table are three buttons: "Add...", "Edit...", and "Remove".

Below the "Default gateways:" section is a checkbox labeled "Automatic metric" which is checked. Below it is a label "Interface metric:" followed by an empty text input field.

At the bottom right of the dialog box are two buttons: "OK" and "Cancel".

Lab Exercise

- Select an ACQUITY system in the Lab
- MassLynx users
 - Uninstall the previous version of ACQUITY Instrument Driver if necessary
 - Install MassLynx v1.40 on your system and configure the inlet
 - Refer to the Installing MassLynx v4.1 procedure in Section 2 of the Exercise and Procedures training manual
- Empower users
 - Do an upgrade of the ACQUITY ICOP to version 1.40
 - Follow the install procedure supplied in the release notes
- Refer to Section 1 of the Exercise and Procedures training manual for install procedure.