WOODWARD

Application Note 51472
(Revision NEW, 3/2013)
Original Instructions
RESTRICTED—LIMITED DISTRIBUTION

MicroNet™ Plus Field Upgrade to Cyber Secure

Upgrade operating system/footprint from 5466-1036/6 to 5466-1045/6 in the field

General Precautions

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

Failure to follow instructions can cause personal injury and/or property damage.

Revisions

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www.woodward.com/publications

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Proper Use

Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.

Translated Publications

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The original source of this publication may have been updated since this translation was made. Be sure to check manual *26311* , *Revision Status & Distribution Restrictions of Woodward Technical Publications*, to verify whether this translation is up to date. Out-of-date translations are marked with ⚠. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Application Note 51472

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Warnings and Notices

Important Definitions

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- **DANGER**—Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**—Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**—Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

⚠WARNING

Overspeed / Overtemperature / Overpressure

The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.

The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.

⚠WARNING

Personal Protective Equipment

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- **Eye Protection**
- **Hearing Protection**
- **Hard Hat**
- **Gloves**
- **Safety Boots**
- **Respirator**

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

⚠WARNING

Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

⚠WARNING

Automotive Applications

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

NOTICE

Battery Charging Device

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

Electrostatic Discharge Awareness

NOTICE

Electrostatic Precautions

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- **Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).**
- **Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.**
- **Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.**

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual *82715*, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
   - Do not touch any part of the PCB except the edges.
   - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
   - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Chapter 1.
General Information

Introduction

This procedure describes the steps necessary to upgrade the operating system and footprint on a MicroNet Plus 5466-1035 or MicroNet Plus RTN 5466-1036 to that of a Cyber Secure MicroNet Plus 5466-1045 or Cyber Secure MicroNet Plus RTN 5466-1046. This is intended for Woodward personnel only and should not be distributed to customers.

Prerequisites

The MicroNet Plus being upgraded to Cyber Secure must have the part number 5466-1035 revision F or greater for non-RTCNet use. For use RTCNet use the revision must be J or greater. The same revision restrictions hold true for an RTN.

Reference

- MicroNet Plus CPU PCBA DWG – 801-1200
- MicroNet Plus CPU PCBA Schematic – 901-1200
- Cyber-Enabled and Cyber-Secure MicroNet Plus CPU/RTN PLD, FPGA, and OS Programming – TSP-14696
- Cyber-Enabled and Cyber-Secure MicroNet Plus CPU TSP-14697
- Guide for Handling & Protection of Electronic Controls – Manual 82715

Chapter 2.
Required Tools

General

The following are required to perform the upgrade of a MicroNet Plus CPU to Cyber Secure.

- PC with USB 2.0 and Windows XP or Windows 7 operating system
  - Wind River driver is currently only 32 bit compatible
- MicroNet Plus Chassis for power supply
- AppManager
- HyperTerminal
  - This is not native to Windows 7 but can be copied from an XP machine.
- ESD Wrist Strap

FPGA Upgrade

- XILINX Platform Cable USB II
  - Model: DLC10
- Xilinx_LabTools_14.4_P.49d.3.0
- Customized XILINX adapter cable.
  - Able to connect to J8 – JTAG Programming Connector on board. Terminations per 901-1200 Sheet 11.
- 5418-2632
  - PwrFan_Monitor26.jed
  - Check BOM and EFMS for correct version.
- 5418-6171
  - FPGA 5418-6171.OBJ_NEW.mcs
  - Check BOM and EFMS for correct version.

VxWorks BDM Operating System Upgrade Image Upgrade

- Wind River Probe
- Wind River On-Chip Debugging API 3.5 and Wind River On-Chip Debugging Utility 2.3 CD or .iso
- Files
  - Install.txt
  - Eagle_Micronet_OCD_Win7.reg
  - For a Windows XP computer: Eagle_Micronet_OCD.reg
- Active network or VPN connection to the Woodward internal network. This connection must remain active whenever using the Wind River Probe.
  - If using a virtual machine you must change the settings for the network adapter to “NAT: Used to share the host’s IP address”.
- 5418-4082
  - Image of Micronet+ PPC 5200 Cyber 5418-4082IMG_C.bin
  - Check BOM and EFMS for correct version.

IMPORTANT **Ensure proper revision in WISE and EFMS.**

Chapter 3.
PC Software Installation

Introduction

The PC software installation is divided into 2 parts. The installation of the XILINX program for updating the FPGA and the installation of the Wind River program for updating the operating system on the MicroNet Plus CPU.

XILINX

1. Run “xsetup.exe” from the Xilinx_LabTools_14.4_P.49d.3.0 folder.
2. Accept user agreements and install in the default locations.

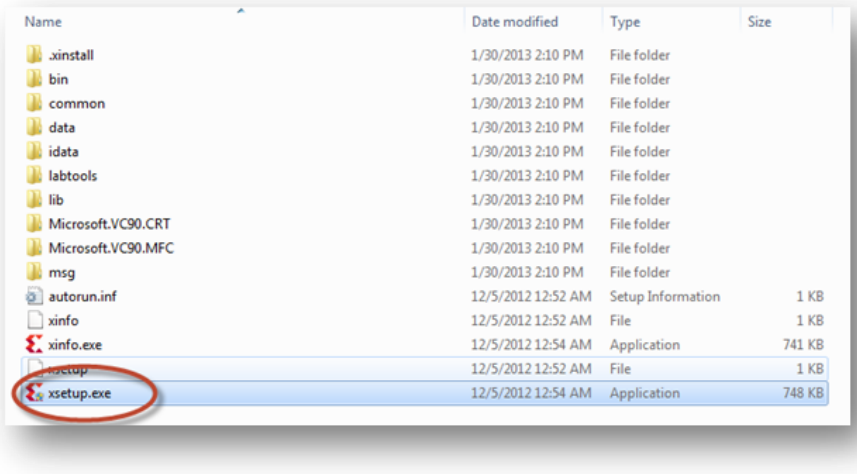


Figure 3-1. XILINX Software Installation

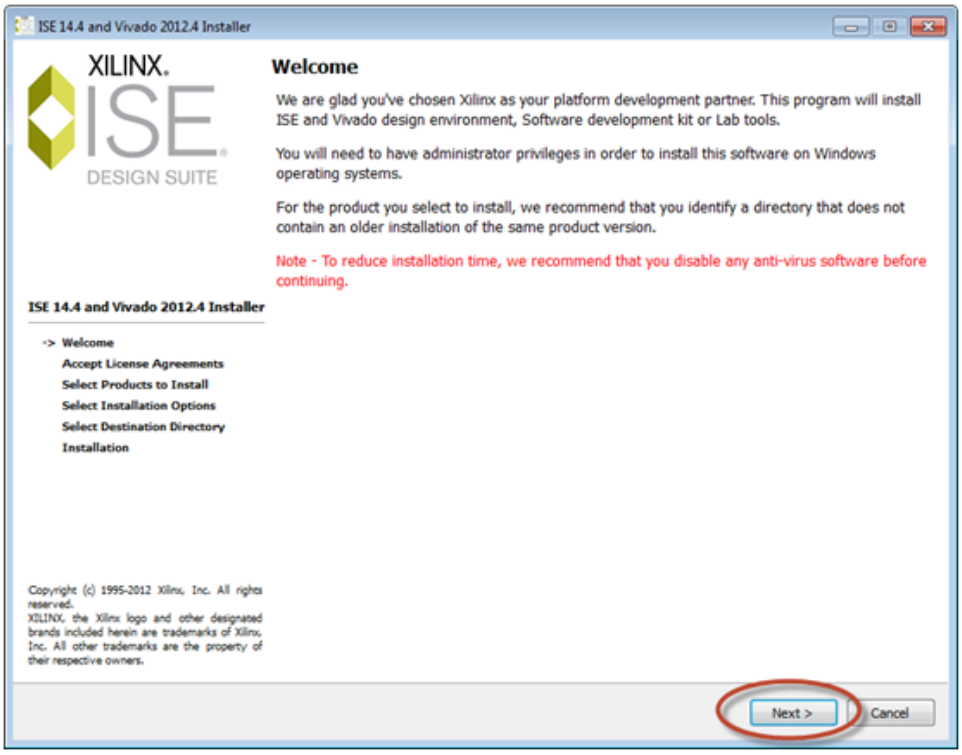


Figure 3-2. XILINX Software Installation

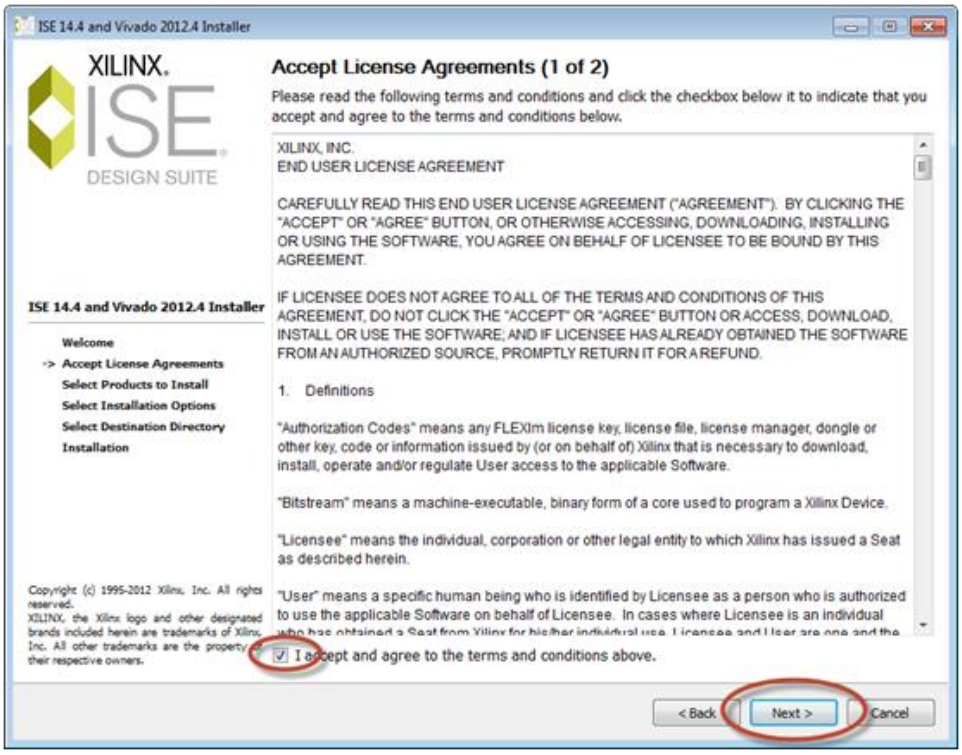


Figure 3-3. XILINX Software Installation

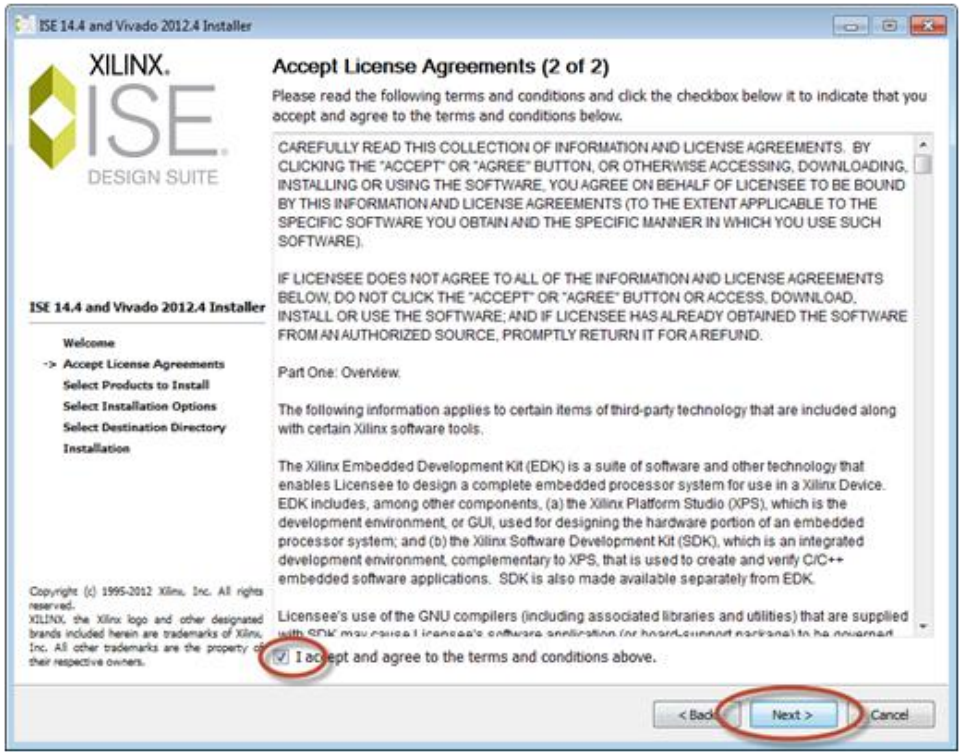


Figure 3-4. XILINX Software Installation

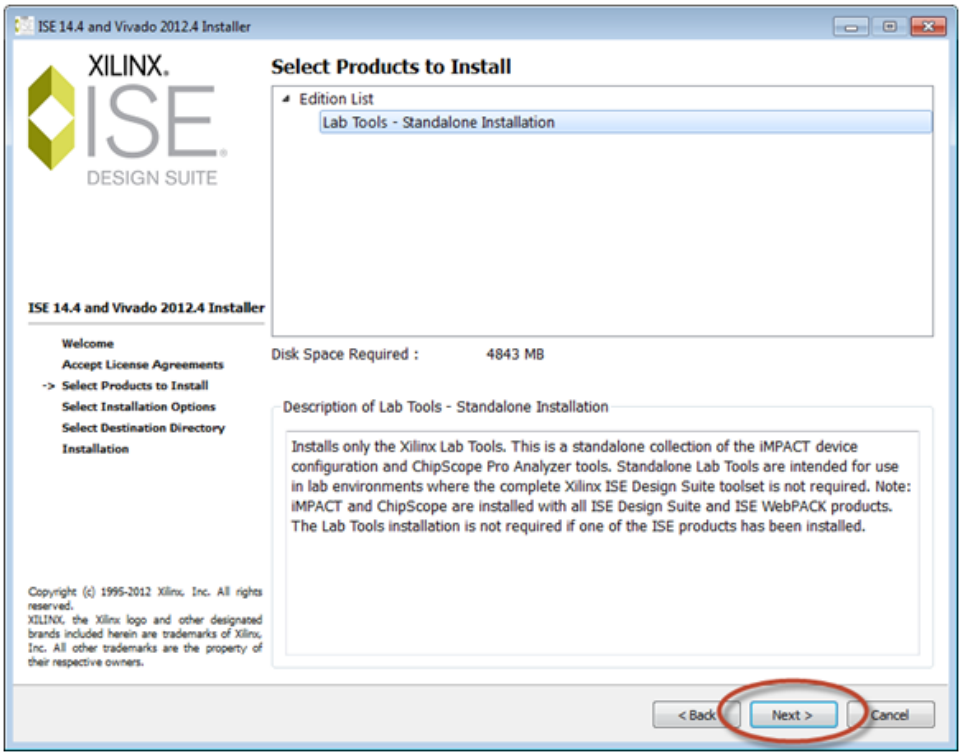


Figure 3-5. XILINX Software Installation

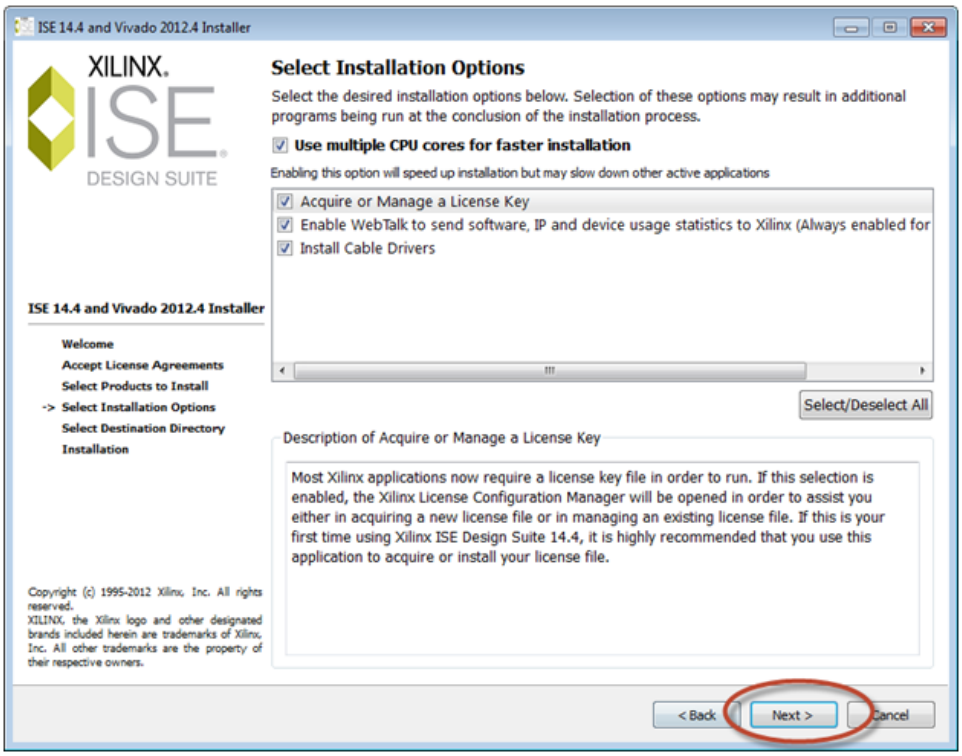


Figure 3-6. XILINX Software Installation

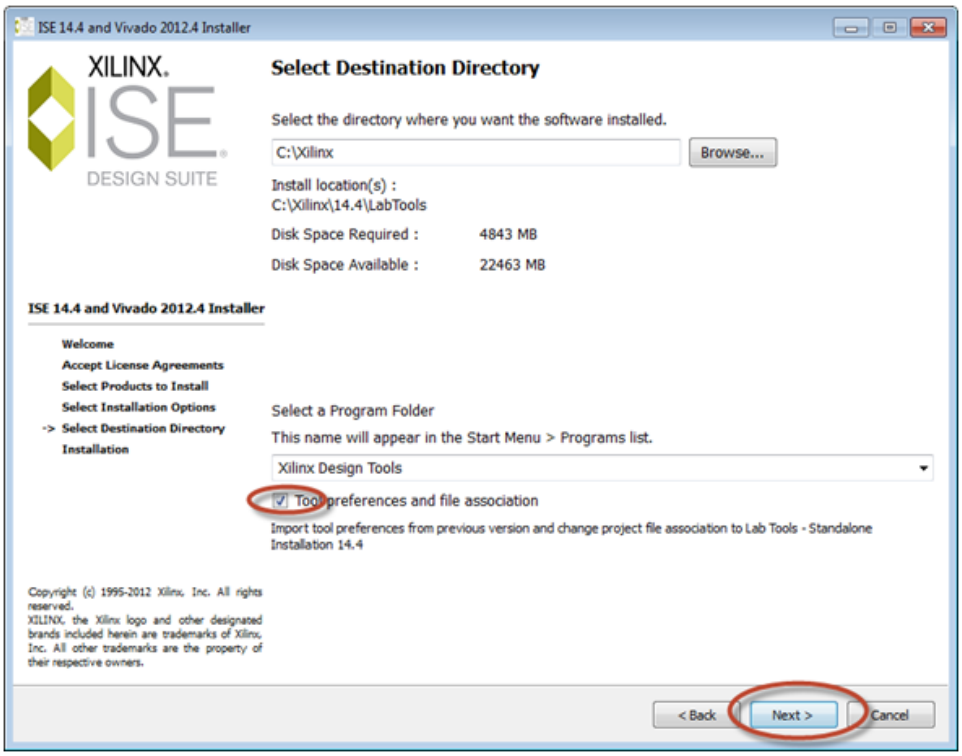


Figure 3-7. XILINX Software Installation

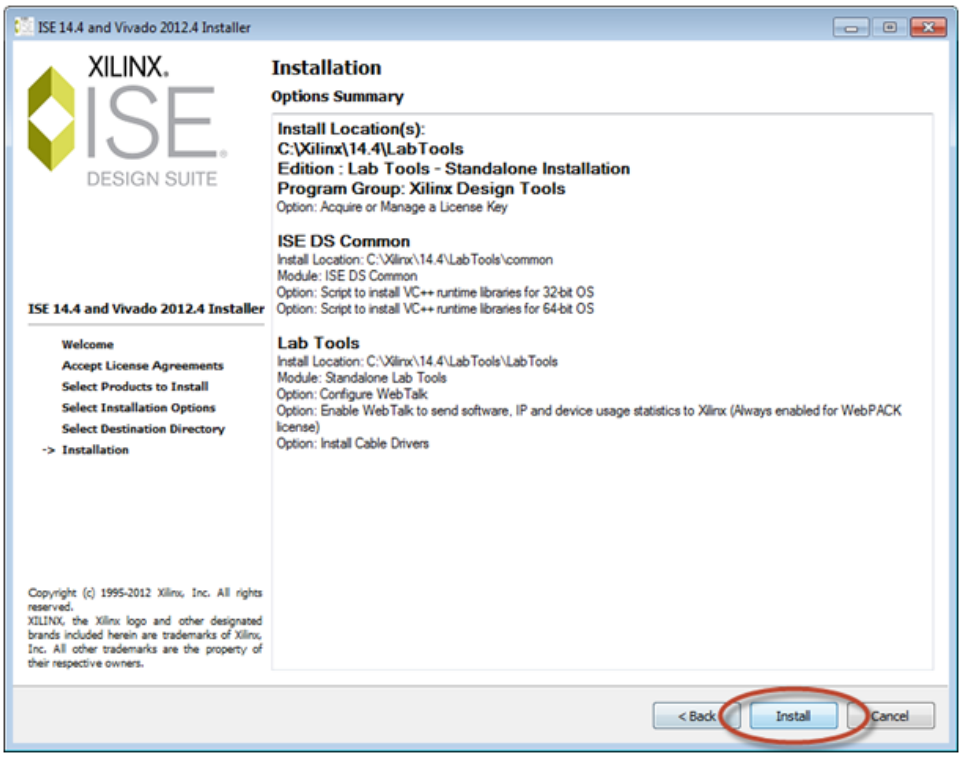


Figure 3-8. XILINX Software Installation

Figure 3-9. XILINX Software Installation

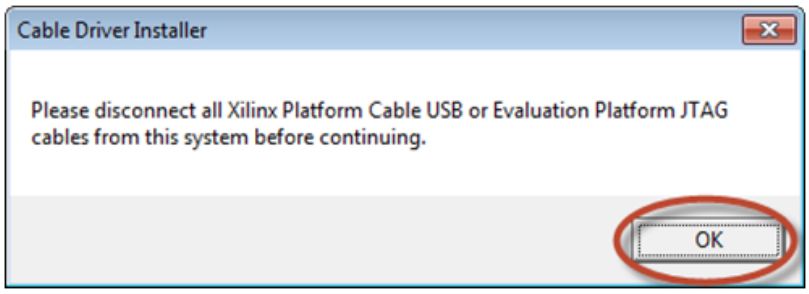


Figure 3-10. XILINX Software Installation

Figure 3-11. XILINX Software Installation

Figure 3-12. XILINX Software Installation

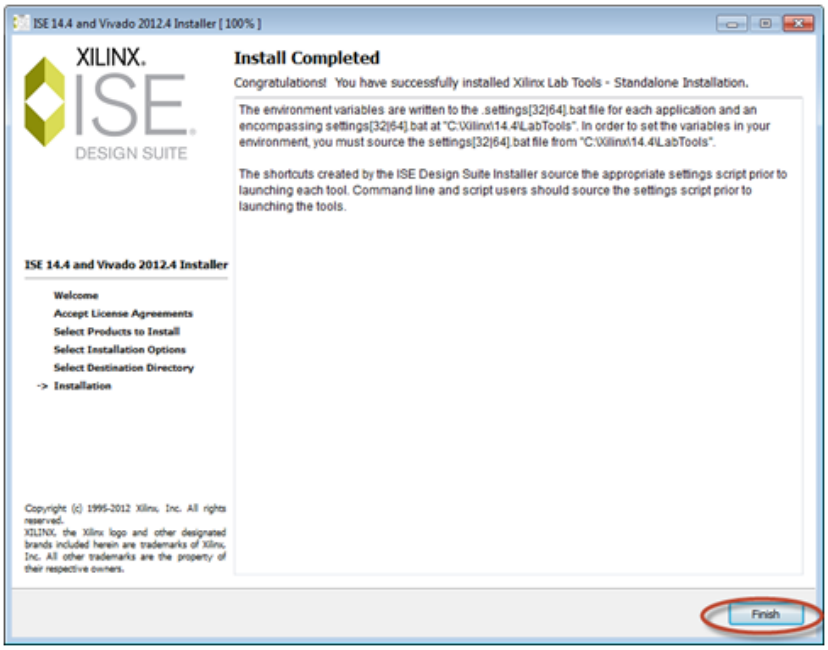


Figure 3-13. XILINX Software Installation

3. Select The Free License option and follow the instructions to register on the website. A license file will be emailed with instructions on how to install.

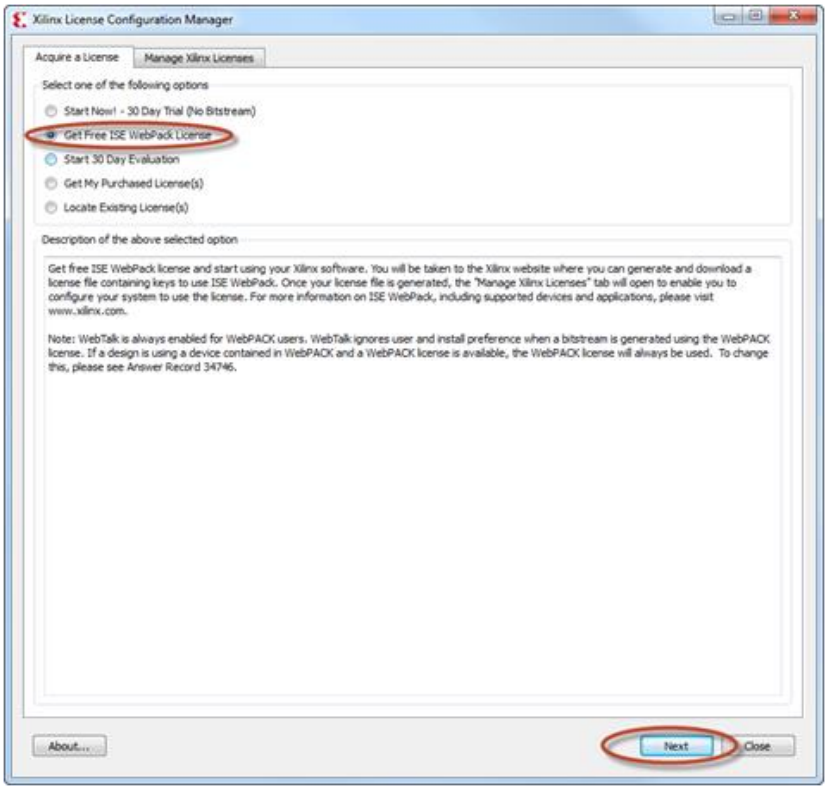


Figure 3-14. XILINX Software Licensing

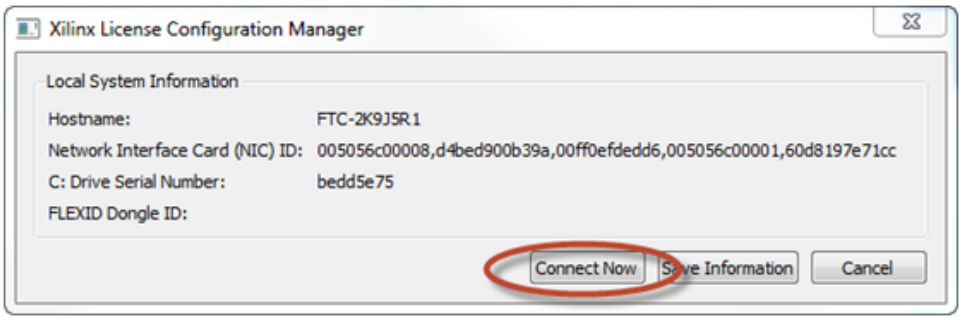


Figure 3-15. XILINX Software Licensing

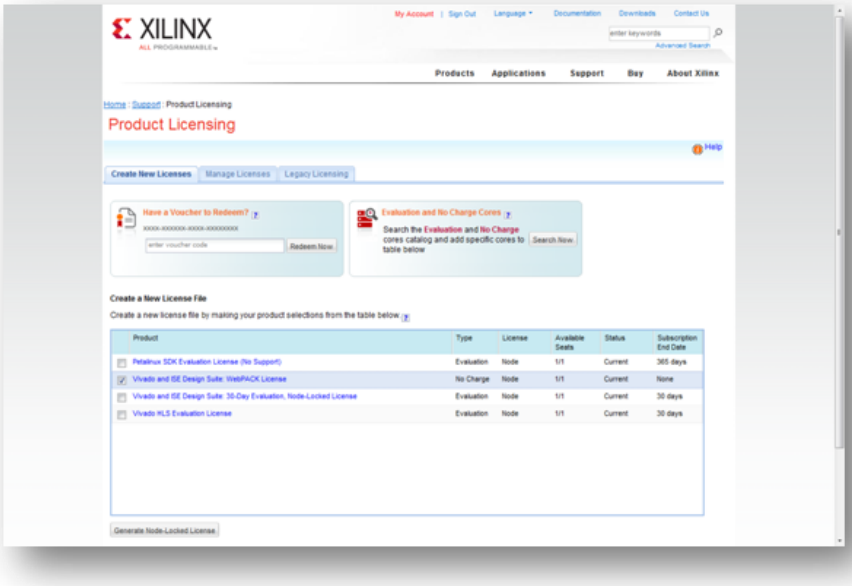
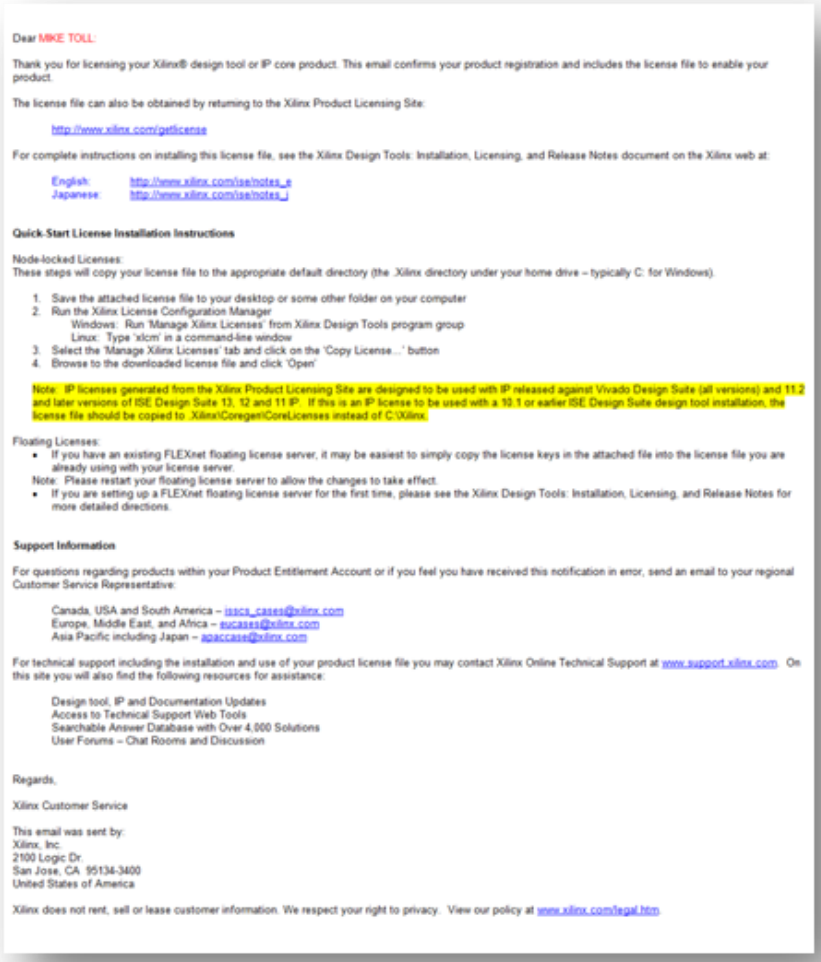


Figure 3-16. XILINX Software Licensing



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Thank you for licensing your Xilinx® design tool or IP core product. This email confirms your product registration and includes the license file to enable your product.

The license file can also be obtained by returning to the Xilinx Product Licensing Site:

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For complete instructions on installing this license file, see the Xilinx Design Tools: Installation, Licensing, and Release Notes document on the Xilinx web at:

English: http://www.xilinx.com/ise/notes_e
Japanese: http://www.xilinx.com/ise/notes_j

Quick-Start License Installation Instructions

Node-locked Licenses:
These steps will copy your license file to the appropriate default directory (the .Xilinx directory under your home drive – typically C: for Windows).

1. Save the attached license file to your desktop or some other folder on your computer
2. Run the Xilinx License Configuration Manager
   Windows: Run 'Manage Xilinx Licenses' from Xilinx Design Tools program group
   Linux: Type 'xlcm' in a command-line window
3. Select the 'Manage Xilinx Licenses' tab and click on the 'Copy License...' button
4. Browse to the downloaded license file and click 'Open'

Note: IP licenses generated from the Xilinx Product Licensing Site are designed to be used with IP released against Vivado Design Suite (all versions) and 11.2 and later versions of ISE Design Suite 13, 12 and 11 IP. If this is an IP license to be used with a 10.1 or earlier ISE Design Suite design tool installation, the license file should be copied to .Xilinx\Coregen\CoreLicenses instead of C:\Xilinx.

Floating Licenses:
- If you have an existing FLEXnet floating license server, it may be easiest to simply copy the license keys in the attached file into the license file you are already using with your license server.

Note: Please restart your floating license server to allow the changes to take effect.
- If you are setting up a FLEXnet floating license server for the first time, please see the Xilinx Design Tools: Installation, Licensing, and Release Notes for more detailed directions.

Support Information

For questions regarding products within your Product Entitlement Account or if you feel you have received this notification in error, send an email to your regional Customer Service Representative:

Canada, USA and South America – issca_cases@xilinx.com
Europe, Middle East, and Africa – eucases@xilinx.com
Asia Pacific including Japan – apaccase@xilinx.com

For technical support including the installation and use of your product license file you may contact Xilinx Online Technical Support at www.support.xilinx.com. On this site you will also find the following resources for assistance:

Design tool, IP and Documentation Updates
Access to Technical Support Web Tools
Searchable Answer Database with Over 4,000 Solutions
User Forums – Chat Rooms and Discussion

Regards,

Xilinx Customer Service

This email was sent by:
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San Jose, CA 95134-3400
United States of America

Xilinx does not rent, sell or lease customer information. We respect your right to privacy. View our policy at www.xilinx.com/legal.htm

Figure 3-17. XILINX Software Licensing

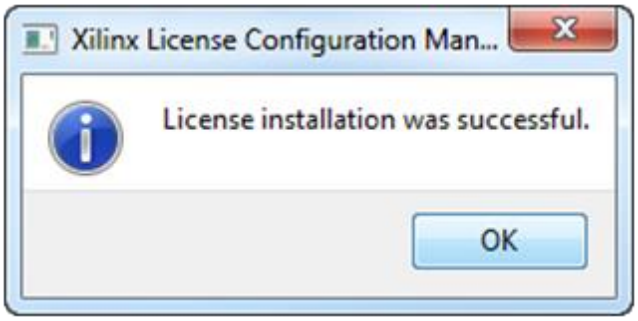

Figure 3-18. XILINX Software Licensing

Wind River On-Chip Debugging API and Utility

Currently this utility in NOT 64 bit compatible.

1. Run the CD or .iso “Wind River On-Chip Debugging API 3.5 and Utility 2.3”
2. Install to default locations and accept agreements.
3. Select “Permanent activation” and point the file “install.txt” included.

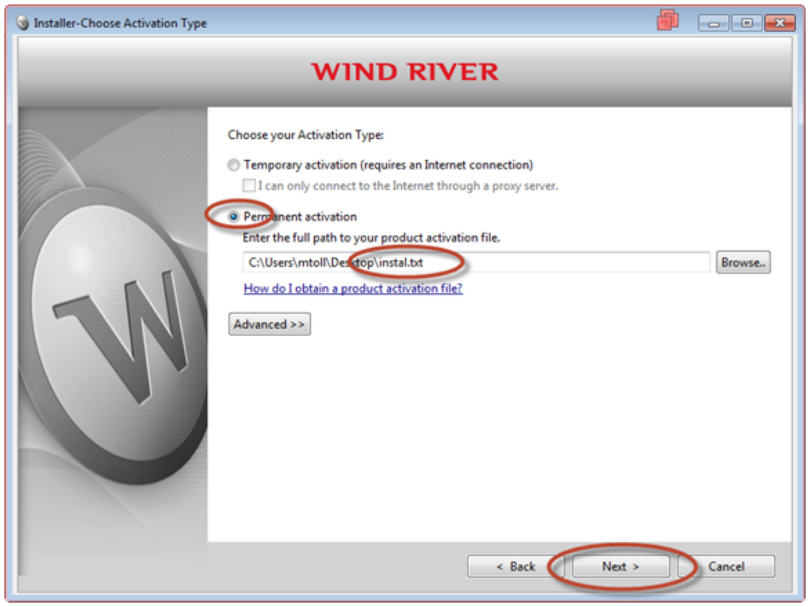

Figure 3-19. Wind River Software Installation

4. Select Standard installation.
5. Wind River On-Chip Debugging API 3.5 and Wind River On-Chip Debugging Utility 2.3 will be installed.
   - Install LabVIEW components to the default locations.

Figure 3-20. Wind River Software Installation

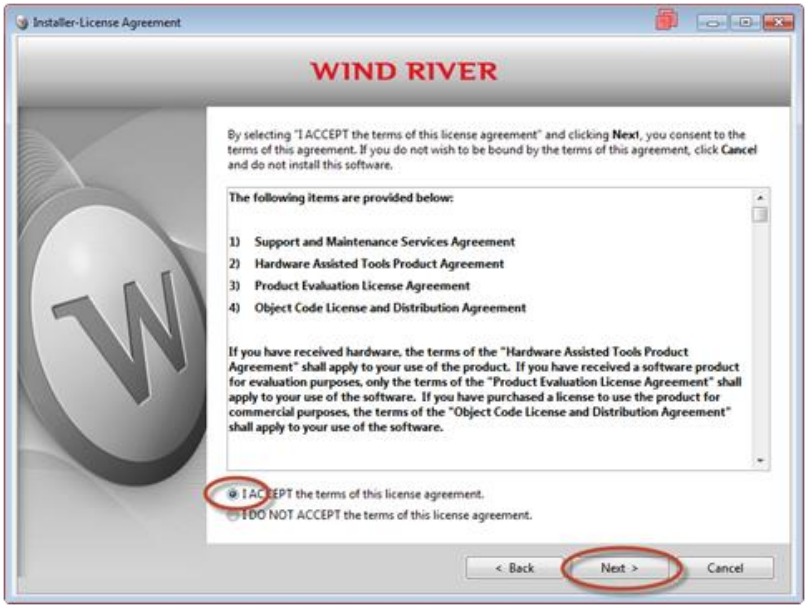

Figure 3-21. Wind River Software Installation

Figure 3-22. Wind River Software Installation

Figure 3-23. Wind River Software Installation

Figure 3-24. Wind River Software Installation

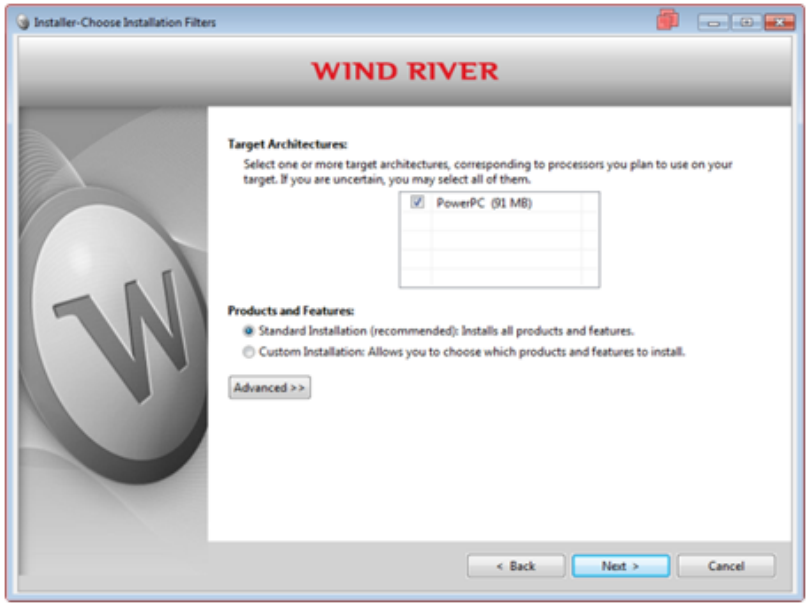

Figure 3-25. Wind River Software Installation

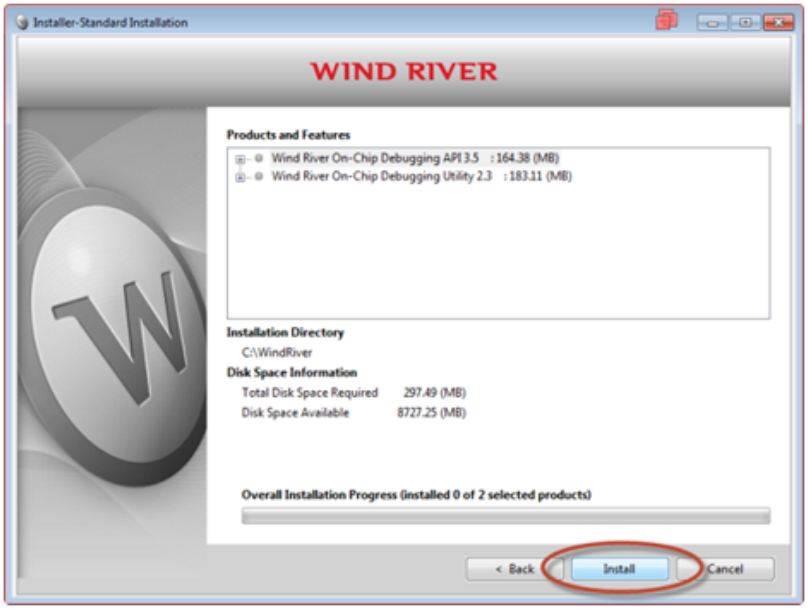

Figure 3-26. Wind River Software Installation

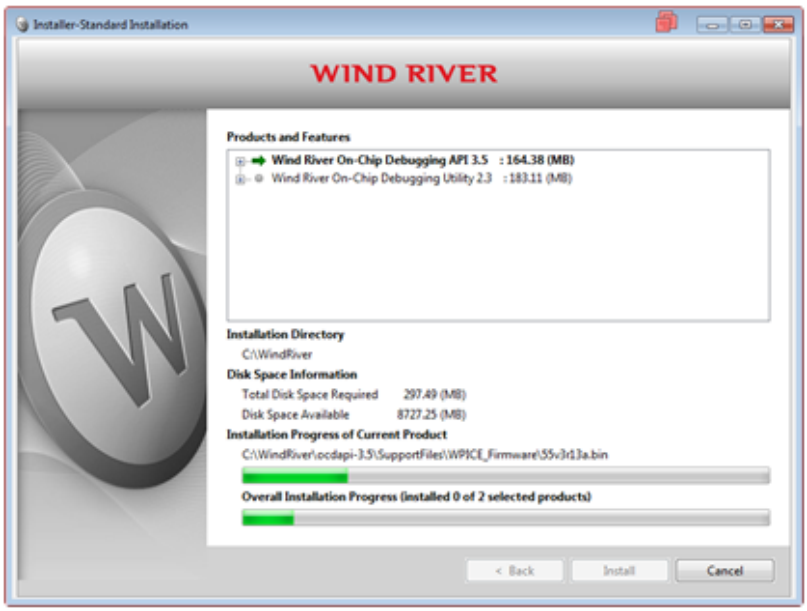

Figure 3-27. Wind River Software Installation

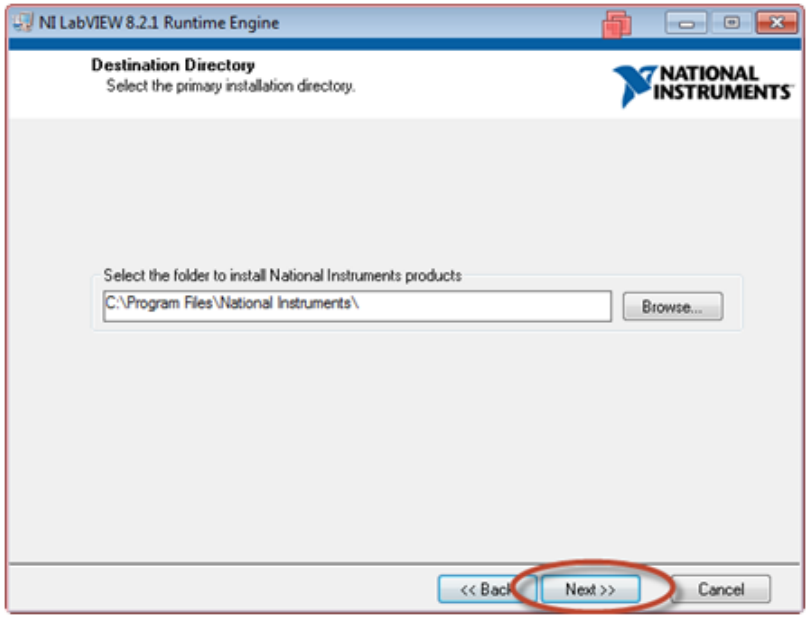

Figure 3-28. Wind River Software Installation

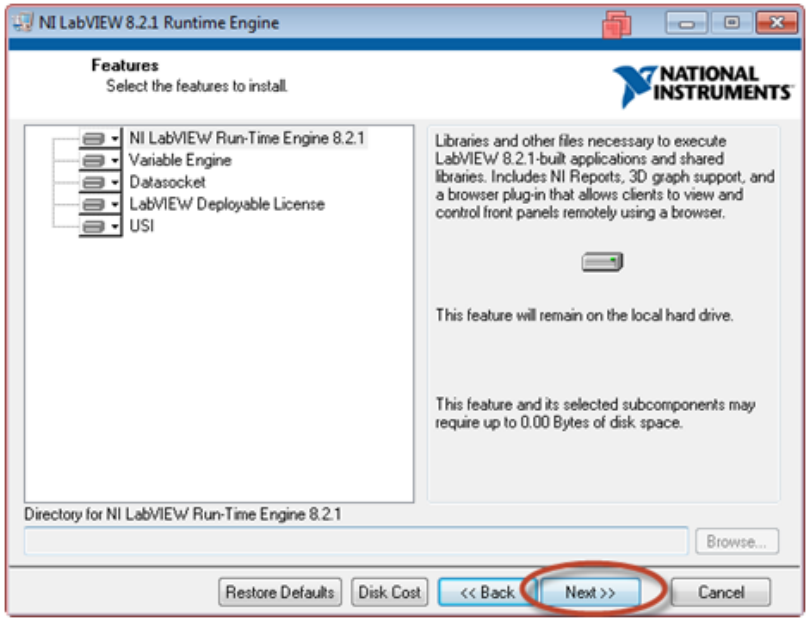

Figure 3-29. Wind River Software Installation

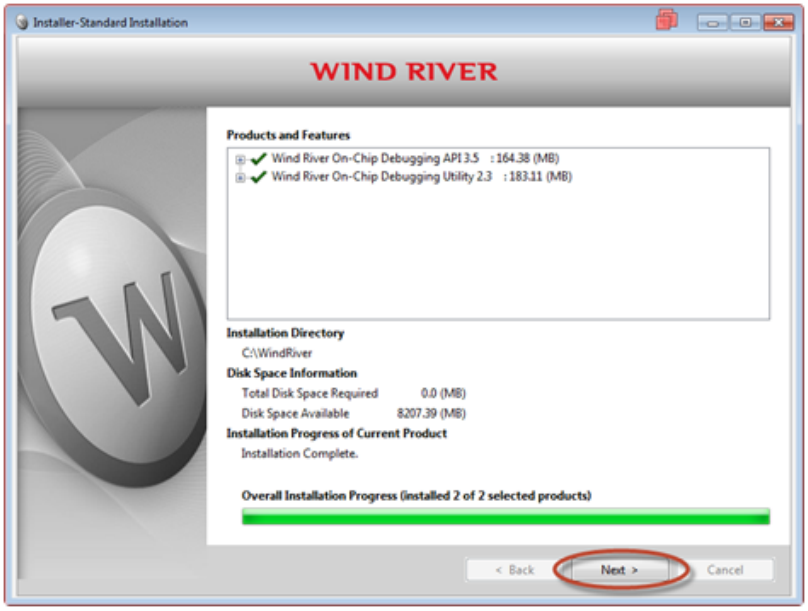

Figure 3-30. Wind River Software Installation

Figure 3-31. Wind River Software Installation

6. Edit Environmental Variables to point to the license server on the Woodward network.
   - Create a new System variable with the following properties.
     - Variable name: LM_License_File
     - Variable value: 27000@FTC-18WYDN1
     - The current location of the license server on the Woodward network is on the computer FTC-18WYDN1.

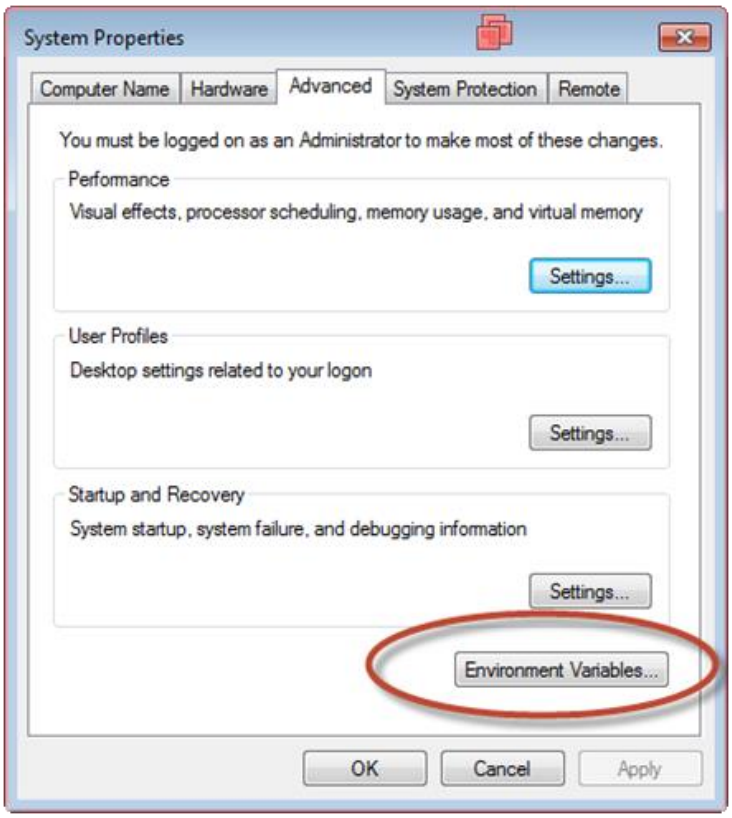

Figure 3-32. Wind River Floating License Setup

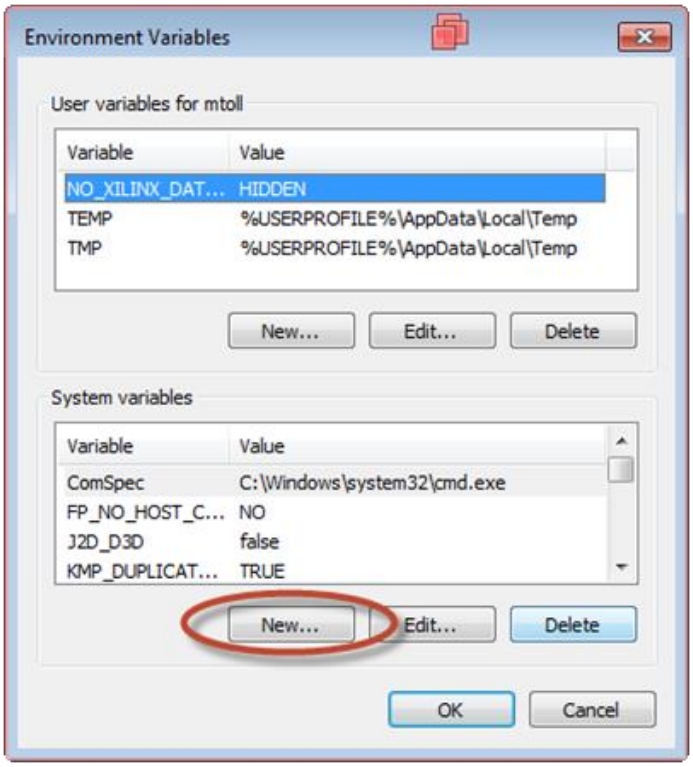

Figure 3-33. Wind River Floating License Setup

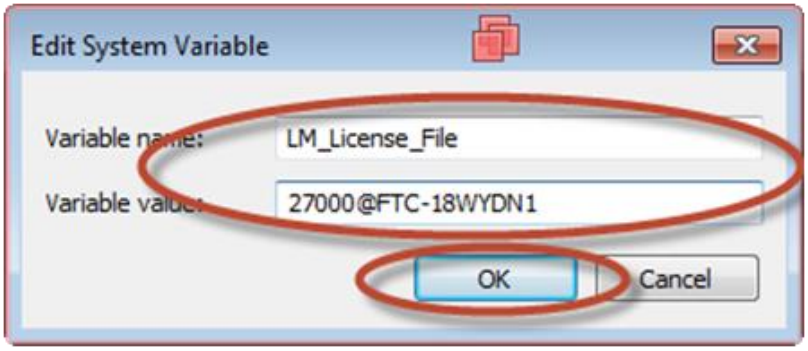

Figure 3-34. Wind River Floating License Setup

7. Load the registry file **Eagle_Micronet_OCD_Win7.reg** from the PC to the probe.
   - Connect the Wind River Probe to the PC.
   - Start the program Wind River OCD Utility.
   - Select the CF icon to configure a new connection. This can be saved and accessed again using the Connect/Attach icon nest to the CF icon.
     - Family Architecture: PPC5XXX
     - CPU: MPC5200
     - Emulator: WindRiverProbe
     - Board Descriptor: C:\WindRiver\ocdapi-3.5\SupportFiles\BoardFiles\PowerPC\5xxx\Generic\Generic_MPC5200.brd

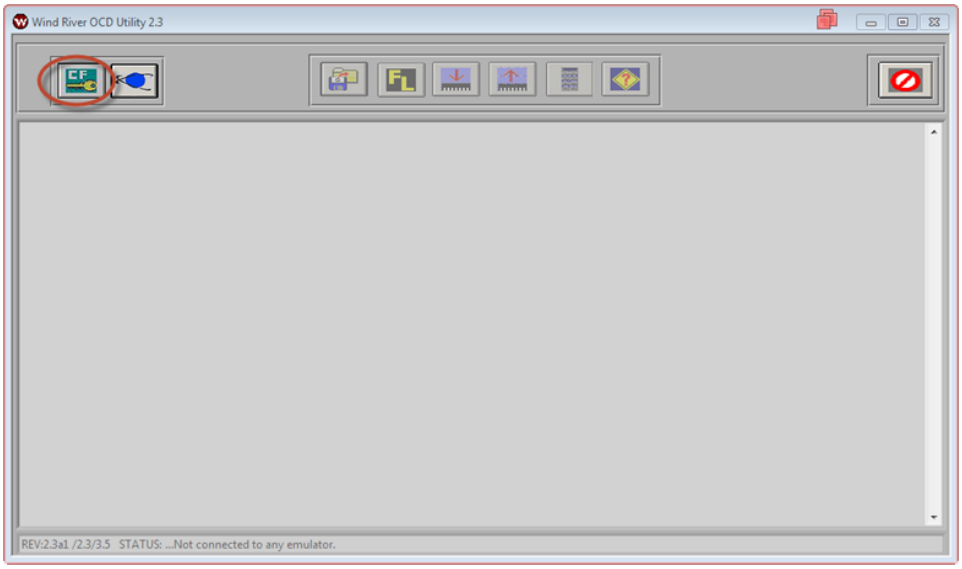

Figure 3-35. Wind River Registry Configuration

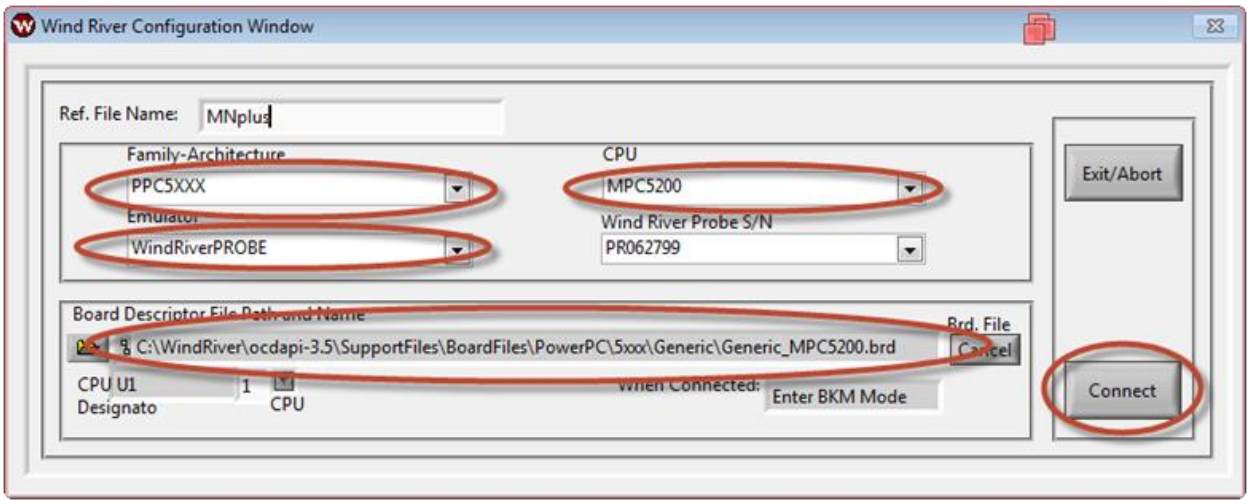

Figure 3-36. Wind River Registry Configuration

- If there is no valid connection to the Woodward license server then the S/N for the probe will not populate and you will receive an error when you select connect.

8. Select the Record/Playback icon.

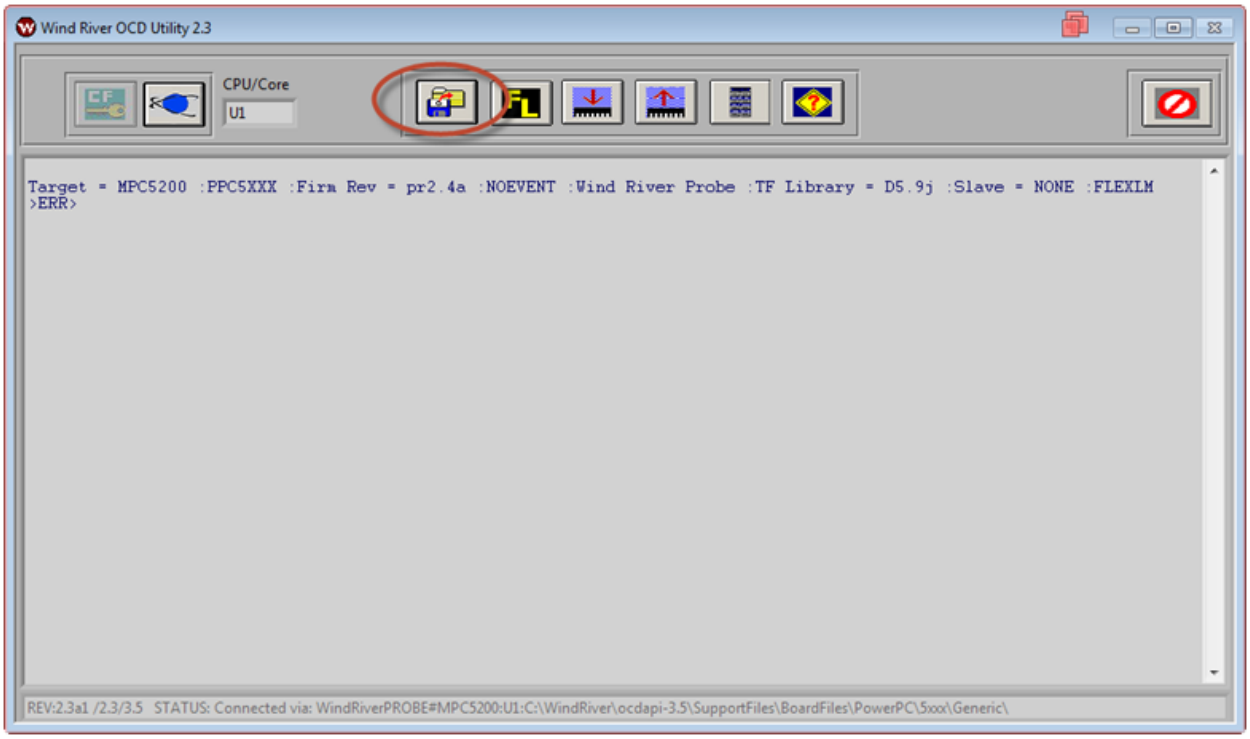

Figure 3-37. Wind River Registry Configuration

9. Select Browse on the Playback option and navigate to the file **Eagle_Micronet_OCD_Win7.reg** if using Windows 7. For *Windows XP* use **Eagle_Micronet_OCD.reg**
   - Select Play for the Playback option.
   - Select Exit/Return.
     - The main screen should show data streaming to the probe.
     - At completion the main screen will return to the ERR or BKM prompt.

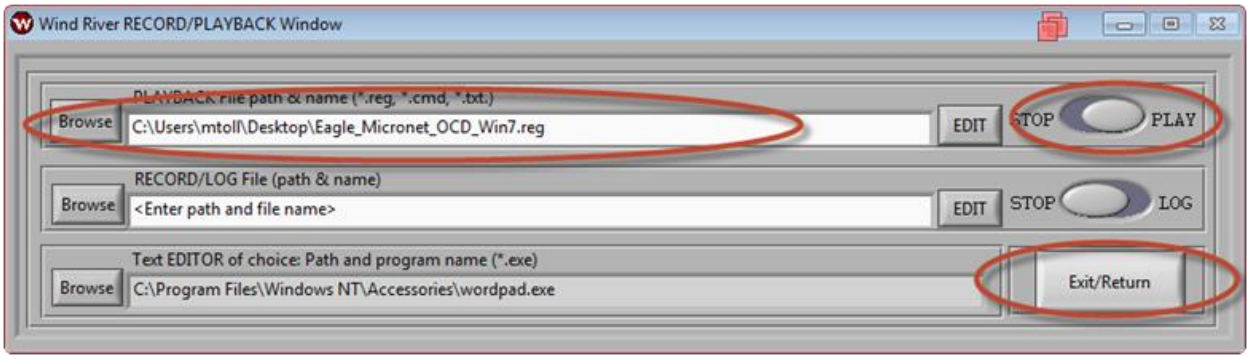

Figure 3-38. Wind River Registry Configuration

10. The probe is now installed and ready to use.

Chapter 4.
MicroNet Plus Upgrade

Introduction

Prior to upgrading the CPU record the current information about the CPU from AppManager. This can be done with a screen capture of the Control Information.

If connecting to an RTN CPU, use “Manage Real Time Network CPUs for the current control” feature in AppManager to access information on the RTN CPU.

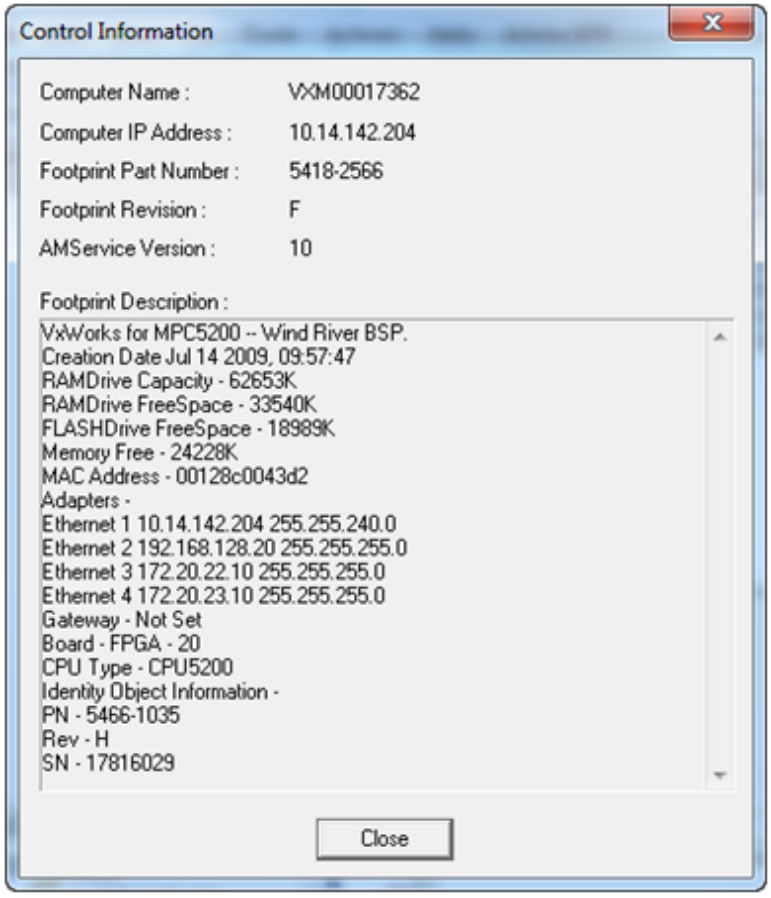

Figure 4-1. MicroNet Plus Upgrade, Control Information

IMPORTANT **Download tunables and record other items saved on the control such as counters from the NV_LOG.**

FPGA Upgrade

1. Remove input power to the MicroNet chassis.
2. Remove dust cover from MicroNet Plus CPU.
   - Follow ESD procedures and use an ESD Wrist Strap.
3. Remove enough modules to the left of the CPU slot as necessary to access the CPU board and use cables connected to the JTAG ports.
4. Connect the customized XILINX adapter cable to JTAG port J8

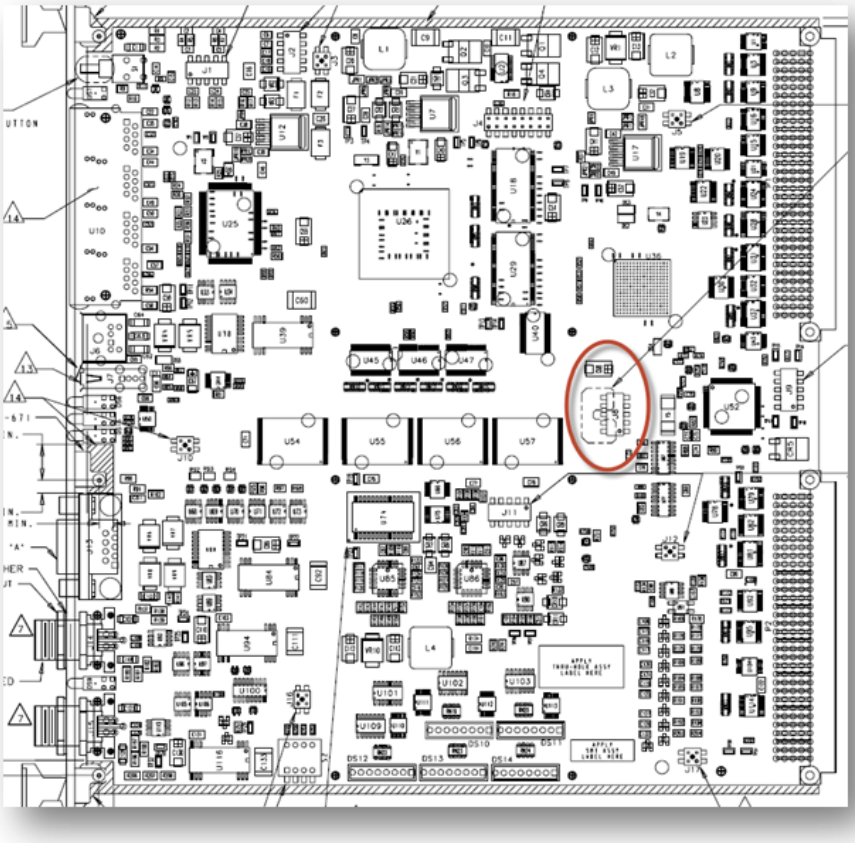

Figure 4-2. MicroNet Plus Upgrade, Board Layout J8

5. Insert MicroNet Plus CPU into chassis. Energize power to the chassis.
6. Run the XILINX program “iMPACT” from the Start menu.

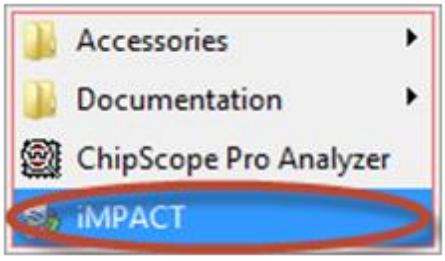

Figure 4-3. MicroNet Plus Upgrade, XILINX

7. Select “NO” and “Cancel ”when prompted.

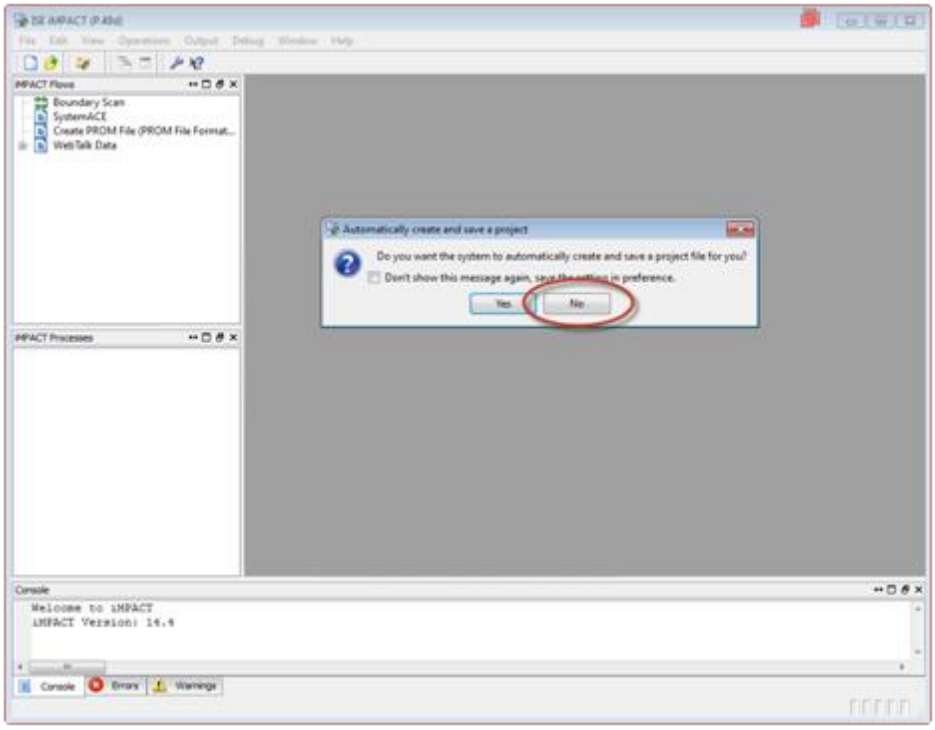

Figure 4-4. MicroNet Plus Upgrade, FPGA with XILINX

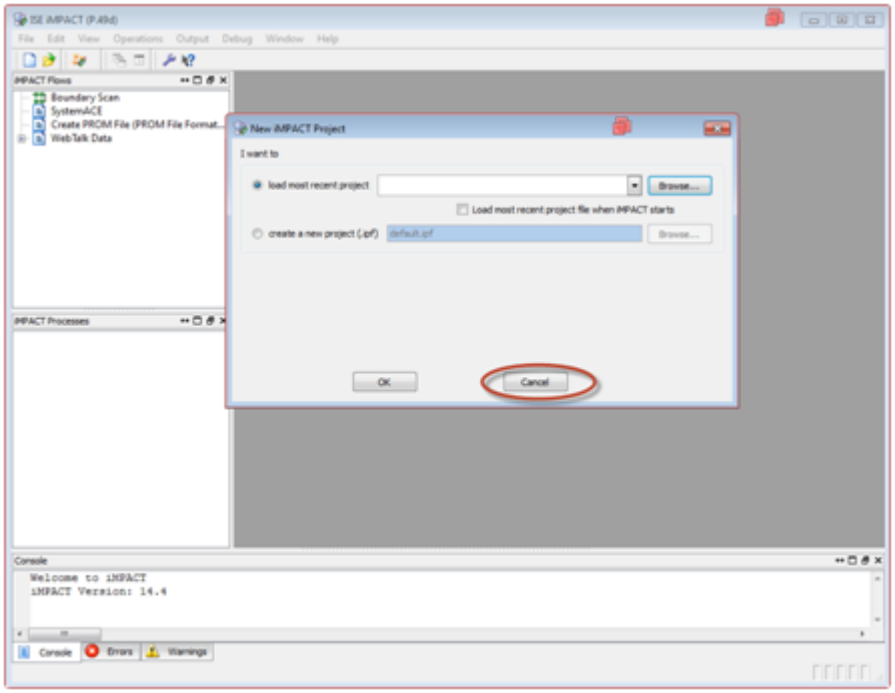

Figure 4-5. MicroNet Plus Upgrade, FPGA with XILINX

8. Select “Boundary Scan” from the left window.

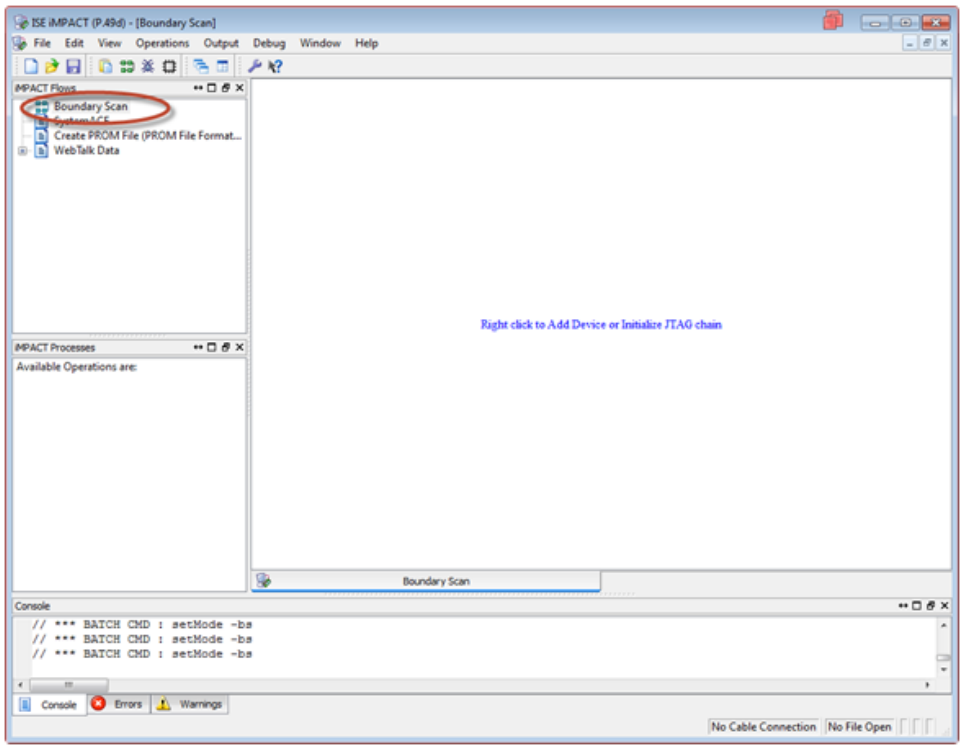

Figure 4-6. MicroNet Plus Upgrade, FPGA with XILINX

9. Right click in the main window and select “initialize Chain”

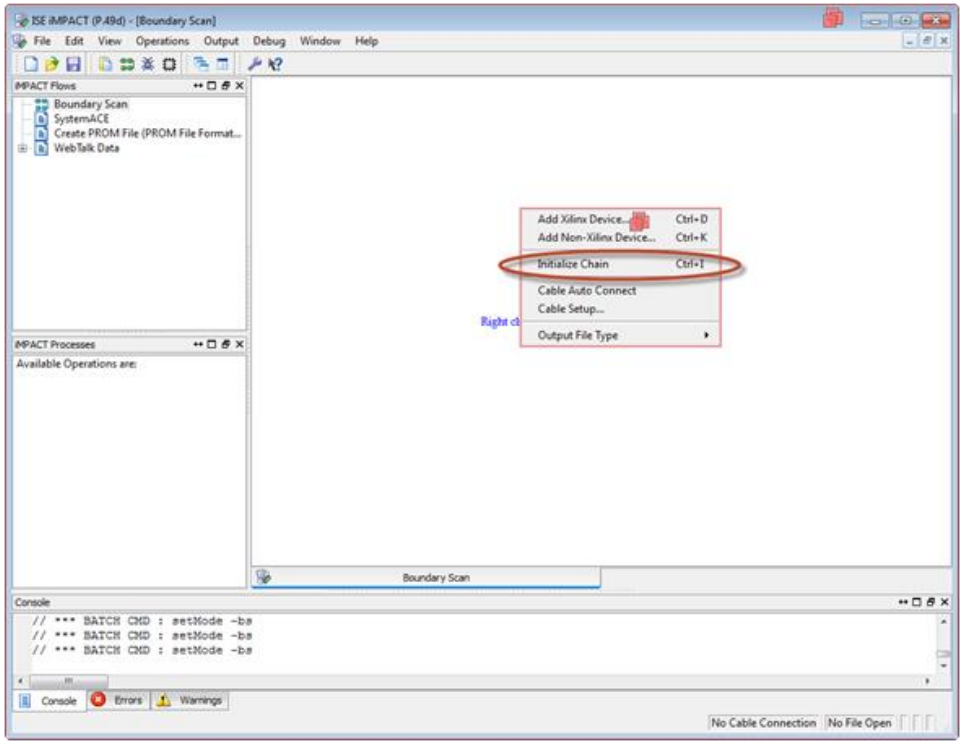

Figure 4-7. MicroNet Plus Upgrade, FPGA with XILINX

10. An Auto Assign window may appear. You can select “NO”.

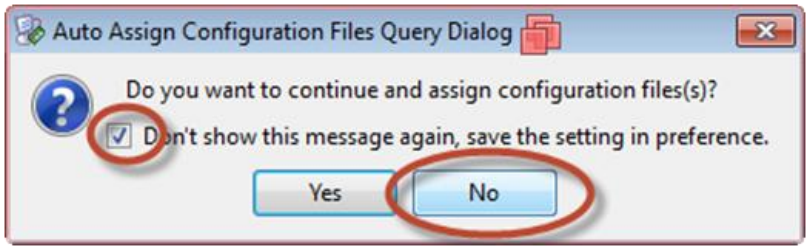

Figure 4-8. MicroNet Plus Upgrade, FPGA with XILINX

11. The main screen should be populated with the 3 recognized devices, xcF02s, xc3s400, and xc9572xl. You can select “Cancel” to close the Programming properties window.

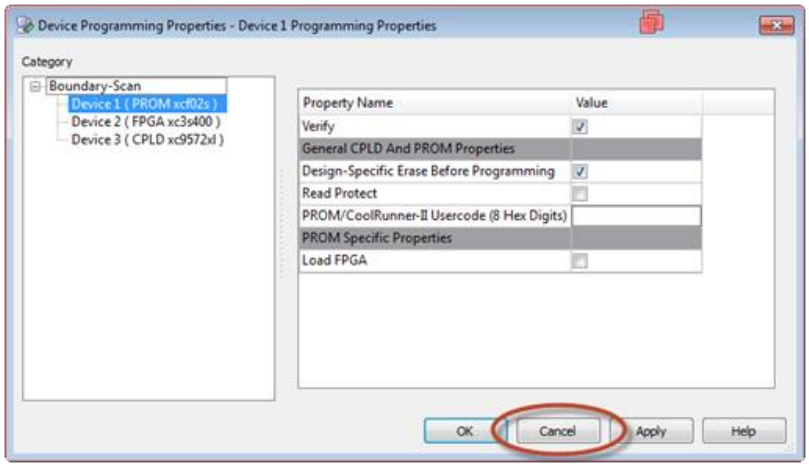

Figure 4-9. MicroNet Plus Upgrade, FPGA with XILINX

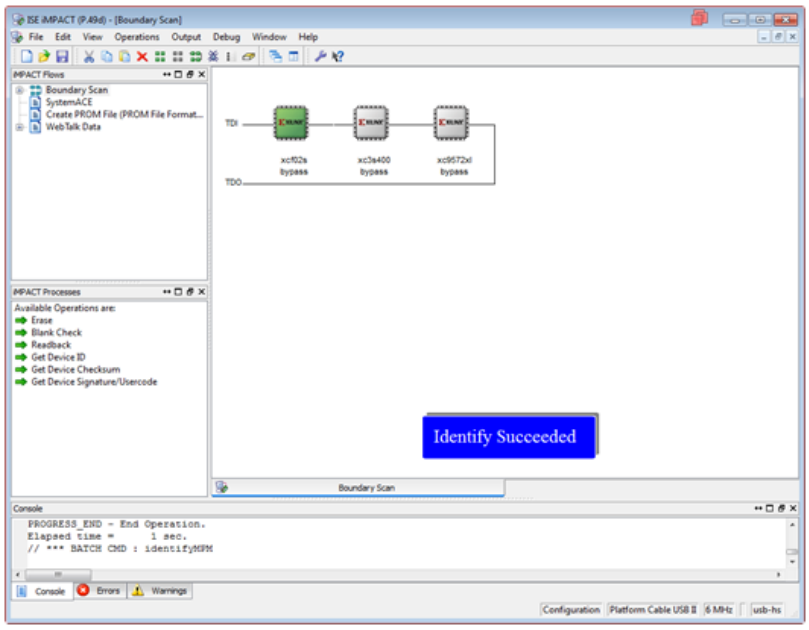

Figure 4-10. MicroNet Plus Upgrade, FPGA with XILINX

12. Select each component one at a time and select “Get Device ID”. Ensure that “ReadIDcode Succeeded” for each component.

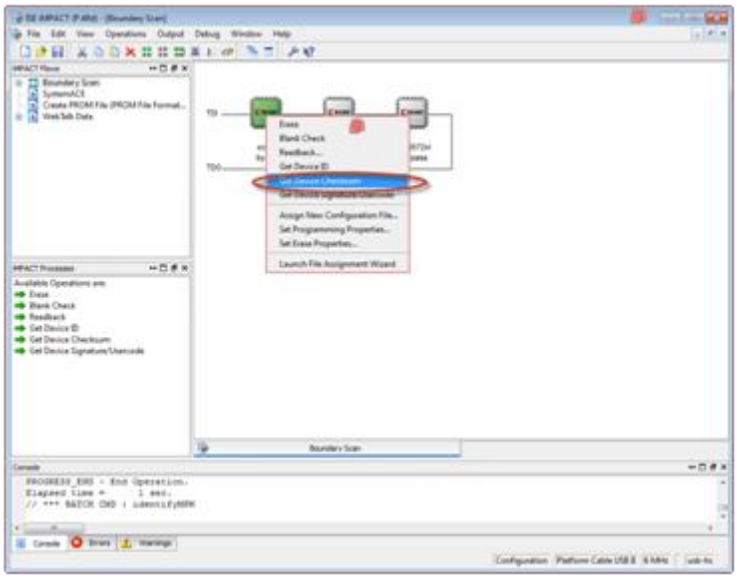

Figure 4-11. MicroNet Plus Upgrade, FPGA with XILINX

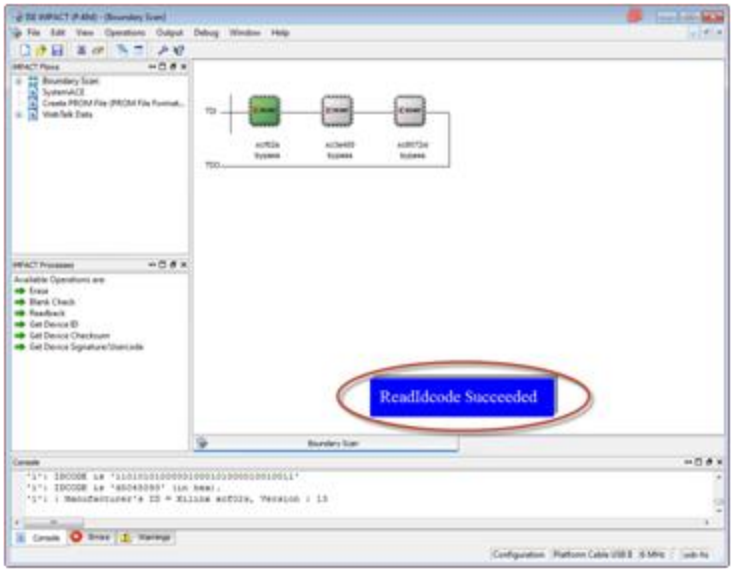

Figure 4-12. MicroNet Plus Upgrade, FPGA with XILINX

13. Right click on xc9572xl and select “Assign New Configuration file”. Navigate to **PwrFan_Monitor26.jed** file.
    - Right click on xc9572xl and select “Program”
      - In the programming properties, select the “Verify” and “Design-Specific Erase Before Programming” boxes.
      - Select “OK”

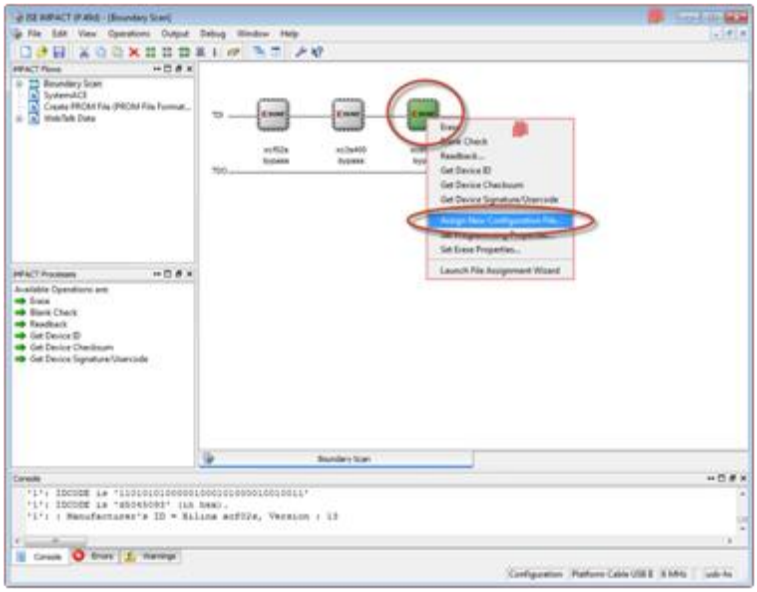

Figure 4-13. MicroNet Plus Upgrade, FPGA with XILINX

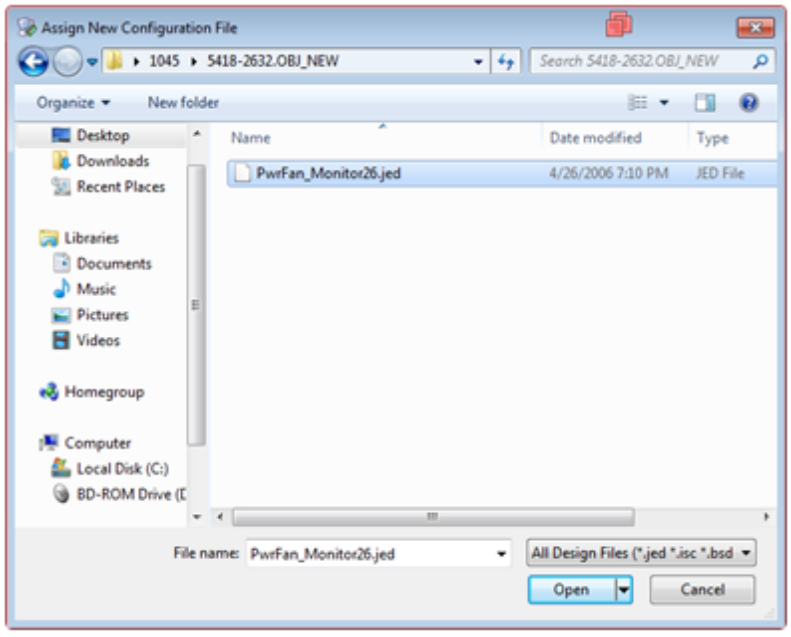

Figure 4-14. MicroNet Plus Upgrade, FPGA with XILINX

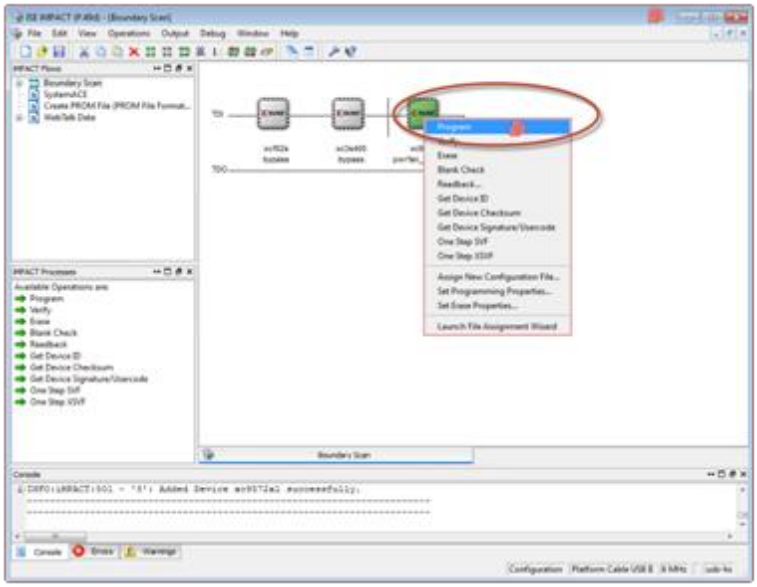

Figure 4-15. MicroNet Plus Upgrade, FPGA with XILINX

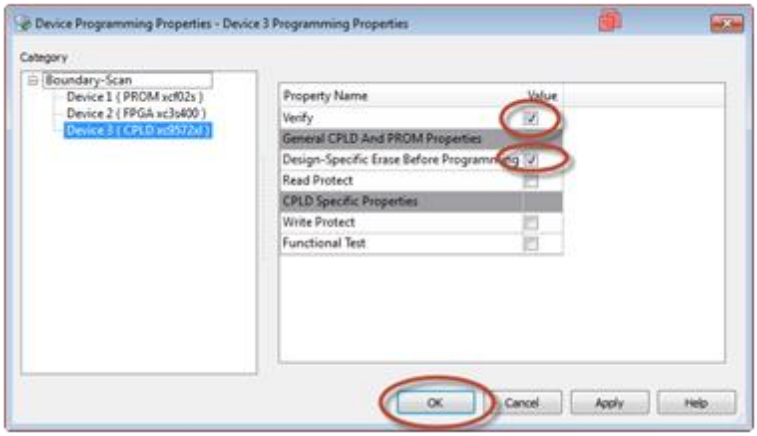

Figure 4-16. MicroNet Plus Upgrade, FPGA with XILINX

14. “Program Succeeded” will be displayed.

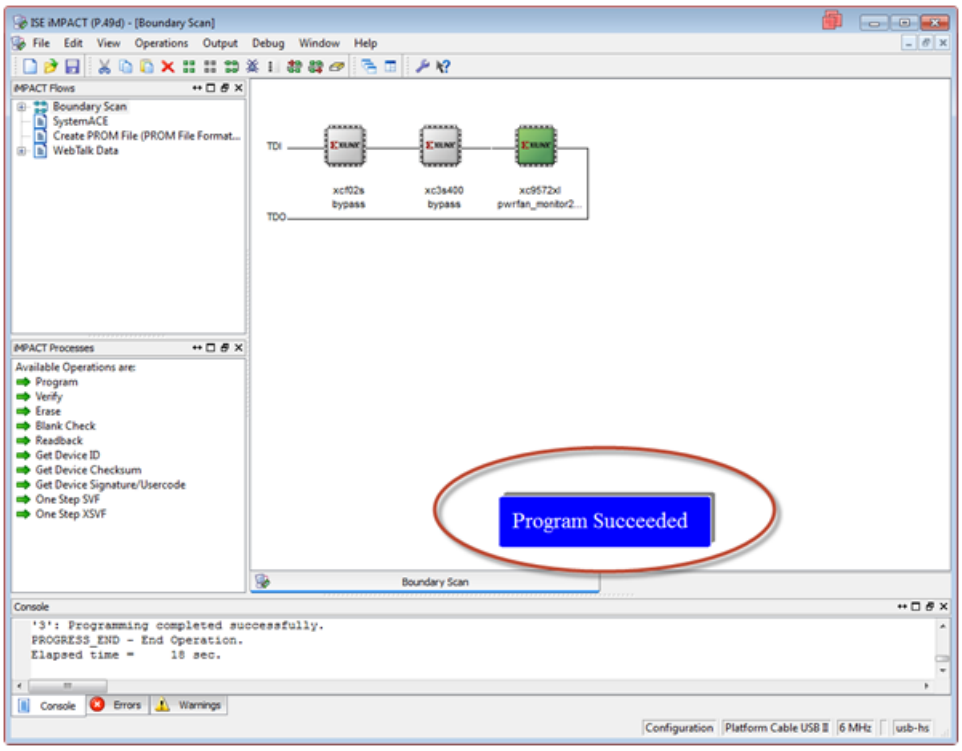

Figure 4-17. MicroNet Plus Upgrade, FPGA with XILINX

15. Right click xcf02s and select “Assign New Configuration file”. Navigate to **5418-6171.OBJ_NEW.mcs** file.
    - Right click on xcf02sl and select “Program”
        - In the programming properties, select the “Verify” and “Design-Specific Erase Before Programming” boxes if prompted.
        - Select “OK”

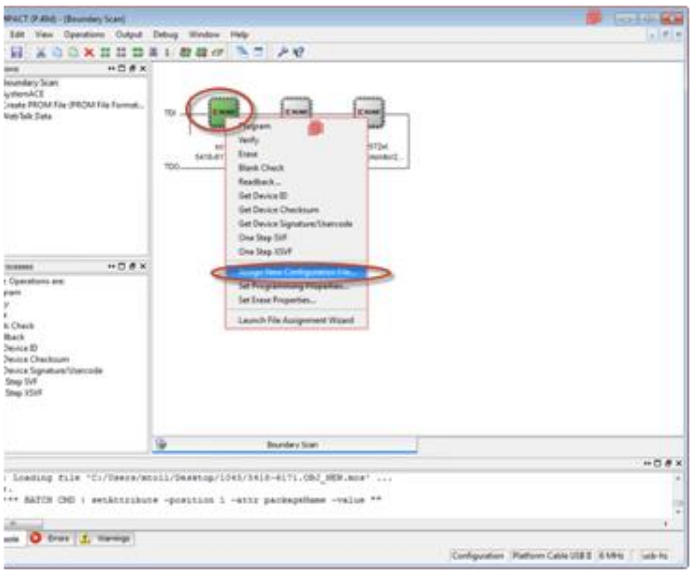

Figure 4-18. MicroNet Plus Upgrade, FPGA with XILINX

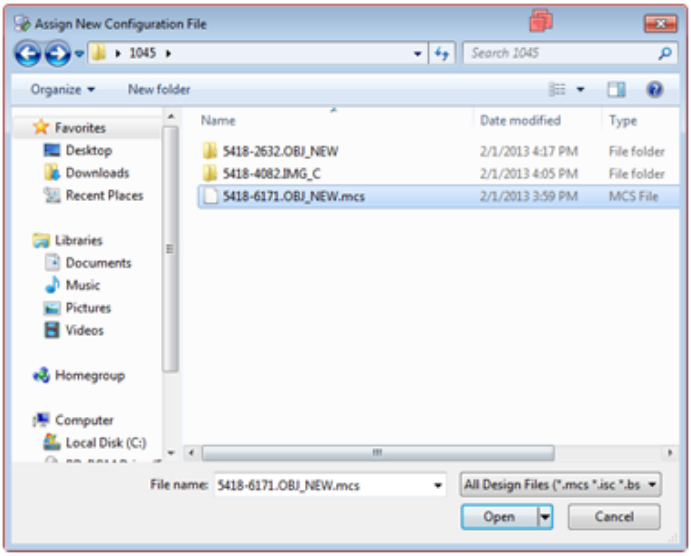

Figure 4-19. MicroNet Plus Upgrade, FPGA with XILINX

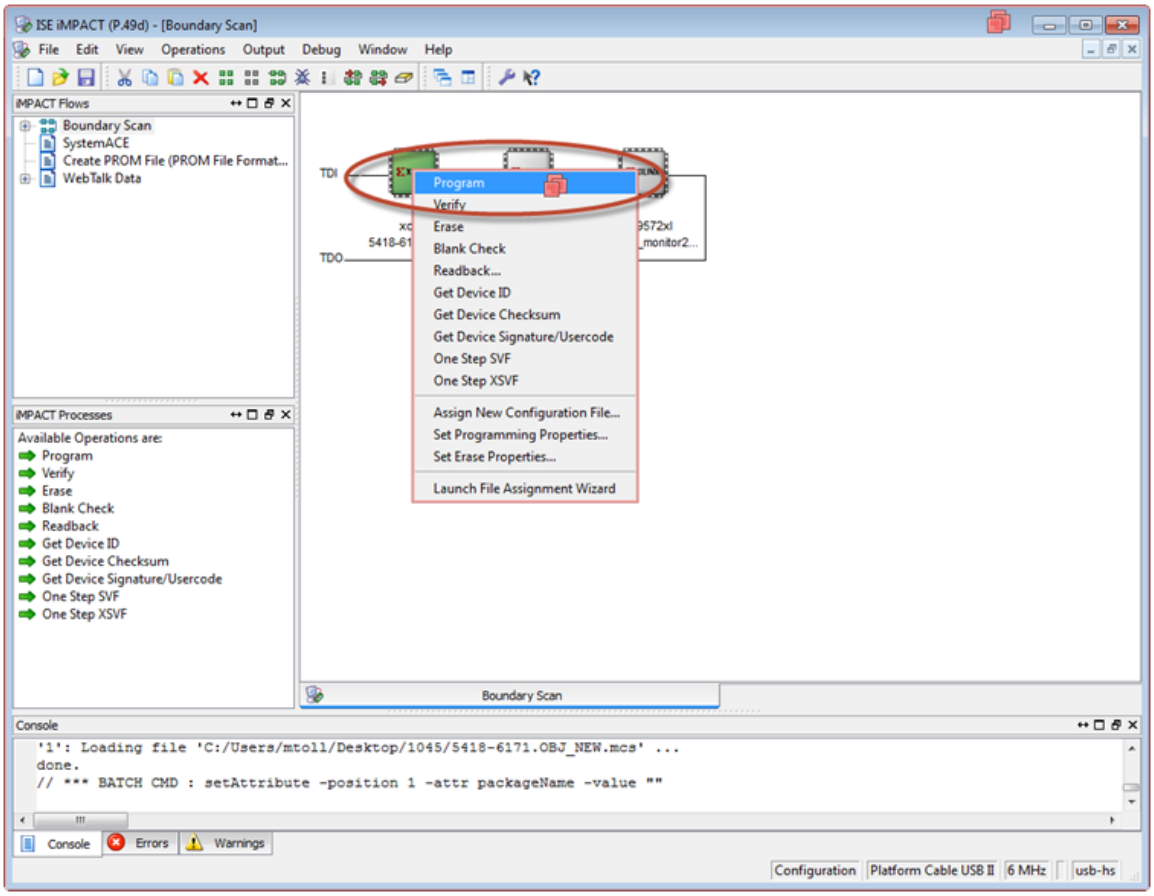

Figure 4-20. MicroNet Plus Upgrade, FPGA with XILINX

16. “Program Succeeded” will be displayed.

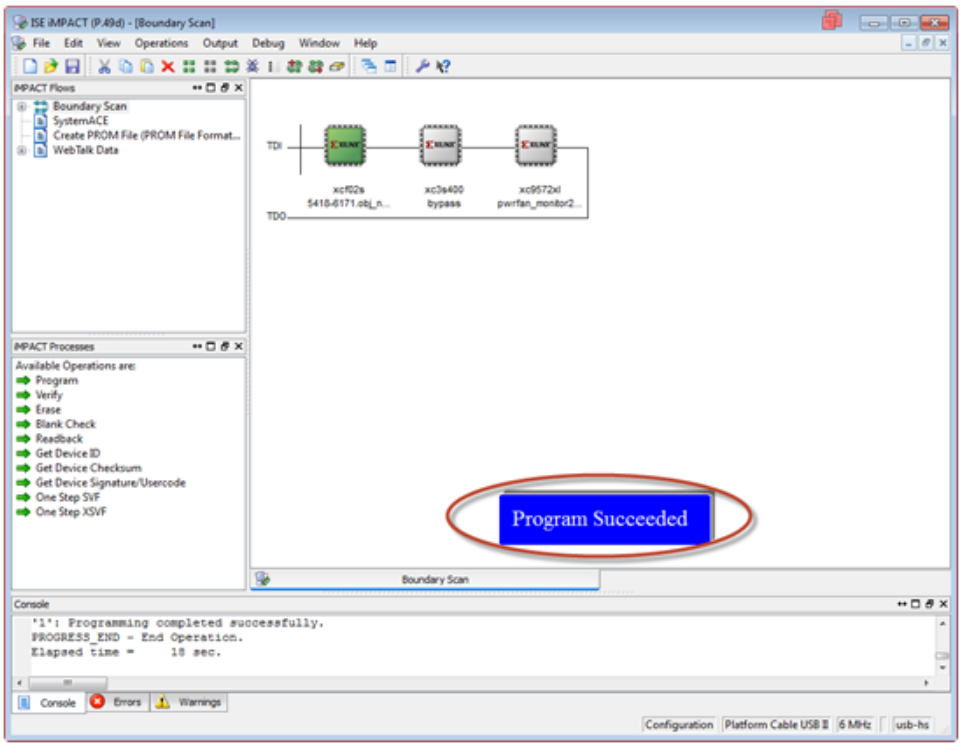

Figure 4-21. MicroNet Plus Upgrade, FPGA with XILINX

17. Remove power from the chassis and remove the cable connected to the JTAG port and close the iMPACT program.
18. The FPGA has now been updated.

VxWorks BDM Operating System Upgrade Image Upgrade

1. Remove input power to the MicroNet chassis.
2. Remove dust cover from MicroNet Plus CPU.
3. Remove enough modules to the left of the CPU slot as necessary to access the CPU board and use cables connected to the JTAG ports.
4. Connect the Wind River Probe cable to JTAG port J4 on the CPU module.

IMPORTANT **Ensure Pin 1 of the cable is connected to Pin 1 on the board.**

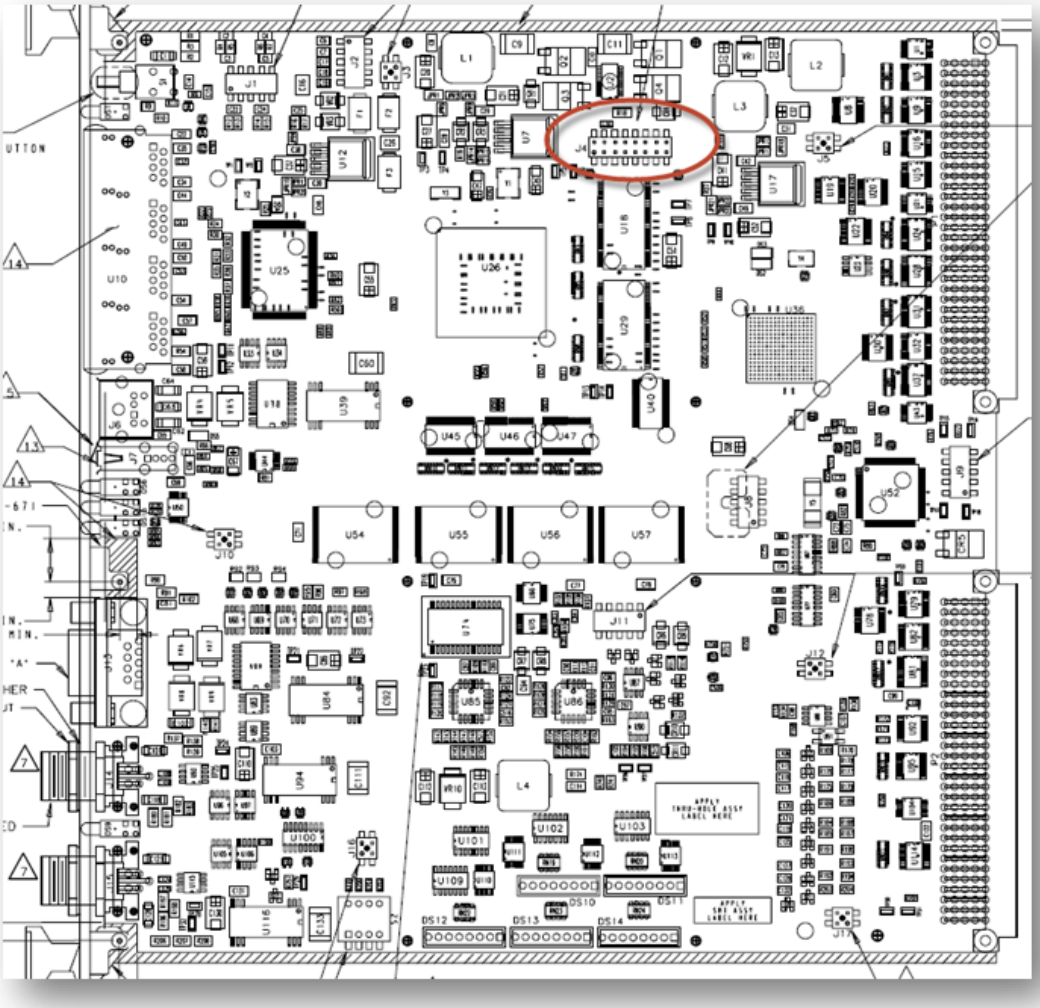

Figure 4-22. MicroNet Plus Upgrade, Board Layout J4

5. Connect a network cable to Ethernet port 1 and to the PC.
6. Connect an adapter cable 5450-1065 and a 9-pin cable to J6 Debug port on the CPU and the PC.
7. Fully insert the CPU into the chassis and energize power to the chassis.
8. Connect the Wind River Probe to the PC.
9. Start the program Wind River OCD Utility.
10. Select the Connect/Attach icon.
    - Navigate to the saved profile.
    - If a connection profile was not saved, refer to the software installation steps.

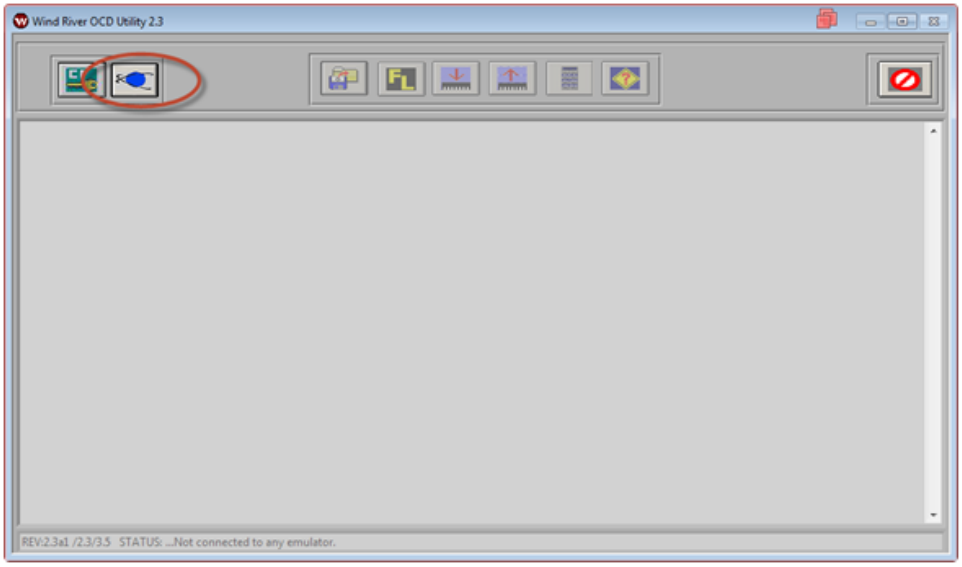

Figure 4-23. MicroNet Plus Upgrade, OS Upgrade Wind River

11. Ensure “>BKM>” is shown in the prompt. If “>ERR>” is shown then check the connection to the CPU and try again.

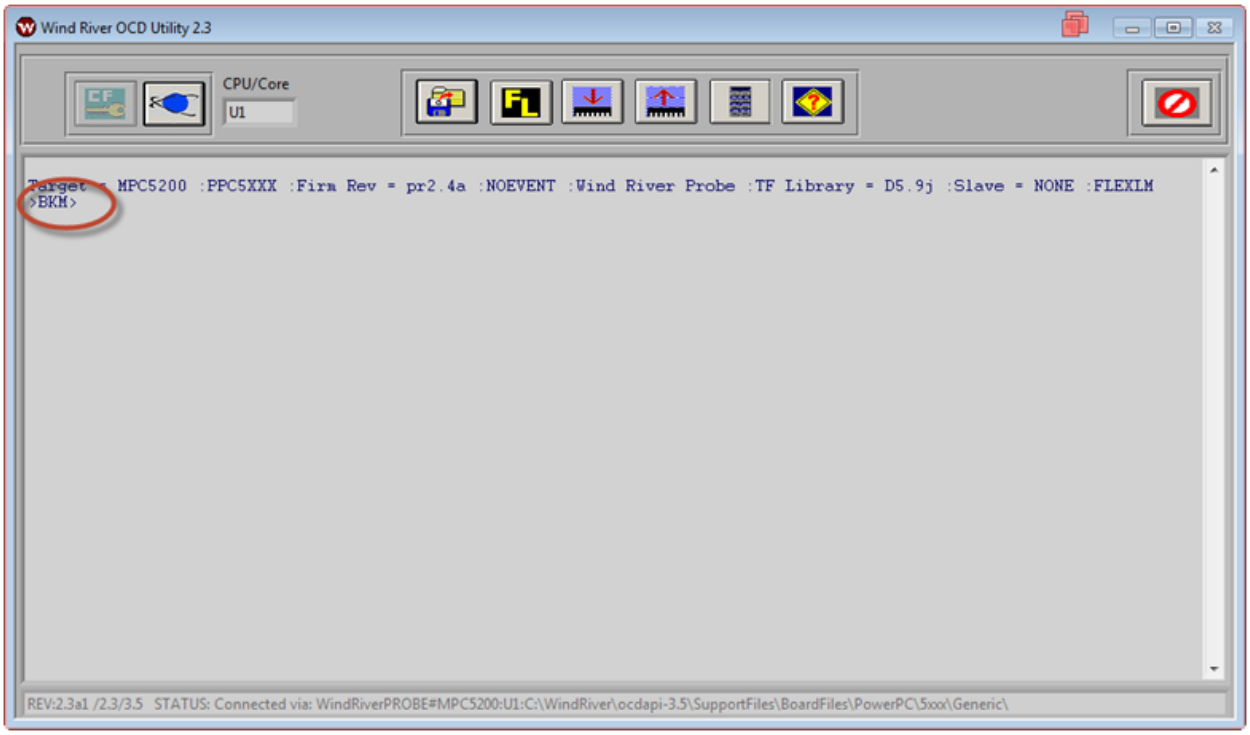

Figure 4-24. MicroNet Plus Upgrade, OS Upgrade Wind River

12. Set the JTAG clock rate to 14 or Auto.
    - In the command window type "**cf clk auto**" or "**cf clk 14**"
    - Type "**cf**" and confirm the change took.

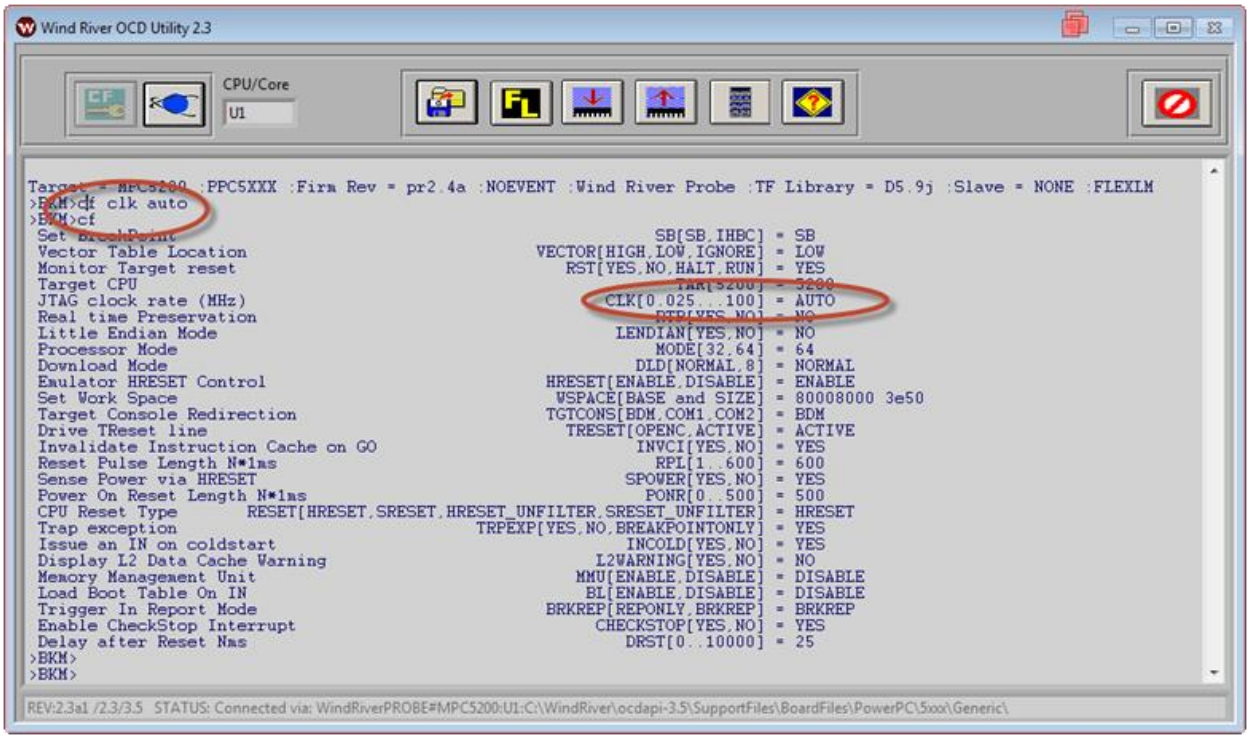

Figure 4-25. MicroNet Plus Upgrade, OS Upgrade Wind River

13. Select the Flash icon.
    - Configure the fields as shown below.
      - Browse: The location of **5418-4082IMG_xxx**
      - Starting Address: **80008000**
      - Size #Bytes: **16164**
      - Base Address: **FF000000**
      - File Bias/Offset: **00000000**
      - Timeout: **120**
      - All (next to Erase): **Checked**
      - Selected device: ***INTEL 28F128Jx (8192 x 16) 1 Device**
        - On a Window 7 computer the Dev # is **209**
        - On an XP computer the Dev# is **171**

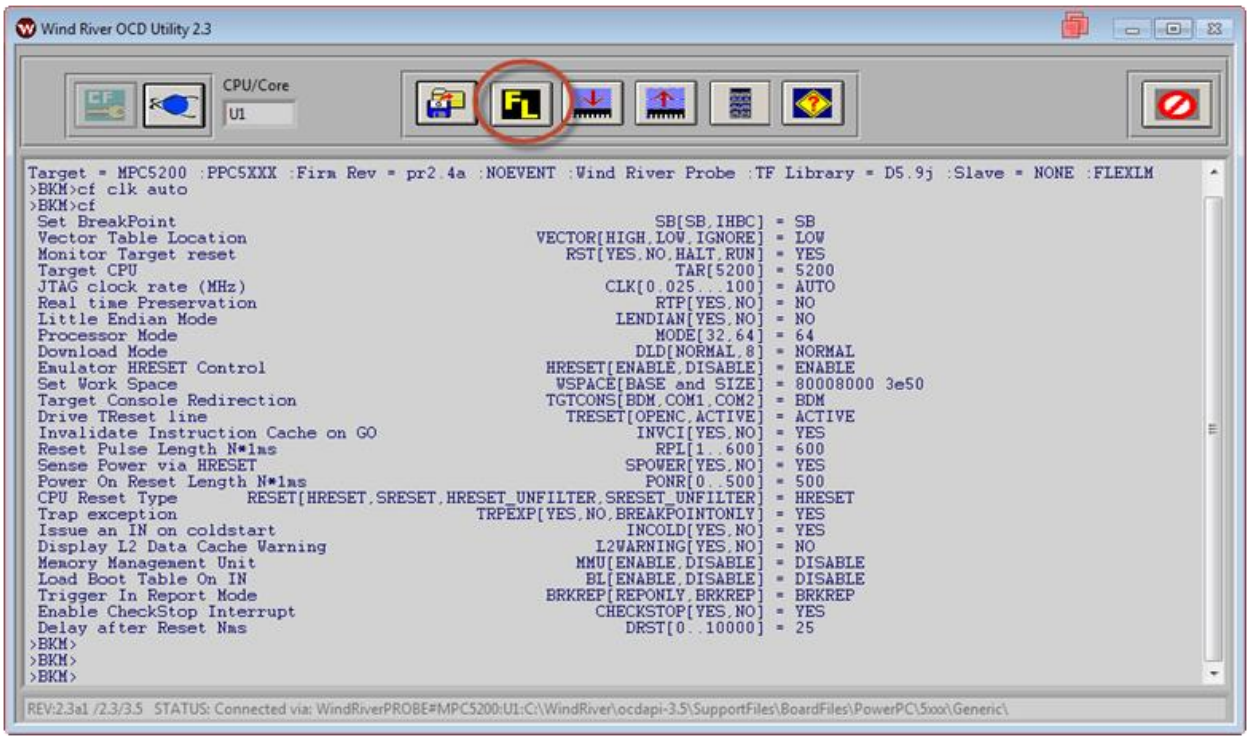

Figure 4-26. MicroNet Plus Upgrade, OS Upgrade Wind River

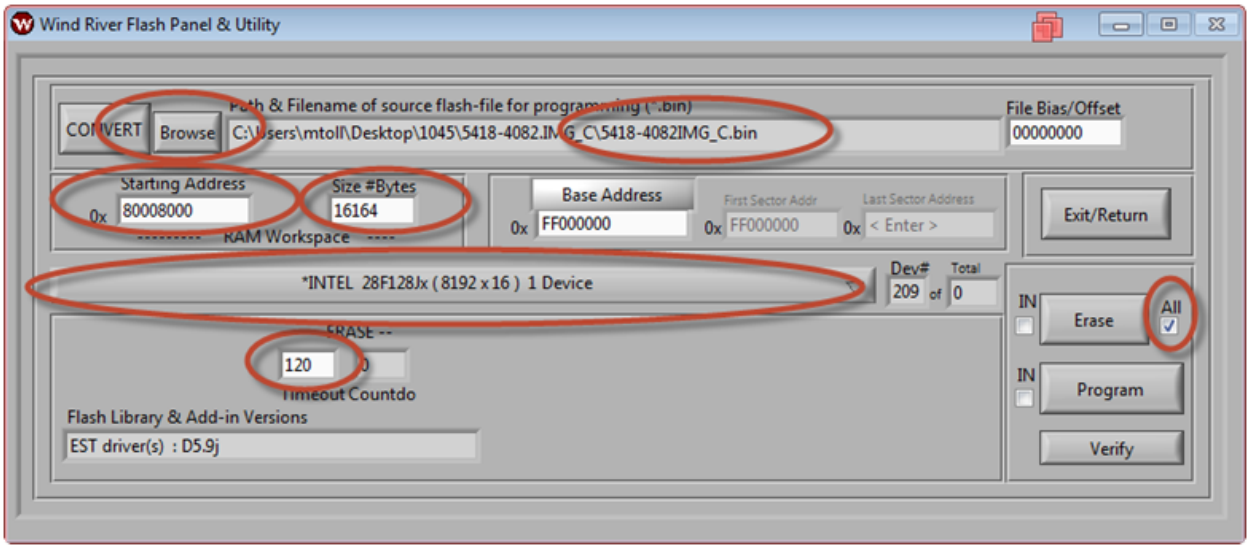

Figure 4-27. MicroNet Plus Upgrade, OS Upgrade Wind River

- Select "**Erase**"
  - The status window will show that the flash is being erased.
  - If a timeout occurs while erasing then increase the timeout time and try again.
  - The status window will display "Done" after a successful erase.

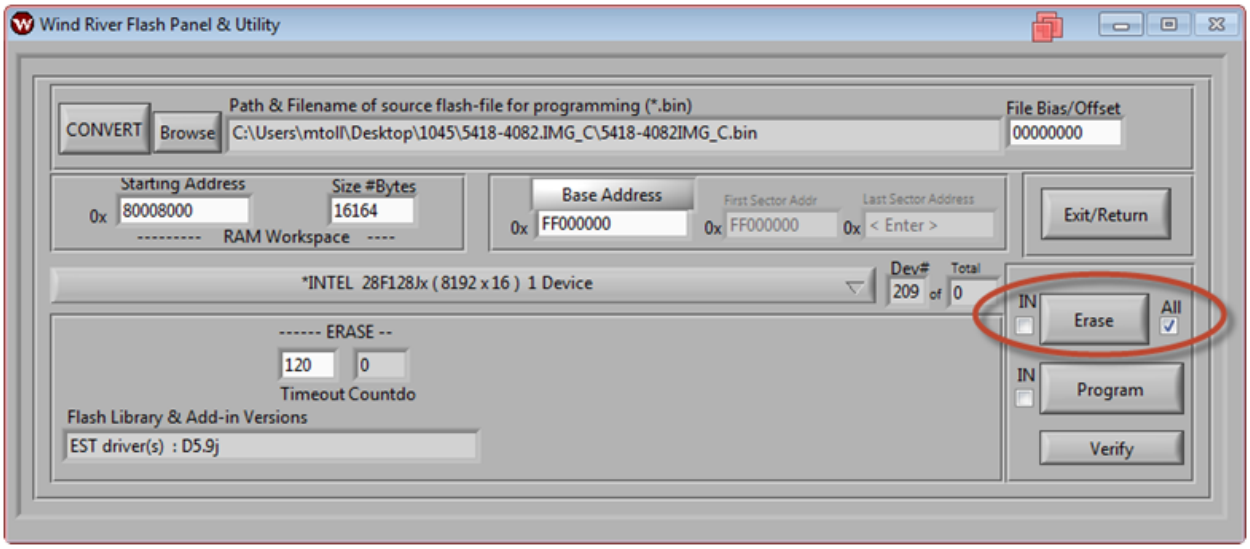

Figure 4-28. MicroNet Plus Upgrade, OS Upgrade Wind River

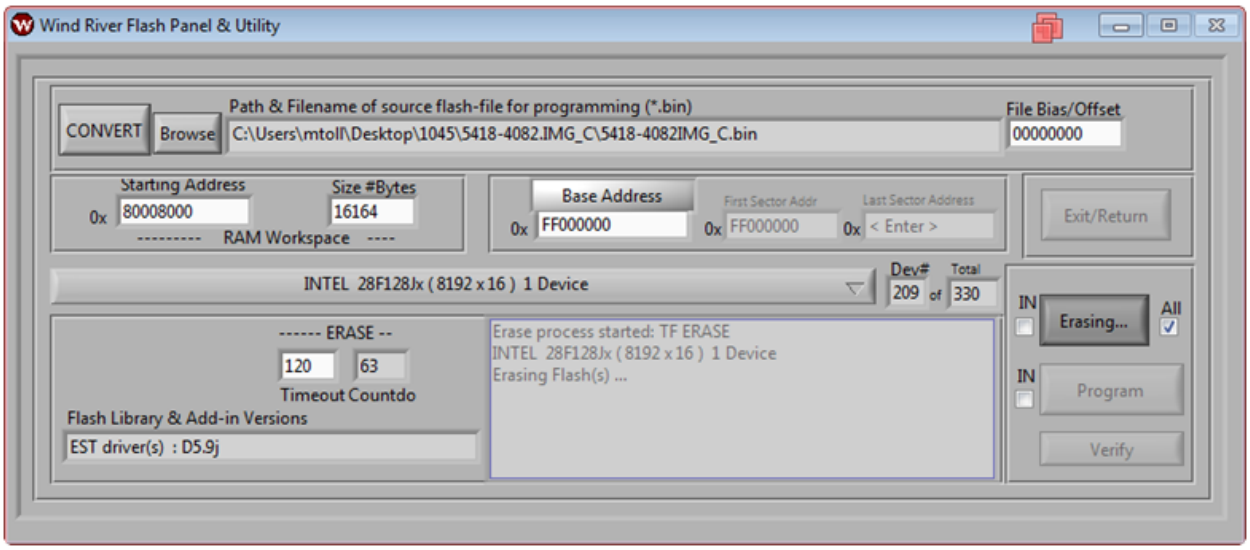

Figure 4-29. MicroNet Plus Upgrade, OS Upgrade Wind River

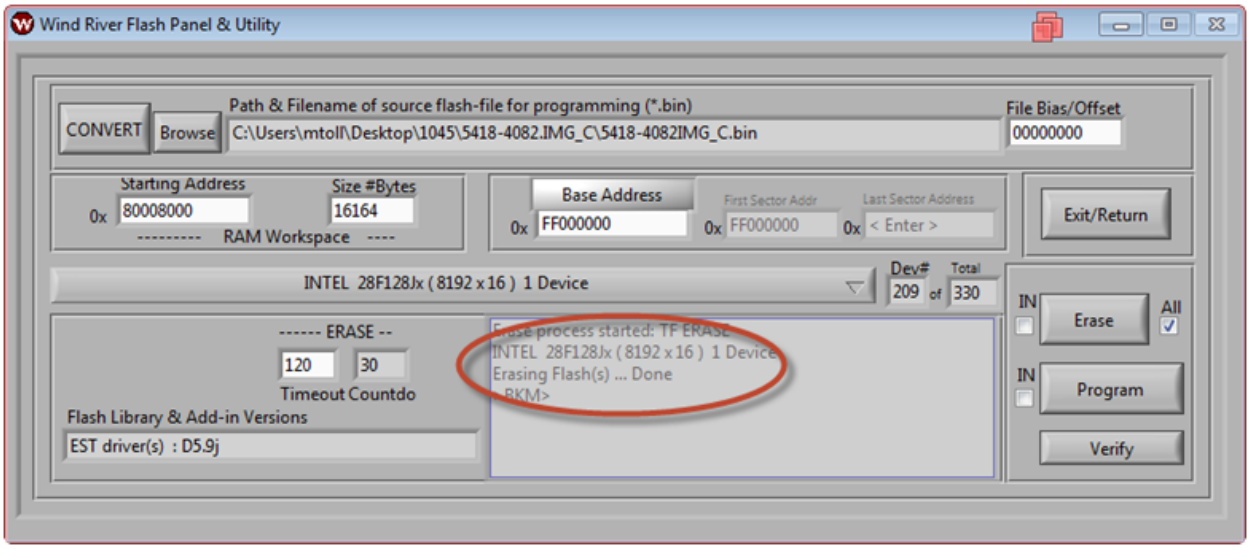

Figure 4-30. MicroNet Plus Upgrade, OS Upgrade Wind River

- Select “**Program**”
  - A progress bar will show the programming occurring.
    - This will take 5-10 minutes.
  - After completion the Flash utility will return to pre-erasing view.

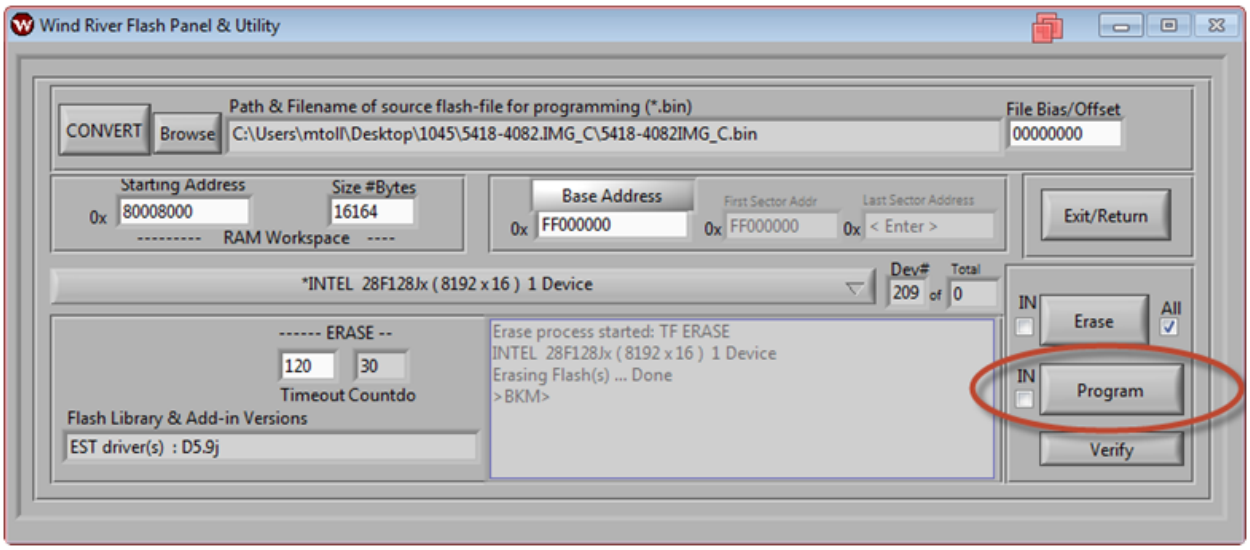

Figure 4-31. MicroNet Plus Upgrade, OS Upgrade Wind River

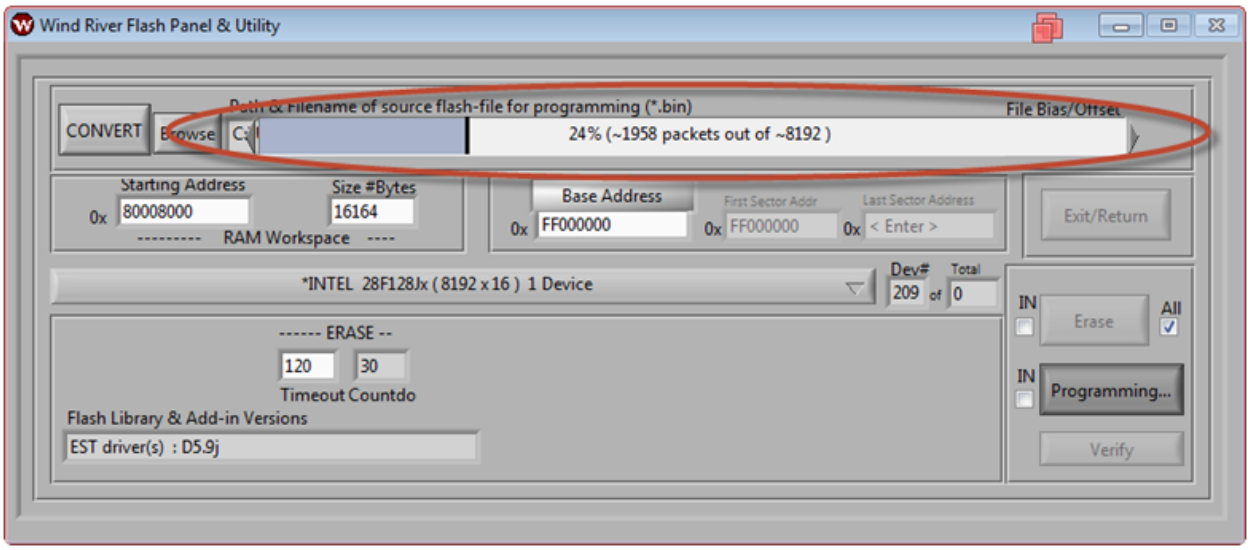

Figure 4-32. MicroNet Plus Upgrade, OS Upgrade Wind River

- Select “**Exit/Return**”

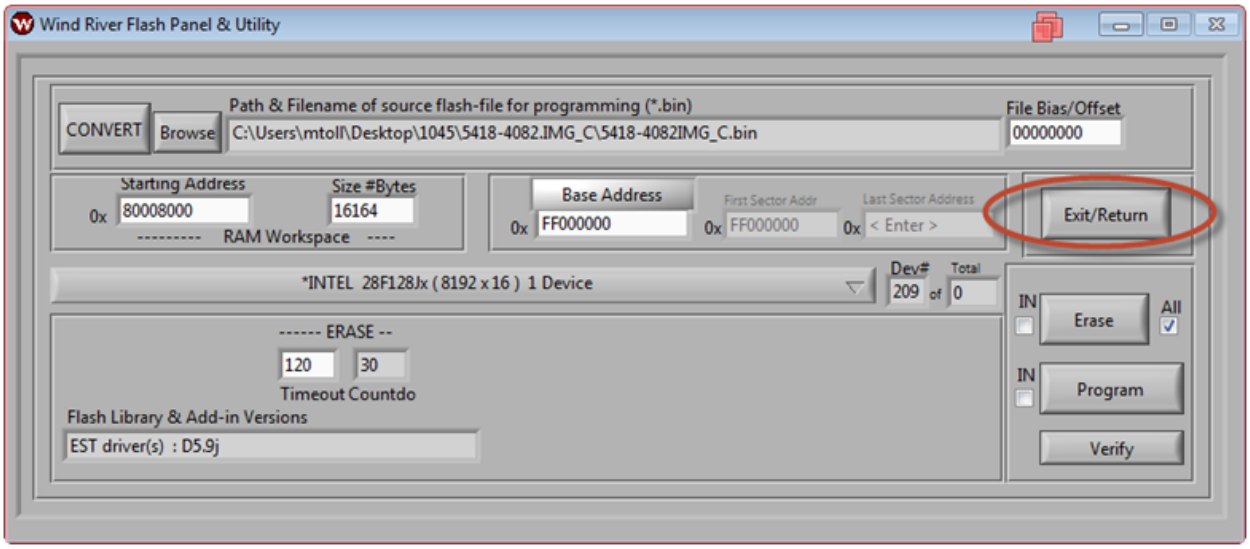

Figure 4-33. MicroNet Plus Upgrade, OS Upgrade Wind River

14. Select the Disconnect icon. And QUIT to exit the utility.

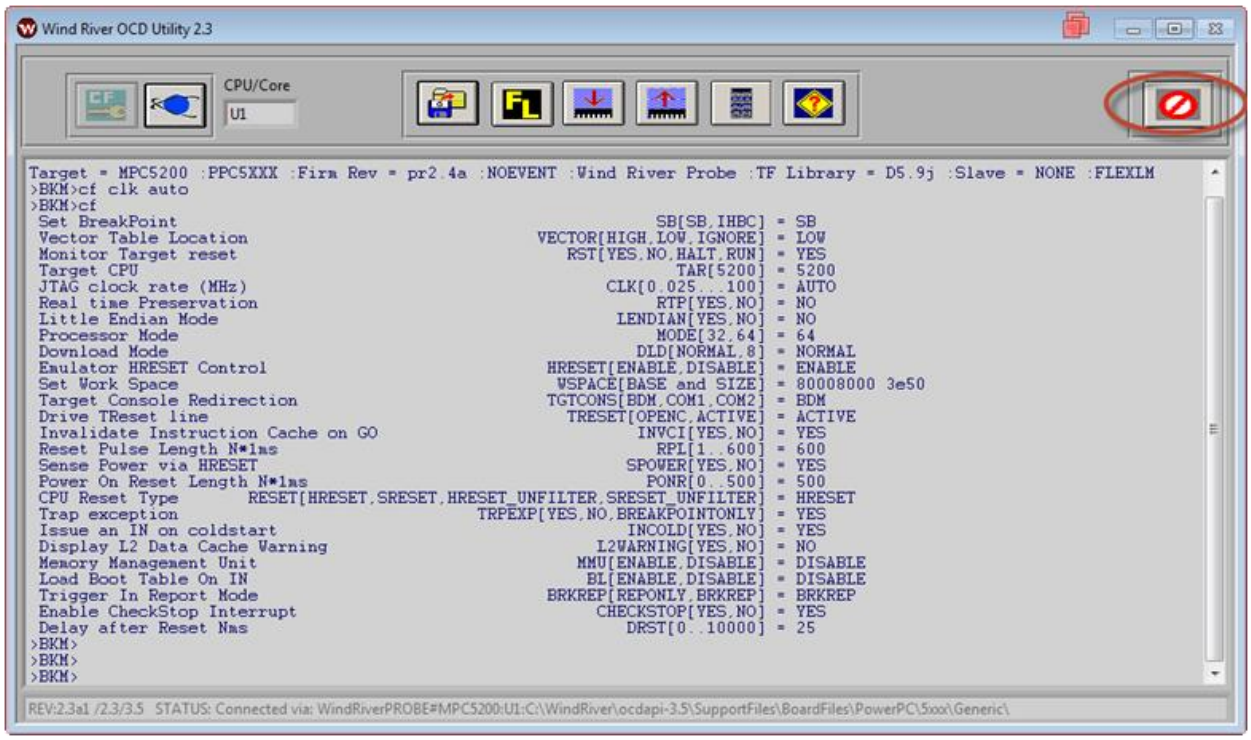

Figure 4-34. MicroNet Plus Upgrade, OS Upgrade Wind River

15. Start HyperTerminal and connect with the following settings.
    - Name: You can name the setting whatever you like.
    - Bits per second: **38400**
    - Data bits: **8**
    - Parity: **None**
    - Stop bits: **1**
    - Flow control: **None**

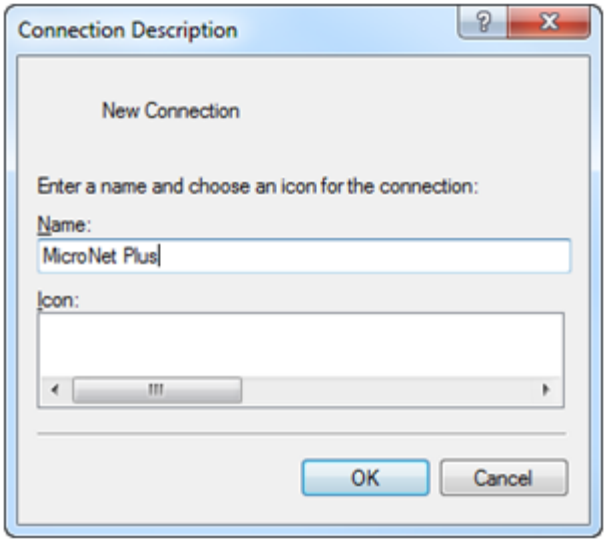

Figure 4-35. MicroNet Plus Upgrade, DEBUG Connection

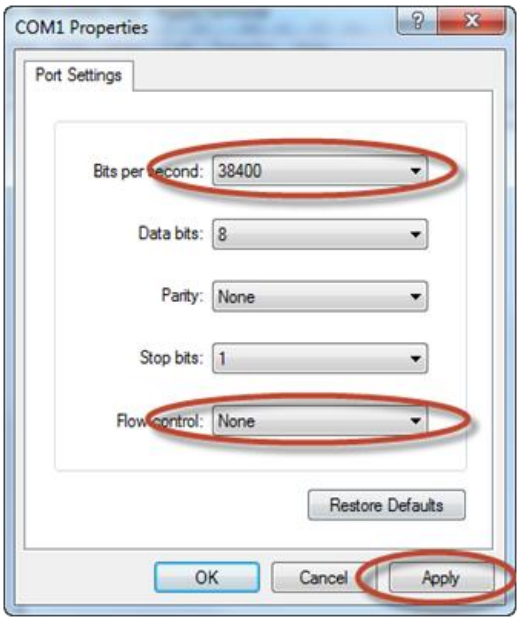

Figure 4-36. MicroNet Plus Upgrade, DEBUG Connection

16. **Cycle power to the chassis.**
    - As the CPU boots up you should see activity in the status window of Hyper Terminal.

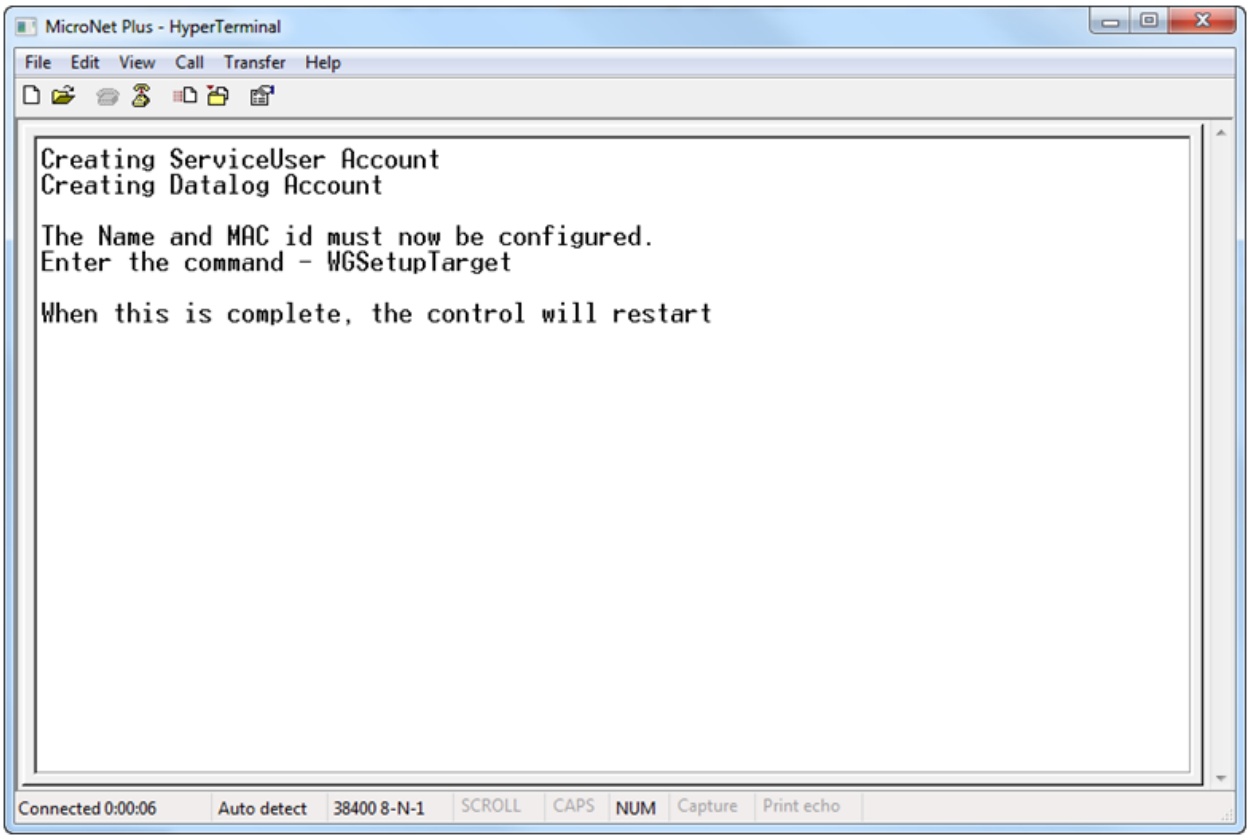

Figure 4-37. MicroNet Plus Upgrade, DEBUG Actions

17. Enter **WGSetupTarget** in the command window.
    - When prompted for a Login and Password enter:
      - VxWorks Login: **ServiceUser**
      - Password: **ServiceUser@1**
        - The password will not be echoed as you type.
    - If the command window returns to a blank prompt after the password is entered, re-enter **WGSetupTarget**.

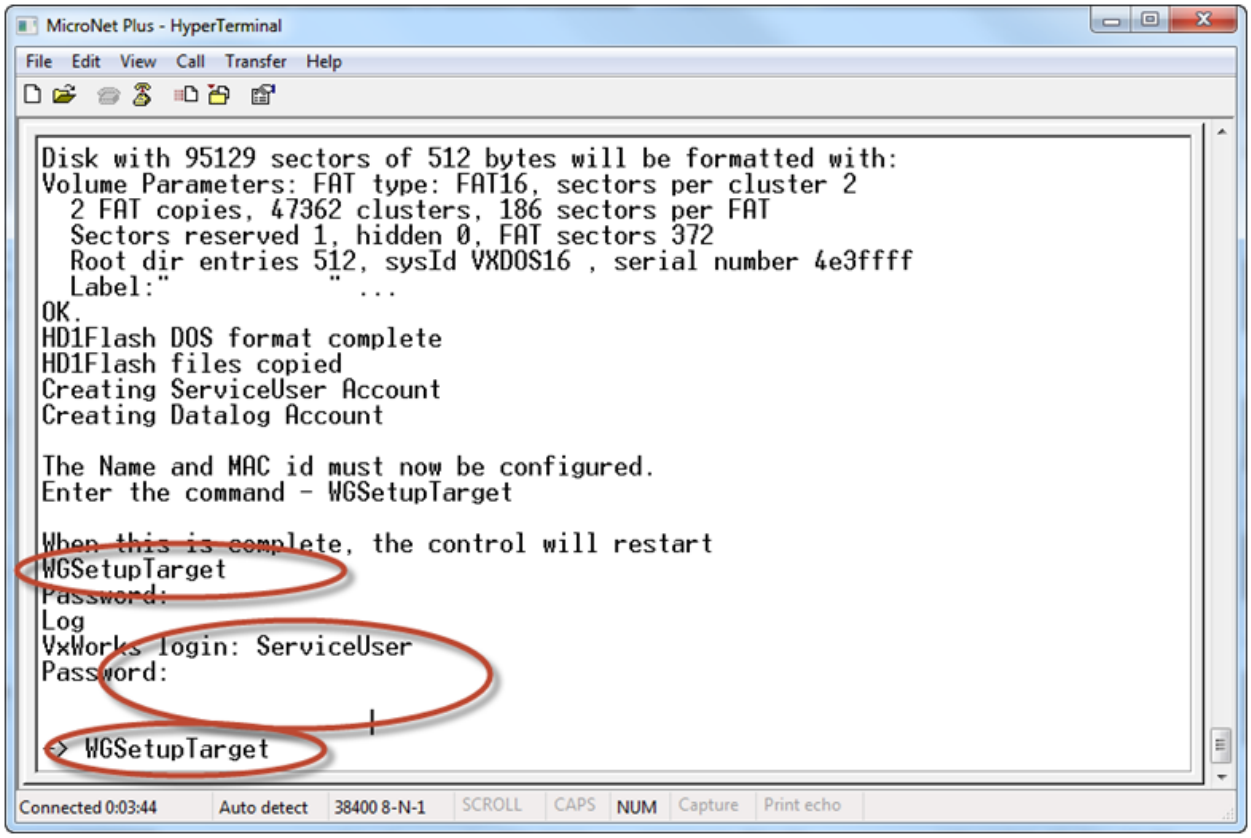

Figure 4-38. MicroNet Plus Upgrade, DEBUG Actions

- Enter the MAC ID:
  - This is entered as a Decimal number from the last 4 digits of the Hexadecimal MAC ID recorded previous to the upgrade. This Decimal number is also the computer name after VXM000.
    - Example: **VXM00017362** and MAC ID: **00128c0043d2**
      - The entered value would be **17362**.
      - The control will reboot on its own.
- Enter the Serial Number recorded prior to the upgraded.
  - Example: **17816029**
- Enter the Part Number recorded prior to the upgrade with an additional "CYBER".
  - Example: 5466-**1035CYBER**
  - An RTN will have the Part Number 5466-1036CYBER
- Enter the revision Number recorded prior to the upgrade.
  - Example: **H**
- The control will reboot on its own.

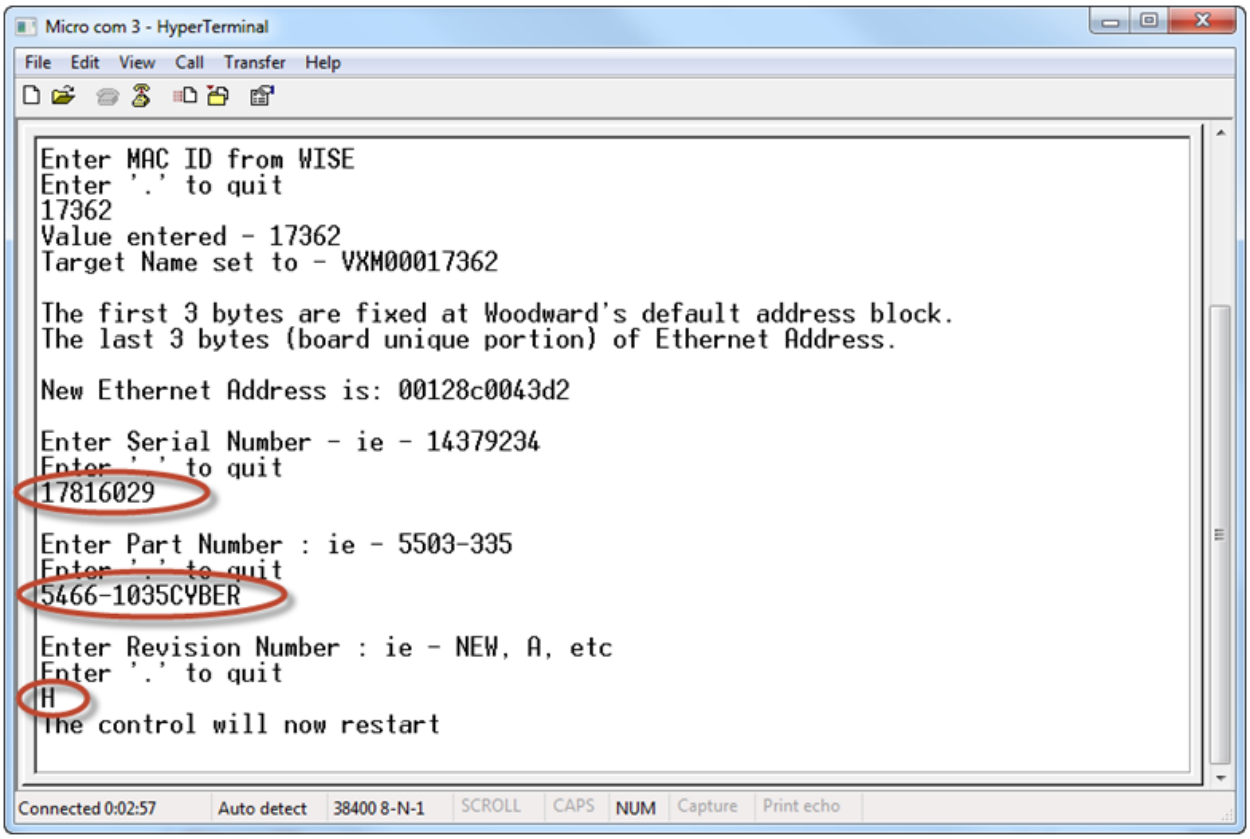

Figure 4-39. MicroNet Plus Upgrade, DEBUG Actions

18. After the control reboots
    - Power down the chassis.
    - Remove the Wind River Probe.
    - Reinstall the dust cover on the CPU.
    - Affix and fill in the "**Field Upgrade to Cyber Secure**" to the outside of the CPU dust cover below the part number sticker.
    - If the revision of the hardware is less than revision J, affix a "**NOT FOR RTCNET USE**" sticker below the upgrade sticker.
    - Energize power to the chassis.
19. After the CPU reboots, use the hyper terminal prompt to enter **WGNetworkShow** to see the IP address of the control.
    - When prompted for a Login and Password enter:
      - VxWorks Login: **ServiceUser**
      - Password: **ServiceUser@1**
    - If the command window returns to a blank prompt after the password is entered, re-enter **WGCNetworkShow**.

20. Use AppManager to log into the control and view the Control Information.
    - If connecting to an RTN, use “Manage Real Time Network CPUs for the current control” feature in AppManager to access information on the RTN CPU.
    - Contact As: **ServiceUser**
    - Password: **ServiceUser@1**
    - Verify the following
        - Computer Name: matches the name recorded prior to the upgrade.
        - MAC Address: matches the name recorded prior to the upgrade.
        - Footprint Part Number: **5418-4082**
        - Footprint Revision: C (or matches later revision if installed)
        - FPGA: 48
        - CPU Type: **Micronet+**
        - PN: **5466-1035CYBER**
            - RTN PN: 5466-1036CYBER
        - Rev: Enter the revision Number recorded prior to the upgrade.
            - Example: **H**
        - SN: matches the SN recorded prior to the upgrade.

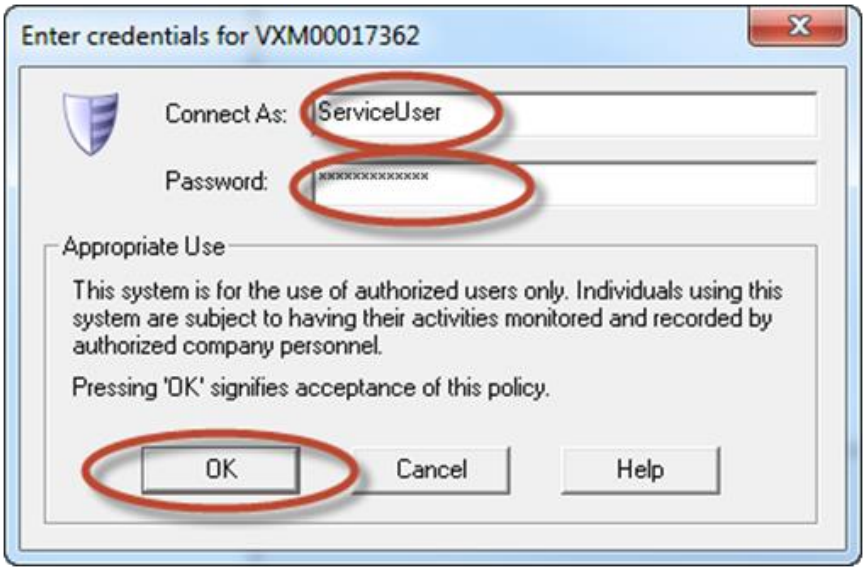

Figure 4-40. MicroNet Plus Upgrade, Verification with AppManager

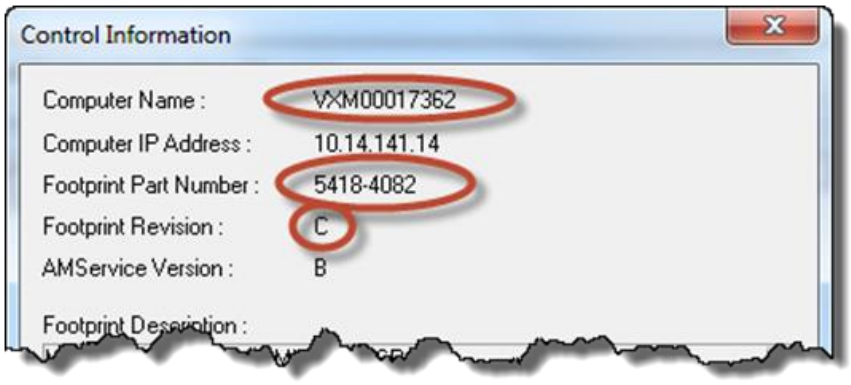

Figure 4-41. MicroNet Plus Upgrade, Verification with AppManager

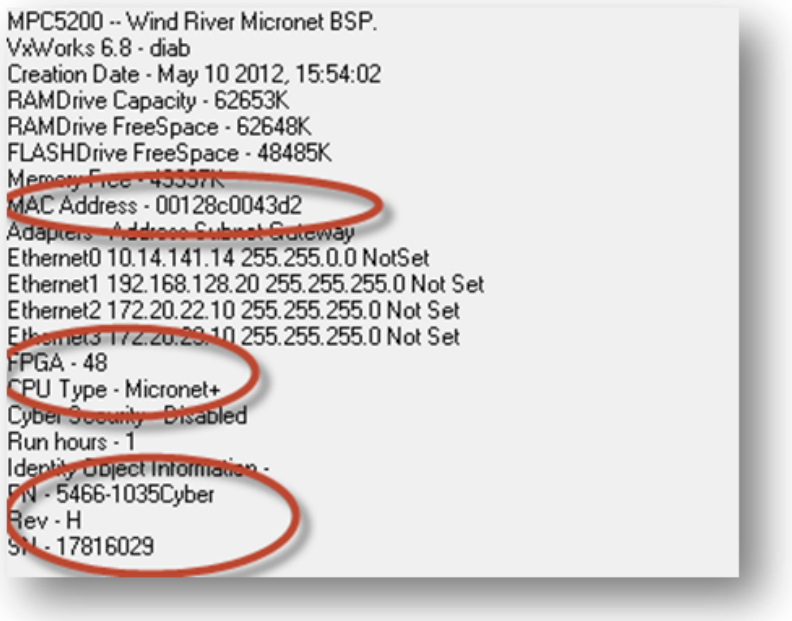

Figure 4-42. MicroNet Plus Upgrade, Verification with AppManager

Chapter 5.
Administrative Tasks

The following tasks should be completed to keep a record of all field updates.

1. Notify the proper CSR to make a note for the Serial Number in WISE (OESN) that the CPU has been upgraded to Cyber Secure.
2. Record and update the spreadsheet “Field Upgraded MicroNet Plus - Cyber.xlsx” located at **\\servf10\sharedir\espjlog\Engineering Services\Field Service\MN+ Field upgrade procedure**
   - Serial Number
   - Original Revision
   - New Footprint Part Number
   - New Footprint Revision
   - Date Upgraded
   - Location Upgraded
   - End User and Site Name if known
   - Upgraded by

The MicroNet Plus CPU has now been successfully upgraded.

Chapter 6.
Service Options

Product Service Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact the manufacturer or packager of your system.
- Contact the Woodward Full Service Distributor serving your area.
- Contact Woodward technical assistance (see “How to Contact Woodward” later in this chapter) and discuss your problem. In many cases, your problem can be resolved over the phone. If not, you can select which course of action to pursue based on the available services listed in this chapter.

OEM and Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An **Authorized Independent Service Facility (AISF)** provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Engine Retrofitter (RER)** is an independent company that does retrofits and upgrades on reciprocating gas engines and dual-fuel conversions, and can provide the full line of Woodward systems and components for the retrofits and overhauls, emission compliance upgrades, long term service contracts, emergency repairs, etc.
- A **Recognized Turbine Retrofitter (RTR)** is an independent company that does both steam and gas turbine control retrofits and upgrades globally, and can provide the full line of Woodward systems and components for the retrofits and overhauls, long term service contracts, emergency repairs, etc.

You can locate your nearest Woodward distributor, AISF, RER, or RTR on our website at:

www.woodward.com/directory

Woodward Factory Servicing Options

The following factory options for servicing Woodward products are available through your local Full-Service Distributor or the OEM or Packager of the equipment system, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is originally shipped from Woodward or a service is performed:

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is a flat-rate program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned within 60 days, a credit for the core charge will be issued.

Flat Rate Repair: Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in “like-new” condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- return authorization number;
- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.

Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

NOTICE

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

Engineering Services

Woodward offers various Engineering Services for our products. For these services, you can contact us by telephone, by email, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact. Emergency assistance is also available during non-business hours by phoning Woodward and stating the urgency of your problem.

Product Training is available as standard classes at many of our worldwide locations. We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from many of our worldwide locations or from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact us via telephone, email us, or use our website: **www.woodward.com**.

How to Contact Woodward

For assistance, call one of the following Woodward facilities to obtain the address and phone number of the facility nearest your location where you will be able to get information and service.

Electrical Power Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (0) 21 52 14 51
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

Engine Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
Germany	+49 (711) 78954-510
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
United States	+1 (970) 482-5811

Turbine Systems

Facility	Phone Number
Brazil	+55 (19) 3708 4800
China	+86 (512) 6762 6727
India	+91 (129) 4097100
Japan	+81 (43) 213-2191
Korea	+82 (51) 636-7080
The Netherlands	+31 (23) 5661111
Poland	+48 12 295 13 00
United States	+1 (970) 482-5811

You can also locate your nearest Woodward distributor or service facility on our website at:

www.woodward.com/directory

Technical Assistance

If you need to telephone for technical assistance, you will need to provide the following information. Please write it down here before phoning:

Your Name	
Site Location	
Phone Number	
Fax Number	
Engine/Turbine Model Number	
Manufacturer	
Number of Cylinders (if applicable)	
Type of Fuel (gas, gaseous, steam, etc)	
Rating	
Application	
Control/Governor #1	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #2	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #3	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

Released

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 51472.

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