

Robotics – FRC 2010 Build Season

Installation Guide for the Programming Laptop

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-Ted Dressel, Programming Mentor for Team 1111, tdressel@microsoft.com

Section 0: Before you get started...

GOAL: Create a programming environment that is repeatable. At any given time, should a laptop not be available (not working, lost, etc) – running these processes will create that programming environment that's necessary for success.

READ: Each of the US First Control System Manuals should be read. There are five of them. Chapter 2 has a set of steps to execute for Getting Started. PLEASE READ THEM!

US First Control System Manuals (CSM) for 2010 are here:

<http://www.usfirst.org/roboticsprograms/frc/content.aspx?id=10934>

NOTE: There should be a pack of five disks, the original operating system (Windows Vista Home Basic), an updated Vista Home Basic with SP2 applied, Disk1 – USFirst, Disk2 – USFirst, and Disk3 (all other software). Disk3 has the CSM's (Control System Manuals)

NOTE: Use the software copied to the Disk1, Disk2 and Disk3 directories (See Step 3 below)

NOTE: Computer is NOT to be connected to the wireless networks of the Robotics equipment in the kit of parts.

Section 1: Install the Operating System

In February 2010, we acquired two laptops – Thing1 and Thing2. These two laptops have their own operating system restore process. It's described in Section 1.1: Thing1/Thing2 Installation Process. Other laptops can take the more generic route for installation in Section 1.2: Generic Vista Basic Installation Process.

Section 1.1: Thing1/Thing2 Installation Process (HP ProBook)

Both laptops came with the same set of DVD's. The simple steps here outline the DVD's to use and the order. The idea here is to build a computer from scratch. Therefore, during the install process, be sure the WHOLE hard drive is reformatted.

DVD's that came with each HP laptop:

1. **Operating System: Windows Vista Business SP1 – 32bit ← USED**
2. Operating System: Windows Vista Business SP1 – 64bit
3. Operating System: Windows XP SP2
4. **Application and Driver Recovery DVD – for Vista (32-bit software for Vista) ← USED**
5. Application and Driver Recovery DVD – for Windows XP
6. Supplemental Software: Office 2007 Trial

Follow these steps to install the base operating system, and applicable drivers for the HP ProBook

1. Do NOT have the computer networked yet.
2. Install Vista Business SP1 (Operating System DVD) – 32-bit software. The 64bit version can be used as well but the directions here were created off of a 32bit install.
3. Reboot laptop and boot to the DVD
 - a. ESC key to access Startup Menu
 - b. F9 – Boot options
 - c. Optical Disk Drive should be on top – select it
 - d. Press a key to start the boot process
4. Once the “Windows is loading files...” goes away, follow the steps below:
 - a. Accept the license terms
 - b. Custom Installation
 - i. Leave the HP_TOOLS partition alone
 - ii. Reformat C:\ drive via Drive Options | Highlight C:\ and then select Format
 - iii. When done, click Next
 - iv. **Takes 20 minutes plus a reboot before the next step**
 - c. User Name: Team1111
 - d. Password: leave it blank for now
 - e. Computer Name: ***Thing1*** or ***Thing2***
 - f. Autoupdate – “Use Recommend Settings”
 - g. Timezone/Date/Time
2. At this point, you will have a Vista Business + SP2 OS installed
3. Take out the OS DVD and put in the DVD labeled: Application and Driver Recovery DVD / for 32-bit Vista
 - a. Run setup.exe
 - b. Select Hardware Enabling Drivers
 - c. Leave all items checked and click Install
 - d. **Takes 25 minutes (Be CAREFUL to watch as there will be popups that indicate a reboot is necessary and you need to postpone them till the full set of installs accomplished)**

- e. Once the “HP Software Setup” process is done, it will indicate a reboot is necessary.
 - f. Click Continue and the reboot will occur
 - g. Take out the DVD and place back in safe storage
4. There will be a few reboots necessary as the installation of drivers seem to require a few more configuration steps and then want to reboot the computer after each item is installed.
5. **Go to Section 1.3: Copy the Robotics Software + Service Packs**

Section 1.2: Generic Vista Basic Installation Process

These instructions were used to install Vista Home Basic onto older laptops that we had acquired. There are no hardware specific directions like the ones above.

1. Considerations for access to Internet.
 - a. Internet access is necessary for Windows Updates, activation of the OS, and the Wind River installation. However...
 - b. **DO NOT** be connected to network that has access to the Internet
 - i. This applies to an install that doesn't already have SP2 slipstreamed.
 - ii. The original Vista Home Basic DVD's supplied do not have Service Pack 1 slipstreamed into them. As a result, if you are on a network that can access the Internet, a Windows Update may attempt to download a HUGE (300MB+) Service Pack 1 file.
 - iii. Vista Service Pack 1 (SP1) will be installed later in the process from the Disk3
 - iv. Additionally, Vista Service Pack 2 (SP2) will be installed later as well. Note that Service Pack 2 needs to have Service Pack 1 installed prior to SP2 being installed.
2. Install Vista Home Basic
 - a. The idea here is to build a computer from scratch. Therefore, during the install process, be sure the WHOLE hard drive is reformatted.
 - b. For Vista Product Key – please see the Programming Team Mentor for the value to use.
 - c. Reformat C:\ drive
 - d. User Name: Team1111
 - e. Password: leave it blank for now
 - f. Computer Name: <<<***name that correspond to Vista product key used***>>>
 - g. Autoupdate – “Use Recommend Settings”
 - h. Timezone/Date/Time

Section 1.3: Copy the Robotics Software + Service Packs

NOTE: Once the OS install has completed, you may continue to the next steps.

1. Do NOT have the computer networked yet.
2. Create the following Directory/File structure on C:\ Drive

- a. C:\Robotics
 - b. C:\Robotics\Disk1
 - c. C:\Robotics\Disk2
 - d. C:\Robotics\Disk3
3. Copy the full contents of each of the three disks to the appropriate directories
 - a. Copy contents of Disk1 to C:\Robotics\Disk1
 - b. Copy contents of Disk2 to C:\Robotics\Disk2
 - c. Copy contents of Disk3 to C:\Robotics\Disk3

NOTE: If the OS install has SP2 (Service Pack 2) installed, by pass the next three steps and continue with the next section: **Section 1.4: Final Setups before FRC 2010 Software Installs**

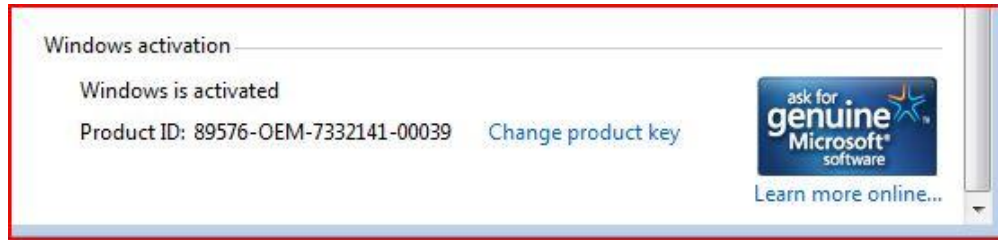
NOTE: Service Packs for Vista come in 32bit and 64bit versions. If the computer being used is a 64bit operating system, you will need to download the 64bit versions from Microsoft.

NOTE: Lastly, SP2 cannot be applied till SP1 is applied. Therefore, if your OS doesn't have any service pack installed, then SP1 needs to be applied first by following the steps below.

4. Install Vista Service Pack 1 (from Disk3\Updates)
 - a. If SP1 is installed already, go to the next step
 - b. Right click the Service Pack 1 file and select "Run as Administrator"
 - c. PATH: C:\Robotics\Disk3\Updates\32bit-VistaSP1-Windows6.0-KB936330-X86.exe
5. Install Vista Service Pack 2 (from Disk3\Updates)
 - a. Right click the Service Pack 2 file and select "Run as Administrator"
 - b. PATH: C:\Robotics\Disk3\Updates\32bit-VistaSP2-Windows6.0-KB948465-X86.exe
 - c. **Started 2:20pm: Takes X minutes**
6. After both service packs are installed, reboot and then connect the computer to a network with Internet access.

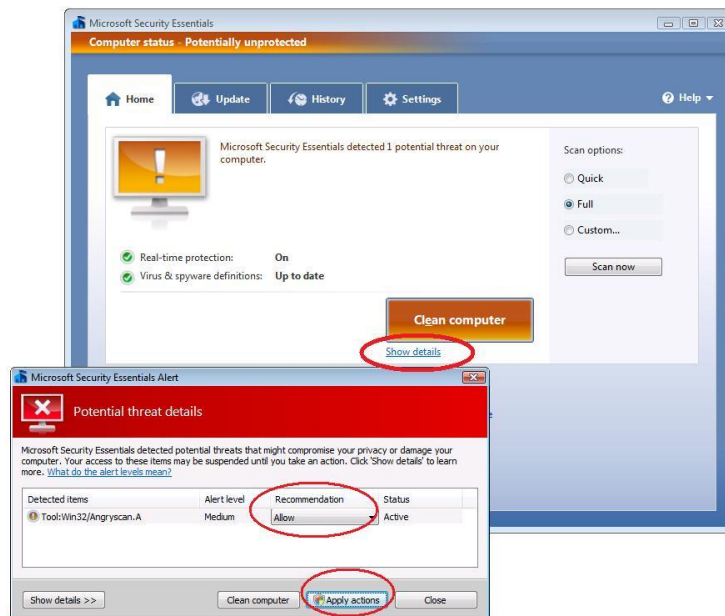
Section 1.4: Final Setups before FRC 2010 Software Installs

1. Connect a network cable to the laptop that has Internet access
2. Test network connectivity to Internet.
 - a. Go to <http://www.bing.com> or <http://www.google.com> to test the Internet access
 - b. Be careful to only check this and not go anywhere else. Remember the computer doesn't have antivirus software on it and the other install processes will need to turn off the firewall or place 'holes' in it.
3. Activate Vista
 - a. Start | Rt.Click Computer | go to bottom of screen to activate the copy of Vista
 - b. Below is what you want to see:



4. Install Microsoft Security Essentials:

- C:\Robotics\Disk3\Tools\Microsoft Security Essentials\ mssefullinstall-x86fre-en-us-vista-win7.exe
- Allow it to retrieve the latest definition file updates
- NOTE:** In the course of time, updates for the Security Essentials software will occur. Please accept these updates as they are normal and expected.
- NOTE:** When a scan occurs, it will most likely find AngryIP has a potential problem:
 - Though the file name has a “.txt” ending to keep anti-virus software from seeing it as a threat – it will most likely be found.
 - The software itself is not problematic, but it has been used in conjunction with other virus and hacking attempts.
 - Should the anti-virus software find it and alert you, perform the steps for the anti-virus software to ACCEPT the program, not quarantine or remove it.



5. Do Windows Updates until there are no additional updates to install

- Start | All Programs | Windows Update

6. Install Adobe Acrobat in order to view the Control System Manuals
 - a. C:\Robotics\Disk3\Tools\AdobeAcrobat_PDF_Reader\AdbeRdr90_en_US.exe
7. Install the Microsoft Word 2007 Viewer
 - a. C:\Robotics\Disk3\Tools\Microsoft Word Viewers\Word 2007 Viewer.exe

Section 2: Install Disk 1 – NI (National Instruments) Install – LabVIEW

NOTE: These steps will tell you what you need to do to install the software. However, look at the suggested readings for more information, back ground information, etc.

NOTE: Access to the Internet will be needed

NOTE: Use the software copied to the Disk1, Disk2 and Disk3 directories – not the DVD's themselves

NOTE: Regardless of whether C++ is to be used (Wind River) vs. LabView – both are to be installed. Java will not be installed.

NOTE: Control System Manuals are listed here: C:\Robotics\Disk3\PulledFromOtherDirs\Docs-USFirst-Controls

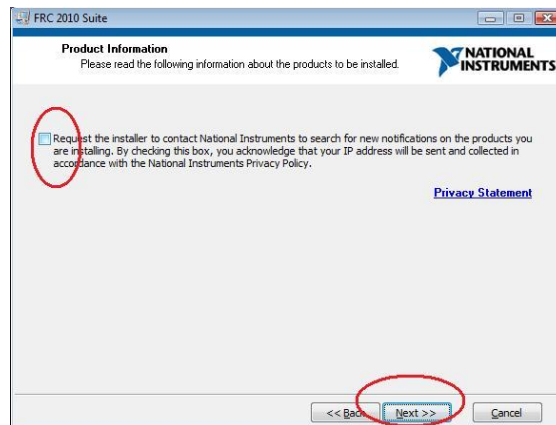
NOTE: These instructions were created based on Control System #2 Manual (Getting Started). Do not bother with the paper instructions that came with the DVD's. The Control System #2 manual supersedes it.

NOTE: Do NOT use the serial number that comes in the software kit for activation. You MUST use the following Serial Number to activate LabVIEW: L13R00000 (this is from the web site)

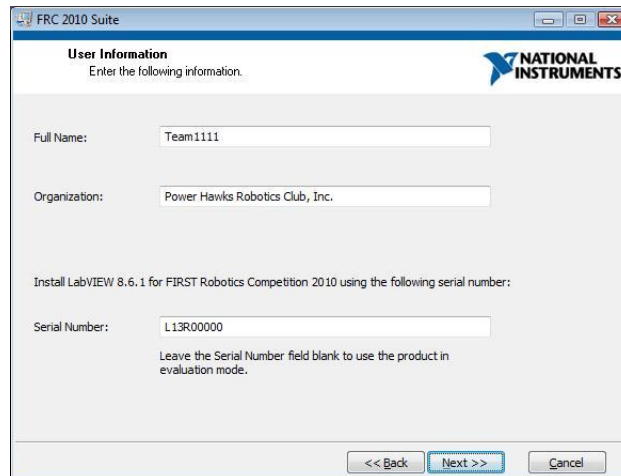
1. Logon to the computer with an account with local administrative rights
2. Disable any anti-virus software while performing the installations:
 - a. For Microsoft Security Essentials, perform the following steps to disable the anti-virus software.
 - b. Start Security Essentials (Start | Microsoft Security Essentials)
 - c. Click Settings tab
 - d. Select Real-time protection on left hand side
 - e. De-select the "Turn on real-time protection"
 - f. Select "Save changes"
 - i. A red header will appear
 - ii. Select Cancel in the lower right hand corner
3. Use Disk1 to install LabView 8.5.1 and associated components (FRC 2010 Control Manual - Section 2 - Chapter 2.3)
 - a. C:\Robotics\Disk1\Setup.exe



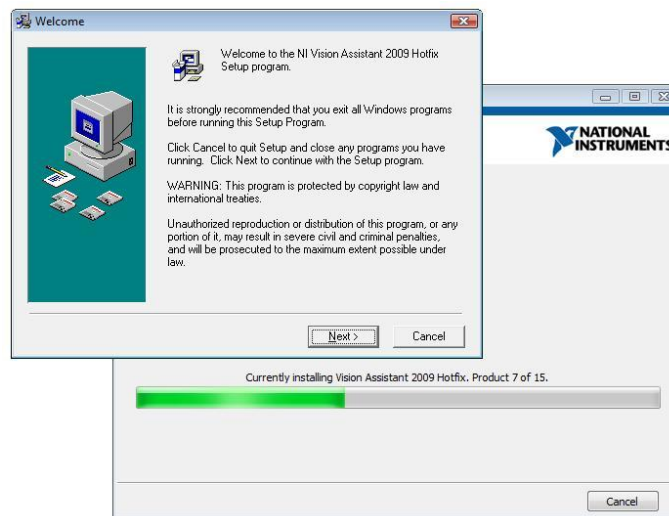
- b. Click “Next” to start the install of the FIRST Robotics Competition Software 2010
- c. For the moment, uncheck the box for allowing NI to notify you when updates are available. It’s a good idea overall but for the moment – let’s skip it. Click Next.



- d. User Information – Use L13R00000 (5 zeros) for the Serial Number



- a. Do all of the defaults – no typing of new values, no selections, no de-selections. Accept the licenses but that’s about it.
 - b. Takes about 60-90 minutes before the process asks for Disk2
4. During the Disk 1 install, you will get to “Product 7 of 15” asking to do an install of a hotfix. Click Next and Finish to continue the installation process

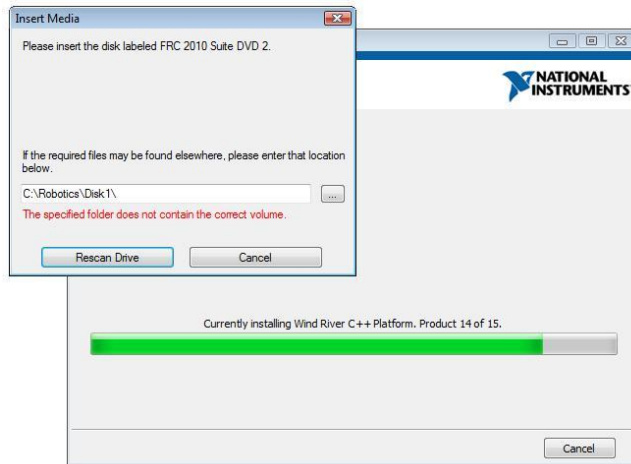


5. During the Disk 1 install, you will get to “Product 11 of 15” will prompt you. Click the appropriate items to continue the installation process – there are multiple prompts.

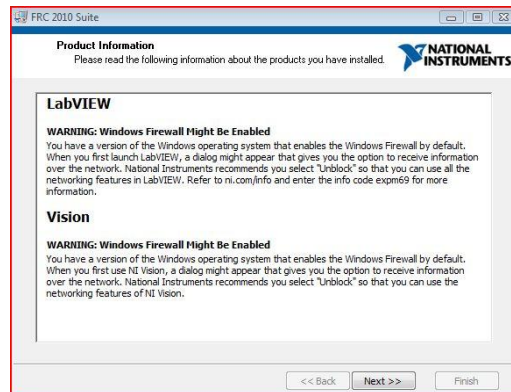
NOTE: The install process on Disk1 (this section) will cause a second installation process to occur where Disk2 (in Section 3 below) files will be needed. However, the Disk1 install process will not have finished yet. So, just be aware. **DO NOT REBOOT** at this time.

Section 3: Transition Between Disk 1 → Disk 2

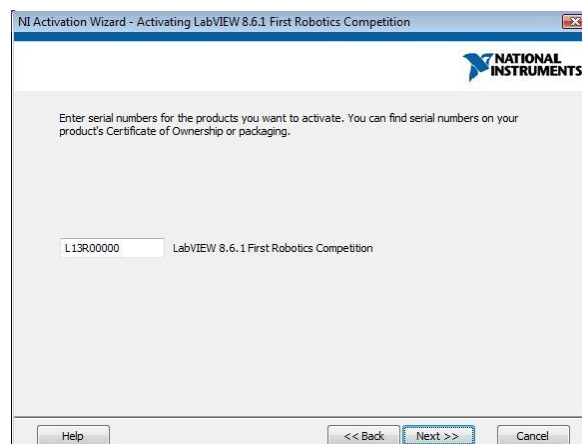
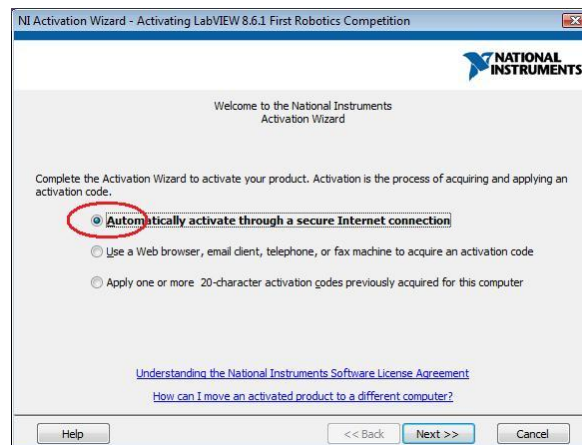
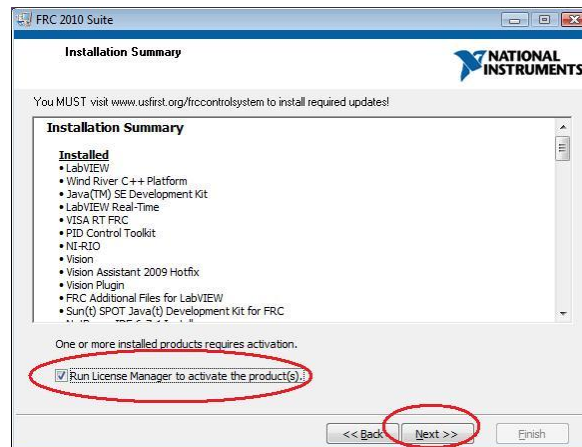
It can be confusing when the second installer (Disk 2) is attempted to be run while the first one hasn't finished. It will look something like the following:



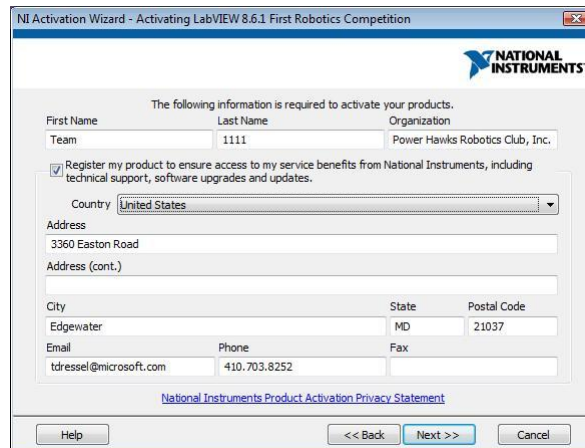
1. A prompt will appear for “inserting” Disk2. Type in the prompt the following value:
C:\Robotics\Disk2\
2. Click “RESCAN DRIVE” and the install process will start the Wind River (Disk 2) installer
3. Do not continue the Wind River (the Disk2 installer) install until the rest of Disk 1 (LabVIEW) has been processed - On the NI (National Instruments) install display:
 - a. Minimize the Wind River installer until you are in the next section - **Section 4: Install Disk 2 – Wind River Install**
 - b. Back on the LabVIEW installer, Click Next (the warning about Windows Firewall...)



- c. Installation Summary display – Select to “Run License Manager to activate the product”.



- d. Fill out the information similar to below and click Next.



The following information is required to activate your products.

First Name: Team, Last Name: 1111, Organization: Power Hawks Robotics Club, Inc.

☒ Register my product to ensure access to my service benefits from National Instruments, including technical support, software upgrades and updates.

Country: United States

Address: 3360 Easton Road

Address (cont.):

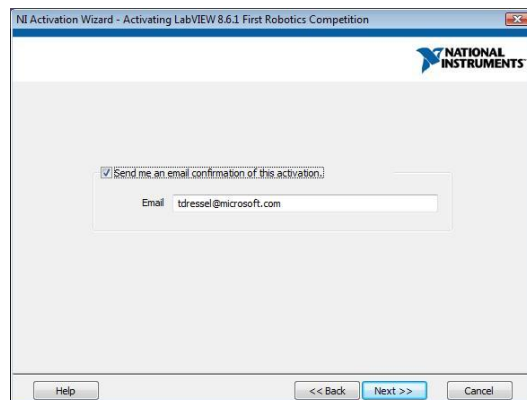
City: Edgewater, State: MD, Postal Code: 21037

Email: tdressel@microsoft.com, Phone: 410.703.8252, Fax:

[National Instruments Product Activation Privacy Statement](#)

Buttons: Help, << Back, Next >>, Cancel

- e. Check the box to be notified if activation is successful - Next

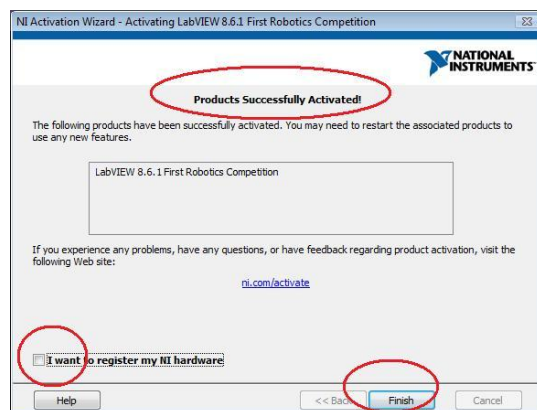


☒ Send me an email confirmation of this activation.

Email: tdressel@microsoft.com

Buttons: Help, << Back, Next >>, Cancel

- f. On the “Product Successfully Activated” display, uncheck the “I want to register my NI hardware” and click Finish.



Products Successfully Activated!

The following products have been successfully activated. You may need to restart the associated products to use any new features.

LabVIEW 8.6.1 First Robotics Competition

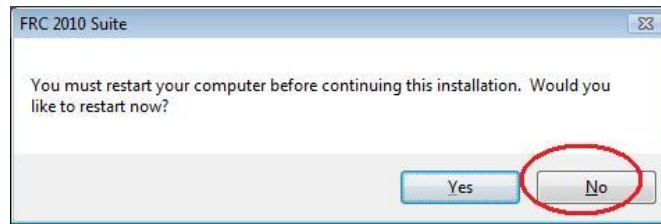
If you experience any problems, have any questions, or have feedback regarding product activation, visit the following Web site:

ni.com/activate

☐ I want to register my NI hardware

Buttons: Help, << Back, Finish, Cancel

- g. **Do not reboot the computer.** This last step is the end of the Disk 1 install process.



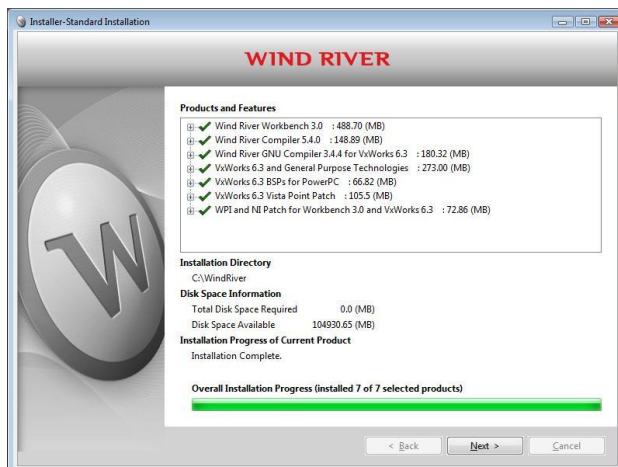
Section 4: Install Disk 2 – Wind River Install

NOTE: The install process on Disk1 should have been completed before starting this section.

NOTE: If for any reason, the Wind River install is to occur without it being tied to the NI install in Section 2, then use the following location to start the install:

C:\Robotics\Disk2\Distributions\WindRiver\setup.exe

1. Going back to the Wind River (Disk2) install
 - a. Click Next on the Welcome prompt
 - b. Accept the license agreement
 - c. Accept the defaults & create the default directory (C:\WindRiver)
2. On the “Activation Type” display, select “Permanent activation” and browse to the activation file: C:\Robotics\Disk2\Distribution\Wind River\FirstRobotics_2010_install.txt. Click Next to continue.
3. On the “Target Architecture” screen, select defaults (Checked PowerPC and Standard Installation) and click Next
4. Click Install to kick off the installers



5. Create a desktop icon but don't start the WindRiver IDE – Click Finish



Section 5: Install Updates

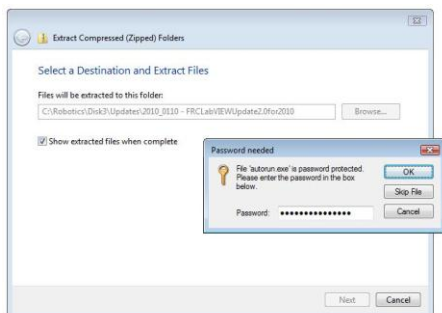
As of February 5, 2010 – there are three updates to install. To avoid issues, install them in the following order:

- LabVIEW Update (FRCLabVIEWUpdate2.0for2010.zip)
- Driver Station Update (DSUpdate1.0for2010.zip)
- Wind River Workbench Update (WorkbenchUpdate20100107.exe)

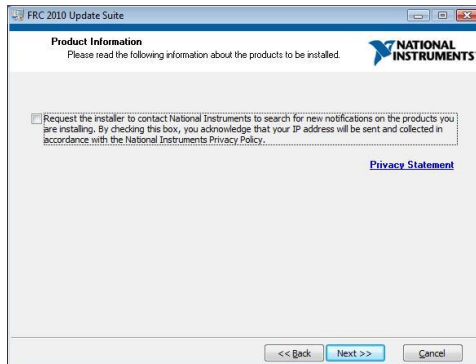
Section 5.1: Update 1 of 3 – LabVIEW Update

The following update was located on the web here (based on Section 2.4 of FRC Control Manual – Chapter 2): <http://joule.ni.com/nidu/cds/view/p/lang/en/id/1534>

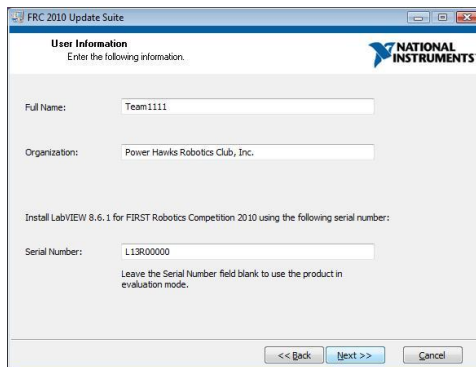
1. Run the C:\Robotics\Disk3\Update\ 2010_0110 - FRCLabVIEWUpdate2.0for2010.zip
2. Place in a subdirectory, and unzip it
3. Use the password of: Breakaway4FRC!



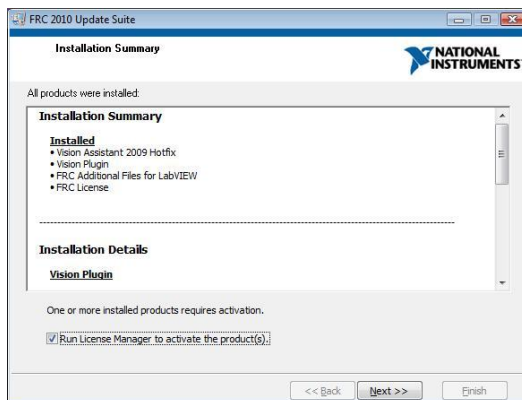
4. Go into the directory of files just uncompressed (unzipped) and run setup.exe
5. Run through the prompts to install it
6. Unselect the request to check for updates and click Next

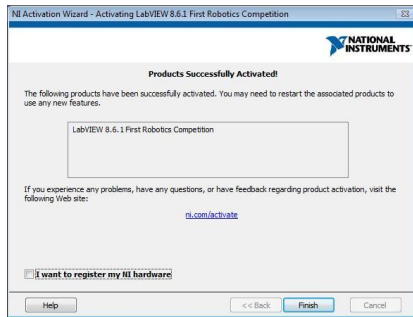


7. Put in a name, organization and the Serial Number: L13R00000 (five '0's)



8. Accept the defaults and ensure the process finishes correctly – run the License Manager again:





Section 5.2: Update 2 of 3 – Driver Station Update (DS Update)

The following update was located on the web here (based on Section 2.5 of FRC Control Manual – Chapter 2): <http://joule.ni.com/nidu/cds/view/p/lang/en/id/1535>

1. Run the C:\Robotics\Disk3\Update\ 2010_0110 - DSUpdate1.0for2010.zip
2. Place in a subdirectory, and unzip it
3. Use the password of: Breakaway4FRC!
4. Run setup.exe
5. Deselect the check for updates and click Next
6. Accept the licenses and select Next
7. Select Finish to complete the install

Section 5.3: Update 3 of 3 – Workbench Update

The following update was located on the web here: <http://first.wpi.edu/FRC/frccupdates.html>

Run the latest workbench file. As of February 9th, there have been three of them:

- C/C++ Team Update 4.2 2/8/2010 → 4.2-WorkbenchUpdate20100208.exe
- C/C++ Team Update 4.1 2/3/2010
- C/C++ Team Update 4.0 1/9/2010

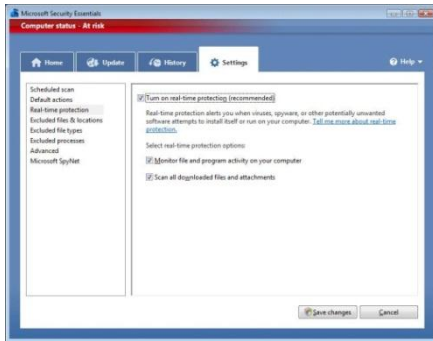
Please check the web location above to see if there has been an update. If so, download and use it in lieu of any of these other three updates. They are cumulative type updates – such that the latest update is all that is necessary.

1. Run the C:\Robotics\Disk3\Update\ 4.2-WorkbenchUpdate20100208.exe
2. There are no additional steps.
3. It just runs and then exits.

Section 5.4: Turn on Anti-Virus Software again

1. Start Security Essentials and re-check the check box for real time checking and click Save Changes. The red header should turn green

2. Do a full scan



Section 6: Cypress Software Installation

For I/O (input/output) on the Driver Station, a separate board has been given to each team. It's from Cypress (www.cypress.com) and the device is called a PSoC3 First Touch Starter Kit. It's a programmable System-On-Chip solution. It has software that needs to be installed as well. The software that came with the hardware has been placed on Disk3.

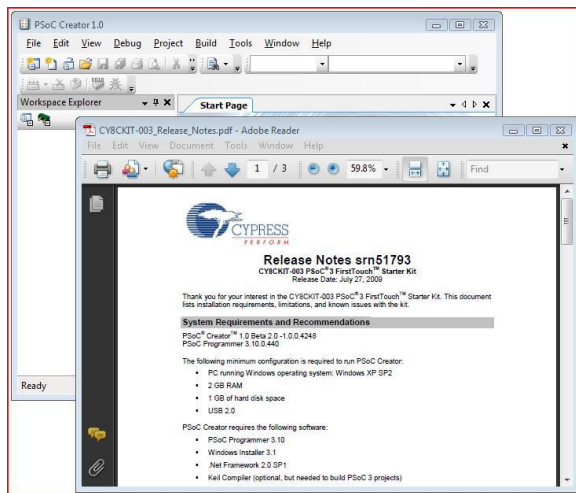
NOTE: This is a long tedious install because there are several sub-installers and a number of clicking steps. Just take the typical choices.

1. Change dir: C:\Robotics\Disk3\Vendors-Variou\Cypress_ProgrammableSystemOnChip
2. Run cyautorun.exe
3. Click the middle choice: Install PSoC 3 FirstTouch Starter Kit



4. Run through the installer – click Next on the Welcome screen
5. There are a number of sub-installers – select Next to continue through them.

- a. Select the 'typical' options
 - b. For customer information – use:
 - i. First Name: Team
 - ii. Last Name: 1111
 - iii. Company Name: Power Hawks Robotics Club, Inc.
 - iv. tdressel@microsoft.com
 - c. Select "Add example projects to the recently used project list"
6. Once you get to the release notes and the starting of the Cypress environment – you are ready to move to the next step.

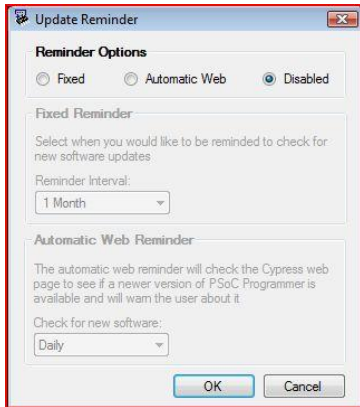


Section 6.1: Cypress Update – FRC_IO.v2.hex

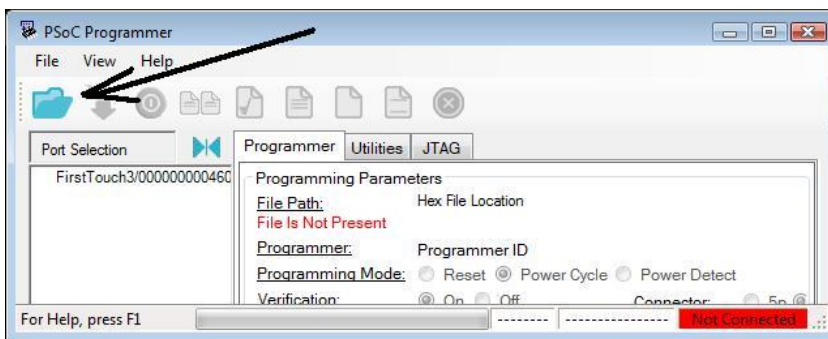
NOTE: These instructions were created based on Control System #2 Manual (Getting Started) – Section 2.11.

Before using your Cypress FirstTouch I/O module, you must first program firmware into the USB chip on the board. The steps below will walk you through the process. Remember that you only need to do this step once per board. Make sure that you have the most recent version of the Driver Station software before proceeding

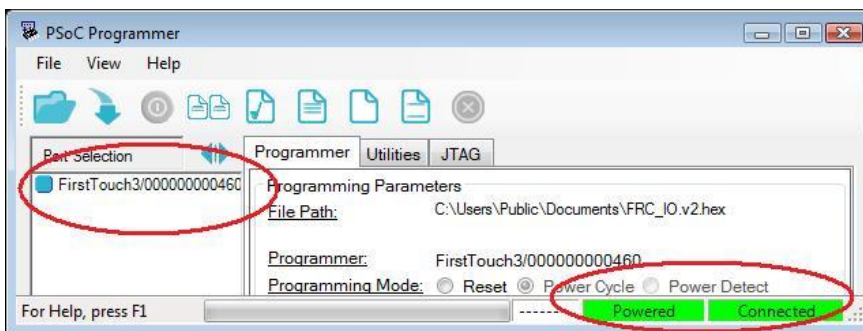
1. Plug the USB cable provided in the FirstTouch starter kit into the I/O module and then into the laptop.
2. Allow the computer time to find and connect to the new hardware.
3. Next, open the Cypress PSoC Programmer → Start | All Programs | Cypress | PSoC Programmer 3.10 | PSoC Programmer
4. If you get an Update Reminder, select Disabled and click OK



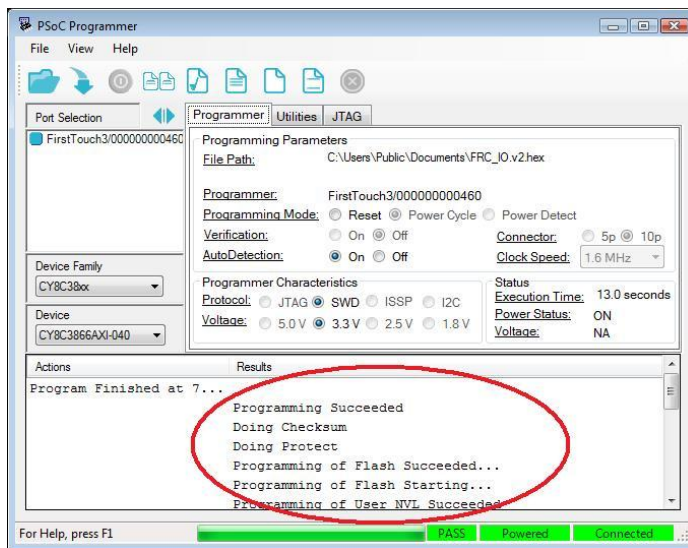
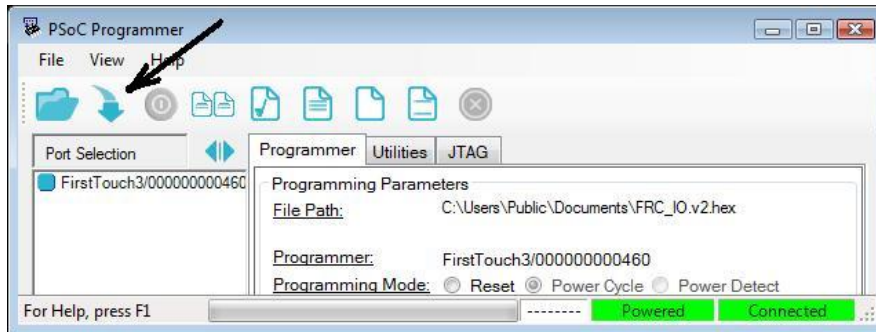
5. In the top left of the tool bar, you'll see a blue folder icon. Click the folder, browse to FRC_IO.v2.hex file. A search for "FRC_IO" yielded: C:\Users\Public\Documents\FRC_IO.v2.hex. Select it and click OK.



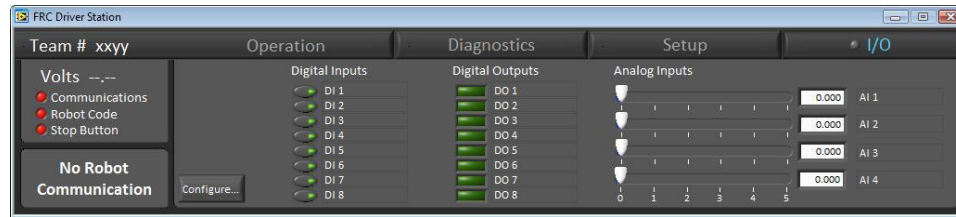
6. Directly below the tool bar, on the left, there is a Port Selection window with the device listed in it. Select the FirstTouch device. This should cause the indicators on the lower right hand side to turn green and show the board to be connected. Previously, the lower right hand corner indicators were red.



7. Click the program button on the tool bar, and wait for the programming operation to complete. You should see all sorts of 'goodness', such as "Programming Succeeded" messages in the text Results window and green indicators showing "PASS" / "Powered" / "Connected".



8. Unplug and replug the USB cable and your I/O module (the Cypress unit) will be ready to use. You can check to make sure the process was successful by opening the Driver Station software and confirming that the device is being recognized.
- To run the Driver Station: Start | All Programs | FRC Driver Station
 - Click the various "Unblocks" to allow Firewall to unblock the traffic
 - With the I/O module plugged in, your I/O tab will indicate that the Hardware I/O is selected. Without the I/O module plugged in, it will default to the Virtual I/O:



Section 7: cRIO Firmware Image Update

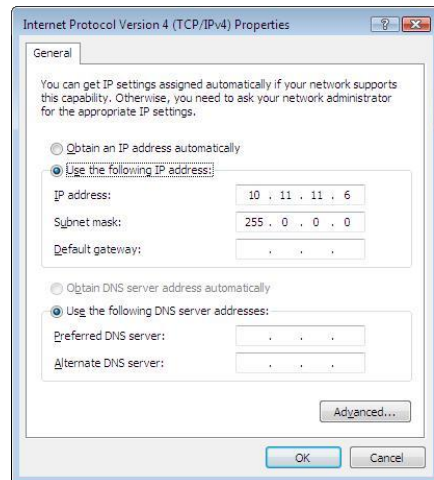
1. Before leaving the Internet, do one more Windows Updates until there are no additional updates to install
 - a. Start | All Programs | Windows Update

NOTE: At this point, the Internet is not necessary.

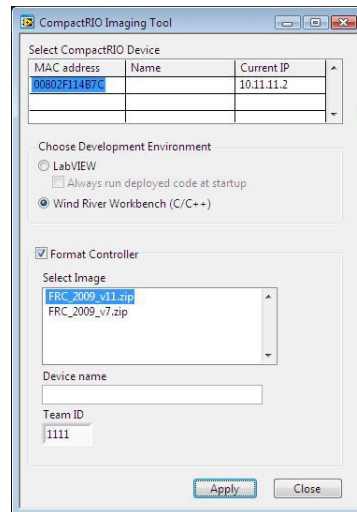
NOTE: Disconnect the computer from the network with Internet access. Connect it to the network that access to the cRIO

NOTE: In order to correctly connect to the cRIO to reimage it, the computer must communicate with it. Either directly connect the cRIO to a laptop, directly connect the cRIO to the WAP (router) or correctly setup the wireless. This is accomplished via FRC Controls Manual 5 (Section 5.6)

2. Using Control System Manual - Section 5 (Specifically Section 5.1.2 / Page 4), Laptop should have the following IP address setup:
 - a. Start | Control Panel | Classic View | Network and Sharing Center
 - b. Click Manage Network Connections on left hand side
 - c. Rt.Click the Local Area Network connection | Properties
 - d. Double click Internet Protocol Version 4 (TCP/IP v4)
 - e. Make the settings look like this screenshot
 - i. **NOTE:** 10.11.11.6 is necessary for the LabVIEW dashboard to work correctly and interact with the program on the robot.



3. Reimage the cRIO - Run the “FRC cRIO Imaging Tool”
 - a. Start | All Programs | National Instruments | LabVIEW 8.5 | FRC cRIO Imaging Tool
 - b. If this is the first time, you will be asked for the firewall on the laptop to unblock the traffic from the program to the cRIO unit – select to UNBLOCK
 - c. If a dialog window appears with the message “No CompactRIO devices were found. Verify the network connection” there was a problem connecting to the cRIO. Check power to the cRIO and ensure the Ethernet cables are connected.
 - d. The cRIO Imaging tool will be launched and a window will be displayed titled “CompactRIO Imaging Tool.” The top of the window will show information on any cRIO devices which were found on the network. Select the MAC address of the cRIO you would like to re-image. (Note: The cRIO MAC address is printed on a label on the back of the cRIO next to the bar code.)
 - e. At this point, the cRIO needs to be updated with the image
 - i. One of the most important files in the FRCLabVIEWUpdate3.0a.zip update is the cRIO image file (FRC_2009_v11.zip) (Step 21)
 - ii. This file was needed at both the FRC 2009 Regional’s (Wash. DC and Chesapeake) that we participated in with mixed results.
 - iii. It’s copied to the C:\Program Files\National Instruments\LabVIEW 8.5\project\CRIO Tool\FRC Images
 - iv. The tool should find it if placed into that location.

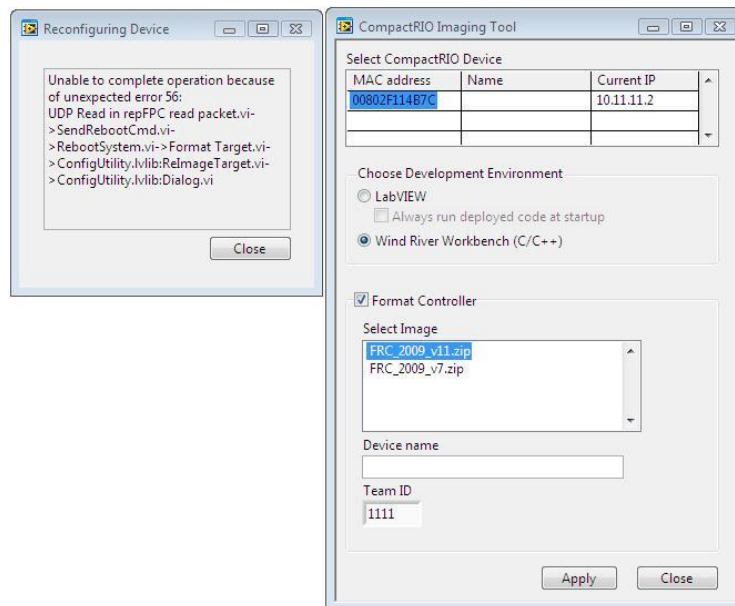


- f. Select the development environment you would like to use by clicking the radio button next to either “LabVIEW” or “Wind River Workbench (C/C++)”.
- g. Select the checkbox next to “Format Controller” to install a new image onto the cRIO.
 - a. Select the image to be used from those in the list. (As of 07 February 2009, the most recent image is FRC_2009_v11.zip)
- h. In the text box under “Device name” enter the desired name for your cRIO device. (e.g. for team 1234, use “FRC-cRIO-1234”)
- i. In the text box under “Team ID” enter your team number. The IP address and subnet mask for the cRIO will be derived from the team number as described in section 5.2.
- j. Downloading a complete image to the cRIO requires about 5 minutes, during which time the laptop and cRIO must not be interrupted by resetting the power or interfering with the network connection.
- k. When ready to proceed, select the “Apply” button to commence imaging of the cRIO.
- l. A “Reconfiguring Device” window should appear showing current status of the imaging procedure. The text window will sequence through the following messages:
 - a. Extracting CompactRIO Image...
 - b. Connecting to CompactRIO device...
 - c. Formatting CompactRIO device...
 - d. Assigning IP address...
 - e. Updating CompactRIO Image...
 - f. Configuring secondary Ethernet port...
- m. The imaging process should complete within approximately 5 minutes. When the imaging process is complete, the message “The CompactRIO image was successfully updated. The IP address of the CompactRIO device is 10.xx.yy.2.” (where xxyy come from your team number) → 10.11.11.2 for Team 1111.

- n. Select “Close” to close the “Reconfiguring Device” window. Selecting “Close” actually closes both displays.
- o. Power cycle the cRIO to have the new FPGA (Field Programmable Gate Array) image loaded automatically.
- p. BACKGROUND:
 - a. Run through the steps in the control manuals. Section 1.6.5 is “step 5” for getting up and going. It points to Section 5.1.2.
 - b. Run through the steps in Section 5.1.2 to update the unit – the settings should match those above.

The Dreaded “error 56”: ERRORS that have been encountered

NOTE: We’ve run into this “Error 56” problem a number of times. Possibly, it had to do with virus scanning software. A clean install of a laptop may take care of this.



NOTE: One tool that maybe needed is the MAX (Measurement & Automation Explorer) tool. Should error 56 occur, it’s best to reset the IP address of the robot and start over.

Using the CompactRIO Operating Instruction and Specification guide, go to Page 15 and use the “Resetting the Network Configuration of the cRIO-FRC” instructions. The text is reprinted here.

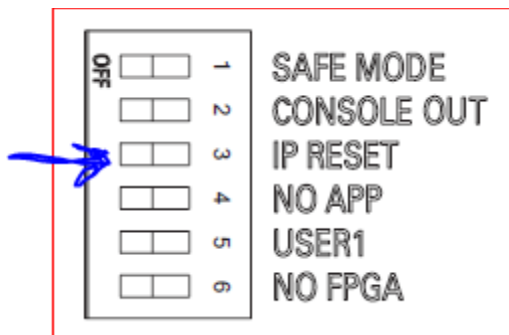
If the cRIO-FRC is not able to communicate with the network, you can use the IP RESET switch to manually restore the chassis to the factory network settings. When you restore the chassis to the factory network settings, the IP address, subnet mask, DNS address, gateway, and Time Server IP are set to 0.0.0.0. Power-on defaults, watchdog settings, and VIs are unaffected

Complete the following steps to reset the chassis.

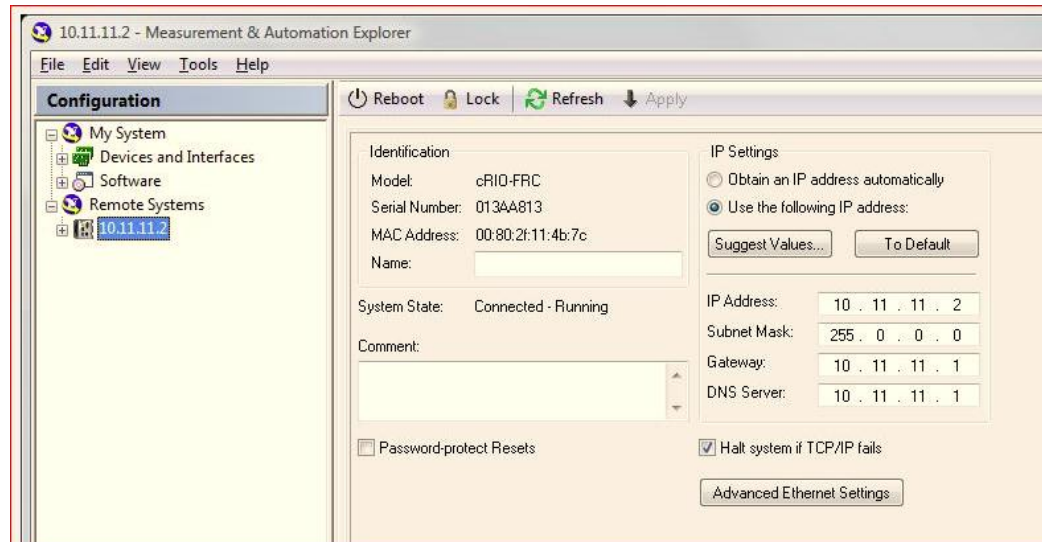
1. Move the IP RESET DIP switch to the ON position.
2. Push the RESET button to cycle power to the chassis. The STATUS LED flashes once, indicating that the IP address is unconfigured.
3. Move the IP RESET switch to the OFF position.

The network settings are restored. You can reconfigure the settings in MAX from a computer on the same subnet. Refer to the Measurement & Automation Explorer Help for more information about configuring the chassis.

Note If the cRIO chassis is restored to the factory network settings, the LabVIEW run-time engine does not load. You must reconfigure the network settings and restart the chassis for the LabVIEW run-time engine to load.



1. Start the MAX tool (Measurement & Automation Explorer)
 - Set the IP address information to that which is shown below. On the left hand side, expand Remote Systems. Set the IP address information to what is shown below and then click the Apply button at the top.
 - Once that occurs, the cRIO imaging tool can be tried again.



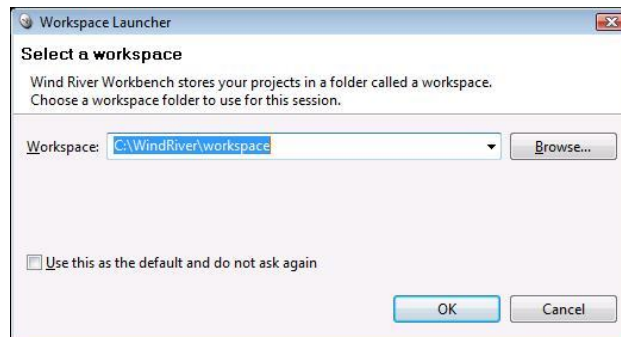
Section 8: Installing FRC 2009 C++ Code Base / Setting up Wind River (C++) Environment

In order to run the robot with the code base from the Chesapeake Regional of 2009, follow the steps below. After a successful run of these steps, the robot will function as it did during the Chesapeake Regional. In the FRC 2009 Build Season, the team used C++ to program the robot. This section takes the newly installed computer and configures the Wind River environment the way that is necessary for the FRC2009 last known good code base to be installed onto the computer, compiled and successfully downloaded to the robot.

1. Reimage the cRIO (via Section 7: cRIO Firmware Image Update) with the Wind River Workbench (C/C++).
 - a. Test that the cRIO truly was reformatted by running it with the driver station.
 - b. Set Driver Station to Autonomous. Then enable it. There should be NO activity from the motors
 - c. Set Driver Station to Teleoperated/Enabled.
 - i. The joy stick will cause only motor's 2 and 4 to run in 'tank mode'. Motor's 2 and 4 are represented by ANALOG connections 2 and 4 on the sidecar.
2. Start the Wind River Workbench (IDE – Integrated Development Environment) via either route:
 - a. Desktop Icon that says: Wind River Workbench 3.0
 - b. C:\WindRiver\workbench-3.0\wrwb\platform\eclipse\wrwb-x86-win32.exe



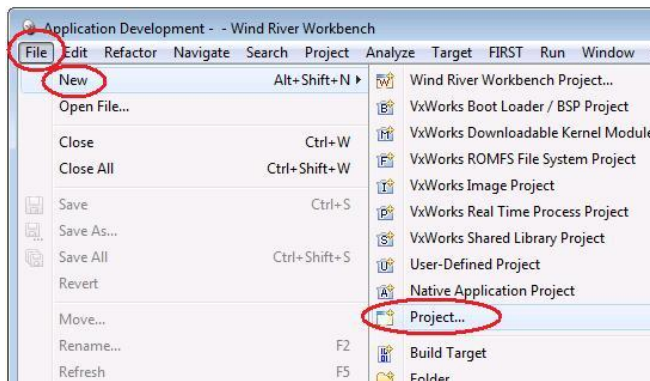
3. On the Workbench Launcher:
 - a. Allow the defaults and choose **C:\WindRiver\workspace** and click OK.



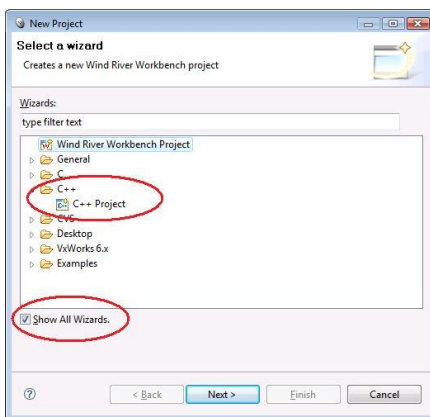
- b. If there are prompts to allow the firewall to unblock attempts at changes to the firewall, choose UNBLOCK.
 - c. Click on the work bench symbol “flipped arrow” at the bottom to enter the Application Development IDE



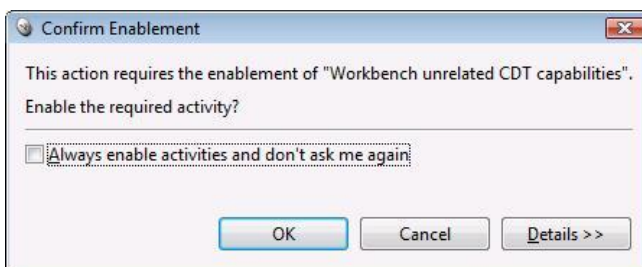
4. File | New | Project



5. Select Show All Wizards and then select C++ Project | Next

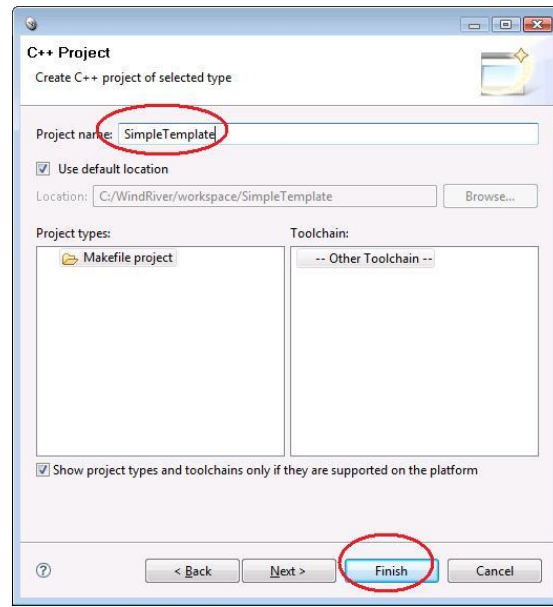


6. On the Confirm Enablement display – select OK

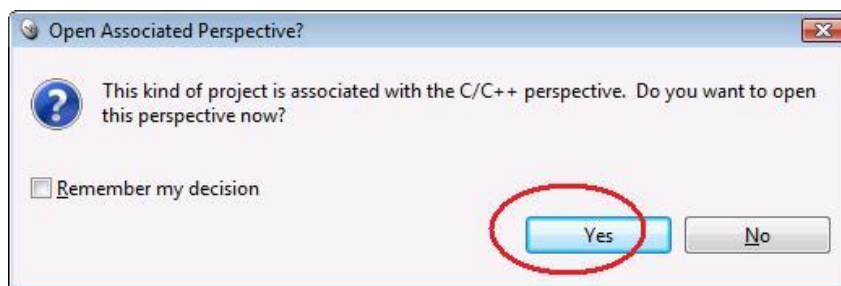


7. On the C++ Project display

- Project Name: SimpleTemplate (one word, no spaces)
- Click Finish

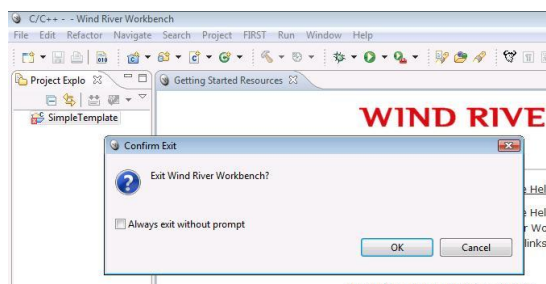


8. Open Associated Perspective | Yes



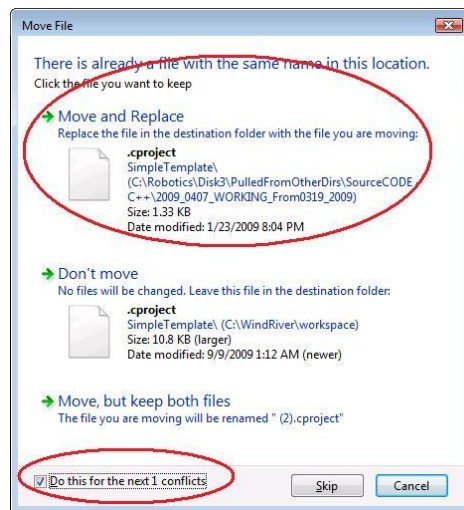
9. The Wind River IDE is shown

10. Exit the Wind River IDE (click OK to confirm exit)



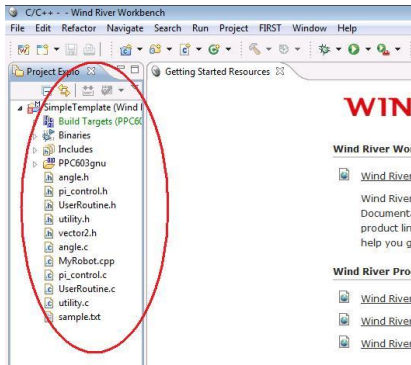
11. Copy the code base that worked last and place it in the Wind River work bench directory

- a. Copy FROM: C:\robotics\disk3\PulledFromOtherDirs\SourceCODE - C++\2009_0407_WORKING_From0319_2009\SimpleTemplate
- b. Copy TO: C:\WindRiver\workspace.



- 

- 30



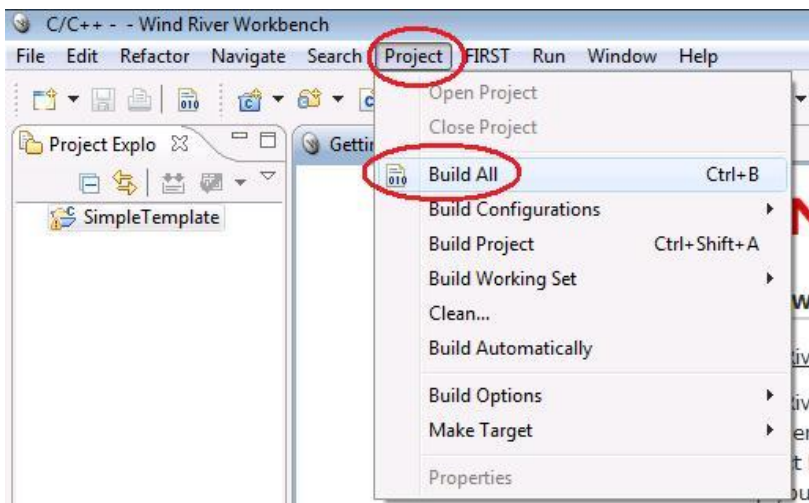
14. In the IDE, select Windows | Preferences

a. FIRST Downloader Preferences

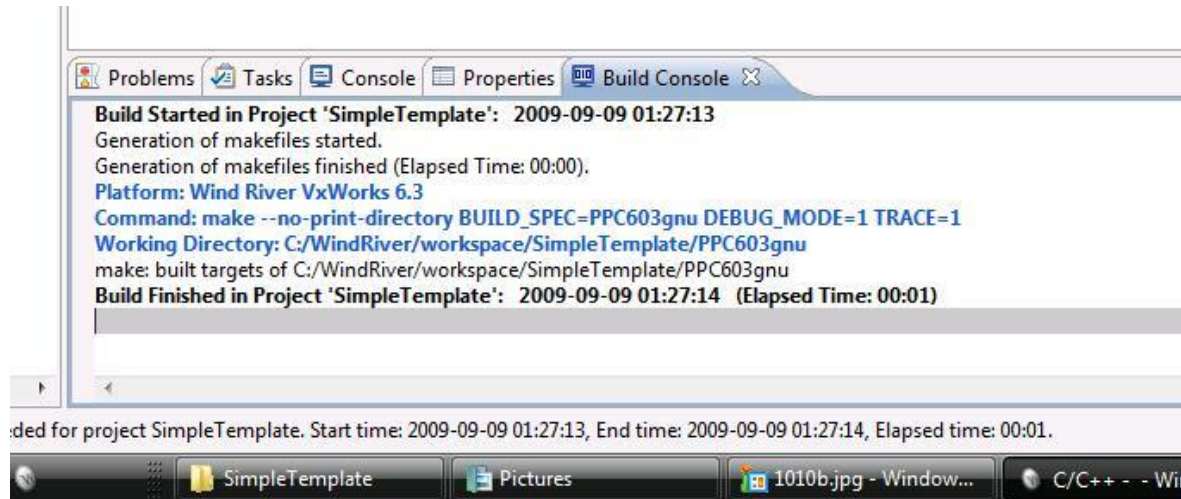
- i. Team: 1111
- ii. File to download to robot:
C:\WindRiver\workspace\SimpleTemplate\PPC603gnu\SimpleTemplate\Debug\SimpleTemplate.out
- iii. Click Apply
- iv. Click Ok



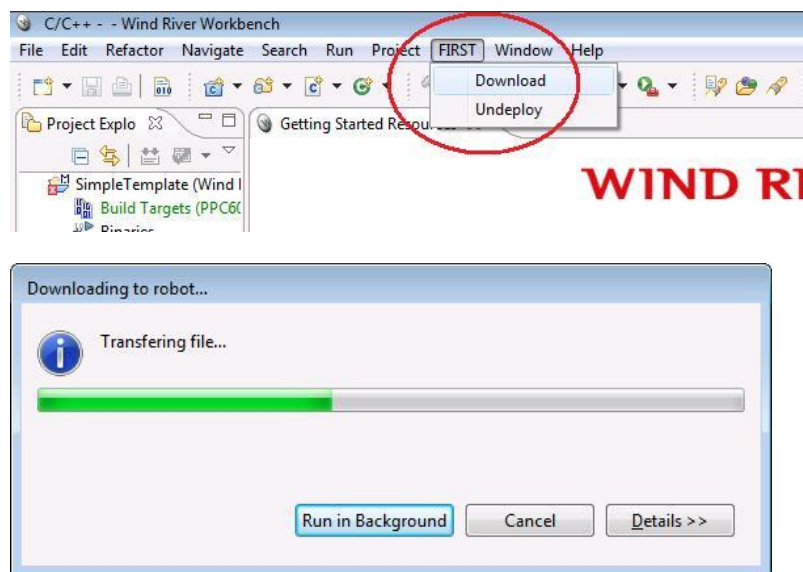
15. Project | Build All



16. Build console status – should indicate it finished building



17. FIRST | Download



18. Reboot the cRIO.

- Test that the cRIO truly has the Team 1111 FRC 2009 Wind River code
- Set Driver Station to Autonomous. Then enable it. There should be activity from the motors
- Set Driver Station to Teleoperated/Enabled.
- The joy stick will cause all motor's to run regardless of the direction of the joy stick

Section 9: Other Updates and Activities

1. Perform a full-index of the laptop so that searches (Start | Search) will cover the Wind River and other installed files
 - a. Start | Control Panel | Classic View | Indexing Options
 - b. On the Indexing Option display - Click Modify
 - c. On the Indexed Locations display - Click Show all locations
 - d. Select the full C:\ drive – then select OK
 - e. Select Close button
2. Angry IP
 - a. For doing a scan of IP addresses use the AngryIP.exe program
 - b. NOTE: The file name has a “.txt” ending. This is to keep anti-virus software from seeing it as a threat. The software itself is not problematic, but it has been used in conjunction with other virus and hacking attempts.
 - c. If you use this software, when the anti-virus software finds it and alerts you, perform the steps for the anti-virus software to ACCEPT the program, not quarantine or remove it.
 - d. Create shortcut on desktop for C:\Robotics\Disk3\Tools\AngryIP\AngryIP.exe
3. WinDiff
 - a. For doing file compares – there is a SIMPLE file comparison tool called WinDiff
 - b. Create shortcut on desktop for C:\Robotics\Disk3\Tools\WinDiff\windiff.exe
4. On the Control Panel – Game Controllers
 - a. NOTE: Joystick must be plugged into laptop for this to be of use
 - b. This can be used to ensure the joystick/game controllers work as expected. Plug in each joystick/game-controller then under Properties select the Test tab and start clicking the buttons and mechanisms. They should all register. Do this for all joystick/game-controllers that are to be used or used as reserve.
 - a. Use Section 4.4 for the installing of other software
 - b. Subversion is a source control application
5. Lastly, do a full scan of the computer with the Microsoft Security Essentials

