Test, Change IP and Upgrade Firmware on sbRio robots
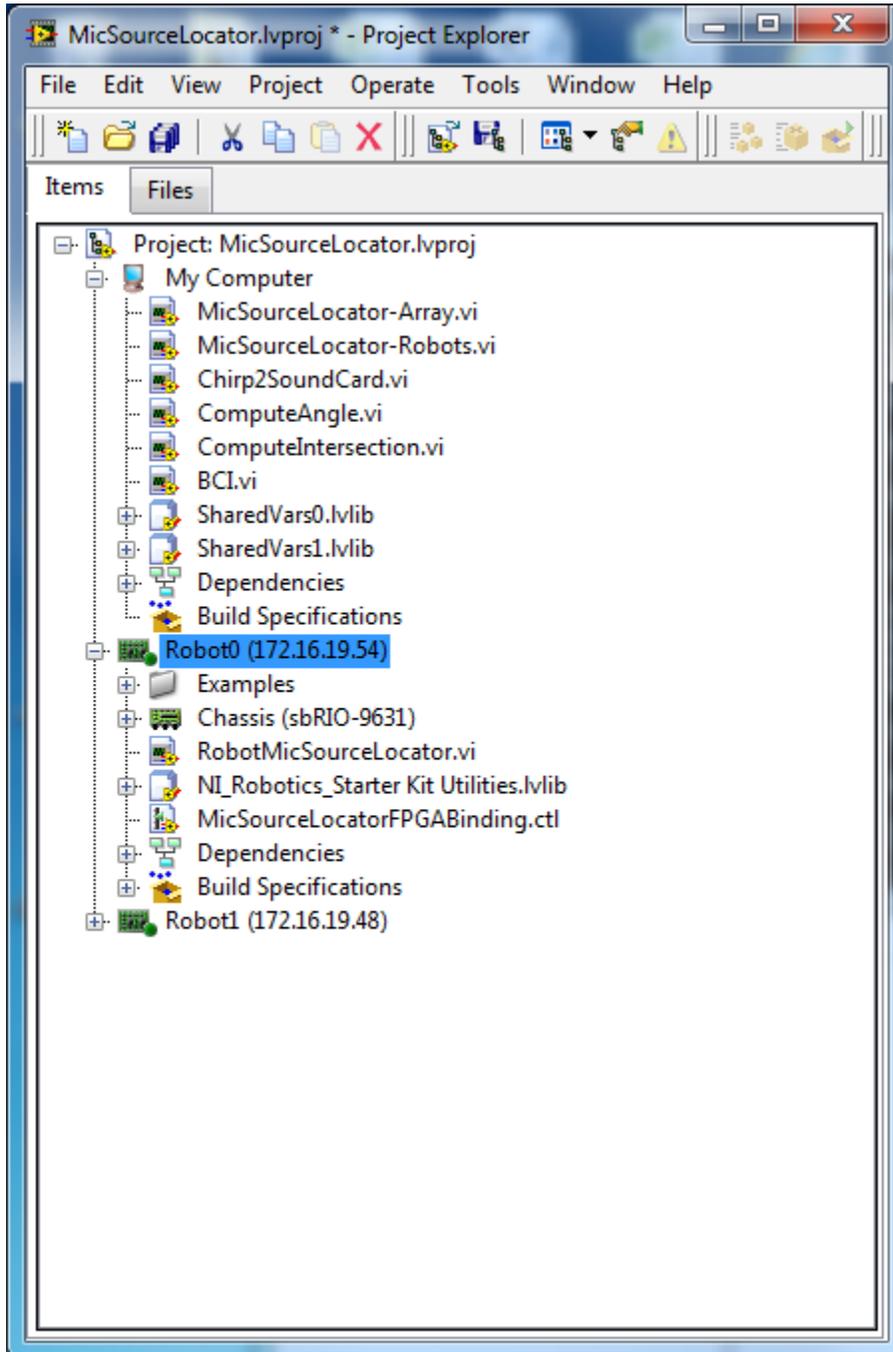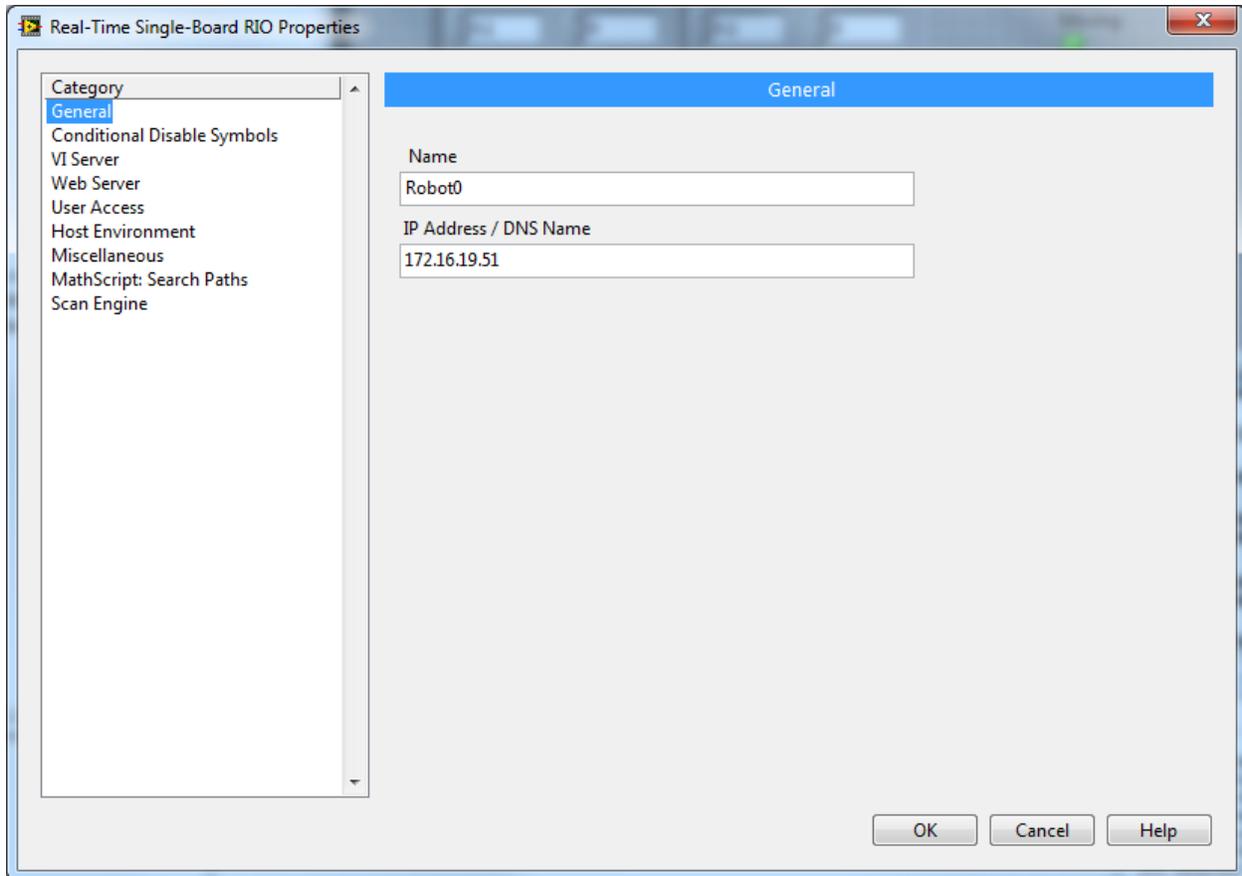
- Test Robots
- Robot Battery Test
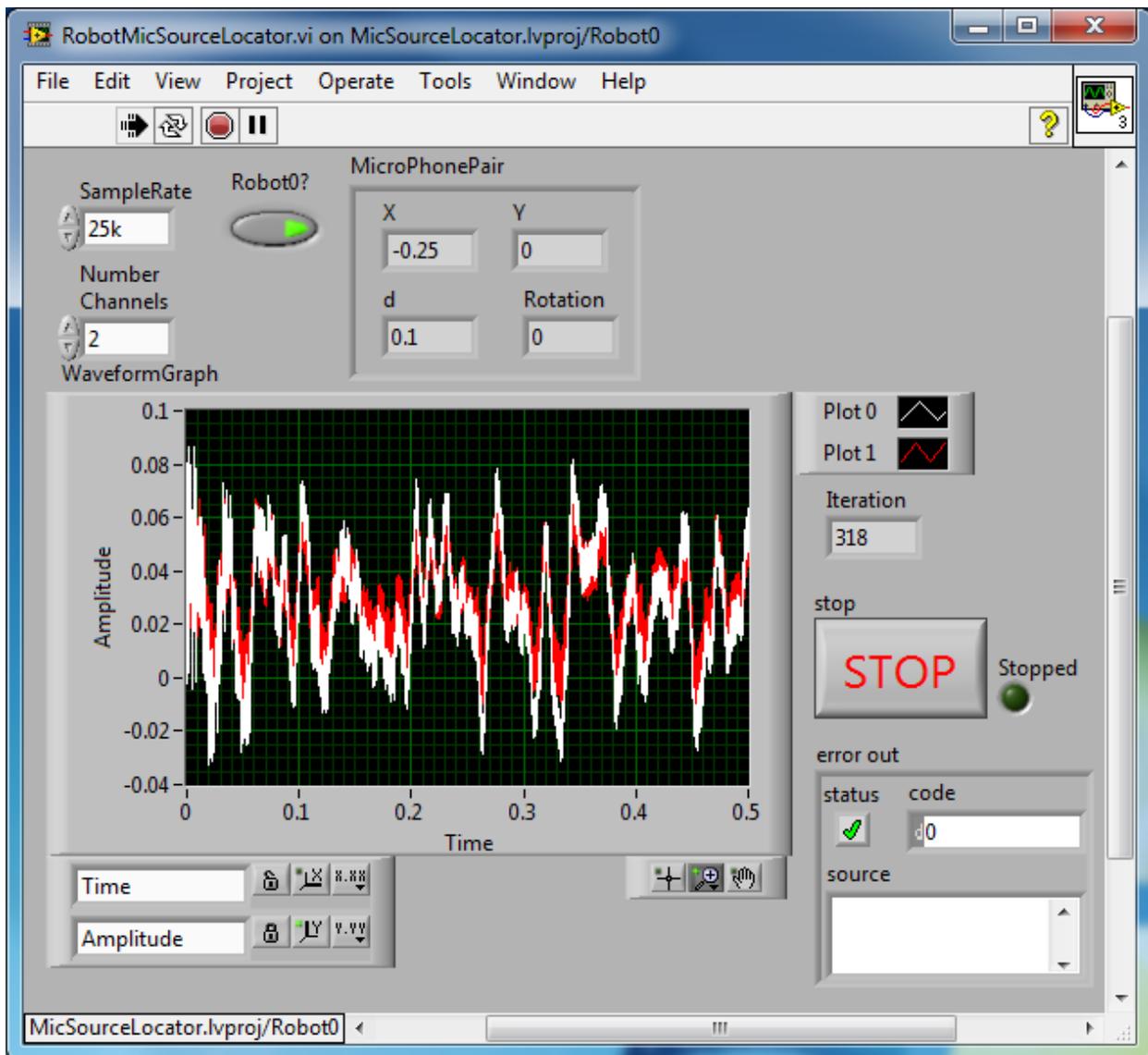- Upgrade Firmware
- Change IP

Test Robots

1. Open MicSourceLocator.lvproj from ESE297 webpage

2. Right Click on Robot0 and select Properties and change the IP to match the label on your robot.
3. Double click on Robot0 -> RobotMicSourceLocator.vi

4. Click the Run Arrow
5. Make sure that the Left Gain and the Right Gain on top of the Preamp is turned up to +48dB and that the Mix (on bottom) is in the middle and the Level (on bottom) is set to 10 and that the Phantom switch is ON. Verify that the Mic0 only activates the white trace and Mic1 only activates the red trace
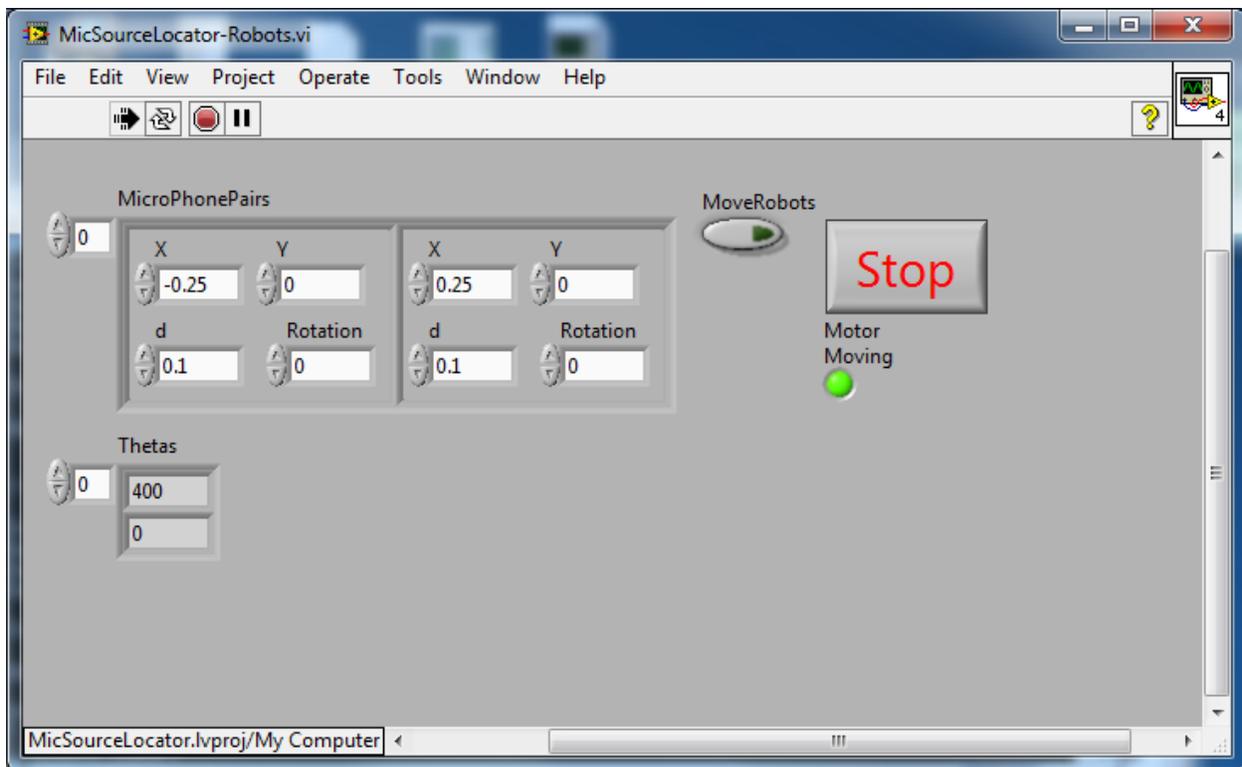
6. Double click on My Computer -> MicSourceLocator-Robots.vi and click the Run arrow.
7. Make sure that the Motor Moving light turns off after a few seconds and that Thetas[0] counts up.
8. Click MoveRobots and make sure that both wheels move in opposite directions ¼ of a rotation.

Battery Test on Robots

1. Follow instructions to test robots and verify all is working
2. Copy BatteryTest.vi from Ed's to your MicSourceLocator folder
3. Add BatteryTest.vi to your project under My Computer
4. Run Robot0 -> RobotMicSourceLocator.vi
5. Run My Computer -> BatteryTest.vi. This will move the motor every 5 seconds. The Iteration indicator should stop updating when the battery dies.

Upgrade Firmware

1. Plug in sbRio robot to active Ethernet port
2. Push Dip Switch 3 to the down position (IP Reset)
3. Launch NI-MAX
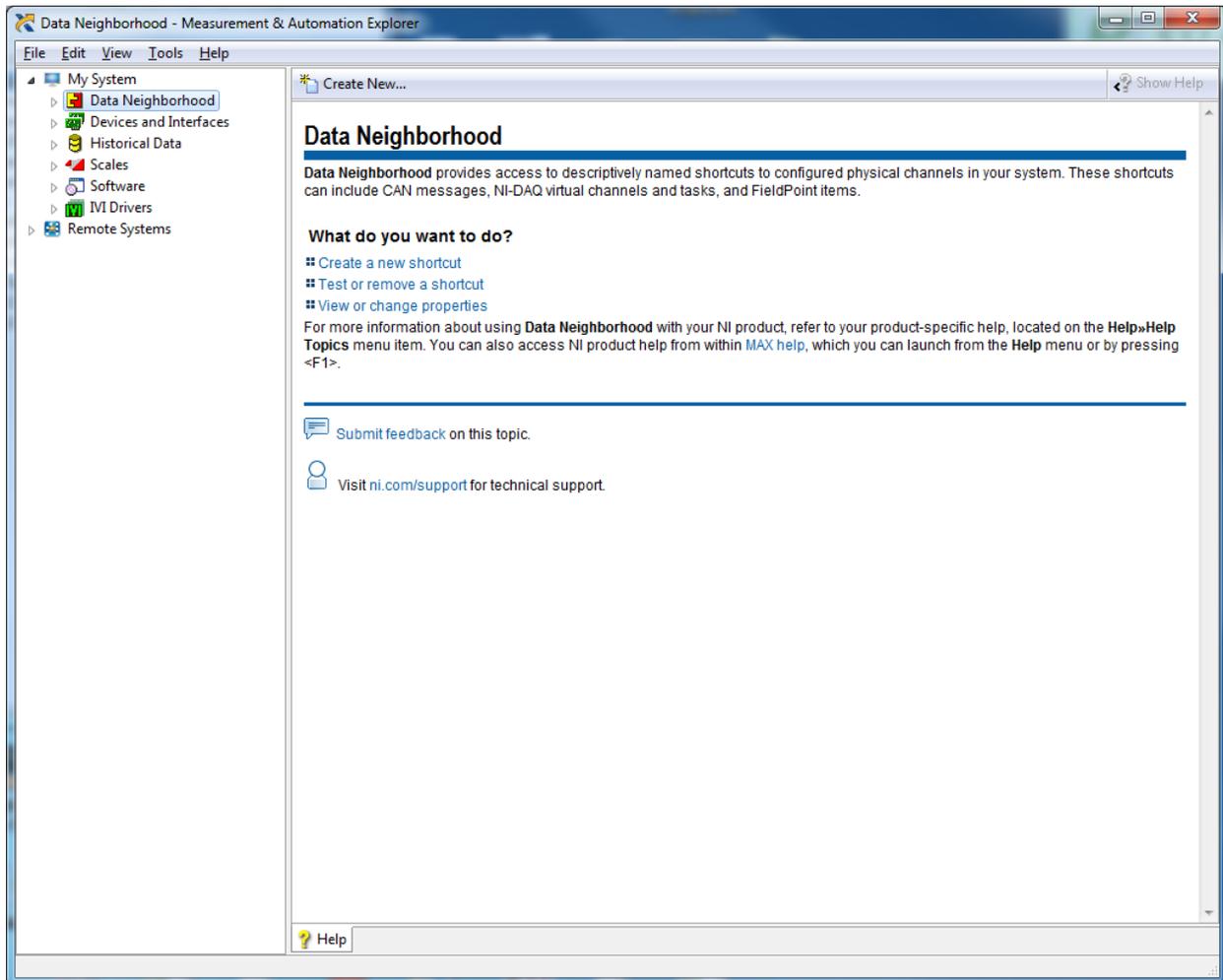
4. Click on the arrow to the left of Remote Systems
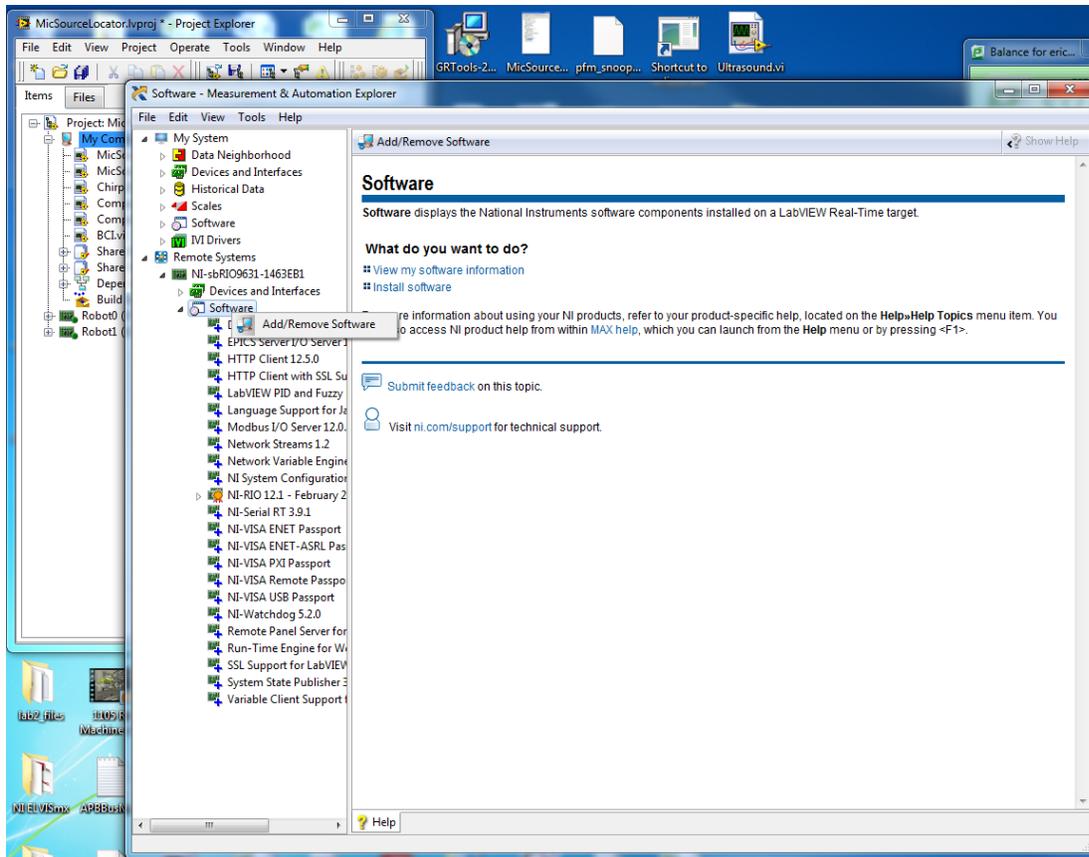
5. Right Click on Remote Systems -> sbRIO -> Software and select Add/Remove Software

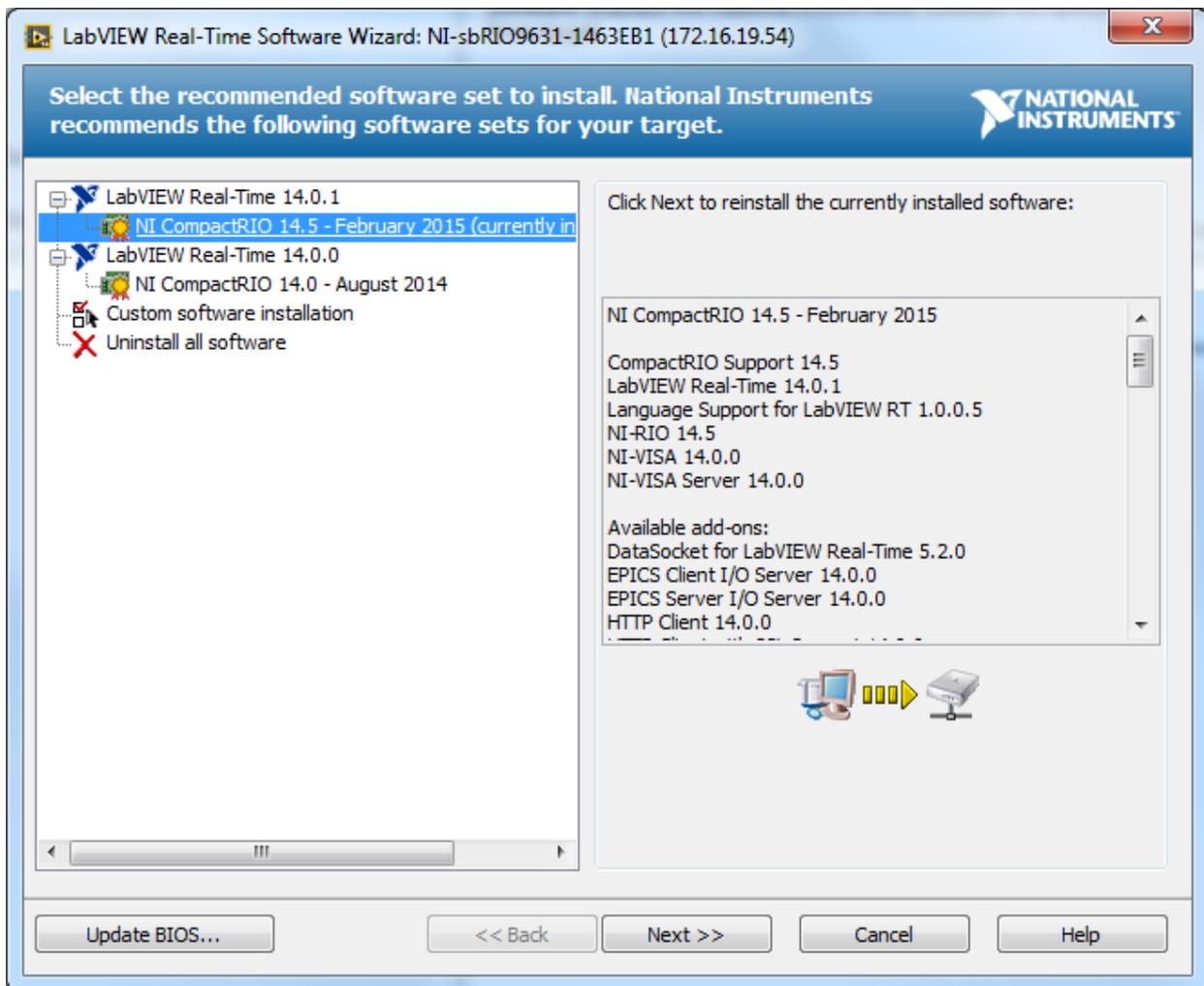6. Select latest version under LabVIEW Real-Time and click Next >>

LabVIEW Real-Time Software Wizard: NI-sbRIO-9631-0148CCC5 (172.16.2.70)

(Optional) Select the software set add-ons you want to install.

NATIONAL INSTRUMENTS™

NI CompactRIO 14.5 - February 2015

- ☑ Software set add-ons
  - ☑ LabVIEW RT Add-ons
    - ☐ LabVIEW Control Design and Simulation 14.0
    - ☐ LabVIEW SoftMotion Module 14.1.0
    - ☐ Language Support for Japanese 14.0.1
    - ☐ Language Support for Simplified Chinese 14.
    - ☑ NI System Configuration 14.5.0
    - ☐ SSL Support for LabVIEW RT 14.5.0
    - ☑ System State Publisher 3.3.0
  - ☑ Network I/O
    - ☐ Modbus I/O Server 14.0.0
    - ☑ Network Streams 14.0
    - ☑ Network Variable Engine 14.0.0
    - ☑ Variable Client Support for LabVIEW RT 14.0
    - ☐ Variable Legacy Protocol Support 5.6.0
    - ☐ Variable Legacy Server Support 5.6.0
  - ☐ NI Scan Engine
    - ☐ NI-RIO IO Scan 14.5
    - ☐ NI-Serial 9870 and 9871 Scan Engine Suppo
  - ☐ Protocols and Buses
    - ☐ DataSocket for LabVIEW Real-Time 5.2.0

Click "Next" to install the Recommended Software Set and the selected add-ons to the target.

NI System Configuration API provides libraries and other files necessary to support applications that discover and configure systems and devices.

This add-on will be installed to the target.

Update BIOS...   << Back   Next >>   Cancel   Help

LabVIEW Real-Time Software Wizard: NI-sbRIO-9631-0148CCC5 (172.16.2.70)

(Optional) Select the software set add-ons you want to install.

NATIONAL INSTRUMENTS™

NI CompactRIO 14.5 - February 2015

- ☐ DataSocket for LabVIEW Real-Time 5.2.0
- ☐ EPICS Client I/O Server 14.0.0
- ☐ EPICS Server I/O Server 14.0.0
- ☐ NI 1588-2008 Network Management 14.0.0
- ☐ NI-Industrial Communications for EtherNet/I
- ☐ NI-Serial RT 14.0.0
- ☐ NI-TimeSync 14.5.0
- ☐ NI-TimeSync Plugin for Software-Based 158
- ☐ NI-VISA ENET Passport 14.0.0
- ☐ NI-VISA ENET-ASRL Passport 14.0.0
- ☐ NI-VISA PXI Passport 14.0.0
- ☐ NI-VISA Remote Passport 14.0.0
- ☐ NI-VISA USB Passport 14.0.0
- ☐ NI-Watchdog 14.1.0
- ☐ OPC UA Client API 14.0.1
- ☐ OPC UA Server API 14.0.1
- ☐ Vision Features
- ☐ NI Vision RT 14.5.0
- ☐ USB3 Vision Support 14.5.0
- ☐ Web Features
- ☐ Hardware Configuration Web Support 14.5.

Click "Next" to install the Recommended Software Set and the selected add-ons to the target.

NI System Configuration API provides libraries and other files necessary to support applications that discover and configure systems and devices.

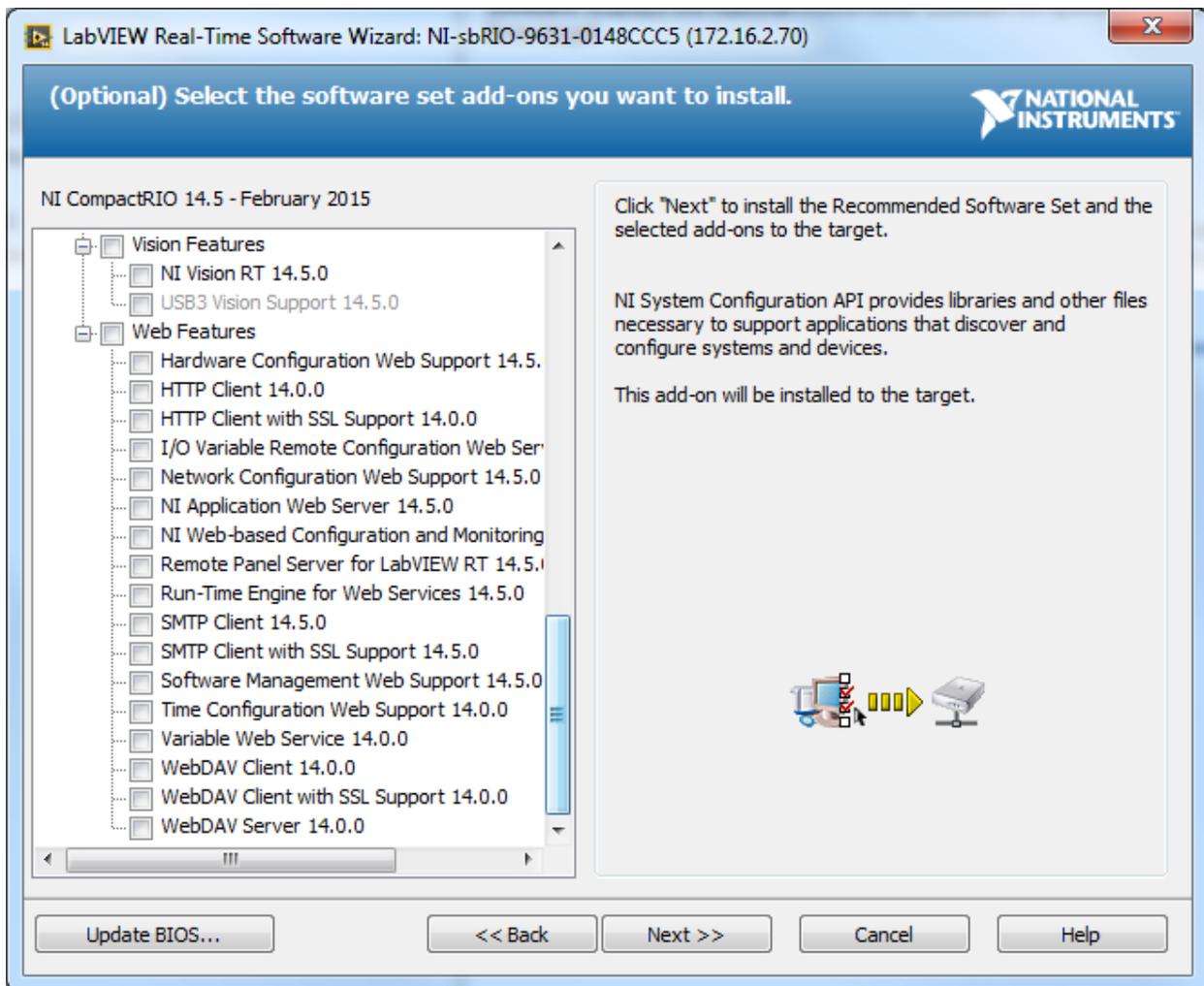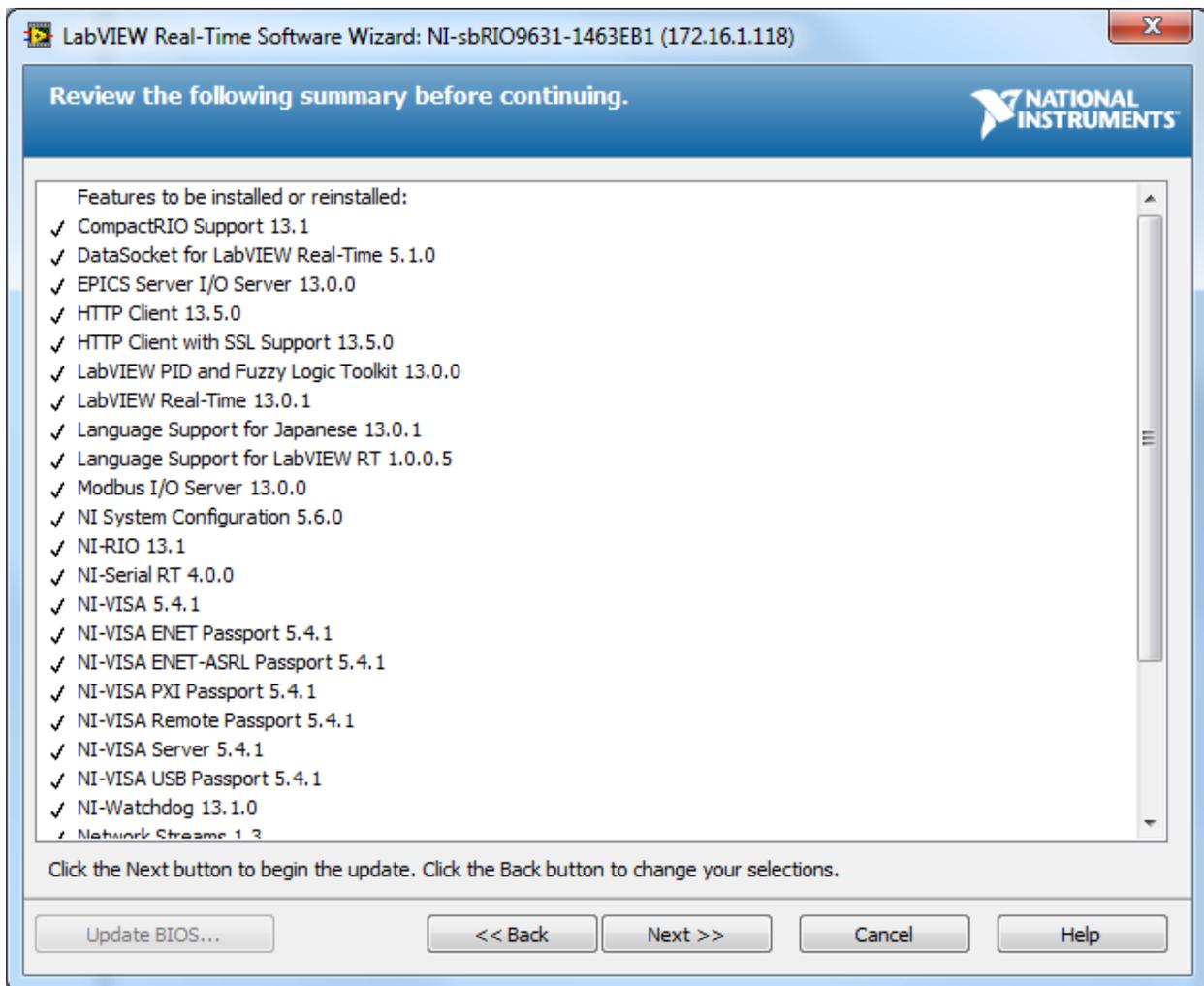This add-on will be installed to the target.

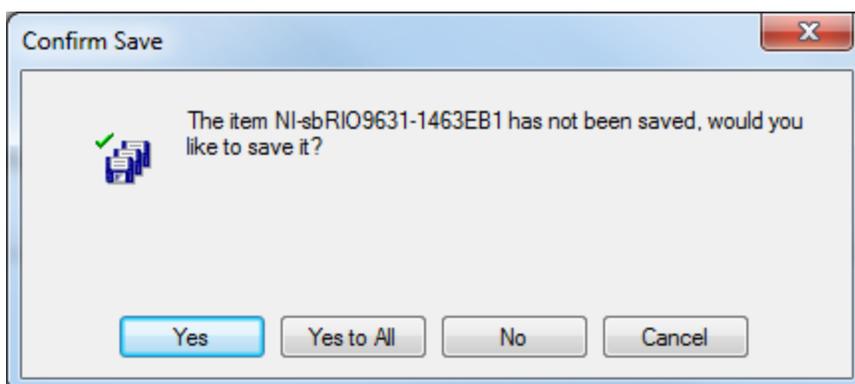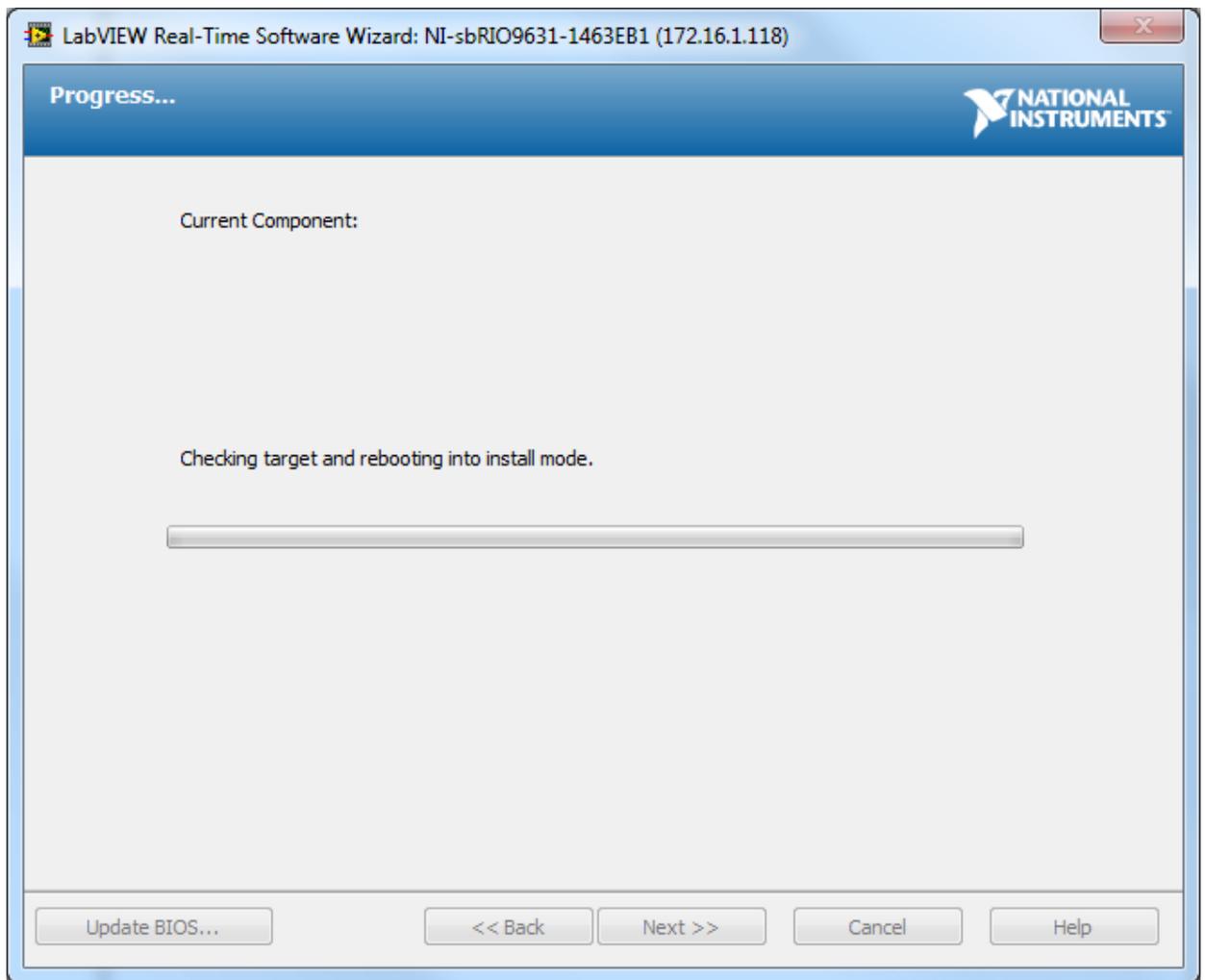[Update BIOS...] [<< Back] [Next >>] [Cancel] [Help]

7. The Defaults use too much memory. You need to change to uncheck LabVIEW RT Add-ons and Click Next>>. The defaults selections are fine.

LabVIEW Real-Time Software Wizard: NI-sbRIO9631-1463EB1 (172.16.1.118)

Review the following summary before continuing.

NATIONAL INSTRUMENTS

Features to be installed or reinstalled:
✓ CompactRIO Support 13.1
✓ DataSocket for LabVIEW Real-Time 5.1.0
✓ EPICS Server I/O Server 13.0.0
✓ HTTP Client 13.5.0
✓ HTTP Client with SSL Support 13.5.0
✓ LabVIEW PID and Fuzzy Logic Toolkit 13.0.0
✓ LabVIEW Real-Time 13.0.1
✓ Language Support for Japanese 13.0.1
✓ Language Support for LabVIEW RT 1.0.0.5
✓ Modbus I/O Server 13.0.0
✓ NI System Configuration 5.6.0
✓ NI-RIO 13.1
✓ NI-Serial RT 4.0.0
✓ NI-VISA 5.4.1
✓ NI-VISA ENET Passport 5.4.1
✓ NI-VISA ENET-ASRL Passport 5.4.1
✓ NI-VISA PXI Passport 5.4.1
✓ NI-VISA Remote Passport 5.4.1
✓ NI-VISA Server 5.4.1
✓ NI-VISA USB Passport 5.4.1
✓ NI-Watchdog 13.1.0
✓ Network Streams 1.3

Click the Next button to begin the update. Click the Back button to change your selections.

Update BIOS...   << Back   Next >>   Cancel   Help

8. Click Next >>

Confirm Save

The item NI-sbRIO9631-1463EB1 has not been saved, would you like to save it?

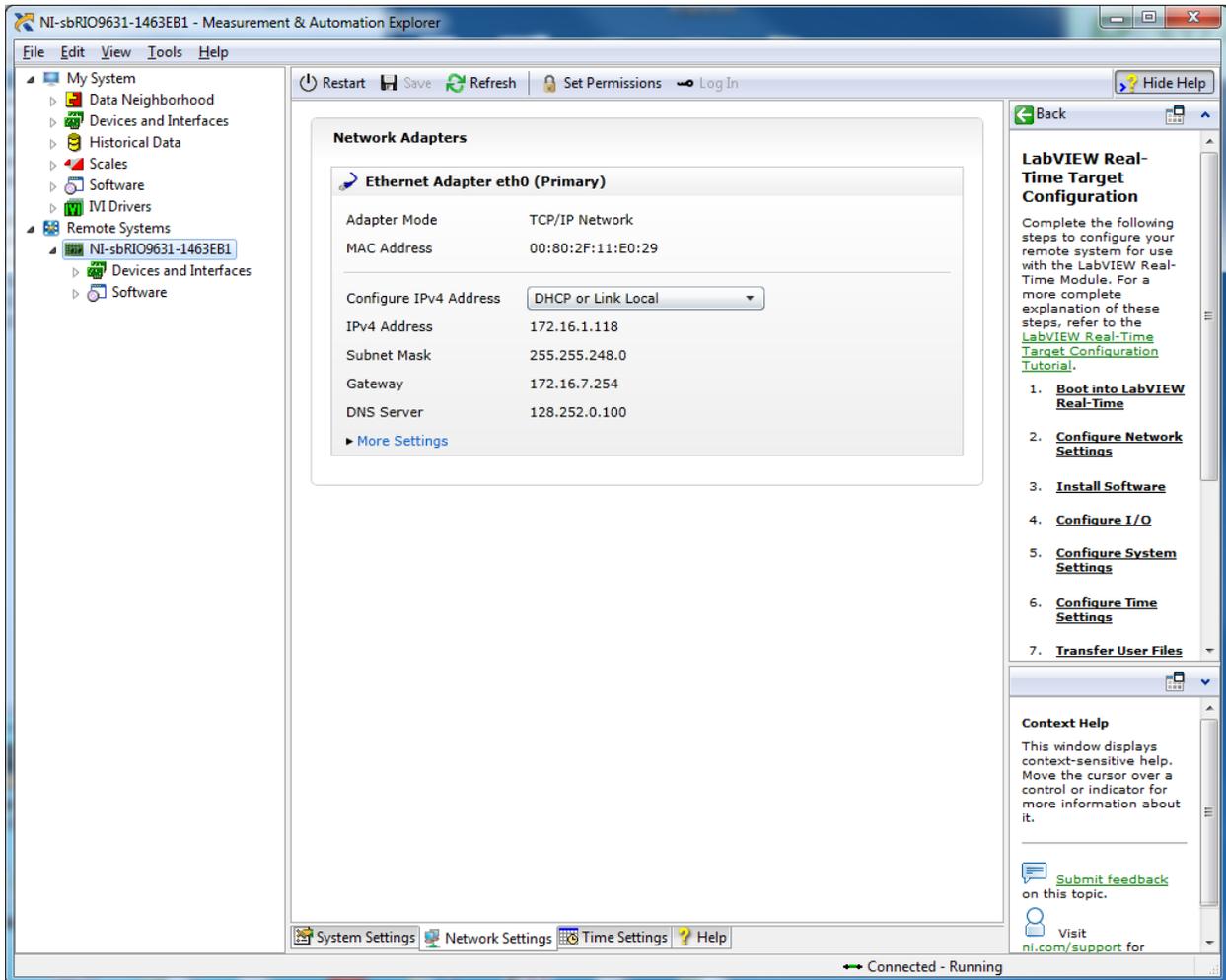Yes   Yes to All   No   Cancel
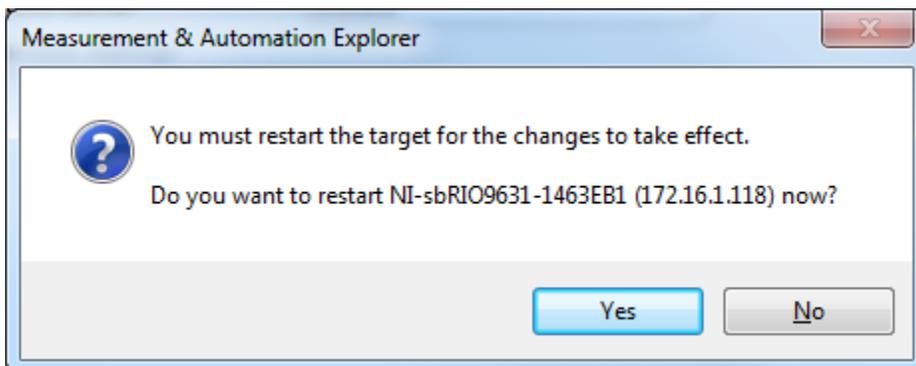
9. Click Yes to All

10. Wait patiently – this takes a few minutes. Click Finish when done.

Change IP

1. Click on Network Settings and change Configure IP4 Address to Static. Then change the IP to match label on robot. Subnet Mask is 255.255.255.0. Click Save.

2. Click No. Then switch Ethernet cable to wireless adapter and reboot sbRio manually.
3. Open a Command Window and make sure you can ping the new IP from the computer.