Continental Control Systems LLC

Using NiagaraAX JACE with the WattNode for LonWorks Meter

Contents

Overview

This document describes the steps to connect a Continental Control Systems WattNode® for LonWorks® (Plus or Logger) meter to a Tridium® JACE® 200 running NiagaraAX Framework®. It discusses two methods. Both methods use the Discover feature in the Lon Device Manager. One method adds the device directly to the Lon database while the other method uses a JAR file. We recommend using the JAR File Method because the Direct Add Method does not include many of the configuration registers. Both methods allow you to install the WattNode meter when it is connected to the network. Using the JAR File Method also allows you to install the WattNode meter when it is not connected to the network.

JACE Preparation

Verify the JACE Station has the LonWorks Hardware Module

1) Examine the JACE 200 for a two-pin connector as shown in Figure 1. (We labeled the connector on our device FT10.)

    If this connector is not available, contact your Tridium JACE distributor for the LonWorks hardware module.

Figure 1: JACE 200 Connections

Verify the Station has the LonWorks License

In addition to having the LonWorks module, the JACE 200 must also be licensed to use LonWorks.

1) To verify the license, look under the JACE's **Platform > License Manager** (double-click).
2) Click on the license under the **Licenses** window ("Vykon.license" in Figure 2).
3) Click the **View** button to see if **feature name="lonworks"** is included in the list. See Figure 2.

    Contact your JACE distributor for a license if it is not installed.
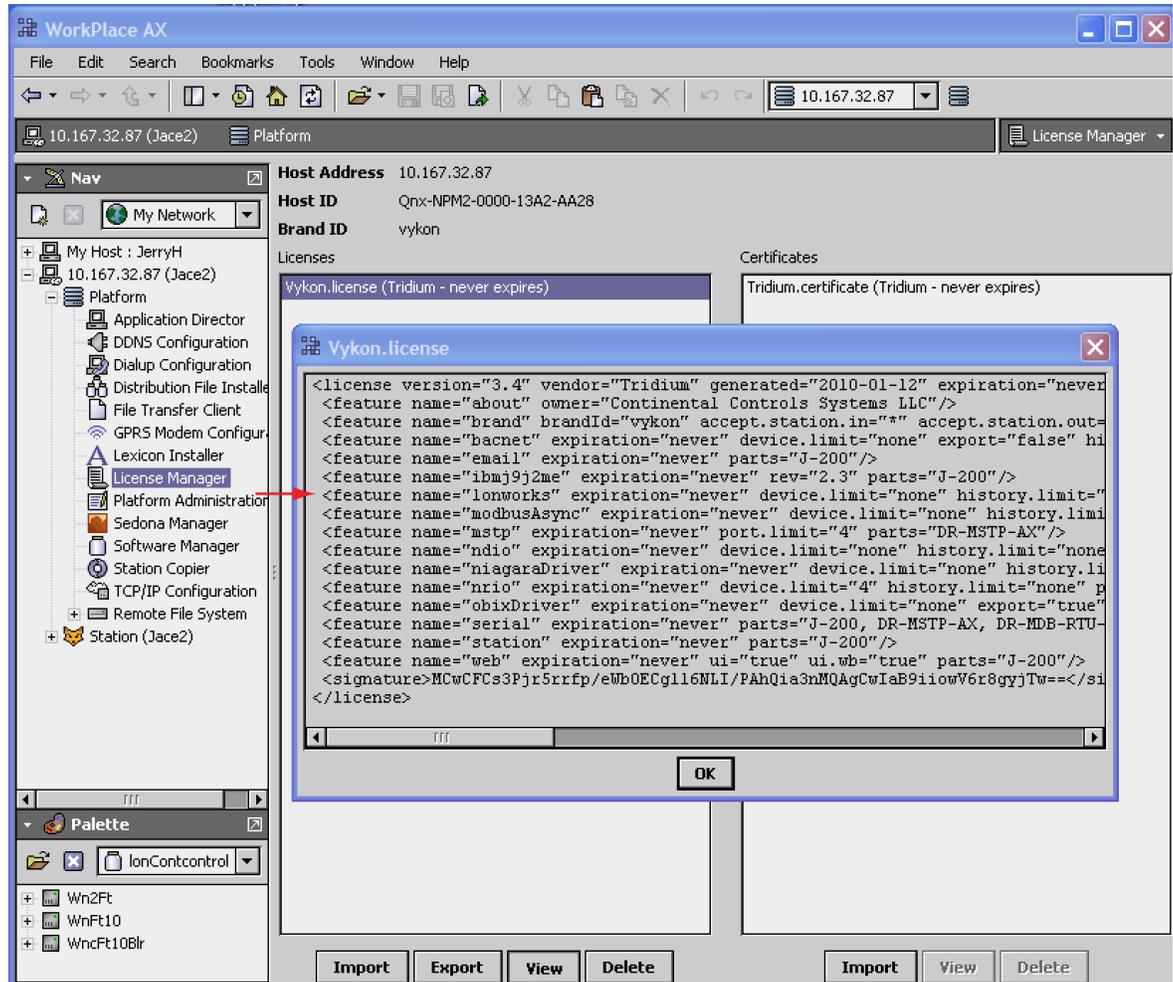
Figure 2: Available Licenses on the JACE

Install LonWorks Module on JACE

If the LonWorks software module has not been installed on the JACE, you need to install it.

1) Go to the JACE's **Platform > Software Manager** (double-click) window.
2) Look at the rightmost column for the **lonworks** module to see if it is installed.
3) If it is not installed, click on the module **lonworks** and then click on the **Install** button at the bottom of the window. See Figure 3.
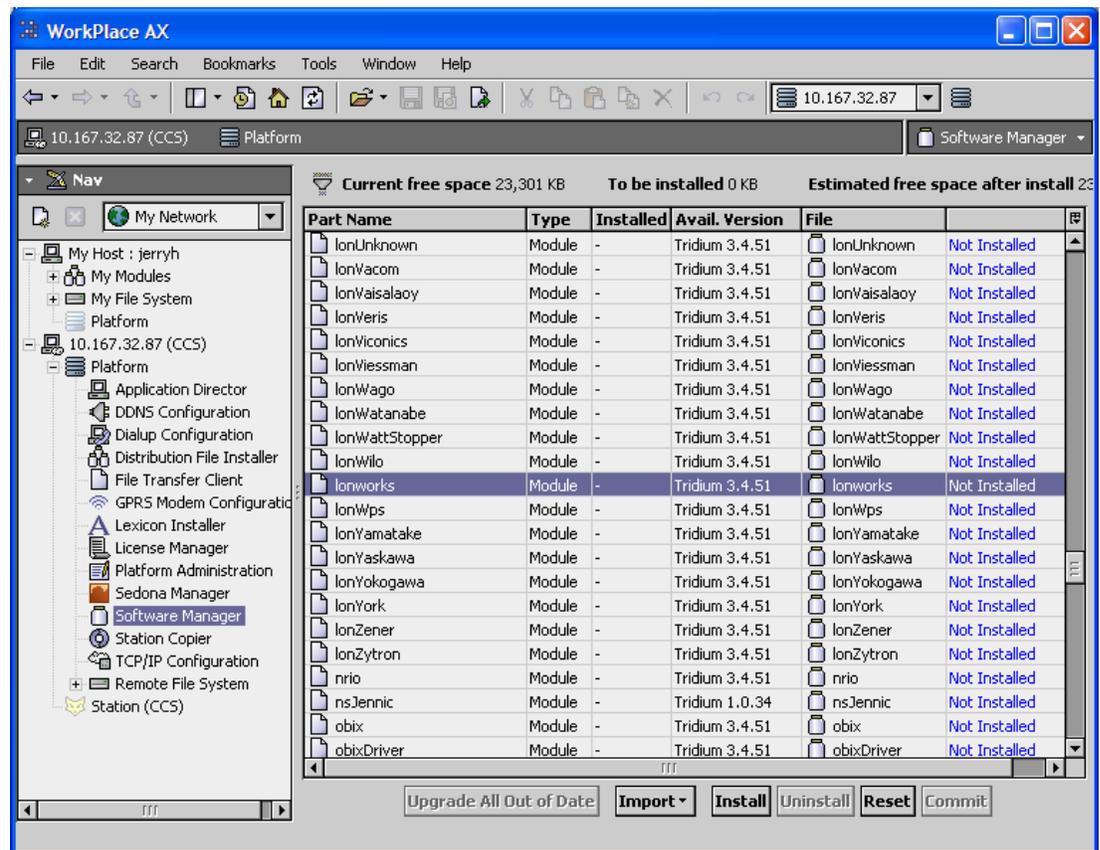
Figure 3: Installing LonWorks Module

Now that you have installed the LonWorks Module, the next step depends on whether you are going to connect the WattNode meter to the JACE 200 using the JAR File Method or the Direct Add Method. As stated in the "Overview" on page 1, we recommend the JAR File Method because the Direct Add Method does not include many of the configuration registers.

4) Follow the instructions for the connection method you are going to use:

● For the JAR File Method, go directly to the next section, "Install LonWorks Network".

After you install the **lonCcsa.jar** module, as explained in "Install WattNode LonWorks Module (JAR File Method Only)" on page 4, you can click **Commit** for both the LonWorks Module and the **lonCcsa.jar** module. This saves the time required to click **Commit** and reboot now.

● For the Direct Add Method, click **Commit** now.

Clicking **Commit** requires a reboot, which takes roughly five minutes.

Install LonWorks Network

1) In the **Palette** window, select the **lonworks** module. See Figure 4.

2) Click and drag the **LonNetwork** to the **Drivers** folder on the **Station.**
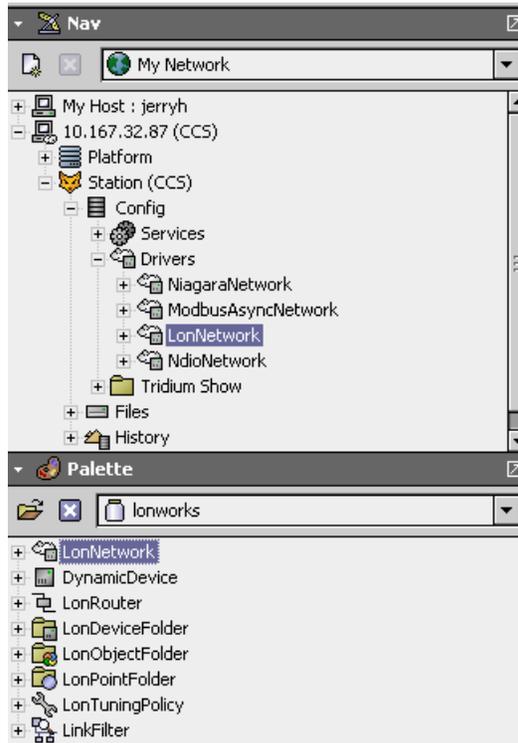
Figure 4: Install LonNetwork

3) Follow the instructions for the connection method you are going to use:

   ● For the JAR File Method, go to the next section, "Install WattNode LonWorks Module (JAR File Method Only)".

   ● For the Direct Add Method, go to "WattNode Meter Installation" on page 7.

Install WattNode LonWorks Module (JAR File Method Only)

If you are going to connect the WattNode meter to the JACE 200 using the JAR File Method, perform the steps in this section. If you are going to connect using the Direct Add Method, you can skip this section.

1) Obtain the WattNode LonWorks software module.

   You can download it from this CCS website page:
   http://www.ccontrolsys.com/w/Download_Niagara_AX_JACE_LonWorks_JAR_file

2) On your PC, place the file in your ***<niagaraRel>*\modules** folder.

   To determine the name of the Niagara release ***<niagaraRel>*** folder, go to the **Stations Platform>Software Manager,** right-click on a module (for example, **kitControl**) and select **Software Details.** See Figure 5.
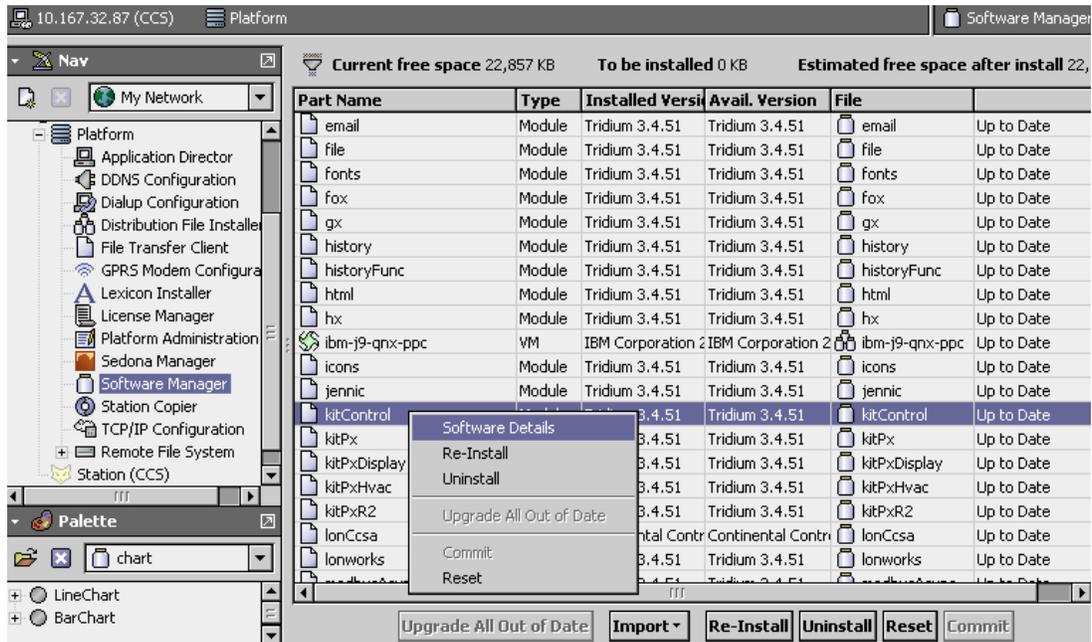
Figure 5: Select Module in Software Manager

The **Software Details** pop-up window shows the **Path** for this module. See Figure 6.
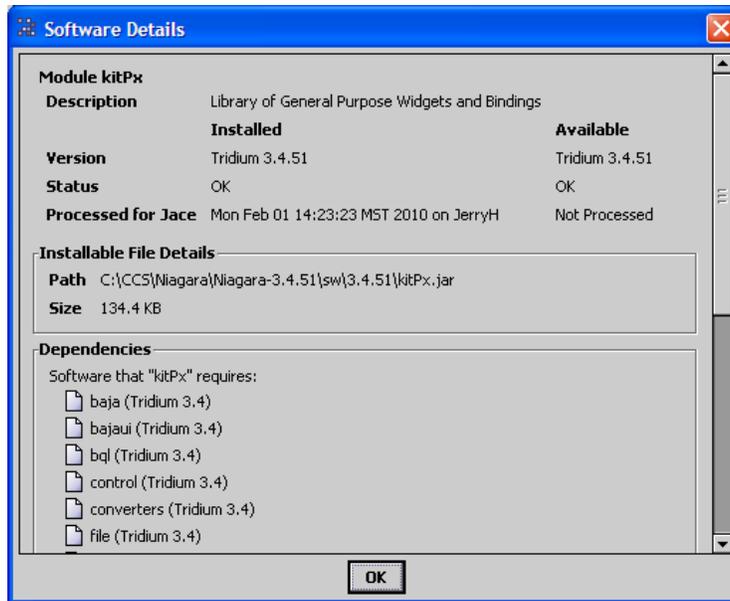
Figure 6: Software Details Window

In this example, the main directory is **C:\CCS\Niagara\Niagara-3.4.51,** so the file would be placed in **C:\CCS\Niagara\Niagara-3.4.51\modules.**

3) Change the name of the WattNode LonWorks software module file to **lonCcsa.jar.**

4) Install the module onto the JACE using the **JACE Platform > Software Manager** window.

5) Click on the module **lonCcsa.**

6) Click on the **Install** button and then click on the **Commit** button at the bottom of the window. See Figure 7.

The JACE station reboots, which takes roughly five minutes.
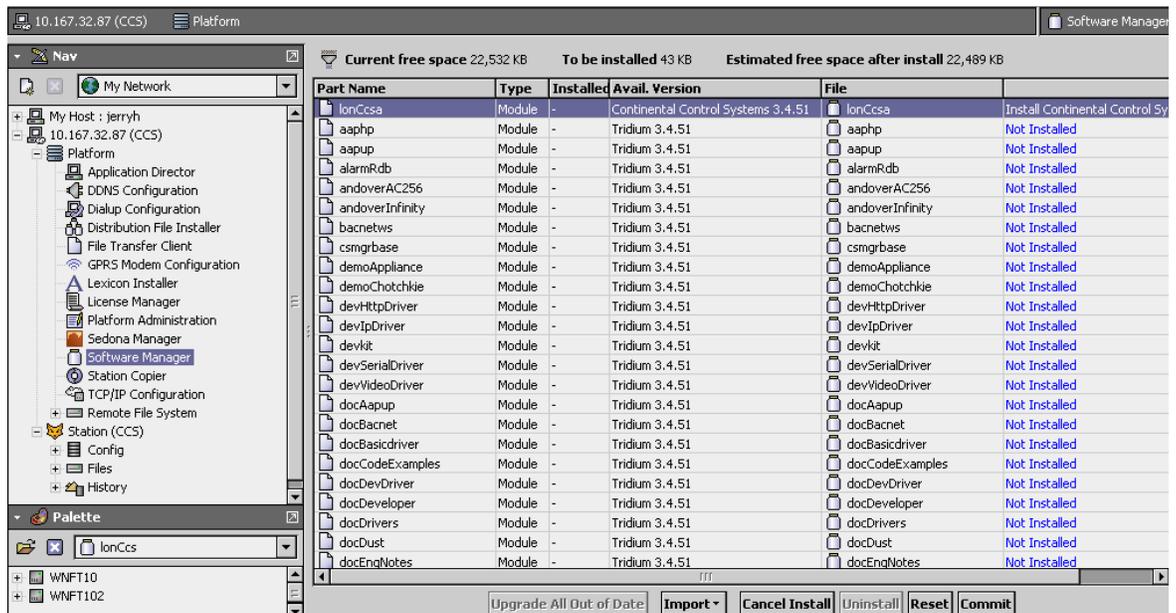
Figure 7: Module Install and Commit

7) After the station reboots, click on the **Open Folder** icon in the **Palette** window. See Figure 8.
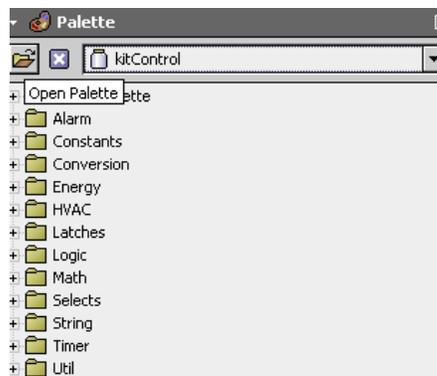
Figure 8: Open Palette

8) In the **Open Palette** pop-up window, select the **lonCcsa** module, and click **OK.**
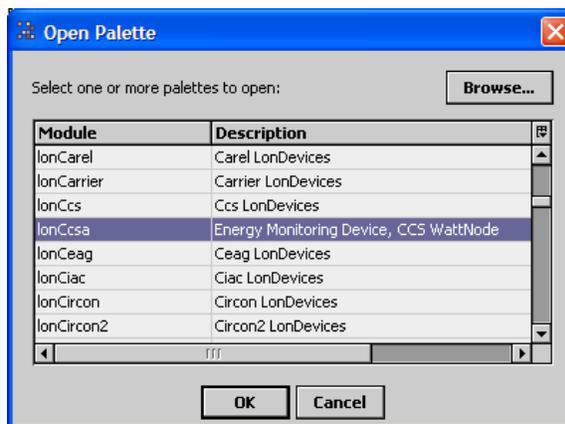
Figure 9: Open Palette Window

The available types of Lon Devices from CCS should now appear in the **Palette** window as shown in Figure 10.
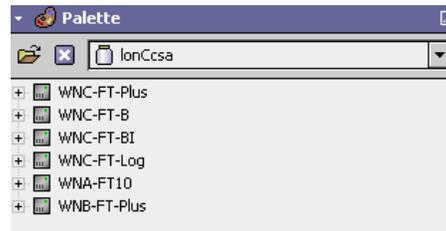
Figure 10: CSS Lon Devices

Figure 11 lists the WattNode model numbers associated with the CCS Lon Devices in the **Palette** window.

CCS Lon Device Names	Model Name	Model Numbers
WNC-FT-Plus	WattNode Plus for LonWorks	WNC-xx-xxx-FT10
WNC-FT-B	WattNode Plus for LonWorks, Option B	WNC-xx-xxx-FT10 Opt B
WNC-FT-BI	WattNode Plus for LonWorks, Option BI	WNC-xx-xxx-FT10 Opt BI
WNC-FT-Log	WattNode Logger for LonWorks	WNC-xx-xxx-FT10-L
WNA-FT10	WattNode for LonWorks (WNA Series) – no longer in production	WNA-xx-xxx-FT10
WNB-FT-Plus	WattNode for LonWorks (WNB Series) – no longer in production	WNB-xx-xxx-FT10

Figure 11: CCS Lon Device Details

WattNode Meter Installation

Connect and Discover Device

In this example, a **WNC-FT-BI** device is used.

1) Connect the meter's network wires to the JACE. Refer to JACE connections in Figure 1 on page 1.
2) Power up the WattNode meter.
3) Discover the device by:
   - Opening the **Lon Device Manager.**
   - Drilling down to the **LonNetwork** folder shown in Figure 12.
   - Right-clicking on **LonNetwork > Views > Lon Device Manager.**
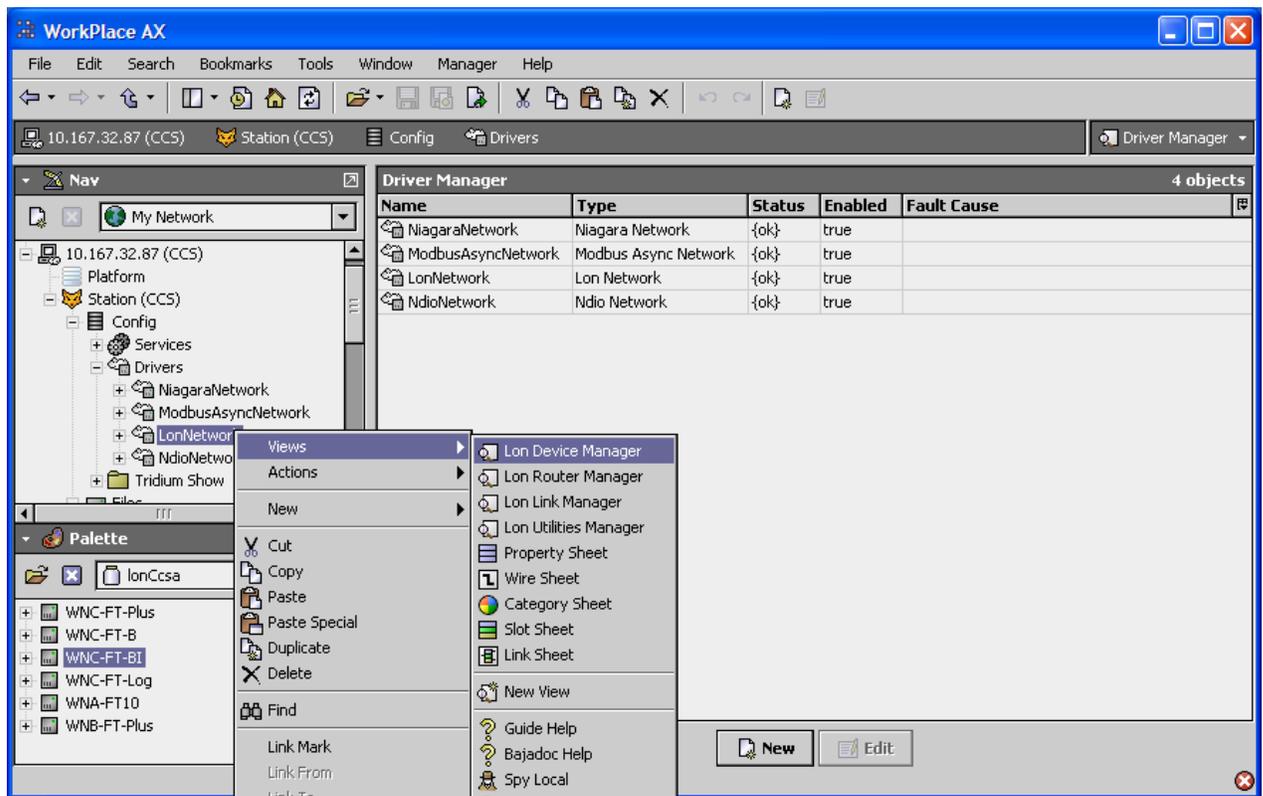
Figure 12: Open Lon Device Manager

4) Click on the **Discover** button. See Figure 13.

The device shows up in the upper **Discovered** window in the **Unconfigured** state. In this example, the **Neuron Id** is **04 a3 19 2c 04 00.**
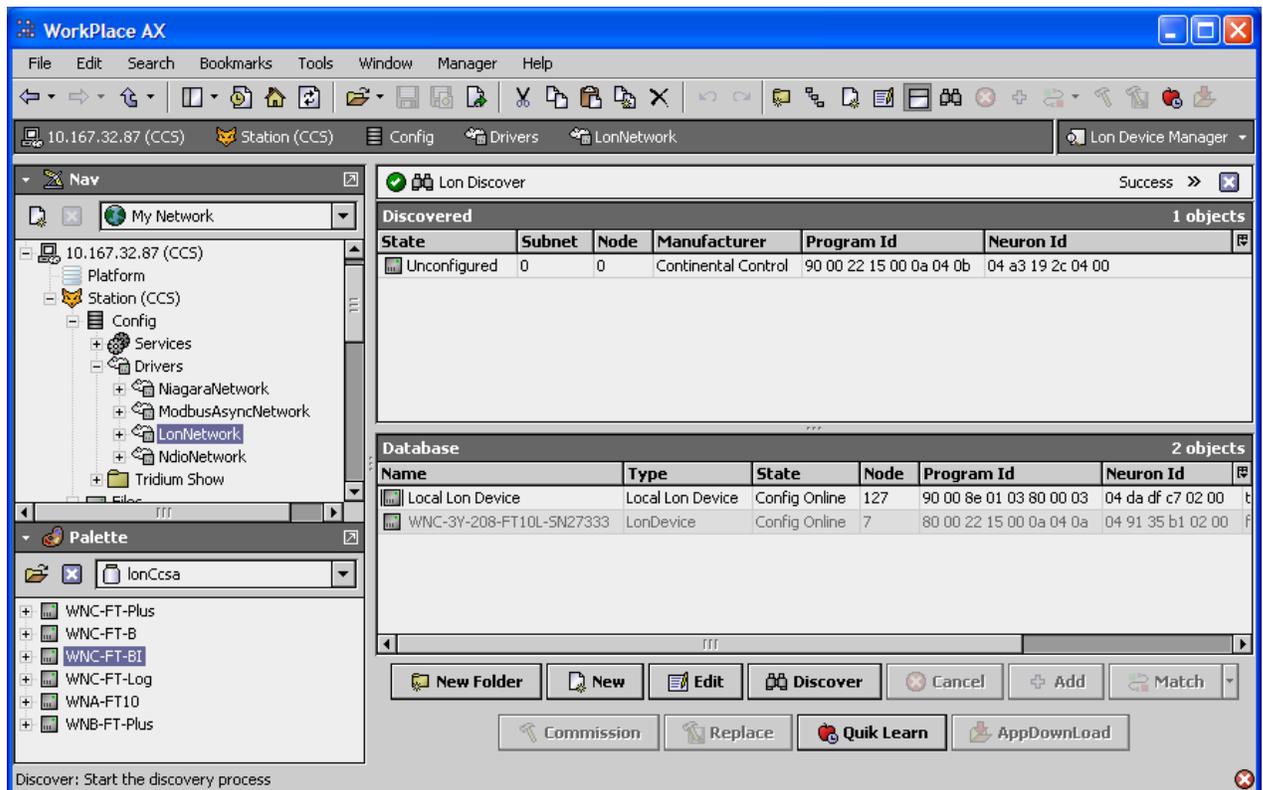
Figure 13: Discover Device

5) Follow the instructions for the connection method you have selected:
   - For the JAR File Method, go to the next section, "Add Device – JAR File Method".
   - For the Direct Add Method, go to "Add Device – Direct Add Method" on page 10.

Add Device – JAR File Method

This method uses the WattNode LonWorks Module JAR file downloaded to the JACE in "Install WattNode LonWorks Module (JAR File Method Only)" on page 4. The method allows access to all the points in the device. It also conveniently groups the points into folders.

The WattNode meter used in this example is the WNC-FT-BI.

1) From the **Palette** window, click on the **WNC-FT-BI** device and drag it into the **Database** window. See Figure 14.
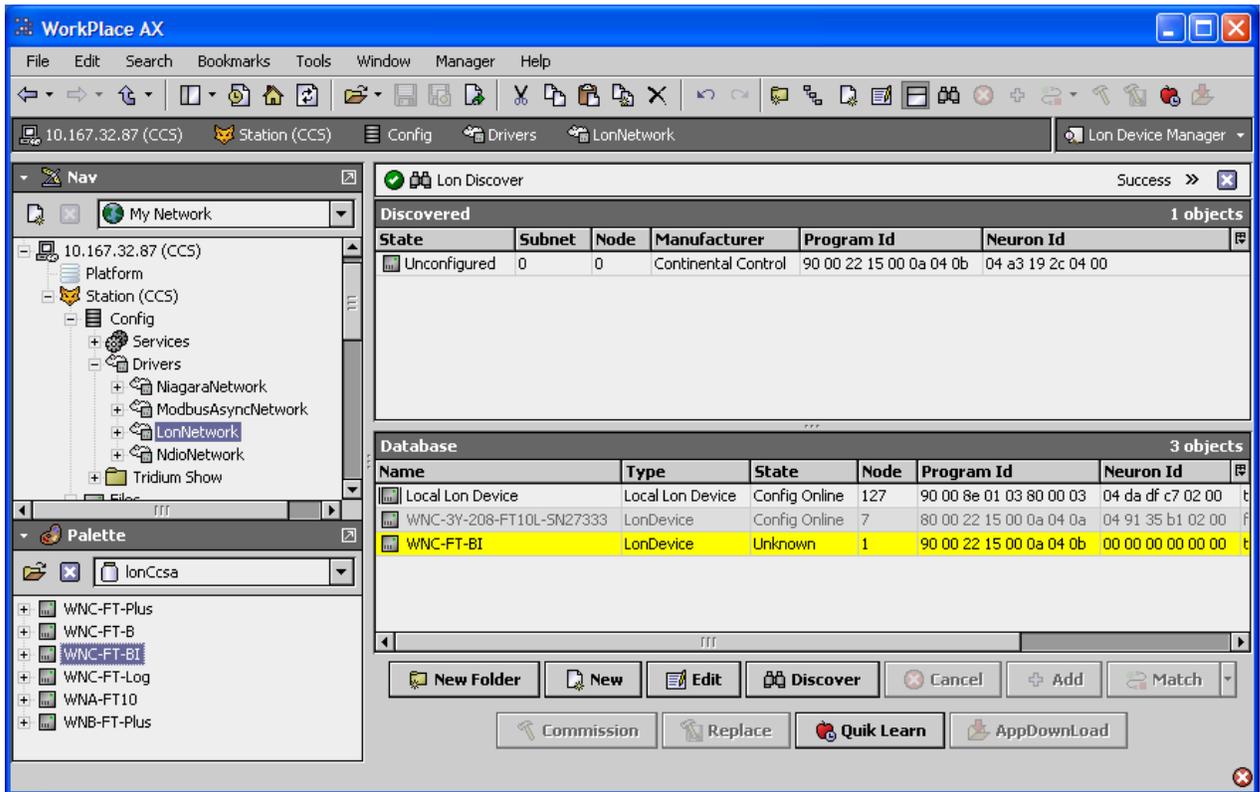
Figure 14: Add Device from Palette to Lon Database

2) Assign the device in the **Discovered** window to the WNC-FT-BI device in the **Database** window by clicking on the **WNC-FT-BI** device in the **Database** window then clicking on the **Commission** button.

   The **Commission** pop up window appears. See Figure 15.

3) Enter the **Neuron ID** of the unconfigured device and click **Apply** button.

   As an alternative to clicking the **Apply** button, click the **Service Pin** button and then press the service pin on the Lon device.

Figure 15: Commission Window

4) Go to "Verify Communications" on page 12.

Add Device – Direct Add Method

This method does not require downloading and installing a JAR file to the JACE. The primary points are accessible and can be added to the database. For access to all the points, you need the JAR file (explained in "Add Device – JAR File Method" on page 9).

1) Left-click on the unconfigured device in the **Discovered** window (see Figure 13 on page 8) and drag it to the **Database** window. See Figure 16.

   In this example the device was renamed to **WNC-3Y-208-FT.**

2) Click on the **Commission** button to change the **State** to **Config Online.**
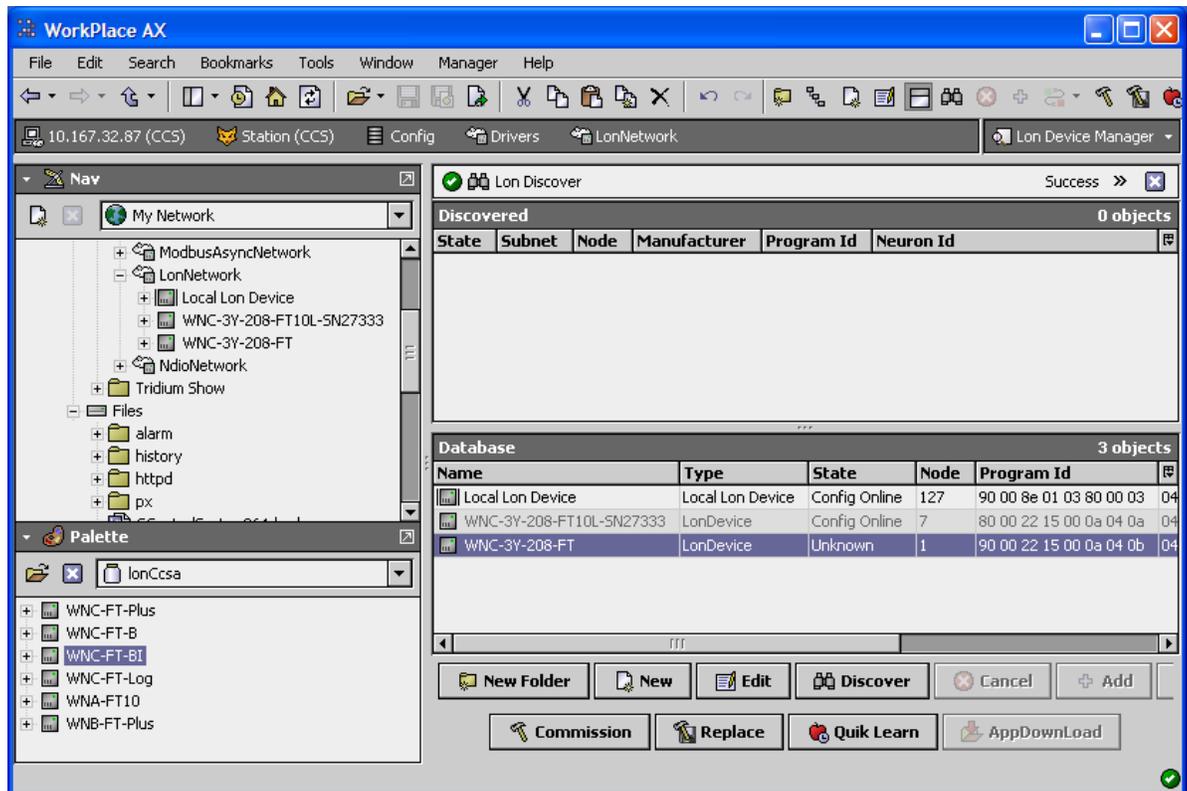
Figure 16: Commission LonWorks Devices

Install Lon Device Network Variables (Points)

1) In the **Nav** tree, drill down to the **Points** folder under the device added (WNC-3Y-208-FT in this example).

2) Double-click on the **Points** folder.

   The Lon **Point Manager** appears. See Figure 17.

3) Click on the **Discover** button.

   The available points appear in the **Discovered** window.

4) Click and drag the points needed for your application from the **Discovered** window to the **Database** window.
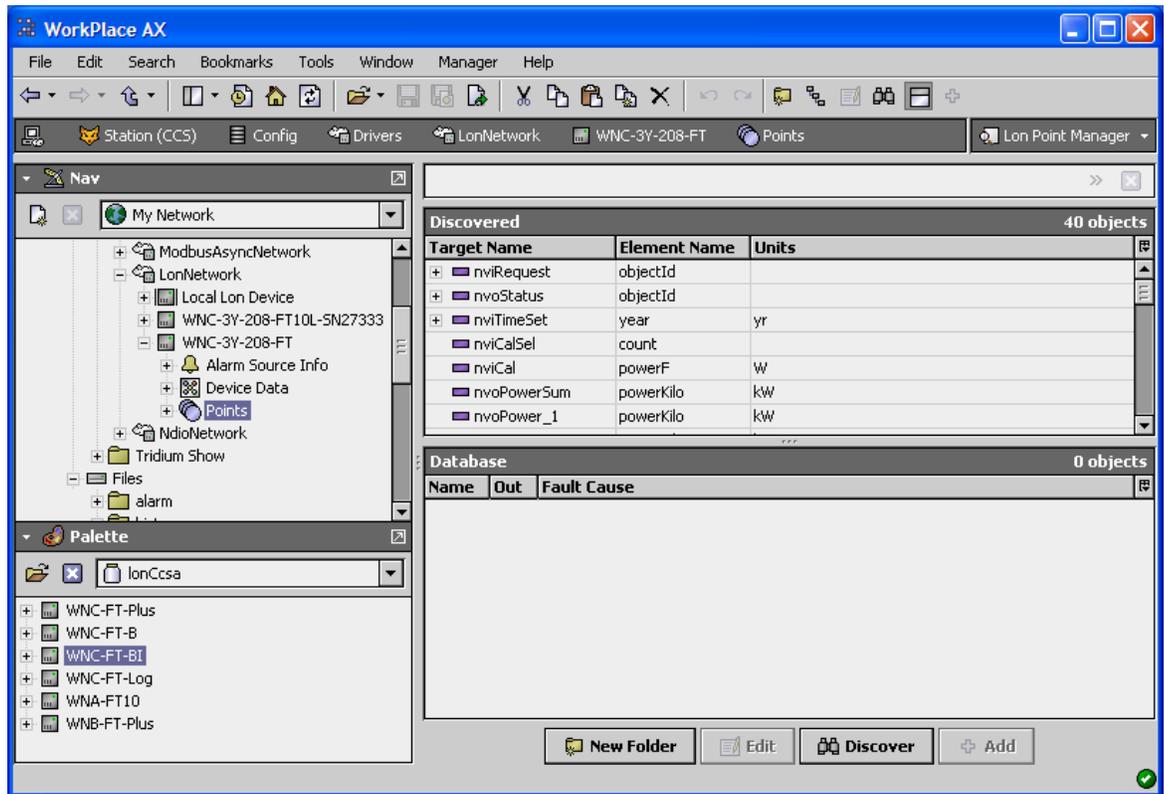
Figure 17: Add Lonworks Device Points

Scale Network Variables (Points)

Some network variables from the WattNode meter are scaled before they are sent out on the network. They need to be re-scaled in the JACE to display correctly.

The following table shows variables that need scaling for specific models of WattNode meters.

Note: Scaling is handled automatically if you use the JAR File Method of installation.

Models	Network Variables	JACE Scale Factor	JACE Units	Notes
WNC-FT-Plus WNC-FT-Log	nvoEnergySum nvoEnergySumNR nvoEnergyA nvoEnergyB nvoEnergyC nvoEngyPosSum nvoEngyPosSumNR nvoReacEngySum	0.1	kW-hr	Scale factor is required because JACE does not scale SNVT_elec_kwh_l correctly.
WNC-FT-B WNB-FT-Plus	nvoEnergySum nvoEnergyA nvoEnergyB nvoEnergyC nvoReacEngySum	0.001	kW-hr	Scale to kW-hr from Watt-hr.

Figure 18: Network Variable Scaling Multipliers for WattNode Meter Models

For example, to apply scaling for the WNC-FT-Plus model's nvoEnergySum network variable:

1) Double-click on the point **nvoEnergySum** to display the **Property Sheet.**

2) Expand the **Proxy Ext,** select **Conversion** to **Linear,** and set the scale to **0.1.** See Figure 19.

   Be sure to apply the scaling and set the units correctly for all affected network variables for your model of WattNode meter.
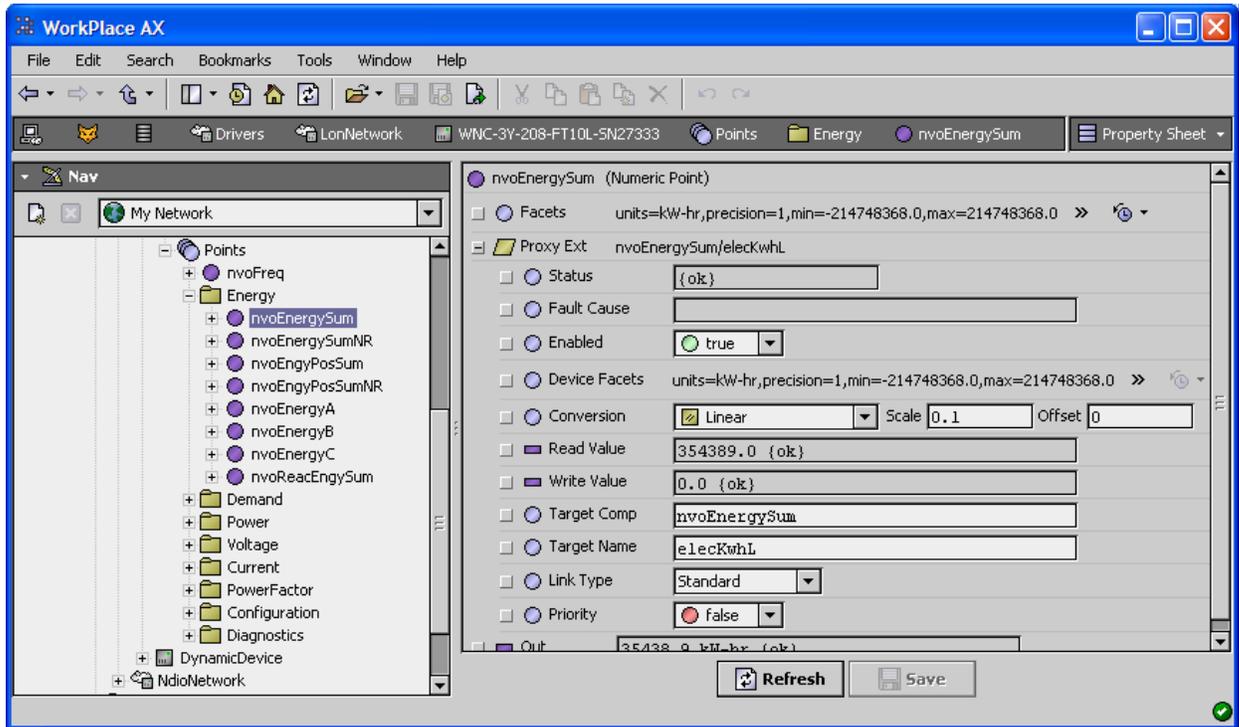
Figure 19: Linear Conversion of Energy Network Variables

Verify Communications

Now that you have completed the installation, verify the WattNode meter is communicating.

1) Drill down to **LonNetwork > WNC-FT-BI > Points.**

   The point **nvoFreq** should display the measured frequency. See Figure 20.

   Because the device has many points, they have been grouped into folders to make them easier to manage.

2) Drill down into these folders to see the different points offered.
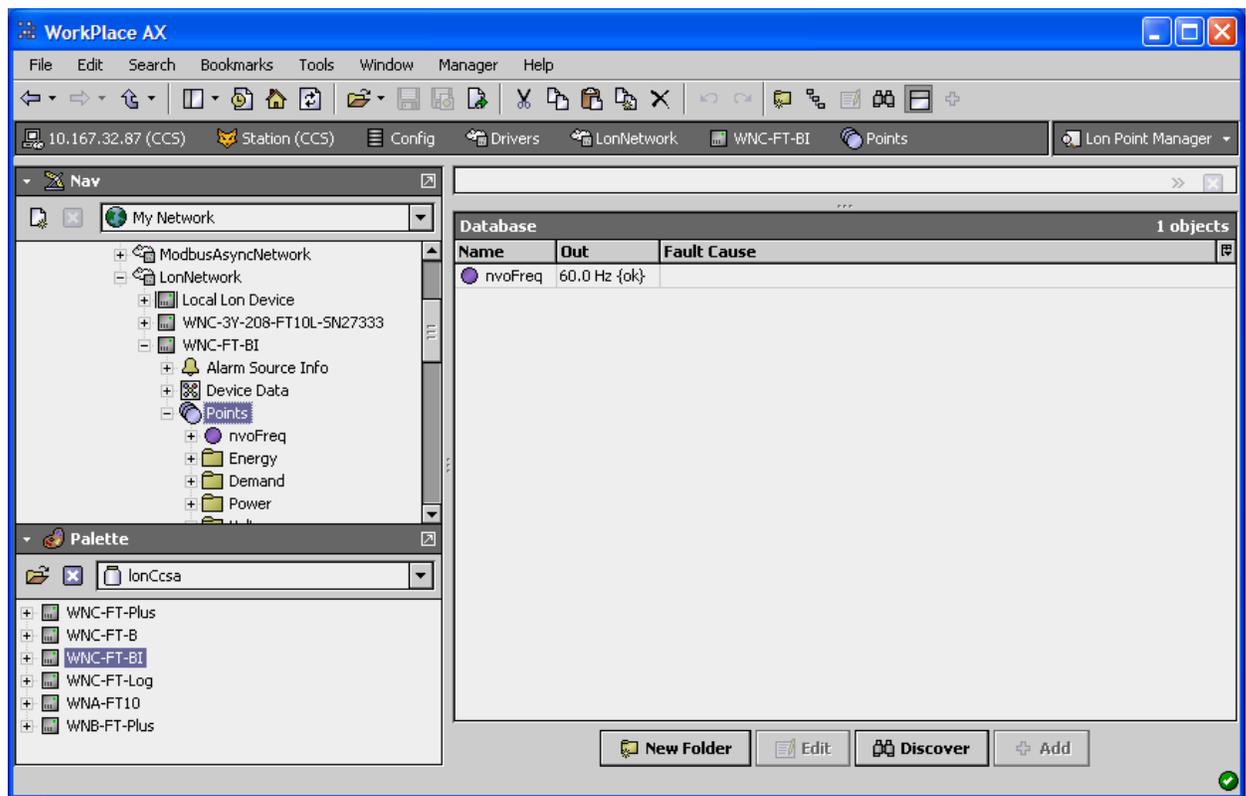
Figure 20: Verify Device Communications

Conclusion

Two methods were discussed to connect a Continental Control Systems WattNode for LonWorks meter to a Tridium JACE 200 running NiagaraAX.

The JAR File Method provides templates for all the WattNode LonWorks models. The network variables are scaled and grouped in folders. This method does not require the WattNode meter to be on the network for access to the network variables. You can configure your system when the meter is not present, which may be common during development of your application.

The Direct Add Method provides a quick connection but may require scaling some network variables and does not provide access to all of the configuration variables that may be needed. This method requires the WattNode meter to be present on the network.

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