PNPSCADA

COURSE 103

TECHNICIAN ROLE:

Installing Etherpads on Plug and Play Scada

PNPSCADA

The NEXT Generation AMR

Gives you the power to configure your own AMR, via an easy to use Web interface

Plug and Play SCADA

Previous Course Requirements

- 102 Technician - Installation of meters

Once you are done with this Course, you should be able to:

- Configure a meter to read on Plug and Play Scada through an Etherpad
- Configure Etherpads as either static or active Etherpads, and know when to use which configuration
- Do basic troubleshooting on Etherpads

MODULE 1: Etherpads in general

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- Etherpads are what we call Ethernet to Serial converters.
- You normally connect at least 3 cables to an Etherpad: power, a LAN cable, and a serial cable (going to the meter).
- Ethernet is what most people know as the LAN or Local Area Network.
- The Etherpads that we deal with in this course allow you to connect a meter's serial port to a server over a LAN or Internet, using TCP/IP.
- Many companies manufacture Etherpads, for example Mult-E-Net, Moxa and Lantronics.
- Etherpads are generally less expensive and more reliable than modems, but need pre-existing infrastructure.
- Some meters have special Etherpads as communication modules that can be slotted into the meter, for example the Elster A1700 and the Landis&Gyr ZMD.

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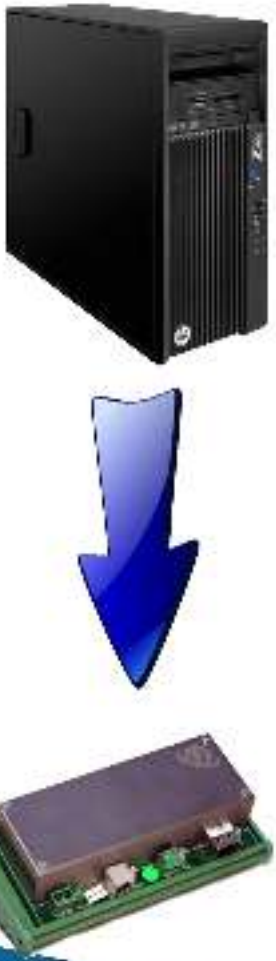
MODULE 1: Simple Etherpads: Static Mode



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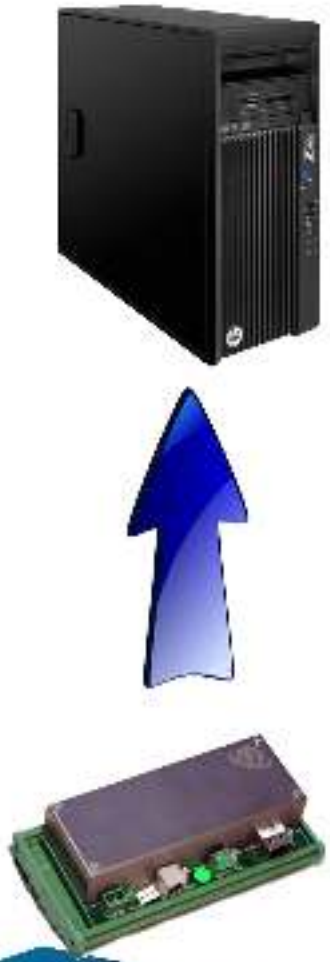
MODULE 1: Simple Etherpads: Active Mode



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MODULE 1: Special Etherpads: Active Mode

- Some Etherpads can be set up as Clients instead of Servers. This is called Active or Client mode.
- This means that the Etherpad is set up to make an outgoing TCP/IP connection to the PC, instead of the other way around.
- To do this, the Etherpad must be set up to automatically connect out to a certain IP address (the Plug and Play Scada Server) and a certain TCP port on that IP.
- The same rules apply: whatever is sent and received over the established connection gets received and sent over the serial cable. The serial setup is likewise still very important.
- Reasons to use an Etherpad in Active mode could be because the Etherpad doesn't have a static IP, or is behind a firewall.

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MODULE 1:
Etherpads

EXERCISE

Assignment:

Taking into account your site or a specific Etherpad site that you may have in mind (take a real example if possible), would you use an Etherpad in Active or Passive mode?

Place: _____

Active or Passive?: _____

Motivate why: _____

_____

_____

Call the Lecturer if you have any questions, and when you're done.

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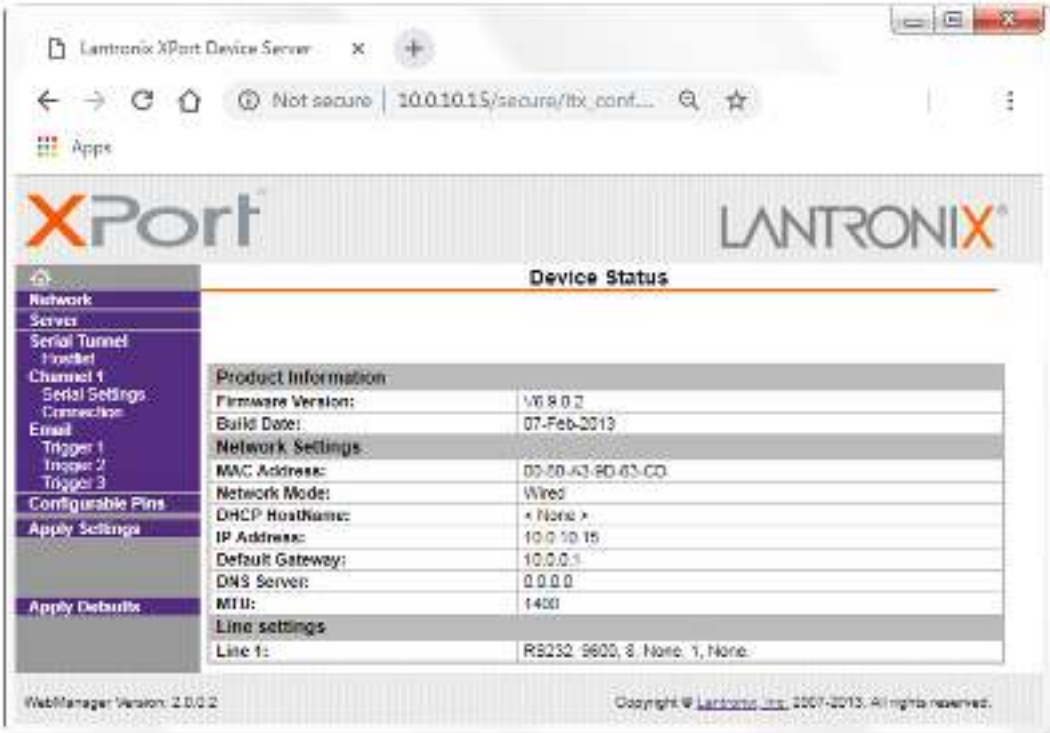
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1: Setup Etherpad



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1: Setup Etherpad

- Before you start, ensure that the Etherpad will be on a network where its IP is visible to the Plug and Play Scada Server.
- The Lantronix Etherpad can be set up by browsing its IP address in a Web Browser
- If you do now know the Etherpad's IP address, you can either search for it from your PC via the software installed from the Lantronix installation disk (your PC must be on the same network as the Etherpad),
- Or you can set up its IP address by connecting to the Etherpad via a serial cable at Etherpad powerup at 9600 8N1 and sending x to the Etherpad over the serial cable. Follow the prompts to set the IP address.
- Click through any HTTP authentication requests without specifying any username or password.

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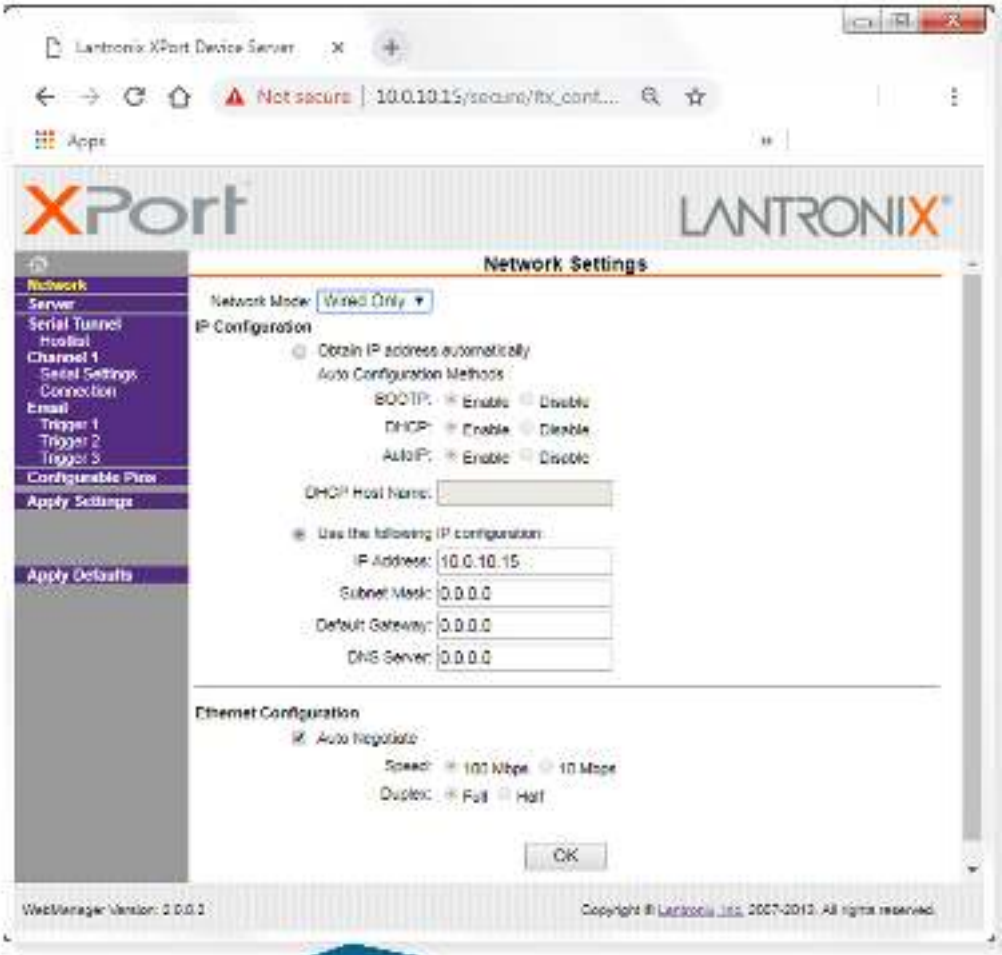
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.1: TCP/IP Setup



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.1: TCP/IP Setup

- Once you have connected to the Etherpad using a Web Browser, set it up at a known static IP address.
- Also set the appropriate Subnet and Gateway and DNS IP addresses as you normally would for a PC.
- It is generally better to configure the Etherpad with a static IP, even if configured in Active mode, since it is normally installed as an unsupervised device, and a DHCP server might be unavailable when it powers up, which means it won't be able to communicate out to the server because its Gateway will not be set up correctly.

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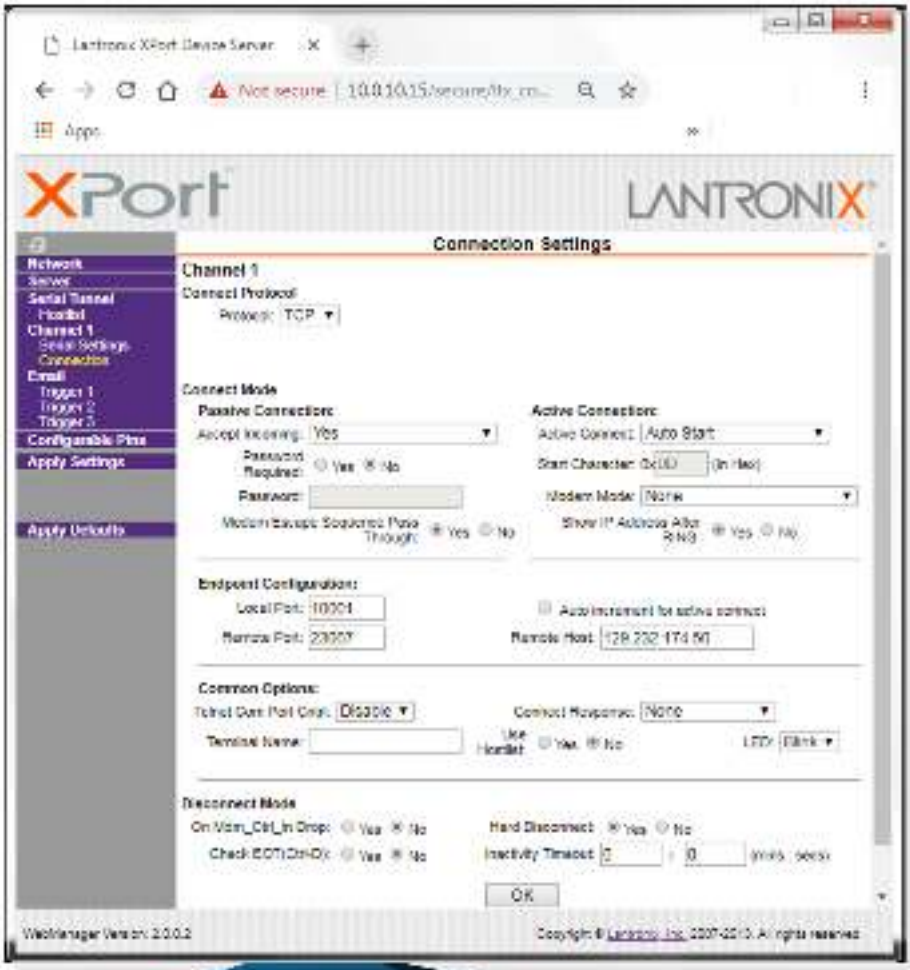
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.2: TCP Port Setup



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.2: TCP Port Setup

- Set up the Etherpad to listen on a specific TCP port, by selecting ' Accept Incoming: Yes' under Passive Connection under Connect Mode.
- Set up the port it should listen on under 'Local Port' under Endpoint Configuration, for example 10001.

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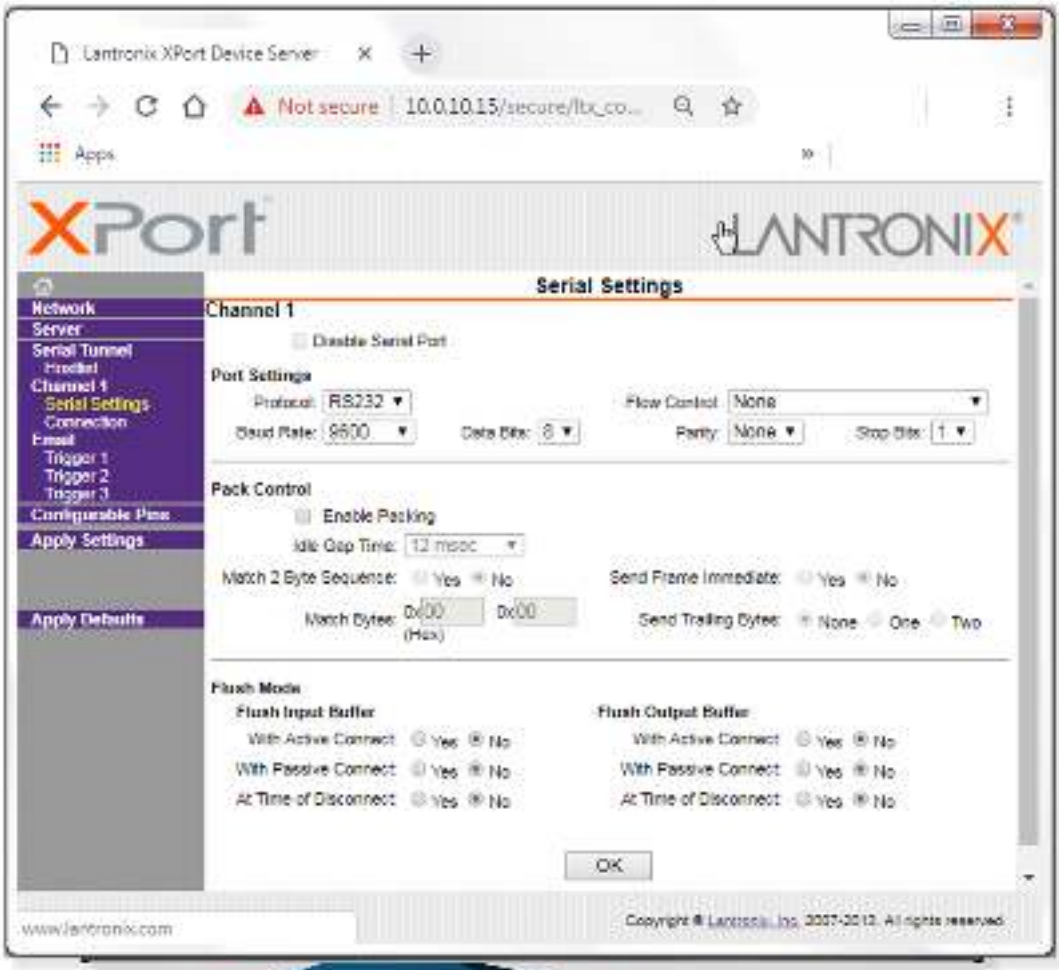
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.3: Serial Port Setup



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 1.3: Serial Port Setup

- Set up the Etherpad Serial port to be the same as the port on the Meter.
- The vast majority of meters speak 9600 baud 8N1, with no Flow Control.

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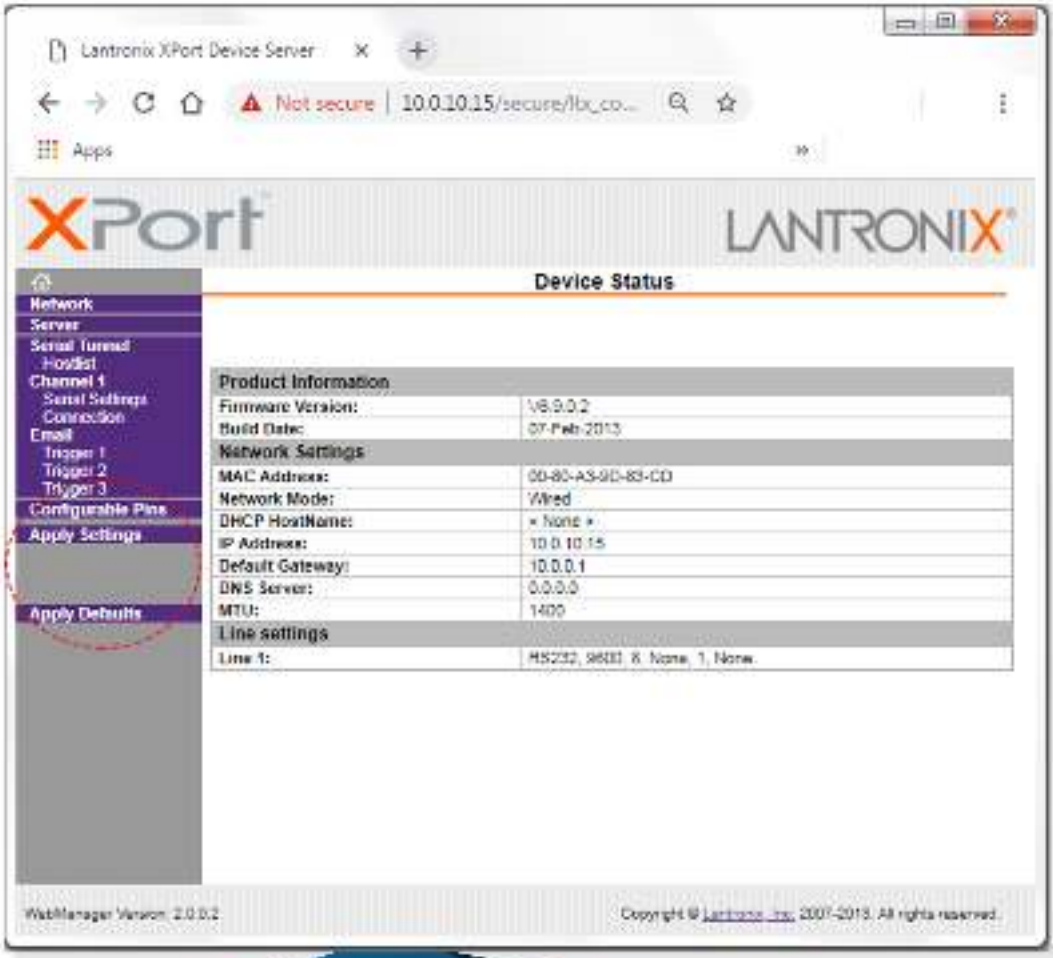
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 14: Save your Setup



MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 14: Save your Setup

- Save your settings, by clicking on Apply Settings.
- Power down and Power up the Etherpad physically, clear your browser cache, and double check that your settings have REALLY been saved.
- If not, refer to the Manufacturer's documentation.

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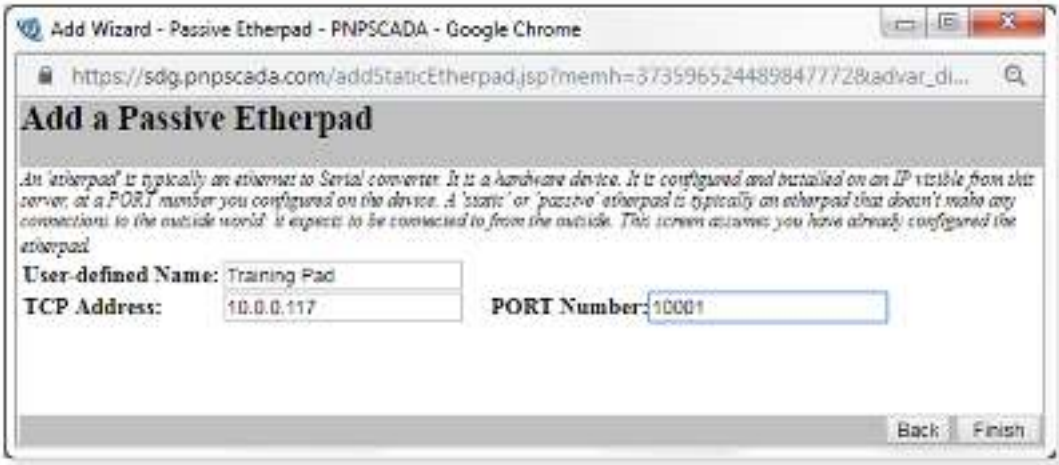
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 2.1: Plug and Play Scada Setup



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 14: Save your Setup

- Log in to Plug and Play Scada.
- Add an Etherpad entity:
- Add a Passive Etherpad.
- Enter the IP address of the Etherpad and the Port on which it listens, as you've set up on the actual Etherpad in steps 1.1 and 1.2.
- Click Finish.

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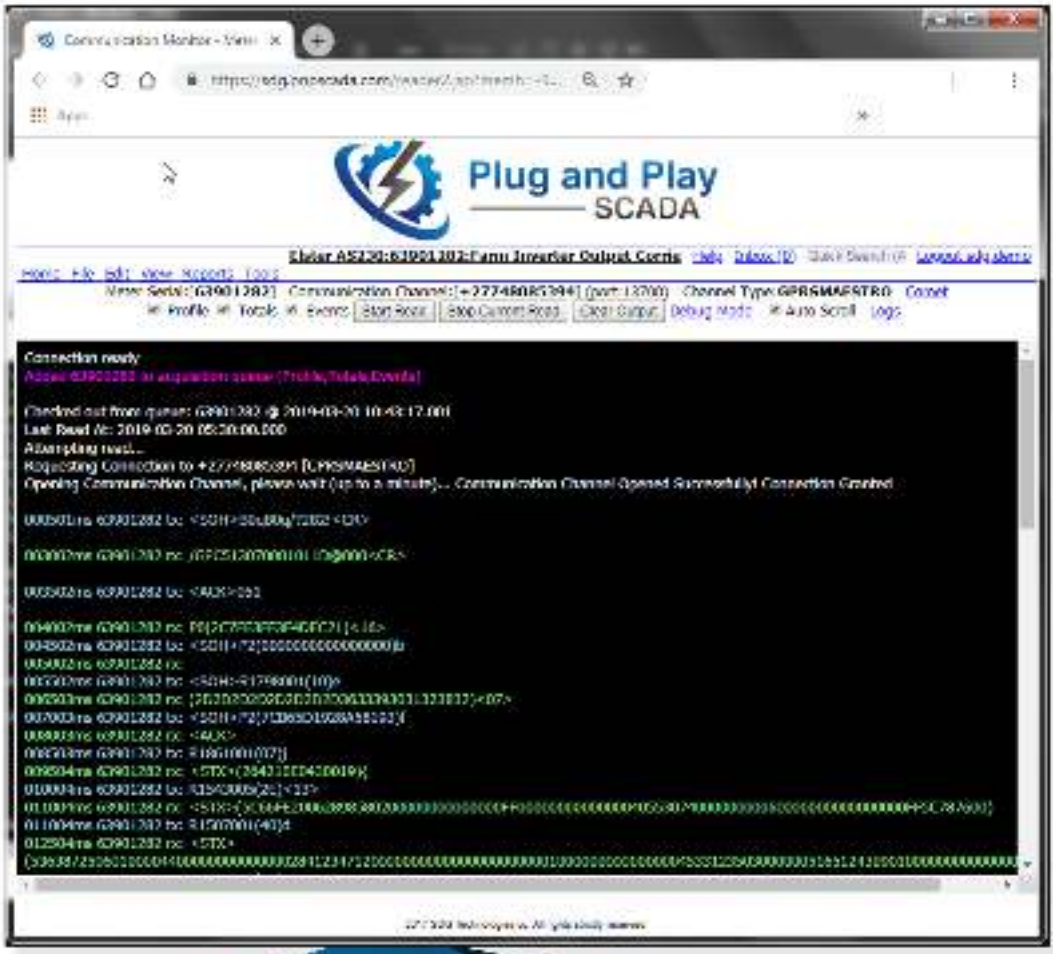
MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 2.2: Verify Plug and Play Scada Setup



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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

Step 2.2: Verify Plug and Play Scada Setup

- Add a Meter that uses the added Etherpad as a Communications Device.
- Your Meter should now be ready and configured to read via the recently added Passive Etherpad.
- To verify, go to Tools->Communication Monitor and kick off a Meter Read.
- If the server cannot connect to the Etherpad, first try to connect from your PC using telnet and get that working. Alternatively: maybe you are blocked by a firewall?
- Troubleshoot until it works.

NOTES:

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MODULE 2:
Adding the Lantronix Etherpad as a Passive Etherpad

EXERCISE

Assignment:

Set up the Etherpad on your desk as a Passive Etherpad, and connect your meter to it.

Setup both Entities in Plug and Play Scada, and read in the Phasor Graph successfully.

Call the Lecturer if you have any questions, and when you're done, tell him your phasor's timestamp and the value of the red voltage.

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MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 1: Plug and Play Scada Setup

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MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 1: Plug and Play Scada Setup

- Log in to Plug and Play Scada.
- Add an Etherpad entity:
- Add an Active Etherpad.
- Enter the unique TCP Port on the server where the server will listen for that particular Etherpad.
- This is the port to which the Etherpad must connect.
- Click Finish.

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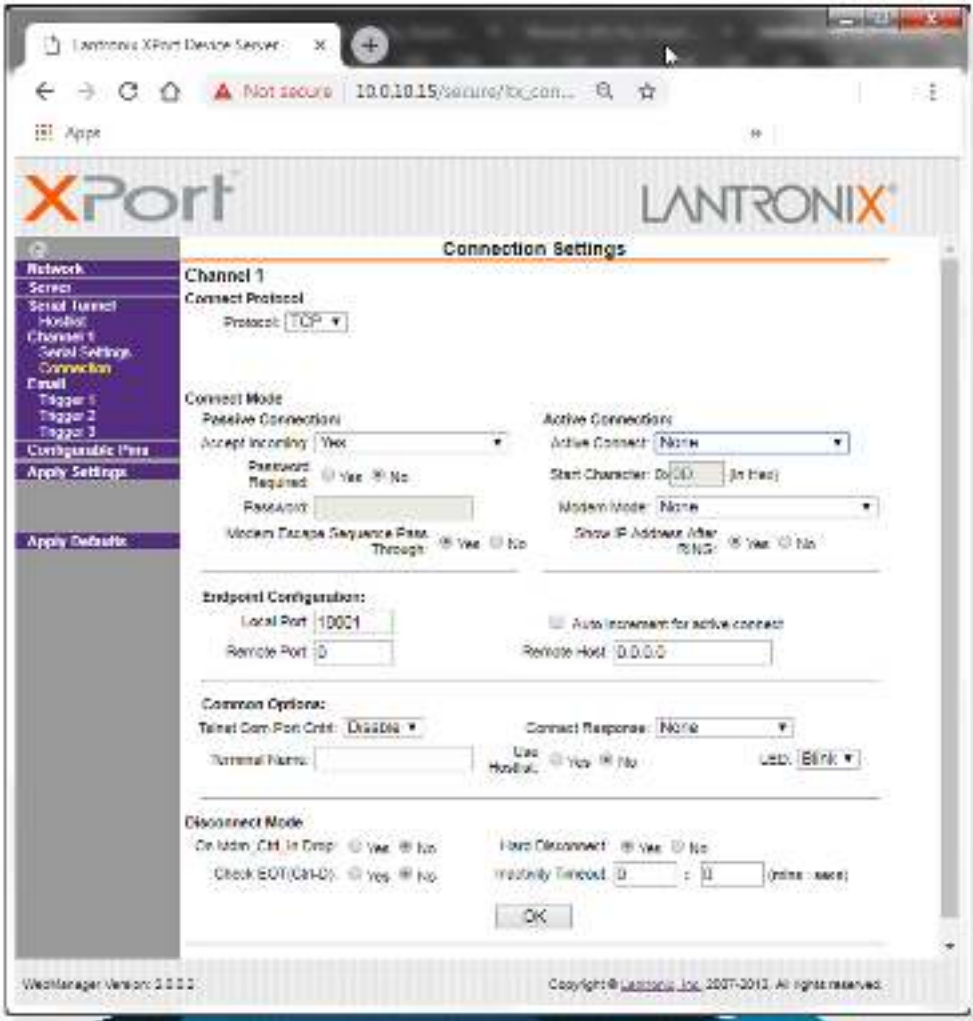
MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 2: Additional Etherpad Configuration



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MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 2: Additional Etherpad Configuration

- You still need to set up the basics for the Etherpad as for the Passive Etherpad in Module 2.
- Additionally, you need to set up 3 critical parameters:
- Switch on the Active Connection by selecting Always Connect next to 'Active Connect'.
- Specify the IP address of the Server next to 'Remote Host'.
- Specify the Port on the Server to connect to - next to 'Remote Port' – to be the same value as you configured in step 1.
- If you don't know the IP address of the server, try to PING its domain name from a Command Prompt.
- Take Care to Save and Verify your Etherpad Setup as per Module 2.

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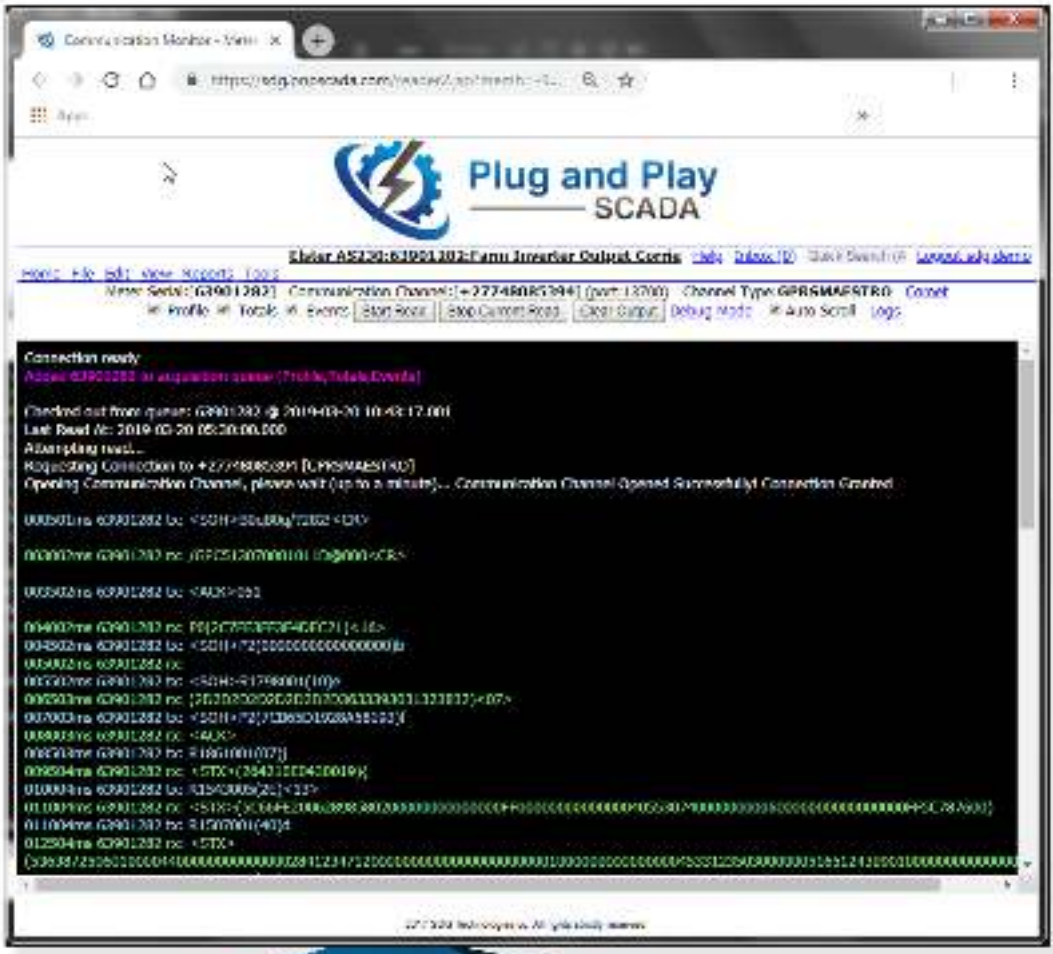
MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 3: Verify Plug and Play Scada setup



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MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

Step 3: Verify Plug and Play Scada setup

- Add the Meter using the added Etherpad as a Communications Device.
- Your Meter should now be ready and configured to read via the recently added Active Etherpad.
- To verify, go to Tools->Communication Monitor and kick off a Meter Read.
- If the Server cannot connect to the Etherpad, try to connect to the server (on the appropriate server port) via telnet from your PC, directly after you push the Read button in Communication Monitor. If this connects, you should see in the communication monitor whatever you type in telnet on your PC. If this works, the Server is working fine: it is the Etherpad that is not connecting out, probably because of a firewall or network problem on site. Otherwise the problem is probably a firewall on or just before the Plug and Play Scada server: talk to us or your server farm admin.
- Troubleshoot until it works.

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MODULE 3:
Adding the Lantronix Etherpad as an Active Etherpad

EXERCISE

Assignment:

Delete the meter and etherpad from Module 2's Assignment if they exist.

Set up the Etherpad on your desk as an Active Etherpad, and connect your meter to it.

Setup both Entities in Plug and Play Scada, and read in the Phasor Graph successfully.

Call the Lecturer if you have any questions, and when you're done, tell him your phasor's timestamp and the value of the red voltage.