



PNPSCADA



## COURSE 103

**TECHNICIAN ROLE:**  
*Installing Etherpads on  
Plug and Play Scada*



# The NEXT Generation AMR

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



## 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



# MODULE 1:

## Etherpads in general

- 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.



# MODULE 1: Simple Etherpads: Static Mode



# MODULE 1:

## Etherpads in general

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PNPSCADA

# MODULE 1: Simple Etherpads: Active Mode





# 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.





# 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?: \_\_\_\_\_

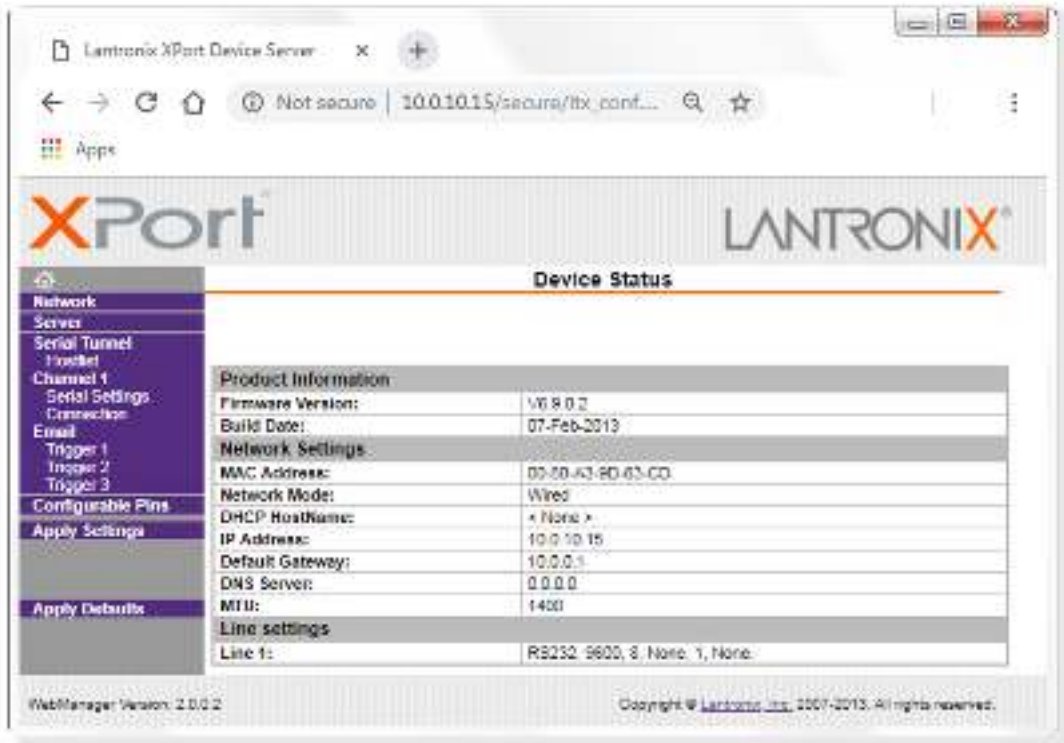
Motivate why: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

# MODULE 2:

## Adding the Lantronix Etherpad as a Passive Etherpad

### Step 1: Setup Etherpad



The screenshot shows the Lantronix XPort Device Server web interface. The browser address bar displays "10.0.10.15/secure/tx\_conf...". The page title is "XPort" and "LANTRONIX". The main content area is titled "Device Status" and contains a table of device information.

Product Information	
Firmware Version:	V08.0.2
Build Date:	07-Feb-2013
Network Settings	
MAC Address:	00:50:43:9D:63:CD
Network Mode:	Wired
DHCP HostName:	< None >
IP Address:	10.0.10.15
Default Gateway:	10.0.0.1
DNS Server:	0.0.0.0
MTU:	1400
Line settings	
Line 1:	RS232, 9600, 8, None, 1, None

WebManager Version: 2.0.0.2 Copyright © Lantronix, Inc. 2007-2013. All rights reserved.



# 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 not 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.

### NOTES:

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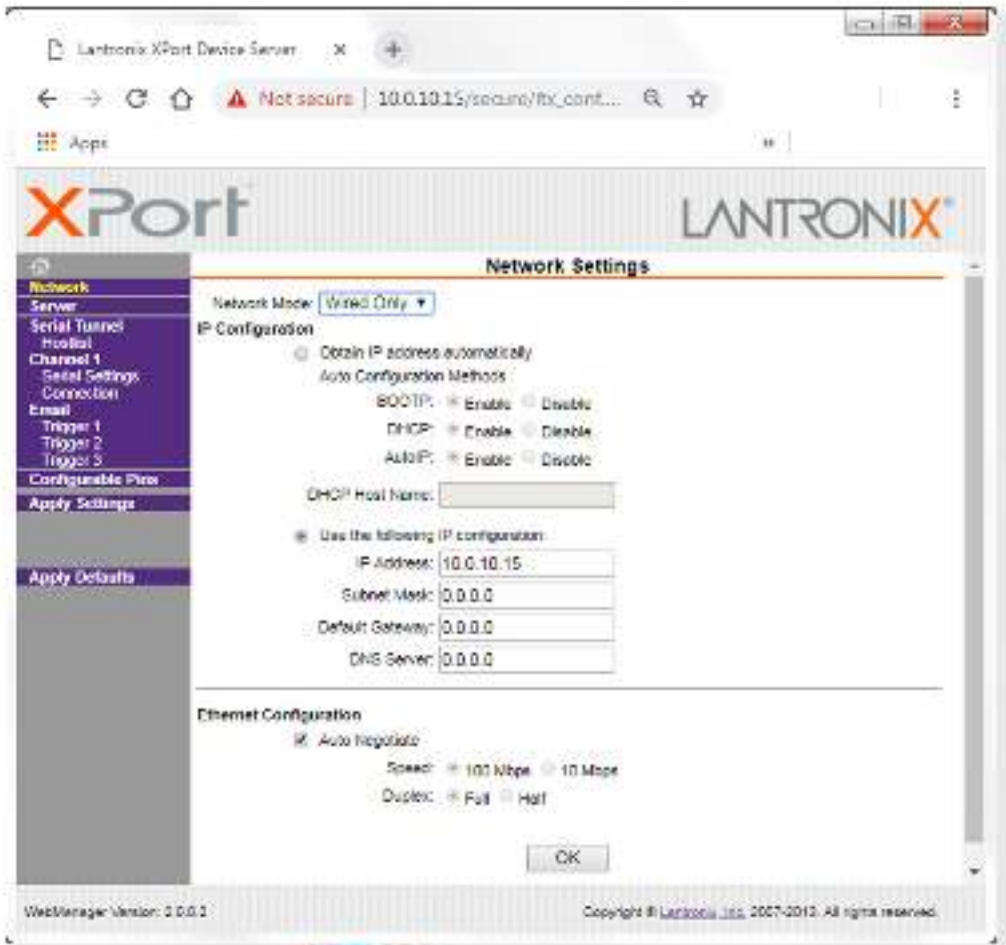
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# MODULE 2:

## Adding the Lantronix Etherpad as a Passive Etherpad

### Step 1.1: TCP/IP Setup



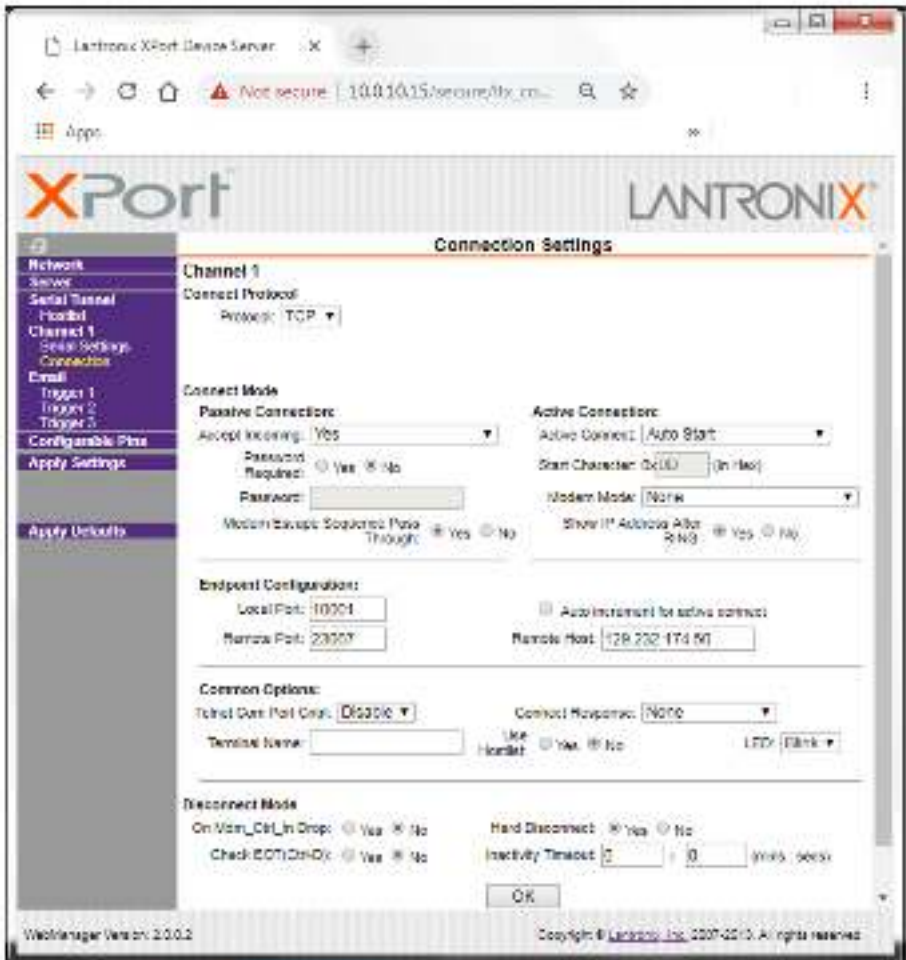
The screenshot displays the WebManager interface for a Lantronix XPort Device Server. The browser address bar shows the URL `10.0.10.15/secure/rtx_conf...`. The interface features a sidebar menu on the left with options like Network, Server, Serial Tunnel, and Configurable Pins. The main content area is titled "Network Settings" and includes a "Network Mode" dropdown set to "Wired Only". Under "IP Configuration", the "Obtain IP address automatically" option is selected, with sub-options for BOOTP, DHCP, and AutoIP, all set to "Enable". Below this, there are input fields for "DHCP Host Name". The "Use the following IP configuration" option is also visible, with fields for IP Address (10.0.10.15), Subnet Mask (0.0.0.0), Default Gateway (0.0.0.0), and DNS Server (0.0.0.0). The "Ethernet Configuration" section shows "Auto negotiate" selected, with speed and duplex options. An "OK" button is located at the bottom right of the settings area. The footer contains the text "WebManager Version: 0.0.0.0" and "Copyright © Lantronix, Inc. 2007-2010. All rights reserved."





# MODULE 2: Adding the Lantronix Etherpad as a Passive Etherpad

## Step 1.2: TCP Port Setup

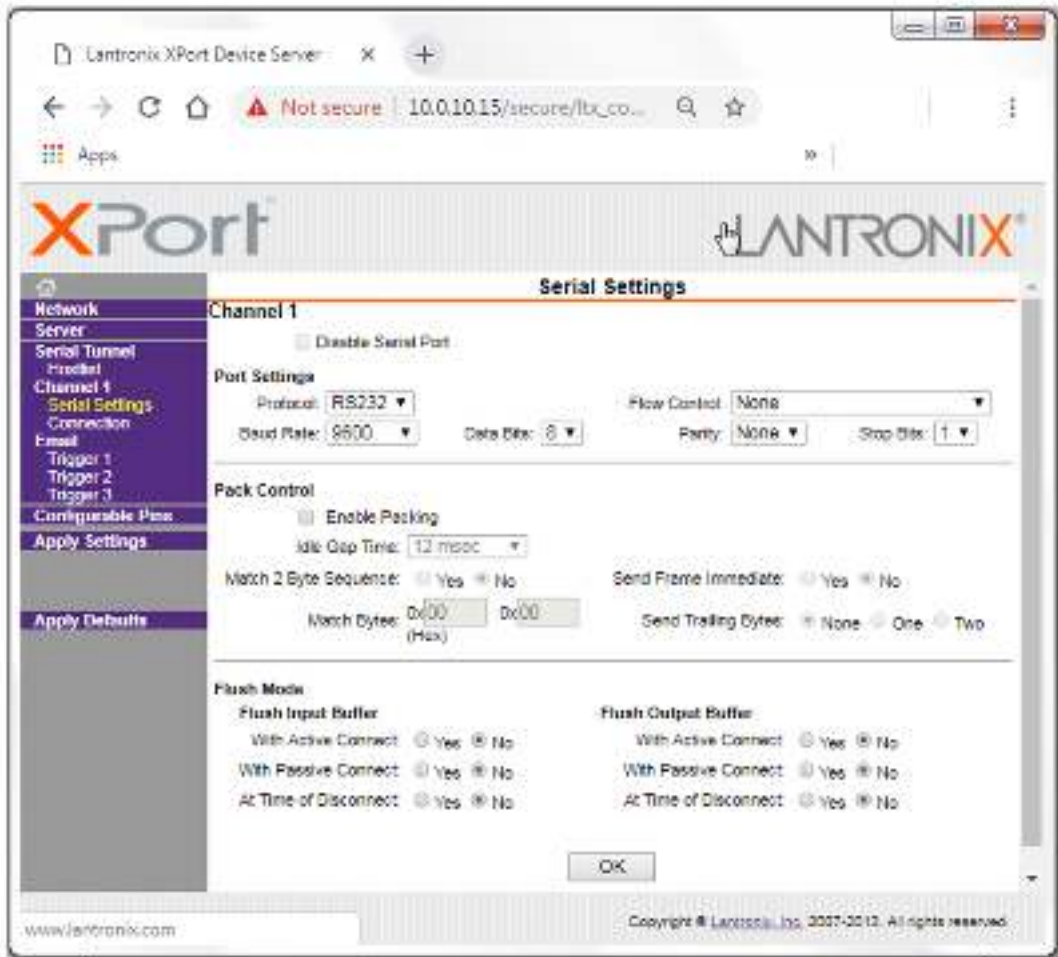




# MODULE 2:

## Adding the Lantronix Etherpad as a Passive Etherpad

### Step 1.3: Serial Port Setup



The screenshot displays the Lantronix XPort Device Server web interface. The browser address bar shows the URL `10.0.10.15/secure/lbx_co...`. The interface features a sidebar with navigation options: Network, Server, Serial Tunnel, Channel 1, Serial Settings (highlighted), Connection, Email, Trigger 1, Trigger 2, Trigger 3, Configurable Pins, Apply Settings, and Apply Defaults. The main content area is titled "Serial Settings" and is for "Channel 1".

**Channel 1**

Disable Serial Port

**Port Settings**

Protocol: RS232  
Baud Rate: 9600  
Data Bits: 8  
Flow Control: None  
Parity: None  
Stop Bits: 1

**Packet Control**

Enable Packing

Idle Gap Time: 12 msec

Match 2 Byte Sequence:  Yes  No

Match Bytes: 0x00 0x00 (Hex)

Send Frame Immediate:  Yes  No

Send Trailing Bytes:  None  One  Two

**Flush Mode**

**Flush Input Buffer**

With Active Connect:  Yes  No

With Passive Connect:  Yes  No

At Time of Disconnect:  Yes  No

**Flush Output Buffer**

With Active Connect:  Yes  No

With Passive Connect:  Yes  No

At Time of Disconnect:  Yes  No

OK

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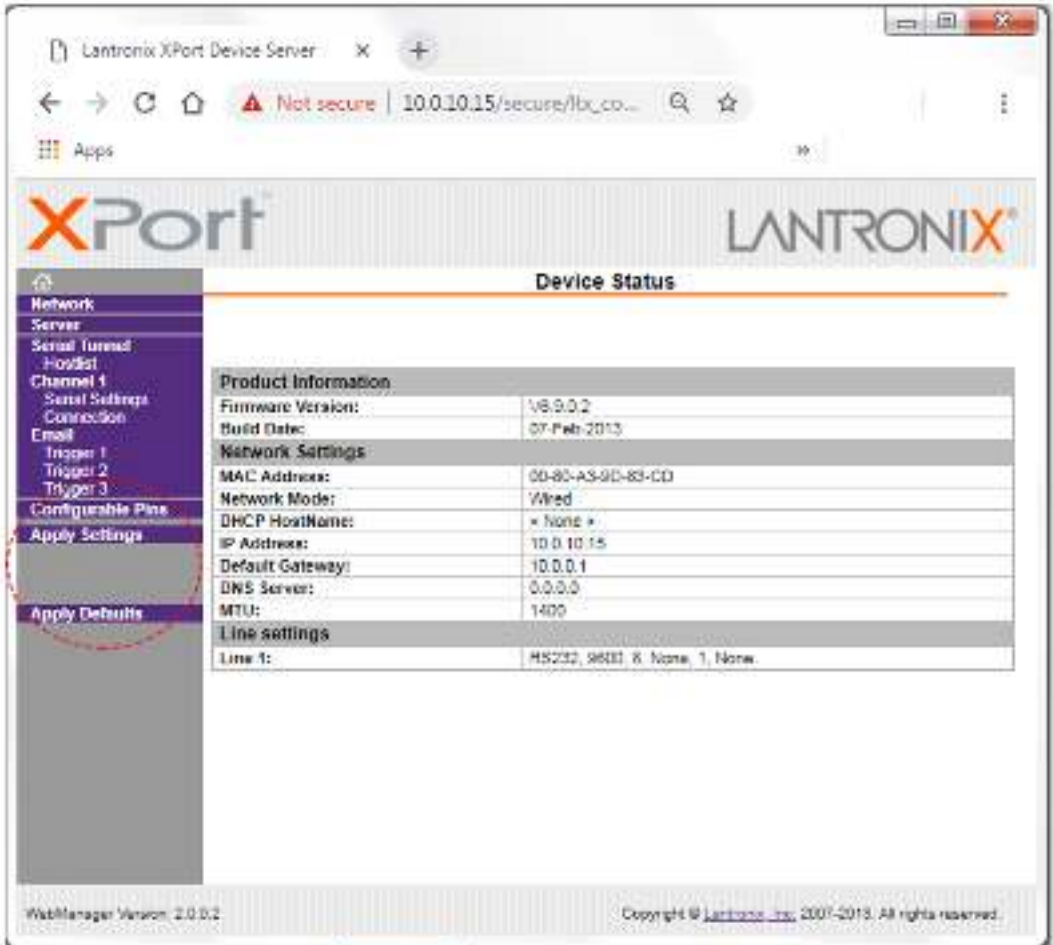




# MODULE 2:

## Adding the Lantronix Etherpad as a Passive Etherpad

### Step 14: Save your Setup



The screenshot shows a web browser window displaying the Lantronix XPort Device Server configuration page. The browser address bar shows the URL `10.0.10.15/secure/lbx_co...`. The page title is "Lantronix XPort Device Server". The main content area is titled "Device Status" and contains a table of configuration parameters. A sidebar on the left contains navigation links, with "Apply Defaults" highlighted and circled in red.

Product Information	
Firmware Version:	V8.0.0.2
Build Date:	07-Feb-2013
Network Settings	
MAC Address:	00-80-45-0D-83-CD
Network Mode:	Wired
DHCP HostName:	* None *
IP Address:	10.0.10.15
Default Gateway:	10.0.0.1
DNS Server:	0.0.0.0
MTU:	1400
Line settings	
Line 1:	MS232, 9600, 8, None, 1, None.

WebManager Version: 2.0.0.2

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# MODULE 2: Adding the Lantronix Etherpad as a Passive Etherpad

## Step 2.1: Plug and Play Scada Setup

**Add a Passive Etherpad**

*An etherpad is typically an ethernet to Serial converter. It is a hardware device. It is configured and installed on an IP visible from the server, at a PORT number you configured on the device. A 'static' or 'passive' etherpad is typically an etherpad that doesn't make any connections to the outside world. It expects to be connected to from the outside. This screen assumes you have already configured the etherpad.*

**User-defined Name:**

**TCP Address:**

**PORT Number:**









## 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.





# MODULE 3: Adding the Lantronix Etherpad as an Active Etherpad

## Step 1: Plug and Play Scada Setup

The screenshot shows a web browser window titled "Add Wizard - Active Etherpad - PNPSCADA - Google Chrome". The address bar contains the URL: [https://sdg.pnpscada.com/addActiveEtherpad.jsp?memh=-1924196737394801897&advar\\_diddep=d...](https://sdg.pnpscada.com/addActiveEtherpad.jsp?memh=-1924196737394801897&advar_diddep=d...)

### Add an Active Etherpad

An "active etherpad" is typically an emulator to Serial converter. It is a hardware device. It is configured and controlled on an IP from which this server is visible. You should configure this etherpad to connect to this server (196.23.139.146), on an available port (as specified here). This screen assumes you have already configured the etherpad.

**Warning:** The port you specify might not be open on this server's firewall. To avoid this assumption, please confirm the port number with the Server Administrator.

User-defined Name:

Server TCP PORT Number:

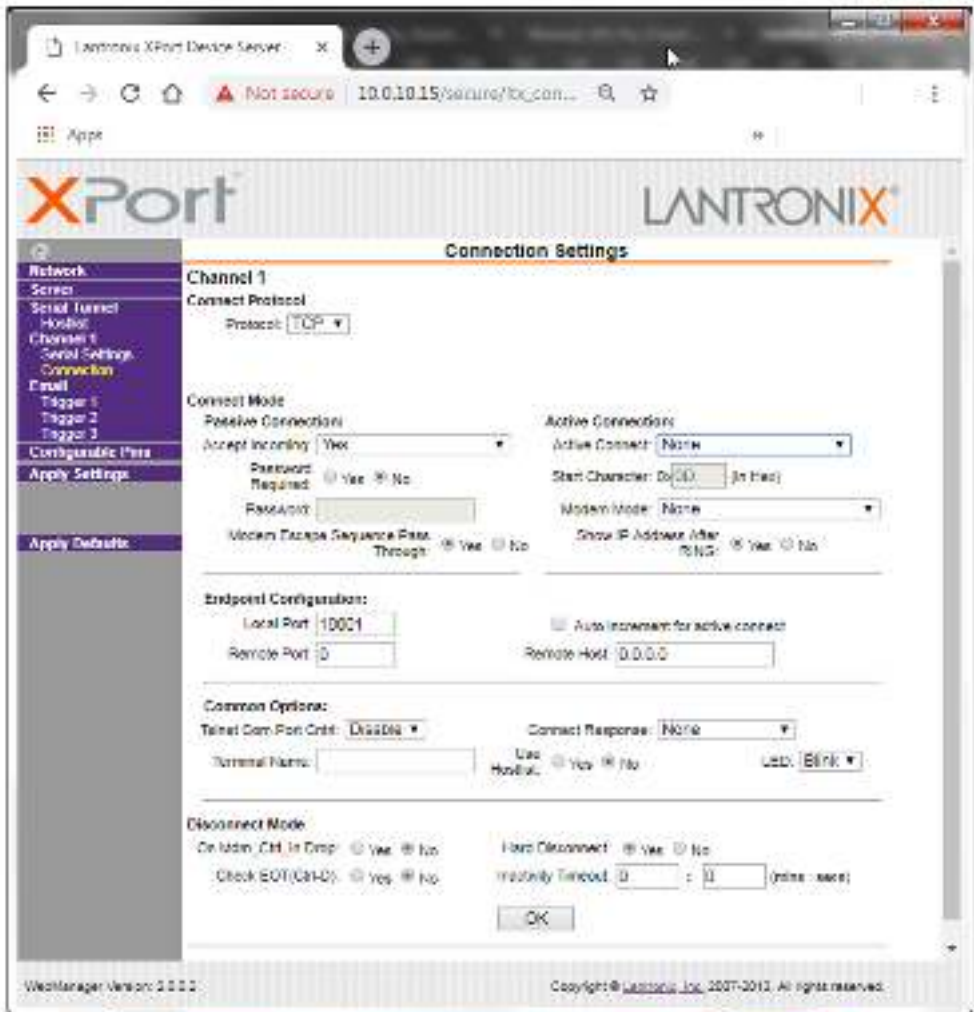
Back Finish



# MODULE 3:

## Adding the Lantronix Etherpad as an Active Etherpad

### Step 2: Additional Etherpad Configuration



The screenshot displays the Lantronix XPort Device Server web interface. The browser address bar shows the URL `10.0.10.15/secure/toc.com...`. The page title is "XPort" and "LANTRONIX". The main content area is titled "Connection Settings" and is for "Channel 1".

**Channel 1**

**Connect Protocol**  
Protocol:

**Connect Mode**

**Passive Connections**  
Accept Incoming:   
Password Required:  Yes  No  
Password:   
Modem Escape Sequence Pass Through:  Yes  No

**Active Connections**  
Active Connect:   
Start Character:  (in Hex)  
Modem Mode:   
Show IP Address After RING:  Yes  No

**Endpoint Configuration:**  
Local Port:   
Remote Port:   
 Auto increment for active connect  
Remote Host:

**Common Options:**  
Tunnel Com. Port Crit:   
Terminal Name:   
Connect Response:   
Use Hostal:  Yes  No  
USB:

**Disconnect Mode**  
On Idle, Ctrl. In Comp:  Yes  No  
Check EOT (Ctrl-C):  Yes  No  
Hard Disconnect:  Yes  No  
Inactivity Timeout:  :  (mins : secs)

WebManager Version: 2.0.0.0 Copyright © Lantronix, Inc. 2007-2013. All rights reserved.

# 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.



# 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.

## 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.