

# NE1A Ethernet IP Communications with Allen Bradley Compact Logix PLC's

Micheal Paradiso

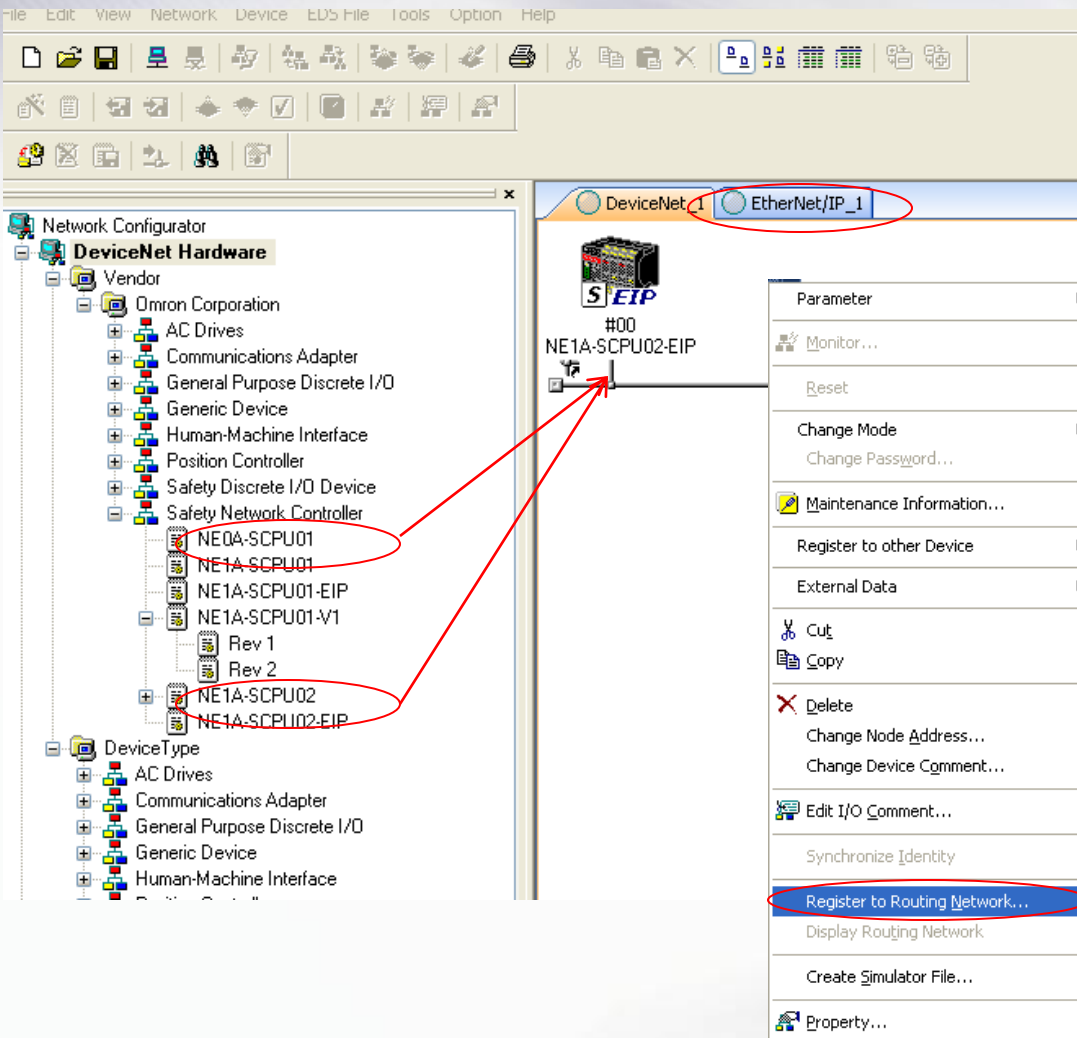
This document will walk you through a step by step setup for communication from a Omron NE1A Safety controller to an Allen Bradley compact logix PLC using Ethernet IP communications.

Network Configuration example code for this presentation is contain in:

NE1A to AB Demo code.ncf

# Creating Needed Networks for NE1A Setup

The first step is to create the needed networks within the Network Configurator software or open example file

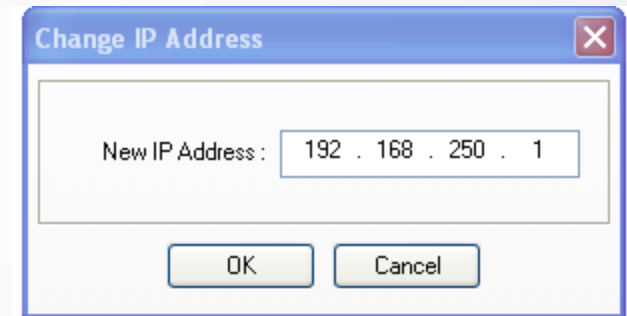
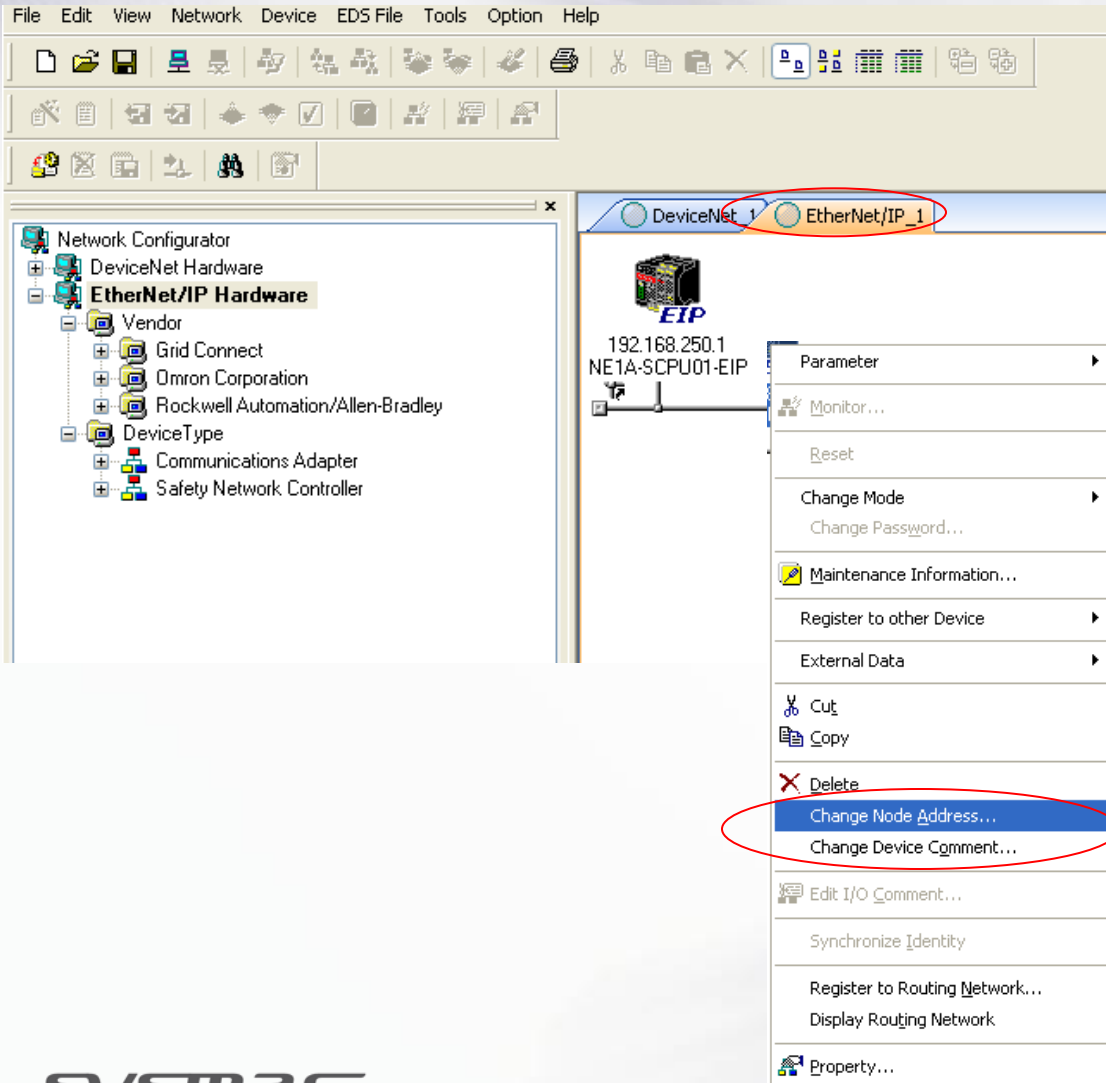


- **Open the Network Configurator software** and place a NE1A controller with EIP onto the DeviceNet network. You have two controllers you can use.
- **Right click** on the controller and **select “Register to Routing Network”**
- **Click “yes”** when asked if you want to add new network.
- Once you have done this, a second network will pop up in the network tab.
- This second network will be an Ethernet/IP network that is linked to the controller on the DeviceNet network.
- This is all that is needed to set up the networks.

# Setting up IP address for NE1A

The default IP address is 192.168.250.1 (assuming you hold down the IP ADDR button when powering up the NE1A,

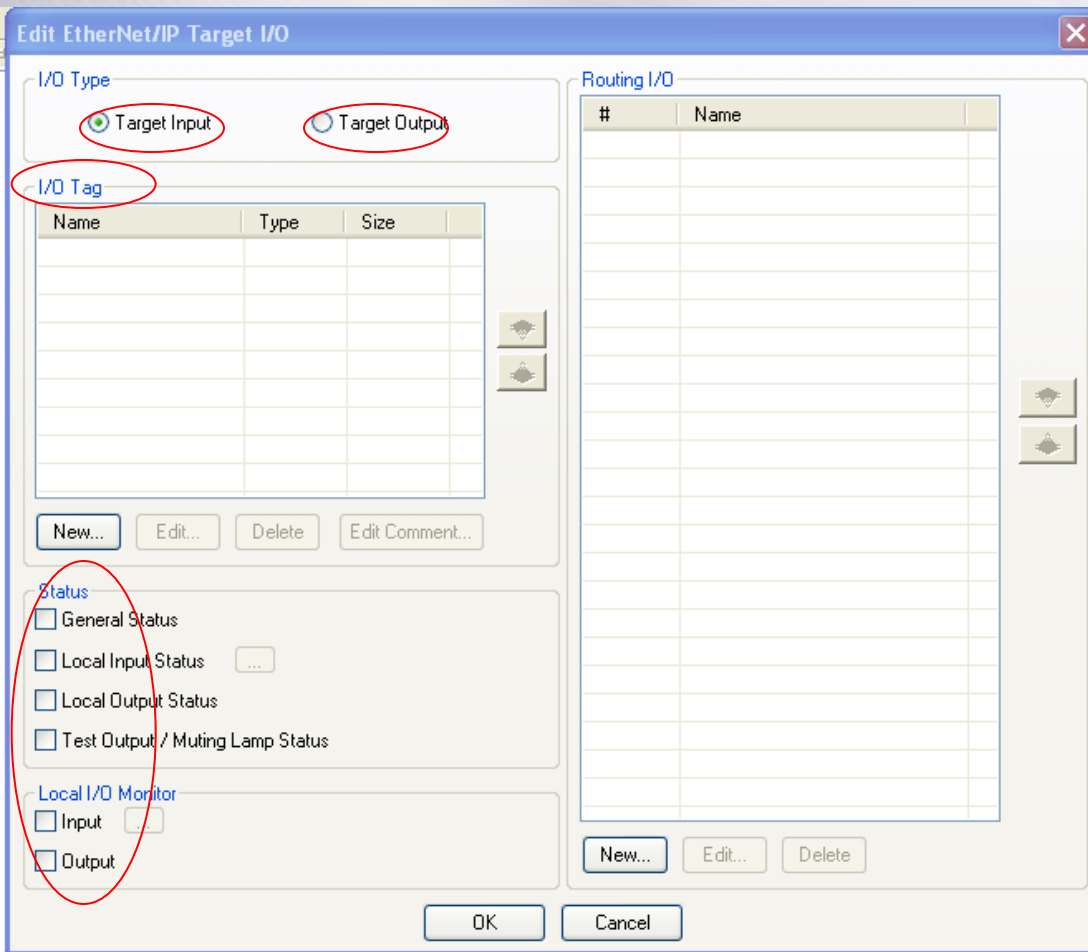
- Click on the Ethernet/IP tab to get to the correct screen.
- Right click on the controller and select “Change Node Address”
- A box will pop where you can change the IP address.
- Once you have entered the needed IP address click OK, the IP address will then be changed in the code.





# Setting up EIP I/O in NE1A cont.

This slide will explain in detail the function of this box.



**Edit EtherNet/IP Target I/O**

**I/O Type**

Target Input     Target Output

**I/O Tag**

Name	Type	Size

New... Edit... Delete Edit Comment...

**Status**

General Status

Local Input Status ...

Local Output Status

Test Output / Muting Lamp Status

**Local I/O Monitor**

Input ...

Output

**Routing I/O**

#	Name

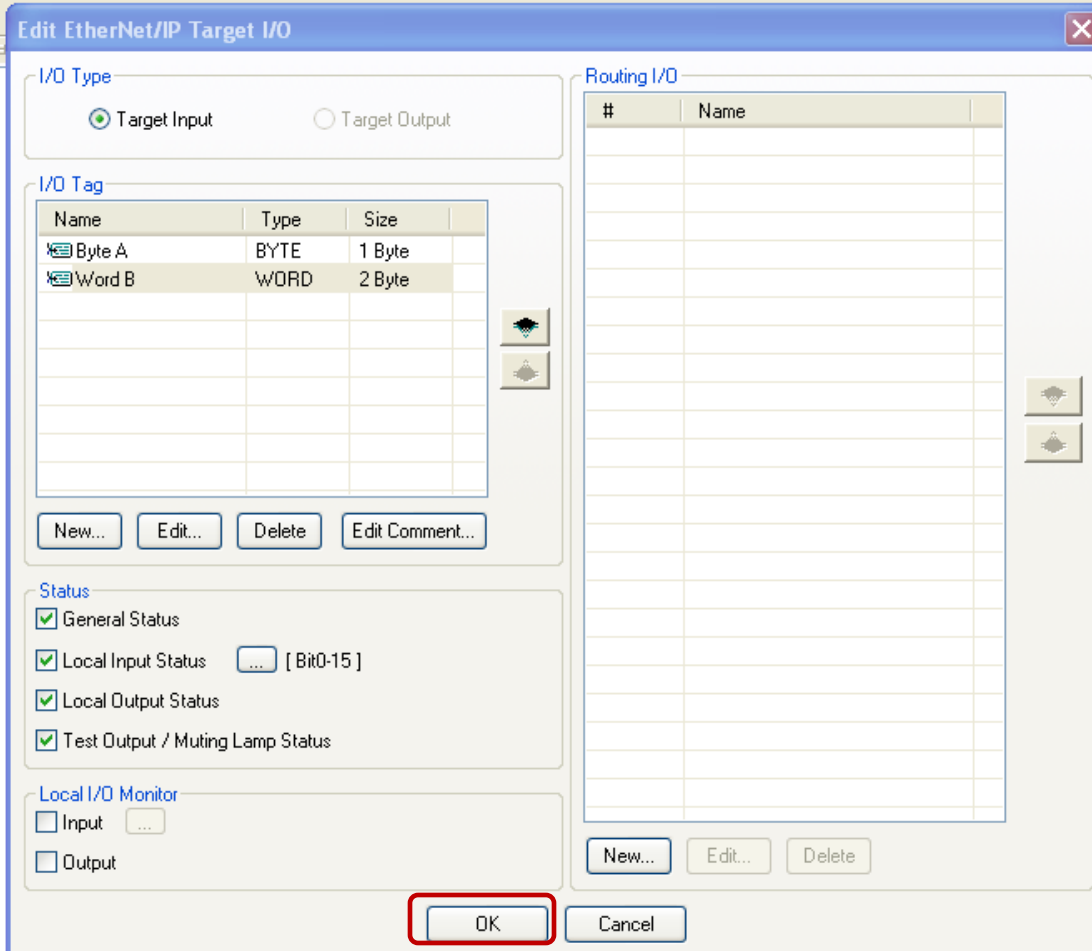
New... Edit... Delete

OK Cancel

- The I/O Type field is used to set up polling information out of the NE1A or writing info to the communication bits in the logic.
- Target Input is used as a read from the NE1A communication bits (outputs from the NE1A)
- Target Outputs is used to do write to the NE1A communication bits (inputs to the NE1A)
- I/O Tag field is used to set up the I/O type and name
- The Status and Local I/O Monitor field are preconfigured I/O points that can be checked and will give you access to these bits on the EIP network.
- The next slide will explain how to set up each of these fields.



# Setting up EIP I/O in NE1A cont.

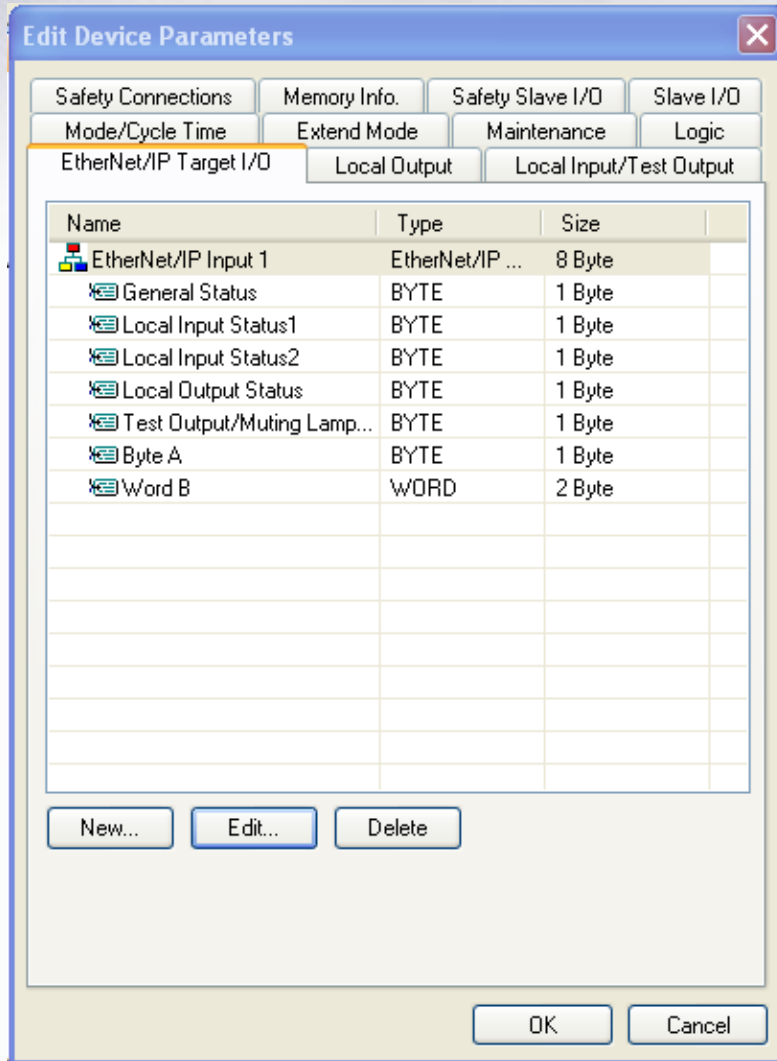


- Your Screen should look like this now
- Click **OK** complete this step

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	General Status (1 byte)							
1	Local Input Status 1 (1 byte)							
2	Local Input Status 2 (1 byte)							
3	Local Output Status (1 byte)							
4	Test Output/Muting Lamp Status (1 byte)							
5	Byte A (1 byte)							
6	Word B (2 bytes)							
7								

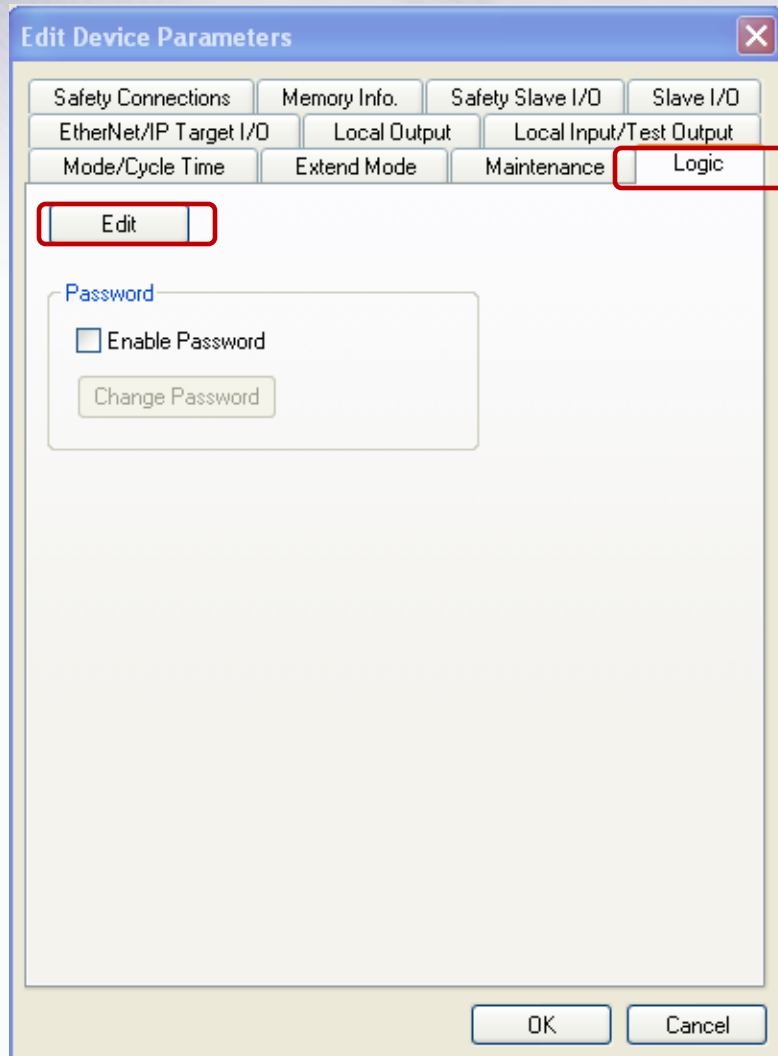
- Data format for the configuration you just setup will look like this.

# Setting up EIP I/O in NE1A cont.



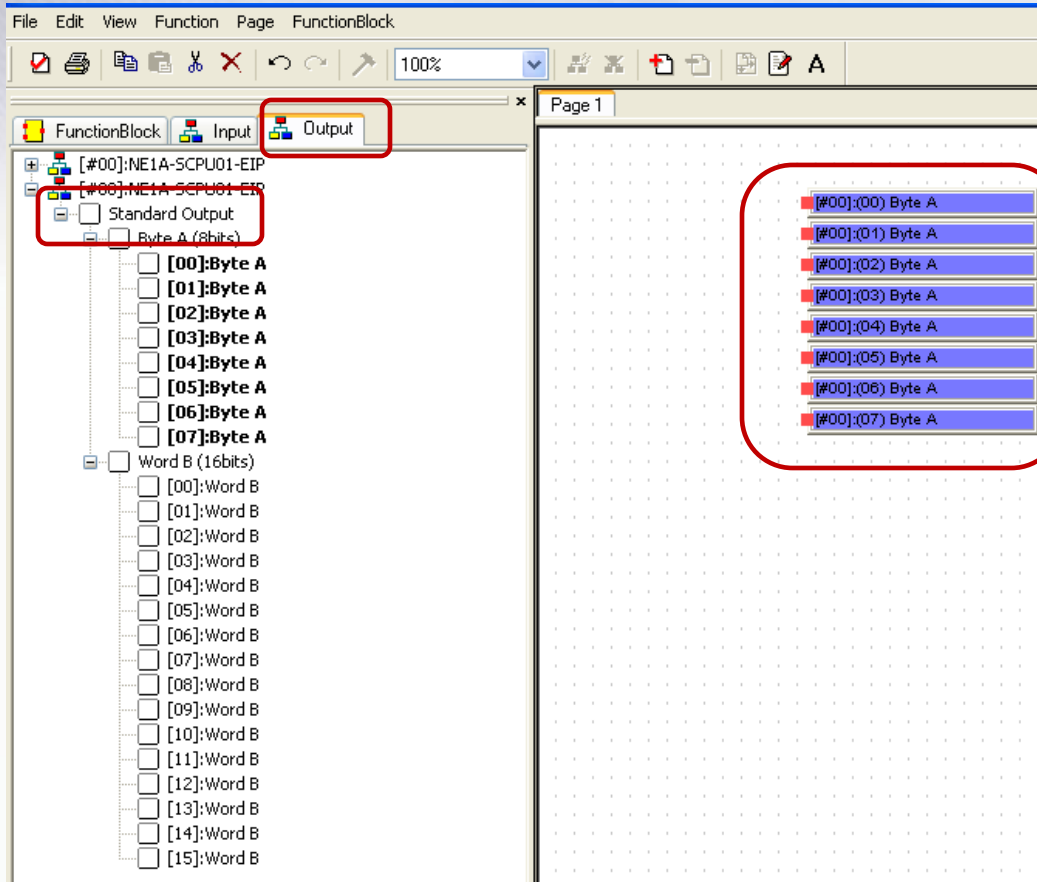
- The tab for EtherNet/IP Target I/O should look like this now.

# Setting up EIP I/O in NE1A cont.



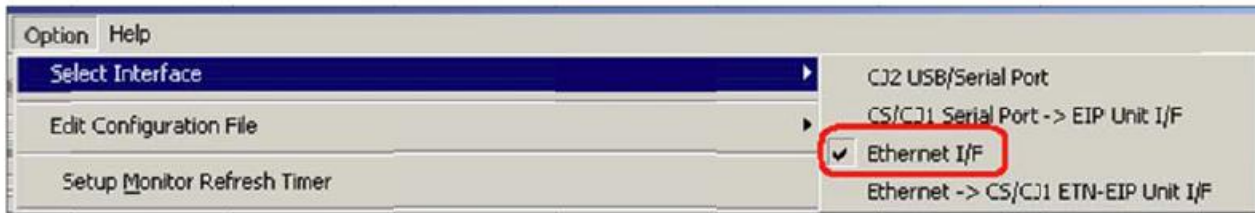
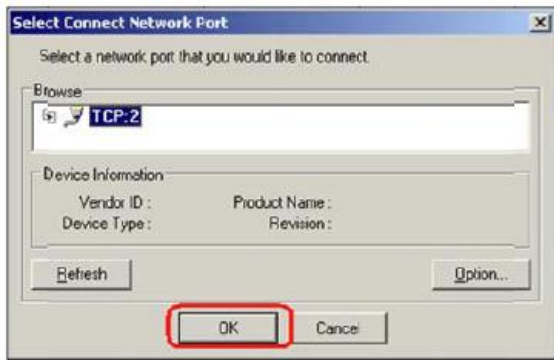
- Now let's check the I/O in the logic that you have just set up. Click on the **Logic** tab and then the **Edit** button
- **Click on the Output tab** and expand the **Standard Output** tab.
- You will now have 24 new output tags you can use in the code as standard output bits.
- The I/O is now set up for the NE1A EIP communications.
- This is all that is needed for EIP communications, the next step will be to do a download to the NE1A. If you have other settings or programming you need to do, do this before you do a download and move on to the next step.

# Setting up EIP I/O in NE1A cont.

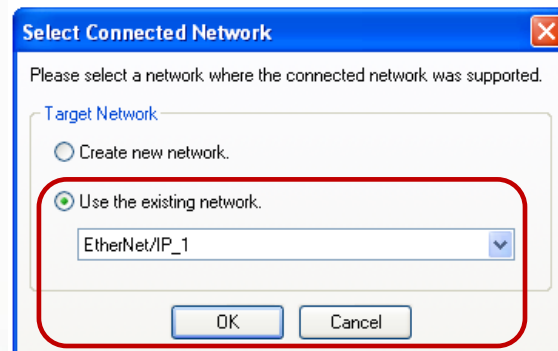


- **Click on the Output tab** and expand the **Standard Output** tab.
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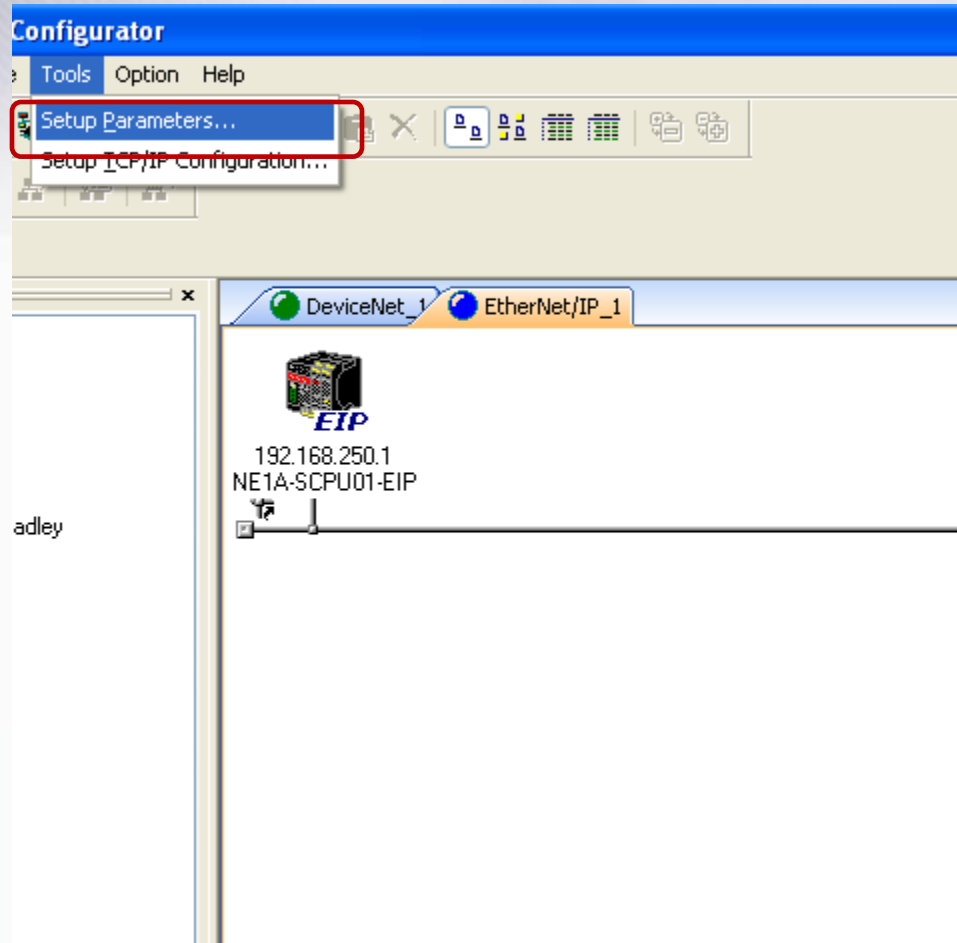
# Testing EIP connection & Setup in NE1A



- This step should only be done after you have done a download of the NE1A code and the controller is in Execute mode.
- For this step you will need to change the controller connection type to Ethernet I/F and have a connection from your PC to the EIP Network.
- Set up your PC's IP address to the same sub net as the controller and **select Ethernet I/F** for the interface.
- Once you have the interface setup, **go online with the controller**
- Use the existing network when asked and say OK.



# Testing EIP connection & Setup in NE1A



- Once you are online with the controller via the EIP Network **select Tools then Setup Parameters.**
- A Setup Parameters box will pop up, **fill in the fields as shown and hit send.**
- A series of numbers will appear in the results box that should look like this.
- The number in this box represents the status of the EIP communication byte that you had setup.
- If you see nothing come back in the result box, check that the controller is in Execute mode. If it still not working, check the configuration of the EIP for the controller.
- The number of Bytes in the results box will change if you add more I/O tags for the EIP communications.

# Testing EIP connection & Setup in NE1A



### Setup Parameters ✕

**Target Node Address**

192 . 168 . 250 . 1

**Service**

Generic Get Attribute Single ▼

Custom Service code set in HEX format string.

**Parameter**

Class :  All parameters set in HEX format string.

Instance :

Attribute :

Data :

Result : 40FFFFFF8F000000

01234567

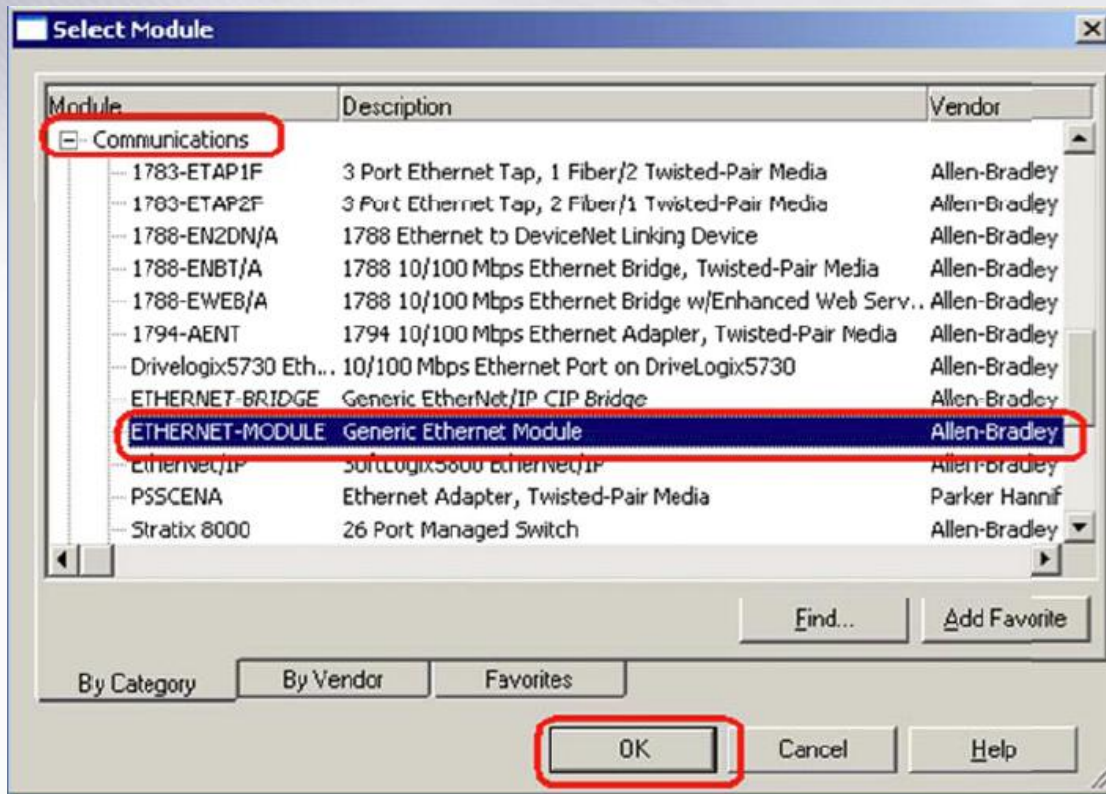
Send

C

- A Setup Parameters box will pop up, **fill in the fields as shown and hit send.**
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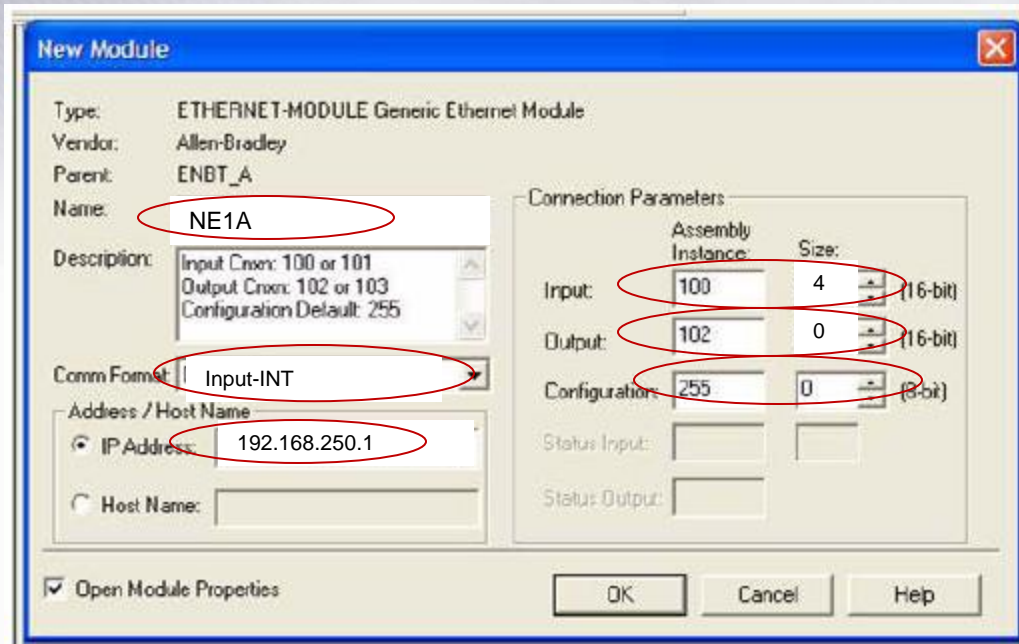
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7								

# Setting up the Allen Bradley PLC



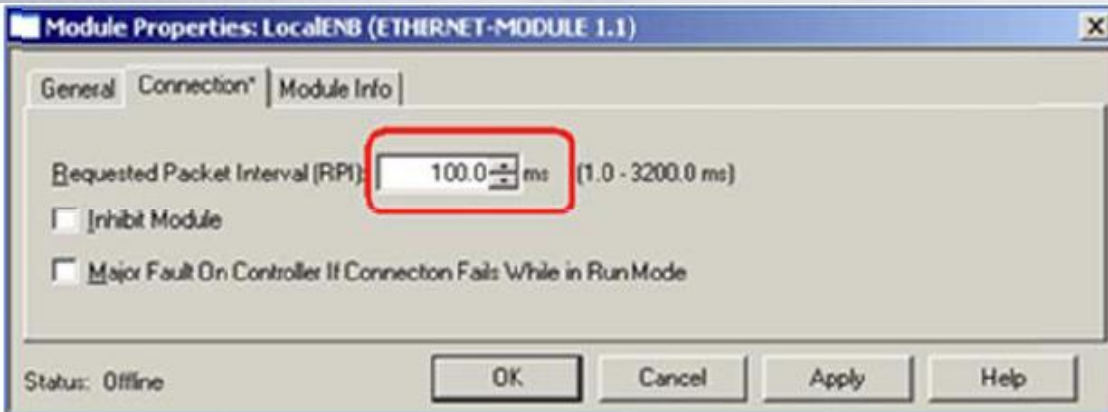
- Connect the NE1A , Allen Bradley PLC and PC to the Ethernet IP switch.
- Open or create a new project file for the CompactLogix in RSLogix 5000.
- Configure the IP address of the CompactLogix to the same sub net as the PC and the NE1A 192.168.250.XXX,
- Right click on the Ethernet module in the CompactLogix, and click "New Module".
- In the Communications group, select Ethernet-Module Generic Ethernet Module, and click OK.

# AB Software Configuration



- Type in the Name you would like to use in the Name field.
- In the Comm Format field select “Input-INT”, this is used if you are only doing a read for the NE1A. If you had set up a read and write to the NE1A you would select “Data-INT” or if you are just doing a write you would select “Output-INT” for this field.
- Configure the IP address to the IP address of the NE1A for the Address/Host name.
- In the Connection Parameters put 100 for the “Assembly Instance” and the size to 4 because the AB PLC uses 16 bit format, the data size will be 4 instead of 8 that is shown for the Omron PLC’s.
- Because we are only doing a read from the NE1A for this example the Output field should be grayed out and you should not be able to enter anything in this field. If you were to change the Comm Format field to “Data-INT” or “Output-INT” you would have to enter data into this field.
- The Configuration data type is not used by the Omron controllers, this field should always have “255” and “0”
- Select OK once all the data has been entered into the fields.

# AB Software Configuration



- Configure the RPI for 100ms and click OK.
- The tags will be created automatically for the NE1A
- Download the project to the CompactLogix processor
- This is all that is needed for this configuration.

