DF1 Router

FTView (SE and ME) to SLC or MicroLogix setup

Technical Application Note

A-DF1R

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1. PREFACE

1.1. PURPOSE OF THIS DOCUMENT

This document will assist the user to setup the DF1 Router to allow an FTView / PanelView Plus application to communicate to an SLC device's DF1 port via EtherNet/IP.

1.2. ADDITIONAL INFORMATION

The following resources contain additional information that can assist the user with the module installation and operation.

Resource	Link
Slate Installation	http://www.aparian.com/software/slate
DF1 Router User Manual DF1 Router Datasheet Example Code & UDTs	http://www.aparian.com/products/df1router
Ethernet wiring standard	www.cisco.com/c/en/us/td/docs/video/cds/cde/cde205_220_420/installation/guide/cde205_220_420_hig/Connectors.html
CIP Routing	The CIP Networks Library, Volume 1, Appendix C:Data Management

1.3. SUPPORT

Technical support will be provided via the Web (in the form of user manuals, FAQ, datasheets etc.) to assist with installation, operation, and diagnostics.

For additional support the user can use either of the following:

Contact Us web link	www.aparian.com/contact-us
Support email	support@aparian.com

2. APPLICATION DESCRIPTION

The Aparian DF1 Router can be used to enable multiple modern Ethernet devices to communicate to legacy SLC500, PLC5 and MicroLogix devices via their DF1 serial ports. In the application example below, an FTView SE application and two PanelView Plus terminals can read and write data to an SLC500.

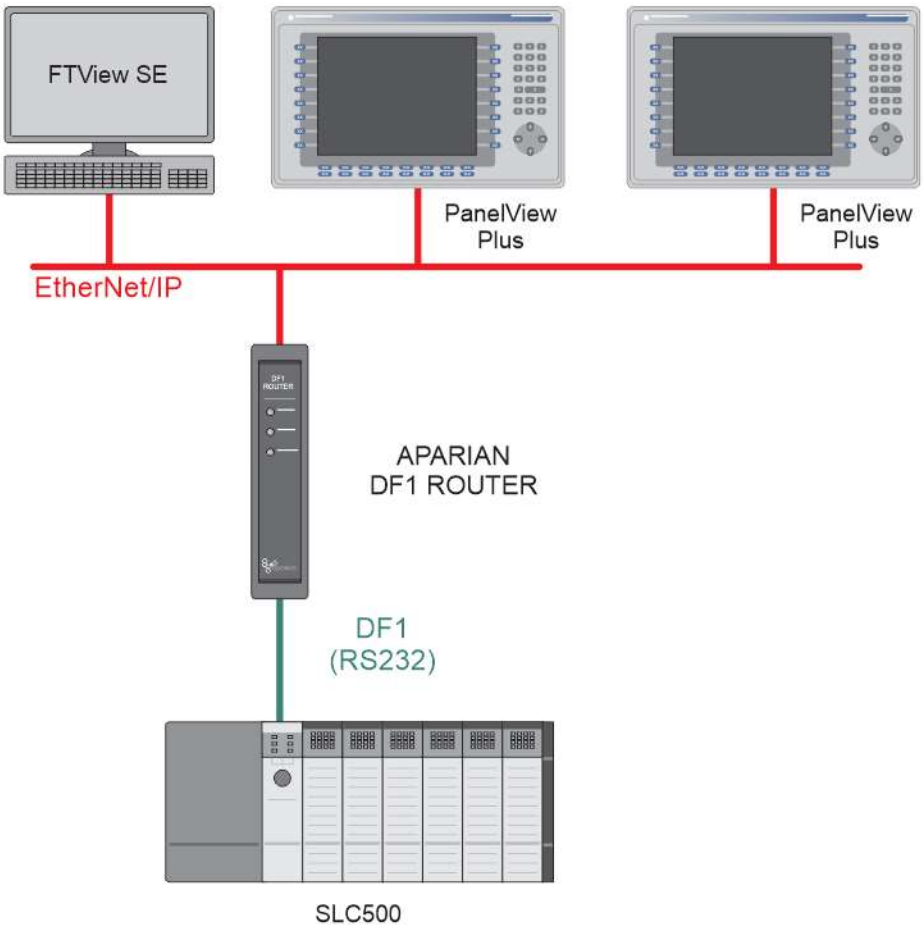

FIGURE 1 - EXAMPLE OF A TYPICAL NETWORK SETUP

3. SETUP

The following sections will describe the installation and configuration of all the required devices to assist the user with the initial setup.

3.1. SERIAL CABLE WIRING

The serial cable pinout is shown in the figure below:

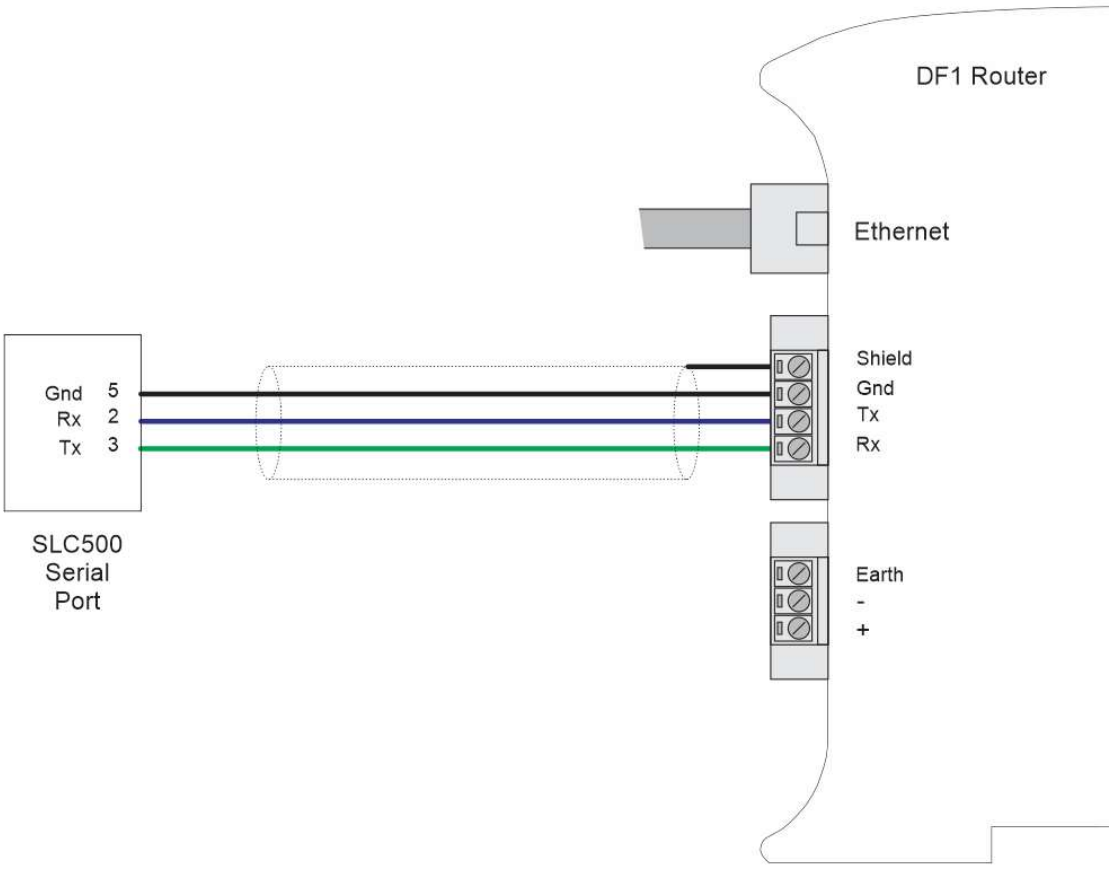

FIGURE 2 – SERIAL CABLE PINOUT

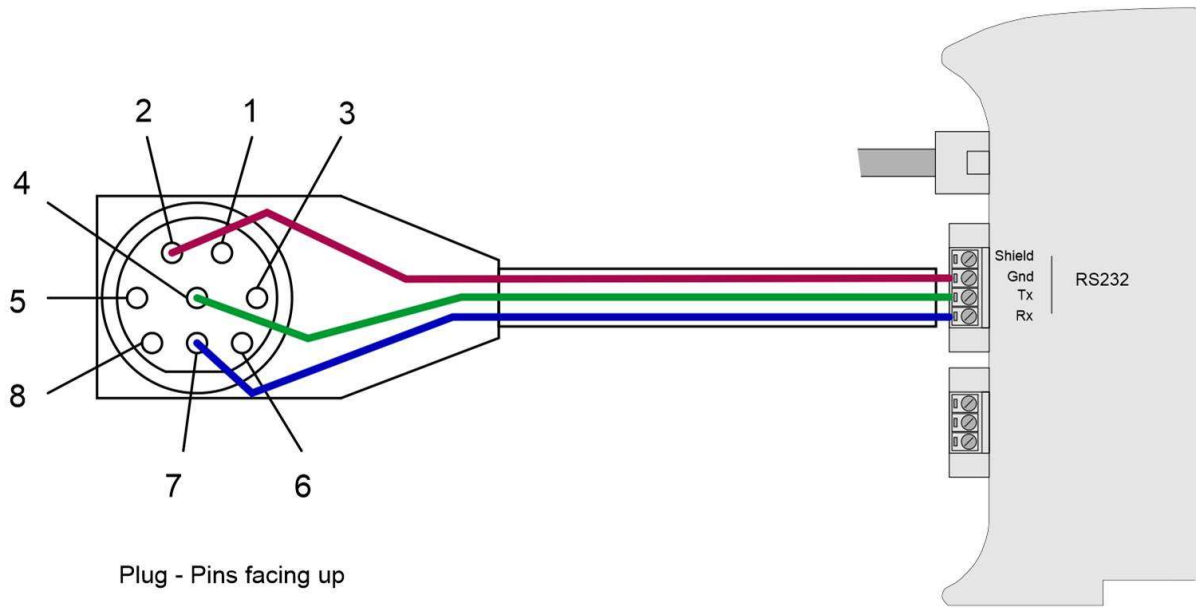

FIGURE 3 – DIN SERIAL CABLE PINOUT

3.2. DF1 ROUTER SETUP

The DF1 Router must be configured in Transparent PCCC mode, as shown below.

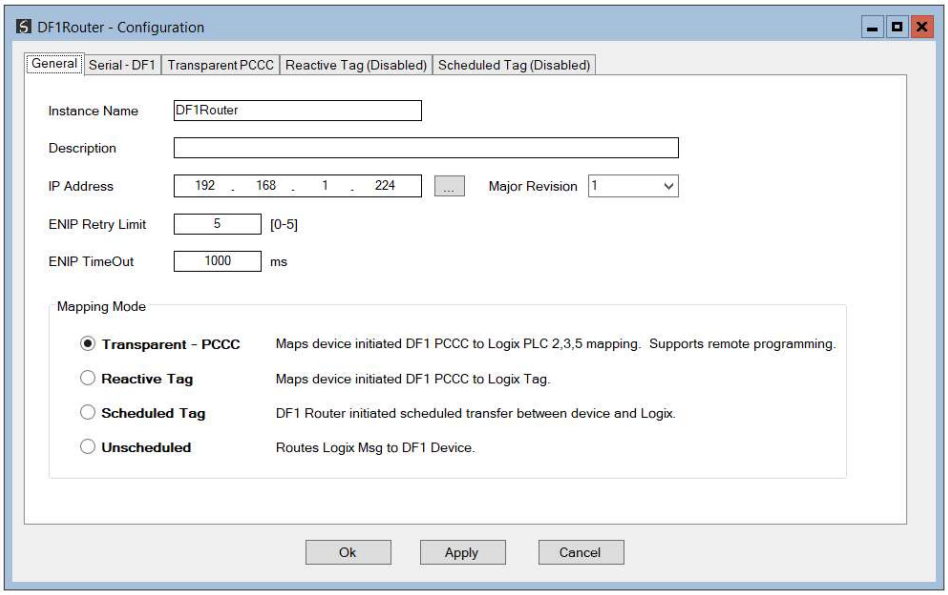

FIGURE 4 – DF1 GENERAL CONFIGURATION

In the Serial-DF1 settings, the protocol must be set to Full Duplex. The BAUD Rate, Parity and Error Detection must match that of the SLC device (as configured using RSLogix 500).

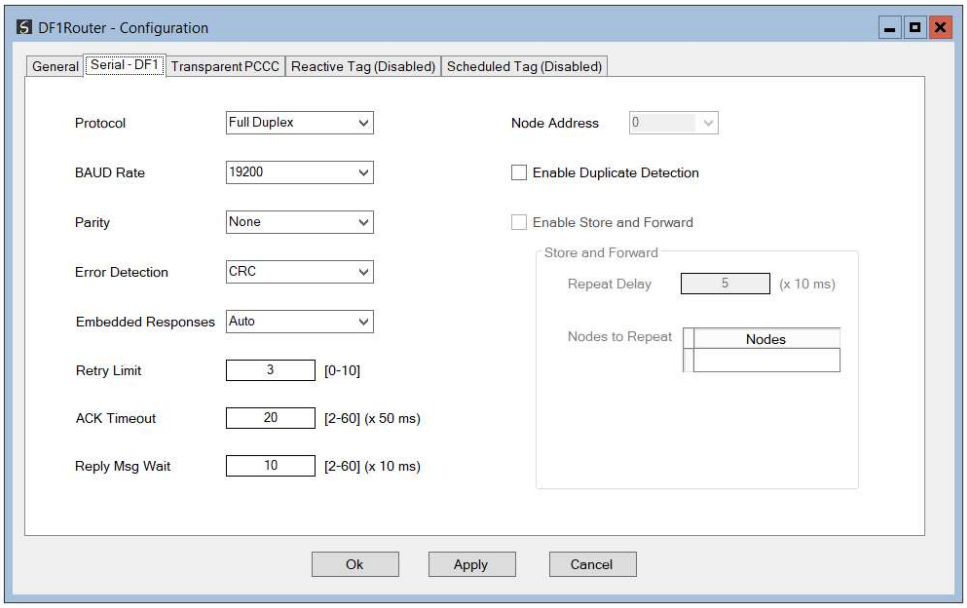

FIGURE 5 – DF1 SERIAL CONFIGURATION

No Transparent PCCC mapping items are required to be configured.

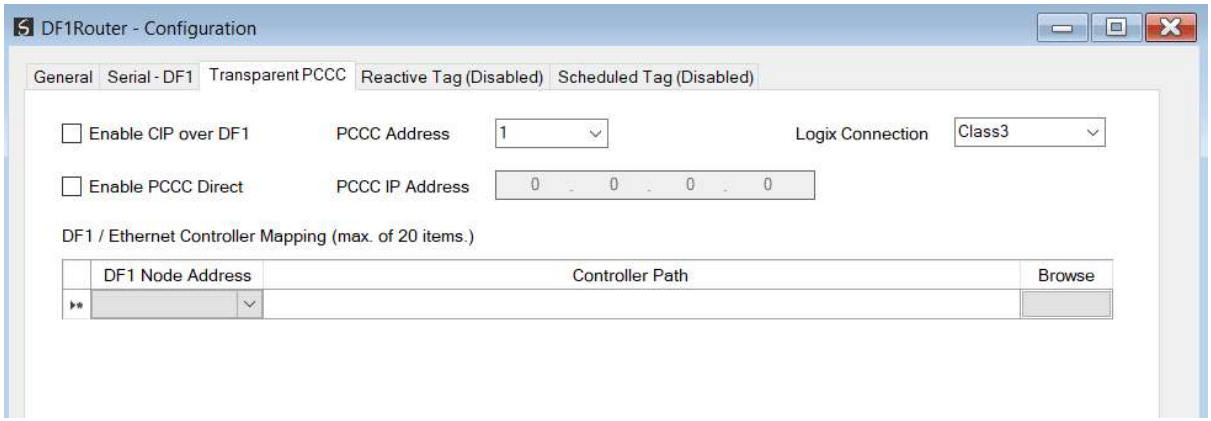

FIGURE 6 – TRANSPARENT PCCC CONFIGURATION

The PCCC Address allows the user to force the destination address of the DF1 message which is routed either via the PCCC protocol or the CIP embedded PCCC message.

NOTE: The PCCC Address is usually only relevant for DH485 networks. Thus for the DF1 Router the default value of 1 can be left unchanged.

The user must **not** have the CIP over DF1 enabled.

The PCCC Direct operation will only be relevant for legacy devices that have an Ethernet port (eg. SLC5/05). When wanting the PanelView Plus to connect to a SLC5/05 via the Serial Port (using the DF1 Router) the user will need to enable the PCCC Direct option and enter a IP address that will be used to emulate the SLC5/05. In the FTView setup section an explanation will be given on how to use the PCCC Direct IP address.

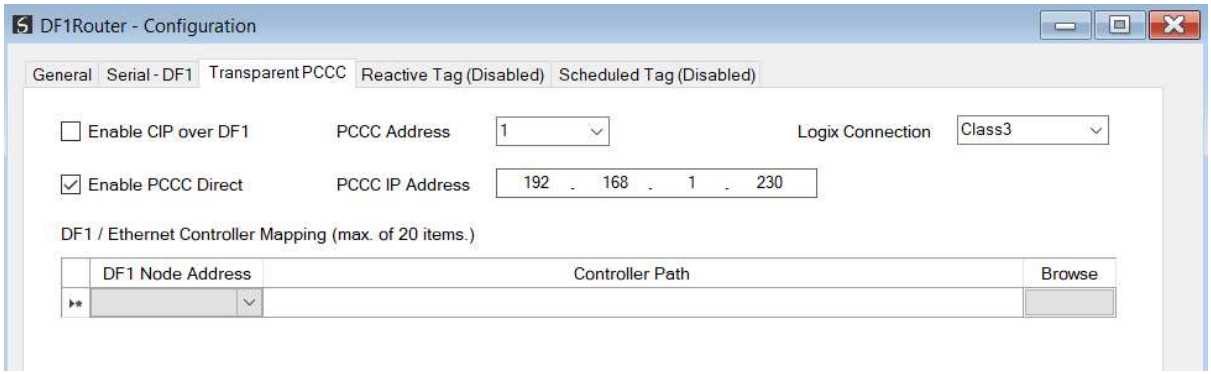

FIGURE 7 – TRANSPARENT PCCC CONFIGURATION WITH PCCC DIRECT

NOTE: The must not have the PCCC IP address the same as the module IP address as it can cause confusion with certain RSLinx drivers.

3.3. RSLOGIX 500 SETUP

Using RSLogix500, the DF1 serial port must be configured to match that of the DF1 Router's serial port settings with respect to BAUD rate, Parity and Error Detection.

NOTE: The DF1 Full Duplex must be selected, and the Duplicate Packet Detect option must be removed.

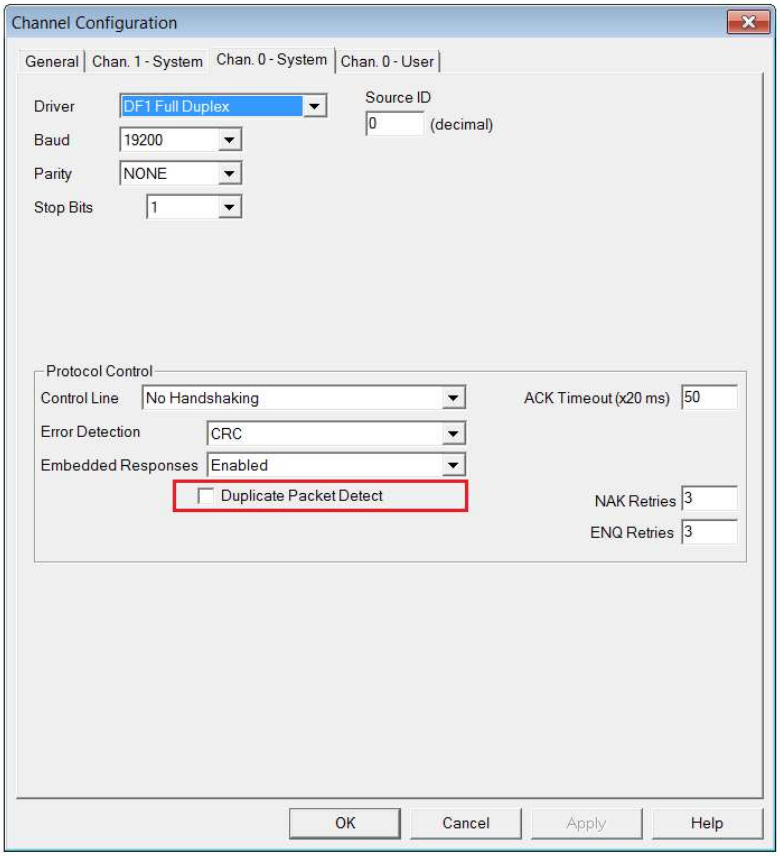

FIGURE 8 – SLC SERIAL CHANNEL CONFIGURATION

3.4. FTVIEW SETUP

Open FTView Studio and create a new FTView project (SE or ME). The project explorer tree will appear on the left-hand side. Right-click on the newly created project and select the ***Add New Server*** option, followed by the *RSLinx Enterprise* option.

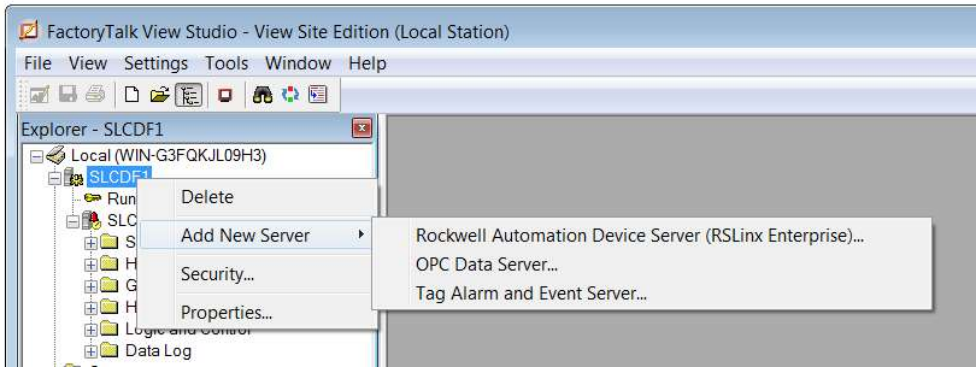

FIGURE 9 – FACTORY TALK SERVER ADD

The RSLinx Enterprise Server properties window will open. Select Ok.

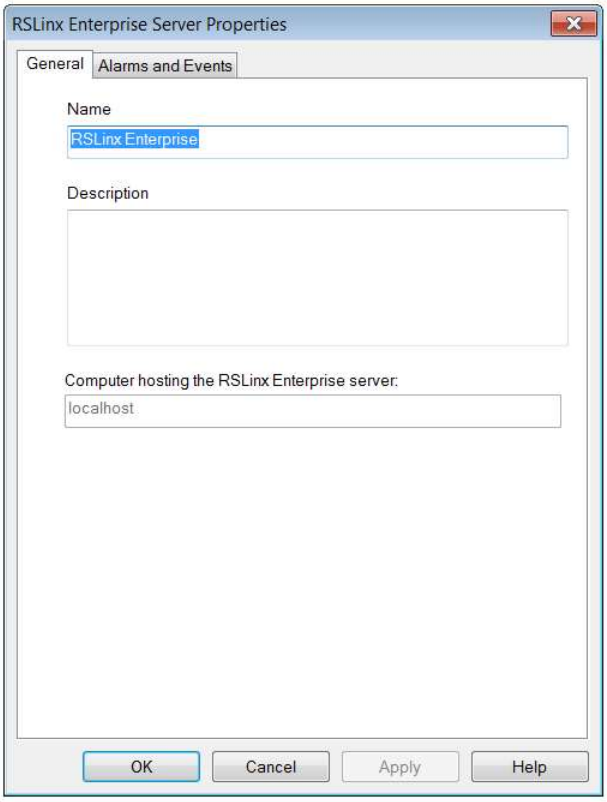

FIGURE 10 – FACTORY TALK SERVER GENERAL

The RSLinx Enterprise server will now appear in the project explorer tree. Double-click on the Communication Setup option below the RSLinx Enterprise server item.

3.4.1. CONTROLLERS NOT SUPPORTING ETHERNET

This part is relevant to controllers that do not have any Ethernet support (eg. SLC5/04).

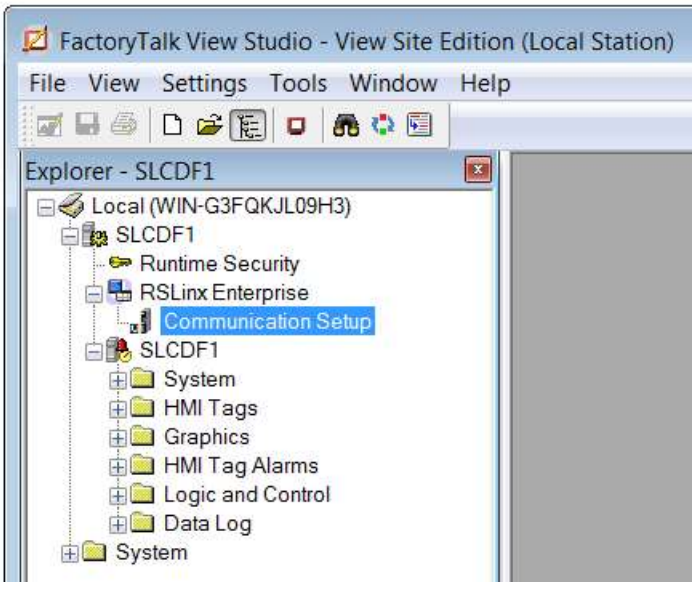

FIGURE 11 – FACTORY TALK COMMUNICATION SETUP

The DF1 Router will now be added using the NET ENI driver.

NOTE: It is recommended that the Ethernet cable be disconnect from your PC at this point. Otherwise the Ethernet driver will automatically detect and add the DF1 Router as an EtherNet/IP device.

In the Communication Setup window, right-click on the Ethernet driver and select ***Add Device***.

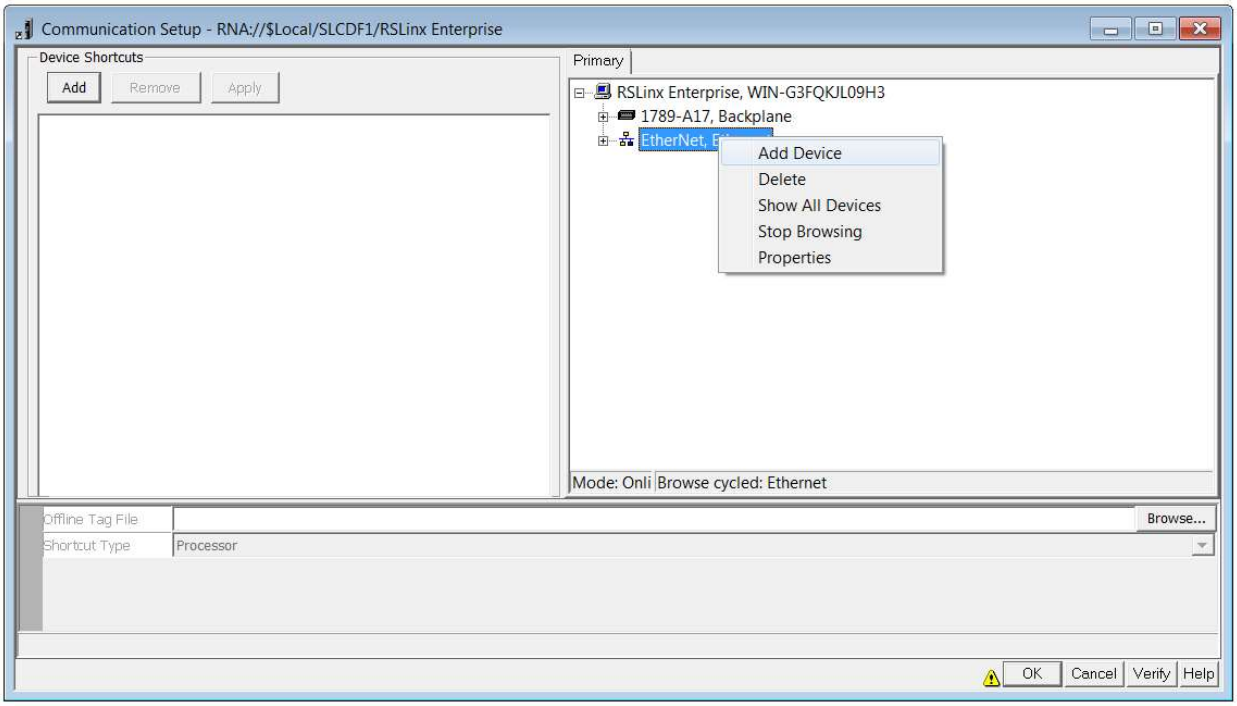

FIGURE 12 – FACTORY TALK RSLINX COMMUNICATION SETUP

In the Add Device Selection window, expand the NetENI-connected PCCC devices. Below that, expand the SLC and MicroLogix Processors.
Select the 1747-L541 SLC 5/04 or similar.

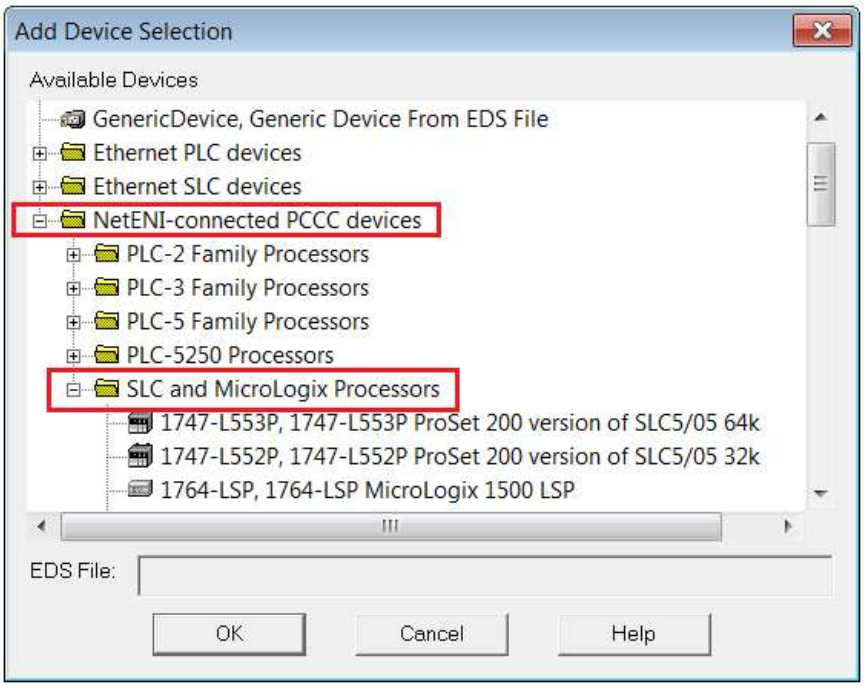

FIGURE 13 – FACTORY TALK DEVICE SELECTION

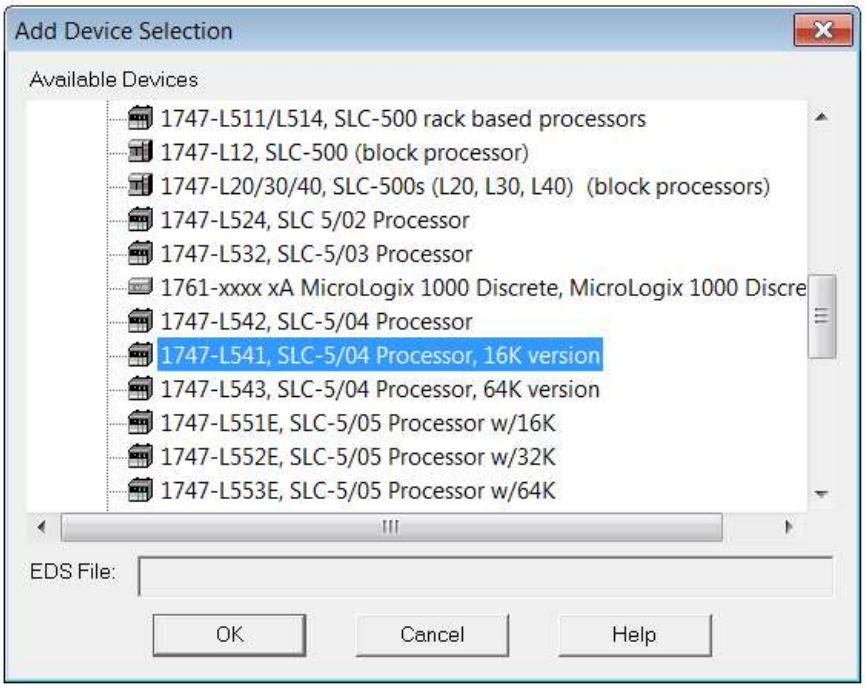

FIGURE 14 – FACTORY TALK DEVICE SELECTION

In the Device Properties window, enter the **IP Address of the DF1 Router** module and select Ok.

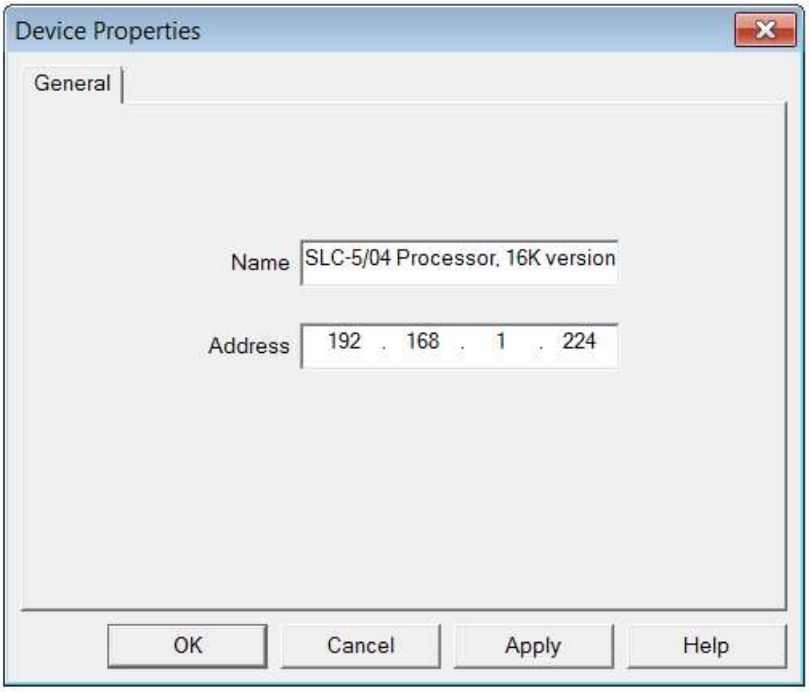

FIGURE 15 – FACTORY TALK DEVICE PROPERTIES

The newly added device will now appear in the Communication Setup tree under Ethernet devices. On the left side of the window, under Device Shortcuts, select the Add button and create a shortcut and give it a suitable name. Then select the SLC device on the right-hand side and select the Apply button (near the top under Device Shortcuts,) to associate the shortcut to the device.

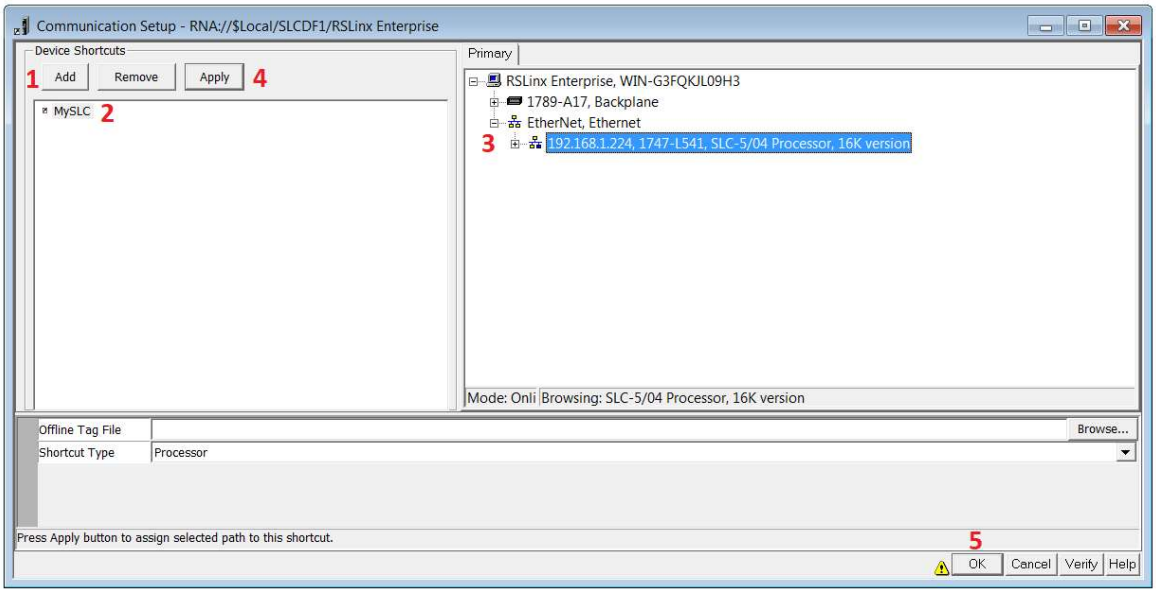

FIGURE 16 – FACTORY TALK RSLINX SETUP

The association will need to be confirmed by selecting ***Yes*** in the dialog window below.

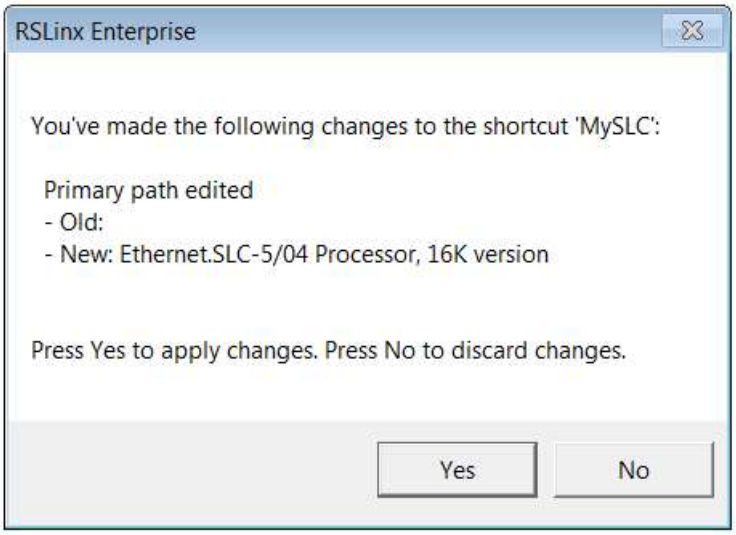

FIGURE 17 – FACTORY TALK RSLINX SETUP

The Communication Setup changes can then be accepted by selecting the ***Ok*** button at the bottom of the window.

3.4.2. CONTROLLERS SUPPORTING ETHERNET

This part is relevant to controllers that supports Ethernet (eg. SLC5/05).

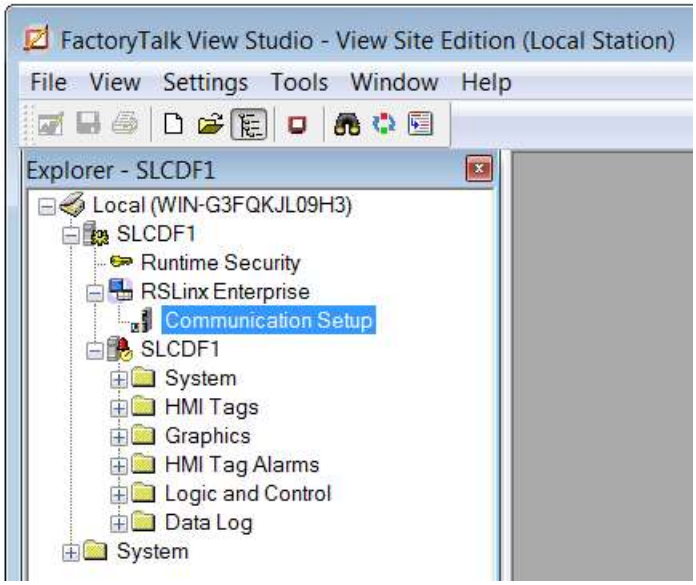

FIGURE 18 – FACTORY TALK COMMUNICATION SETUP

The DF1 Router will now be added using the NET ENI driver.

In the Communication Setup window, right-click on the Ethernet driver and select ***Add Device***.

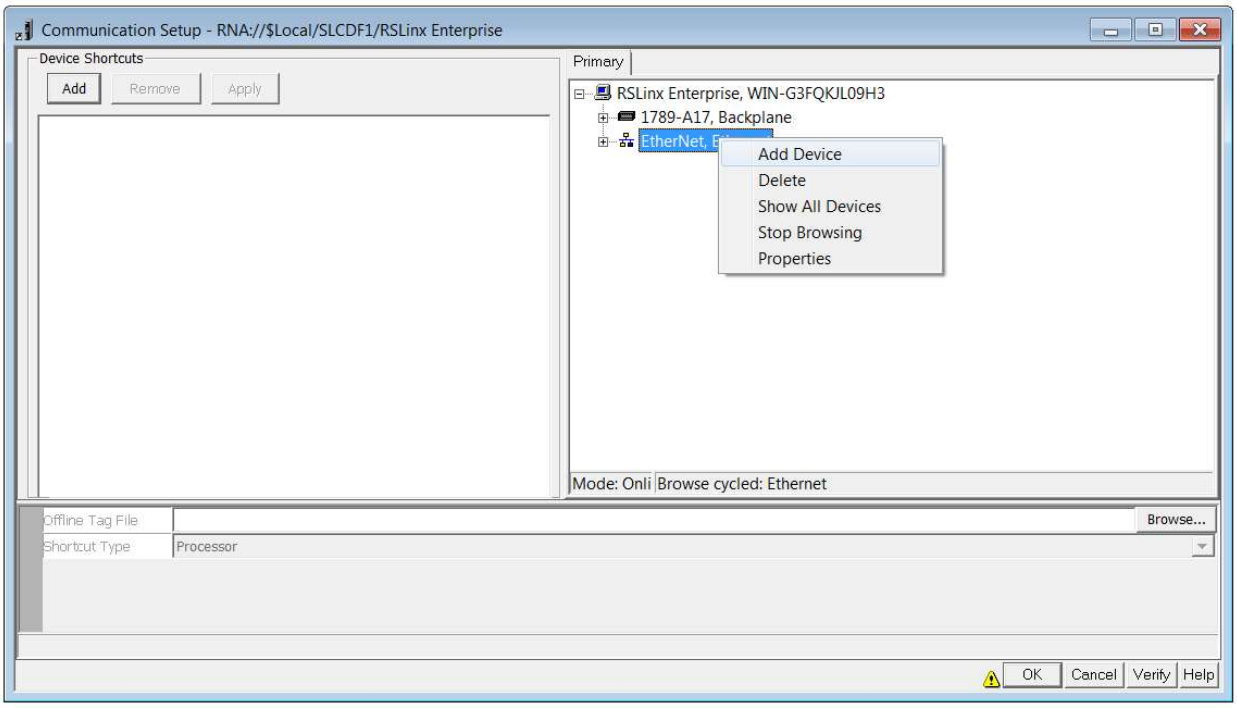

FIGURE 19 – FACTORY TALK RSLINX COMMUNICATION SETUP

In the Add Device Selection window, expand the NetENI-connected PCCC devices. Below that, expand the SLC and MicroLogix Processors. Select the 1747-L541 SLC 5/05 or similar.

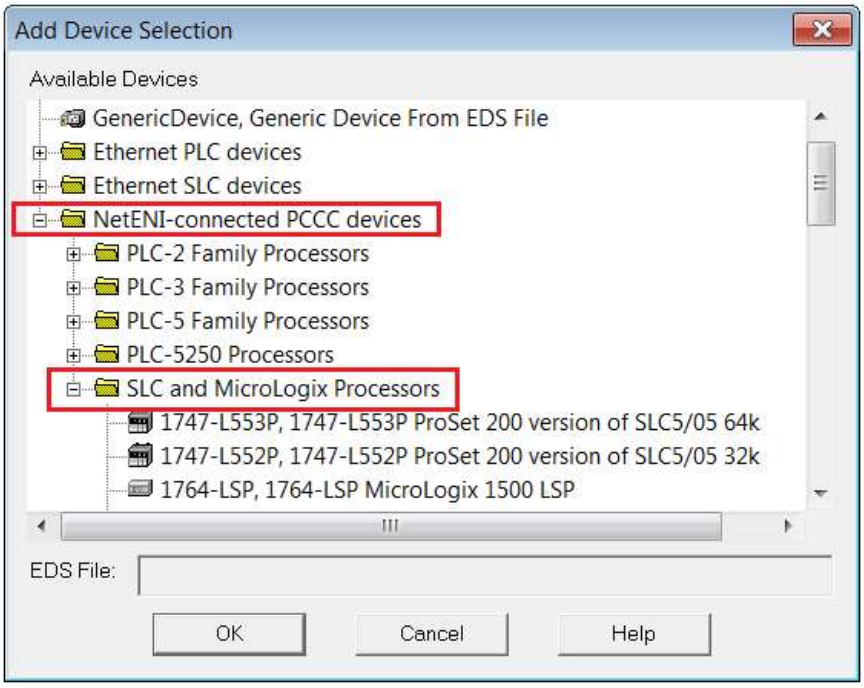

FIGURE 20 – FACTORY TALK DEVICE SELECTION

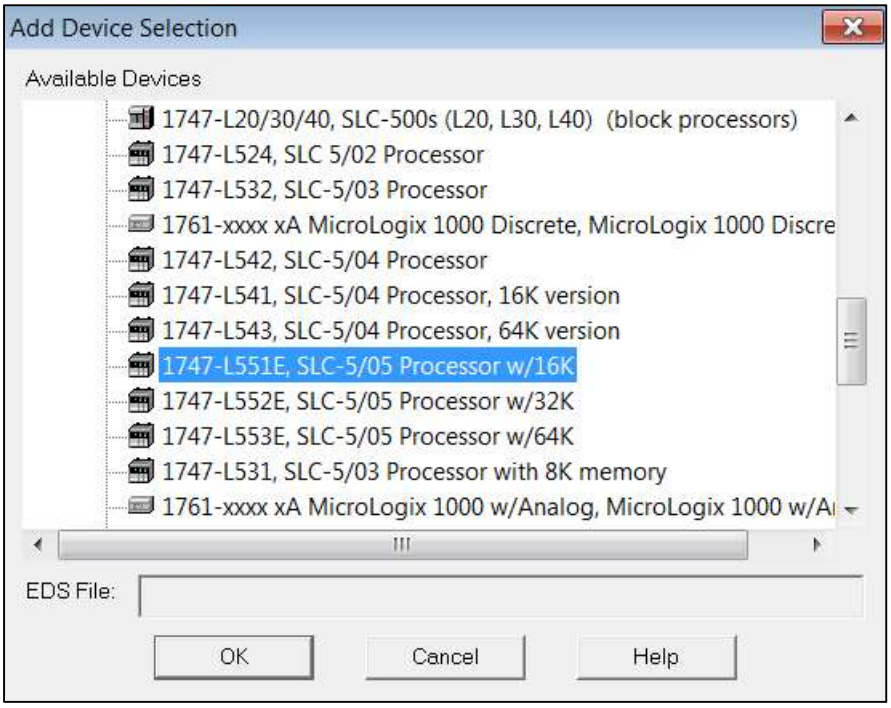

FIGURE 21 – FACTORY TALK DEVICE SELECTION

In the Device Properties window, enter the **PCCC IP Address** configured in the module and select Ok.

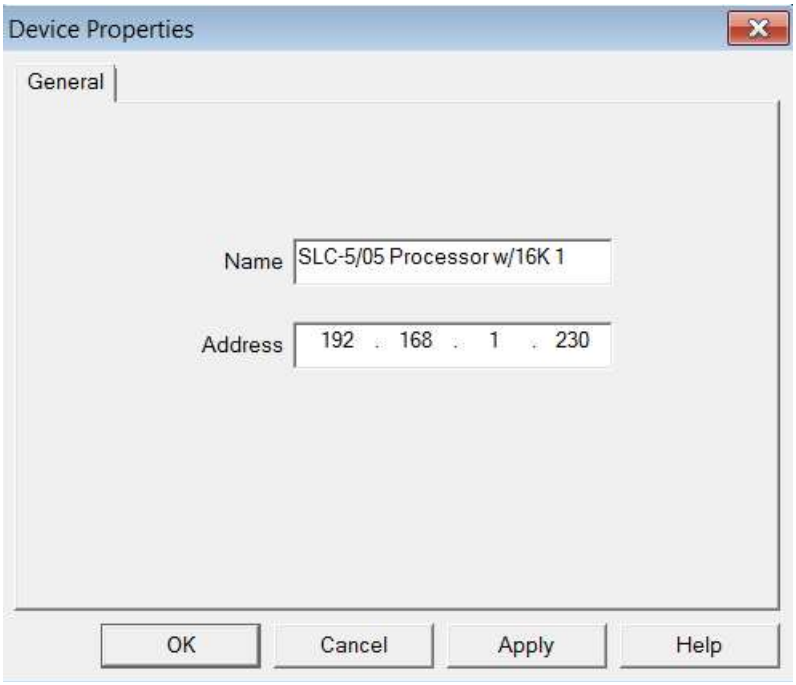

FIGURE 22 – FACTORY TALK DEVICE PROPERTIES

The newly added device will now appear in the Communication Setup tree under Ethernet devices. On the left side of the window, under Device Shortcuts, select the Add button and create a shortcut and give it a suitable name. Then select the SLC device on the right-hand

side and select the Apply button (near the top under Device Shortcuts,) to associate the shortcut to the device.

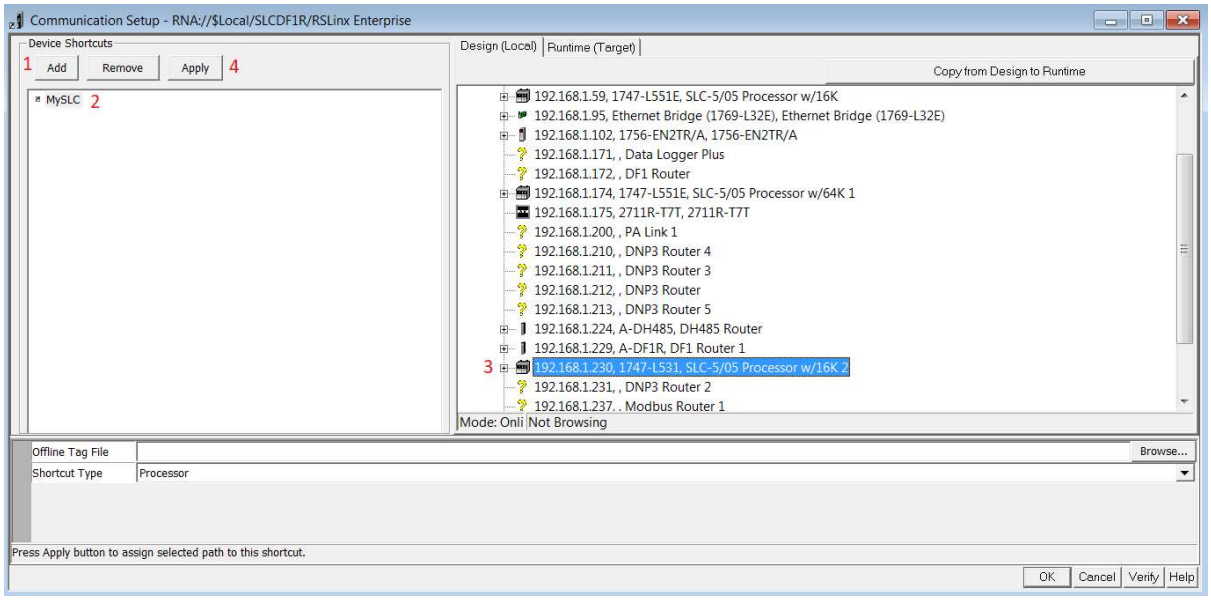

FIGURE 23 – FACTORY TALK RSLINX SETUP

The association will need to be confirmed by selecting ***Yes*** in the dialog window below.

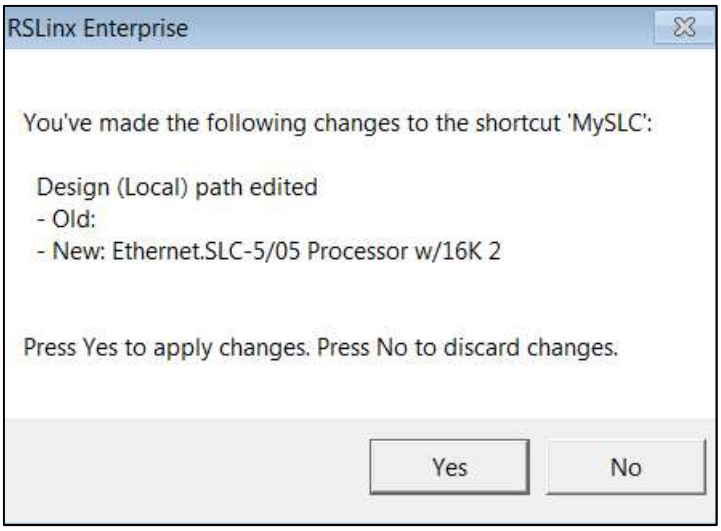

FIGURE 24 – FACTORY TALK RSLINX SETUP

The Communication Setup changes can then be accepted by selecting the ***Ok*** button at the bottom of the window.

3.4.3. TESTING COMMUNICATION



NOTE: If the Ethernet cable was disconnected in the previous step, this would be a good time to reconnect it.

To test the communication, a new display can be created. Using the project explorer tree, under the ***Graphics*** section, right-click on the ***Display*** option and select ***New***.

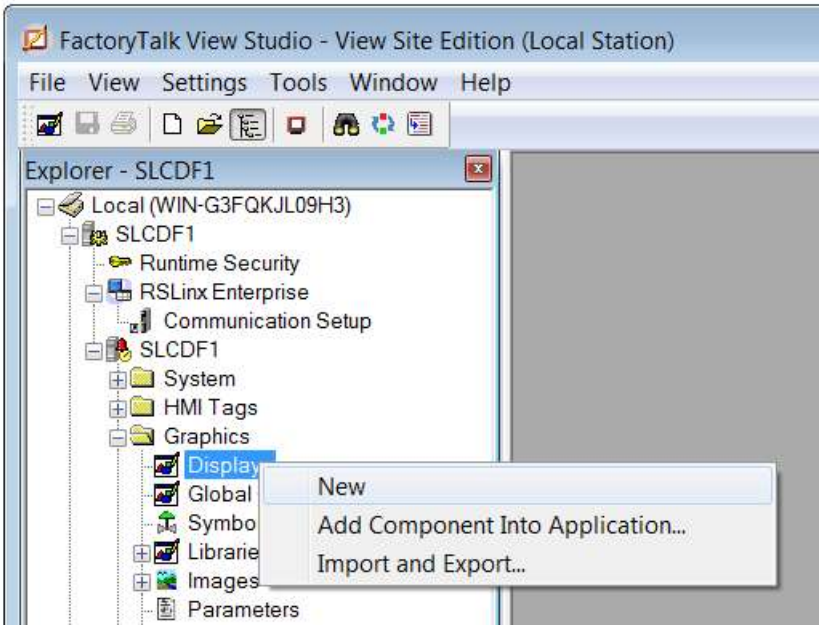

FIGURE 25 – FACTORY TALK NEW DISPLAY

Using the toolbar, add a Numeric Display object to the window.

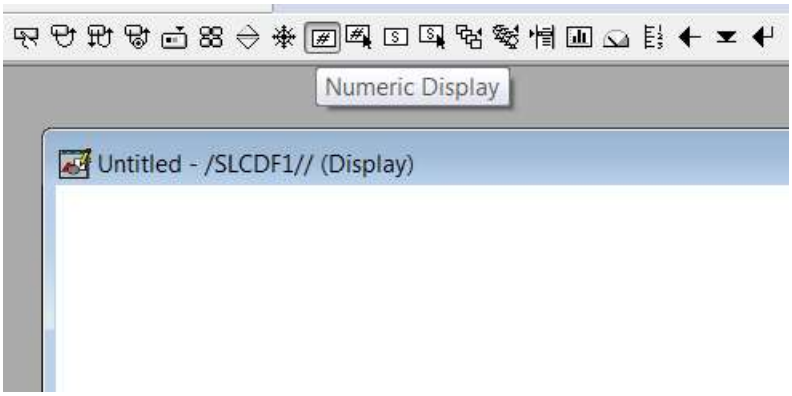

FIGURE 26 – FACTORY TALK NUMERIC DISPLAY

In the ***Numeric Display Properties*** window, select the ***Tags*** option.

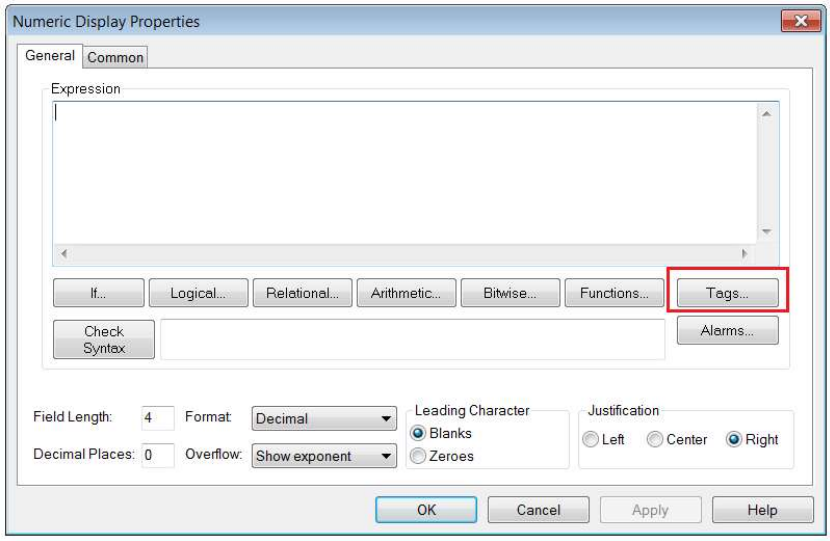

FIGURE 27 – FACTORY TALK DISPLAY PROPERTIES

The Tag Browser window will open. Since this is the first time the Tag Browser has been opened since the addition of the SLC device the tags must be refreshed. This is achieved by right-clicking at the folder tree and selecting the ***Refresh All Folders*** option.

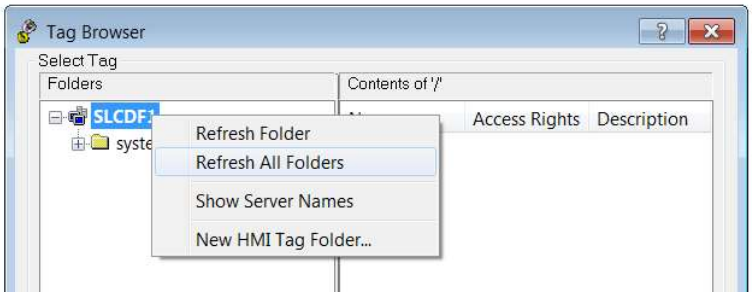

FIGURE 28 – FACTORY TALK TAG BROWSER

All the SLC data files will now be listed and can be selected for animation.

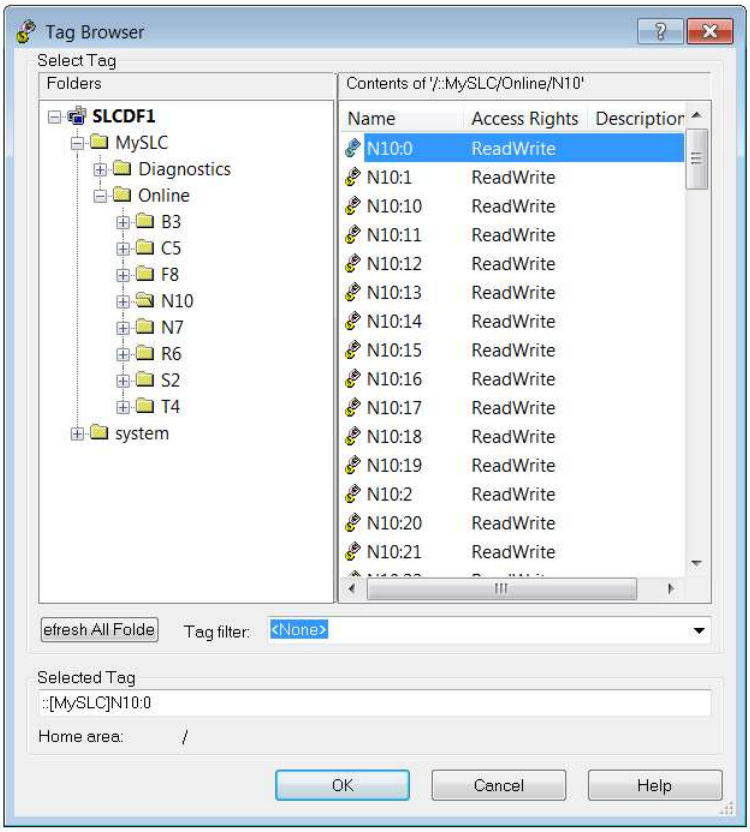

FIGURE 29 – FACTORY TALK FILE SELECTION

3.5. PROGRAMMING SLC5/03 OR SLC5/04 WITH PANELVIEW CONNECTED

When a user programs a SLC5/04 or SLC5/03 and a PanelView is also connected to the same SLC controller (via the DF1 Router), there is a possibility that the SLC controller can fault unrecoverable. This is a known issue in the SLC5/03 and SLC5/04.

To avoid this from happening the user will need to select a different destination address for the SLC that is used for Programming with RSLogix 500. **This is only relevant for Full Duplex (Point to Point) connections when operating in Transparent mode.**

To select a different destination DF1 address the user will need to ensure the DF1 Node address for the SLC in RSLinx is different from the configured PCCC Address in Slate. In the example below the DF1 node address for the SLC in RSLinx is 1 and the user has configured the PCCC Address in Slate to be 2.

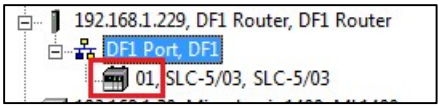

FIGURE 30 – SLC DF1 NODE ADDRESS



FIGURE 31 – SLATE PCCC ADDRESS