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Technical Note



Rockwell Automation ControlLogix PLC Communications with 4B Watchdog Super Elite via a ProSoft Technology PLX31-EIP-MBTCP



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Configuring one or more Watchdog Super Elites to communicate with a Rockwell Automation ControlLogix PLC through a ProSoft Technology PLX31-EIP-MBTCP gateway

Summary:

This example will guide the user through connecting a Rockwell ControlLogix PLC to communicate with Watchdog Super Elite monitoring systems by way of a ProSoft Technology EtherNet/IP to Modbus TCP gateway.

Equipment Used:

- Rockwell Automation
 - Logix 5571 – ControlLogix Processor
 - 1756-EN3TR – ControlLogix Ethernet Bridge
 - Studio 5000 – ControlLogix Configuration Software
- 4B Components
 - WDC4V46C (2) – Watchdog Super Elite Monitoring System
- ProSoft Technology
 - PLX31-EIP-MBTCP – EtherNet/IP to Modbus TCP gateway
 - ProSoft Configuration Builder – ProSoft Configuration Software

Procedure:

Set the IP address on the WDC4V46C Devices

Refer to the 4B documentation to set the IP addresses of the WDC4V46C.

<http://www.go4b.com/watchdog>

- 1) Open the ProSoft Configuration Builder (PCB) .ppf project file attached.
 - a. If you don't have a copy of PCB you can download a free copy by visiting www.ProSoft-Technology.com

The sample configuration has been set up to communicate with 10 WDC4V46C monitoring systems. By default only one connection has been enabled.

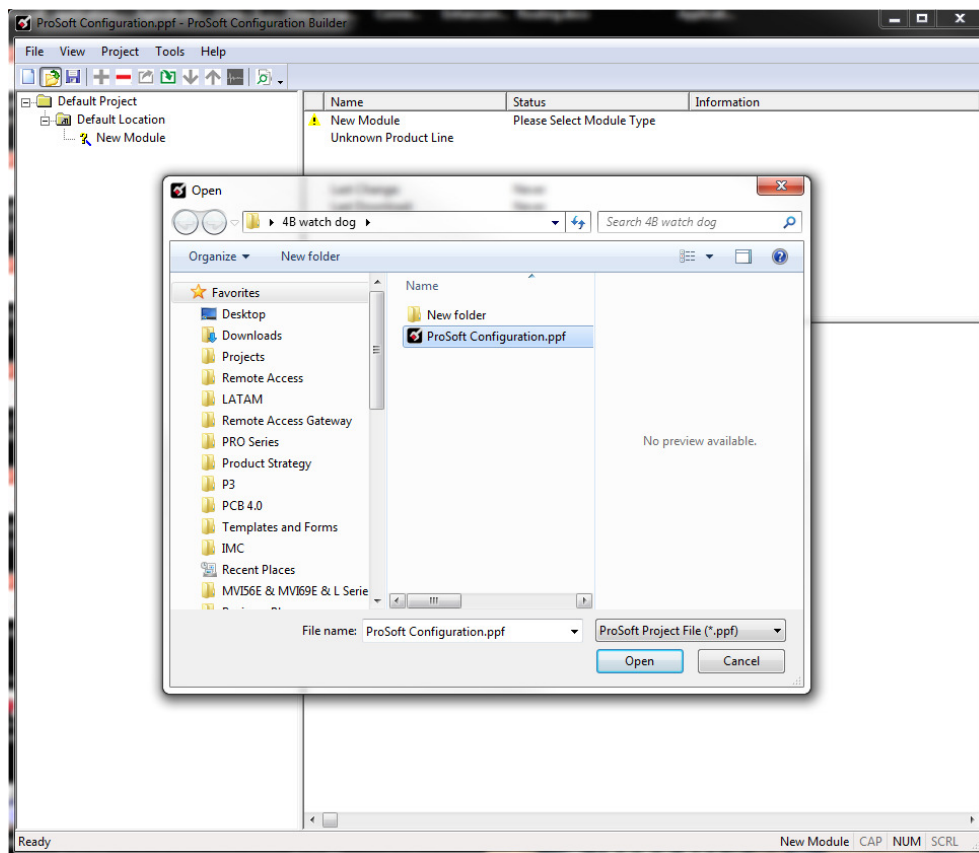


Image 1

2) Expand the PLX31-EIP-MBTCP line

The ProSoft gateway has ten Modbus TCP client connections. Each of these connections can be used to communicate with one WDC4V46C.

Then expand the MBTCP Client 0 line right click on MBTCP Client 0 Commands and select Configure from the shortcut menu

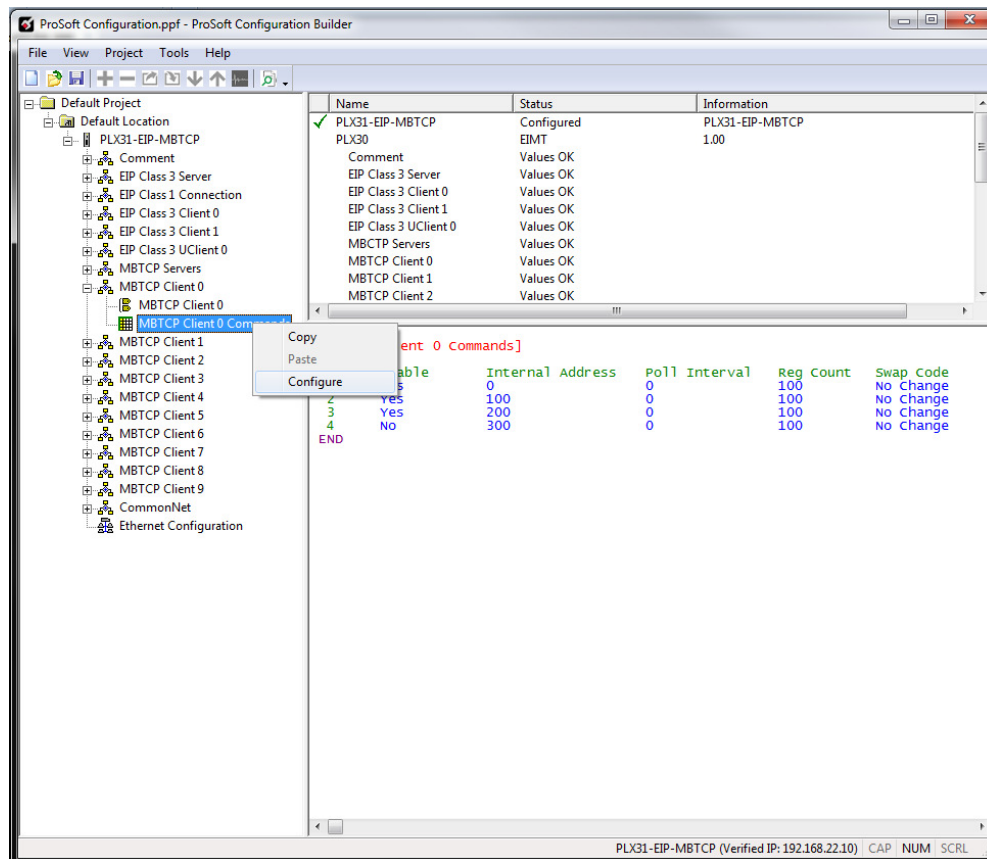


Image 2

The first three commands are enabled and the last command is disabled. The WDC4V46C has 208 Modbus Registers containing status data. The remaining 181 registers are reserved for future use.

3) In the Edit commands window, the Node IP Address fields will need to be changed for each command. These Node IP Addresses should match the IP address configured for the first WDC4V46C. Do this by selecting the command line, and then the edit row button located at the bottom of the window. Click Ok when done to save the changes.

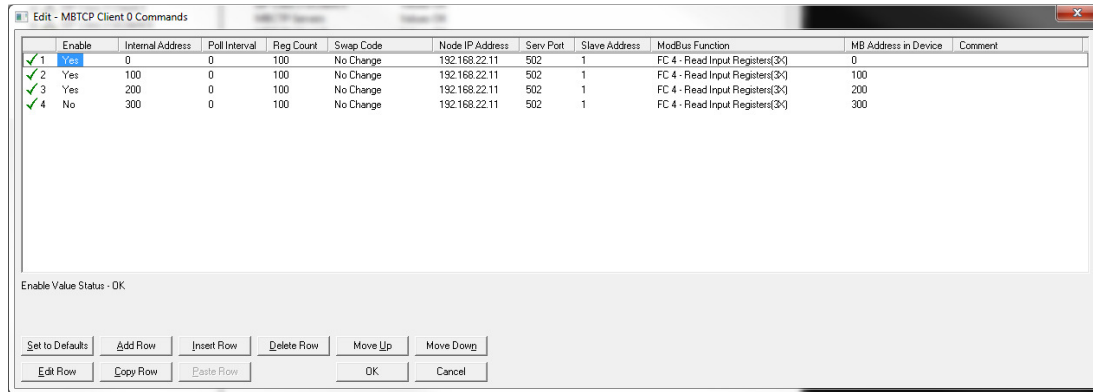


Image 3

- 4) If using two Watchdogs, follow the same procedure for MBTCP Client 1. Again, the Node IP Address field should be changed to match the second WDC4V46C. Additionally, all 4 commands will be disabled by default, so you will need to enable 1, 2, and 3 in the row edit.

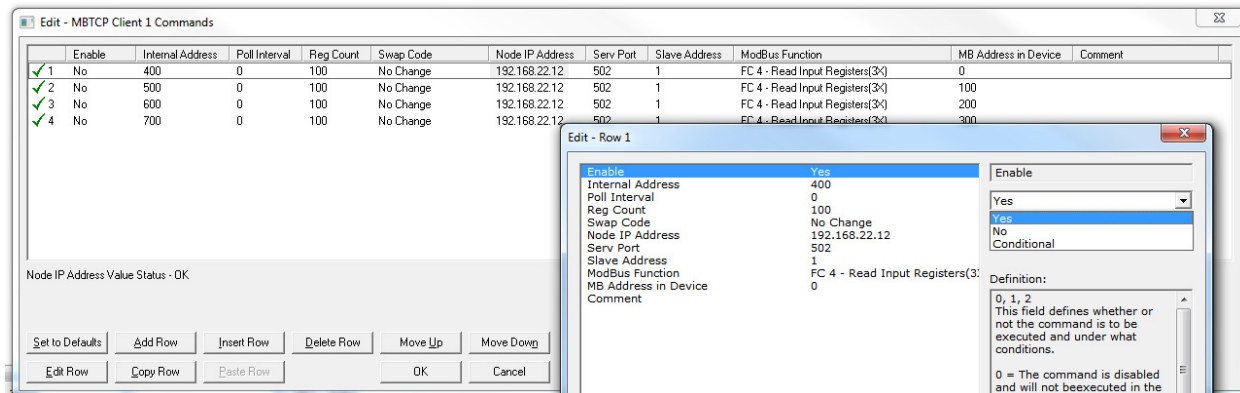


Image 4

- 5) If you are using more than two Watchdogs, follow step 4 for enabling and assigning IP addresses to each additional Watchdog. Leave commands for unused Watchdogs disabled.
- 6) Once the command configuration is complete, right click on the Ethernet Configuration line to configure the IP settings of the ProSoft gateway

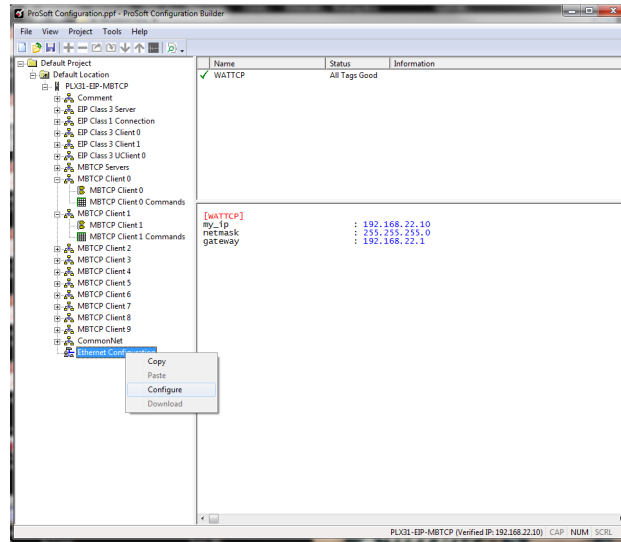


Image 5

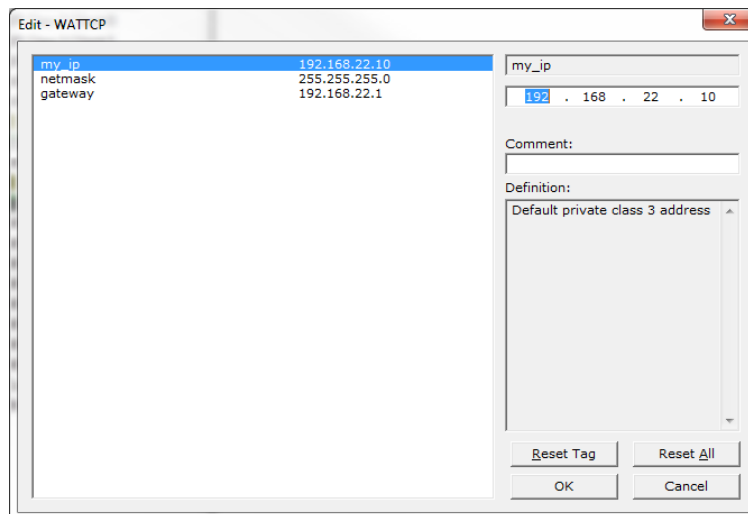


Image 6

- 7) Download the new configuration to the gateway by right clicking the PLX31-EIP-MBTCP line and selecting Download from PC to Device from the shortcut menu

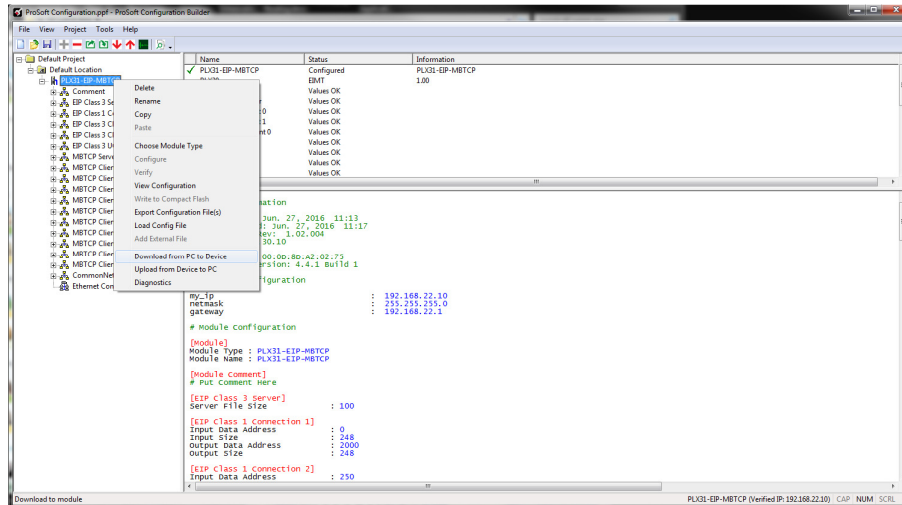


Image 7

8) Enter the IP address of the gateway in the Ethernet field then click the DOWNLOAD button

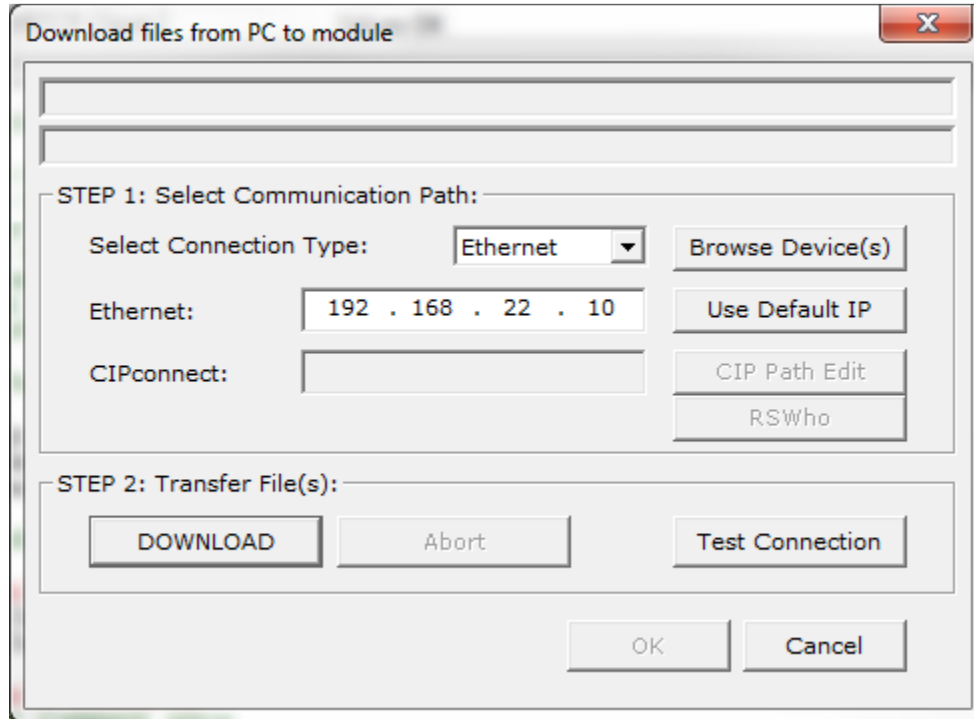
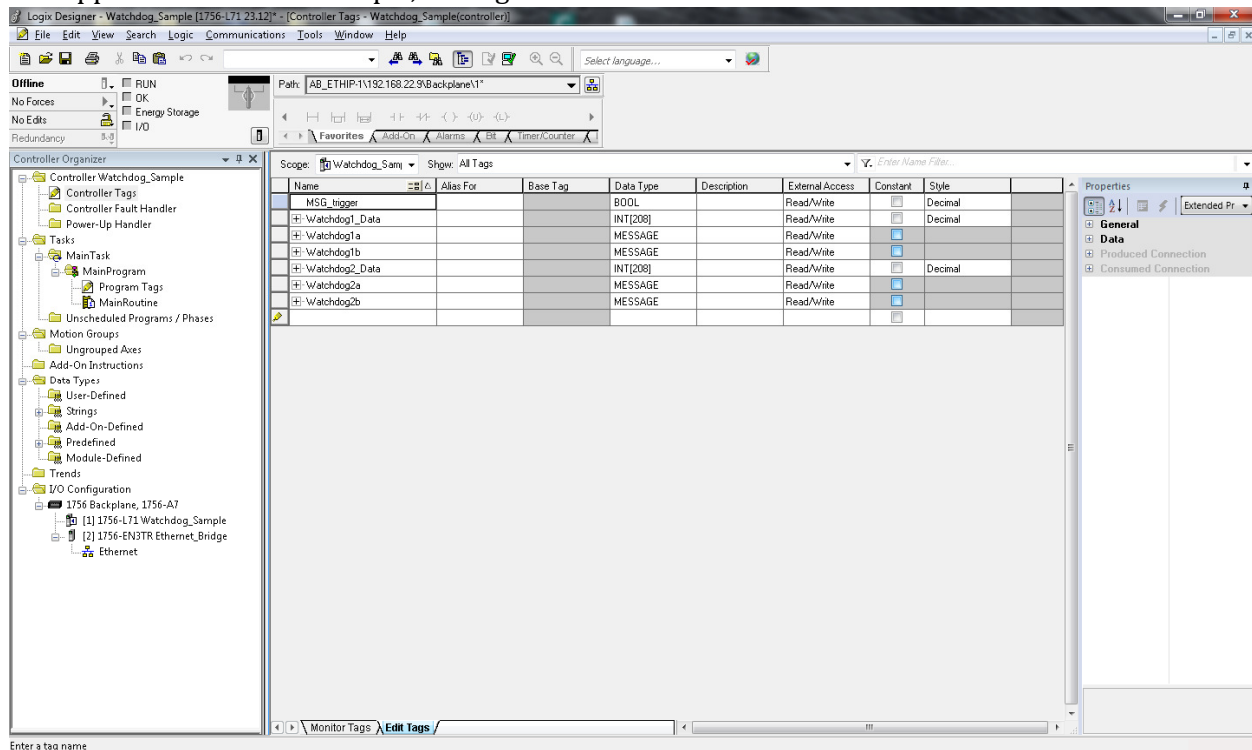


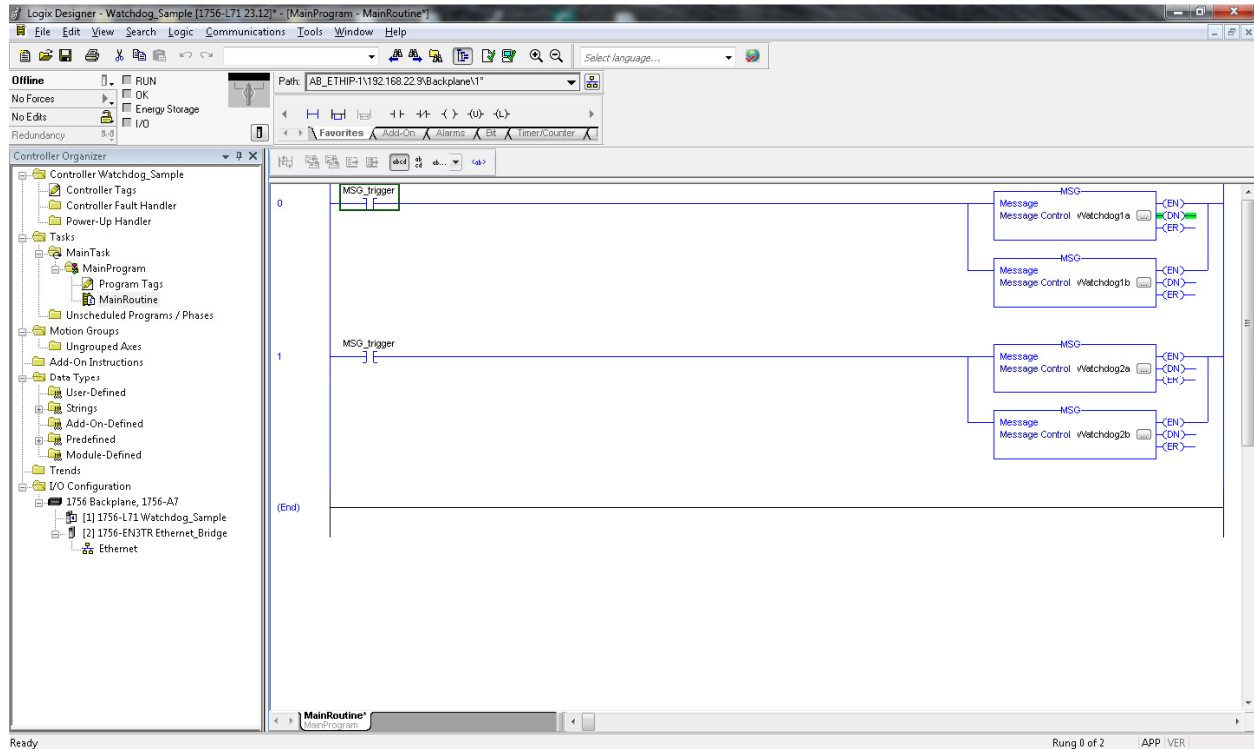
Image 8

The gateway is now communicating with the WDC4V46C.

Using the supplied Studio 5000 sample, the tags to read the status data from two WDC4V46C's have been created.



The sample PLC code will read the status data from two WDC4V46C's. Follow the same structure to read data from additional WDC4V46C's.



Message Configuration - Watchdog1a

Configuration | Communication | Tag

Message Type: CIP Data Table Read

Source Element: INT_data[0]

Number Of Elements: 200

Destination Element: Watchdog1_Data

Enable ☐ Enable Waiting ☐ Start ☐ Done ☒ Done Length: 200

Error Code: Error Path: Error Text:

OK Cancel Apply Help

Message Configuration - Watchdog1a

Configuration | Communication | Tag

Path: Ethernet_Bridge_2.192.168.22.10

Broadcast: ☐ Channel: 'A'

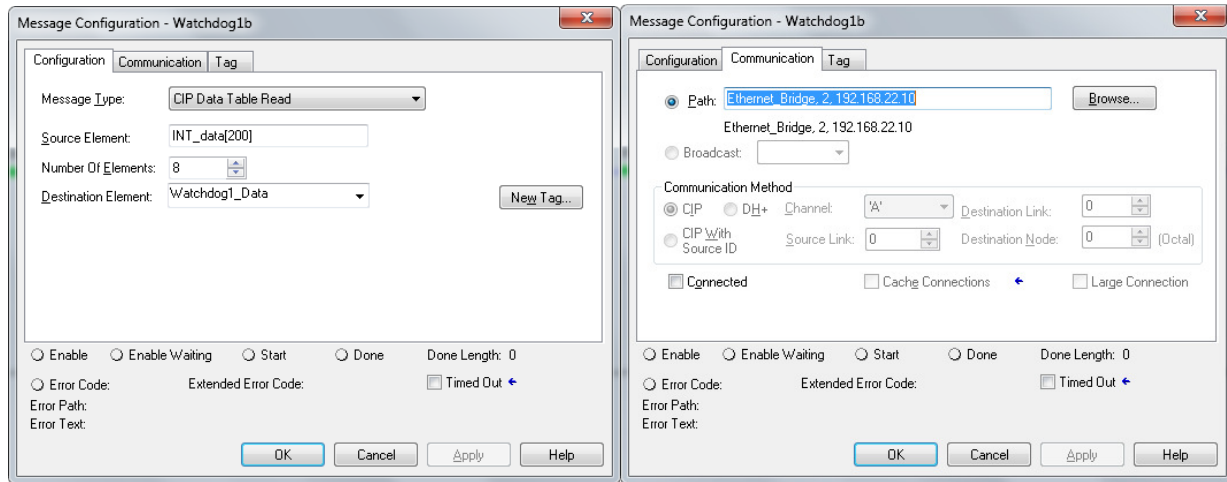
Communication Method: CIP ☒ DH+ ☐ CIP With Source ID ☐ Source Link: 0 Destination Link: 0 Destination Node: 0 (Octal)

Connected ☐ Cache Connections ☐ Large Connection ☐

Enable ☐ Enable Waiting ☐ Start ☐ Done ☒ Done Length: 200

Error Code: Error Path: Error Text:

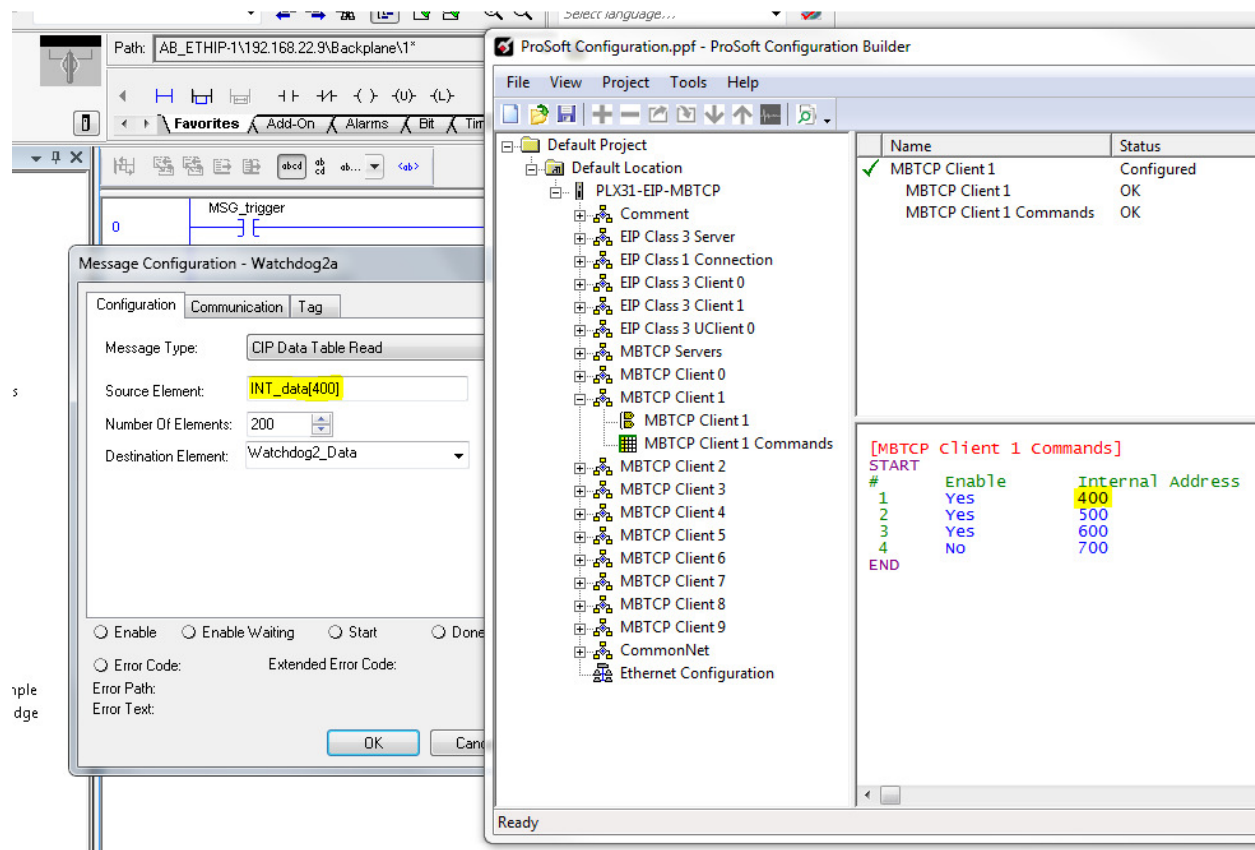
OK Cancel Apply Help



Device	Message Type	Source Element	Number of Elements	Destination Element	Communication Path
WDC4V46C - 1	CIP Data Table Read	INT_data[0]	200	Watchdog1_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 1	CIP Data Table Read	INT_data[200]	8	Watchdog1_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 2	CIP Data Table Read	INT_data[400]	200	Watchdog2_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 2	CIP Data Table Read	INT_data[600]	8	Watchdog2_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 3	CIP Data Table Read	INT_data[800]	200	Watchdog3_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 3	CIP Data Table Read	INT_data[1000]	8	Watchdog3_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 4	CIP Data Table Read	INT_data[1200]	200	Watchdog4_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 4	CIP Data Table Read	INT_data[1400]	8	Watchdog4_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C - 5	CIP Data Table Read	INT_data[1600]	200	Watchdog5_Data	Ethernet_Bridge, 2, 192.168.22.10

WDC4V46C – 5	CIP Data Table Read	INT_data[1800]	8	Watchdog5_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 6	CIP Data Table Read	INT_data[2000]	200	Watchdog6_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 6	CIP Data Table Read	INT_data[2200]	8	Watchdog6_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 7	CIP Data Table Read	INT_data[2400]	200	Watchdog7_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 7	CIP Data Table Read	INT_data[2600]	8	Watchdog7_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 8	CIP Data Table Read	INT_data[2800]	200	Watchdog8_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 8	CIP Data Table Read	INT_data[3000]	8	Watchdog8_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 9	CIP Data Table Read	INT_data[3200]	200	Watchdog9_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 9	CIP Data Table Read	INT_data[3400]	8	Watchdog9_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 10	CIP Data Table Read	INT_data[3600]	200	Watchdog10_Data	Ethernet_Bridge, 2, 192.168.22.10
WDC4V46C – 10	CIP Data Table Read	INT_data[3800]	8	Watchdog10_Data	Ethernet_Bridge, 2, 192.168.22.10

Each CIP Data Table Read has a maximum length of 200 words. A second message is required to poll the remaining 8 words of data from each Watchdog. In the sample, there are only tags created to retrieve the status data from two Watchdog's.



Reference

The network settings for all the devices in this example is configured as follows:

Device	IP Address	Subnet Mask	Gateway
WDC4V46C (1)	192.168.22.11	255.255.255.0	192.168.22.1
WDC4V46C (2)	192.168.22.12	255.255.255.0	192.168.22.1
PLX31-EIP-MBTCP	192.168.22.10	255.255.255.0	192.168.22.1
1756-EN3TR	192.168.22.9	255.255.255.0	192.168.22.1

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