

VIP connecting to an external modbus master and downstream slave

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Summary

If there exists a Modbus RTU master and slave network of meters, one may be able to import data from both the master and the slave into the VIP. Using the Virtual Processor Setup tool, the VIP can be setup to access devices downstream from an Ethernet/Serial ION Meter. See picture for Ethernet network topology.

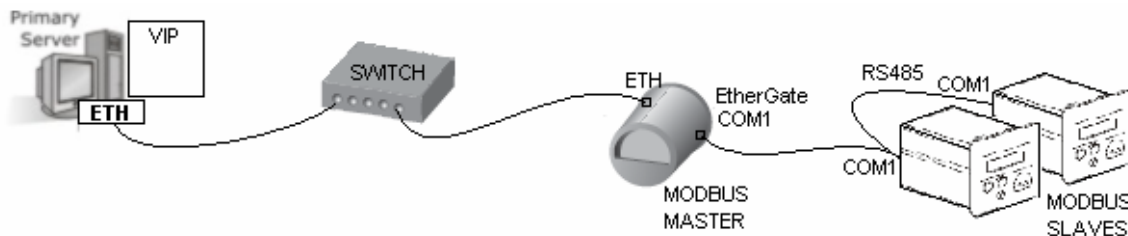


Figure 1.0: Modbus master/slave topology.

Keywords

Virtual Processor Setup, Virtual ION Processor, VIP, not a valid device

Symptoms

1. Q. How does one import modbus slave data into the VIP?
2. In the VIP, the Modbus Import Module's properties show:
Error: The setup register 'MI1 Device Name' shows, "Not_a_valid_device". See below in Figure 2.0.

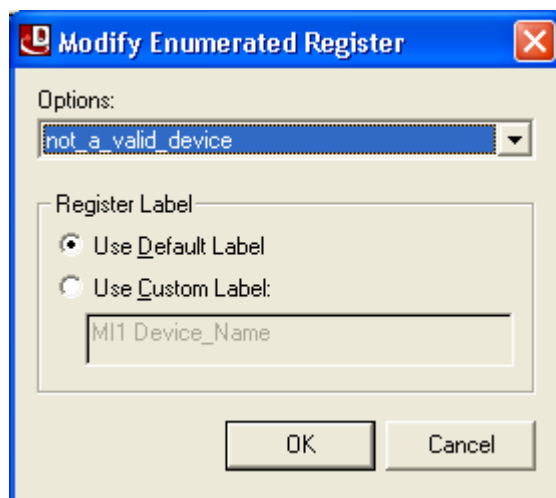


Figure 2.0: Designer - Properties of the setup register 'MI1 Device Name'.

Cause

'MI1 Device Name' shows, "Not_a_valid_device" because no modification of the Virtual Processor Setup tool was done. See Resolution.

Resolution

PART 1: Connecting to the slaves:

Q. How does one import modbus data into the VIP from the slaves?

A.

1. Indicate to the VIP how the Modbus network topology is setup using the Virtual Processor Setup tool.
2. Open Management Console > Tools > System > Virtual Processor Setup (Fig 3.0)

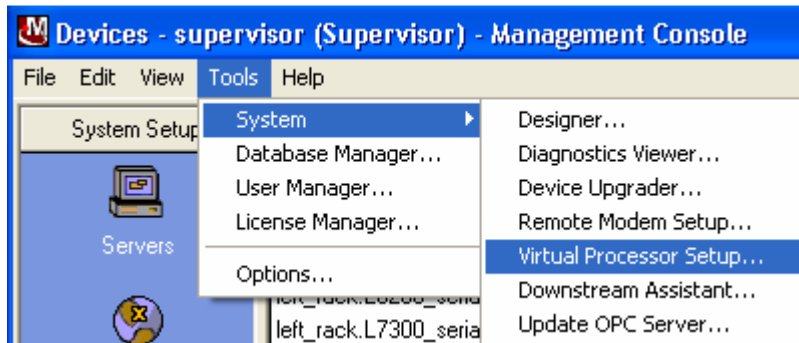


Figure 3.0: Management console - VIP Setup Tool.

3. The Virtual Processor Setup tool shows the following:
 - Root
 - NOELJ21305
 - VIP.NOELJ21305
 - + Global Parameters
 - + Modbus Network

Expand the Modbus Network item above to define how the network is defined.

- First, the tree in the Virtual Processor Setup tool is explained in Fig 4.0. The network of interest is the blue box circling the tree item “- Modbus Network”, however if the computer’s serial port is to be used to connect to slaves, refer to the lower hatched-box that shows how to use the Virtual Processor Setup tool to setup ‘Slave Ports’.

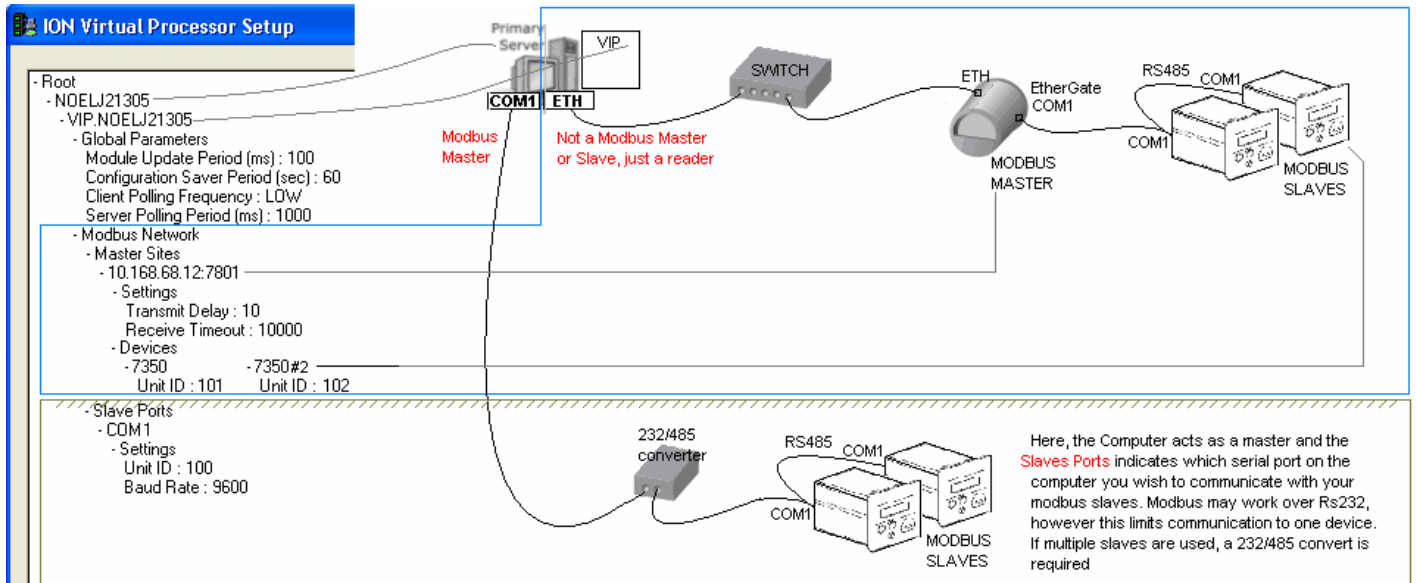


Figure 4.0: VIP Setup tool - Explained

- Add a Site and enter the Modbus Master’s IP_Address and port.

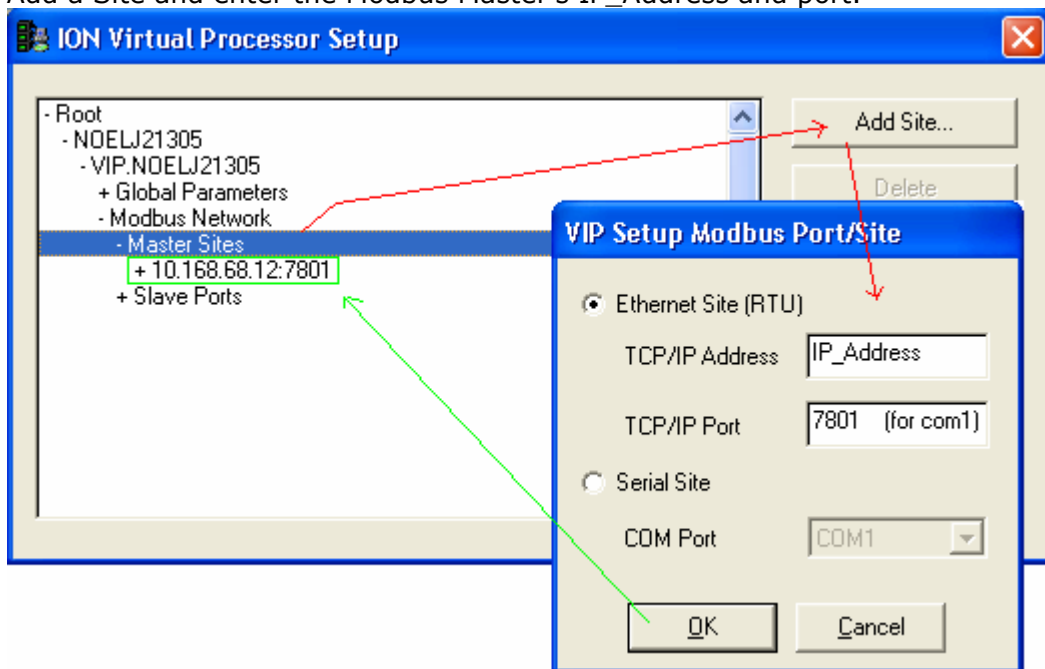


Figure 5.0: VIP Setup tool - Adding a master to Virtual Processor Setup tool

The TCP/IP Port refers to the serial communications ports on the back of the Modbus master (Meter) as shown by COM1 in Fig 4.0. If the downstream Modbus

slaves are connected to the Modbus Master's COM1 port or COM2 port, use the following for TCP/IP Port:

7700	Communicates to Modbus Master
7800	Transfers TCP packets (stripped of TCP Header) to COM1 and COM2
7801	Transfers TCP packets (stripped of TCP Header) to COM1
7802	Transfers TCP packets (stripped of TCP Header) to COM2

This table refers to 75xx, 76xx meters. For port mappings to other meters, see KB10415.

- Now expand the Master Site '10.168.68.12:7801' by double clicking on 10.168.68.12:7801

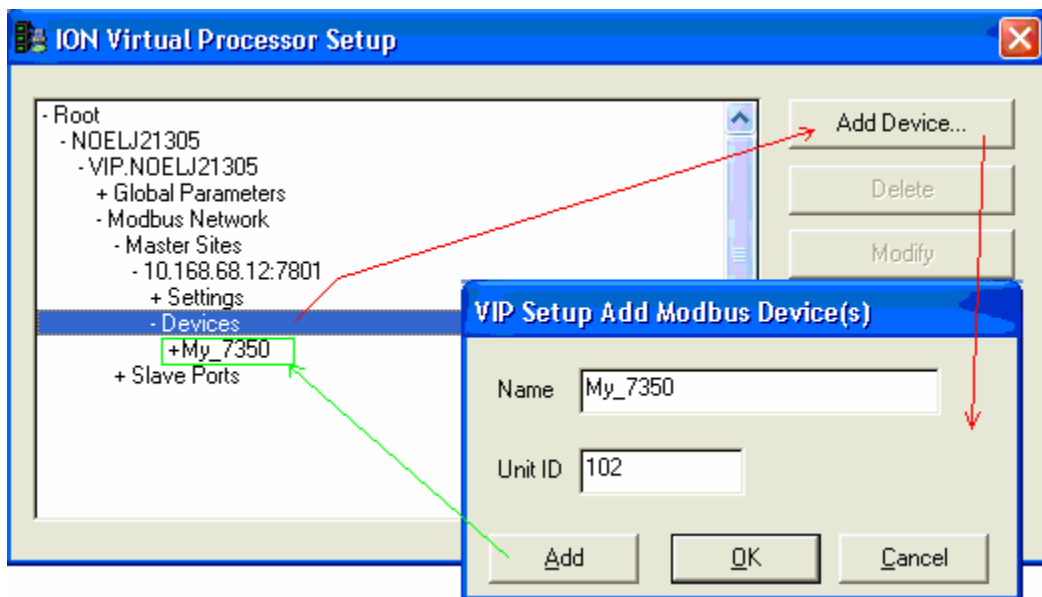


Figure 6.0: VIP Setup tool - Add one or more slaves.

- If there are more than one slave, press the add button to add the first device. The window stays open so that the information for the second can be added. Press add and continue this process. Click OK in Fig 4.0 only when all the slaves have been added.
- Restart the VIP Service. Start > Settings > Admin Tools > Services > ION VIP > right click > restart.
- Next, open Designer > File > Open > VIP.Computer_name.
- Ensure the toolbox is open (Options > show toolbox)

11. Drag out a Modbus Import Module. This module will import data from the network topology just created in the Virtual Processor Setup tool.

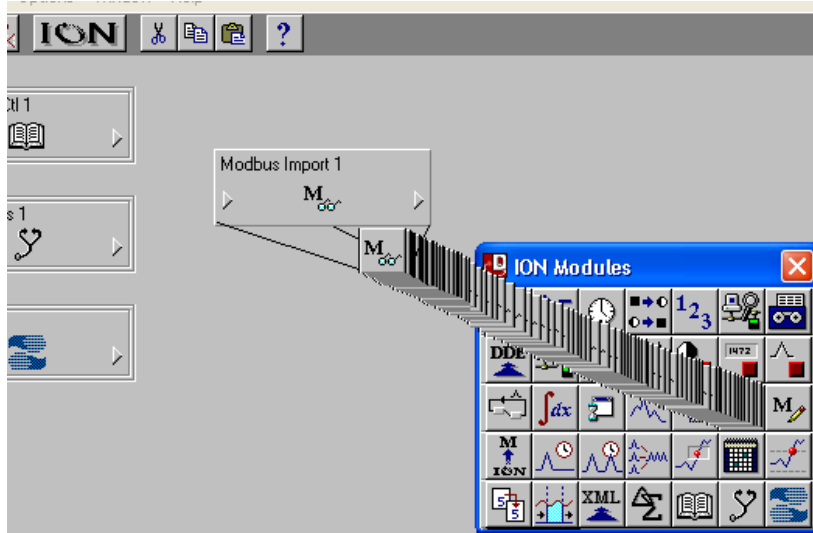


Figure 7.0: Designer - Dragging out a Modbus Import Module from the toolbox

12. Right click on Modbus Import 1. This opens the properties.
13. Double click on Device name as seen by Fig 8.0. Choose the 7350.

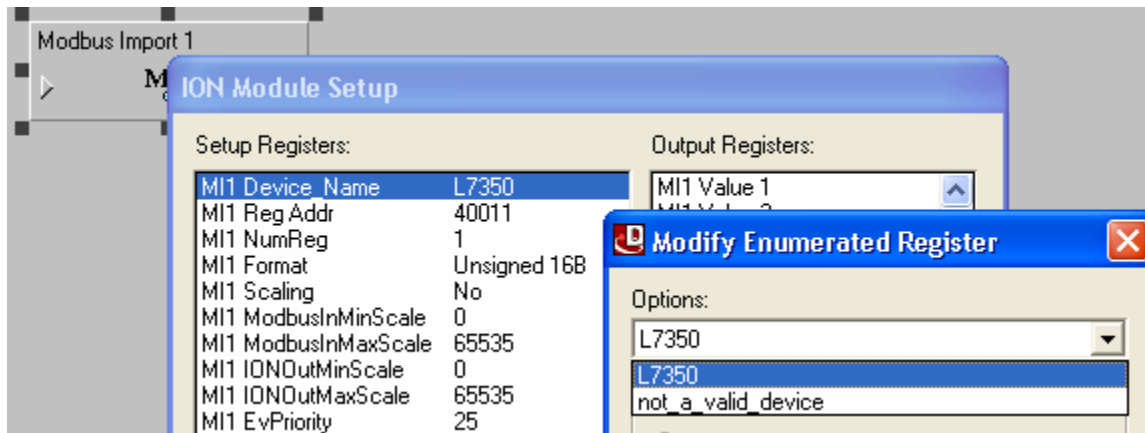


Figure 8.0: Designer - Linking the modbus import module to one of the downstream modbus slaves called L7350.

14. To see if the import module works, define the other setup registers as in Figure 8.0. Then, close out of the properties window, hold down shift and click on the outputs to see real-time values in Designer as in Fig 9.0.

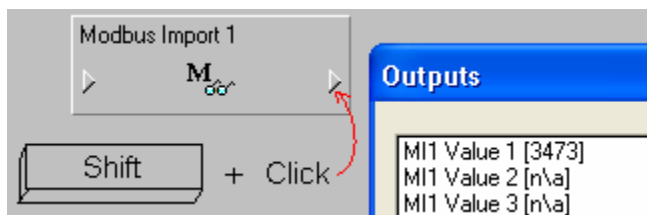


Figure 9.0: Designer - Viewing real-time values

PART 2: Connecting to the master:

1. The Modbus master in figure 1.0 is connected to the ION Enterprise system via Ethernet. The Ethernet port does not require a protocol to be set. It will accept any acceptable protocol. The Modbus master device should appear in the Management Console as an Ethernet meter in order to access it. Once the meter is added, information from the meter can be pulled via the 'ION' button rather than any modbus module within Designer. See Figure 10.0.

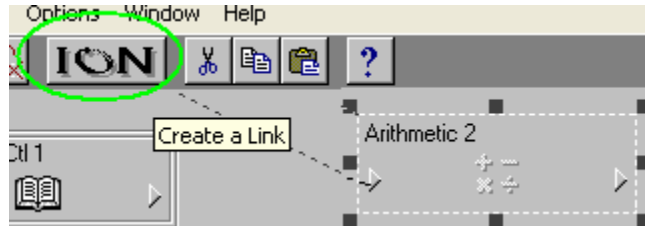


Figure 10.0: Designer - Linking any module (Arithmetic) to an existing meter