PLC220

Lab Exercise 5


```
I/O Configuration
    [1] 1756-IB16 din
    [2] 1756-OB16E dout
    [6] 1756-ENBT/A Enet
        [6] 1756-ENBT/A Remote_Chassis
            [1] 1756-IB16 remote_din
            [2] 1756-OB16E remote_dout
            [3] 1756-IF8 remote_ain
            [4] 1756-OF4 remote_aout
```
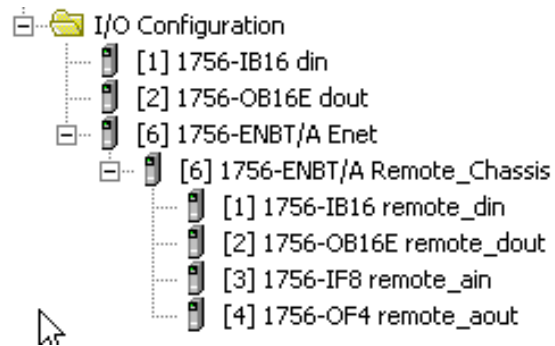
Remote Chassis

using ControlLogix Ethernet Modules

Student Materials for Lab Exercise 5: Remote Chassis

Lesson Objective
By the end of this session, students should be able to:

1. Explain basic set-up of Ethernet Communication Modules

2. Understand ControlLogix set-up for projects using remote chassis.

3. Understand module tags on a remote chassis.

Introduction:

Allen Bradley ControlLogix PLC Systems can be as simple as a processor monitoring /controlling I/O across a chassis backplane (Local Chassis) or more complex with processors monitoring / controlling I/O and other devices (VFDs, HIMs) over communication networks (Remote Chassis) such as Ethernet, ControlNet, DeviceNet, DH+, Remote I/O and others.

This lesson will cover the basic set-up of a ControlLogix remote chassis, to allow a ControlLogix processor to monitor / control I/O in a chassis via Ethernet communications .
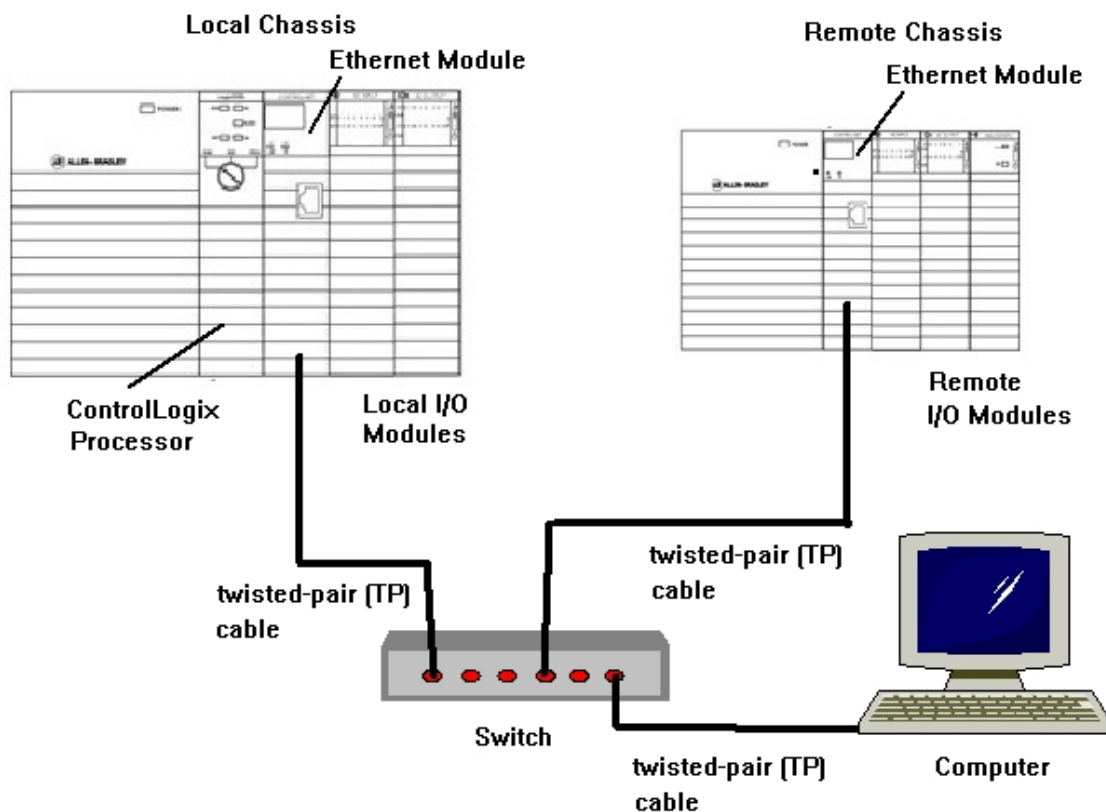

Figure 1-A
Basic Remote Chassis Configuration

Local Chassis – Chassis with ControlLogix processor, Communication Modules, Power
        Supply and I/O Modules (Local I/O)

Remote Chassis – Chassis with Communication Module, Power Supply and I/O Modules
        (Remote I/O)
            Note: Remote Chassis could contain a processor

Switch – Ethernet connection point for Computer, Local Ethernet Module and Remote
Ethernet Module.

Computer – Studio 5000 software, RSLinx software, Ethernet Port, Windows 7 OS
Cabling - twisted-pair

Note: Computer and the 2 Ethernet modules must have the same Network ID
Computer and the 2 Ethernet modules must have different Device (Host) IDs

2 Demo units - 1756-L71 processors version 24
1756-EN2TR or 1756-ENBT Ethernet communication modules
Discrete I/O Modules

Remote Chassis Set-up

1. Determine the IP Address and Subnet Mask information for the computer
IP Address:_____
Subnet Mask: _____

2. With RSLinx - verify that there is a connection to each of the Ethernet Modules

Note: Both Ethernet modules must have the same Network ID as the computer
Both Ethernet modules must have the same Network (Subnet) Mask as the
computer

```
⊞--品 AB_ETHIP-3, Ethernet
⊟--品 AB_ETHIP-31, Ethernet
    ⊟-- 📱 192.168.101.52, 1756-EN2TR, 1756-EN2TR/C 217021900
        ⊟-- 📟 Backplane, 1756-A7/A
                01, 1756-IB16/A, 1756-IB16/A   DCIN
                02, 1756-OB16E/A, 1756-OB16E/A  DCOUT EFUSE
                03, 1756-IF8/A, 1756-IF8/A
                04, 1756-OF4/A, 1756-OF4/A
                06, 1756-EN2TR, 1756-EN2TR/C 217021900
    ⊟-- 📱 192.168.101.59, 1756-EN2TR, 1756-EN2TR/C 217021900
        ⊟-- 📟 Backplane, 1756-A10/B
            ⊞-- 📱 00, 1756-L71 LOGIX5571, ptio
                01, 1756-EN2TR, 1756-EN2TR/C 217021900
                02, 1756-IB16/A, 1756-IB16/A   DCIN
                03, 1756-OB16E/A, 1756-OB16E/A  DCOUT EFUSE
                04, 1756-IF8/A, 1756-IF8/A
                05, 1756-OF4/A, 1756-OF4/A
            ⊞-- 📱 06, 1756-DNB, 1756-DNB DeviceNet Scanner
⊞--品 AB_ETHIP77, Ethernet
```
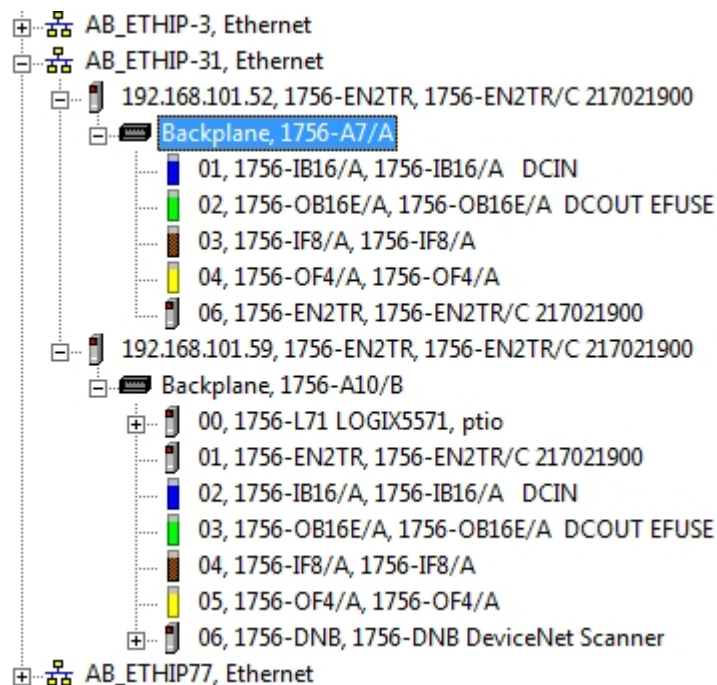
Figure 2-A - RSLinx RSWho Screen
Ethernet Connection

In this example the chassis that contain the 1756-EN2TR module with the IP address of 192.168.101.59 is the local chassis.
1756-L71 processor located in slot 0.

In this example the chassis that contain the 1756-EN2TR module with the IP address of 192.168.101.52 is the remote chassis.
No ControlLogix processor in chassis.

3. Using the Project File Module_2_Remote_Chassis.L5K, Import in to Studio 5000.

4. Navigate to and expand the I/O Configuration folder.
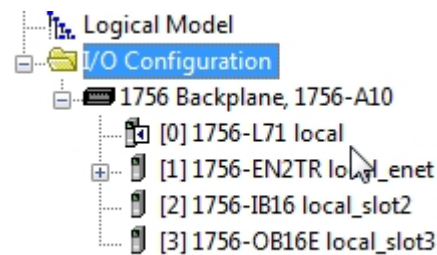
Figure 3-A
I/ O Configuration Folder

5. Open the Properties window for the 1756-EN2TR Ethernet module.
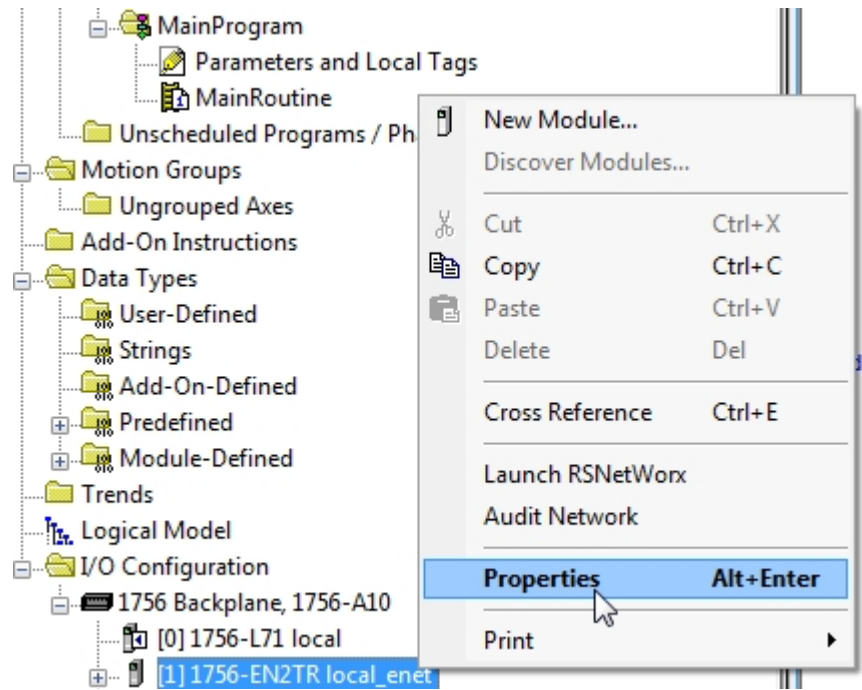
Figure 4-A
Navigate to 1756-EN2TR Properties

6. View General tab Information
   See Figure 5-A
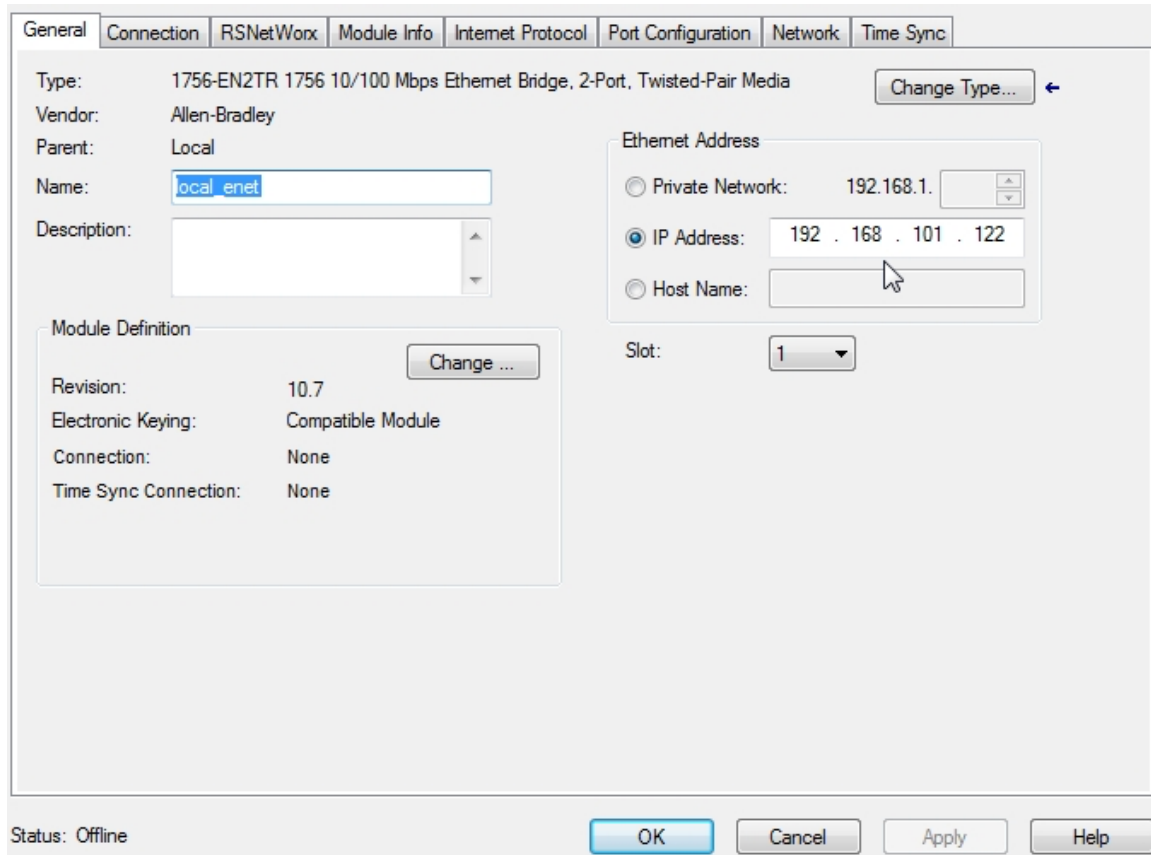
Figure 5-A
1756-EN2TR Properties – General Tab

Verify the following configuration settings:

Type: Match actual module's Part Number

Parent: Local – Module in the same chassis as processor

Name: Module name – user defined

IP Address: Must match to module's actual IP address

> If address does not match change either module's IP address to match the IP Address setting on General tab or change the IP Address setting on the General tab to match the actual IP address of the module.

Slot: Must match the actual slot location of module

Electronic Keying: Based in module's revision

7. Navigate back to I/O Configuration folder on the Controller Organizer window
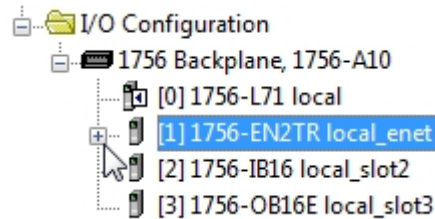
Figure 6-A. How to expand the information on the Ethernet module.

8. Click the plus (+) sign to the left of the local Ethernet module,
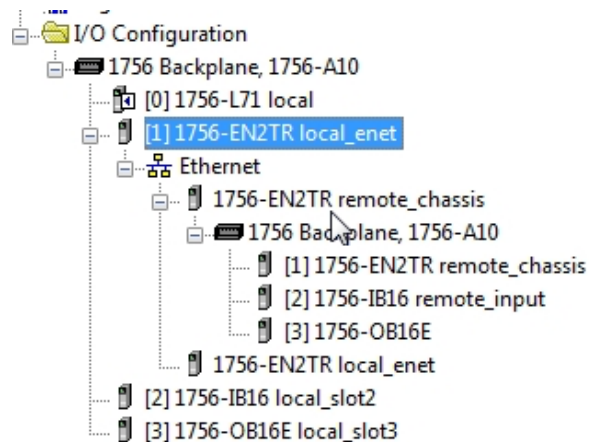
Figure 7-A. Viewing the information within the Ethernet.

The information listed under [1] 1756-EN2TR local_enet is the configuration information for the remote chassis.

Remote Chassis (Backplane) is a 10 slot chassis – 1756-A10

In slot 1 of the remote chassis is the remote communication module –
[1] 1756-EN2TR remote_chassis

In slot 2 of the remote chassis is an 16 point input module –
[2] 1756-IB16 remote_input

In slot 3 of the remote chassis is an 16 point output module –
[3] 1756-OB16E

This information must match the modules' location in the remote chassis.

9. Right click [1] 1756-EN2TR remote_chassis to open its Properties window
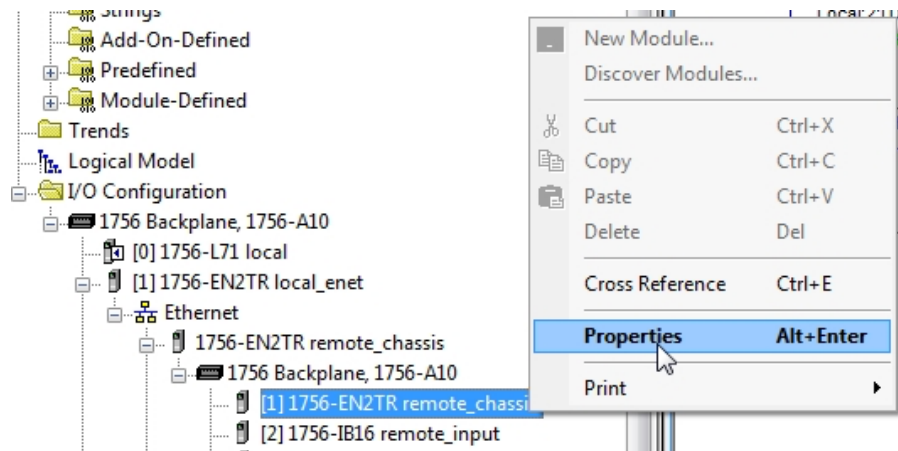
Figure 8-A

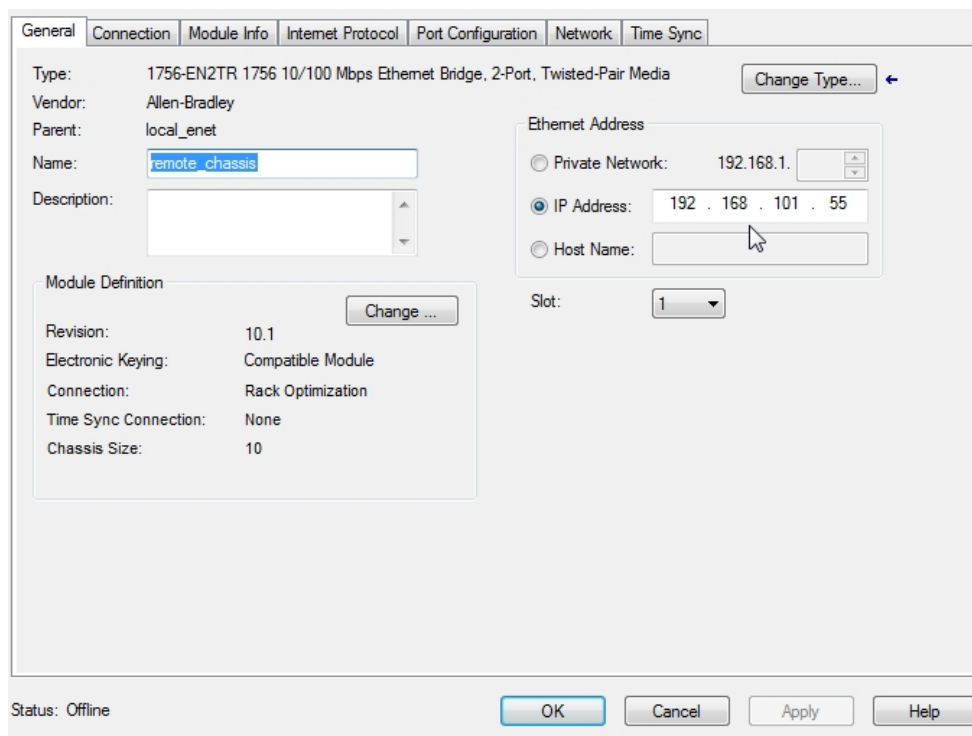10. Navigate to General tab for [1] 1756-EN2TR remote_chassis module.

Figure 9-A Remote Ethernet Module's Properties Window – General Tab

Verify the following configuration settings:
Type: Match actual module's Part Number
Parent: local_enet – Name of the Ethernet Communication module in the local chassis
Name: Module name – user defined
IP Address: Must match to module's actual IP address
       If address does not match change either module's IP address to match the
       IP Address setting on General tab or change the IP Address setting on the

General tab to match the actual IP address of the module.
Slot: Must match the actual slot location of module
Electronic Keying: Based in module's revision
Chassis Size: Number of Slots in Remote Chassis – must match to actual chassis size
Use Change button to modify Chassis Size, Revision and Electronic Keying settings

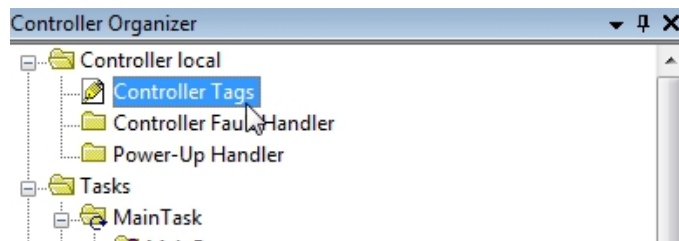11. Navigate back to the Controller Organizer window and open Controller Tags window.

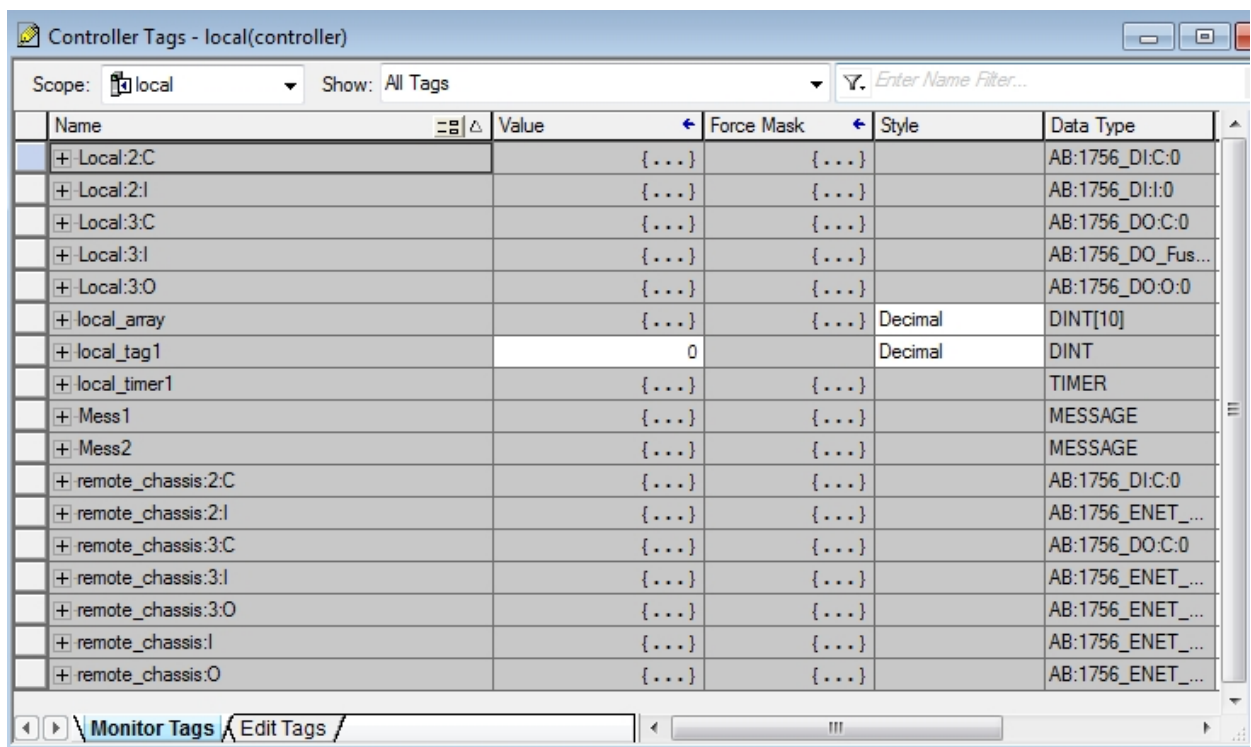

Figure 10-A – Controller Tags

12. View Controller Tag window.

Figure 11-A –Controller Tags

Tags that begin with the term Local are I/O tags for I/O modules located in the Local Chassis.

Tags that begin with the term remote_chassis are I/O tags for I/O modules located in a Remote Chassis.

What is the Name of the 1756-EN2TR Ethernet module located in the Remote Chassis?

_____

Note: I/O tags for remote chassis I/O modules begin with the Name of the communication module in the Remote Chassis.

For example – remote_chassis:2:I tags – refers to the input module in slot 2 of the remote chassis.

remote_chassis:3:O tags – refers to the output module in slot 3 of the remote chassis.

13. Navigate to the Ladder Logic screen – MainRoutine.
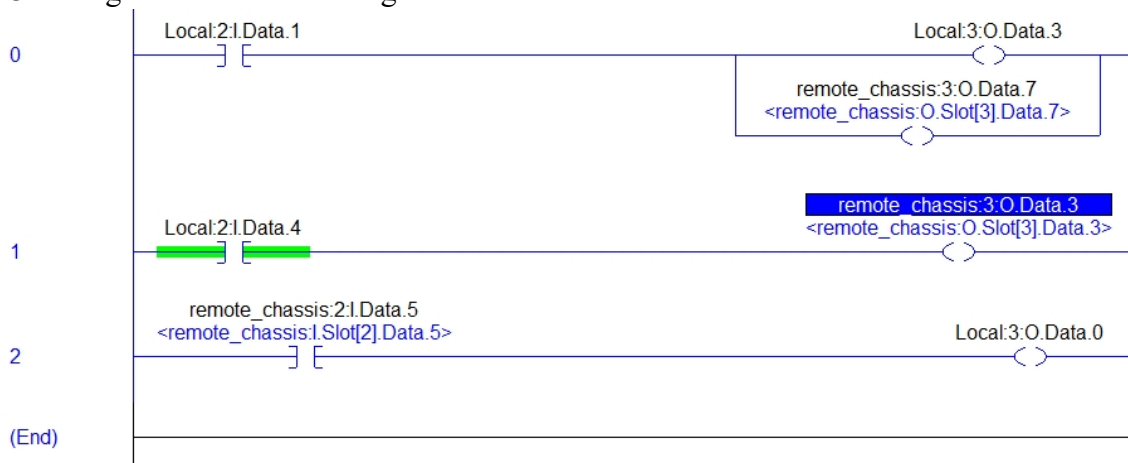
Figure 12-A – Ladder Logic Window

Rung 0 – PB1 on Local demo board will turn ON PL3 indicator on the Local demo board and PL7 on the Remote demo board.

Rung 1 – SS4 on Local demo board will turn ON PL3 indicator on the Remote demo board

Rung 2 – SS5 on Remote demo board will turn ON PL0 indicator on the Local demo board

14. Make any necessary changes to Ethernet Modules Properties windows - General tabs Download the Project File Module_2_Remote_Chassis.ACD to 1756-L71 processor

Verify correct operation.

Note: To add additional chassis to the I/O Configuration – Right click the local Ethernet
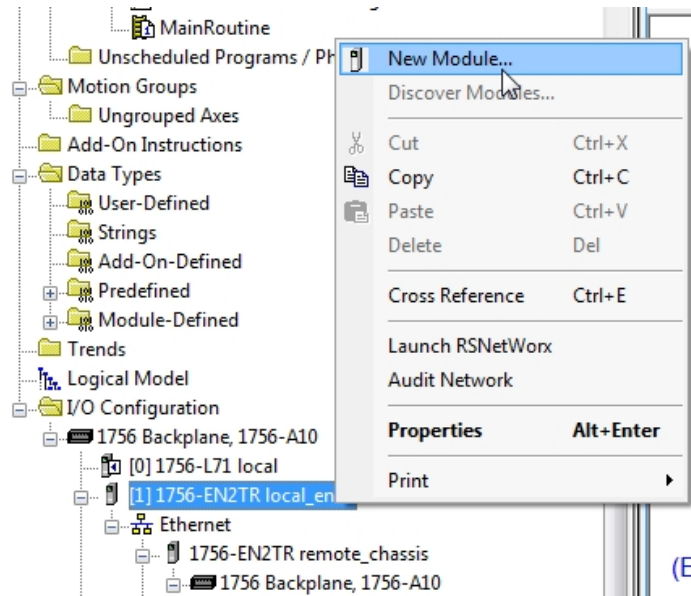module and choose New Module.

Figure 13-A

On the Select Module Type window – Select the type of communication module that will
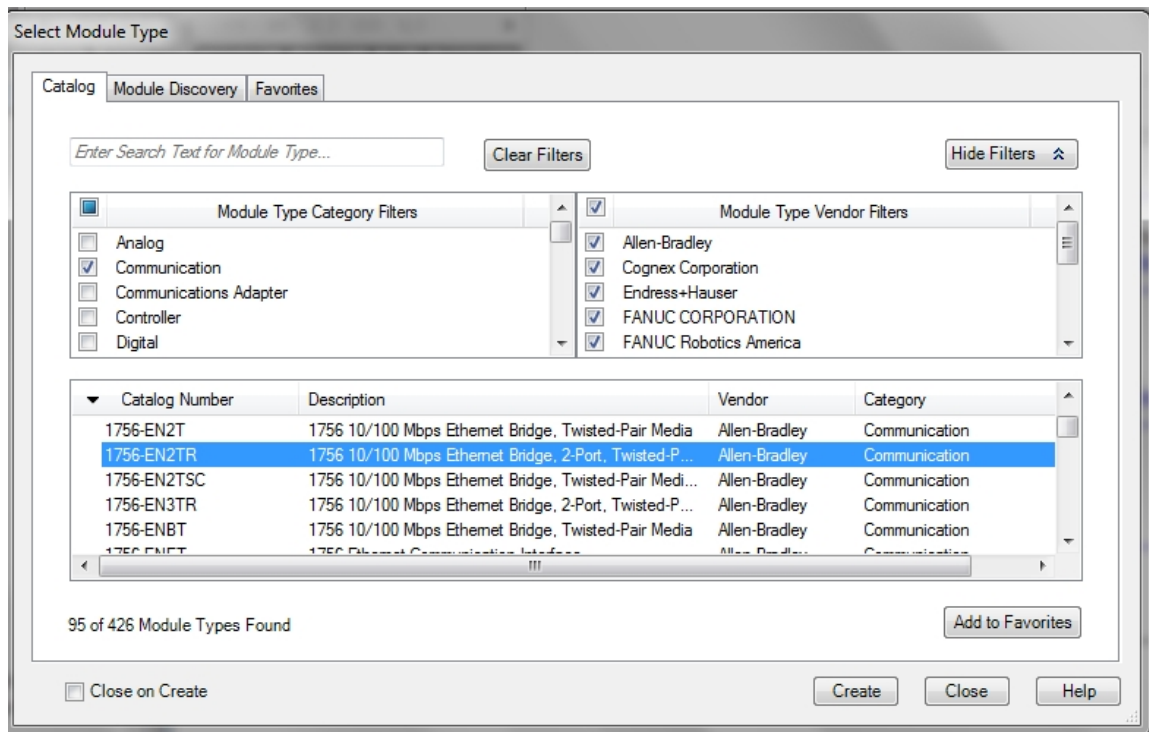be located in the remote device.

Figure 14-A. Adding a module.

Note: To add additional modules a Remote Chassis – Right click the remote Ethernet module (located in Remote Chassis) and choose New Module.
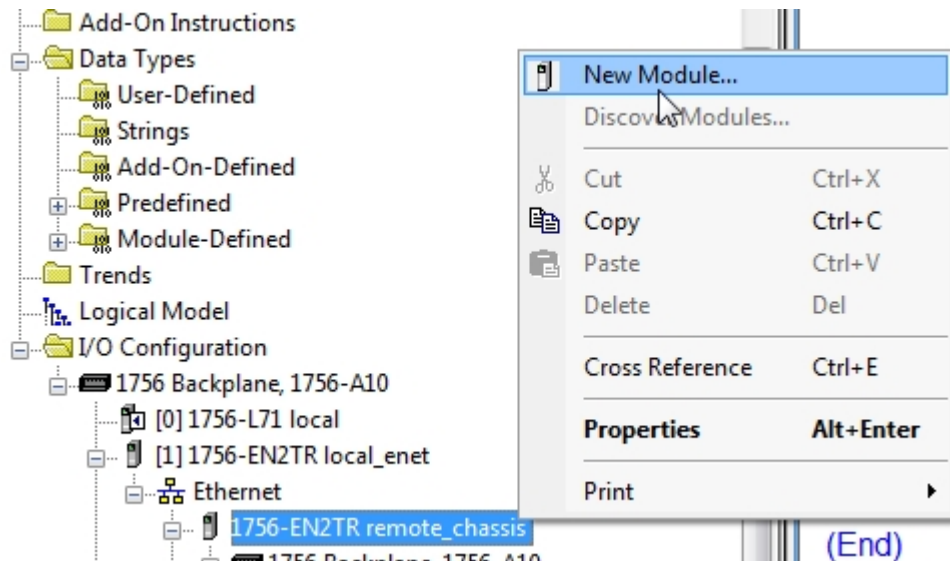

Figure 15-A. Choosing a new module.

On the Select Module Type window – Select the type of I/O module that will be located in the remote chassis.
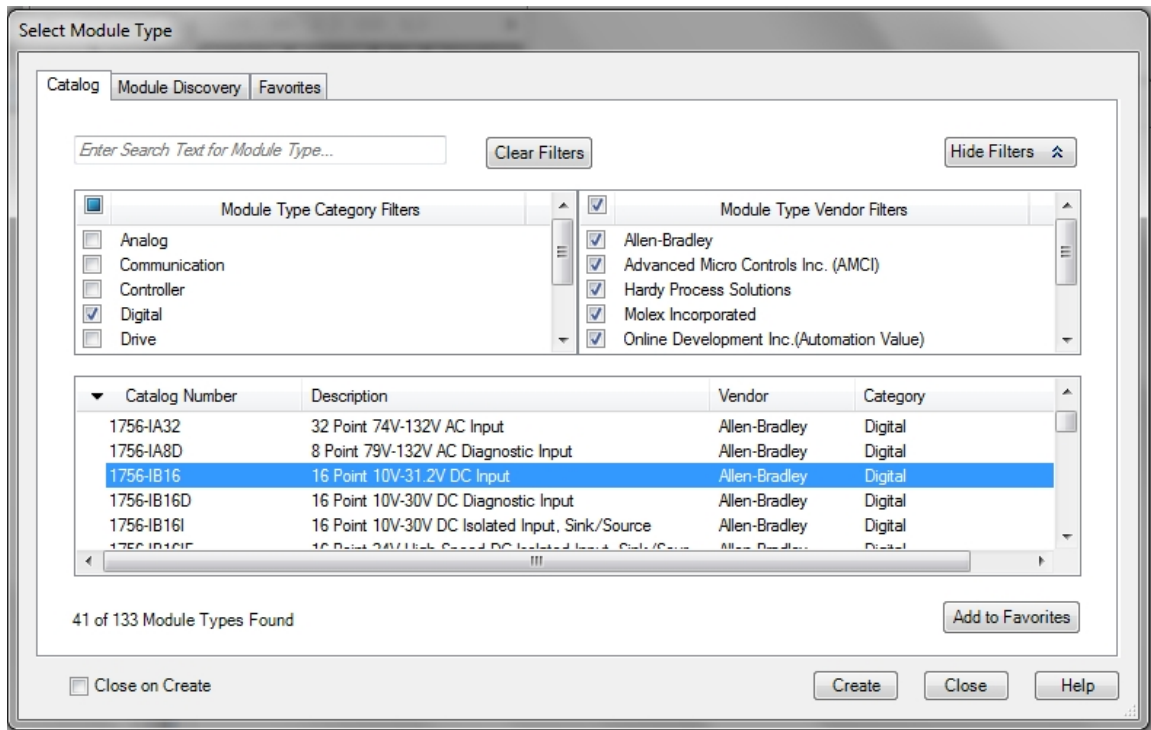
Figure 16-A
Adding I/O Module to Remote Chassis.

Review Questions

1.   T   F   Remote Chassis must be connected using Ethernet.

2.   The communication module must be located in what slot of a chassis?

   a)   6

   b)   Right most slot

   c)   0

   d)   Doesn't matter

3.   A communication module in a remote chassis is named – Machine_1, I/O tags in the chassis will be named:

   a)   Remote_Chassis:

   b)   Local:

   c)   Machine_1:

   d)   It depends on module address

4.   A tag called LINE6:4:I.Data.3 is being used. Where is the module located.

   a)   A Local Chassis , Slot 6

   b)   A Remote chassis, Slot 6

   c)   A Remote chassis, Slot 4

   d)   A Remote chassis, Slot 3

5.   A tag called LINE6:4:I.Data.3 is being used. What module terminal is being referenced?

a)   6

b)   4

c)   3

d)   1

6.   T   F   A remote chassis does not require a processor.

7.   A tag called LINE6:4:I.Data.3 is being used. What type of data is being referenced?

a)   Analog Input

b)   Analog Output

c)   Discrete Input

d)   Discrete Output

8.   The processor I/O Fault has does not reference remote I/O modules:

a)   True

b)   False

Review Question Answers

1) F

2) d

3) c

4) c

5) c

6) T

7) c

8) F