

Technical Note



Migrating MVI56-DNPNET to the Enhanced MVI56E-DNPNET

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Document Brief

This document describes how to migrate an existing DNP3 over Ethernet ControlLogix platform using an MVI56-DNPSNET module to a platform using the Enhanced MVI56E-DNPNET module. The document will illustrate the steps involved in converting the current configuration files to configuration compatible with the MVI56E-DNPNET module.

While the migration process is simple, there are a number of fundamental differences between the MVI56-DNPSNET module and the enhanced MVI56E-DNPNET module. In terms of functionality, the MVI56E-DNPNET module works as both a DNP3 over Ethernet Master (or Client) and a DNP3 over Ethernet Slave (or Server) simultaneously. The MVI56-DNPSNET only operates as a DNP3 over Ethernet Slave (or Server). Expect changes in the configuration parameters and nomenclature. This document will be a guide on matching your MVI56E-DNPNET configuration to that of your existing MVI56-DNPSNET card. For more information of the new features of the card, please refer to the [MVI56E-DNPNET User Manual](#).

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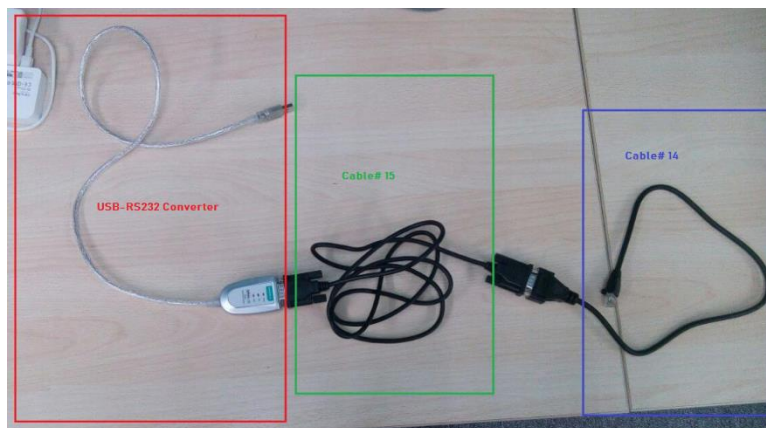
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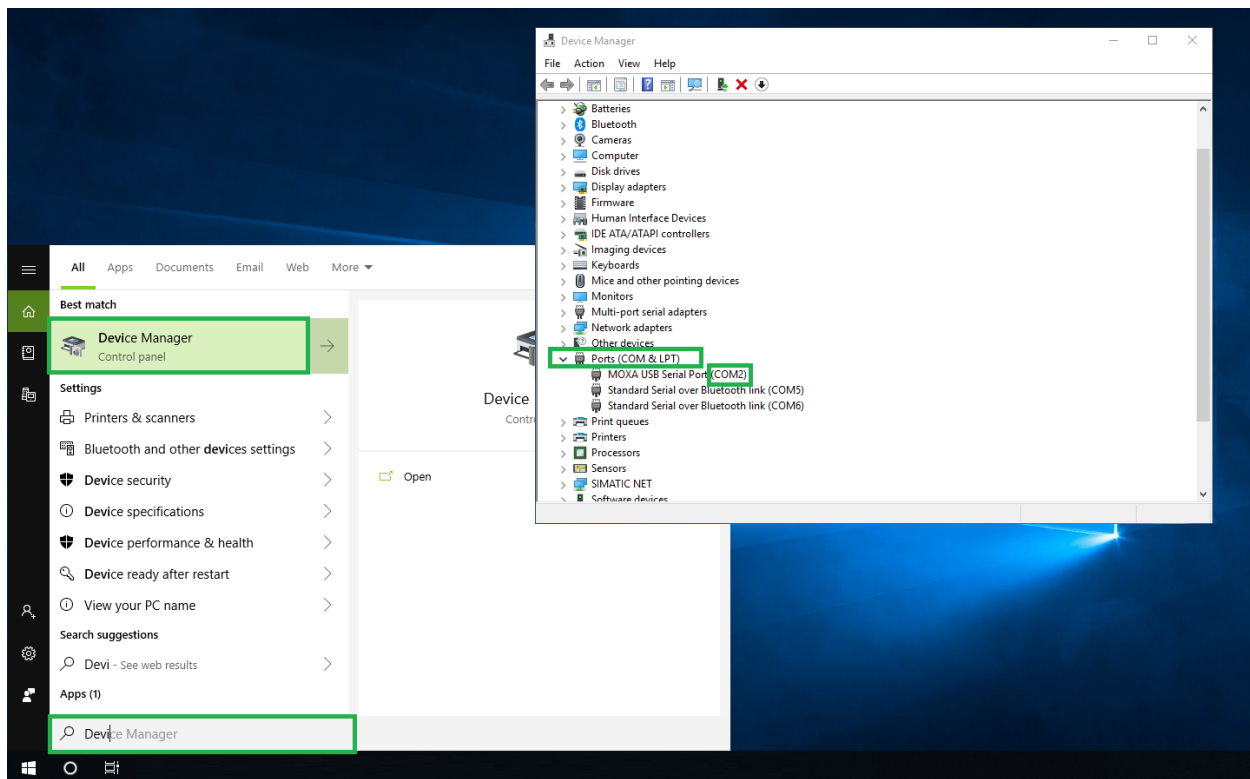
What you will need...

1. A Computer with the following applications installed:
 - a. ProSoft Configuration Builder, version 4.1 or higher
 - b. RSLogix5000 or Studio 5000, licensed and accompanied by RSLinx
2. Serial Debug port connecting cable – This is a combination of Cable#14, Cable#15 and an RS232-USB Conversion cable.

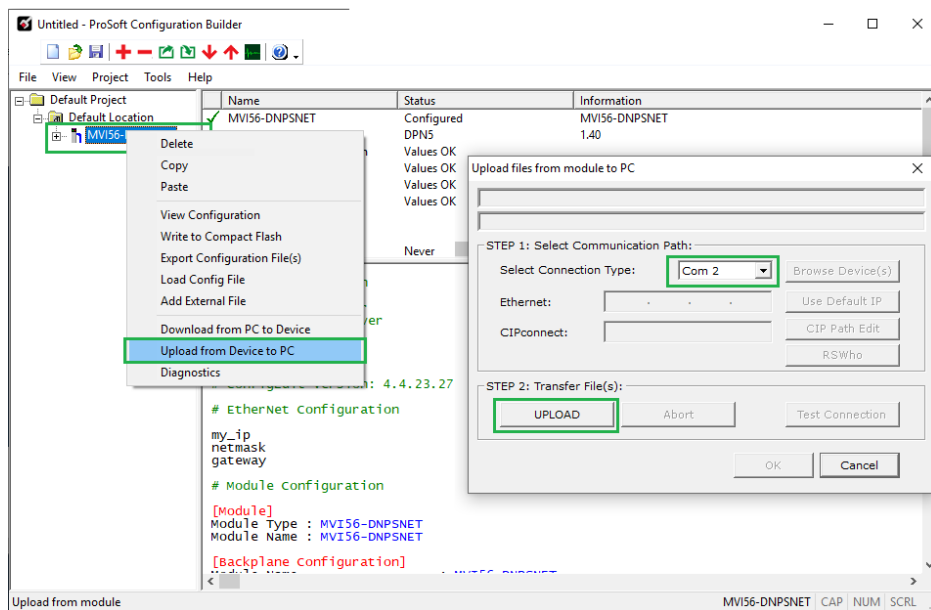
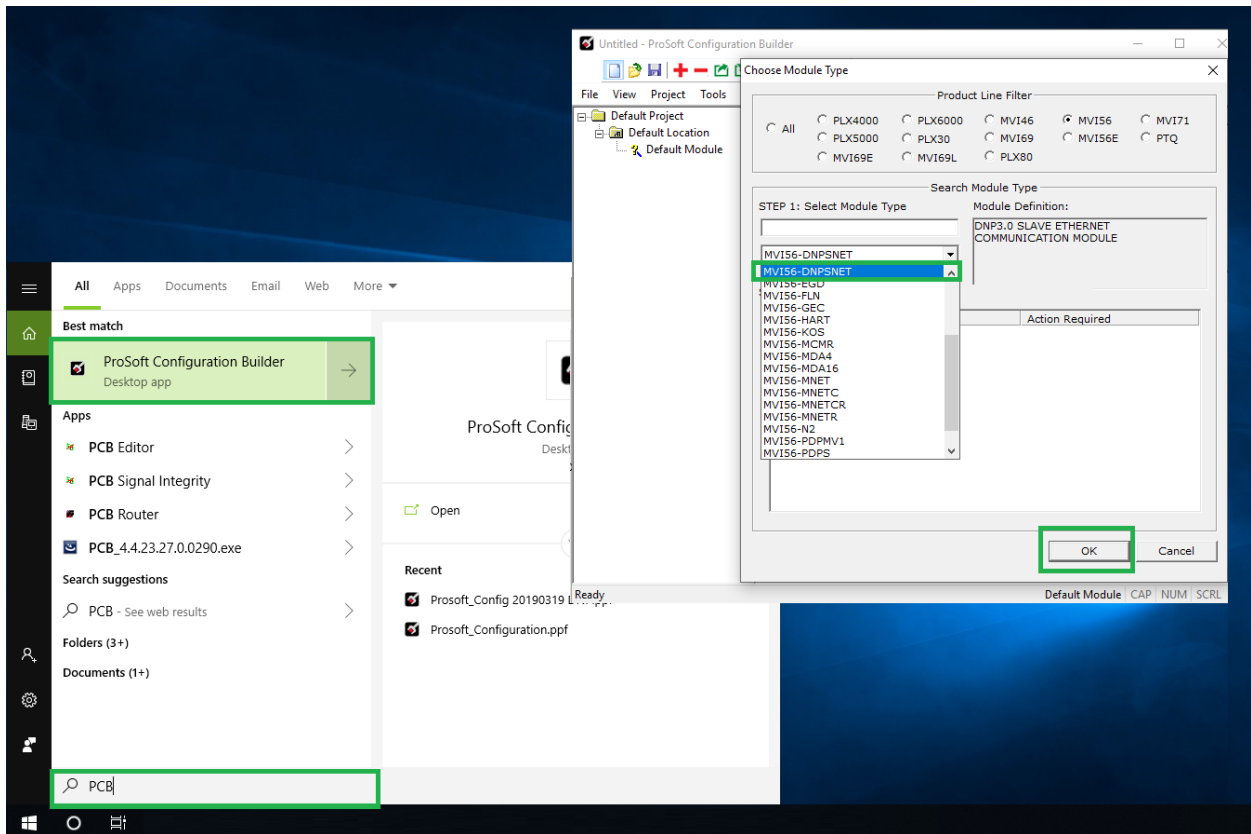


Step 1: Uploading Configuration from MVI56-DNPSNET

Connect the one end of Cable#14 to the Debug Port of the MVI56-DNPSNET module and connect the USB end of the RS232-USB converter to your PC. Make sure all the drivers are up-to-date and make a mental note of the COM Port the converter is on.



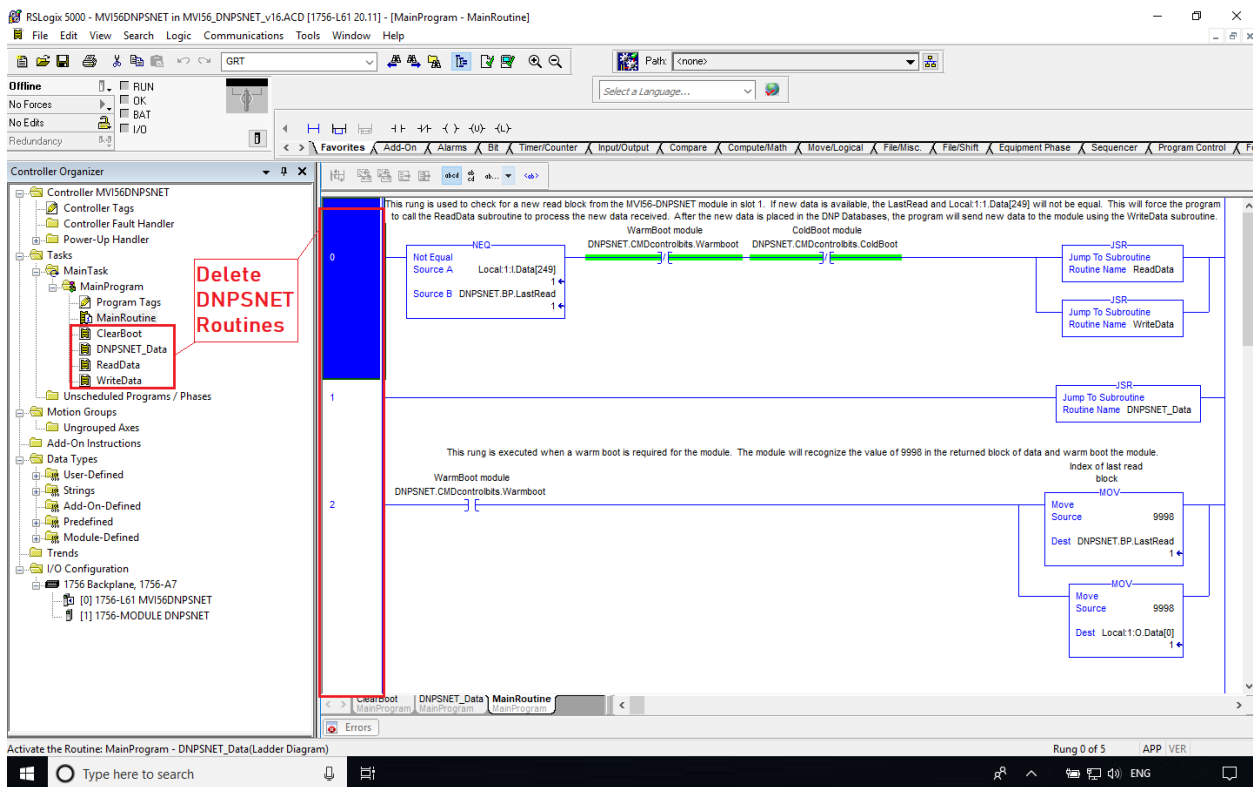
Startup ProSoft Configuration Builder (or PCB), select the MVI56-DNPSNET module from the select module tree. Once you have the module selected, right click the module name and select “Upload from Device to PC” from the pop-up tree.



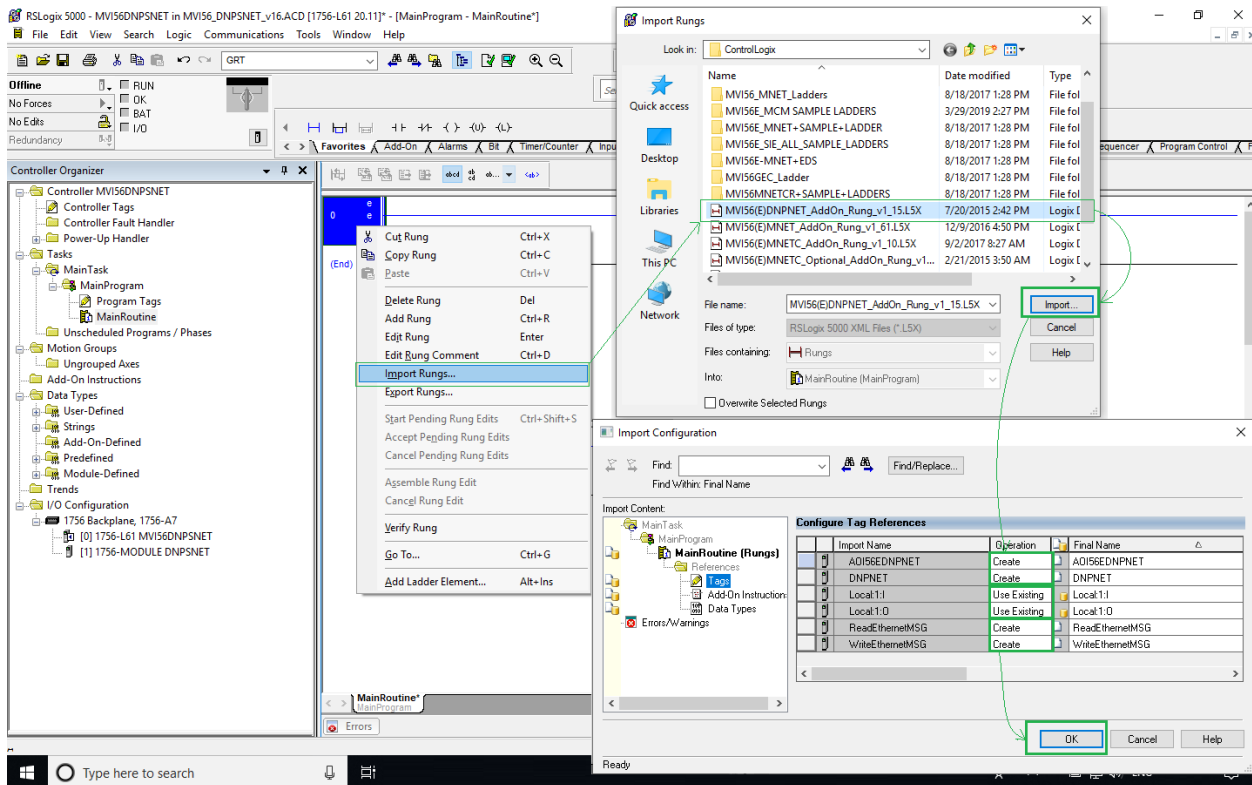
This will upload the configuration from the MVI56-DNPSNET. Now would be a good time to “Save” the PCB file (or .ppf file).

Step 2: Changing the AOI in Studio5000/RSLogix5000

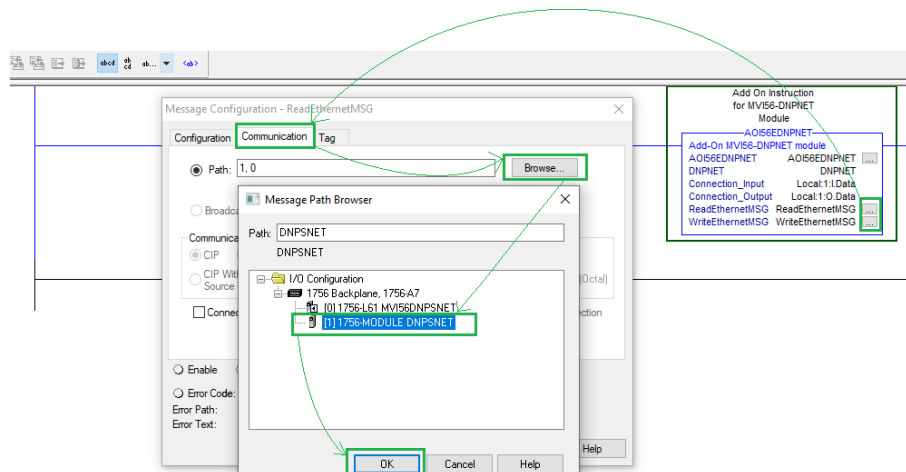
The enhanced MVI56E-DNPNET is configured entirely through the controller tags of your Studio5000 application. The next step involves downloading the [MVI56E-DNPNET AOI](#) from the module’s landing page. You will then delete existing communication rungs and import the downloaded rung in their place.



Remember to delete the tags associated with the DNPSNET Routines at after everything is done.

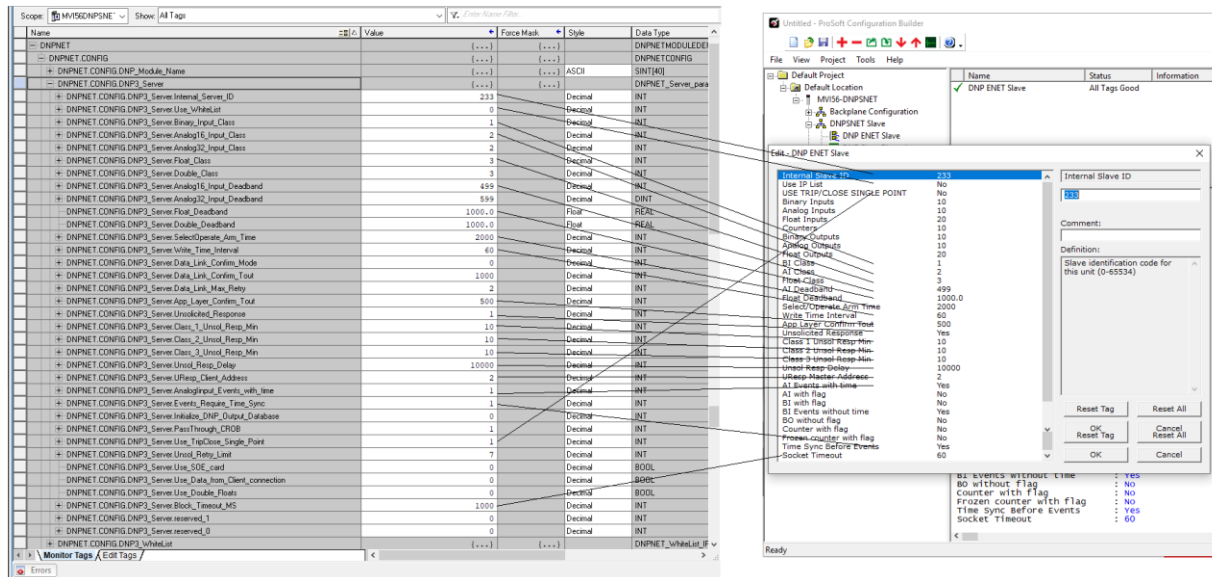


Once the AOI is imported into the Studio5000/RSLogix5000 project, adjust the connection path of the CIP message to point to the new DNP3 Module.



Step 3: Transferring the Configuration

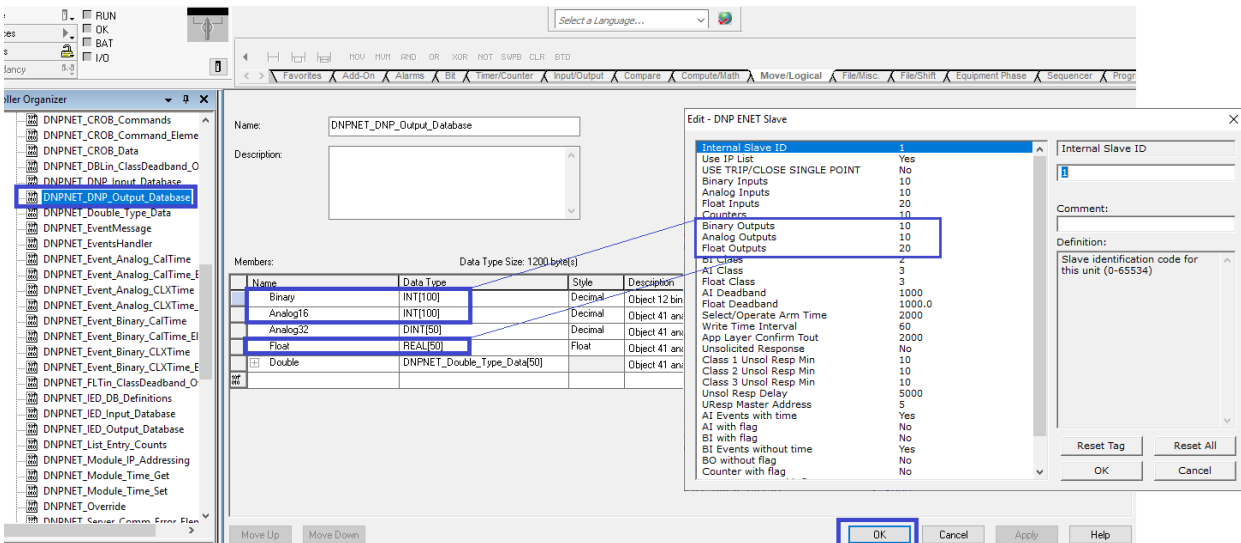
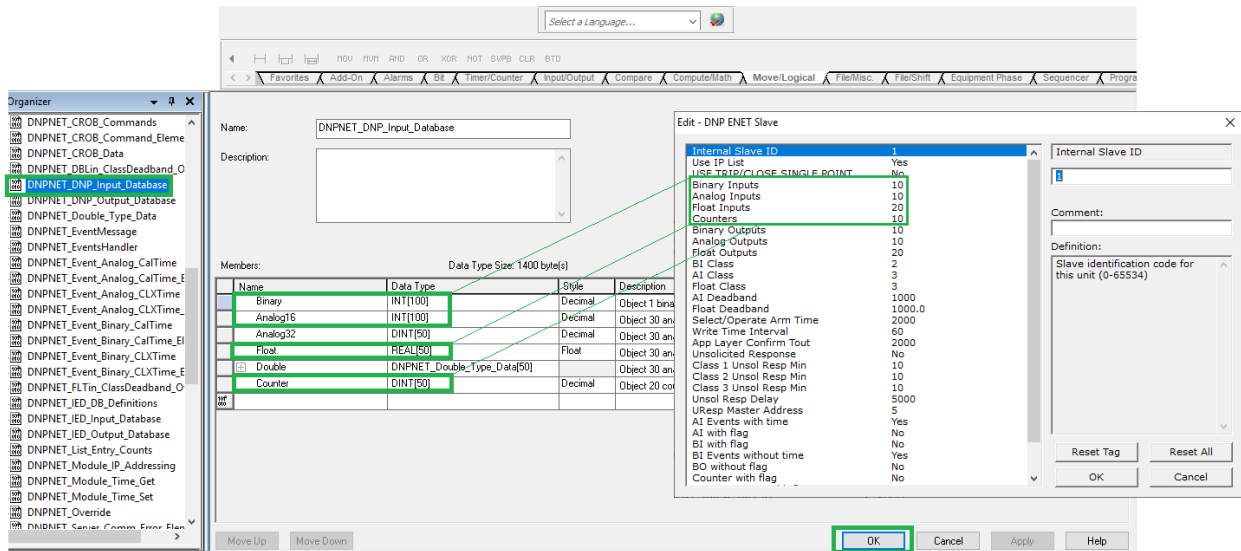
The updated AOI will come with a new set of tags. For the MVI56E-DNPNET, the server configuration is stored in the controller tags. The configuration will have to be transferred manually.



Step 4: Adjusting and Understanding the Point Database.

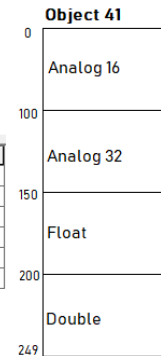
You will notice from the image above that the Number of Points are not specified in the Server Configuration Tags. The Number of Points are determined by the UDTs in the Project. You will need to adjust the UDTs to match your configuration. Since the module is a server, the DNP Database tags will need to be re-sized. One enhancement in the new MVI56E-DNPNET card that the card distinguishes 16 bit analog values and 32 bit analog values with the object variation. The 32 bit analog values tags (Analog32 [xx]) cannot be deleted but it can be re-sized to match the 16 bit analog values tag (Analog16 [xx]).

Point numbering is also different in the new card. All the analog values are members of the same object. The data is stored in the order that they appear in the DNPNET_DATABASE and all the points are numbers sequentially. Meaning to say, for the

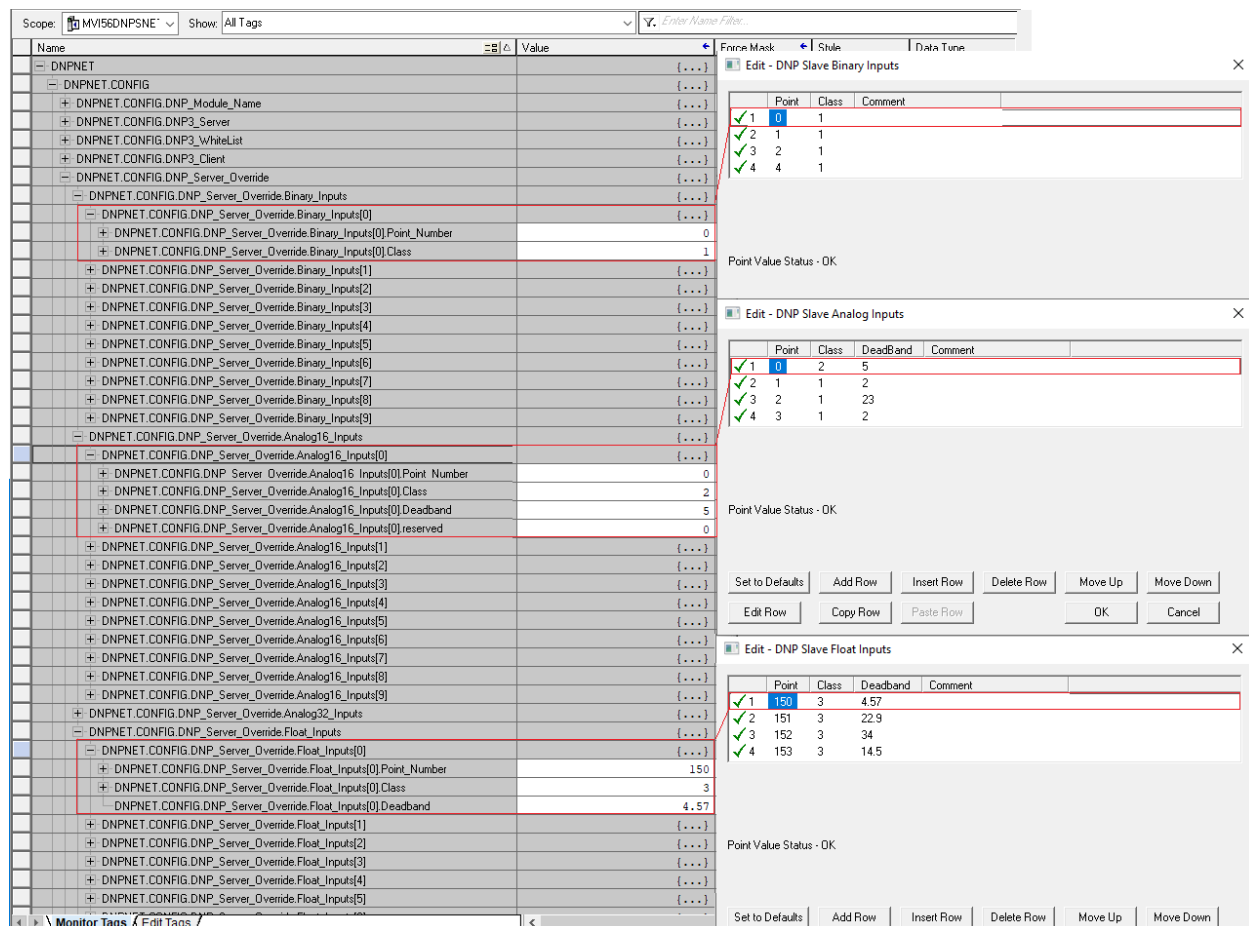


DNPNET_DNP_Output_Database, Analog16 values are points 0 to 99, Analog32 values are points 100 to 149, Float values are points 150 to 199 and Double values are points 200 to 249.

Name	Data Type	Style	Description	External Access
Binary	INT(100)	Decimal	Object 12 binary INTs	Read/Write
Analog16	INT(100)	Decimal	Object 41 analog INTs	Read/Write
Analog32	DINT(50)	Decimal	Object 41 analog DIN	Read/Write
Float	REAL(50)	Float	Object 41 analog REAL	Read/Write
Double	DNPNET_Double_Type_Data[50]		Object 41 analog double	Read/Write



Step 5: Configuring the Server Overrides



The screenshot shows the configuration interface for the MVI56-DNPSNET module. The main window displays a tree view of the configuration, with the 'DNPNET.CONFIG.DNP_Server_Override' section expanded. Three dialog boxes are open, each showing a table of input configurations:

- Edit - DNP Slave Binary Inputs:**

Point	Class	Comment
1	0	1
2	1	1
3	2	1
4	4	1
- Edit - DNP Slave Analog Inputs:**

Point	Class	DeadBand	Comment
1	0	2	5
2	1	1	2
3	2	1	23
4	3	1	2
- Edit - DNP Slave Float Inputs:**

Point	Class	Deadband	Comment
1	150	3	4.57
2	151	3	22.9
3	152	3	34
4	153	3	14.5

The Point Database Overrides for the MVI56-DNPSNET can be copied to the Server Override in the MVI56E-DNPNET configuration. There are tags available for each data type that the module supports.

Step 6: Writing the IP Configuration

The Module's IP address is configured via a message instruction triggered from the PLC Tags. Enter the IP address in the IP_Settings tags and Trigger IP_Settings.Write with a Boolean High.

	Control Trigger:			
- DNPNET.CONFIG.IP_Settings	Boolean High (...)			DNPNET_Module_IP_Addressing
- DNPNET.CONFIG.IP_Settings.Read	0	Decimal		BOOL
- DNPNET.CONFIG.IP_Settings.Write	0	Decimal		BOOL
- DNPNET.CONFIG.IP_Settings.IP	(...)	Decimal		INT[4]
+ DNPNET.CONFIG.IP_Settings.IP[0]	105	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.IP[1]	102	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.IP[2]	0	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.IP[3]	151	Decimal		INT
- DNPNET.CONFIG.IP_Settings.Netmask	(...)	Decimal		INT[4]
+ DNPNET.CONFIG.IP_Settings.Netmask[0]	255	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Netmask[1]	255	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Netmask[2]	255	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Netmask[3]	0	Decimal		INT
- DNPNET.CONFIG.IP_Settings.Gateway	(...)	Decimal		INT[4]
+ DNPNET.CONFIG.IP_Settings.Gateway[0]	105	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Gateway[1]	102	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Gateway[2]	0	Decimal		INT
+ DNPNET.CONFIG.IP_Settings.Gateway[3]	1	Decimal		INT

IP Address
 105.102.0.151

 Subnet Mask
 255.255.255.0

 Gateway IP Address
 105.102.0.1

Test and Sample

Sample Configuration files used in this document are available to download [via this download link](#). They server as an illustration of the process of converting the MVI56-DNPSNET to the MVI56E-DNPNET.