

# Migrating MVI56-DNPNET to the Enhanced MVI56E-DNPNET

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**Document Brief** 

This document described 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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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.



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Upload from module					MVI56-DI	NPSNET CAP NUM SC	RL



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/RSLogix500

The enhanced MVI56E-DNPNET is configured entirely through the controller tags of your Studio5000 application. The next step involves downloading the <u>MVI56E-DNPNET AOI</u> 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.



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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.

cope: B MVI56DNPSNE' V Show: All Tags		✓ ¥. 2700 Name				M Untilled - BroSoft Configuration Builder
Name	=≘ △ Value	+	Force Mask 🗧 🗧	Style	Data Type ^	Ontribed * Prosont Configuration Builder
DNPNET		()	()		DNPNETMODULEDEF	
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DNPNET.CONFIG.DNP_Module_Name		()	()	ASCII	SINT[40]	In Carlout Desiret
- DNPNET.CONFIG.DNP3_Server		()	()		DNPNET_Server_para	Default Project Project Inform
+ DNPNET.CONFIG.DNP3 Server.Internal Server ID		233		Decimal	INT	ANIA CONTRACT
+ DNPNET.CONFIG.DNP3_Server.Use_WhiteList		0		Decipal	INT	A A Racipalane Configuration
+ DNPNET.CONFIG.DNP3_Server.Binary_Input_Class		1		Decimal	-INI	DNPSNET Slave
+ DNPNET.CONFIG.DNP3_Server.Analog16_Input_Class		2 -	~	Decimal	INI	B DNP ENET Slave
+ DNPNET.CONFIG.DNP3 Server Analog32 Input Class		2		Opcimal	INT	
+ DNPNET.CONFIG.DNP3 Server.Float Class		3 -	_	Decimal	INT	test. DNP ENEL Slave
+ DNPNET.CONFIG.DNP3_Server.Double_Class		3		Decimal	480	Internal Stave 10 233
+ DNPNET.CONFIG.DNP3 Server.Analog16 Input Deadband		499	_	Decisal	INT	Use IP List No
DNPNET.CONFIG.DNP3 Server Analog32 Input Deadband		599		Decimal	DINT	USE TRIP/CLOSE SINGLE POINT No 233
		1000.0	_	Floar	BEAT	Analog Inputs 10
		1000.0		Float	REAL	Float Inputs 20 Comment:
T DNPNET CONFIG DNP3 Server SelectDorate Am Time		2000		Decimal	INT	Binters 10
DNPNET CONFIG DNP3 Server Write Time Interval		60		Decimal	INT	Applied Otheuts 10 Definition:
+ DNPNET CONFIG DNP3 Server Data Liok Confirm Mode		0		Precimal	- ANT	Pleas Outputs 20
DNDNET COMPIG DNP2 Server Data Link Confirm Tout		1000		Decimal	TALE	AT Cless 2 this unit (0-65534)
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DNPNET.CONFIG.DNP3_Server.Jpsylicontin_Tox     DNPNET.CONFIG.DNP3_Server.Jpsylicontin_Tox		300		Decimal	TAIT	Select/Operate.Arm Time 2000
DNPNET.CONFIG.DNP3_Server.Chas.1.Used.Resp.Mis		10		Decinal	INT	App Layer Confirm Toxe 50
DNPNET CONFIG DNP3_Server Class_1_Unitd_Resp_Min     DNDNET CONFIG DNP3_Caster Class_2_Used_Resp_Min		10		Designed	INT	Unsolicited Response Yes
DNPNET.CONFIG.DNP3_Server.Class_2_Dnb0_Resp_Min     DNDNET.CONFIG.DNP3_Cerver.Class_2_Used_Resp_Min		10		Desired		Class 1 Unsol Resp Min- 10
H: DNDNET.CONFIG.DNP3_Server.Class_3_Unito_Help_Min		10		Decimal	aut	Class 3 Unsol Resp Min- 10
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UNPINE L.CUNPIG.DNP3_Server.Analoginput_Events_with_time		1		Lecand		AI with flag No
H DNPNET.CUNHG.DNP3_Server.Events_Hequire_Time_Sync		1		Decimal	INT	BI with flag No Reset Tag Reset 7
+ DNPNET.CUNPIG.DNP3_Server.Initial2e_DNP_Dutput_Database		0	_/	Decinar	INT	BO without flag No
+ DNPNET.CONFIG.DNP3_Server.PassThrough_CROB		1	/	Decimal	INT	Counter with flag No V OK Cance Reset Tag Reset
DNPNET.CONFIG.DNP3_Server.Use_TripClose_Single_Point		1		Decimal	INT	Time Sync Before Events Yes
+ DNPNET.CONFIG.DNP3_Server.Unsol_Rety_Limit		7		Decimal	INT	Socket Timeout 60 v OK Cance
DNPNET.CONFIG.DNP3_Server.Use_SOE_card		0		Decimal	800L	
DNPNET.CONFIG.DNP3_Server.Use_Data_from_Client_connection		0		Decimal	BOOL	BO without flag : No
DNPNET.CONFIG.DNP3_Server.Use_Double_Floats		0		Dectria	BOOL	Counter with flag : No
+ DNPNET.CONFIG.DNP3_Server.Block_Timeout_MS		1000 -		Decimal	INT	Time Sync Before Events : Yes
+ DNPNET.CONFIG.DNP3_Server.reserved_1		0		Decimal	INT	socket Timeout : 60
DNPNET.CONFIG.DNP3_Server.reserved_0		0		Decimal	INT	
DNPNET.CONFIG.DNP3_WhiteList		()	()		DNPNET_WhiteList_IF ~	Pearly
Monitor Tags / Edit Tags /	<				>	neavy

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.





#### Step 5: Configuring the Server Overrides

Scope: DMVI56DNPSNE' V Show: All Tags	✓ 🔽 Enter Name	9 Filter
Name === △	Value 🗧	Force Mask 🔶 Stule Data Tune
DNPNET	{}	Edit - DNP Slave Binary Inputs ×
- DNPNET.CONFIG	{}	
DNPNET.CONFIG.DNP Module Name	()	Point Class Comment
+ DNPNET.CONFIG.DNP3 Server	()	
DNPNET.CONFIG.DNP3 WhiteList	()	√2 1 1
E-DNPNET CONFIG DNP3 Client	()	√3 2 1
	[]	/ ↓ ✓ 4 4 1
DNPNET.CONFIG.DNP Server Override.Binary Inputs	{}	
DNPNET.CONFIG.DNP. Server Override.Binary Inputs[0]	[]	
DNPNET CONFIG DNP. Server, Override Binary Inputs[0] Point Number	0	
DNPNET.CONFIG.DNP_Server_Override.Binary_Inputs(0).Class	1	
DNPNET CONFIG DNP. Server Override Binary Inputs[1]	[]	Point Value Status - DK
The second	[]	
DNPNET CONFIG DNP. Server, Override Binary Inputs[2]	1	
The second	[ ]	Edit - DNP Slave Analog Inputs X
The DREAM CONFIGURATION CONTRACT OPERATION (1)	( )	
DIVINET.CONFIG.DNR_Server_Override.binaty_inputs[6]	1	Point Class DeadBand Comment
DWINET.CONFIG.DNR_Server_Override.binaty_inputs[0]	1	
DNPNET.CONFIG.DNP_Server_Ovenide.binaly_inputs[7]	1	
DNPNET.CONFIG.DNP_Server_Overlide.binaty_inputs[o]	{}	× 3 2 1 23
DNPNET CONFIG.DNP_Server_Overide.binary_inputs[3]	{}	4 5 1 2
E-DNPNET.CUNFIG.DNP_Server_Overnde.Analog16_Inputs	{}	
E-UNPICE DUPICE DNP_Server_Uverride.Analog16_inputs(U)	{}	
UNPNET.CUNFIG.DNP Server Override.Analog16 Inputs[0].Point Number	0	
DIVENET.CONFIG.DIVE_Server_Overlide.Analog 16_Inputs[0].Class	2	
E-DINPINE I.CUINFIG.DINP_Server_OVerride.Analog 16_Inputs[U].Deadband	5	Point Value Status - UK
DNPNET.CUNHIG.DNP_Server_Override.Analog16_Inputs[U].reserved	0	
UNPNET.CUNFIG.DNP_Server_Override.Analog16_Inputs[1]	{}	
DNPNET.CUNFIG.DNP_Server_Override.Analog16_Inputs[2]	{}	Casta Data Marine L. Marine Dennel Datata Dani L. Marine Uni L. Marine Danime L.
UNPRET.CUNFIG.DNP_Server_Override.Analog16_Inputs[3]	{}	Set to belauks Add how Inset how Delete how Move op Move Down
DNPNET.CUNFIG.DNP_Server_Uverride.Analog16_Inputs[4]	{}	Edit Row Copy Row Paste Row OK Cancel
+ DNPNET.CUNFIG.DNP_Server_Override.Analog16_Inputs[5]	{}	
+ DNPNET.CONFIG.DNP_Server_Override.Analog16_Inputs[6]	{}	Edit - DNP Slave Float Inputs
+ DNPNET.CONFIG.DNP_Server_Override.Analog16_Inputs[7]	{}	
+ DNPNET.CONFIG.DNP_Server_Override.Analog16_Inputs[8]	{}	Point Class Deadband Comment
	{}	√1 150 3 4.57
DNPNET.CONFIG.DNP_Server_Override.Analog32_Inputs	{}	√ 2 151 3 22.9
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs	{}	√ 3 152 3 34
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[0]	{}	✓ 4 153 3 14.5
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[0].Point_Number	150	
+ DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[0].Class	3	
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[0].Deadband	4.57	
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[1]	{}	
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[2]	{}	Point Value Status - OK
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[3]	{}	
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[4]	{}	
DNPNET.CONFIG.DNP_Server_Override.Float_Inputs[5]	{}	
Monitor Tags / Edit Tags /	<	Set to Defaults Add Row Insert Row Delete Row Move Up Move Down

The Point Database Overrides for the MVI56-DNPSNT 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]	— IP Address
+ DNPNET.CONFIG.IP_Settings.IP[0]	105	Decimal	INT	105.102.0.151
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]	<ul> <li>Subnet Mask</li> </ul>
DNPNET.CONFIG.IP_Settings.Netmask[0]	255	Decimal	INT	255.255.255.0
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]	<ul> <li>Gateway IP Address</li> </ul>
DNPNET.CONFIG.IP_Settings.Gateway[0]	105	Decimal	INT	105.102.0.1
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	

Test and Sample

Sample Configuration files used in this document are available to download <u>via this download</u> <u>link</u>. They server as an illustration of the process of converting the MVI56-DNPSNET to the MVI56E-DNPNET.