

# VERTIV NCU - SNMP APPLICATION NOTE

**Document Name:** VertivNCU\_SNMP\_IO  
Gateway\_Application Note\_2020-10

**Date (MM/DD/YYYY):** October 2020

**Purpose:** This application note presents a step by step approach to integrate an intelligent DC Power Plant controller to a FUSION and an iO Gateway.

**Target Equipment:** Vertiv NCU

**Equipment Description:** The NCU is an intelligent DC Power Plant controller manufactured by Vertiv. The controller provides a mean to communicate via SNMP

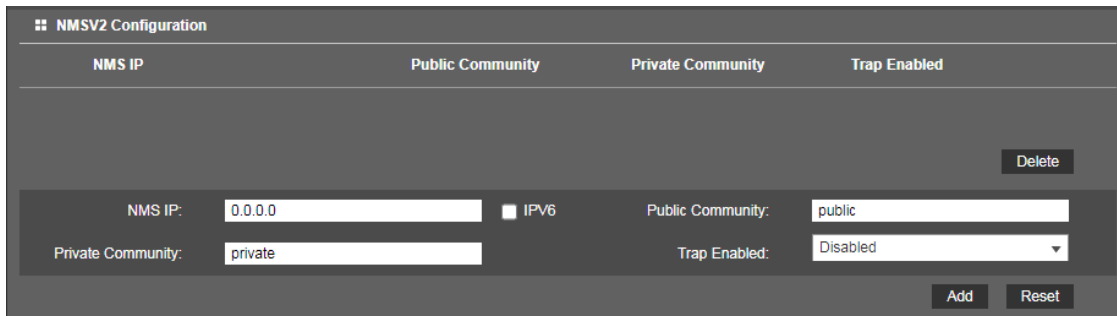


**Product Description**

<b>Name</b>	NCU
<b>Manufacturer</b>	Vertiv
<b>System Type</b>	System Controller
<b>Modbus Version</b>	
<b>Manufacturer Technical Support</b>	<b>+1 800 265 9243 OPTION 4</b>
<b>Specificities</b>	

### Vertiv NCU Communication Settings:

1. Access the NCU Controller using a computer connected to the RJ-45 socket
  - a. Default IP address: 192.168.1.2
  - b. Default user: admin Default password: 640275
2. From the left side menu, click on Advanced Settings.
3. From the top menu, select SNMP.
4. Enter the following information and click on Add.



The screenshot shows the 'NMSV2 Configuration' interface. At the top, there are four tabs: 'NMS IP', 'Public Community', 'Private Community', and 'Trap Enabled'. Below the tabs, there is a 'Delete' button. The main configuration area contains the following fields:

- NMS IP: 0.0.0.0 (text input)
- IPV6:  (checkbox)
- Public Community: public (text input)
- Private Community: private (text input)
- Trap Enabled: Disabled (dropdown menu)

At the bottom right, there are 'Add' and 'Reset' buttons.

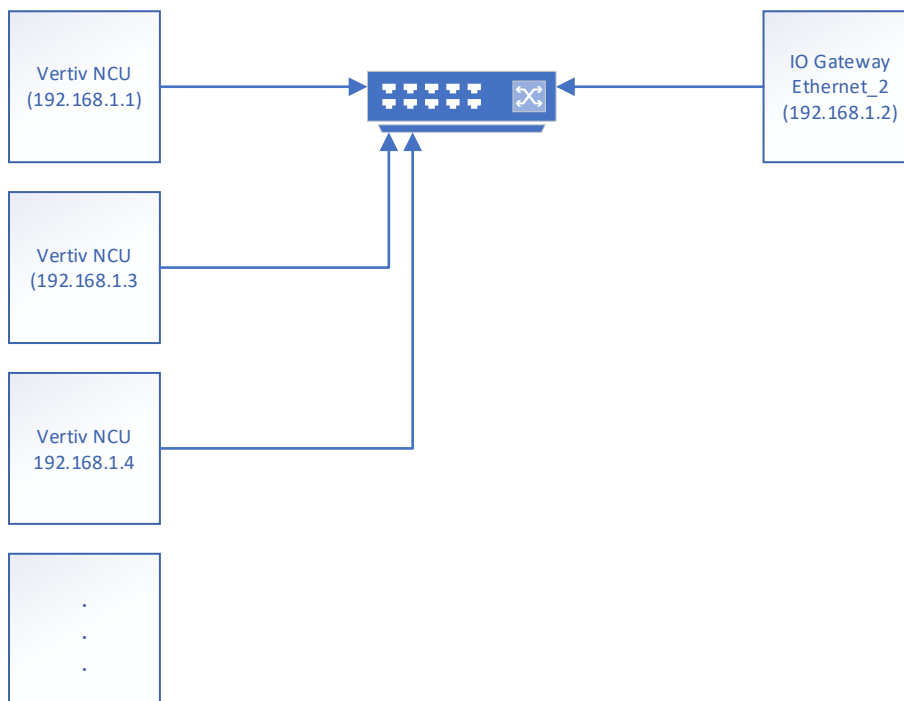
5. From the top menu, select Ethernet.
6. Change the IP address to be on the same network of the iO Gateway front port (Default IP 192.168.1.2)
7. Save changes.

### Vertiv NCU Mib Browser Walk

1. Open a MIB Browser application, this procedure is built around iReasoning MIB browser.
2. Click on File > UnLoad MIBs, remove Mib file not related to Vertiv controller by highlighting all file name (Ctrl + click) and clicking on Ok.
3. Click on File > Load MIBs, select the following Vertiv NCU MIB files.
  - a. Mib\_for\_ncu\_and\_acu-plus-controller\_rev-d.mib\_219695\_0.mib
4. Enter NCU IP address in the Address bar.
5. Click on Advanced.
  - a. Read Community: public
  - b. SNMP Version: 2
6. Test SNMP connection by changing operations to Get and then clicking on Go.
  - a. Working connection should return a value under the Result table
7. From the left side menu, expand System folder.
8. Expand psRectifiers folder.
  - a. Select psRectifierTable
  - b. Press on ctrl+T (Table View)
    - i. A new tab should appear next to the ResultTable tab
    - ii. Select the tab in the top menu
    - iii. Wait for the table value to appear
    - iv. Click on Export
    - v. Save result in CSV

9. Expand psDistribution folder.
  - a. Select psDistributionLoadTable
  - b. Press on Ctrl + T (Table View)
    - i. A new tab should appear next to the ResultTable tab
    - ii. Select the tab in the top menu
    - iii. Wait for the table value to appear
    - iv. Click on Export
    - v. Save result in CSV
  - c. Select psDistributionGeneralTable
  - d. Press on Ctrl + T (Table View)
    - i. A new tab should appear next to the ResultTable tab
    - ii. Select the tab in the top menu
    - iii. Wait for the table value to appear
    - iv. Click on Export
    - v. Save result in CSV

### Vertiv NCU Connection to iO Gateway



### iO Gateway Communication Settings:

1. Connect to the iO Gateway with a laptop using an Ethernet cable.
  - a. Ethernet\_2 default IP address is 192.168.1.2
  - b. Connect your laptop on the IO Gateway front port, open a web browser and type the gateway IP address in the address bar
  
2. Navigate to **Settings/Connections/RS-485 COM A:**
  - a. Set RS-485 – COM A need to be Enable
  - b. Set Baud rate to 9600
  - c. Set Stop bits to 1
  - d. Set Protocol to Modbus RTU Slave
  - e. Set Data bits to 8
  - f. Set Parity to None

**Port Configuration**

<b>State</b> <input checked="" type="checkbox"/>	
Port Name * COMA	Protocol MODBUS RTU SLAVE
Baudrate 9600	Data Bits 8
Stop Bits 1	Parity NONE
<b>Save</b>	Cancel

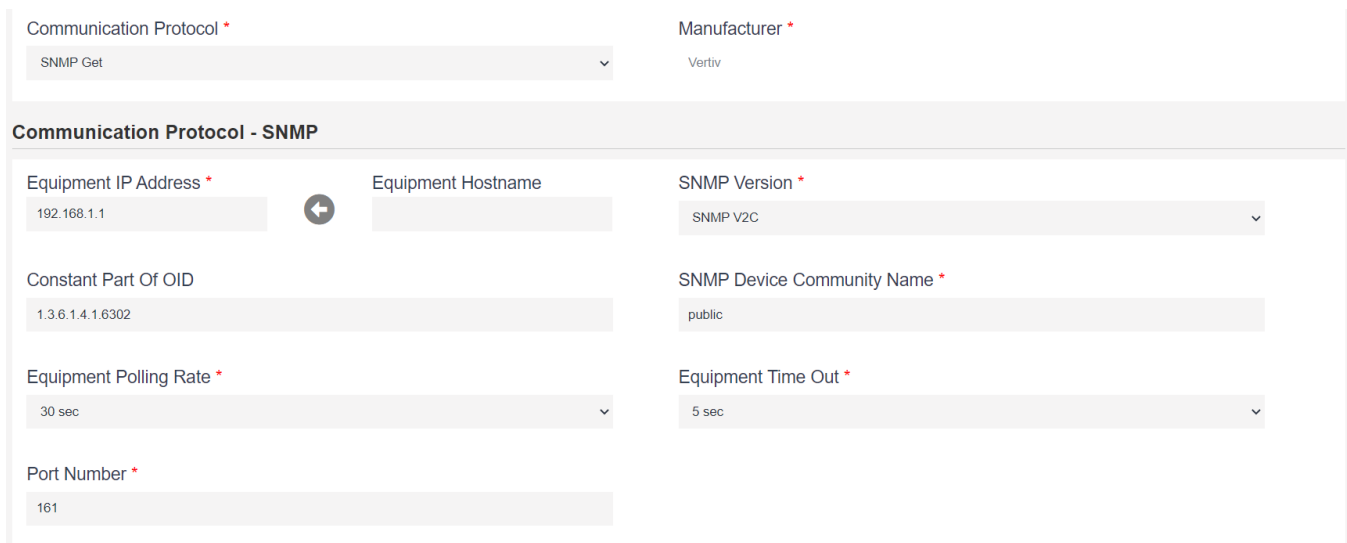
3. Navigate to **Settings/Protocols/Modbus Slave.**
  - a. Set State to Enable
  - b. Use a Slave ID that is not currently used by another Modbus

**Modbus RTU**

<b>State</b> <input checked="" type="checkbox"/>
Slave ID * 80

4. Navigate to **Data Sources (Create Vertiv Equipment)**

- a. Click on + Equipment
- b. Add an Equipment name (DC plant identification)
- c. Set Equipment Category to DC Plant
- d. Set Equipment Model to NCU
- e. Set Communication Protocol to SNMP Get
- f. Enter Equipment IP Address
- g. Set SNMP Version to SNMP v2c
- h. Constant Part of OID: 1.3.6.1.4.1.6302
- i. Set SNMP Device Community Name to public
- j. Select Equipment Polling Rate to 30 sec
- k. Select Equipment Time Out to 5 sec
- l. Save the equipment



Communication Protocol \*  
SNMP Get

Manufacturer \*  
Vertiv

**Communication Protocol - SNMP**

Equipment IP Address \*  
192.168.1.1

Equipment Hostname

SNMP Version \*  
SNMP V2C

Constant Part Of OID  
1.3.6.1.4.1.6302

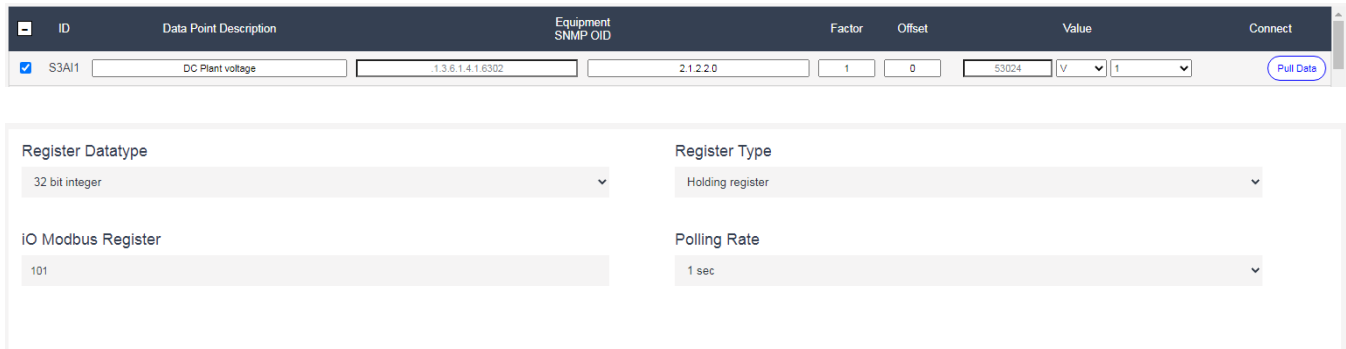
SNMP Device Community Name \*  
public

Equipment Polling Rate \*  
30 sec

Equipment Time Out \*  
5 sec

Port Number \*  
161

5. Navigate to the **Equipment Data Sources/Action/.../Data Points**
  - a. Click on + Data point
  - b. Set Datapoint Description to Plant Voltage
  - c. Set second OID part to 2.1.2.2.0
  - d. Click on Advanced
    - i. Set Register Data Type to 32-bit integer
    - ii. Set register Type to Holding register
    - iii. Set iO Modbus Register to 1 (add 1 to register for each new datapoint, add 2 if last register is 32 bit)
    - iv. Set Polling Rate to 30 sec
    - v. Set Factor to 1
    - vi. Set Offset to 0
  - e. Click on Pull Data
  - f. Plant voltage should appear under Value column



ID	Data Point Description	Equipment SNMP OID	Factor	Offset	Value	Connect	
<input checked="" type="checkbox"/> S3AI1	DC Plant voltage	1.3.6.1.4.1.6302	2.1.2.2.0	1	0	53024 V 1	<a href="#">Pull Data</a>

Register Datatype	Register Type	iO Modbus Register	Polling Rate
32 bit integer	Holding register	101	1 sec

### **iO Gateway Modbus RTU Connection:**

Refer to your detailed engineering or the layout of your MODBUS network, respect the MODBUS best practices at all times by preventing star shape network, thus terminate to the last equipment of the current MODBUS daisy chain trunk or if this is your first equipment on the network device, then terminate directly at the FUSION back panel. The FUSION offers (2) RS-485 ports, one called MLINK and the other one RS-485. Use the connector available from Multitel to convert the RJ-12 connector to a screw type connector. (Part# is C-7000-MOD).

If no other Modbus device are connected to the Fusion

1. Connect Fusion MLINK or RS485 + (C-7000-MOD) to IO Gateway RS-485 COM A Rx/Tx +
2. Connect Fusion MLINK or RS485 – (C-7000-MOD) to IO Gateway RS-485 COM A Rx/Tx –

### FUSION Communication Settings:

Once you have logged into the FUSION using the “supervisor” username and no password, click on **CONFIG** menu and select “**Communication Ports**” from the left menu. Select the **MLINK** or **RS-485** port and config operating parameters as follow:

Communication Ports	
COMRS485	Value
Enter protocol (0: Terminal, 1: Mlink, 2: ISNMS, 3: MODBUS, 4: NONE, 5: Port forwarding, 6: Card reader)	MODBUS
Enter baudrate (0=300, 1=1200, 2=2400, 3=4800, 4=9600, 5=19200, 6=38400, 7=57600 or 8=115200)	9600
Enter character parameters (number of bit, parity, stop bit) 1: 8N1, 2: 8E1, 3: 8O1, 4: 7N1, 5: 7E1, 6: 7O1)	8N1
Enter configuration (1-RS485(2 wires), 2-RS422(4 wires))	RS485(2 wires)
Enter the number of IDLE char to wait (1 to 255)	5
Enter device (0-None, 1-Modem)	None

### FUSION “Module” settings:

Once the FUSION communication port is setup, associate the equipment to a specific Module number. Select “**Modules**” from the left menu and choose the pre-assigned module or click on a module available (State = None).

Modules	
M11	Value
Enter module state (0 Disabled, 1.Enabled, 2.None)	Enabled
Enter name ('C' to clear)	Midrange (Controller Distr.)
Enter slave ID (1 - 255)	80
Enter port (1:RS485 Back Port, 2:MLINK Port)	RS485 Back Port
Enter number of retry (1 - 99)	4
Enter module type (0:GEN, 1:SMX-48BI, 2:SMX-24AI)	GEN
Enter time out (1 - 50 *0.1s)	35
Enter register order 1:Most significative register = lower address 2:Most significative register = higher address	Most significative register = higher address
Enter register base address 0:use given address 1:subtract 1 from given address	use given address
Enter silent (in 0.01 sec) before sending request (0 - 100)	50

*Configure the name of the Module using the reference name of the DC Plant, such as “Transport #1”*

### FUSION “Test Channel” settings:

Once the Equipment is associated to a module, a list of channels will appear and be available for Multitel to configure. However, in order to test the MODBUS RTU wiring and iO controller communication settings, it is highly recommended to configure a test channel as per the following to validate. Click on MxA1 and configure the operating parameters as follows:

Modules	
M11A1	Value
The channel state is	Enabled
The name is	Midrange-Plant/Volt
The measure unit is	VDC
The number of decimal digits is (4 = auto)	1
The bits for the mask used to extract value is	None
The strings associated to each code is	Not Programmed
The register address is	101
The reading function code is	3
The sign is	Normal
The data type is	32-Bit Integer
The sign is	Signed Integer
The multiplication factor is	0.001
The channel offset is	0