

# F7904504

# **Technical Bulletin**

# Vanguard<sup>®</sup> SC 370 Setup for Modem and SNMP Monitoring

**Document Revision History** 

Document Version	Date	Author	Notes
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The Vanguard<sup>®</sup> SC 370 controller is designed to be monitored by Flash Technology and other 3rd party NOC's. Instructions to configure the modem for 3rd party SNMP monitoring are presented below.

These instructions are intended for the use of 3rd parties who are already familiar with SNMP type monitoring and have the systems needed to support it. Flash Technology is not able to provide training or systems support beyond the setup and operation of their equipment.

#### 1. Configuring Modem for custom SIM card

The SIM card used in the LTE Multitech modem must be configured to connect to the correct access point name (APN) on the appropriate network. This is achieved in one of two ways.

1.1 Manual modem configuration of SIM card settings.

User sets up modem and configures SIM card settings. With this process, the Vanguard SC 370 controller will not communicate with the modem to fetch signal strength or IP address. Portforwarding modifications are permitted.

1.2 Customized SIM card option using the Vanguard System webpage User needs the APN for the SIM card in use. The Vanguard SC 370 controller communicates with the modem and configures SIM card APN to provide signal strength and IP address data through SNMP GET commands. However, port-forwarding changes are not permitted. Vanguard IP address needs to be configured to 192.168.1.11 which is a default configuration.

#### 1.1 Manual modem configuration of SIM card settings:

- 1.1.1 Connect the SC 370 controller and modem as shown in the Product Manual/Info Card in the box.
- 1.1.2 If a SIM card has already been installed and needs to be replaced, use the following procedure:
  - 1.1.2.1 Push down on the SIM card and release so the spring clamp can release it.
  - 1.1.2.2 Insert the new SIM and push in until it locks into place.



1.1.3 Ensure that the antenna is connected to the port marked "Cell" and not to the port marked "Aux".

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- 1.1.4 Power up the modem.
- 1.1.5 Configure the computer/laptop to a static IP address, for example 192.168.1.100.
- 1.1.5.1 The default modem IP address for the SC 370 controller is 192.168.1.10.
- 1.1.6 Connect the Ethernet cable (straight) from Modem to computer.
- 1.1.7 Open a command prompt on the laptop and perform a ping to ensure a connection to the modem.
- 1.1.8 Confirm ability to login to the modem by opening a web browser and typing in the address http://192.168.1.10
- 1.1.9 Modem login page appears as below. Enter "admin" for both username and password.

MULTITECH	
MultiConnect® rCell v3.1.4	
Username: Password: Login	

- 1.1.10 The home page of the modem appears as below. If a setup wizard appears, then exit out of it.
- 1.1.11 Note that the Cellular IP address field (highlighted in the picture below) displays the message "Not Acquired".

Home	Device Infor	mation		
Save and Restart	Router		LAN	
Setup	Model Number	MTR-LAT1	MAC Addre	ess 00:08:00:88:1E:72
Cellular	Serial Number	17919442	IP Address	192.168.1.10
-irewall	IMEI	358942050011510	Netmask	255.255.255.0
	Firmware	3.6.0	Gateway	192.168.1.10
SMS	Current Time	04/03/2017 02:05:53	DNS	Not Acquired
Funnels	Up Time	0:03:47	DHCP Stat	e Enabled
Administration	WAN Transport	None	Lease Ran	ge 192.168.1.100 - 192.168.1.254
Status & Logs	Cellular			
Commands	State	Stopped		
Help	Mode	PPP		
Copyright © 1995-2017	Signal	•• <b>•0</b>		
Multi-Tech Systems, Inc. All rights reserved.	Connected	0:00:00		
	IPv4 Address	Not Acquired		
	Roaming	No		
	Tower	0000167		
				Last updated: 03:43:3

1.1.12 Select the "Cellular" button on the left side of the menu by clicking on it as indicated.

	MultiConnect® MTR-LAT1 Firmware 3	rCell - Intelligent Wireless	Router	Logged In: admin Logo Search:
Home	Device Inform	ation		
Save and Restart	Router		LAN	
Setup	Model Number	MTR-LAT1	MAC Address	00:08:00:88:1E:72
Cellular	Serial Number	17919442	IP Address	192.168.1.10
Firewall	IMEI	358942050011510	Netmask	255.255.255.0
	Firmware	3.6.0	Gateway	192.168.1.10
SMS	Current Time	04/25/2017 19:51:10	DNS	Not Acquired
Tunnels	Up Time	1 day 22:40:45	DHCP State	Enabled
Administration	WAN Transport	Cellular	Lease Range	192.168.1.100 - 192.168.1.254
Status & Logs	Cellular			
Commands	State	PPP Link is up		
Help	Mode	PPP		
nep	Signal	•o000		
Copyright © 1995-2017	Connected	0:23:50		
Multi-Tech Systems, Inc. All rights reserved.	IPv4 Address			
	Roaming	No		
	Tower	206000977		
				Last updated: 04:33:04

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1.1.13 Select the "Cellular Configuration" option to reach the page displayed below.

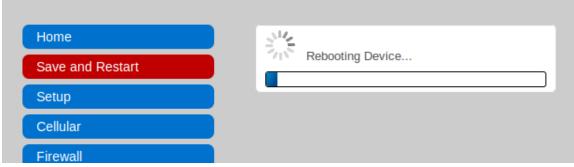
Save and Restart	General Configurat	ion			
Setup	Enabled		Mode	PPP	N.
Cellular	Connect Timeout	90	Dial-on-Demand	0	_
Cellular Configuration		0	Diaron-Demanu	0	
wake op on caa	Dialing Max Retries	0			
Telnet Radio Access	Modem Configurati	on			
Radio Status	Dial Number	*99***1#	Init String1	AT+CSQ	
Firewall	Connect String	CONNECT	Init String2		
SMS	Dial Prefix	ATDT	Init String3		
Tunnels	SIM Pin		Init String4		
Administration	APN		nin String+		
Status & Logs	APN				
Commands	Authentication				
Help	Authentication Type	NONE			
	Keep Alive				
Copyright © 1995-2017 Multi-Tech Systems, Inc. All rights reserved.	ICMP/TCP Check	k			
	Enabled				
	Interval	60	Keep Alive Type	ICMP	•
	Hostname		ICMP Count	4	
	Data Receive Mo	onitor			
	Enabled	<b>S</b>			
	Window	60	minutes		

- 1.1.14 Enter the APN provided by your cellular carrier in the field highlighted by the red arrow in the picture above and submit it by clicking on the "Submit" button.
  NOTE: For Verizon customers, APN's are managed by Verizon dynamically Over the Air (OTA). If you have a Verizon modem and do not see an APN field, you can skip this step.
- 1.1.15 Update the settings as shown below and click on the "Save and Restart" button.

Home	Cellular Configurat	ion 🙎		R	eset To Defau
Save and Restart	General Configurati	on			
Setup	Enabled	 M	Mode	PPP V	
Cellular	Connect Timeout	90	Dial-on-Demand		
Cellular Configuration Wake Up On Call	Dialing Max Retries	0			
Telnet Radio Access Radio Status	Modem Configuration	on			
Firewall	Dial Number	*99***1#	Init String1	AT+CSQ	
SMS	Connect String	CONNECT	Init String2		
	Dial Prefix	ATDT	Init String3		
Tunnels	SIM Pin		Init String4		

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1.1.16 When modem rebooting is complete, login again.



1.1.17 Verify that the Cellular IP address has been acquired by checking the "IPv4 Address" field (highlighted in the picture below). If the IP address does not appear or if the cellular state does not change to "PPP linkup", then go back and verify that the modem has accepted the APN.

	MultiConnect( MTR-LAT1 Firmware	8 rCell - Intelligent Wirel 3.6.0	ess Router	Logged In: admin Logo Search:
•				
Home	Device Infor	mation		
Save and Restart	Router		LAN	
Setup	Model Number	MTR-LAT1	MAC Address	00:08:00:88:1E:72
Cellular	Serial Number	17919442	IP Address	192.168.1.10
Firewall	IMEI	358942050011510	Netmask	255.255.255.0
	Firmware	3.6.0	Gateway	192.168.1.10
SMS	Current Time	04/03/2017 01:44:05	DNS	Not Acquired
Tunnels	Up Time	0:02:39	DHCP State	Enabled
Administration	WAN Transport	Cellular	Lease Range	192.168.1.100 - 192.168.1.254
Status & Logs	Cellular			
Commands	State	PPP Link is up		
Help	Mode	PPP		
	Signal	-		
Copyright © 1995-2017		o <b>00</b>		
Multi-Tech Systems, Inc. All rights reserved.	Connected	0:01:12		
	IPv4 Address	10.64.64.12		
	Roaming	No		
	Tower	0000167		
				Last updated: 03:21:42

- 1.1.18 To set up port-forwarding for your network click on the "Firewall" and the "Settings" options as highlighted below.
  - 1.1.18.1 Add or edit the rules for the specific need.
  - 1.1.18.2 Default port-forwarding settings for SNMP monitoring ports are 161, 162, FTP, SSH and webpage access port 80 to 8080.

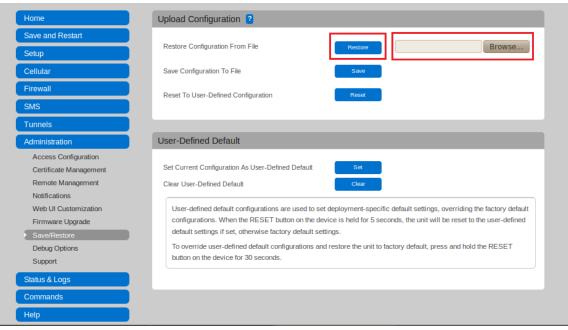
ome	Firew	/all 🔽					Advanced Setting
ve and Restart	Port	Forwarding					Add Rule
φ		Name	WAN Ports	Des	stination IP	Protocol	
lular		Port23	23	192	168.1.10:23	TCP	/ ×
wall		Port20	20	192	168.1.11:20	UDP	/ ×
ettings tatic Routes			54690		168.1.11.21	TCP/UDP	/ ×
5		Port22	22		.168.1.11:22	TCP	/ ×
nels		Port161	161	192	168.1.11:161	UDP	/ <b>x</b>
inistration		Port162	162	192	.168.1.11:162	TCP/UDP	/ <b>x</b>
ıs & Logs		Port8080	8080	192	.168.1.11:80	TCP	2 ×
mands		Port54631	54631	192	168.1.11:54631	TCP	<b>/ x</b>
		Port54635	54635	192	.168.1.11:54635	TCP	2 <b>x</b>
	Out	bound Traffic	1				Add Rule
Copyright © 1995-2017 Multi-Tech Systems, Inc. All rights reserved.		Name	Action	Source	Destination	Protoco	1
				•			
	MAG	C Filtering					Add Rule
		Name	Action		MAC	Protocol	
			-		-	-	

- 1.1.19 If the Vanguard LAN IP address is changed, then the port-forwarding table shown above must be modified to update the LAN IP address.
- 1.1.20 To configure multiple modems, save the modem configuration to a file, then upload the configuration file to the other modems in a single step as shown below.
- 1.1.21 Click on the highlighted "Save" button to save the file.

Home	Upload Configuration 2
Save and Restart	
Setup	Restore Configuration From File Restore Browse
Cellular	Save Configuration To File Save
Firewall	Reset To User-Defined Configuration
SMS	
Tunnels	
Administration	User-Defined Default
Access Configuration Certificate Management Remote Management Notifications Web UI Customization Firmware Upgrade Save/Restore Debug Options Support	Set Current Configuration As User-Defined Default    Set      Clear User-Defined Default    Clear      User-defined default configurations are used to set deployment-specific default settings, overriding the factory default configurations. When the RESET button on the device is held for 5 seconds, the unit will be reset to the user-defined default settings.      To override user-defined default configurations and restore the unit to factory default, press and hold the RESET button on the device for 30 seconds.
Status & Logs	
Commands	
Help	

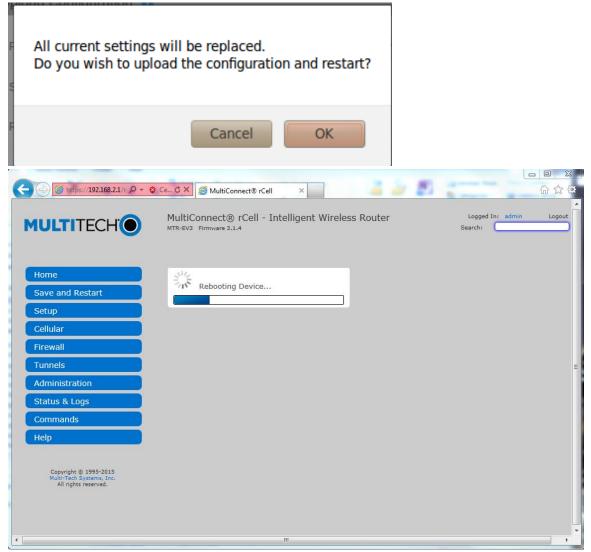
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1.1.22 For the next modem, select the "Browse" button (highlighted in the picture above) and upload the configuration file that was previously saved by clicking on the "Restore" button.



1.1.22.1 If SIM cards are from multiple carriers, configurations will have to be maintained independently for each carrier.

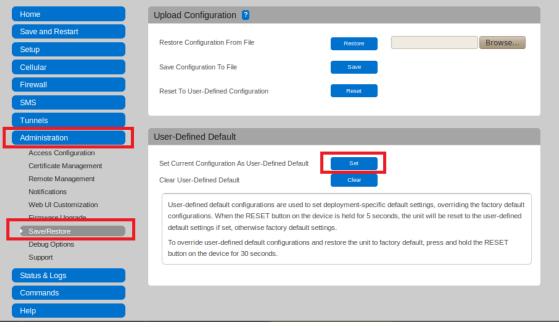
1.1.23 Click on the popup and allow the modem to reboot.



1.1.24 After the modem reboots itself (may take a few minutes), type https://192.168.1.10/login.html into the browser address bar and enter.

1.1.24.1 If the modem does not return to the login page, try refreshing the webpage.

1.1.25 When logged in, click on the "Administration" tab on the left side of the screen, then on the "Save/Restore link" and finally on the "Set" button under User-Defined Default section.



#### Click on OK button in the popup window.

ſ	Message fro	om webpage
e	?	The currently saved system configuration will become the default configuration, i.e. user-defined defaults will replace factory defaults. Continue?
		OK Cancel

1.1.26 Click on the "Save and Restart" button to save user defaults.

	User-Defined Default Saved as Default Configuration
Home	Upload Configuration 2
Save and Restart	
Setup	Restore Configuration From File Restore Browse
Cellular	Save Configuration To File Save
Firewall	Reset To User-Defined Configuration Reset
SMS	
Tunnels	
Administration	User-Defined Default
Access Configuration Certificate Management Remote Management Notifications	Set Current Configuration As User-Defined Default
Web UI Customization Firmware Upgrade Save/Restore Debug Options Support	User-defined default configurations are used to set deployment-specific default settings, overriding the factory default configurations. When the RESET button on the device is held for 5 seconds, the unit will be reset to the user-defined default settings if set, otherwise factory default settings. To override user-defined default configurations and restore the unit to factory default, press and hold the RESET button on the device for 30 seconds.

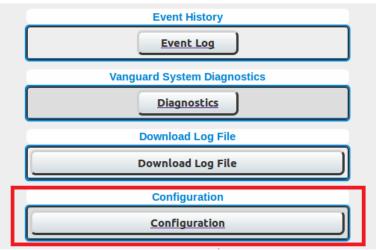
1.1.27 The modem is ready for monitoring. Reconnect the Ethernet cable from the modem to the SC 370 controller.

#### 1.2 Customized SIM card option using the Vanguard webpage

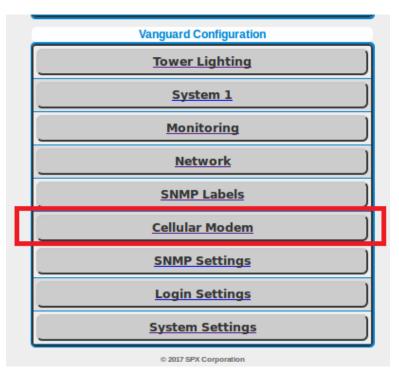
- 1.2.1 Connect the SC 370 controller to the computer using straight Ethernet/CAT5 cable. Make sure to configure computer to static IP address 192.168.1.100.
- 1.2.1.1 Default IP address for Vanguard SC 370 is 192.168.1.11.
- 1.2.2 Confirm the connectivity to SC 370 by opening the browser and typing the address http://192.168.1.11
- 1.2.3 The Vanguard System webpage appears as below irrespective of the modem type.

FLASH TI	ECHNOLOGY 7
	Product Manual
Sit	e Name: Not Set
S	ite ID: Not Set
For	Support: 1-800-821-5825
Tow	er Lighting Status
Description	Value
Controller	FTS 370d
Tower Lighting Type	Dual
Total Beacons	1
Total Marker Tiers	1
Total Alarms	<b>O</b> 0

1.2.4 Click on the "Configuration" button and then "Cellular Modem" to configure for customized SIM card with APN as shown below.



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1.2.5 Click on the "Configuration" menu and select "Customized" from the drop down options.

-	Meriu	
Back		Home
AT&T Direct: SIM card is blue/white fro		k.
Vanguard Cell	ular Modem Con	figuration
Description	Current Value	Set Value
Changing this setting could pre	event further commu	inications to the system.
SIM Card Type	AT&T ROW2	Select 🔻
Commit Settings	Cancel	AT&T Direct AT&T ROW
6 2	017 SPX Corporation	AT&T ROW2 Customized

Monu

1.2.6 Follow the messages on the webpage to configure the customized APN provided by the SIM card network carrier.

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Site iD: test unit
Please enter custom APN value.
Descript Changing this setting could prevent further communications to the system.
SIM Card Type AT AT AT ROWZ Customized V Commit Settings Cancel Home
Site Name, Raj once Site ID: test unit
Changing this setting could prevent further communications to the system. Sim Card Type AT&T ROW2 Constrained over com Commit Settings Cancel Home E 2017 DFX Corporation
Vanguard Cellular Modem Configuration
Description Current Set Value
Changing this setting could prevent further communications to the system.
SIM Card Type Customized Customapn.carrier.com
Commit Set Cancel Home
© 2017 SPX Corporation

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1.2.7 In this instance the default port-forwarding table is fixed and is not editable. User modifications will periodically be overwritten by the firmware.

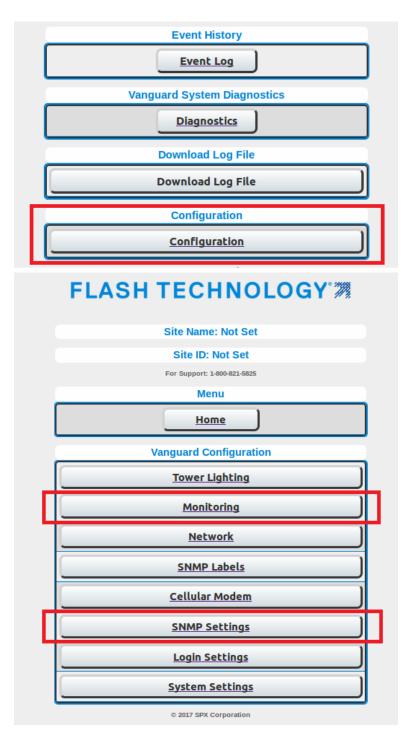
Home	Firewall ?				Advanced Settin
Save and Restart	Port Forwarding				Add Rule
Setup	Name	WAN Ports	Destination IP	Protocol	
Cellular	Port23	23	192.168.1.10:23	TCP	/ ×
Firewall	Port20	20	192.168.1.11:20	UDP	∠ ×
Static Routes	Sec. 2010	54690	192.168.1.11:21	TCP/UDP	/ ×
SMS	Port22	22	192.168.1.11:22	TCP	∠ ×
Tunnels	Section Port161	161	192.168.1.11:161	UDP	<u>/ ×</u>
Administration	Port162	162	192.168.1.11:162	TCP/UDP	/ ×
Status & Logs	Port8080	8080	192.168.1.11:80	TCP	<u>/ ×</u>
Commands	Port54631	54631	192.168.1.11:54631	TCP	/ ×
Help	Port54635	54635	192.168.1.11:54635	TCP	/ ×
Copyright © 1995-2017	Outbound Traffic				Add Rule
Multi-Tech Systems, Inc. All rights reserved.	Name	Action So	ource Destination	Protoco	bl
	-		-	-	
	MAC Filtering				Add Rule
	Name	Action	MAC	Protocol	
	-	-	-	-	

#### 2. Configuring Vanguard SC 370 for SNMP Monitoring:

- 2.1 Connect the Vanguard controller to a computer using a straight Ethernet/CAT5 cable.
- 2.1.1 Default IP address for SC 370 is 192.168.1.11
- 2.2 Confirm the connectivity to the controller by opening the browser and typing the address http://192.168.1.11
- 2.3 To address the webpage over WAN, use address <a href="http://WANIPADDRESS:8080">http://WANIPADDRESS:8080</a>
- 2.4 The Vanguard System webpage appears as below, irrespective of modem type.

FLASH TEC	CHNOLOGY"
Prod	duct Manual
Site Na	ame: Not Set
Site	D: Not Set
For Suppo	ort: 1-800-821-5825
Tower Li	ighting Status
Description	Value
Controller	FTS 370d
Tower Lighting Type	Dual
Total Beacons	1
Total Marker Tiers	1
Total Alarms	0

2.5 Click on the "Configuration" button on the webpage and then "Monitoring" to configure for Ethernet SNMP monitoring as below.



2.6 By default, "Primary Monitoring Configuration" will be disabled. Set the Monitoring method to "SNMP Settings" and click on "Commit Settings".

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	Menu	
Back		Home
Primary M	Nonitoring Confi	gu Select
Description	Current Value	Disable Cellular Eagle
Monitoring Method	Disabled	Ethernet SNMP
Primary IP Addr		Ethernet Eagle
Primary Port		
Alternate IP Addr		
Alternate Port		
Listen Port		
Automatic Update Interval	11 Hour(s)	Select v
Alternate	Monitoring Conf	iguration
Description	Current Value	Set Value
Monitoring Method	RS485 Modbus	Select v
Baud Rate	9600	
Station Address		2
Automatic Update Interval	Disabled	_
Commit Settings	Can	icel Home

2.7 Configure Primary IP address, Alternate IP address and port numbers as per the SNMP NMS server settings. By default, the port number for reporting traps is 162, and 161 for GET/SET commands.

	Site ID: Not S	et
	For Support: 1-800-821	
		-0020
	Menu	
Back		Home
Primar	y Monitoring Co	onfiguration
Description	Current Value	Set Value
Monitoring Method	Ethernet SNMP	Select 🗘
Primary IP Addr		192.168.1.123
Primary Port		162
Alternate IP Addr		192.168.1.124
Alternate Port		162
Listen Port		161
Automatic Update Interval	11 Hour(s)	Select 🜲
Alterna	te Monitoring C	onfiguration
Description	Current Value	Set Value
Monitoring Method	RS485 Modbus	Select 🗘
Baud Rate	9600	
Station Address	2	
Automatic Update Interval	Disabled	
	1	. ) ( )
Commit Setti		Cancel Home

- 2.8 For initial testing, set the Primary IP address to 192.168.1.100 and click on submit.
- 2.9 The Vanguard SC 370 controller is now set for SNMP monitoring with community string "public" for GETs/SETs.
- 2.10 To configure SNMP V2C/V3 settings, change the configuration in System Settings and SNMP settings. Refer to the product manual available on the Vanguard homepage, or download from the Flash Technology website

https://www.flashtechnology.com/knowledge-base/

SNMP Settings: F7904503-Technical-Bulletin-SC370-SNMP-Trap-Interface-Rev1.pdf Product Manual: 7913702-FTS-370d\_w\_r-Catenary

2.11 SNMP MIBs are available at the web link below. Always refer to the MIBs associated with the latest firmware version

https://www.flashtechnology.com/knowledgebase/vanguard-software/

2.12 For a Linux machine, run the "tcpdump" command with port settings 162. You will see SNMP traps by flipping the manual mode switch on the Vanguard controller

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Command example: tcpdump -i eth0 (Ethernet interface) port 162

2.13 For a Windows<sup>®</sup> machine, try any available MIB browser to view the traps or to perform WALK/GET. You can also use any network protocol analyzer or Windows packet capture utility filtering on port 162. The firewall settings may need to be updated to allow UDP traffic.

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