User's Guide

LX Platform Devices

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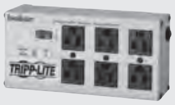
Documentation Notice: *This User's Guide is a supplement to the printed manual that came with your Tripp Lite LX Platform device. Refer to the printed manual for instructions on hardware installation and basic configuration, including IP address assignment. If you have misplaced your printed manual, you can download an electronic version at* www.tripplite.com/support *and entering the model number of your product in the search box.*



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1. Introduction

Tripp Lite LX Platform devices contain an Ethernet network interface that enables remote monitoring, control and condition reporting. These functions can be performed using Tripp Lite Management Software, SNMP Network Management Software, a Web browser or Telnet/SSH. This User's Guide focuses on configuration and management offered through the web interface and Telnet/SSH. The web interface for LX Platform devices is known as the PowerAlert® Device Manager, or PADM, for short.

1.1 System Requirements

- Tripp Lite LX Platform Device, such as WEBCARDLX, PDU3E-series PDUs, PDU3XE-series PDUs, LX suffix PDUs and LX-compatible Cooling products
- Ethernet network that supports the TCP/IP protocol
- One of the following options for remote monitoring and control:
    - Tripp Lite Management Software
    - SNMP-based Network Management Software
    - Web browser (Chrome, Firefox, Internet Explorer or Safari)
    - VT-100 Telnet and/or SSH Client
- For “Terminal Mode” configuration only:
    - Terminal emulation software program (such as TeraTerm Pro by Ayera Technologies)

Warning: Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is not recommended.

2. Initial Configuration

This section provides instructions for configuring your LX Platform device to be accessible on the network. During the process, the device's MAC address may be needed. The 12-digit address (in the format XX XX XX XX XX XX) is printed on a label found on the LX Platform device.

- For devices using WEBCARDLX, the label is attached to the underside of the card
- For devices with an embedded LX interface, the label is typically affixed to the device enclosure

For instructions on loading a firmware or device driver update, refer to the applicable release notes. Related documentation can be downloaded from the Tripp Lite website: www.tripplite.com. Enter the model name of the LX Platform device in the search bar; on opening the device's product page, refer to the "Resources & Downloads" section.

Ensure that your LX Platform device is turned on.

2.1 IP Address Assignment

An IP Address can be assigned to the LX Platform device either dynamically (by your network's DHCP server) or manually (by entering a static IP address). Refer to the appropriate section below. If you are uncertain which method to use, contact your network administrator for assistance.

2.1.1 Dynamic IP Address Assignment

Using a standard Ethernet patch cable, connect the RJ45 Ethernet port on the LX Platform device to the network environment in which the DHCP server is running.

Note: *This port does not support PoE (Power over Ethernet) applications.*

The device will attempt to obtain an IP address via DHCP. This may take several minutes, depending on your network environment. To learn which IP address has been assigned to the device, contact your network administrator and provide the device's MAC address.

You can also determine the IP address using a PC running terminal emulation program (such as Tera Term Pro). This will require the CDC driver to be installed on the PC. If a CDC driver is not currently installed, you can download it from www.tripplite.com/support. In the Support page search field, enter **WEBCARDLX** then select "USB CDC Serial Driver and Instructions" package in the Software, Firmware & Drivers section. Follow the instructions provided in the package to install the driver.

A. Once the driver is installed and the COM port has been assigned, start a session on the terminal emulation program. Configure it to use the assigned COM port and the following serial port settings: 115.2 Kbps, 8, NONE, 1.

B. Connect a USB or serial cable between the PC and the appropriate port on the LX Platform device; this will be either the Micro-USB port labeled "CONSOLE" or the RJ-45 port labelled "CONFIG". See Figure 2-1.

C. When the login prompt appears, enter **localadmin** for both the login and password, then navigate to "3- Network Configuration", followed by "1- IP Configuration". The assigned IP address will be displayed; make note of this IP address, as it will be required for accessing the device's web interface.

Notes:

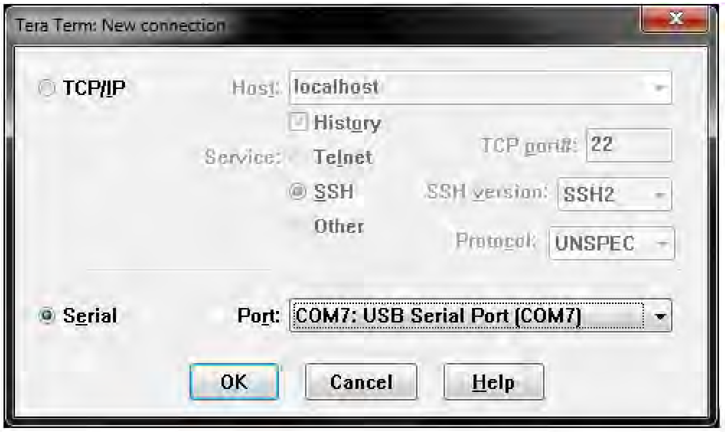
- *User names and passwords are case sensitive.*
- *You may wish to request a long-term lease period for the IP address, depending on your application.*
- *PowerAlert® Device Manager and the LX Platform devices support both IPv4 and IPv6. The device is set up by default to receive a DHCP address for IPv4, IPv6 or both. Receiving both addresses allows connection to the device via either the IPv4 or IPv6 address.*

2.1.2 Static IP Address Assignment

The LX Platform device can support a single static IPv4 address (requires setting the IP address, subnet mask and gateway) and/or a single static IPv6 address. In addition, the LX Platform device can support a single static IPv4 or an IPv6 DNS address that is required to be entered.

To assign a static IP address using a PC running terminal emulation program (such as Tera Term Pro), ensure that the CDC driver is installed on the PC; if not currently installed, you can download it from www.tripplite.com/support. In the Support page's search field, enter **WEBCARDLX** then select "USB CDC Serial Driver and Instructions" package in the Software, Firmware & Drivers section. Follow the instructions provided in the package to install the driver.

A. Once the driver is installed and the COM port has been assigned, start a session on the terminal emulation program. Configure it to use the COM port that corresponds to the USB port.



Tera Term: New connection

○ TCP/IP Host: localhost

☑ History

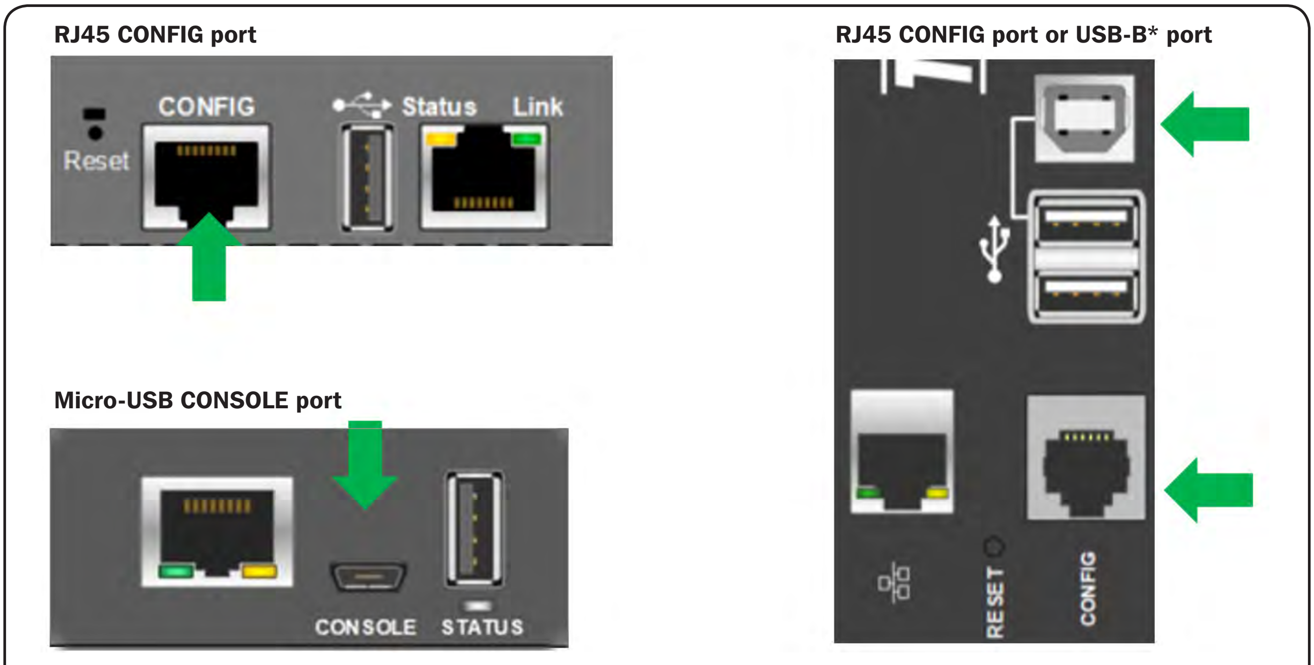
Service: ○ Telnet TCP port#: 22

● SSH SSH version: SSH2

○ Other Protocol: UNSPEC

● Serial Port: COM7: USB Serial Port (COM7)

B. Using the serial or USB cable that shipped with your WEBCARDLX or LX Platform device, connect the PC to the appropriate port on the LX Device. See Figure 2-1.



*If using the USB-B port for initial configuration or console access, the USB A port directly below it cannot be used. If concurrent use of USB-A and USB-B ports is required, use lower USB-A port.

Figure 2-1: Configuration ports on LX Platform Devices

C. When the login prompt appears, enter **localadmin** for both the login and password. From the main menu, navigate to the Static IP settings menu using the following sequence:

3: Network Configuration

1: IP Configuration

3 or 4: IPv4 or IPv6 settings

1: Method

2: Static

D. Assign the Address, Subnet Mask, Gateway, Primary DNS, etc.

E. Save your settings by selecting "A" (apply).

F. For the settings to take effect, select “Y” to Restart PowerAlert Now.

G. Close the terminal session.

Note: *User names and passwords are case sensitive.*

2.2 Saving Configuration Changes

Most configuration changes made in PowerAlert Device Manager will take effect immediately. PADM and Telnet/SSH will typically advise you if your configuration changes require a restart to take effect.

Regardless, to ensure that configuration changes persist, it is recommended that you restart PowerAlert Device Manager. Most configuration changes will auto-save after about 30 minutes of idle time; changes to the network settings will not.

Restarting PADM will not disrupt power to equipment powered through your UPS or PDU and has no effect on the general operation of your Tripp Lite device.

2.3 Default UPS System Shutdown Settings

When used with a Tripp Lite UPS during a power failure, WEBCARDLX is pre-configured to shut down the UPS system two minutes after receiving a low battery signal. This allows the UPS system to provide the maximum available runtime to connected equipment. To change the default setting, select Device Shutdown from the Action Type dropdown menu (refer to **3.4.4 Configurations/Actions** or **4.2.2.1 Action Profiles for Telnet/SSH**).

2.4 SNMP Configuration

LX Platform devices function as SNMP-managed devices on your network, using the SNMP agent and Management Information Base (MIB). The SNMP agent resides in the LX Platform device firmware and responds to standard SNMP commands (Get, Get Next and Set). It can also generate SNMP traps (messages). The MIB determines which parameters can be monitored and controlled. Three MIB files—TRIPPLITE.MIB, TRIPPLITE-PRODUCTS.MIB and RFC-1628-UPS.MIB—must be loaded on each Network Management Station that will monitor the managed device. (The files can be downloaded from www.tripplite.com/support. Consult your Network Management Station software documentation for instructions on how to import MIB files.)

Note: *SNMP Users are configured in the Configuration > Security > User section of PADM.*

SNMPv3 Definitions

Username — The identifier of the user profile. SNMPv3 maps Gets, Sets and Traps to a user profile by matching the username of the profile to the username in the data packet being transmitted. A username can have up to 32 ASCII characters (alphanumeric and the following special characters: !@#$%^*(){[}]~_-).

Authentication Passphrase — A phrase of 8 to 32 ASCII characters (alphanumeric and the following special characters: !@#$%^*(){[}]~_-) that verifies that the Network Management System (NMS) communicating with this device through SNMPv3 is the NMS it claims to be, that the message has not been changed during transmission, and that the message was communicated in a timely manner, indicating that it was not delayed and that it was not copied and sent again later at an inappropriate time.

Privacy Passphrase — A phrase of 8 to 32 ASCII characters (alphanumeric and the following special characters: !@#$%^*(){[}]~_-) that ensures the privacy of the data (by means of encryption) that a Network Management System (NMS) is sending to this device or receiving from this device through SNMPv3.

Authentication Protocol — The Tripp Lite implementation of SNMPv3 supports only SHA (as of 15.04.0) authentication.

Privacy Protocol — The Tripp Lite implementation of SNMPv3 supports only AES (as of 15.04.0) as the protocol for encrypting and decrypting data.

Public Value — A field provided to enter a username/password hint for SNMPv3 Admin users. This SNMPv3 value is part of the SNMPv3 USM User Table.

3. The Web Interface

3.1 Accessing the Web Interface

1. Open your browser.
2. Enter the IP address assigned to the LX Platform device in the address bar.
3. The login page will appear with prompts for Username and Password (Figure 3-1). The default administrator username is **localadmin** and the default password is **localadmin**. The Username and Password fields are case sensitive. After entering the login credentials, click the [Login] button.

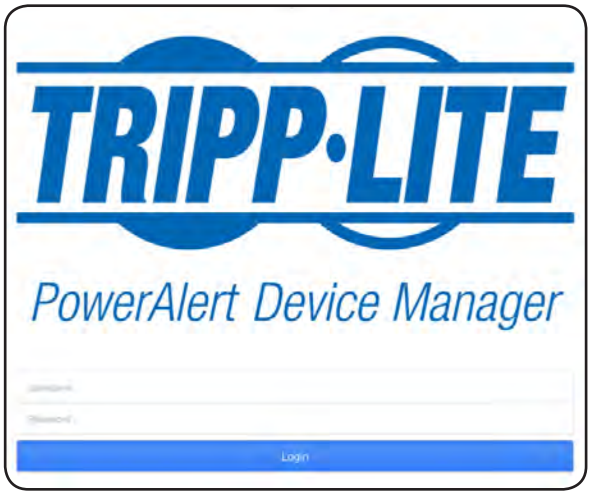
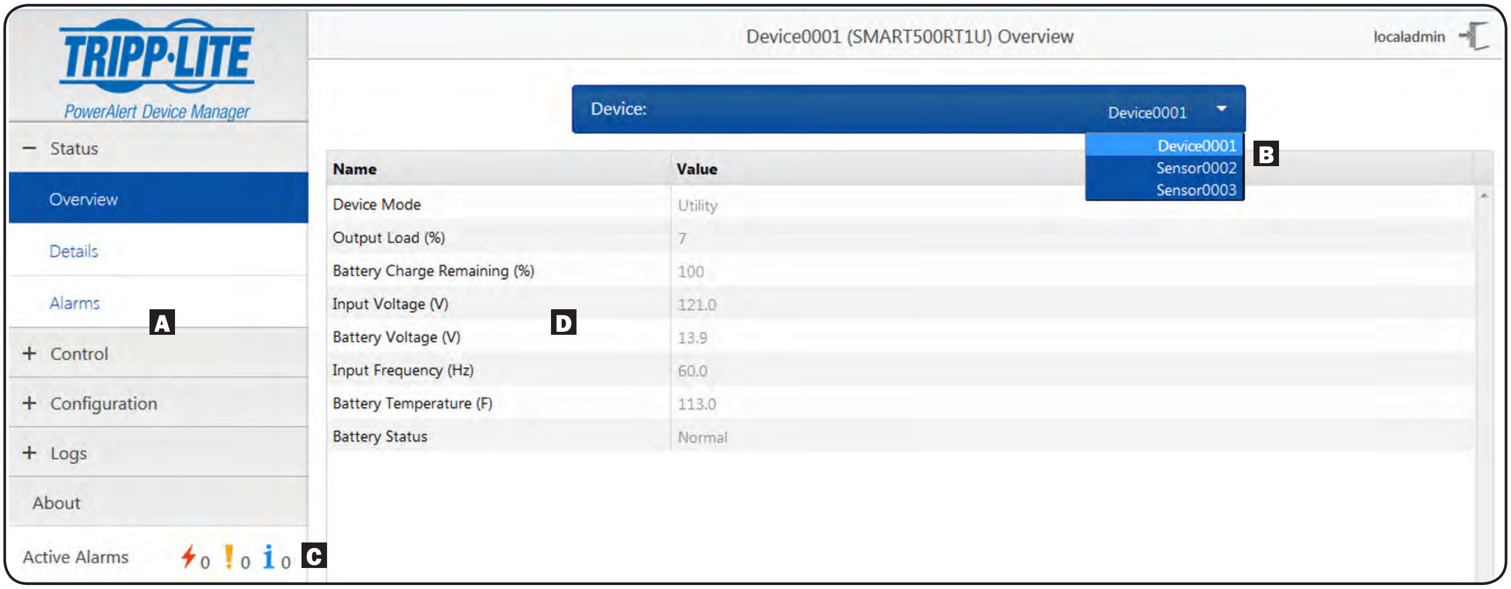


Figure 3-1: Login Page

4. After logging in, the Overview page on the Status Menu will display. (Figure 3-2a). Additional navigation elements are shown in Figure 3-2b.



Device0001 (SMART500RT1U) Overview

Name	Value
Device Mode	Utility
Output Load (%)	7
Battery Charge Remaining (%)	100
Input Voltage (V)	121.0
Battery Voltage (V)	13.9
Input Frequency (Hz)	60.0
Battery Temperature (F)	113.0
Battery Status	Normal

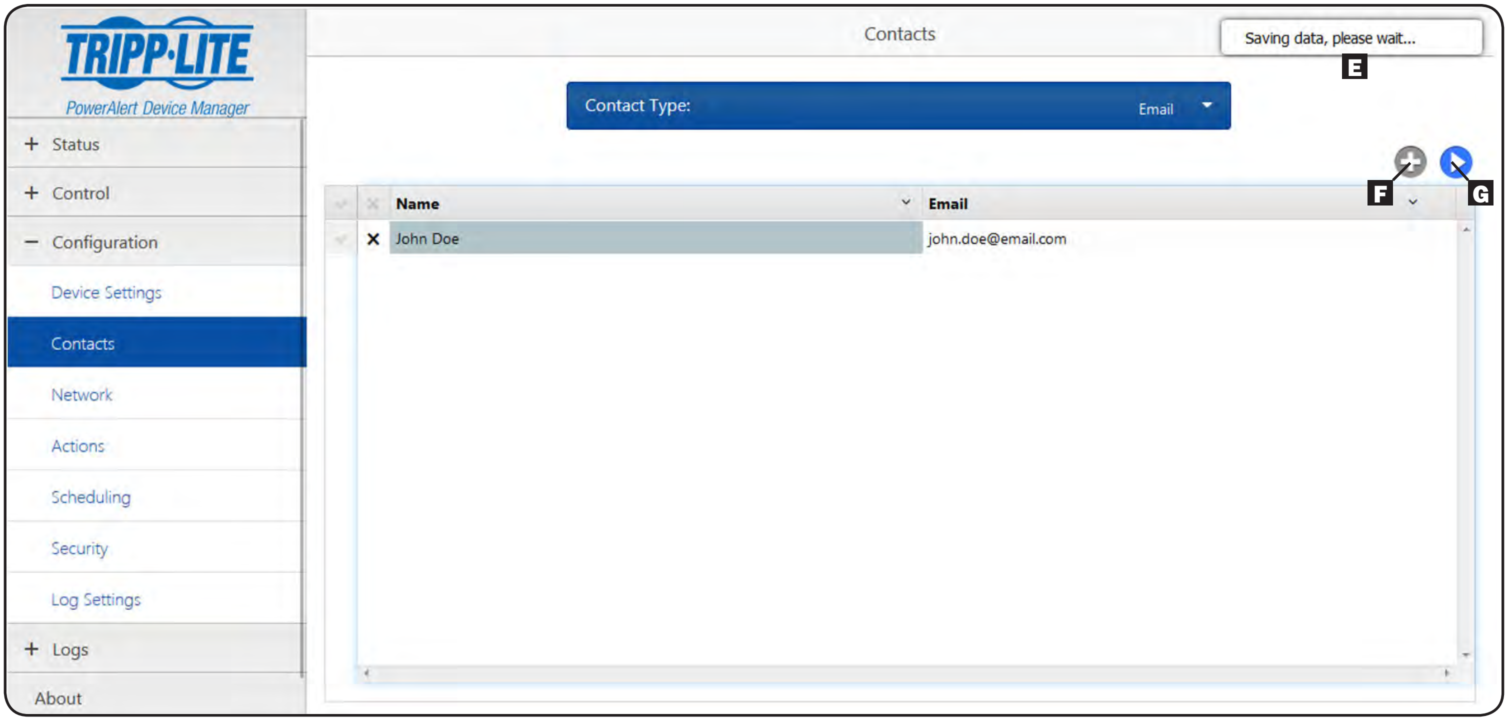
Figure 3-2a: Power Alert Device Manager Navigation

A **Menus:** Click the + next to a menu item to expand the menu group and expose the submenus.

B **Dropdown Menu:** Click to select a submenu. The first submenu item is typically the main device, followed by any peripherals attached to it, (e.g. environmental sensors).

C **Active Alarm Count:** Click active alarms for a shortcut to bring up the alarm page.

D **Page Data:** Menu-driven information displays here.



Saving data, please wait...

Contact Type: Email

Name	Email
John Doe	john.doe@email.com

Figure 3-2b: Power Alert Device Manager Navigation

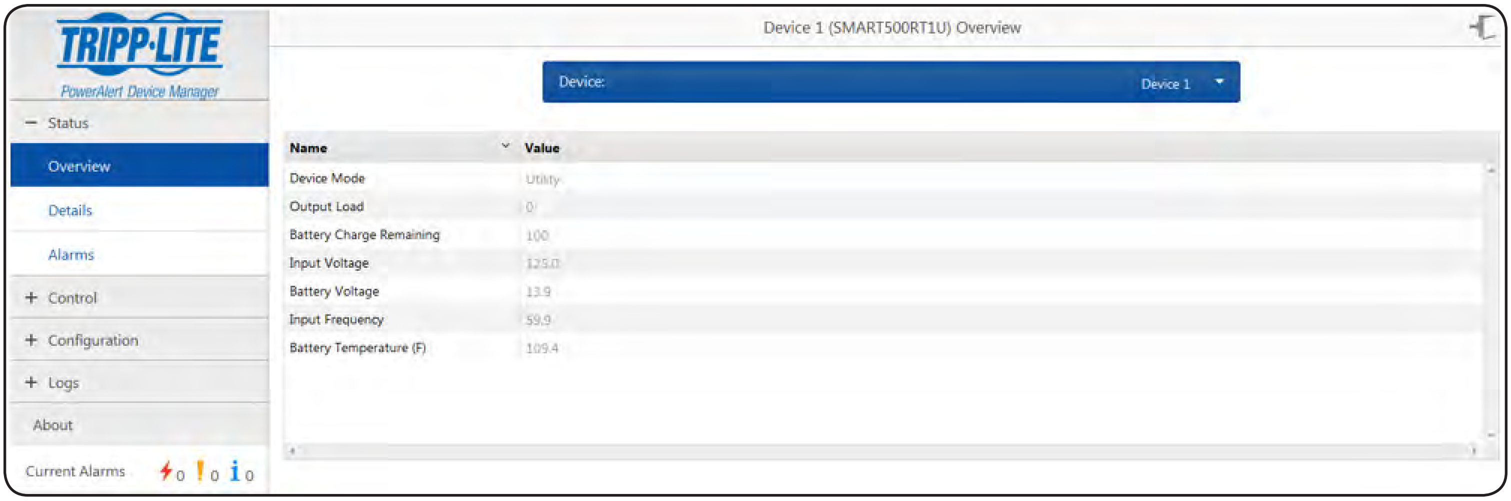
E **Message Display:** User feedback messages appear in this area.

F **Plus button:** Click to add a new item.

G **Save button:** Click to save the settings.

3.2 Status

The Status menu group contains three submenus: Overview, Details and Alarms.



Device: Device 1

Name	Value
Device Mode	Utility
Output Load	0
Battery Charge Remaining	100
Input Voltage	125.0
Battery Voltage	13.9
Input Frequency	59.9
Battery Temperature (F)	109.4

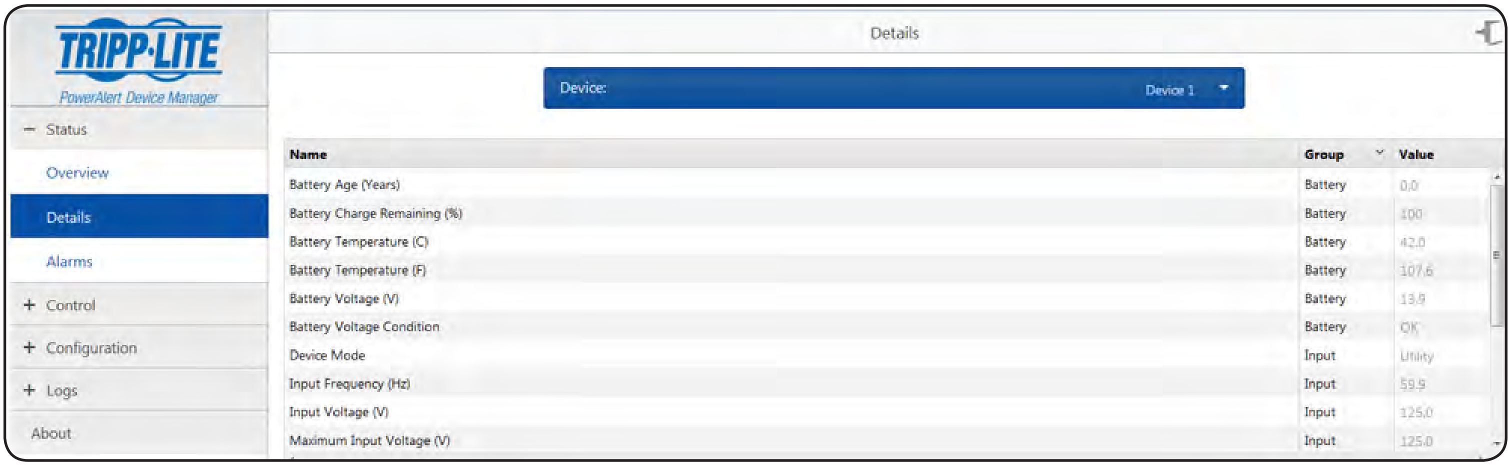
Figure 3-3: Status Menu and Overview Page

3.2.1 Status/Overview

The Overview page displays a subset of data for the selected device type that users reference most often.

3.2.2 Status/Details

The Details page (Figure 3-4) displays the full list of device status information for the selected device, including the information displayed in the Overview page. To navigate between the device and any connected EnviroSense2 sensor modules, select the desired device from the device dropdown menu.



Device: Device 1

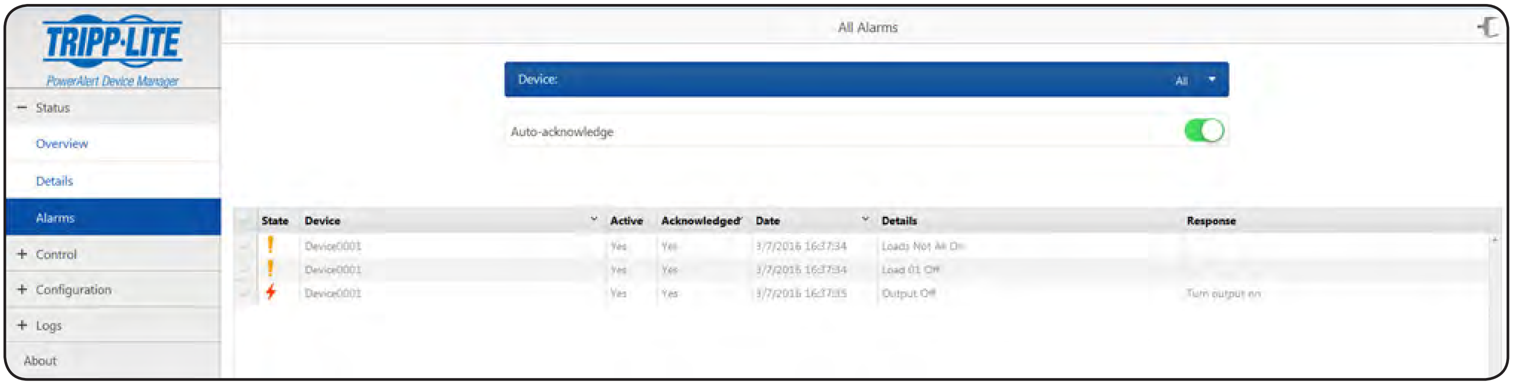
Name	Group	Value
Battery Age (Years)	Battery	0.0
Battery Charge Remaining (%)	Battery	100
Battery Temperature (C)	Battery	42.0
Battery Temperature (F)	Battery	107.6
Battery Voltage (V)	Battery	13.9
Battery Voltage Condition	Battery	OK
Device Mode	Input	Utility
Input Frequency (Hz)	Input	59.9
Input Voltage (V)	Input	125.0
Maximum Input Voltage (V)	Input	125.0

Figure 3-4: Details Page

3.2.3 Status/Alarms

The Alarms page (Figure 3-5) will display the alarms for the selected device. Along with the time stamp and alarm details, alarms indicate their current state (active or inactive) and the acknowledge status (yes or no). An alarm that is inactive, meaning the alarm condition has cleared, and acknowledged will be removed from the list. An alarm can be acknowledged in one of two ways: the system can be set to auto-acknowledge alarms as they are received, or the user can disable auto-acknowledge and manually acknowledge alarms by selecting the checkbox (or checkboxes) of the alarms to be acknowledged and clicking the Acknowledge button. By default, Auto-acknowledge is enabled (as shown in Figure 3-5) and, as a result, the Acknowledge button is not displayed. Turn off the Auto-acknowledge switch to see the Acknowledge button (👁).

Note: *This setting should be enabled if using with Tripp Lite management software or PowerAlert Network Shutdown Agent (PANSA).*



Device: All

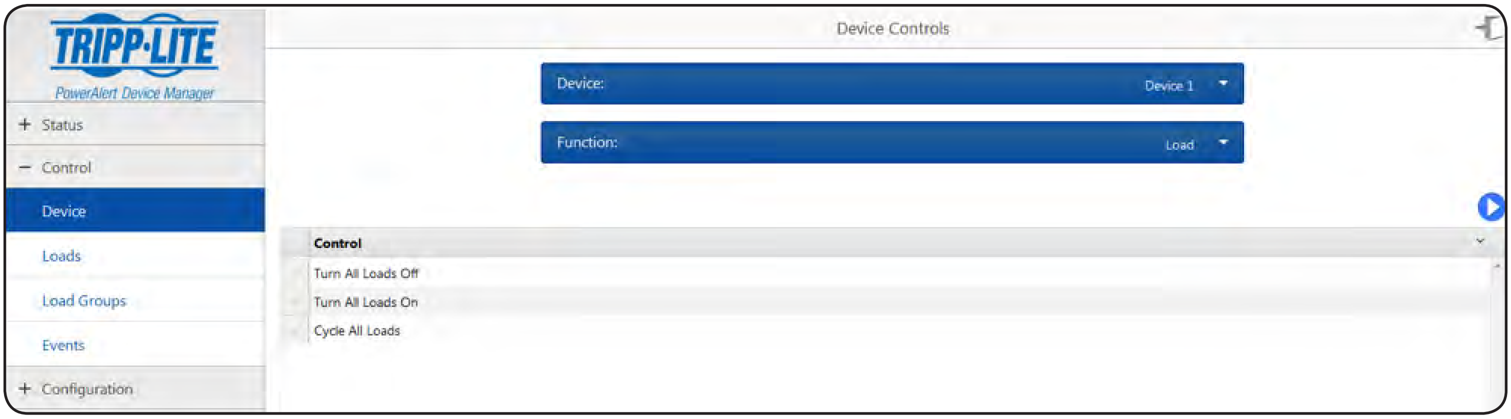
Auto-acknowledge

State	Device	Active	Acknowledged	Date	Details	Response
!	Device0001	Yes	Yes	3/7/2016 16:37:34	Loads Not All On	
!	Device0001	Yes	Yes	3/7/2016 16:37:34	Load 01 Off	
⚡	Device0001	Yes	Yes	3/7/2016 16:37:35	Output Off	Turn output on

Figure 3-5: Alarms Page

3.3 Control

The Control menu group contains four submenus: Device, Loads, Load Groups and Events. The available controls will vary by device.



Device: Device 1

Function: Load

Control
Turn All Loads Off
Turn All Loads On
Cycle All Loads

Figure 3-6: Control Menu Group

3.3.1 Control/Device

The Device page includes system maintenance controls that can be performed on the LX Platform device as well as access to the controls supported on the individual devices to which the LX Platform device is communicating. The system maintenance controls include “Restart SNMP Card”, “Restart with Factory Defaults (Preserve Network Settings)”, “Restart with Factory Defaults (Do NOT Preserve Network Settings)” and “Firmware Update”. The three restart methods do not require any user parameters. Simply check the desired Control, and click the [Save] button to execute. The system will prompt you that your session will close and allow you to **Continue** or **Cancel**.

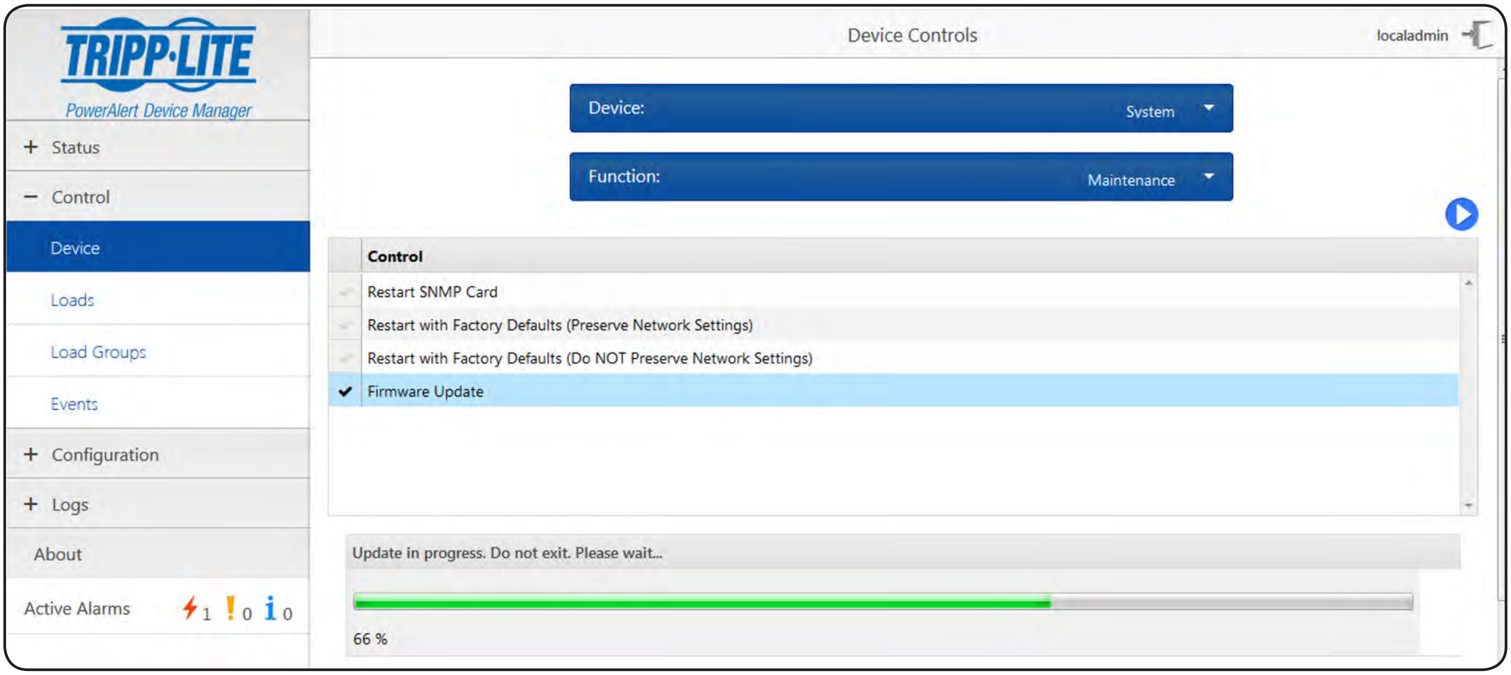
Restarts can also be performed by pressing the Reset button on the Tripp Lite device. A short press (~ 1 second) will restart the webcard. A long press (press and hold for 15-20 seconds) will result in a restart with factory defaults, preserving the network settings.

Note: *Executing any of these resets will not interrupt device operation. For example, an LX Platform PDU will continue distributing power through its outlets during a restart.*

In some cases, controls may have parameters may appear lower on the web page; be sure to scroll down to access these parameters.

The “Firmware Update” control requires the selection of a firmware file. Select Choose File to browse to the location of the required .tar file (see next paragraph). Select the file to upload and click the [Save] button to execute (Figure 3-7). The Firmware Update process will prompt you that it will take several minutes. You will be logged out while the update is performed. Once you click OK, the update will start by uploading the specified file to the LX Platform device, where it will be decompressed and installed. During the update, the Status LED on the device interface will alternate between green and orange. After the update finishes installing, the device interface will reboot. A solid green Status LED indicates the update is complete. When the device interface is back online following the reboot, the PowerAlert Device Manager version can be checked via the Device/About page (refer to section **3.6 About** for details).

The file or files required for firmware update are located within "LX" firmware packages which are downloadable from the Tripp Lite website. These packages contain detailed instructions on performing the update, whether individually through PADM or using the PowerAlert Mass Updater Utility (also included in the LX firmware package). Another option for updating firmware is uploading the files via SFTP (enabled by default) and using the swupdate command in CLI.



Device: System

Function: Maintenance

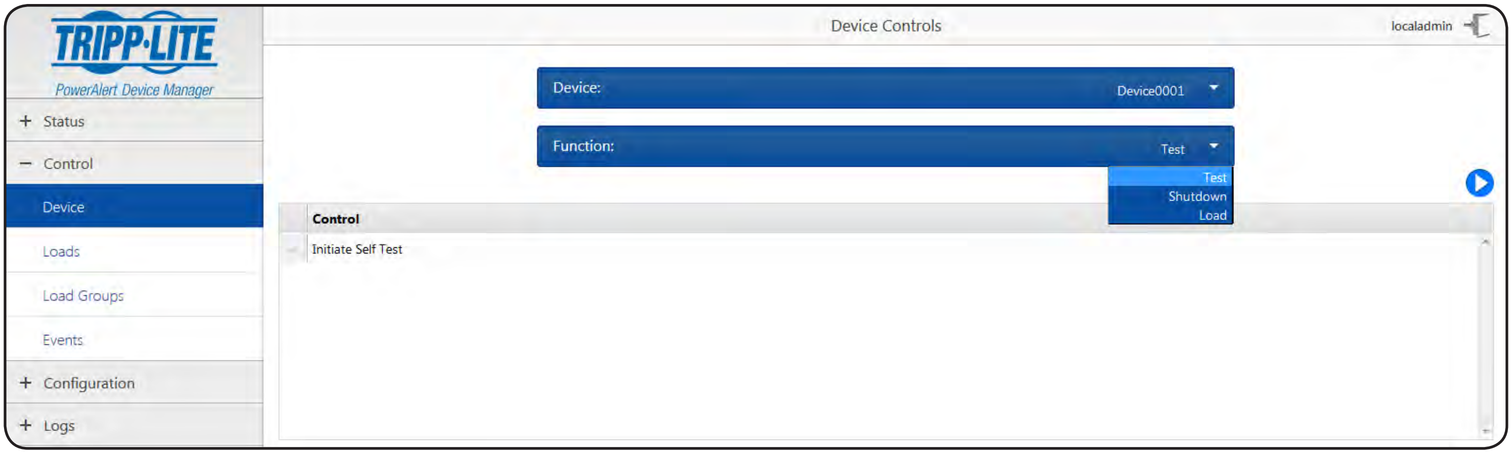
	Control
	Restart SNMP Card
	Restart with Factory Defaults (Preserve Network Settings)
	Restart with Factory Defaults (Do NOT Preserve Network Settings)
✓	Firmware Update

Update in progress. Do not exit. Please wait...

66 %

Figure 3-7: System Maintenance Controls

In addition to the System Maintenance controls, individual device controls can be accessed by first selecting the specific device and then selecting the function. The options will vary by device; examples are “Test”, “Shutdown” and “Load” (Figure 3-8). For devices with controllable loads, the Load function group includes “Cycle All Loads”, “Turn All Loads Off” and “Turn All Loads On”. Example Shutdown controls include “Device Shutdown”, if supported. Click the [Save] button to execute the function.



Device Controls

Device: Device0001

Function: Test

Control
Initiate Self Test

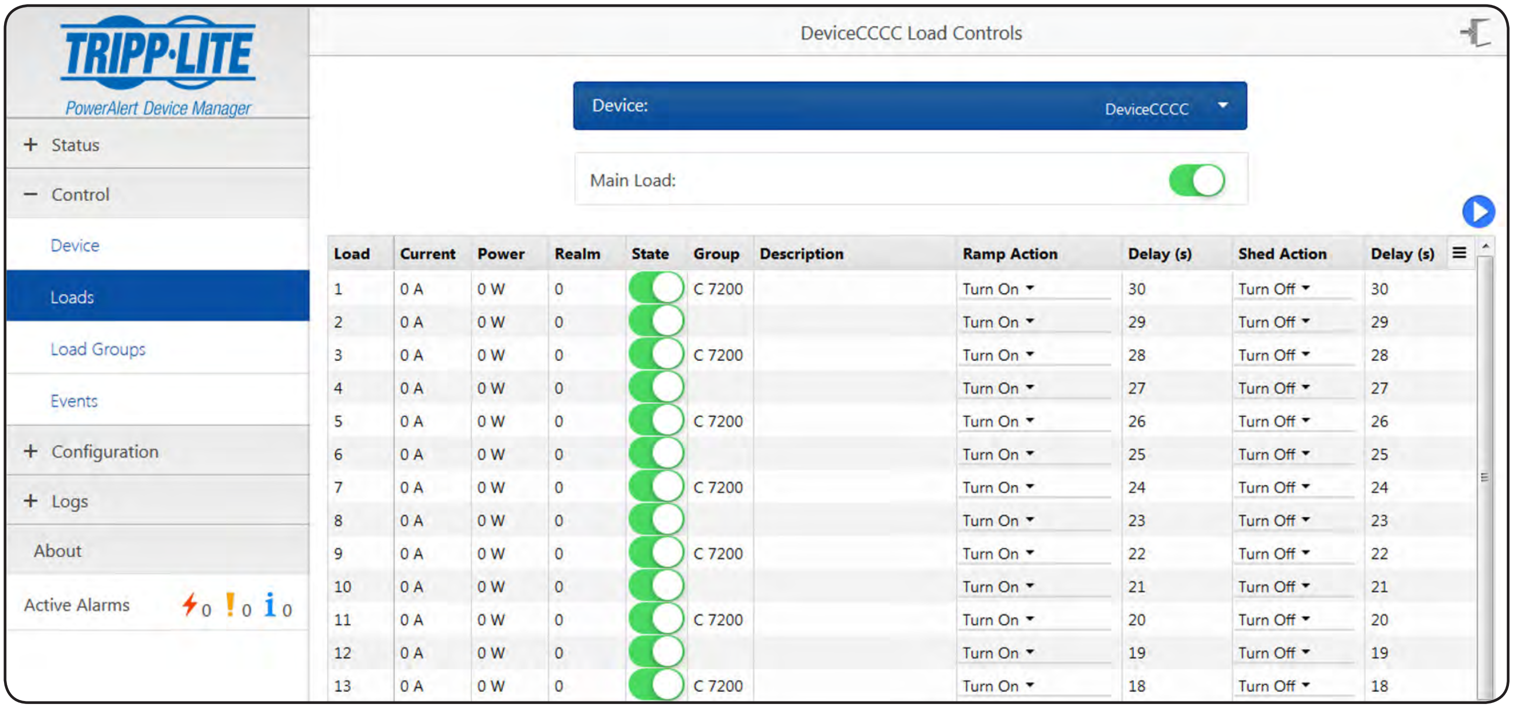
Figure 3-8: Individual Device Controls

3.3.2 Control/Loads

If the selected device has loads, the state of the load can be viewed on the Loads page (Figure 3-9). For devices that support controllable loads, the load state can be changed by choosing the load and then choosing the desired state: **On** if the load is off, **Off** if the load is on, or **Cycle** to turn the load off and then back on. Ramp and Shed behaviors can be set, each with adjustable delay times, for controllable loads that support ramp/shed. Select the desired behavior and timing for each load and click the [Save] button. Loads or Outlet Banks can be given a Description for easy identification. Simply enter the desired description and click the [Save] button. Ramp or Shed controls configured in this fashion can be manually executed in the Control > Device page, selecting Load in the Function sub-menu. For autonomous execution of Ramp and Shed, see section 3.4.4 Configurations/Actions.

The Loads page also allows the Main Load to be turned on, off or cycled on devices that support Main Load control. The on/off state of non-controllable loads is displayed, but the controls are not selectable.

For devices that support per-outlet or per-bank Current or Power measurement, those values will be displayed on the Loads page. Remember that load fluctuates with the power demands of the connected equipment. It is prudent to limit the total connected load to no more than 80% of the device’s maximum capacity to accommodate higher start-up power demands and other increased power needs. Each load may optionally be assigned to a realm, which allows or restricts a user's Read Only or Read/Write access to the outlets in that realm (as set in Configuration>Security>User).



DeviceCCCC Load Controls

Device: DeviceCCCC

Main Load: ●

Load	Current	Power	Realm	State	Group	Description	Ramp Action	Delay (s)	Shed Action	Delay (s)
1	0 A	0 W	0	●	C 7200		Turn On	30	Turn Off	30
2	0 A	0 W	0	●			Turn On	29	Turn Off	29
3	0 A	0 W	0	●	C 7200		Turn On	28	Turn Off	28
4	0 A	0 W	0	●			Turn On	27	Turn Off	27
5	0 A	0 W	0	●	C 7200		Turn On	26	Turn Off	26
6	0 A	0 W	0	●			Turn On	25	Turn Off	25
7	0 A	0 W	0	●	C 7200		Turn On	24	Turn Off	24
8	0 A	0 W	0	●			Turn On	23	Turn Off	23
9	0 A	0 W	0	●	C 7200		Turn On	22	Turn Off	22
10	0 A	0 W	0	●			Turn On	21	Turn Off	21
11	0 A	0 W	0	●	C 7200		Turn On	20	Turn Off	20
12	0 A	0 W	0	●			Turn On	19	Turn Off	19
13	0 A	0 W	0	●	C 7200		Turn On	18	Turn Off	18

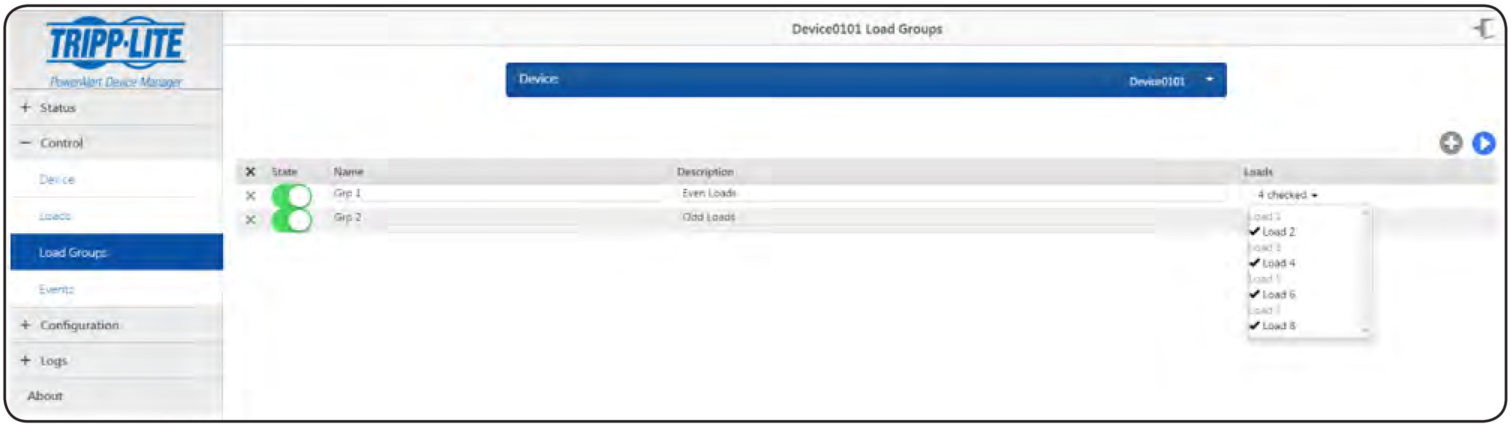
Figure 3-9: Loads Page

3.3.3 Control/Load Groups

The Load Groups page (Figure 3-10) is used to create and control groups of outlets on select devices that have two or more controllable loads. Click the [+] button to create a new load group, configure it accordingly, then click the [Save] button to store it. Click the [x] to delete an existing load group and click the [Save] button to remove it permanently.

Note: *An individual load can only be a member of a single Load Group.*

As on the Loads page, the loads in a Load Group can be turned On, Off, or set to Cycle as a group. Refer to the Loads page for additional information on Load Group control. The state switch will change to blue and the switch position will be in the center if the loads in the group are not all in the same state. Refer to Figure 3-11 to see two loads in the "Even Loads" group "Off" state and Figure 3-12 to see how this is represented in the Load Groups page.



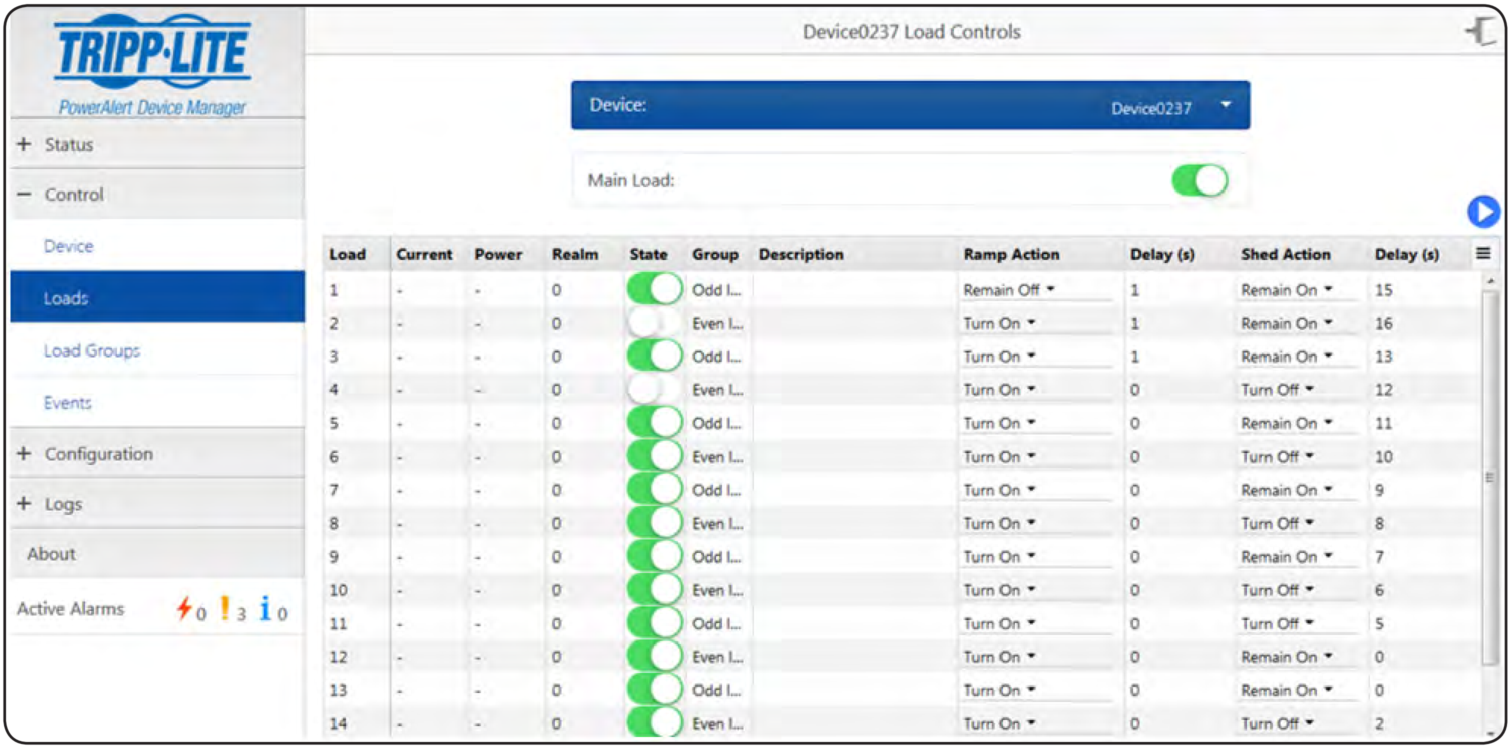
Device0101 Load Groups

Device: Device0101

✕	State	Name	Description	Loads
✕	●	Grp 1	Even Loads	4 checked
✕	●	Grp 2	Odd Loads	

Load 1
✔ Load 2
Load 3
✔ Load 4
Load 5
✔ Load 6
Load 7
✔ Load 8

Figure 3-10: Load Groups Page



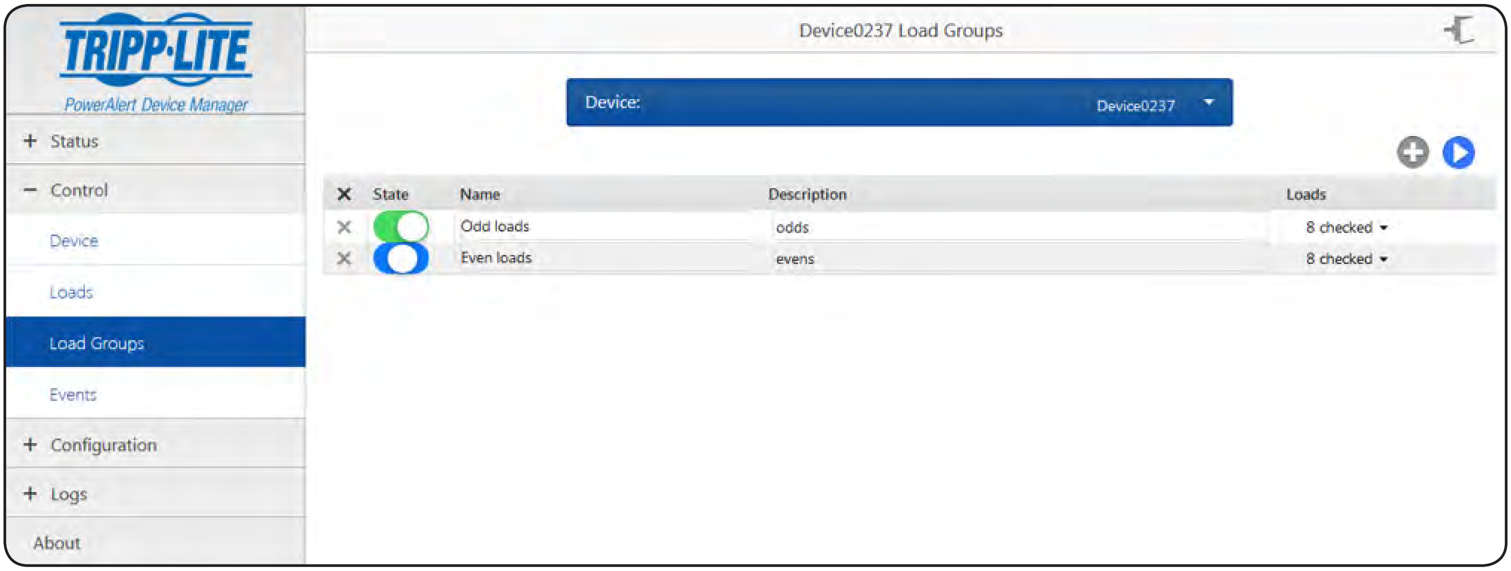
Device0237 Load Controls

Device: Device0237

Main Load: ●

Load	Current	Power	Realm	State	Group	Description	Ramp Action	Delay (s)	Shed Action	Delay (s)
1	-	-	0	●	Odd l...		Remain Off	1	Remain On	15
2	-	-	0	○	Even l...		Turn On	1	Remain On	16
3	-	-	0	●	Odd l...		Turn On	1	Remain On	13
4	-	-	0	○	Even l...		Turn On	0	Turn Off	12
5	-	-	0	●	Odd l...		Turn On	0	Remain On	11
6	-	-	0	●	Even l...		Turn On	0	Turn Off	10
7	-	-	0	●	Odd l...		Turn On	0	Remain On	9
8	-	-	0	●	Even l...		Turn On	0	Turn Off	8
9	-	-	0	●	Odd l...		Turn On	0	Remain On	7
10	-	-	0	●	Even l...		Turn On	0	Turn Off	6
11	-	-	0	●	Odd l...		Turn On	0	Turn Off	5
12	-	-	0	●	Even l...		Turn On	0	Remain On	0
13	-	-	0	●	Odd l...		Turn On	0	Remain On	0
14	-	-	0	●	Even l...		Turn On	0	Turn Off	2

Figure 3-11: Loads in Mixed States



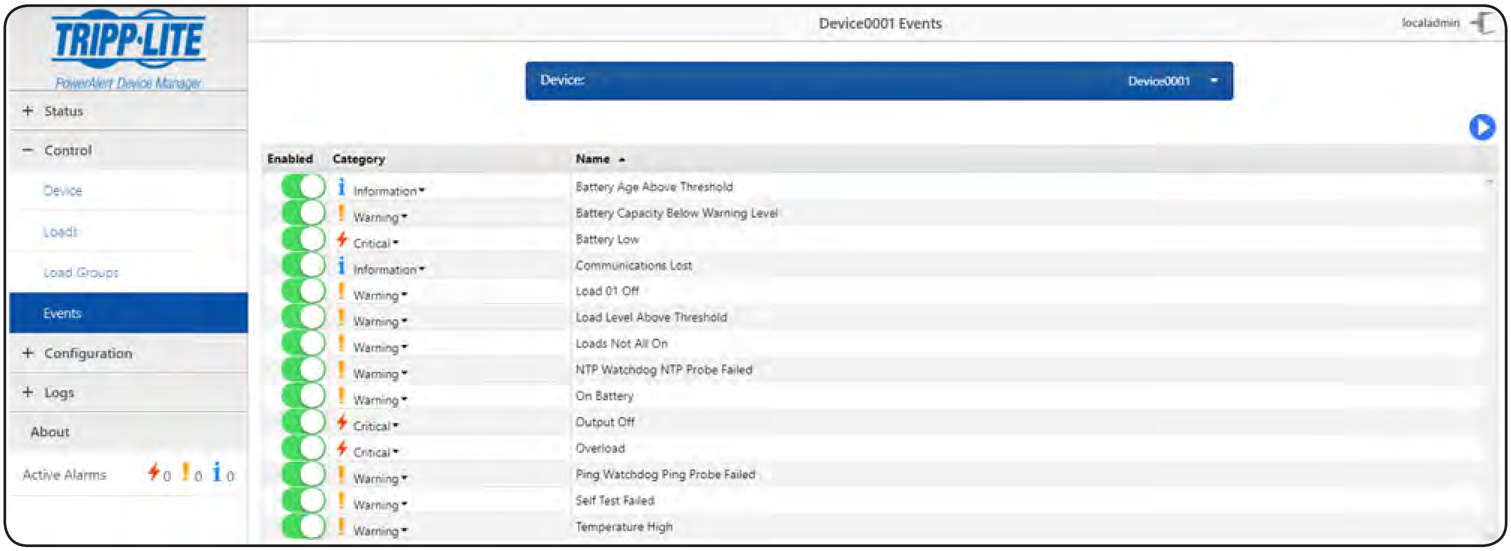
Device: Device0237

✕	State	Name	Description	Loads
✕	●	Odd loads	odds	8 checked ▾
✕	●	Even loads	evens	8 checked ▾

Figure 3-12: Load Group with Loads in Mixed States

3.3.4 Control/Events

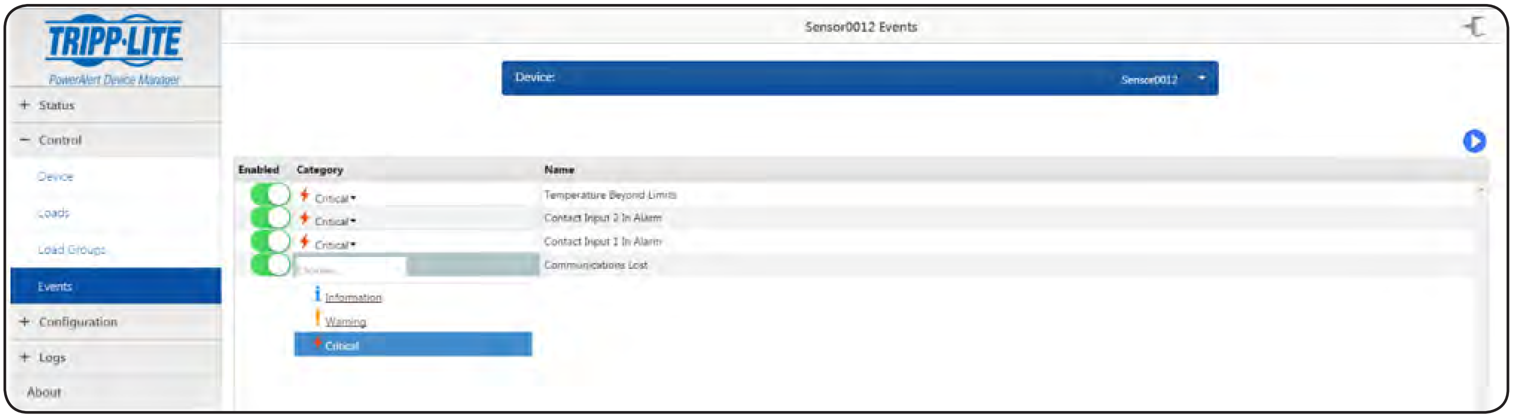
The Events page displays events supported by the selected device (Figure 3-13 and Figure 3-14). This list will vary by device model. Use the sliders to enable or disable notifications for each of the event types. Use the dropdown menu in the Category column to set the priority: Information, Warning or Critical. Click the [Save] button at any time to apply your changes.



Device: Device0001

Enabled	Category	Name ▴
●	Information ▾	Battery Age Above Threshold
●	Warning ▾	Battery Capacity Below Warning Level
●	Critical ▾	Battery Low
●	Information ▾	Communications Lost
●	Warning ▾	Load 01 Off
●	Warning ▾	Load Level Above Threshold
●	Warning ▾	Loads Not All On
●	Warning ▾	NTP Watchdog NTP Probe Failed
●	Warning ▾	On Battery
●	Critical ▾	Output Off
●	Critical ▾	Overload
●	Warning ▾	Ping Watchdog Ping Probe Failed
●	Warning ▾	Self Test Failed
●	Warning ▾	Temperature High

Figure 3-13: Events Page



Device: Sensor0012

Enabled	Category	Name
●	Critical ▾	Temperature Beyond Limits
●	Critical ▾	Contact Input 2 In Alarm
●	Critical ▾	Contact Input 1 In Alarm
●	Choose...	Communications Lost

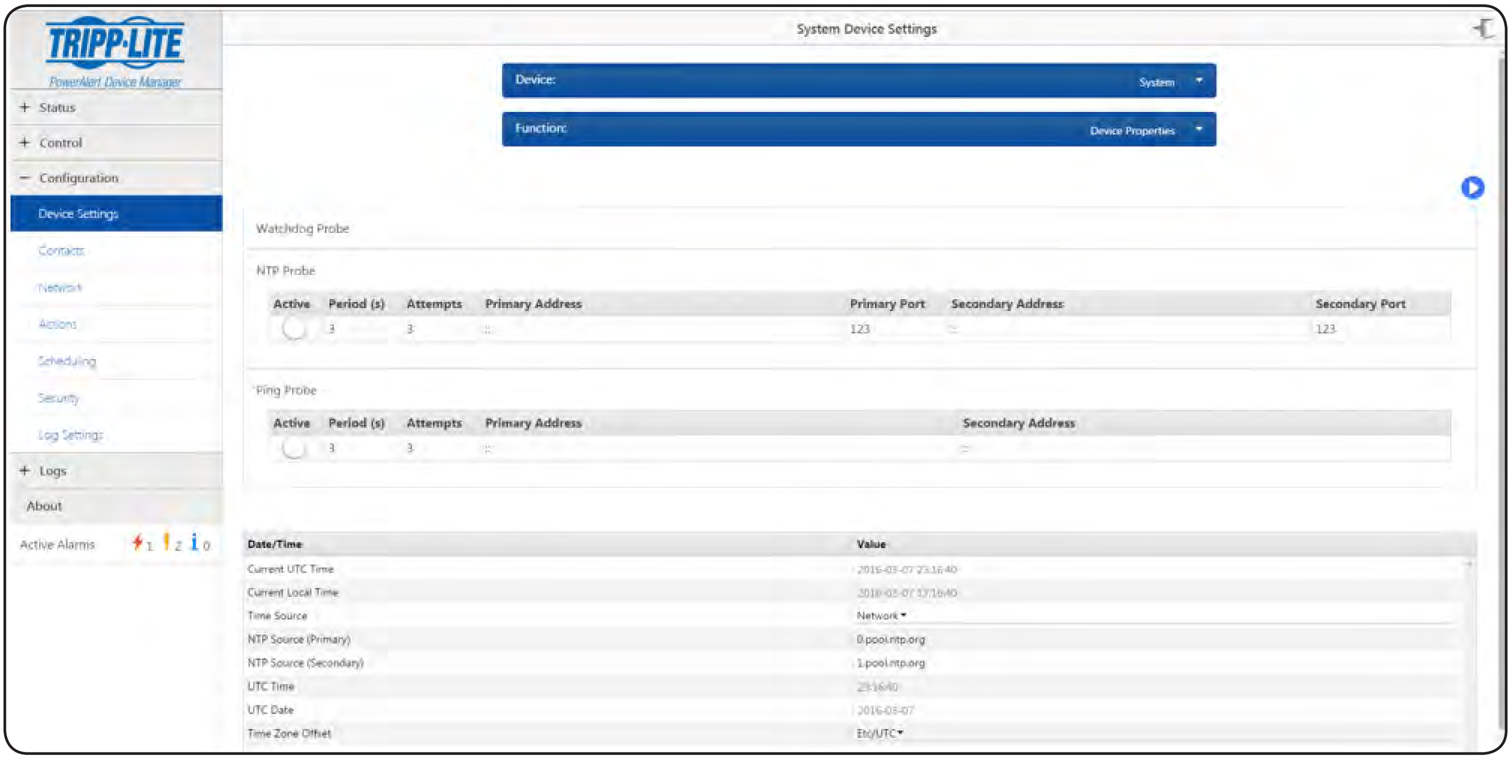
Figure 3-14: Setting Event Severity

3.4 Configuration

The Configuration menu group contains seven submenus: Device Settings, Contacts, Network, Actions, Scheduling, Security and Log Settings (Figure 3-15). The available configuration options will vary by device.

3.4.1 Configuration / System Settings

System-level settings will include Watchdog configuration options, selection of the default time source and time zone offset.



Device: System

Function: Device Properties

Watchdog Probe

NTP Probe

Active	Period (s)	Attempts	Primary Address	Primary Port	Secondary Address	Secondary Port
○	3	3	::	123	::	123

Ping Probe

Active	Period (s)	Attempts	Primary Address	Secondary Address
○	3	3	::	::

Date/Time	Value
Current UTC Time	2016-03-07 23:16:40
Current Local Time	2016-03-07 17:16:40
Time Source	Network
NTP Source (Primary)	0.pool.ntp.org
NTP Source (Secondary)	1.pool.ntp.org
UTC Time	23:16:40
UTC Date	2016-03-07
Time Zone Offset	Etc/UTC

Figure 3-15: Configuration Menu

The Watchdog Probe function allows the network interface of the LX Platform device to reboot itself if it loses network communication. This reboot will not affect functionality of the LX device; for example, a PDU will continue distributing power through its outlets while the interface reboots.

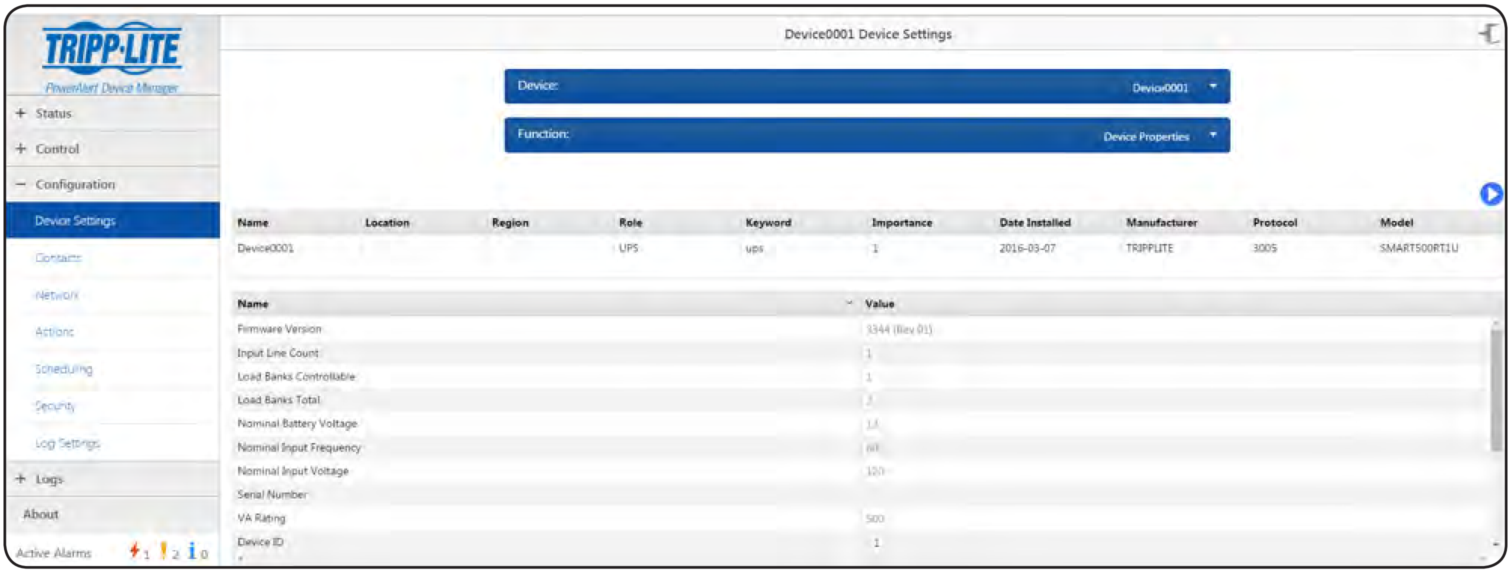
- Active – Enables or disables the probe.
- Period -- The number of minutes between probe attempts. The range of valid values is 3 to 1440.
- Attempts -- The number of consecutive probes after which, if unsuccessful, the interface reboot will be triggered. The range of valid values is 3 to 10.
- Primary address – The IPv4 address of the primary probe target or the Fully Qualified Domain Names (FQDN). For the NTP Probe, the IPv4 address or FQDN of the NTP server should be entered.
- Primary port – The port number of the primary probe target (NTP server).
- Secondary address – The iPv4 address or the FQDN of the secondary probe target. This can be optionally set as a means to double-check if network connectivity was lost. If probes to the primary address fail, but probes to the secondary address are successful, the reboot will not be triggered.

The Time Source choices are Network and RTC. If Network is chosen, enter the Primary NTP Source (and Secondary NTP Source, if desired) in the appropriate fields. The default Time Zone Offset is UTC; to change this, select the desired selection from the pulldown menu. Ensure that you click on the [Save] icon after entering or editing these fields.

The default Ping and NTP watchdog probe events are configured to log to the event log and reboot the card 30 seconds after the event is detected. Probes will become active once they complete a successful handshake with the remote host. An unsuccessful handshake will be captured in the event log, as well as the Telnet/SSH for Auto Probes status.

3.4.2 Configuration/Device Settings

The Device Settings page displays the settings of the selected device. Select the device to configure and choose Device Properties (Figure 3-16) or Device Thresholds (Figure 3-17) from the Function dropdown menu. Click the [Save] button at any time to apply the selected settings. To configure a UPS for operation with external battery packs, use the External Battery Pack Configuration Utility (downloadable from the Tripp Lite website).



Device0001 Device Settings

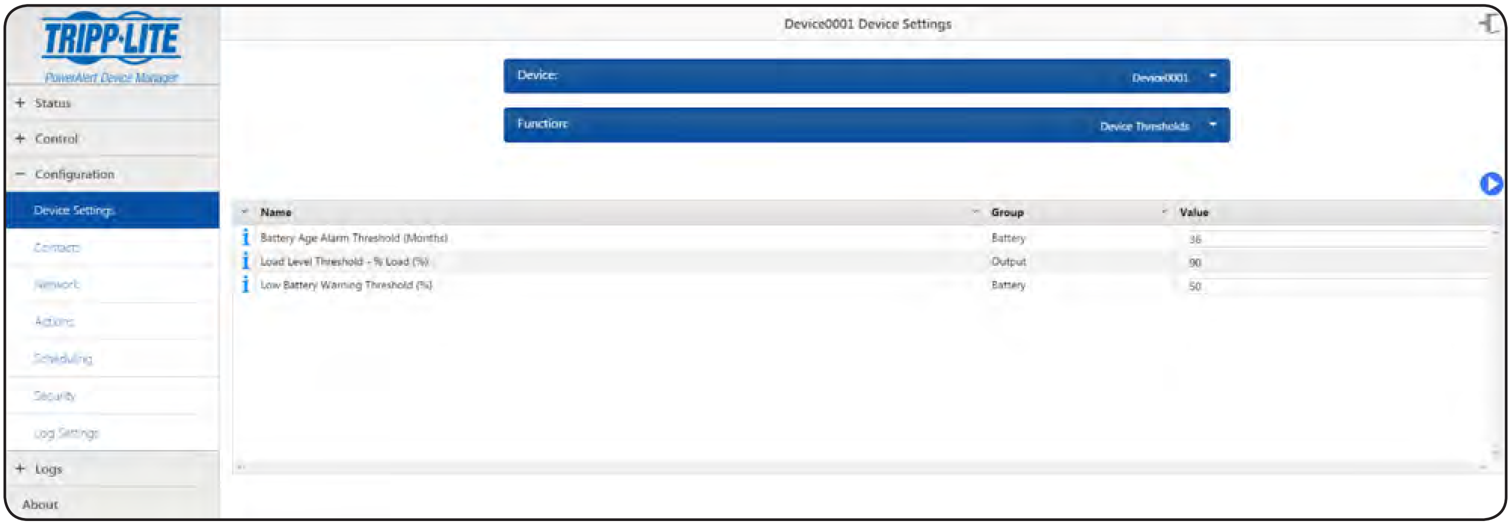
Device: Device0001

Function: Device Properties

Name	Location	Region	Role	Keyword	Importance	Date Installed	Manufacturer	Protocol	Model
Device0001			UPS	ups	1	2016-03-07	TRIPPLITE	3005	SMART500RT1U

Name	Value
Firmware Version	1344 (Rev 01)
Input Line Count	1
Load Banks Controllable	1
Load Banks Total	2
Nominal Battery Voltage	12
Nominal Input Frequency	60
Nominal Input Voltage	120
Serial Number	
VA Rating	500
Device ID	1

Figure 3-16: Device Properties



Device0001 Device Settings

Device: Device0001

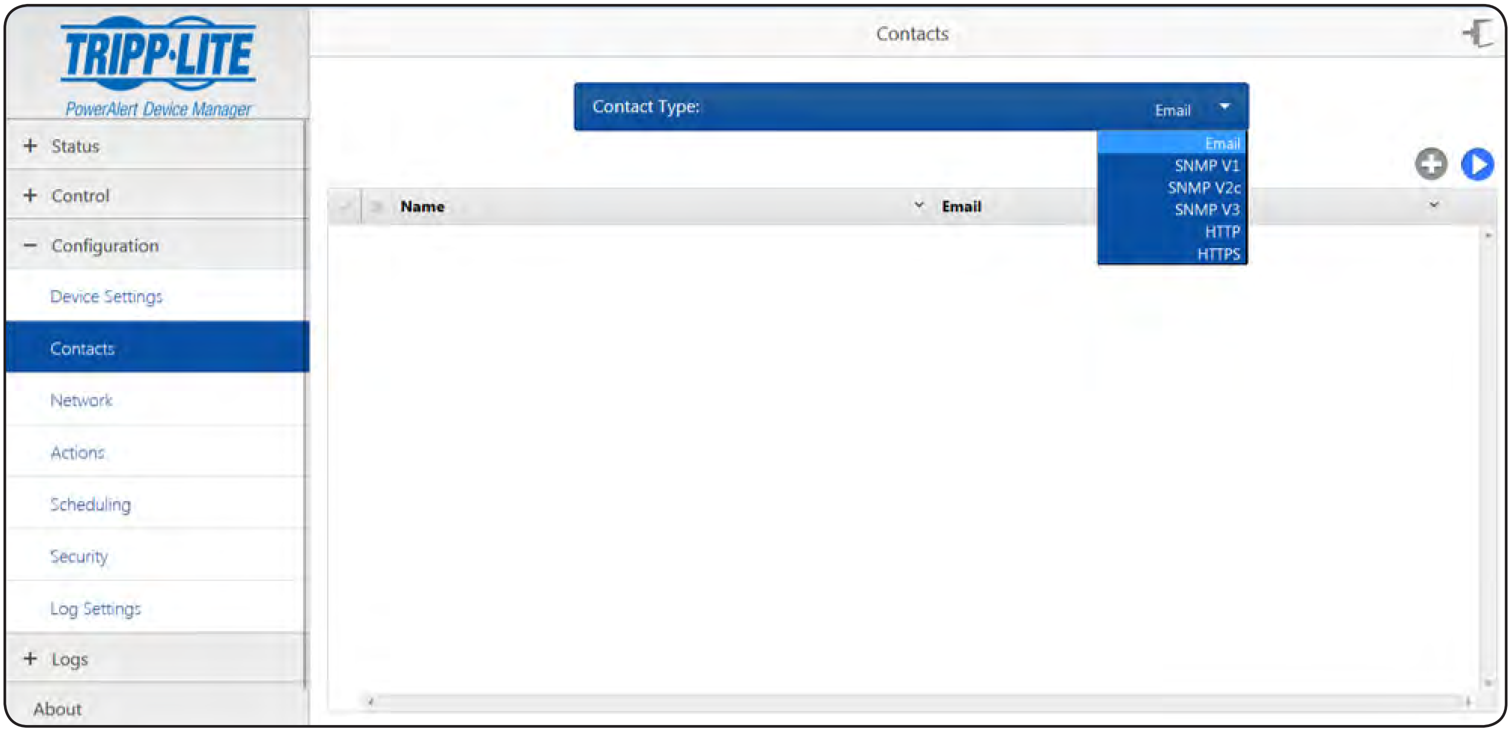
Function: Device Thresholds

Name	Group	Value
Battery Age Alarm Threshold (Months)	Battery	36
Load Level Threshold - % Load (%)	Output	90
Low Battery Warning Threshold (%)	Battery	50

Figure 3-17: Device Thresholds

3.4.3 Configuration/Contacts

The Contacts page is used to configure Email, SNMP V1, SNMP V2c, SNMP V3, HTTP and HTTPS contacts (Figure 3-18).

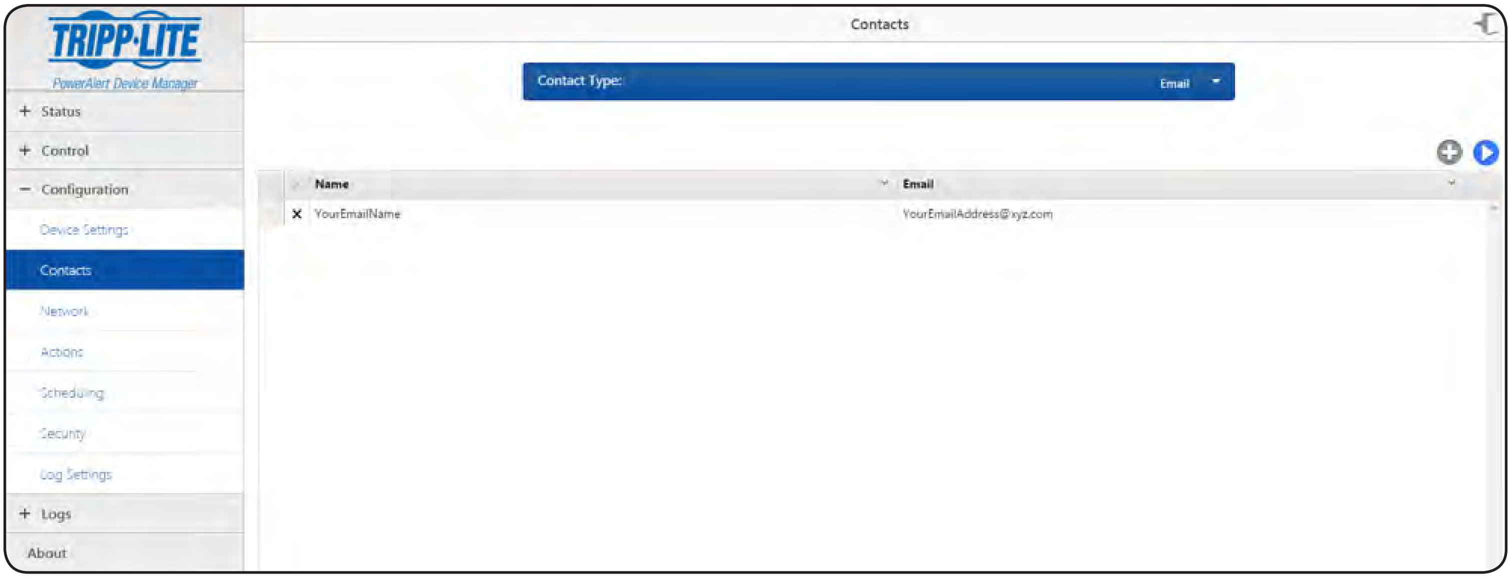


Contact Type: Email

Figure 3-18: Contacts Page

3.4.3.1 Email

Before PowerAlert Device Manager can send email notifications with rotated log contents, email actions and other system data, there must be at least one email contact. To create a new email contact, select Email from the dropdown menu and click the [**+**] button. Enter a unique name for the contact name field; enter a unique contact email address in the email field. Click the [Save] button at any time to apply the settings. The same procedure can be used to edit an existing contact. Start by selecting the row you wish to edit by clicking the [**✔**]. To remove an existing contact, click the [**X**] to the left of the Contact Name (Figure 3-19). Common email services such as Gmail, Yahoo! Mail and Hotmail are supported. Test emails can be sent to each email contact through the Telnet/SSH interface. Refer to **Section 4.2.1.1** for details.



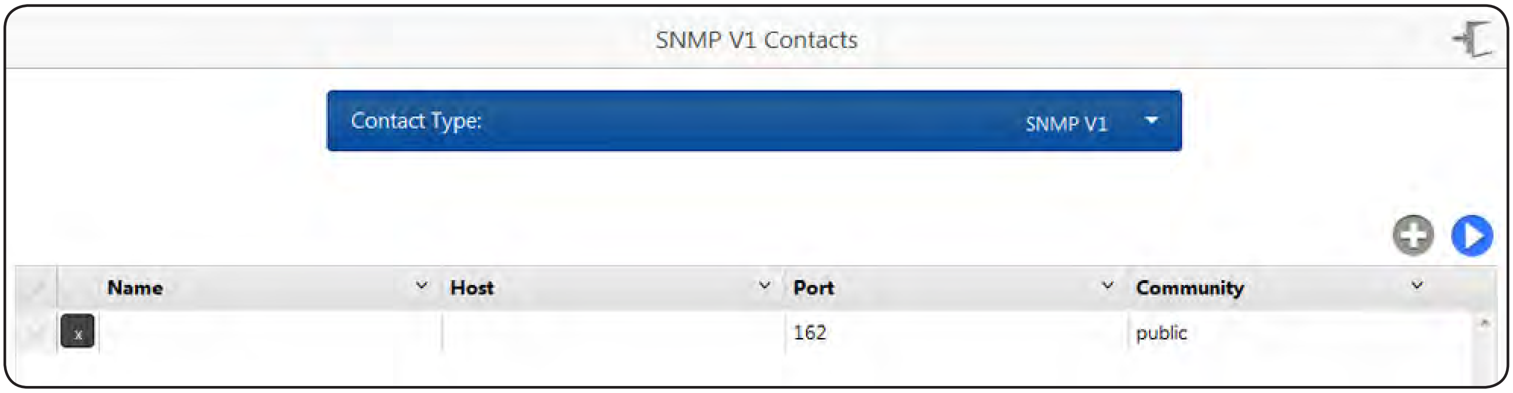
Contact Type: Email

	Name	Email
X	YourEmailName	YourEmailAddress@xyz.com

Figure 3-19: Creating a New Email Contact

3.4.3.2 SNMP V1

The SNMP V1 page displays a list of SNMP V1 contacts. Before PowerAlert Device Manager can send an SNMP trap or an SNMP set to an IP address, there must be at least one SNMP contact. To create a new SNMP V1 contact, select SNMP V1 from the dropdown menu and click the [+] button (Figure 3-20). Enter a name for the contact in the Name field; enter the host in the host IP address field. The Port and Community fields will default to Port 162 and Community "public". To make a change to either of the defaults, click the field and edit the contents. Click the [Save] button at any time to apply the settings. The same procedure can be used to edit an existing contact. Start by selecting the row you wish to edit by clicking on the [✔]. To remove an existing contact, click the [**X**] to the left of the Contact Name. By default, adding an SNMP contact will automatically make it a recipient of alarm traps, which are sent 30 seconds after the alarm is detected.



SNMP V1 Contacts

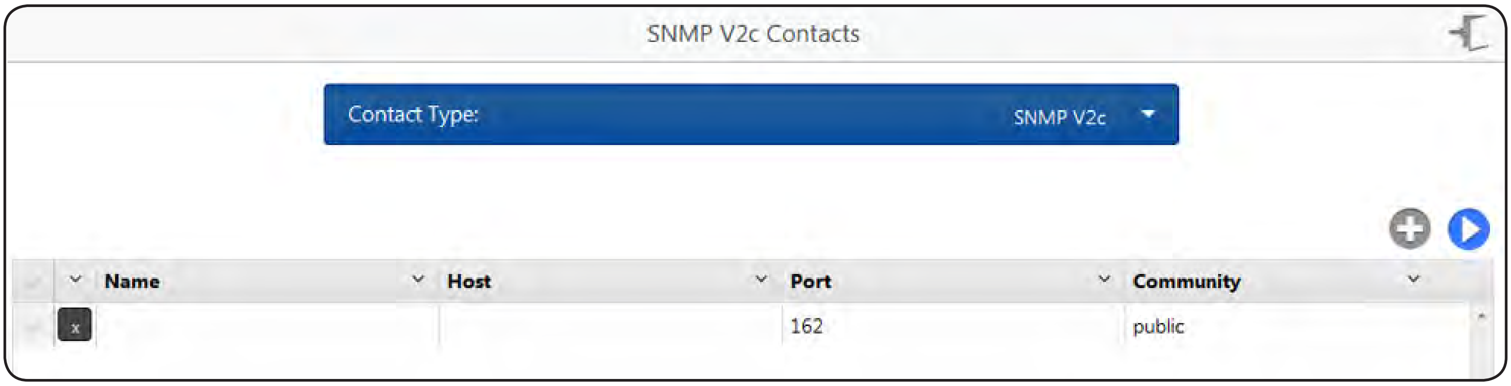
Contact Type: SNMP V1

	Name	Host	Port	Community
x			162	public

Figure 3-20: Creating an SNMP V1 Contact

3.4.3.3 SNMP V2c

The SNMP V2c page displays the list of SNMP V2c contacts. To create a new SNMP V2c contact, select SNMP V2c from the dropdown menu and click the [+] button (Figure 3-21). Enter a name for the contact in the Name field; enter the host in the host IP address field. The Port and Community fields will default to Port 162 and Community "public". To make a change to either of the defaults, click the field and edit the contents. Click [Save] at any time to apply the settings. The same procedure can be used to edit an existing contact. Start by selecting the row you wish to edit by clicking on the [✔]. To remove an existing contact, click the [**X**] to the left of the Contact Name.



SNMP V2c Contacts

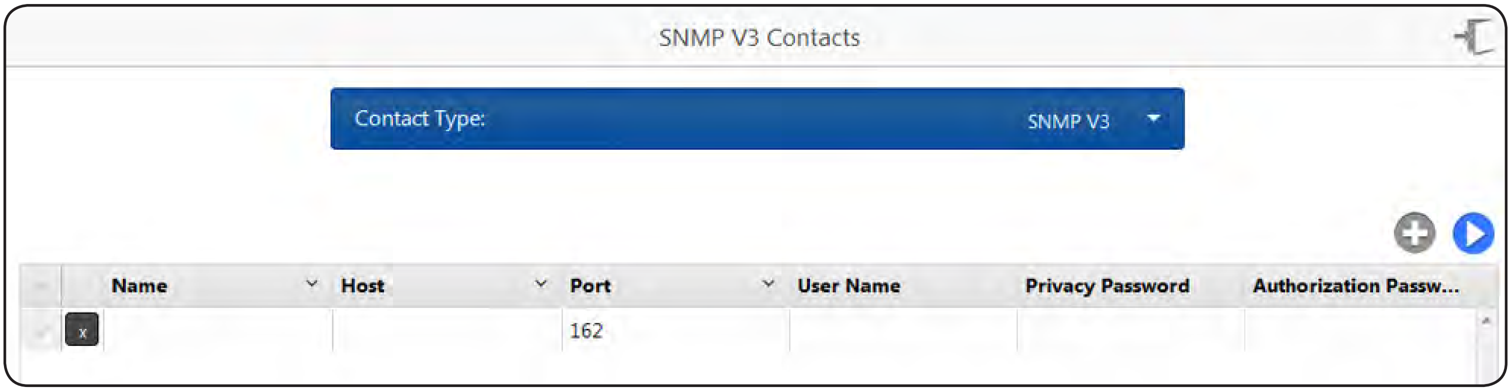
Contact Type: SNMP V2c

	Name	Host	Port	Community
x			162	public

Figure 3-21 Creating an SNMP V2c Contact

3.4.3.4 SNMP V3

The SNMP V3 page displays a list of SNMP V3 contacts. To create a new SNMP V3 contact, select SNMP V3 from the dropdown menu and click the [**+**] button (Figure 3-22). Click on the name field to enter the contact name. Click on the Host field and enter the host IP address for the contact. The Port contents will default to 162. To make a change, click on the field to edit the contents. User Name, Privacy Password and Authorization Password can be modified by clicking and typing the field for each option. Click the [Save] button at any time to apply the settings. To edit an existing SNMP V3 contact, click on the field for name, host, port, User Name, Privacy Password and Authorization Password to make changes. To remove an existing SNMP V3 contact, click the [**X**] on the left hand side of the table.



SNMP V3 Contacts

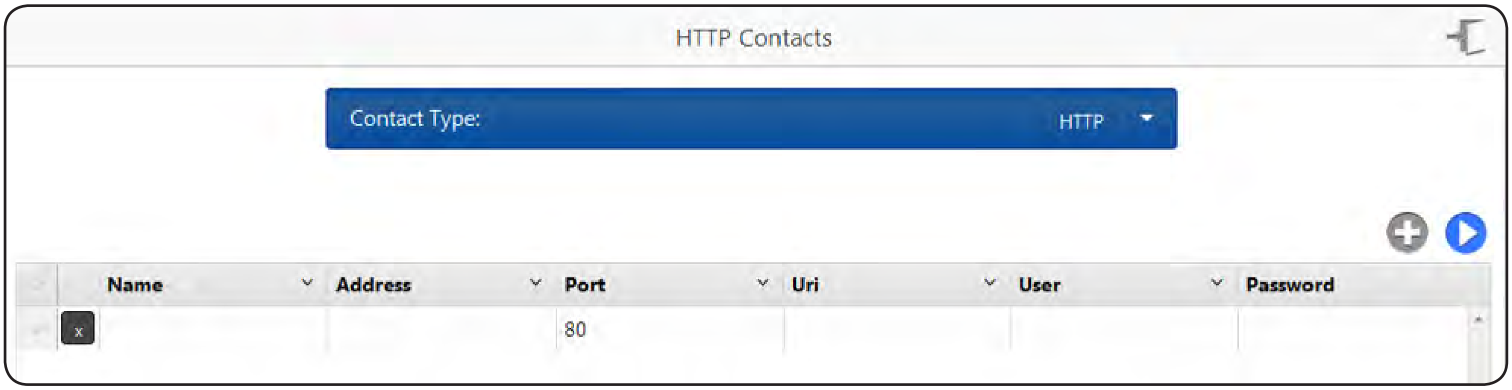
Contact Type: SNMP V3

	Name	Host	Port	User Name	Privacy Password	Authorization Passw...
x			162			

Figure 3-22: Creating an SNMP V3 Contact

3.4.3.5 HTTP

The HTTP page displays a list of the HTTP contacts. To create a new HTTP contact, select HTTP from the dropdown menu and click the [**+**] button (Figure 3-23). Click on the name field to enter the contact name. Click on the Address field and enter the Address for the contact. The Port contents will default to 80. To make a change, click on the field to edit the contents. Uri, User and Password can be modified by clicking the field for each option. Click the [Save] button at any time to apply the settings. To edit an existing HTTP contact, click on the textbox to make changes. To remove an existing HTTP contact, click the [**X**] on the left hand side of the table.



HTTP Contacts

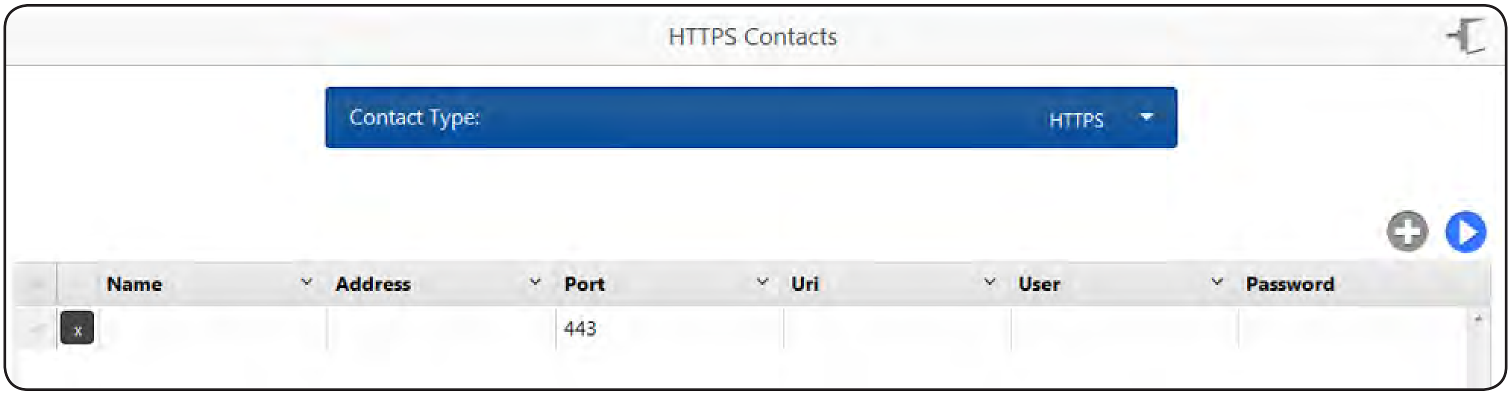
Contact Type: HTTP

	Name	Address	Port	Uri	User	Password
x			80			

Figure 3-23: Creating an HTTP Contact

3.4.3.6 HTTPS

The HTTPS page displays a list of HTTPS contacts. To create a new HTTPS contact, select HTTPS from the dropdown menu and click the [+] button (Figure 3-24). Click on the name field to enter the contact name. Click on the Address field and enter the Address for the contact. The Port contents will default to 443. To make a change, click on either field to edit the contents. Uri, User and Password can be modified by clicking the field for each option. Click the [Save] button at any time to apply the settings. To edit an existing HTTPS contact, click on the field to make changes. To remove an existing HTTPS contact, click the [**X**] on the left hand side of the table.



HTTPS Contacts

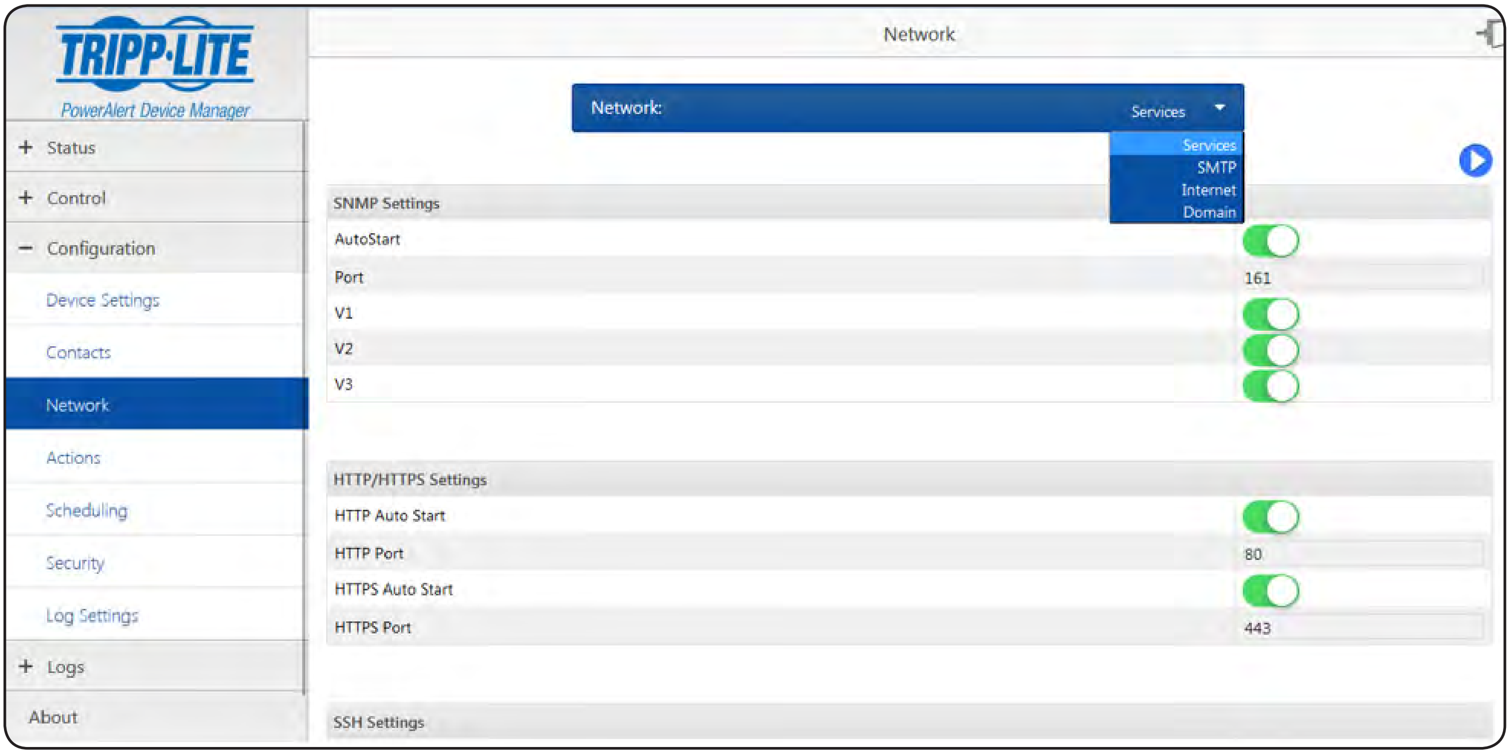
Contact Type: HTTPS

	Name	Address	Port	Uri	User	Password
x			443			

Figure 3-24: Creating an HTTPS Contact

3.4.3.7 Configuration/Network

Configuration of the LX Platform device Network Services, SMTP, Internet and Domain are accessed through the Network Page (Figure 3-25).



Network

Network: Services

SNMP Settings	
AutoStart	●
Port	161
V1	●
V2	●
V3	●

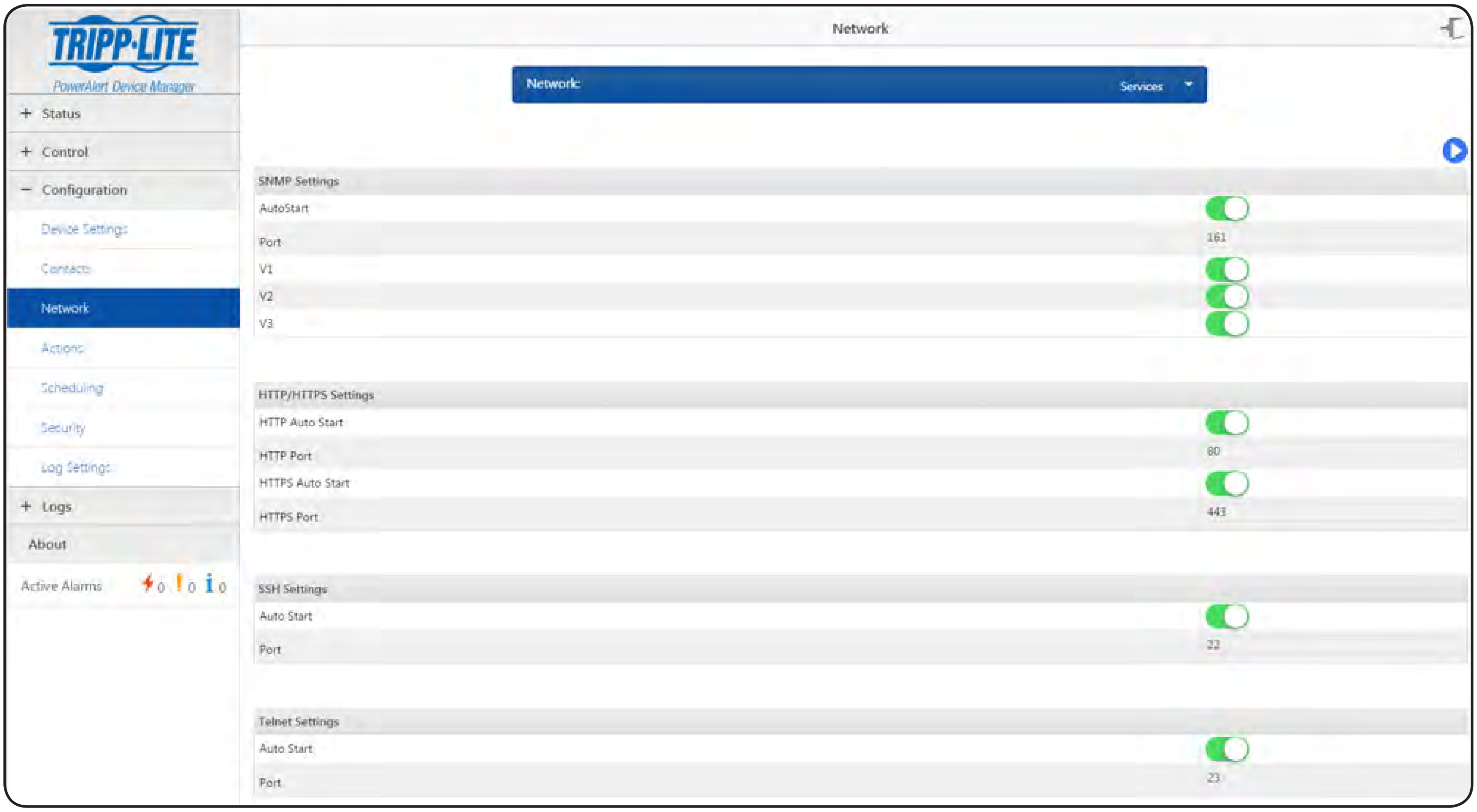
HTTP/HTTPS Settings	
HTTP Auto Start	●
HTTP Port	80
HTTPS Auto Start	●
HTTPS Port	443

SSH Settings

Figure 3-25: Network Page

3.4.3.8 Configuration/Network/Services

The Services option displays SNMP Settings, HTTP/HTTPS Settings, SSH Settings and Telnet settings. Use the sliders to enable or disable each available option. Click the Port field to add/edit the port number. Click the [Save] button to apply settings at any time (Figure 3-26).



SNMP Settings

AutoStart ●
Port 161
V1 ●
V2 ●
V3 ●

HTTP/HTTPS Settings

HTTP Auto Start ●
HTTP Port 80
HTTPS Auto Start ●
HTTPS Port 443

SSH Settings

Auto Start ●
Port 22

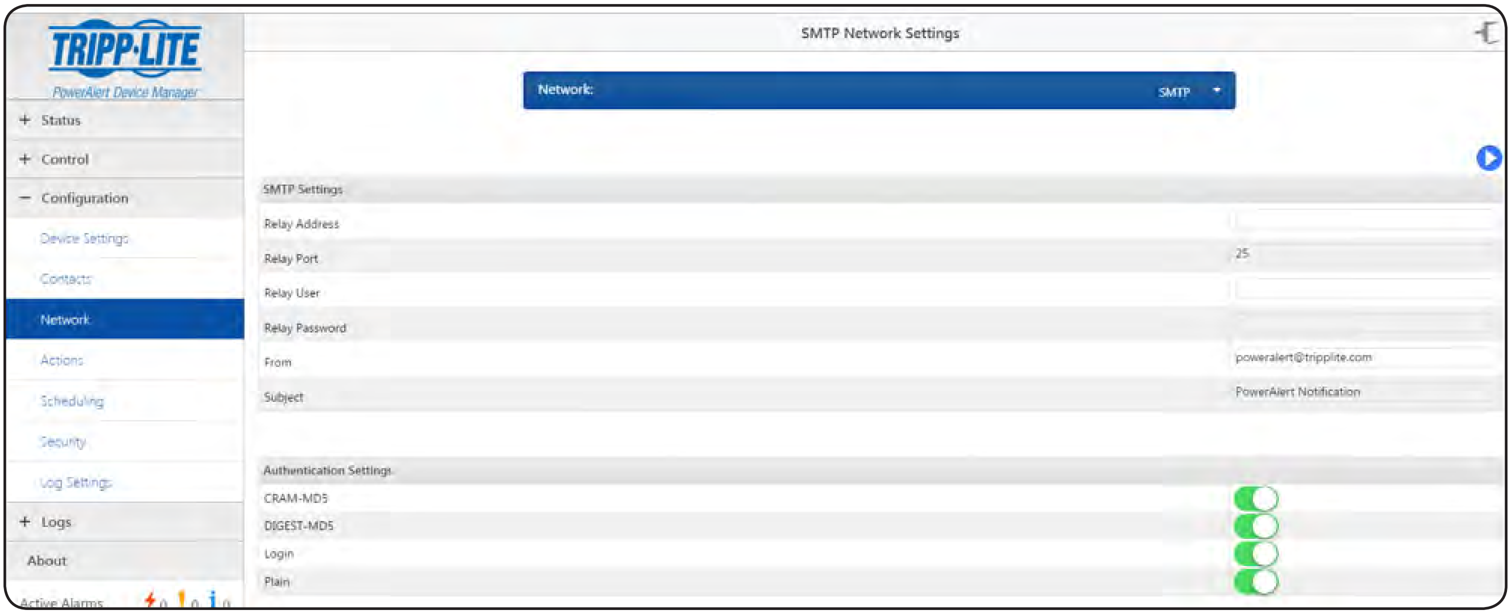
Telnet Settings

Auto Start ●
Port 23

Figure 3-26: Network Services Settings

3.4.3.9 Configuration/Network/SMTP

The SMTP settings page displays SMTP and Authentication Settings. To use a specific on-premise SMTP server or 3rd party SMTP server (Gmail, Yahoo! Mail, etc.), enter the appropriate SMTP settings for that server. To add or modify the SMTP settings, click on each available field. Use the sliders to enable the options available in Authentication settings. Click the [Save] button to apply settings at any time (Figure 3-27).



SMTP Settings

Relay Address
Relay Port 25
Relay User
Relay Password
From poweralert@tripplite.com
Subject PowerAlert Notification

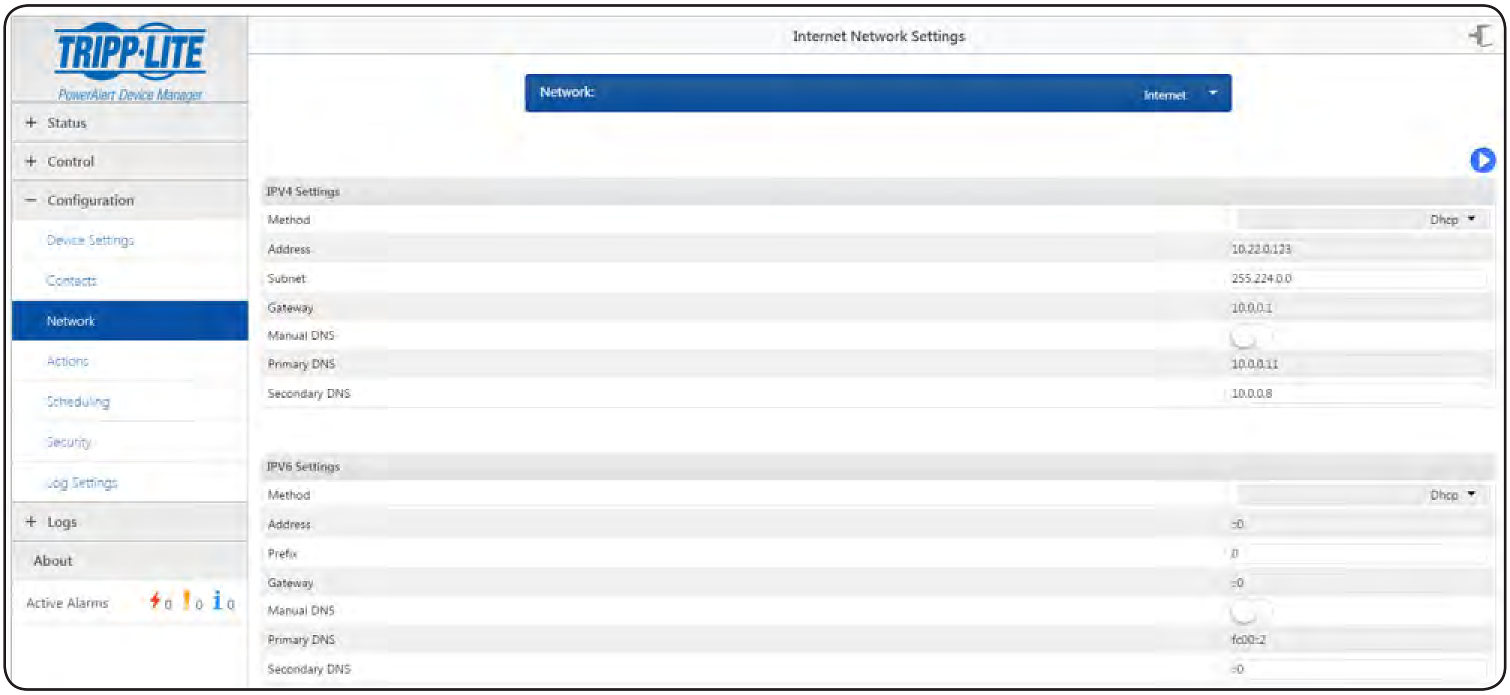
Authentication Settings

CRAM-MD5 ●
DIGEST-MD5 ●
Login ●
Plain ●

Figure 3-27: SMTP Settings

3.4.3.10 Configuration/Network/Internet

The Internet Network Settings page displays both IPV4 and IPV6 settings (Figure 3-28). Select DHCP, static or stateless (IPV6 only) from the dropdown menu for Method and enter the address information for the other options. Click the [Save] button at any time to apply the current settings.



Internet Network Settings

Network: Internet

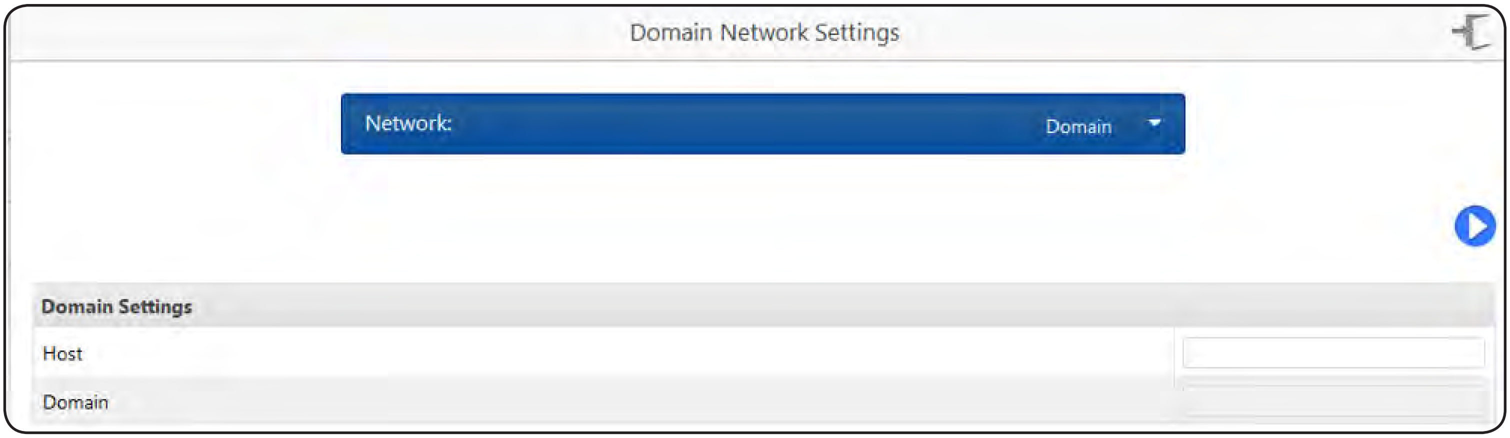
IPV4 Settings	
Method	Dhcp
Address	10.22.0.123
Subnet	255.224.0.0
Gateway	10.0.0.1
Manual DNS	
Primary DNS	10.0.0.11
Secondary DNS	10.0.0.8

IPV6 Settings	
Method	Dhcp
Address	:0
Prefix	0
Gateway	:0
Manual DNS	
Primary DNS	fc00::2
Secondary DNS	:0

Figure 3-28: Internet Settings

3.4.3.11 Configuration/Network/Domain

The Domain page displays both host and domain information. Click on the field for each option to change the settings (Figure 3-29). Click the [Save] button at any time to apply the current settings.



Domain Network Settings

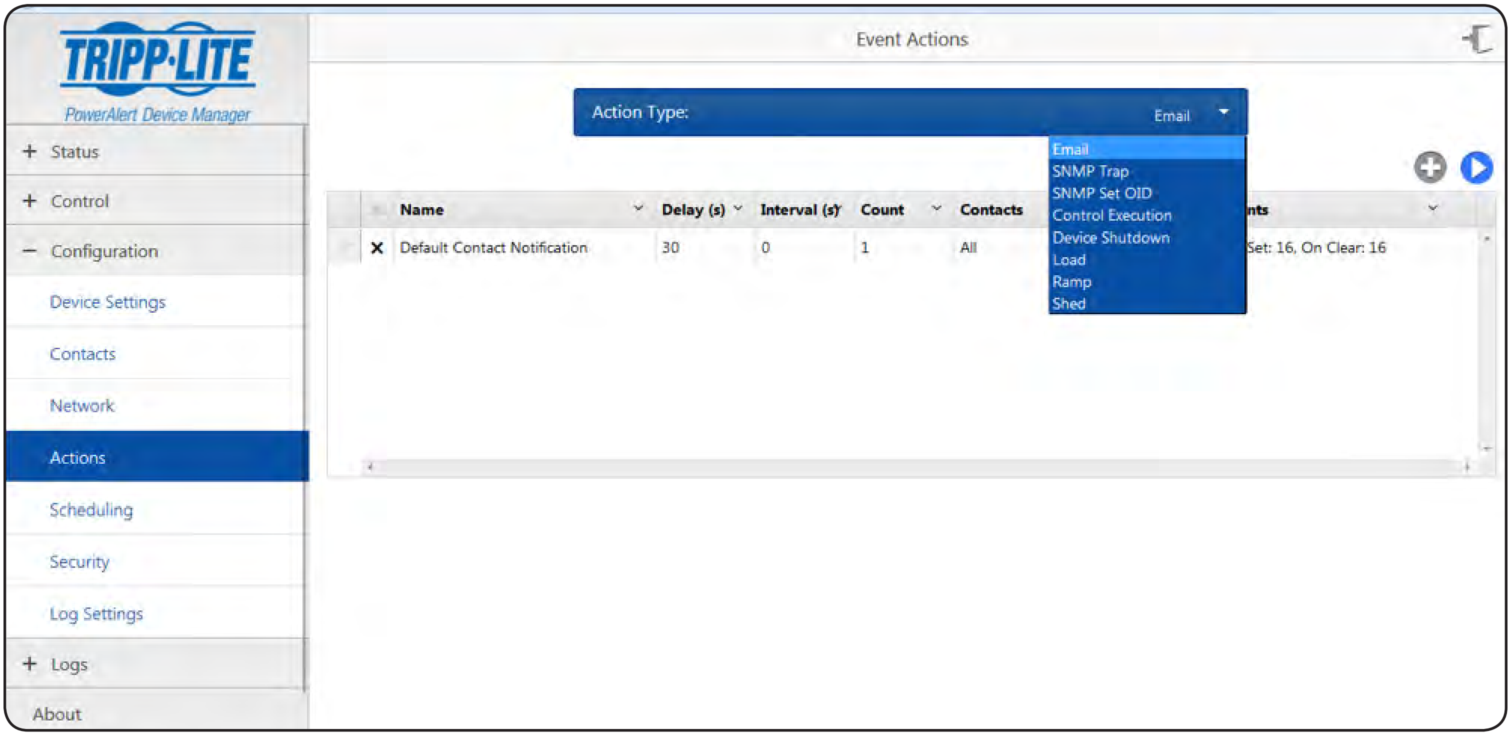
Network: Domain

Domain Settings	
Host	
Domain	

Figure 3-29: Domain Settings

3.4.4 Configuration/Actions

The system allows the user to define actions to be executed when events occur or are cleared. The actions may be to send email, send an SNMP trap, set a value via SNMP, execute a control, execute a load control, start a ramp or shed action, or shutdown a device. The actions available vary by device. Refer to Figure 3-30 for an overview of the Action Types.



Action Type: Email

	Name	Delay (s)	Interval (s)	Count	Contacts	nts
✕	Default Contact Notification	30	0	1	All	Set: 16, On Clear: 16

Figure 3-30: Configuring Event Actions

3.4.4.1 Defining Action Types

The following data items are common across many action types:

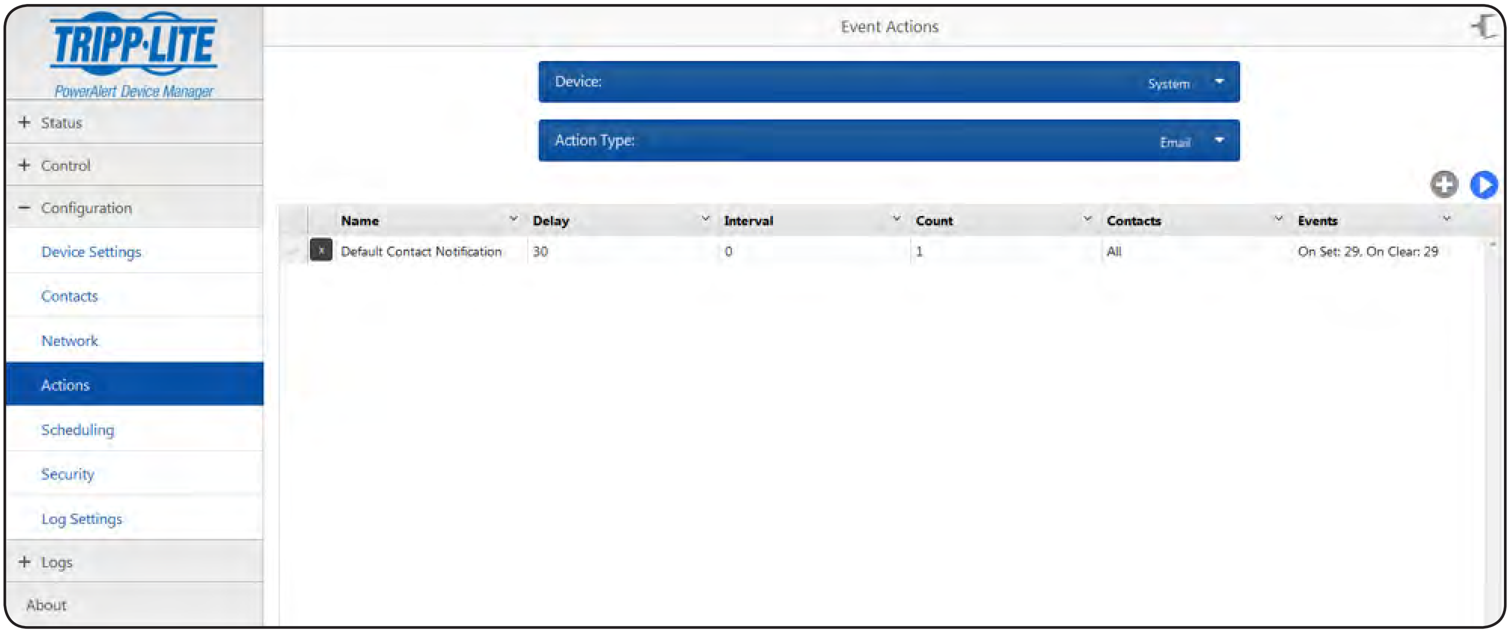
1. **Name:** Name of the action. This name must be unique across all action types.
2. **Delay:** The amount of time after the triggering event occurs before the action is performed. If the event clears before the delay time has elapsed, the action will not be performed.
3. **Interval:** Some action types allow the action to be performed repeatedly. For those action types, this attribute defines the amount of time to wait before the action is performed again. When the action is to be performed only once, this value is 0.
4. **Count:** This defines the number of times the action will be performed. When the interval is 0, the Count must be 1. A value of 0 means that the action will be repeated until the event is cleared.
5. **Events:** The events that will trigger the action to be performed. This can be when the event occurs or when the event clears.

3.4.4.1.1 Configuration/Action/Email

This action type will send an email when the event occurs or clears. Before defining an Email Action, Email Contacts to receive the email message must already exist. Refer to section 3.4.3 for details. Choose the "All" option in the Contacts column to send the email to all contacts when the event occurs.

Email actions support a repeat option. You can choose the interval and count options to repeat sending the email until the event clears. Repeat does not apply when the action is triggered by the event clearing.

The Actions page displays the event actions for each device. The event action types are SNMP Set OID, SNMP Trap and Email (Figure 3-31).



Event Actions

Device: System

Action Type: Email

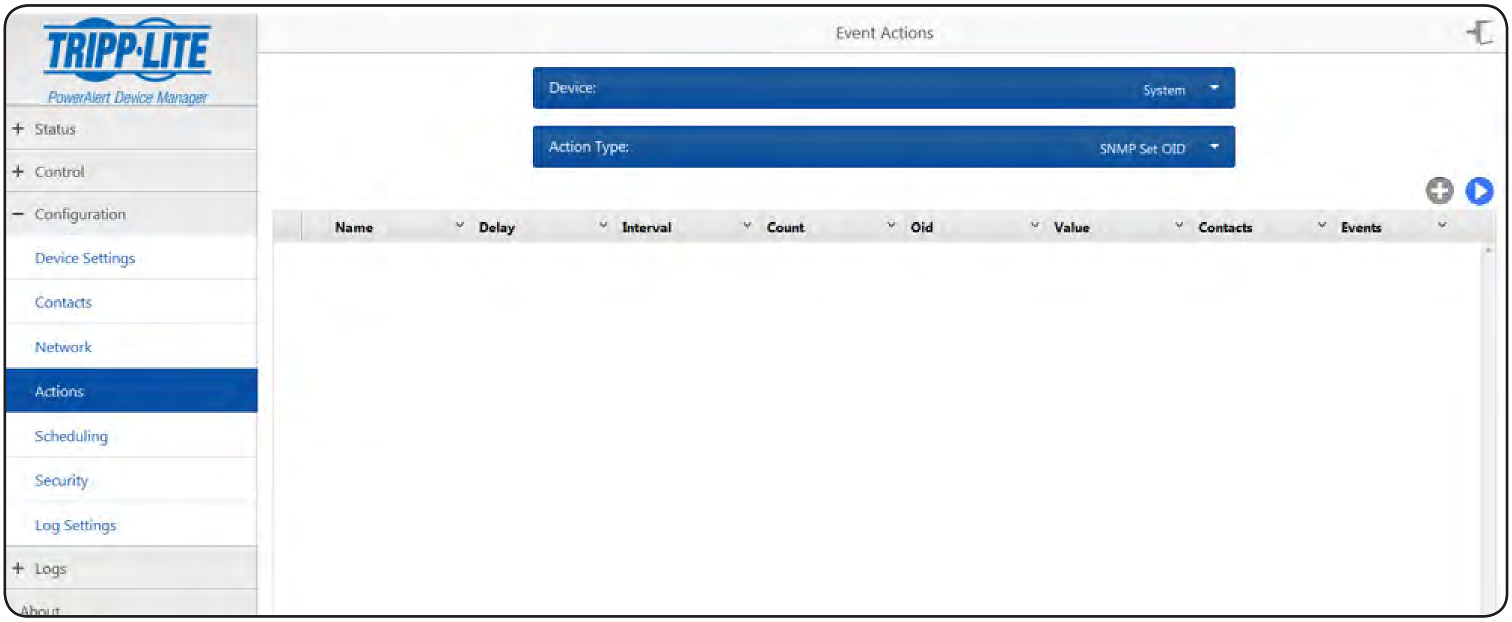
Name	Delay	Interval	Count	Contacts	Events
Default Contact Notification	30	0	1	All	On Set: 29, On Clear: 29

Figure 3-31: Email Actions

3.4.4.1.2 Configuration/Action/SNMP Set OID

The SNMP Set OID page displays the current SNMP Set OID event actions. To add a new event action, click the [+] button and select the event parameters. Click the [Save] button to save the current settings at any time (Figure 3-32).

Note: *Only SNMPv1 contacts are supported for SNMP Set OID actions.*



Event Actions

Device: System

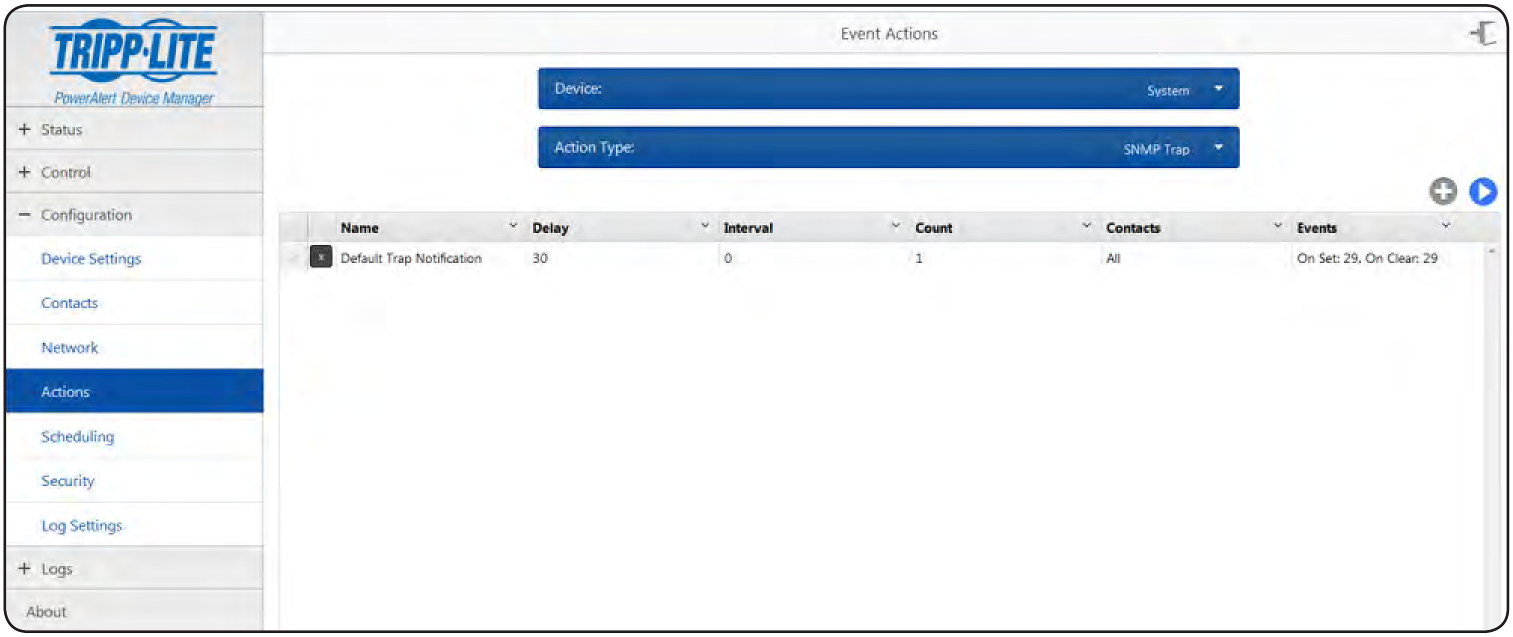
Action Type: SNMP Set OID

Name	Delay	Interval	Count	Oid	Value	Contacts	Events

Figure 3-32: SNMP Set OID Event Actions

3.4.4.1.3 Configuration/Action/SNMP Trap

The SNMP Trap page displays the current SNMP Trap event actions. To add a new event action, click the [+] button and select the event parameters. Click the [Save] button to save the current settings at any time (Figure 3-33).



Event Actions

Device: System

Action Type: SNMP Trap

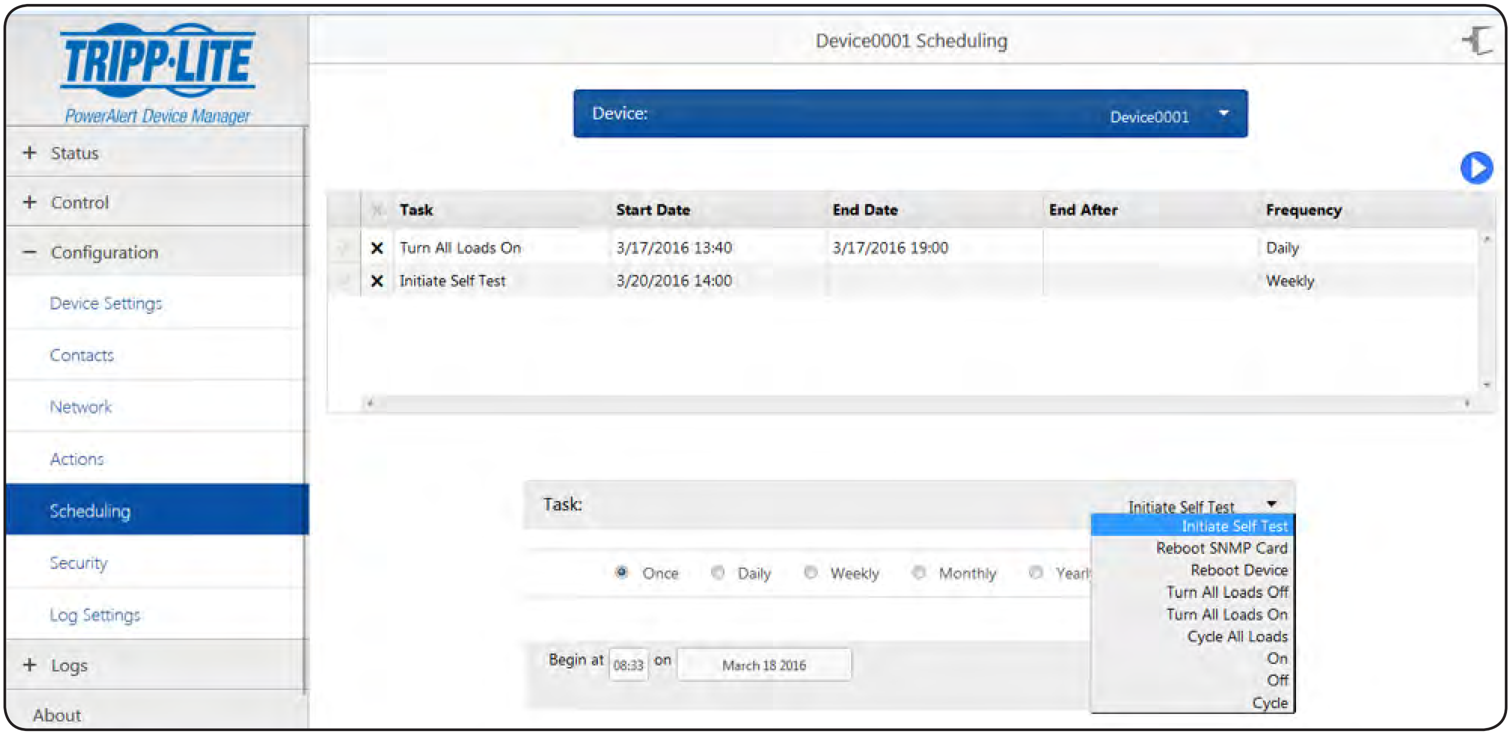
	Name	Delay	Interval	Count	Contacts	Events
x	Default Trap Notification	30	0	1	All	On Set: 29, On Clear: 29

Figure 3-33: SNMP Trap Event Actions

3.4.5 Configuration/Scheduling

The Scheduling page is used to schedule tasks for a selected device. Start by selecting the device and the desired task from the list of tasks supported by your device (Figure 3-34). Select the frequency of execution and configure how long the schedule should repeat, if desired (Figure 3-35). Click the [Save] button to save the current settings at any time.

An existing schedule cannot be edited, but if you select the schedule you wish to modify, make the desired changes, and save it, a new schedule will be created, and the existing one can simply be deleted. To remove an existing schedule, click the [x] on the left-hand side of the table. The selected schedule will be removed. It is not necessary to click the [Save] button.



Device0001 Scheduling

Device: Device0001

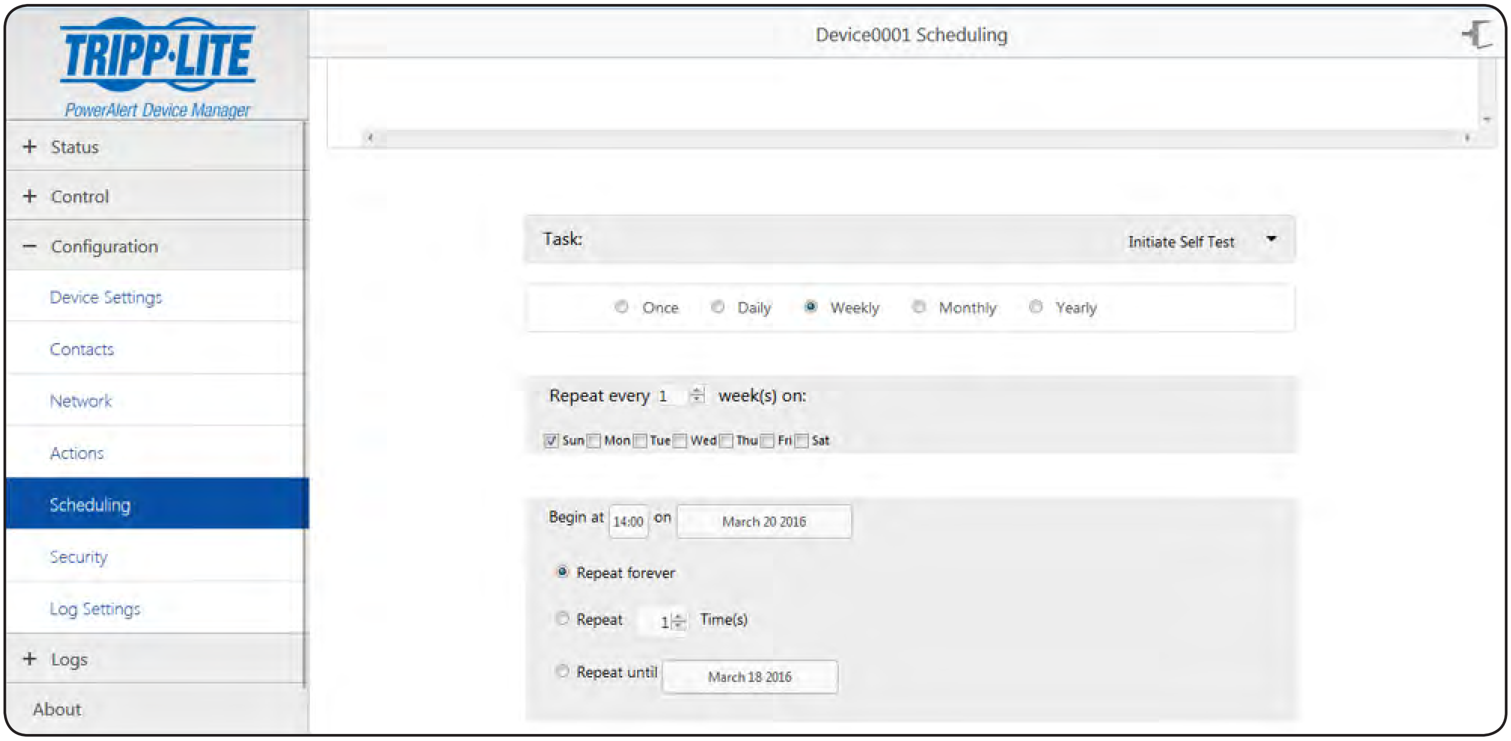
	Task	Start Date	End Date	End After	Frequency
X	Turn All Loads On	3/17/2016 13:40	3/17/2016 19:00		Daily
X	Initiate Self Test	3/20/2016 14:00			Weekly

Task: Initiate Self Test

● Once ○ Daily ○ Weekly ○ Monthly ○ Yearl

Begin at 08:33 on March 18 2016

Figure 3-34: Scheduling Tasks



Device0001 Scheduling

Task: Initiate Self Test

○ Once ○ Daily ● Weekly ○ Monthly ○ Yearly

Repeat every 1 week(s) on:

☑ Sun □ Mon □ Tue □ Wed □ Thu □ Fri □ Sat

Begin at 14:00 on March 20 2016

● Repeat forever

○ Repeat 1 Time(s)

○ Repeat until March 18 2016

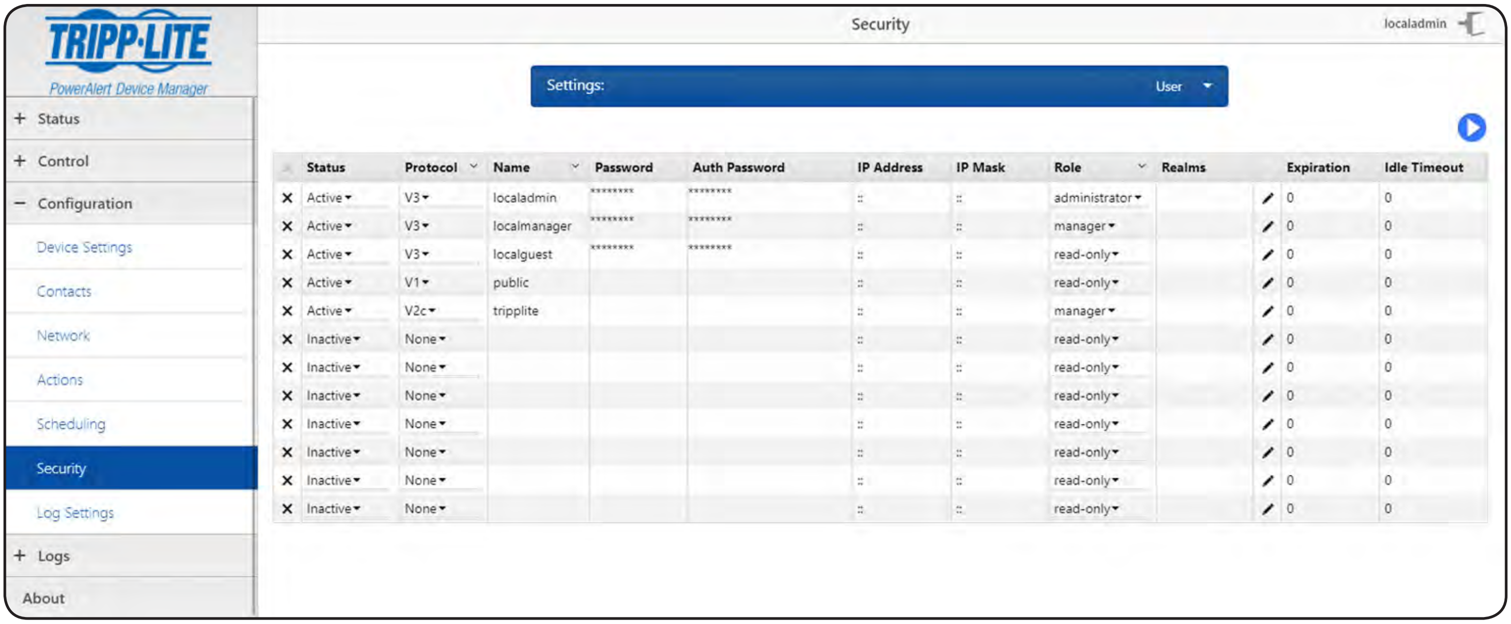
Figure 3-35: Setting Task Frequency and Repeat Rate

3.4.6 Security

The Security page displays options to assign users [set up SNMP access/default communities], change the password, change AAA settings and change Radius server settings (Figure 3-36). Community names are entered in the "Name" column.

Note: *The default "tripplite" community is also used by Tripp Lite's PowerAlert Network Shutdown Agent (PANSA)—any change to its name or inactivating it may cause issues when using PANSA.*

All users can access the password page. Only administrator-level users can access the other menu options. For names and passwords, alphanumeric and the following special characters are allowed: !@#$%^*(){[}]~_-. Names must be a minimum of 6 characters; passwords must be a minimum of 8 characters. Click the [Save] button to save the current settings at any time.



Security

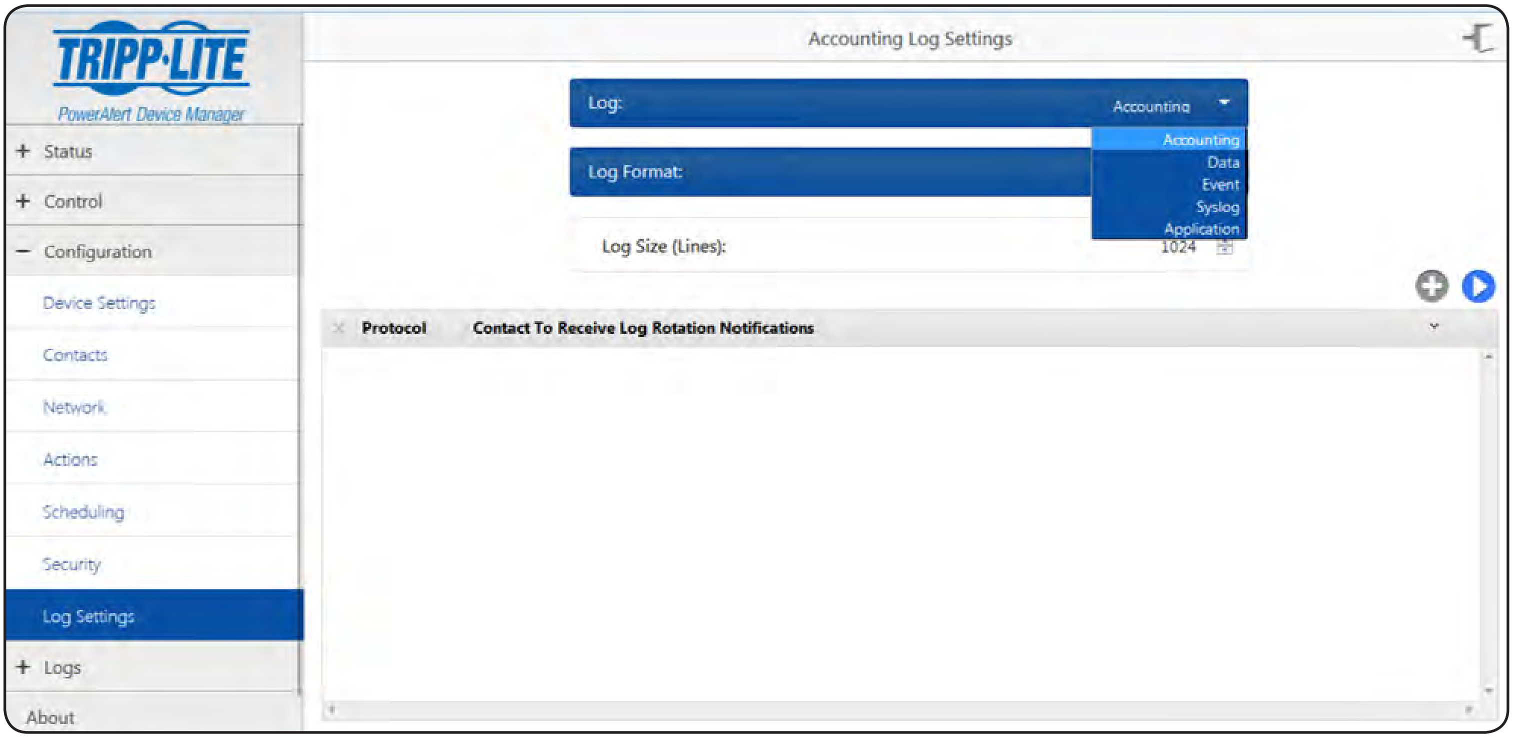
Settings: User

	Status	Protocol	Name	Password	Auth Password	IP Address	IP Mask	Role	Realms		Expiration	Idle Timeout
✕	Active	V3	localadmin	********	********	::	::	administrator		✎	0	0
✕	Active	V3	localmanager	********	********	::	::	manager		✎	0	0
✕	Active	V3	localguest	********	********	::	::	read-only		✎	0	0
✕	Active	V1	public			::	::	read-only		✎	0	0
✕	Active	V2c	tripplite			::	::	manager		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0
✕	Inactive	None				::	::	read-only		✎	0	0

Figure 3-36: Security Page

3.4.7 Configuration/Log Settings

The Log Settings page is used to configure the log rotation options for the supported log types: Accounting, Data and Events (Figure 3-37). A maximum of 1024 lines will be stored in any of the logs before the log automatically rotates. The size of the log can be adjusted; the minimum is 64 lines and the maximum is 1024 lines. The log format can be chosen; options are xml and csv. Use the [+] button to assign an existing HTTP or Email contact to receive the rotated logs (Figure 3-38). Click the [Save] button to save the settings at any time. In addition to log rotation settings, Syslog and Application log settings can be configured. The only setting for the Application log is the minimum severity level system message that should be logged (Figure 3-39). All higher-level messages will be logged automatically.

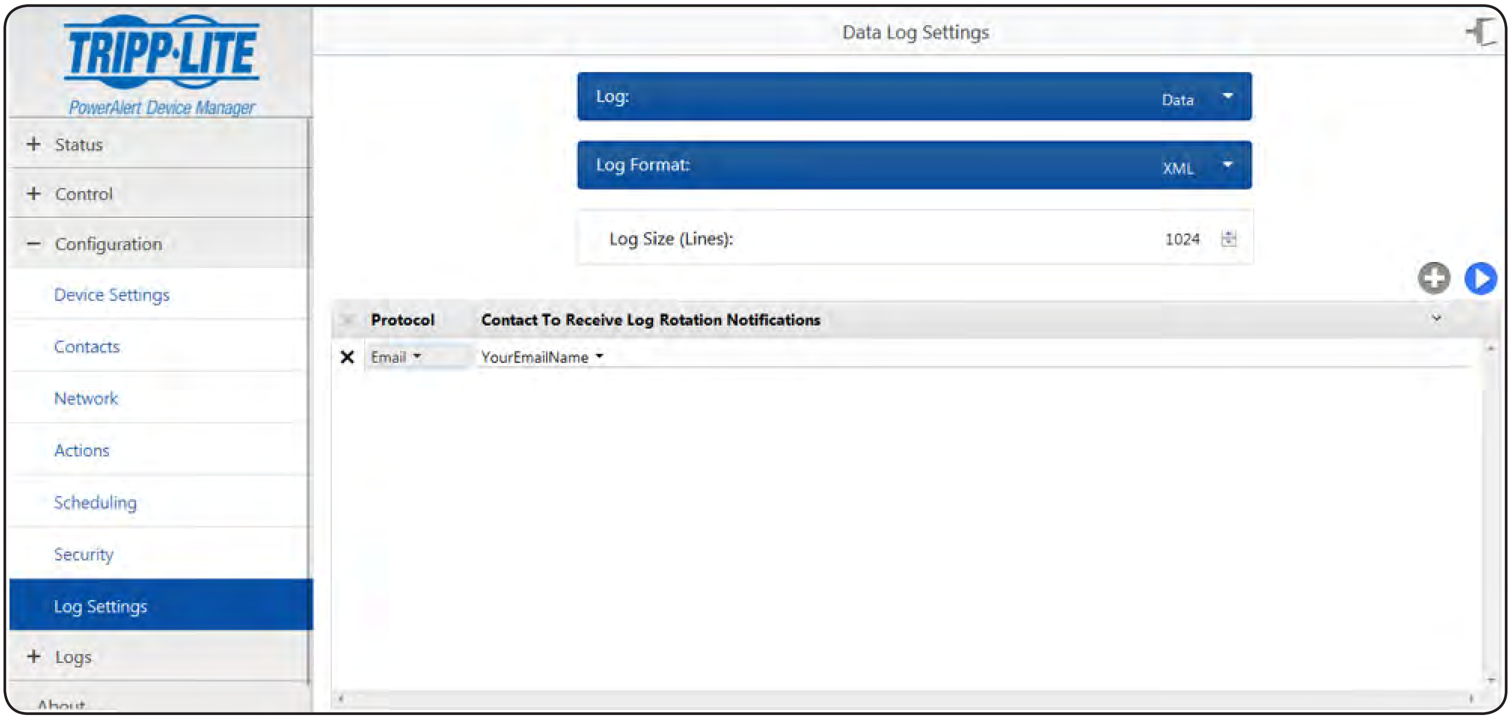


Log: Accounting

Log Format:

Log Size (Lines): 1024

Figure 3-37: Log Settings Page



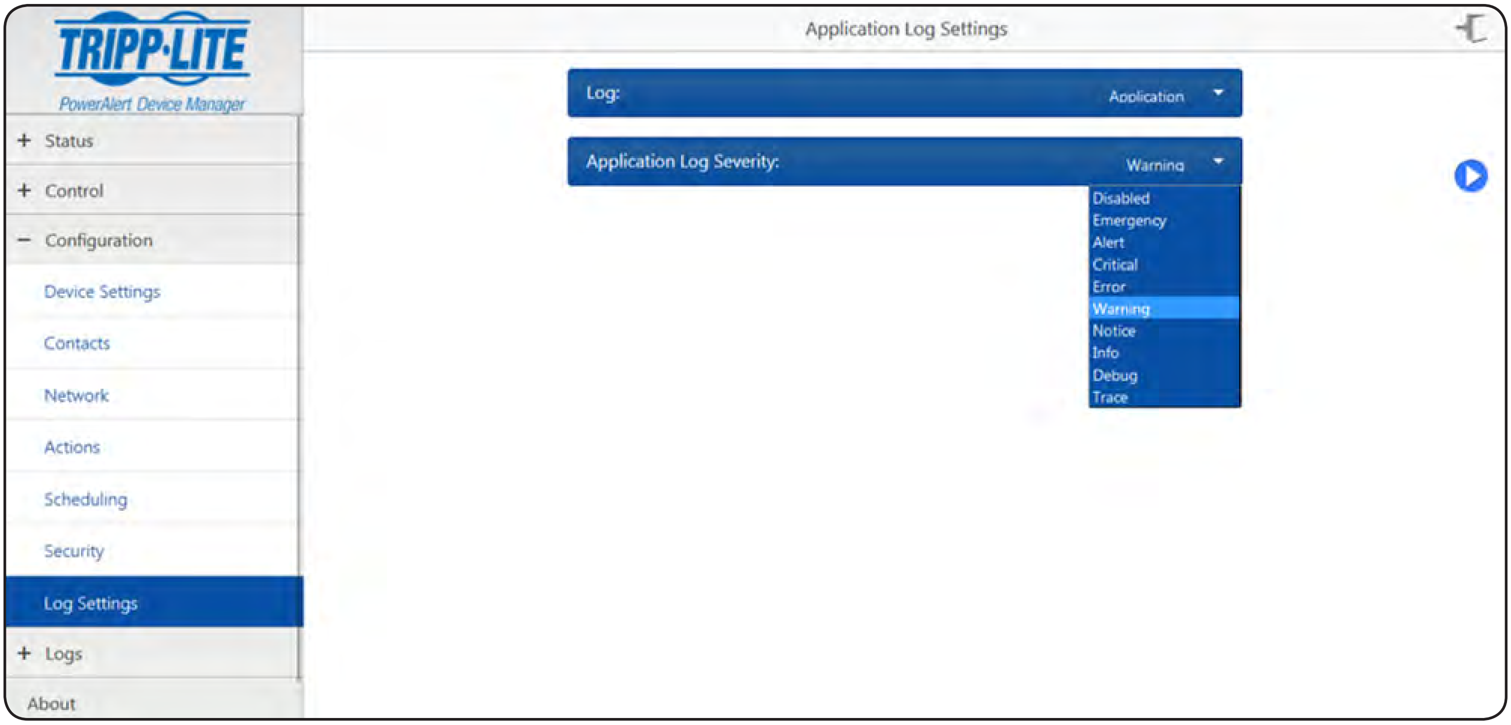
Log: Data

Log Format: XML

Log Size (Lines): 1024

Protocol	Contact To Receive Log Rotation Notifications
Email	YourEmailName

Figure 3-38: Assigning a Contact to Receive Logs



Application Log Settings

Log: Application

Application Log Severity: Warning

Figure 3-39: Setting Minimum Severity Level for Logging

3.5 Logs

The Logs menu group includes the Events, Data and Accounting Logs. The logs are loaded on demand and do not refresh automatically, so that the data you are looking at does not shift position as new information is added to the log. Refresh the page to see the most recent log entries. Each log can display up to a maximum of 1024 entries before it will automatically rotate the logs.

Click the Refresh icon ↻ to update the selected log. Click the Rotate icon 🗎 to manually send the log via email or HTTP.

Note: *Doing so clears the entries in the log.*

Note: *If there are no Contacts configured to receive rotated log files and the log fills up or you click on Rotate, the log data will be cleared. Once it is cleared it cannot be retrieved, so be sure to configure log rotation contacts prior to rotating the log if the historical system data is important to you.*

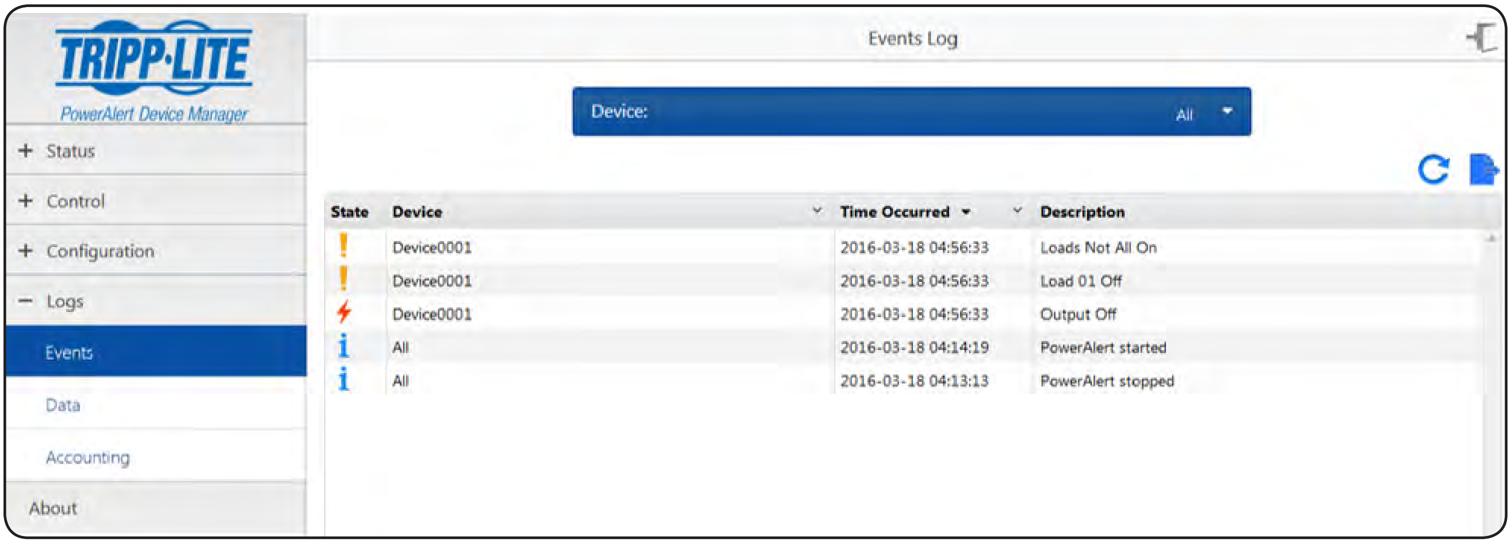
Use the Device dropdown to filter the log to include only data from the selected device.

3.5.1 Logs/Events Log

The Events Log displays the historical record of events that have occurred in the system. Select a device from the device dropdown menu to filter the log on the specific device (Figure 3-40).

By default, Events are displayed in reverse chronological order. Click the column header to change the sort criteria. The event state, the device it occurred on, and a description of the event are also displayed. To view more events, simply continue scrolling down through the log.

Note: *Changes to sorting and filtering will not persist if you leave the log and return.*



Device: All

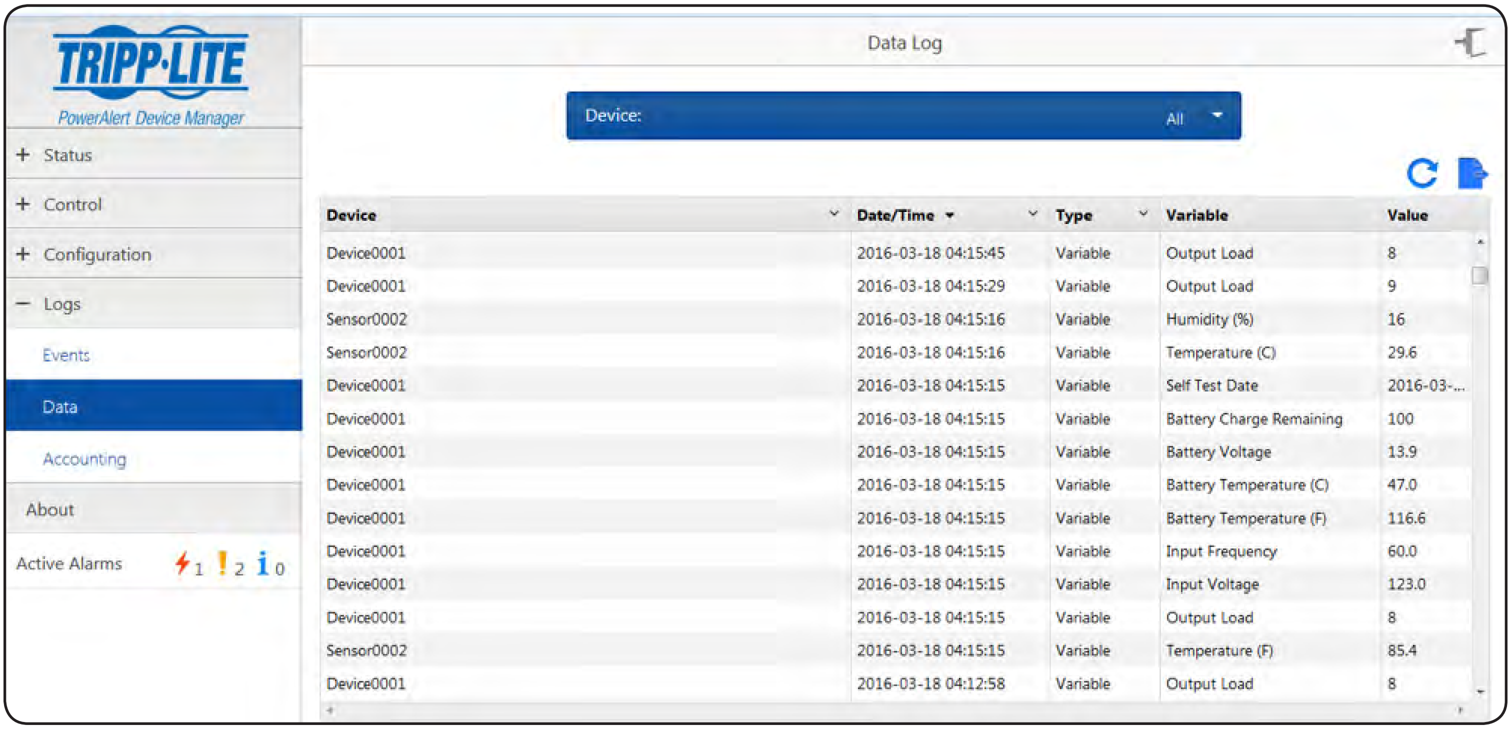
State	Device	Time Occurred	Description
!	Device0001	2016-03-18 04:56:33	Loads Not All On
!	Device0001	2016-03-18 04:56:33	Load 01 Off
⚡	Device0001	2016-03-18 04:56:33	Output Off
i	All	2016-03-18 04:14:19	PowerAlert started
i	All	2016-03-18 04:13:13	PowerAlert stopped

Figure 3-40: Events Log

3.5.2 Logs/Data Log

The Data Log displays the historical value of data points in reverse chronological order of the date and time the value was recorded by the system (Figure 3-41). The logging thresholds are fixed such that a change greater than the threshold value must be detected before a new value will be logged. Select a device from the device dropdown menu to filter the log on the specific device (Figure 3-42). Click the column header to change the sort criteria. Information on the data type, variable type, recorded value and the device it occurred on is also displayed. To view more data points, simply continue scrolling down through the log.

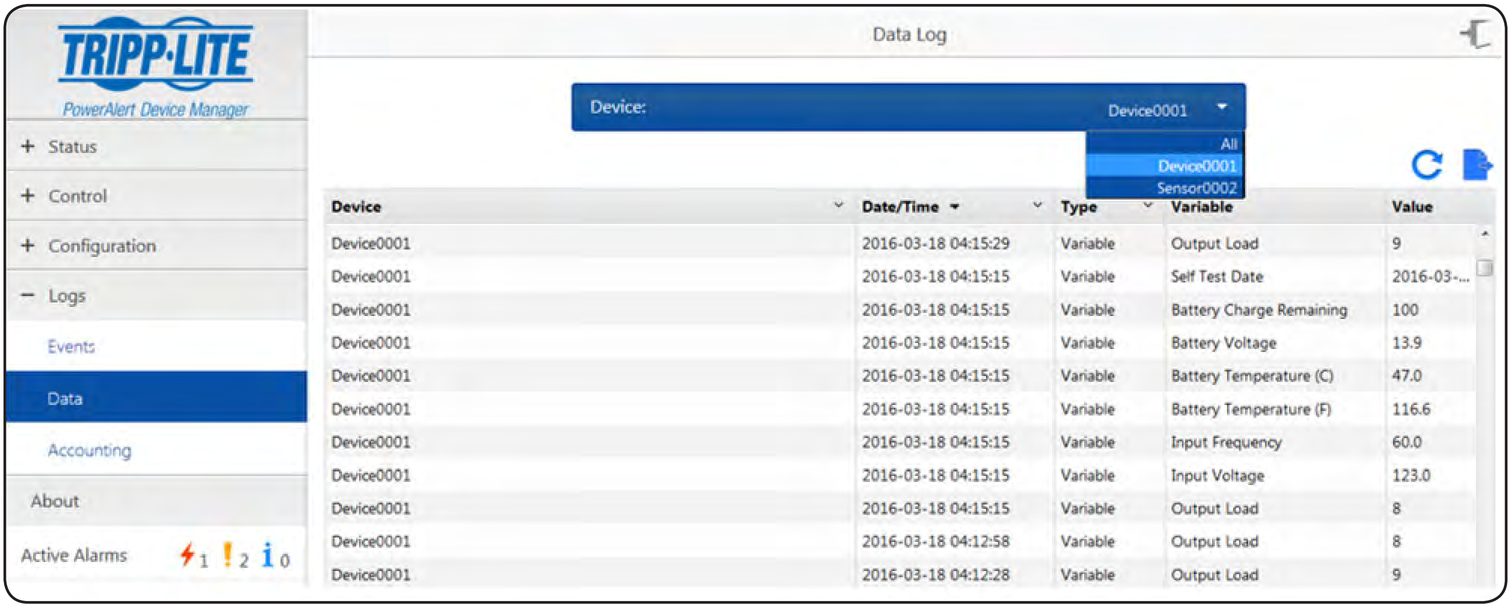
Note: *Changes to sorting and filtering will not persist if you leave the log and return.*



Device: All

Device	Date/Time	Type	Variable	Value
Device0001	2016-03-18 04:15:45	Variable	Output Load	8
Device0001	2016-03-18 04:15:29	Variable	Output Load	9
Sensor0002	2016-03-18 04:15:16	Variable	Humidity (%)	16
Sensor0002	2016-03-18 04:15:16	Variable	Temperature (C)	29.6
Device0001	2016-03-18 04:15:15	Variable	Self Test Date	2016-03-...
Device0001	2016-03-18 04:15:15	Variable	Battery Charge Remaining	100
Device0001	2016-03-18 04:15:15	Variable	Battery Voltage	13.9
Device0001	2016-03-18 04:15:15	Variable	Battery Temperature (C)	47.0
Device0001	2016-03-18 04:15:15	Variable	Battery Temperature (F)	116.6
Device0001	2016-03-18 04:15:15	Variable	Input Frequency	60.0
Device0001	2016-03-18 04:15:15	Variable	Input Voltage	123.0
Device0001	2016-03-18 04:15:15	Variable	Output Load	8
Sensor0002	2016-03-18 04:15:15	Variable	Temperature (F)	85.4
Device0001	2016-03-18 04:12:58	Variable	Output Load	8

Figure 3-41: Data Log Showing Historical Values

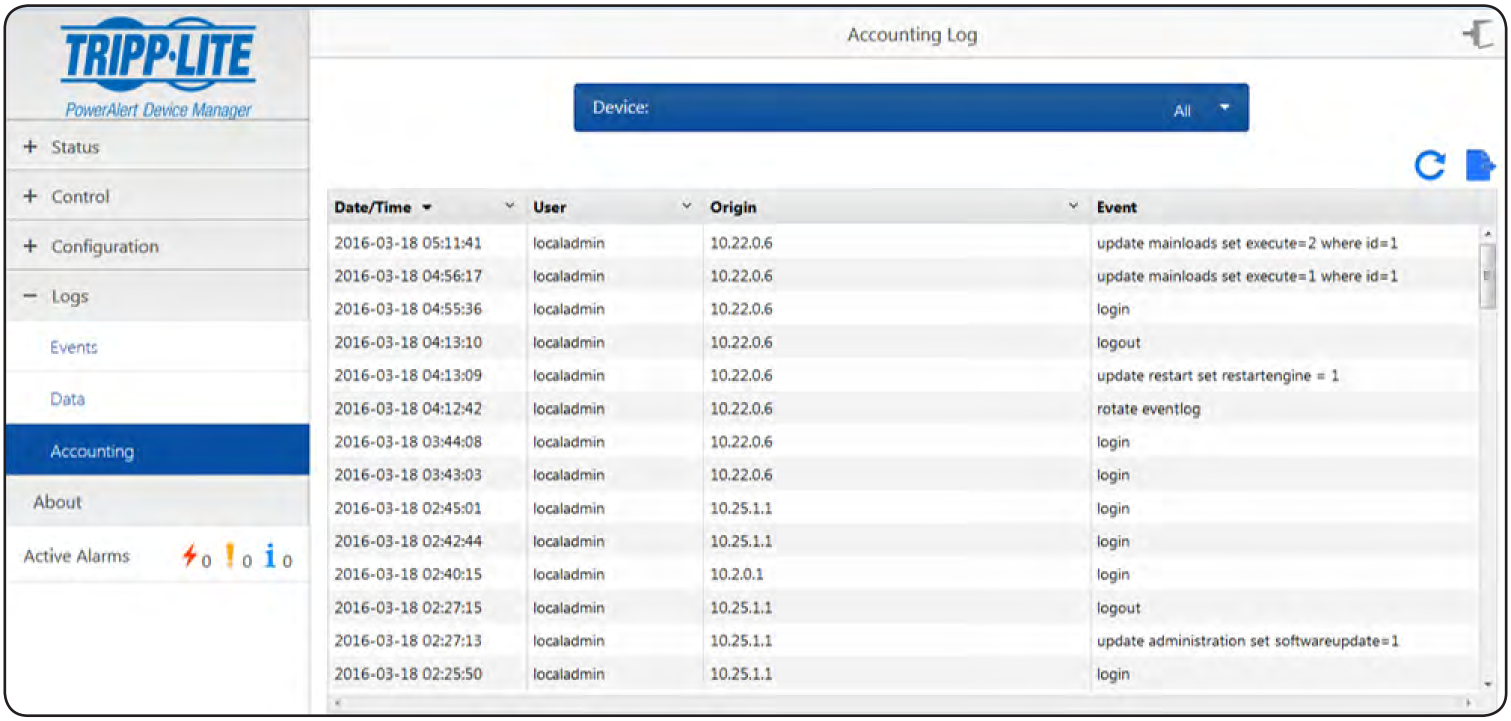


Device	Date/Time	Type	Variable	Value
Device0001	2016-03-18 04:15:29	Variable	Output Load	9
Device0001	2016-03-18 04:15:15	Variable	Self Test Date	2016-03-...
Device0001	2016-03-18 04:15:15	Variable	Battery Charge Remaining	100
Device0001	2016-03-18 04:15:15	Variable	Battery Voltage	13.9
Device0001	2016-03-18 04:15:15	Variable	Battery Temperature (C)	47.0
Device0001	2016-03-18 04:15:15	Variable	Battery Temperature (F)	116.6
Device0001	2016-03-18 04:15:15	Variable	Input Frequency	60.0
Device0001	2016-03-18 04:15:15	Variable	Input Voltage	123.0
Device0001	2016-03-18 04:15:15	Variable	Output Load	8
Device0001	2016-03-18 04:12:58	Variable	Output Load	8
Device0001	2016-03-18 04:12:28	Variable	Output Load	9

Figure 3-42: Filtering Log by Specific Device

3.5.3 Logs/Accounting Log

The Accounting Log operates on the same principle as the Events and Data Logs. It keeps track of changes made to the system, along with the date and time, the user who made the change and the origin (Figure 3-43).

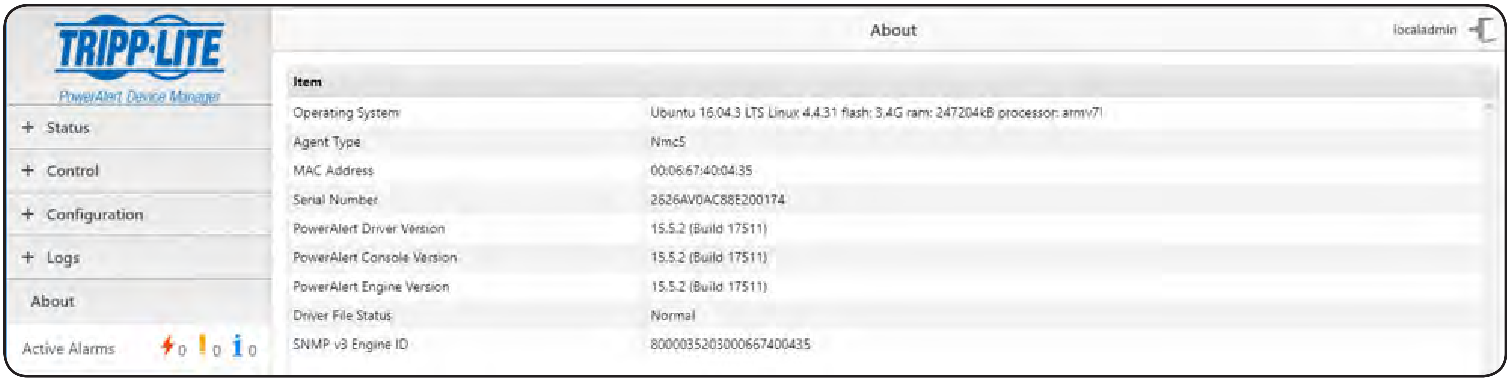


Date/Time	User	Origin	Event
2016-03-18 05:11:41	localadmin	10.22.0.6	update mainloads set execute=2 where id=1
2016-03-18 04:56:17	localadmin	10.22.0.6	update mainloads set execute=1 where id=1
2016-03-18 04:55:36	localadmin	10.22.0.6	login
2016-03-18 04:13:10	localadmin	10.22.0.6	logout
2016-03-18 04:13:09	localadmin	10.22.0.6	update restart set restartengine = 1
2016-03-18 04:12:42	localadmin	10.22.0.6	rotate eventlog
2016-03-18 03:44:08	localadmin	10.22.0.6	login
2016-03-18 03:43:03	localadmin	10.22.0.6	login
2016-03-18 02:45:01	localadmin	10.25.1.1	login
2016-03-18 02:42:44	localadmin	10.25.1.1	login
2016-03-18 02:40:15	localadmin	10.2.0.1	login
2016-03-18 02:27:15	localadmin	10.25.1.1	logout
2016-03-18 02:27:13	localadmin	10.25.1.1	update administration set softwareupdate=1
2016-03-18 02:25:50	localadmin	10.25.1.1	login

Figure 3-43: Accounting Log

3.6 About

The About page shows information about the LX Platform device, including its MAC Address, Serial Number and the PowerAlert Device Manager revision (Figure 3-44). The information on the About page is read-only.



Item	
Operating System	Ubuntu 16.04.3 LTS Linux 4.4.31 flash: 3.4G ram: 247204kB processor: armv7l
Agent Type	Nmc5
MAC Address	00:06:67:40:04:35
Serial Number	2626AV0AC88E200174
PowerAlert Driver Version	15.5.2 (Build 17511)
PowerAlert Console Version	15.5.2 (Build 17511)
PowerAlert Engine Version	15.5.2 (Build 17511)
Driver File Status	Normal
SNMP v3 Engine ID	8000035203000667400435

Figure 3-44: About Page

4. Telnet/SSH Console

Most of the monitoring and control features available in the Web interface (see **Section 3. The Web Interface**) are also available in the Telnet and/or SSH console. Accessing the LX Platform device through the Telnet/SSH console is ideal for mobile or resource-limited platforms.

Each menu can be thought of as one of four types: navigation, summary, detail and data collection.

Navigation Menus
Navigational menus allow a user to choose a path down the menu structure. Any data presented on these navigational menus are for information only and will require continuing down into a submenu to make any modifications.

Summary Menus
Data items that can have multiple instances will also have a summary menu. For example, the Email Recipients will have a summary menu. The summary will display a row for each member with a subset of the data for that object.

From the summary, a user may enter an ID number from the list to view/modify the detail menu for that item. If insert is allowed for the data, the user will be presented with the option to enter '0' as well. When '0' is chosen, the user is then automatically prompted to enter the individual detail menu items. Once all items have been entered, the user will be prompted to save the information, view the information, or abort the insert.

Detail Menus
The detail menus display the information about a collection of related individual data items. An example of a detail menu would be the menu for a single Email Recipient. From the detail menu, a user will be given the option to choose to modify the individual data items. When allowed, deletes will be done from the detail menus.

Some detail menus will immediately update the data as entered. Others will collect all the data changes and require the user to explicitly save the data in one operation. Those that require an explicit save will present an 'A' option to apply the changes. If a user has pending changes and attempts to leave the menu, an indication that the changes have not been saved will be presented and give the user the option to save or abort the changes.

Data Collection Menus
Data collection menus allow a user to enter values for an individual data item. For example, the menu to update an Email Recipient's email address would be a data collection menu. These menus do not have any submenus.

Menu Permissions
The menu descriptions in this documentation will assume that the user has Read/Write permissions to all of the data. Not all users will have this level of authorization.

The data displayed and the options presented to a given user will depend upon that user's permissions. A user will only be presented with data and options to the data that he or she is allowed to access. A more detailed discussion of user permissions can be found in the discussion on Local User definitions later in this document.

***Note:** The menu examples were generated using one specific device model. Because the content of many of the device-specific menus will vary based upon the device and protocol, these are simply examples to give an idea of the type of data displayed here and how it is formatted. The contents of these menus should not necessarily be expected to be displayed, unless it is explicitly stated that the setting applies for all device types.*

Menus

Main Menu
The main menu is the starting menu when a user accesses the Telnet/SSH interface. It contains the entry point for all of the pieces of the system data. All other menus are accessible from the main menu.

To help keep the user informed about active alarms, the current list of active alarms is always displayed as part of the main menu.

```
Tripp Lite                                              (c) Copyright 2005-2018
PowerAlert 15.5.2 (Build 17511)                             All Rights Reserved
--------------------------------------------------------------------------------

-------- ALARMS ----------------------------------------------------------------

   No active alarms present

-------- Main Menu -------------------------------------------------------------

        1- Devices
        2- System Configuration
        3- Network Configuration
        4- Alarms and Logging
        5- About
        E- Launch CLI
        Q- Logout
        <ENTER> Refresh Menu
```

4. Telnet/SSH Console

4.1 Device Menu

If there is more than one device, the first menu displayed for “Device” is a choice of which device's data you would like to present. The data on all descendant menus will refer to the device chosen. If there is only one device, this choice is skipped and all descendant menus will obviously apply to the sole device.

In order to access the device menu structure, the user must have at least read permission for the DEVICE STATUS facility. Any additional permissions needed in the submenus of this structure will be indicated for that menu.

Device List Menu

```
-------- Device List -----------------------------------------------------------

      1-    Device0001 (SMART750RM1UN)
      2-    Sensor0004 (E2MTHDI)
      X/M- Return to Main Menu
      <ENTER> Refresh Menu -----------------------------------------------------------------
```

Device Main Menu

```
-------- Device 1 --------------------------------------------------------------

 Device Name            : Device0001
 Location               :                 Region           :
 Vendor                 : TRIPPLITE       Product          : SMART750RM1UN
 Protocol               : 3003            Date Installed   : 2016-04-08
 State                  : NORMAL          Type             : UPS
 Port Mode              : RS232           Port Name        : /dev/tty02
 Firmware Version       : 2264 (Rev  A)   Serial Number    :
 Device ID              : 1               Self Test Date   : 2016-04-08
 Self Test Status       : Done and Pass

      1- Status
      2- Identification
      3- Controls
      4- Events
      5- Loads
      6- Preferences and Thresholds
      7- Device Alarms
      8- Logs
      X- Device List Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

4.1.1 Status

This menu displays the status variables for the device. The values in this menu are not editable. The exact data shown on this menu will be device dependent.

Device Status Menu

```
-------- Device Status Menu ----------------------------------------------------

 Device
 ======
 Self Test Date              : 2016-04-08
 Self Test Status            : Done and Passed

 Battery
 =======
 Battery Status              : Normal
 Battery Charge Remaining    : 100 %
 Battery Voltage             : 28.0 V
 Battery Temperature (C)     : 35.7 C
 Battery Temperature (F)     : 96.3 F
 Battery Age                 : 0.0 Years

 Input
 =====
 Input Frequency             : 60.0 Hz
 Input Voltage               : 121.0 V
 Device Mode                 : Utility
 Tap State                   : Normal
 Minimum Input Voltage       : 115.0 V
 Maximum Input Voltage       : 123.0 V

 Output
 ======
 Output Source               : Normal
 Output Load                 : 10 %

      X- Device Main Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

4.1.2 Identification

This is the section of the device menus that will contain the information about the device. This information will be both user-defined settings, such as device name or location, and equipment-specific information like vendor, product and protocol. There are data items on this menu which will be displayed for all devices and some data displayed based upon the type and protocol for the device. Any data that is modifiable by the user will have a prompt option displayed on the menu.

Device Identification Menu

```
-------- Identification --------------------------------------------------------

 Device Name                    : Device0001
 Location                       :
 Region                         :
 Vendor                         : TRIPPLITE
 Product                        : SMART750RM1UN
 Protocol                       : 3003
 Date Installed                 : 2016-04-08
 State                          : NORMAL
 Type                           : UPS
 Port Mode                      : RS232
 Port Name                      : /dev/tty02
 VA Rating                      : 750 VA
 Firmware Version               : 2264 (Rev  A)
 Serial Number                  :
 Watchdog Supported             : Yes
 Nominal Battery Voltage        : 24 V
 Input Line Count               : 1
 Nominal Input Voltage          : 120 V
 Nominal Input Frequency        : 60 Hz
 Load Banks Total               : 3
 Load Banks Controllable        : 2
 Device ID                      : 1

 1- Name
 2- Location
 3- Region
 4- Date Installed
 5- Serial Number
 6- Device ID
 X- Device Main Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

The following menu data should display for all devices:

Device Name
This is the user-modifiable device name. The system will give the device a default name. The default for a UPS, PDU or ATS is "DeviceX", where X is the last four digits of the device's serial number. For devices that do not have a serial number, "X" will default to "001." The default for an EnviroSense2 module is "Sensor." The default for SRCOOLNET is "AC."

Location
The user-defined device location. There is no default for location.

Region
The user-defined device region. There is no default for region.

Vendor
This is the manufacturer of the device.

Product
This is the device model.

Protocol
This is the protocol used by the device.

Date Installed
This is the date that the device was installed. For a UPS, this will be used for the battery-installed date and is therefore modifiable.

State
This is the current operating state of the device. Some valid values are:

- NORMAL
- INFORMATION
- WARNING
- STATUS
- CRITICAL
- OFFLINE

Type
This is the device type. Some valid values are:

- UPS
- PDU
- ENVIROSENSE
- ATS

Port Mode
This is the connection mode of this device. The valid values are:

- RS232
- USB
- HID

Port Name
Name of the port this device is on.

4.1.3 Controls

This section of the menu is used to present the controls that are available for the device. When a control is chosen and it does not have any control data associated, the user will be prompted for verification that they really wish to execute the control. Upon verification, the control will be executed. If the control does have control data parameters associated with it, then that data will be presented when the control is chosen.

Note: *To access the controls menu, the user must also have at least Read permission for the DEVICE STATUS and DEVICE CONTROLS facilities.*

Device Controls Menu

```
-------- Device Controls -------------------------------------------------------

 1 Turn All Loads Off
 2 Reboot SNMP Card
 3 Reboot Device
 4 Initiate Self Test
 5 Turn All Loads On
 6 Cycle All Loads
 X- Device Main Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.1.3.1 Control Data

This menu displays the list of data items associated with the control. The options from this menu are to choose the number associated with the data item or to execute ("E") the control. If "E" is chosen, the user will be prompted to verify that they wish to execute the control. If verified, the control is executed. If they choose one of the data items, they will be prompted to enter the new value.

```
-------- Control Data ----------------------------------------------------------
DESCRIPTION                                  VALUE        TYPE         MIN          MAX
Delay before reboot (seconds)                15           Integer      1            65535
Delay before restarting UPS (seconds)        60           Integer      10           16777214

 1- Delay before reboot (seconds)
 2- Delay before restarting UPS (seconds)
 E- Execute
 X- Device Control Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Example of choice '1' for above example

```
 Description      : Delay before reboot (seconds)
 Value            : 15

 Enter Integer between 1 and 65535
 X- Leave value unchanged
 M- Return to Main Menu
```

Example of choice 'E' for above example

```
 Do you wish to execute this control?
 Y- Yes, continue and perform operation
 N- Do Not Make Change
```

4.1.4 Events

Events

To access the events menu, the user must have at least Read access to the DEVICE EVENTS, ACTIONS and CONTACTS facilities in addition to the DEVICE STATUS facility.

Events Summary Menu

```
-------- Device Events Menu ----------------------------------------------------
   -----------------------------------------------------------------------------
    #  | CATEGORY     | DESCRIPTION                             | ENABLED
   -----------------------------------------------------------------------------
    1    WARNING        Load Level Above Threshold                  Yes
    2    WARNING        On Battery                                  Yes
    3    CRITICAL       Battery Low                                 Yes
    4    WARNING        Battery Capacity Below Warning Level        Yes
    5    CRITICAL       Overload                                    Yes
    6    WARNING        Temperature High                            Yes
    7    CRITICAL       Output Off                                  Yes
    8    WARNING        Self Test Failed                            Yes
    9    INFORMATION    Battery Age Above Threshold                 Yes
    10   INFORMATION    Communications Lost                         Yes
    11   WARNING        Loads Not All On                            Yes
    12   WARNING        Load 01 Off                                 Yes
    13   WARNING        Load 02 Off                                 Yes

      #- Select Event
      X- Device Main Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Event Details Menu

```
-------- Device Event Menu -----------------------------------------------------
   Event Set Name      : Load Level Above Threshold
   Event Clear Name    : Load Level Below Threshold
   Event Category      : WARNING
   Event Enabled       : Yes
   Event Logging       : On

   Set Action                Clear Action
   ------------------------- -------------------------
   Default Contact Notificat Default Contact Notificat
   Default Trap Notification Default Trap Notification
   Send Trap to PANMS or PAN Send Trap to PANMS or PAN

      1- Manage Actions
      2- Modify Event Category
      3- Disable Event
      4- Disable Logging for Event
      X- Device Events Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Event Category

This specifies the severity level for the event. The user may choose to give different events different severity levels. The valid values for category are:

- CRITICAL
- WARNING
- INFORMATION

Enable/Disable Event

This allows the user to no longer consider the event an alarm event. Disabling it causes the event to no longer create an alarm, and the assigned actions will no longer fire when this event occurs. The default is for all events to be enabled.

Enable/Disable Logging
The user may enable and disable logging for the event. The default is that all events are logged.

Device Event Actions
This will display all of the actions to occur when this event occurs and subsequently clears. The user will also be allowed to add new actions from this menu.

Device Event Actions Summary Menu

```
-------- Device Event Actions --------------------------------------------------

    # Set Action                        Clear Action
     --- -------------------------      -------------------------
       1 Default Contact Notificat      Default Contact Notificat
       2 Default Trap Notification      Default Trap Notification
       3 Send Trap to PANMS or PAN      Send Trap to PANMS or PAN

     #- Modify Event Set/Clear Actions
     0- Add new Event Set/Clear Actions
     X- Device Events
     M- Return to Main Menu
     <ENTER> Refresh Menu
```

Device Event Action Detail Menu

```
-------- Device Event Action Menu ----------------------------------------------

  Event                : Load Level Above Threshold
  Event Clear          : Load Level Below Threshold
  Event Action         : Default Contact Notification
  Event Clear Action   : Default Contact Notification

     1- Choose Set Action
     2- Choose Clear Action
     3- Choose Action For Both Set and Clear
     A- Apply Changes
     D- Delete the Event Action
     X- Device Event Menu
     M- Return to Main Menu
     <ENTER> Refresh Menu
```

Menu Data

Event
This is the label of the event to which actions will be assigned. This is a display-only value.

Event Clear
This is the clear label of the event to which the actions are being assigned. This is a display-only value.

Event Action
This is also called the set action. It is the action to be taken when this event occurs.

Event Clear Action
This is the action to be taken when this event clears.

Options

- Choose Set Action
  This allows the user to choose the set action and then be prompted to choose the clear action.
- Choose Clear Action
  This choice allows the user to choose the clear action and then be prompted to choose the set action.
- Choose Action for Both Set and Clear
  This option allows the user to choose a single action to be used for both the set and the clear actions.

For all of the above choices, if there are no actions that match the action that the user would like to assign, the user will be allowed to create a new action from this menu. For more information on the action menus, please refer to that section.

4.1.5 Loads

To access the load menus, the user must have at least Read access to the DEVICE LOADS and DEVICE STATUS facilities. Additionally, a user may be able to update Loads options by accessing outlet realms.

You can control the outlets of a managed device by selecting the load plugged into it and clicking the desired [On], [Off] or [Cycle] control. Each load bank consists of one or more outlets.

You can use the “Description” field to label the banks for easy reference. The main control buttons affect all outlets at once.

Warning! The load controls start or stop the flow of electricity to your device’s outlets. Make sure you know what equipment is connected to each load bank before attempting to use these controls! Check the outlet labels and/or test the load banks by plugging a circuit tester or small light into each outlet and observing the effects of the controls.

4.1.5.1 Load Configuration

Menu Data

Edit Description
Use this menu to enter custom labels for load banks. This can be used to help identify equipment quickly and easily before using the controls to cycle the bank ON or OFF.

Change Realm
Assigning a realm to an individual outlet or group of outlets creates a logical grouping that can be used to assign user access.

Turn Load On/Off
This menu controls the state of the outlet.

Cycle Load
This command can be used to turn the load OFF and back ON in a single command.

```
-------- Device Load Detail Menu -----------

Description:
Realm:             0
State:             On
Controllable:      Yes
Load Group:

Ramp Settings
     Action:       Remain Off
     Delay:        0

Shed Settings
     Action:       Remain On
     Delay:        0

      1- Edit Description
      2- Change Realm
      3- Turn Load Off
      4- Cycle Load
      5- Change Ramp Action
      6- Change Ramp Delay
      7- Change Shed Action
      8- Change Shed Delay
      X- Load Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> x
-------------Loads Menu ---------------------
```

Change Ramp Action
Select if the outlet should stay OFF or turn ON when ramp actions are triggered.

Change Ramp Delay
If setting the ramp action to turn ON, this command sets the delay before the action occurs.

Change Shed Action
Select if the outlet should stay ON or turn OFF when shed actions are triggered.

Change Shed Delay
If setting the shed action to turn OFF, this command sets the delay before the action to occur.

4.1.5.2 Load Groups

The Load Groups menu is not available for all devices. Devices that support load groups must have two or more loads and provide a mechanism for updating multiple loads with a single command. If the device does not support load groups, then this menu will not be available.

Load Groups Summary Menu

```
-------- Device Load Groups Menu -----------------------------------------------

--------------------------------------------------------------------------------
##| State |          Name          |                   Outlets                 |
--------------------------------------------------------------------------------
01   On    load group one           1 3 5 7

      #- Load Group
      0- New Load Group
      X- Device Main Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Load Group Detail Menu

```
-------- Load Group Detail Menu ---------------------------------------------

   Load Group Name      : load group one
   Description          : odd loads
   State                : On
   Load                 : 1,3,5,7
      1- Load Group Name
      2- Description
      3- Select Loads
      4- Turn Group Loads Off
      5- Cycle Group Loads
      A- Apply Changes
      D- Delete
      X- Load Groups Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> x
```

Menu Data Descriptions

Load Group Name
This is the name of the load group.

Description
This is the description of the load group.

State
This is the state of the load group. The valid values are:

- On – all of the loads in the group are on
- Off – all of the loads in the group are off
- Mixed – some loads in the group are on and some are off

Load
This is a comma-separated list of loads in the group. The loads in the group must be controllable, belong to only one group and must all be from the same device.

4.1.5.3 Ramp/Shed Settings

This menu allows the user to modify the ramp and shed settings for the entire device in one operation. This is to ensure the user can make all of the changes necessary before a ramp/shed synchronization is started. The menu will prompt the user to make sure all changes have been made before saving. A message will be displayed that indicates if a ramp/shed synchronization is in progress and further updates will not be allowed. Updates of other variables will also be blocked when synchronization is in progress. This will be indicated on the menus impacted.

Ramp/Shed Settings Summary Menu

```
-------- Ramp/Shed Settings -----------------------------------------------------

Load  | Description                  | Ramp                    | Shed
      |                              | Action       | Delay    | Action       | Delay
      |                              | After Delay  |          | After Delay  |
1                                      Remain Off     0          Remain On      0
2                                      Remain Off     0          Remain On      0
3                                      Remain Off     0          Remain On      0
        #- Ramp/Shed Settings
        A- Apply Changes
        X- Loads
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

The following shows the sequence of automatic data prompts when '1' is entered from the above summary menu and the resulting summary menu when done.

```
>> 1
-------- Ramp/Shed Settings -----------------------------------------------------

-------- Ramp Action Selection --------------------------------------------------
 Current Value: Remain Off
 1- Remain Off
 2- Turn On After Delay
>> 2
-------- Ramp Delay -------------------------------------------------------------
 Current Ramp Delay = 0
 Enter an integer less than 65536 for Ramp Delay
>> 10
-------- Shed Action Selection --------------------------------------------------
 Current Value: Remain On
 1- Remain On
 2- Turn Off After Delay
>> 2
-------- Shed Delay -------------------------------------------------------------
 Current Shed Delay = 0
 Enter an integer less than 65536 for Shed Delay
>> 20
-------- Ramp/Shed Settings -----------------------------------------------------

Load  | Description                  | Ramp                    | Shed
      |                              | Action       | Delay    | Action       | Delay
      |                              | After Delay  |          | After Delay  |
1                                      Turn On        10         Turn Off       20
2                                      Remain Off     0          Remain On      0
3                                      Remain Off     0          Remain On      0
```

Menu Data

Ramp Action
This is the action to take when a ramp is initiated. The valid values are:

- Remain Off
- Turn On After Delay

Ramp Delay
This is the delay before taking the ramp action.

Shed Action
This is the action to take when a shed is initiated. The valid values are:

- Remain On
- Turn Off After Delay

Shed Delay
This is the delay before taking the shed action.

4.1.6 Preferences and Thresholds

This menu contains the device and protocol specific data that defines the user's preferred behavior settings and thresholds. Since this menu is used to define the user's preferences, the values here should be editable.

Preferences and Thresholds Menu

```
-------- Preferences and Thresholds --------------------------------------------
 Auto Restart On Shutdown                     : Enabled
 Auto Restart On Delayed W                    : Enabled
 Auto Restart On Low Volta                    : Enabled
 Auto Restart On Overload                     : Disabled
 Auto Restart On Overtemp                     : Disabled
 Auto Battery Test Period                     : Disabled
 Low Battery Warning Thres                    : 50 %
 Battery Age Alarm Thresho                    : 36 Months
 Load Level Threshold - %                     : 90 %

 1- Auto Restart On Shutdown
 2- Auto Restart On Delayed Wakeup
 3- Auto Restart On Low Voltage
 4- Auto Restart On Overload
 5- Auto Restart On Overtemp
 6- Auto Battery Test Period
 7- Low Battery Warning Threshold
 8- Battery Age Alarm Threshold
 9- Load Level Threshold - % Load
 X- Device Main Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.1.7 Device Alarms

This view is similar to the alarm view except the alarms displayed here are for the selected device only. The option to enable/disable auto-acknowledge alarms is not available at the device level. It must be done system-wide from the system alarms menu.

4.1.8 Logs

Display the logs that apply to the selected device only. The menus here are similar to the system-wide logging menus but show only the logs for the selected device.

4.2 System Configuration

This section of the menu is used to define system-wide configuration data.

System Configuration Menu

```
-------- Configuration ----------------------------------------------------

 -------- System Configuration --------------------------------------------
 1- Address Book
 2- Global Actions
 3- Security
 4- Date/Time
 5- Local Device Discovery
 6- Restart PowerAlert
 X- System Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.2.1 Address Book

This section of the menu is used to define various recipients of data from the system. These include email recipients, SNMP trap and set OID recipients and HTTP destinations used for log rotation.

To access to the address book menu, the user must have at least Read access to the CONTACTS facility.

Address Book Menu

```
-------- Address Book ------------------------------------------------------------

 1- Email Contacts
 2- SNMP Contacts
 3- HTTP Contacts
 X- System Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.2.1.1 Email Contacts

This section of the menus is used to define the email contacts.

Summary Menu

```
-------- Email Contacts ----------------------------------------------------------
```

#	Name	Email Address
1	John	John@mail.com
2	Nancy	Nancy@mail.com

```
#- Email Contact
0- Add New Email Contact
X- Contacts Menu
M- Return to Main Menu
<ENTER> Refresh Menu
```

Email Contact Detail Menu

After adding a new contact, enter “A” to apply the change. The Status field will display “No Current Email Status” until a test email has been sent. Enter “S” to send a test email.

```
Name                  : Nancy
Email                 : Nancy@mail.com
Status                : No Current Email Status

A- Apply Changes
D- Delete
S - Send Test Email
X- Email Contacts
M- Return to Main Menu
<ENTER> Refresh Menu
```

Menu Data

Name
This is the name of the email recipient.

Email
This is the email address of the recipient in the form mailbox@emailserver. An example of an email address in its proper form would be user1234@yahoo.com.

4.2.1.2 SNMP Contacts

The destinations defined that can be used to send SNMP traps or perform SNMP set OID operations.

SNMP Contacts Summary Menu

```
-------- SNMP Contacts Menu ----------------------------------------------------

--------------------------------------------------------------------------
#   |    Name            |     Host Address       |   Port  |   Version
--------------------------------------------------------------------------
1     mycommunity             10.10.10.10             200         SNMPV1
2     snmpv3 destination      10.11.12.13             162         SNMPV3

 #- Edit SNMP Contact
 0- Add New SNMP Contact
 X- Address Book
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

SNMP V1/V2 Contact Detail

```
-------- SNMP Contact Detail Menu ----------------------------------------------

 SNMP Version     : SNMPV2c
 Name             : snmpv2 destination
 Host Address     : 10.10.10.11
 Port             : 162
 Community        : sss

 1- Name
 2- Host Address
 3- Port
 4- Community
 A- Apply Changes
 D- Delete
 X- Contacts Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

SNMP V3 Contact Detail Menu

```
-------- SNMP Contact Detail Menu ----------------------------------------------

SNMP Version      : SNMPV3
Name              : snmpv3 destination
Host Address      : 10.11.12.13
Port              : 162
User              : someusername
Priv Password     : somepassword
Auth Password     : somepassword

 1- Name
 2- Host Address
 3- Port
 4- User
 5- Priv Password
 6- Auth Password
 A- Apply Changes
 D- Delete
 X- Contacts Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

Menu Data

Name
The name is the character string which contains a unique identifying name for the SNMP destination.

Host Address
This defines the IP Address used to send SNMP Traps or SNMP Set OID requests.

Port
This defines the Host Address Port used to send SNMP Trap or SNMP Set OID requests.

Community (SNMPV1 and SNMPV2c only)
For SNMPv1 or SNMPv2 recipients, this must be a valid community for the receiving agent.

User (SNMPV3 only)
This must specify a valid SNMPV3 username defined in the VACM tables. This is the username specified in the Set OID requests.

Priv Password (SNMPV3 only)
The PRIV Password of the SNMPV3 user used for sending Set OID requests.

Auth Password (SNMPV3 only)
The AUTH password of the SNMPV3 user used for sending Set OID requests.

4.2.1.3 HTTP Contacts

HTTP destinations to be used for sending log files when rotating logs.

HTTP Destination Summary

```
-------- HTTP Contacts Menu ----------------------------------------------------

#     Name
1     http destination

#- Edit HTTP Contact
0- Add New HTTP Contact
X- Address Book
M- Return to Main Menu
<ENTER> Refresh Menu
```

HTTP Contact Detail

```
-------- HTTP Contact Detail Menu ----------------------------------------------
 Name                          : http destination
 Protocol                      : https
 Address                       : 10.12.14.16
 Port                          : 223
 Contact URI                   : someuri.here.com
 Authentication Login Name     : eightlettername
 Authentication Password       : eightletterpassword
  1- Name
  2- Protocol
  3- Address
  4- Port
  5- Contact URI
  6- Authentication Login Name
  7- Authentication Password
  A- Apply Changes
  D- Delete
  X- Contacts Menu
  M- Return to Main Menu
  <ENTER> Refresh Menu
  >>
```

Menu Data

Name
The name is the character string which contains a unique identifying name for the HTTP destination.

Protocol
Choose “http” for non-secured HTTP and “https” for secured HTTP.

Contact URI
Uniform Resource Identifier (URI) is a character string used to identify the destination on the internet.

Authentication Login Name
This is an optional login name used for authentication. The string must have a length between 8 and 32 characters. Alphanumeric and the following special characters are supported: !@#$%^*(){[}]~_-

Authentication Password
This is an optional password used for authentication. It must be a string between 8 and 32 characters. If the authentication login is entered, then the authentication password should be entered as well.

4.2.2 Global Actions

4.2.2.1 Action Profiles

Action profiles define responses to events and alarm conditions. The action profile allows the response to be defined once and applied to multiple alarm events. An action may be a response to the alarm condition or a response to the condition clearing. Where appropriate, the two actions may be the same.

```
------- Action Profiles Menu --------------------------------------------------

     1- Email Notification Profiles
     2- Device Shutdown Profiles
     3- SNMP Set OID Profiles
     4- SNMP Trap Notification Profiles
     5- Load Control Action Profiles
     6- Ramp Action Profiles
     7- Shed Action Profiles
     8- Control Execution Action Profiles
     X- Global Actions
     M- Return to Main Menu
     <ENTER> Refresh Menu
```

Common Action Data

All action profiles, unless otherwise noted, have the data described in this section.

Name
All actions have a unique identifying name.

Delay
All actions have a delay in seconds. This is the amount of time before the action fires after the event occurs. When an action is the response to the action clearing, the delay is ignored and is done immediately.

Common Data
In addition to the common values for name and delay, the notification actions also allow the notifications to be sent multiple times until the event condition has been cleared. The additional data to support that is an interval and count.

Interval
This data applies to only Email and SNMP Trap Notifications. The interval allows the notification to be sent multiple times while the alarm condition is present. The interval is the amount of time in seconds before sending the next notification. The valid values are:

- 0 – the notification is sent only once
- Integer greater than or equal to 15 – the notification will be sent after this interval has elapsed and the alarm condition is still present

Count
This data applies to only Email and SNMP Trap Notifications. The count determines the number of times that the notification will be sent. The valid values are:

- 0 – valid only if interval is not 0. This implies that the notification should be sent until the alarm condition is cleared.
- 1 – valid only if interval is 0. The notification is sent only once.
- Integer greater than 1. This is a finite number of times that the notification will be sent while the alarm condition is still present.

4.2.2.1.1 Email Notification Action Menus

Summary Menu

```
-------- Email Notification Profiles ------------------------------------------

   -----------------------------------------------------------------------------
       |                                |       |          | INTERVAL | TO
   #   | Name                           | DELAY | INTERVAL |  COUNT   | ALL
   -----------------------------------------------------------------------------
    1    Default Contact Notification       30        0          1      Yes
    2    Email to Admin                      0        0          1      No

      #- Edit Profile
      0- Add New Profile
      X- Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu

Default Email Notification Action Profile Menu

-------- Email Action Profile Detail Menu --------------------------------------

   Name: Default Contact Notification
   Delay: 30
   Interval: 0
   Count: 1
   Email Contacts Chosen:  All

      1- Modify Profile Name
      2- Modify Delay
      3- Modify Interval
      4- Modify Count
      5- Manage Email Action Contacts
      6- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Email Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu

Email Action Profile with Single Email Contact Example Menu
-------- Email Action Profile Detail Menu --------------------------------------

   Name: Email to Admin
   Delay: 0
   Interval: 0
   Count: 1
   Email Contacts Chosen: Admin John Doe

      1- Modify Profile Name
      2- Modify Delay
      3- Modify Interval
      4- Modify Count
      5- Manage Email Action Contacts
      6- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Email Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Email Contacts Chosen

The email notification action requires the user to define a list of contacts that will receive email notification when an event occurs. When the option is set to ALL, every email contact in the system will receive the notification and any new users added will automatically be included in the list without any further changes to the action. Alternately, the option can be set to only notify a specific list of email contacts defined in the system.

```
Choosing Email Contact Example Menus

-------- Email Action Contacts Menu -----------------------------------------

   Email Contacts Chosen: All

      1- Select All Contacts
      2- Clear Contact List
      3- Assign Contact To List
      4- Delete Contact From List
      X- Email Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
>> 3

 -------- Add Email Action Contact Menu -------------------------------------

   Email Contacts Chosen: All

-----------------------------------------------------------------------------
   #  |              Name                |            Email Address
-----------------------------------------------------------------------------
   1     Admin John Doe                          admin_jdoe@example.com


      #- Assign Contact To List
      0- Create New Contact
      X- Email Action Contacts Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
>> 1

-------- Add Email Action Contact Menu --------------------------------------

   Email Contacts Chosen: Admin John Doe

-----------------------------------------------------------------------------
   #  |              Name                |            Email Address
-----------------------------------------------------------------------------
   1     Admin John Doe                          admin_jdoe@example.com


      #- Assign Contact To List
      0- Create New Contact
      X- Email Action Contacts Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
>> x

-------- Email Action Contacts Menu -----------------------------------------

   Email Contacts Chosen: Admin John Doe

      1- Select All Contacts
      2- Clear Contact List
      3- Assign Contact To List
      4- Delete Contact From List
      X- Email Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

4.2.2.1.2 SNMP Trap Notification Menus

Summary Menu

```
-------- SNMP Trap Notification Profiles ---------------------------------------

   -----------------------------------------------------------------------------
       |                                |       |          | INTERVAL | TO
   #   | Name                           | DELAY | INTERVAL |  COUNT   | ALL
   -----------------------------------------------------------------------------
    1    Default Trap Notification          30        0          1      Yes

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- SNMP Trap Action Profile Detail Menu ----------------------------------

   Name: Default Trap Notification
   Delay: 30
   Interval: 0
   Count: 1
   SNMP Contacts Chosen:  All

      1- Modify Profile Name
      2- Modify Delay
      3- Modify Interval
      4- Modify Count
      5- Manage SNMP Trap Contacts
      6- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Script Exection Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> x
```

Menu Data

SNMP Contacts Chosen

This is the list of contacts that the SNMP trap will be sent to when the action is fired. The trap may be sent to all SNMP Contacts or to a specific list of SNMP Contacts defined in the system. When the option is set to ALL, any new contacts will automatically be sent the set request without making any further changes to the action.

4.2.2.1.3 SNMP Set OID Action Menus

SNMP Set OID actions will make an SNMP Set request to a list of SNMP Contact Destinations.

Summary Menu

```
-------- SNMP Set OID Profiles -------------------------------------------------

   -----------------------------------------------------------------------------
       |                                |       |          | INTERVAL
   #   | Name                           | DELAY | INTERVAL |  COUNT
   -----------------------------------------------------------------------------
    1   shed on alarm                      0         0          1
    2   ramp on clear                      0         0          1

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- SNMP Set OID Action Profile Detail Menu -------------------------------

   Name: shed on alarm
   Delay: 0
   Interval: 0
   Count: 1
   SNMP Contacts Chosen:  All
   Set OID: 1.3.6.1.4.1.850.100.1.8.3.3.0
   Set OID Data Type: Integer
   Set OID Value: 1

      1- Modify Profile Name
      2- Modify Delay
      3- Modify Interval
      4- Modify Count
      5- Update OID
      6- Update Data Type
      7- Update Value
      8- Manage SNMP Set OID Contacts
      9- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Script Execution Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

OID
This is the OID to be used in the SNMP Set request sent for the action.

Note: *The OID should not start with a period.*

Data Type
This is the data type used in the SNMP Set request sent for the action. Available options are Integer and String.

Value
This is the value used in the SNMP Set request sent for the action.

SNMP Contacts Chosen
This is the list of contacts that the SNMP Set request will be sent to when the action is fired. The set request may be sent to all SNMP Contacts or to a specific list of SNMP Contacts defined in the system. When the option is set to ALL, any new contacts will automatically be sent the set request without making any further changes to the action.

4.2.2.1.4 Device Specific Menus

The device-specific menus are actions that occur on a specific device. They may be applied to any device event.

Common Data

Device ID
Since all these actions will occur on a specific device, they require the user to specify the device.

Device Shutdown Action Menus

Summary Menu

```
-------- Device Shutdown Profiles ----------------------------------------------

   ----------------------------------------------------------------------------
   #   | Name                            | DELAY
   ----------------------------------------------------------------------------
    1    Default Device Shutdown            120

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- Device Shutdown Action Profile Detail Menu ----------------------------

   Name: Default Device Shutdown
   Delay: 120
   Device: 0

      1- Modify Profile Name
      2- Modify Delay
      3- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- SNMP Trap Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Load Control Action Menus

Summary Menu

```
-------- Device 1 Load Control Action Profile ----------------------------------

   ----------------------------------------------------------------------------
   #   | Name                            | DELAY
   ----------------------------------------------------------------------------
    1    load 1 off                         120

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- Device 1 Load Control Action Profile Detail --------------------------

   Name: load 1 off
   Delay: 120
   Device: 1
   Load Control: Turn Off
   Loads Chosen:   1

      1- Modify Profile Name
      2- Modify Delay
      3- Select Load Control
      4- Select Loads To Control
      5- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- SNMP Trap Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Load Control
This setting dictates what the load will do when the action is fired. The valid options are:

- Turn Off
- Turn On

Load Selection
This is the list of loads that will be controlled by the action. The display will always be a comma-separated list of loads. For data entry, the loads may be entered as a comma-separated, a range or a comma-separated list that contains ranges.

The lists (1, 2, 3, 5, 6, 7) and (1-3, 5-7) would both be accepted and result in the same selection.

Ramp Action Menus

Summary Menu

```
-------- Device 1 Ramp Action Profile -----------------------------------------

   ----------------------------------------------------------------------------
   #   | Name                            | DELAY
   ----------------------------------------------------------------------------
    1    ramp it up                          0

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- Device 1 Ramp Action Profile Detail -----------------------------------

   Name: ramp device loads
   Delay: 0
   Device: 1

      1- Modify Profile Name
      2- Modify Delay
      A- Apply Changes
      D- Delete
      X- Device Ramp Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Shed Action Menus

Summary Menu

```
Only one device available for this action type. Using device 1.

-------- Device 1 Shed Action Profile ---------------------------------------

-----------------------------------------------------------------------------
   #   | Name                           | DELAY
-----------------------------------------------------------------------------
    1    shed device loads                  0

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

```
-------- Device 1 Shed Action Profile Detail -----------------------------------

   Name: shed device loads
   Delay: 0
   Device: 1

      1- Modify Profile Name
      2- Modify Delay
      3- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Device Shed Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Control Execution Action Menus (This feature is not yet implemented.)

Summary Menu

```
Only one device available for this action type. Using device 1.

-------- Device 1 Control Execute Action Profile ------------------------------

   -----------------------------------------------------------------------------
   #   | Name                          | DELAY
   -----------------------------------------------------------------------------
    1    exec control action               0
    2    exec another control action       0

      #- Edit Profile
      0- Add New Profile
      X- Device Action Profile Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Detail Menu

Control with no control data

```
-------- Device 1 Control Execute Action Profile Detail -----------------------

   Name: exec control action
   Delay: 0
   Device: 1
   Control Executed: Initiate Self Test

      1- Modify Profile Name
      2- Modify Delay
      3- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Device Control Execute Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Control with Control Data

```
-------- Device 1 Control Execute Action Profile Detail -----------------------

   Name: exec another control action
   Delay: 0
   Device: 1
   Control Executed: Reboot Device
   Control Data:
                    Description                 Value
      ---------------------------------------   -----
      Delay before shutdown (seconds)             1
      Delay before restart (minutes)              1

      1- Modify Profile Name
      2- Modify Delay
      3- Control Data
      4- Apply To Device Events
      A- Apply Changes
      D- Delete
      X- Device Control Execute Action Profiles Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Control
This is the control to be executed by the action.

Control Data
Some controls have additional data. For those controls, the data settings may be changed.

4.2.2.1.5 Applying Actions to Events

Choosing this option begins the process of assigning the action to events. Each event has both a “Set” and a “Clear” action associated with it. The action being updated must be used for the “Set” action or both “Set” and “Clear” actions, as appropriate. Ramp actions are only allowed to be used for the “Clear” action and will not be present this option. The steps necessary to assign the actions to events are as follows:

1. Choose “Set” and “Clear” action pair.
2. Choose events that the use “Set” and “Clear” actions.

Choosing the Set and Clear Actions

Once all the data for an action profile has been saved, the user will have the option to apply the action to events. The next step presented depends upon the type of action profile being updated. The action profile being updated will at least be the “Set” action, unless the action type is not allowed to be used for the set action. At this time, the only type of action that cannot be used for the set action is Ramp action.

Actions to Using Both Set and Clear
For Email and SNMP Trap notifications, the same action is automatically used for both “Set” and “Clear” responses. The menu will proceed directly to choosing the events to correspond to these actions.

Actions Types Allowed for Set Only
Shed action profiles are only allowed to be used as the “Set” action on events. In the menu, only the option to use the action for “Set” will be given. The following is an example of the menu displayed for this action profile type.

```
-------- Actions Set/Clear -----------------------------------------------------

   Using Action For Alarm Condition

      S- Continue to Apply to Device Events

      X- None

      M- Return to Main Menu

      <ENTER> Refresh Menu
```

Action Types Allowed for Clear Only
Ramp Action profiles are only allowed to be used in conjunction with Shed Action profiles and therefore must be a “Clear” action on events. Since the “Set” action must be chosen before the “Clear” action, the Ramp action will not be present in the “Set” menu and cannot be the first action applied to an event.

Action Types Allowed for Both Set and Clear
The action types not already covered are allowed to be used for both the event “Set” and “Clear” actions. Unlike the notification actions, where it is desirable for the “Set” and “Clear” action to be the same, the preference for these actions is that the “Set” and “Clear” actions be of the same type, but not the same action. The types covered here are Load Control Actions, Control Execution and SNMP Set OID. The following is an example of the menu presented for these action types.

Menu Data

Using Action for Set Action
The action will be used for the “Set” action only. The user will be given the option to choose the “Clear” action before continuing on to select events.

Using Action for Both Set and Clear Action
The action will be used for both “Set” and “Clear” and the user can immediately continue on to choose events.

Choosing Clear Action
This is skipped if action is to be used for both “Set” and “Clear” action, or the user chose not to include a “Clear” action. The action chosen for the “Clear” action must be the same type as the “Set” action. The list of available actions will be presented. If none of the actions match what the user would like to happen on the clear, the user may choose to insert a new action.

Choosing an existing action
The number of the existing action is chosen and the user moves on to select events.

Choosing to create a new action
The user is placed into insert mode and prompted for the settings for the new actions. Once the insert of the new action is completed, it is chosen as the “Clear” action and the user is moved on to select events.

Choosing Events

```
-------- Apply To Device Events ------------------------------------------------

   Set Action           : shed device loads
   Clear Action         : ramp device loads

      1- Apply To All Device Events
      2- Apply To Events On Device 1 (SU1500RTXL2Ua)
      3- Apply To Events On Probe (Envirosense)
      X- None
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Apply To All Events
This option will apply the “Set” and “Clear” actions chosen to all of the events on all devices. If the “Set” and “Clear” actions are already assigned, but are not paired with the same “Set” and “Clear” action, the user will be prompted to leave those assignments alone or to clear those assignments and assign the chosen actions in their place.

Apply to Events of a Selected Device

```
-------- Action Events ---------------------------------------------------------

   Set Action           : shed device loads
   Clear Action         : ramp device loads
   Events Chosen        : None

      1- Apply To All Events
      2- Clear Event List
      3- Add Event To List
      4- Delete Event From List
      X- Apply To Device Events
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Apply To All Events
This option will apply the “Set” and “Clear” actions chosen to all of the events on the selected devices. If the “Set” and “Clear” actions are already assigned but are not paired with the same “Set” and “Clear” action, the user will be prompted to leave those assignments alone or to clear those assignments and assign the chosen actions in their place.

Clear Event List
This will clear the “Set” and “Clear” action assignments from all of the events for the selected device only.

Add Event to List
This choice will allow the user to select an event from the list of events for the device selected. Only the events that do not currently have actions assigned will be presented.

```
-------- Add Event To List -----------------------------------------------------

      1- Contact 1 In Alarm
      2- Contact 2 In Alarm
      3- Contact 3 In Alarm
      4- Contact 4 In Alarm
      5- Temperature Beyond Limits
      6- Humidity Beyond Limits
      X- Action Events
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Delete Event From List
Delete a chosen event from the list. The user will be presented with a list of all events that are currently using the “Set” and “Clear” action. Choosing an event will remove the actions from that event only. The following is an example of the delete event menu.

```
-------- Delete Event From List ------------------------------------------------

      1- Temperature Beyond Limits
      2- Humidity Beyond Limits
      X- Action Events
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Note: *To have access to the action profiles menus, the user must have at least Read access to the ACTIONS and DEVICE EVENTS facilities. In addition, to be able to have access to control execution actions, the user must also have at least Read permission to the DEVICE CONTROLS as well. Similarly, to have access to load control, ramp and shed actions, the user must also have access to DEVICE LOAD. To be able to create Email notification, SNMP Trap and SNMP Set OID actions, the user must also have at least Read permission for CONTACTS.*

4.2.2.2 Schedules

Once a schedule has been created, it cannot be modified. To change a schedule, the original schedule has to be removed and a new schedule created.

```
-------- Schedules Menu --------------------------------------------------------

--------------------------------------------------------------------------------
  # Pending Action       Next Execution Time            Frequency
--------------------------------------------------------------------------------
  1 Cycle All Loads      2016-06-02 17:00:00+00:00      Weekly
  2 Reboot Device        2016-06-15 18:00:00+00:00      Monthly
  3 Reboot SNMP Card     2016-06-15 22:00:00+00:00      Monthly
  4 Initiate Self Test   2017-01-15 23:00:00+00:00      Yearly
  5 Initiate Self Test   2016-11-26 08:00:00+00:00      Yearly

        #- View Schedule
        0- Add New Schedule
        X- Global Actions
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

Execute Once Schedule

```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Initiate Self Test
Device Id            : 1
Frequency            : Once
Next Execution Time  : 2016-06-01 16:00:00+00:00

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

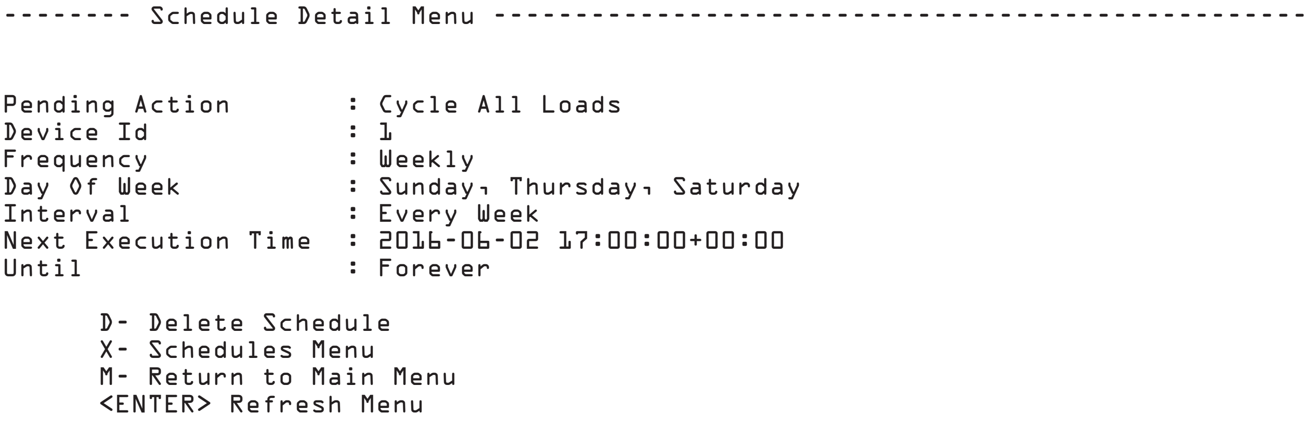
Execute Daily Schedule

```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Cycle All Loads
Device Id            : 1
Frequency            : Daily
Interval             : Every Day
Time                 : 17:00
Start Date           : 2016-06-01
Until                : Forever

     1- Device
     2- Pending Action
     3- Frequency
     4- Time
     5- Interval
     6- Start Date
     7- Until
     A- Create Schedule
     X- Schedules Menu
     M- Return to Main Menu
```

Execute Weekly Schedule



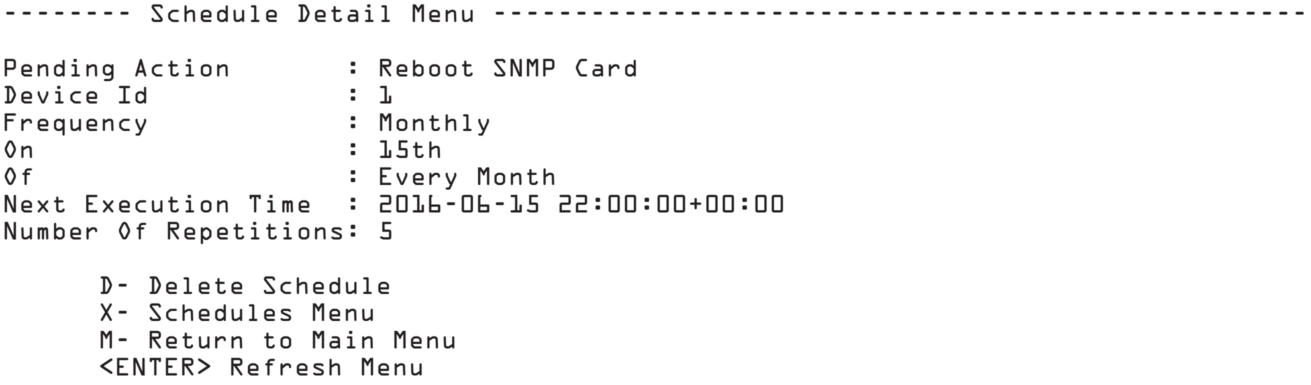
```
-------- Schedule Detail Menu --------------------------------------------------


Pending Action       : Cycle All Loads
Device Id            : 1
Frequency            : Weekly
Day Of Week          : Sunday, Thursday, Saturday
Interval             : Every Week
Next Execution Time  : 2016-06-02 17:00:00+00:00
Until                : Forever

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Execute Monthly Schedule

Day of Month

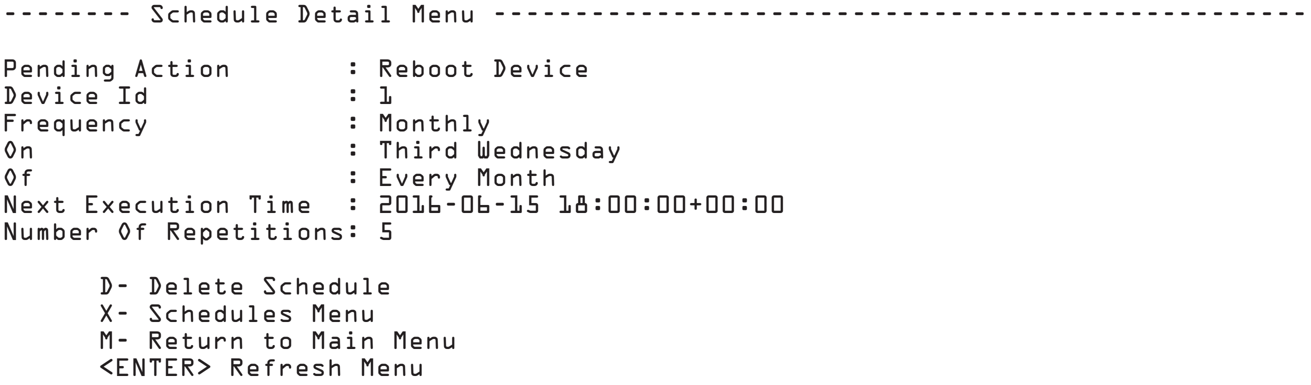


```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Reboot SNMP Card
Device Id            : 1
Frequency            : Monthly
On                   : 15th
Of                   : Every Month
Next Execution Time  : 2016-06-15 22:00:00+00:00
Number Of Repetitions: 5

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Relative Day of Month



```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Reboot Device
Device Id            : 1
Frequency            : Monthly
On                   : Third Wednesday
Of                   : Every Month
Next Execution Time  : 2016-06-15 18:00:00+00:00
Number Of Repetitions: 5

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Execute Yearly Schedule

Day of Month

```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Initiate Self Test
Device Id            : 1
Frequency            : Yearly
On                   : 15th
Month                : January
Next Execution Time  : 2017-01-15 23:00:00+00:00
Until                : Forever

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Relative Day of Month

```
-------- Schedule Detail Menu --------------------------------------------------

Pending Action       : Initiate Self Test
Device Id            : 1
Frequency            : Yearly
On                   : Last Saturday
Month                : November
Next Execution Time  : 2016-11-26 08:00:00+00:00
Until                : Forever

      D- Delete Schedule
      X- Schedules Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Device ID
This field selects the device to which the schedule is to be applied.

Pending Action
This field indicates the action to be fired according to the schedule.

Time
This setting controls the time that the scheduled action will be fired. The time and date chosen must be in the future. The default setting is 10 minutes from the current time.

Date/Start Date
For schedules that will only fire once, this is the date that the scheduled control will be executed.

For all other schedules, this is the start date for scheduling the control to be executed. The date and time chosen must be in the future. The default setting is the current date.

Frequency
This is how often the control is to be executed. Choices are: once, daily, weekly, monthly and yearly.

Interval
The interval is valid only for daily, weekly and monthly schedules. This is the number of days, weeks or months between executions of the chosen control. For example, an interval of 2 for a daily schedule means that it would happen every other day. The default for interval is 1.

Day of Week
This is the day of the week that the scheduled control should be executed. It is used for weekly schedules and for monthly/yearly schedules using a relative day selection such as “first Thursday.”

Day of Month
This setting is used for monthly and yearly schedules. It specifies the day of the month that the schedule should be executed.

Month
This setting is used for yearly schedules only. This is the month that the yearly scheduled control should be executed.

Relative Days
This setting is used for monthly and yearly schedules. It allows a relative day of a month to be specified. The valid relative day selections are:

- First
- Second
- Third
- Fourth
- Last

It is used in combination with the day of the week to choose a relative day of the month like “last Friday” for a monthly schedule or “third Thursday of July” for a yearly schedule.

Until
For daily, weekly, monthly and yearly schedules, the user also needs to specify how long the schedule is in effect. The valid choices are:

- Forever – the schedule will executed until it is deleted
- End Date – the schedule will be executed until the specified date.
- Number of Repetitions – the schedule will be executed for the specified number of times.

Automatic Removal of Schedule
A schedule will be automatically removed when it has fired for the last time. The conditions that will cause the schedule to be removed are:

- One-time schedule has been executed.
- The Until End Date has been reached.
- The Until Number of Repetitions has been reached.

4.2.3 Security

Security Menu

```
-------- Security Menu ---------------------------------------------------------

 1- Authentication Method
 2- Local Users
 3- Radius Servers
 4- Change Password
 X/M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.2.3.1 Authentication Method

Authorization Detail Menu

```
-------- Authentication Method --------------
 Authrorization Scheme : Local Only
 Accounting Scheme : Local Only

 1- Authentication Scheme
 2- Accounting Scheme
 X- Security Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
>> 1
```

Authentication Scheme Data Entry Menu

```
-------- Authentication Scheme Menu ---------

 Authentication Scheme: Local Only

 1- Local Only
 2- Radius Only
 3- Local Then Radius
 4- Radius Then Local
 X- Authentication Method
 M- Return to Main Menu
```

Accounting Scheme Data Entry Menu

```
-------- Accounting Scheme Menu -------------

 Accounting Scheme: Local Only
 1- Local Only
 2- Radius Only
 3- Local Then Radius
 4- Radius Then Local
 X- Authentication Method
 M- Return to Main Menu
```

Authorization Scheme

The authorization scheme defines how user authentication will be done. The authorization can be done with locally defined users only, RADIUS server defined users only or a combination of the two. The valid values are:

- Local Only

The system only uses locally defined user definitions.

- RADIUS Only

The system uses RADIUS only for authentication.

- Local Then RADIUS

The system uses locally defined user definitions first. If the user data is not found, it uses RADIUS for authentication.

- RADIUS Then Local

The system uses RADIUS for authentication first. If not authorized via the RADIUS server, the locally defined users will be used for authentication.

Accounting Scheme

This defines where the user session accounting data will be recorded. Like the authorization, the data can be recorded locally or on the RADIUS server or a combination of the two. The valid values are:

- Local Only

Uses only the local system to record the session accounting data.

- RADIUS Only

Uses only the RADIUS servers defined to record the session accounting data.

- Local Then RADIUS

Tries to record the session accounting data locally and, if not able to, then tries to record to RADIUS.

- RADIUS Then Local

Tries to record the session accounting data on RADIUS first and, if not able to, then records locally.

4.2.3.2 Local Users

This menu is used to define the local users. Local users include SNMPv3 users and SNMPv1/v2c communities, which must be defined locally. RADIUS authentication may not be used for SNMP access. There are a total of 12 users that may be defined with 5 default users being created initially. Available slots will be identified in the user summary table with the name/community of “User Not Defined.”

The following is the data used to define the users. Not all data applies to all user types and will be identified accordingly. Alphanumeric and the following special characters can be used: !@#$%^*(){[}]~_-).

```
---------------------User Detail Menu----------------------------

SNMP Protocol            : SNMPV3
User Name                : localadmin
Role                     : administrator
Outlet Realms            :
ACL IP Address           : ::
ACL IP Mask              : ::
Password                 : rG5cF6F8E3kNU5iwHddrrg==
Auth Password            : rG5cF6F8E3kNU5iwHddrrg==
Idle Timeout in Minutes  : 0
Session Expiration in Min: 0

1- Name
2- Password
3- Auth Password
A- Apply Changes
X- Security
M- Return to Main Menu
<ENTER> Refresh Menu
>>
```

Menu Data

SNMP Protocol
The SNMP Protocol is the first attribute to be defined for a user since it will need to be used to determine what data items need to be populated for the user. The valid values are:

- None

This user does not have any SNMP access allowed.

- SNMPv1

This user is a SNMPv1 community definition. Only access through SNMP is allowed for this user.

- SNMPv2c

This user is a SNMPv2c community definition. Only access through SNMP is allowed for this user.

- SNMPv3

This user has SNMPv3 access, as well as access through any of the other view interfaces.

Username (SNMPv3 and No SNMP Access Users)
This is the username. It is a string value which is 8 to 32 characters long with no spaces.

Community (SNMPv1 and SNMPv2c Users)
This is the SNMP community name. It is a string value which is 8 to 32 characters long with no spaces.

Role
This is determined by login credentials. Valid values are administrator, manager and read-only.

Outlet Realms
Outlet realms are an integer between 1 and 32 used to identify a logical grouping of outlets to be used to limit a user's access to a subset of outlets. In the user definition, it is a comma separated list of realms or range of realms that the user may access. Each load may be assigned a single realm and multiple outlets may use the same realm.

For example, a PDU may be powering devices at a co-hosting facility where Customer One has all of his equipment connected to Circuit 1 of a 3-phase PDU, Customer Two is on Circuit 2, and Customer Three is on Circuit 3. This PDU may have outlets 1, 4, 7, 10, 13, 16, 19 and 22 on Circuit 1, outlets 2, 5, 8, 11, 14, 17, 20 and 24 on Circuit 2 and outlets 3, 6, 9, 12, 15, 18, 21, and 23 on Circuit 3. The outlets on Circuit 1 could be assigned to Realm 5. The outlets on Circuit 2 could be assigned to Realm 7 and the outlets on Circuit 3 could be assigned to Realm 9. The user realm mapping would be Realm 5 for Customer One, Realm 7 for Customer Two and Realm 9 for Customer Three. Assigning the realm to the user gives Read/Write access only for the outlets assigned to the users’ realms, meaning they will be able to turn On or Off outlets only in the same realm.

Although the concept of realms may seem similar to outlet groups, it provides no other grouping functionality other than permissions.

192.168.1.1 (single)	255.255.255.255
192.168.1.0 (range)	255.255.255.0
192.168.0.0	255.255.0.0
192.0.0.0	255.0.0.0
0.0.0.0 (everyone)	0.0.0.0

The access level to the realms indicated is Read/Write. Each load may optionally be assigned to a realm. Whatever loads belong to the realms indicated here, the user may access. In order to correctly access the data, a user should have at least Read Only permission for Device Status and Device Loads to be able to user the realms.

ACL IP Address (Users with SNMP Access Only)
This defines what IP Address (or Addresses when used with the ACL IP Mask) from which this user may access the data via SNMP.

ACL IP Mask (Users with SNMP Access Only)
This defines the Subnet Mask to user with the ACL IP Address to determine if an address is one from which the user is allowed to access the data via SNMP.

Password (N/A for SNMPv1 or SNMPv2c)
This is the user password for logging in. For SNMP V3 users, this is the Priv Password.

Auth Password (N/A for SNMPv1 or SNMPv2c)
For SNMP v3 Users only, this is the Auth Password.

Idle Timeout in Minutes (N/A for SNMPv1 or SNMPv2c)
This applies to data access other than SNMP which does not use the concept of a logged in session. This is the amount of time the session can be idle before it will time out and no longer have access to the data. When the value is 0, that means idle sessions will not time out.

Session Expiration Minutes (N/A for SNMPv1 or SNMPv2c)
This applies to data access other than SNMP which does not use the concept of a logged in session. This is the amount of total time a session may last whether or not the session is idle or active. When the value is 0, the session will not expire.

Local User Summary Menu

```
-------- Local Users -----------------------------------------------------------
 -----------------------------------------------------------------------------
 # |  NAME / COMMUNITY | SNMP
 -----------------------------------------------------------------------------
 1    localadmin         SNMPV3
 2    localmanager       SNMPV3
 3    localguest         SNMPV3
 4    public             SNMPV1
 5    tripplite          SNMPV2c
 6    mikemike           None
 7    User Not Defined
 8    User Not Defined
 9    User Not Defined
 10   User Not Defined
 11   User Not Defined
 12   User Not Defined
 #-   User
 X-   Security Menu
 M-   Return to Main Menu
 <ENTER> Refresh Menu
>> 1
```

Local User Detail Menu

```
-------- User Detail Menu ------------------------------------------------------
 SNMP Protocol : SNMPV3
 User Name : localadmin
 Facility Permissions : DEFAULT FACILITY = Read Write
 Outlet Realms :
 ACL IP Address : ::
 ACL IP Mask : ::
 Password : localadmin
 Auth Password : localadmin
 Idle Timeout in Minutes : 0
 Session Expiration in Min: 0
 1- Name
 2- Outlet Permissions
 3- SNMP Protocol
 4- ACL IP Address
 5- ACL IP Mask
 6- Password
 7- Auth Password
 8- Idle Timeout in Minutes
 9- Session Expiration in Minutes
 A- Apply Changes
 X- Security Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
>> x
```

Default Users: Program users must have a minimum username length and password of 8 characters.

Menu Data

localadmin
This is the administrator account and has Read/Write access to all program areas. This user cannot be deleted or its facility access permission be modified, but the username and password may be changed from its default settings. The default password is same as the username.

localmanager
This account has default access as Read/Write to all areas except to the security area of the program. The default password is same as the username.

localguest
This account has read-only access to Device Status, Logging, and Info areas of the program. The default password is same as the username.

public
This account is not a program user. It is an SNMPv1 Read-Only community.

tripplite
This account is not a program user. It is an SNMPv2c Read/Write community. This the default community string that Tripp Lite's PowerAlert Network Shutdown Agent uses to discover Tripp Lite SNMP devices on the network.

Users 6-12 are not defined.

4.2.3.3 RADIUS Servers

This is the section of the menu used to define the RADIUS Servers. There is a maximum of 2 RADIUS Servers that can be defined. If a slot is available to create another server, the address value will be "Server Not Defined".

Radius Servers Summary Menu

```
-------- Radius Servers Menu ---------------------------------------------------
 ------------------------------------------------------------------------------
 # | Address | Priority | AUTH PORT | ACCT PORT
 ------------------------------------------------------------------------------
 1  10.0.0.11     1           1812        1813
 2 Server Not Defined
 #- Radius Server
 X- Security Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
>> 1
```

Radius Server Detail Menu

```
-------- Radius Server Detail Menu ---------------------------------------------
Address : 10.0.0.11
Priority : 1
Shared Secret : tripplite
Authentication Port : 1812
Accounting Port : 1813
 1- Address
 2- Priority
 3- Shared Secret
 4- Authentication Port
 5- Accounting Port
 A- Apply Changes
 C- Delete Radius Host
 X- Radius Servers Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
>> x
-------- Radius Servers Menu ---------------------------------------------------
 ------------------------------------------------------------------------------
 # | Address | Priority | AUTH PORT | ACCT PORT
 ------------------------------------------------------------------------------
 1  10.0.0.11     1           1812        1813
 2 Server Not Defined
 #- Radius Server
 X- Security Menu
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Address
This defines the internet address of the RADIUS server.

Priority
This is a number that defines the priority of this RADIUS server.

Shared Secret
This is the shared secret value to be used with this RADIUS server.

Authentication Port
This defines the port on the server to be used for authentication.

Accounting Port
This defines the port on the server to be used for accounting.

4.2.3.4 Change Password

This menu is used to allow a user to change his or her user password. The user will be prompted for the old password, then the new password and then finally asked to verify the new password again. The new password will take effect for the next login. For passwords, alphanumeric and the following special characters are allowed: !@#$%^*(){[}]~_-.

4.2.4 Date/Time

```
-------- Date/Time -------------------------------------------------------------
 Current Date/Time    : 2016-06-01 16:41:40+00:00
 Time Source          : Network Time Protocol
 Timezone Offset      : Etc/UTC

      1- Time Source
      2- NTP Settings
      3- Time Settings
      4- Time Zone
      X- System Configuration
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

4.2.4.1 Time Source Data Entry Menu

This menu will allow the user to switch between using Network Time Protocol (NTP) or Real Time Clock (RTC) for the time. Using NTP, the system will poll an NTP server for the time. Using RTC, the values will be determined from local RTC settings.

```
-------- Time Source -----------------------------------------------------------
 Time Source : Network Time Protocol
 R- Switch To RTC
 X- Date/Time
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.2.4.2 Time Zone

This menu allows the user to select a time zone.

```
-------- Time zone ---------------------------------------------------------
  Timezone Offset       : Etc/UTC
  1- Africa
  2- America
  3- Antarctica
  4- Arctic
  5- Asia
  6- Atlantic
  7- Australia
  8- Europe
  9- Indian
  10- Pacific
  X- Date/Time
  M- Return to Main Menu
  <ENTER> Refresh Menu
```

Menu Data

Time Zone Offset
The time zone offset from UTC. All times are entered as UTC and will be adjusted by the selected offset. Time zone offsets west of UTC are entered as positive numbers, and time zone offsets east of UTC are entered as negative numbers.

4.2.4.3 NTP Settings

This menu allows the user to control the various aspects of using NTP for setting the time and date.

```
-------- NTP Settings ---------------------------------------------------------

 Primary Address      : 0.pool.ntp.org
 Secondary Address    : 1.pool.ntp.org

 1- Primary Address
 2- Secondary Address
 A- Apply Changes
 X- Date/Time
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Primary Address
This is the address for the primary NTP server. The default is 0.pool.ntp.org.

Secondary Address
This is the address of the secondary NTP server. The default is 1.pool.ntp.org.

4.2.4.4 Time Settings

This menu allows the user to set the time and date.

```
-------- Time Settings ----------------------------------------------------------
 Date                  : 2016-06-01
 Day Of Week           : Wednesday
 Time                  : 16:43:22

 1- Date
 2- Time
 A- Apply Changes
 X- Date/Time
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Date
This is the current date. The date must be entered in the format YYYY-MM-DD.

Day of Week
This is the current day of the week (Sunday through Saturday).

Time
This is the current time specified in 24-hour clock value for the current local time.

4.2.5 Local Device Discovery

This menu is used to tell the system to attempt to discover any new device connections.

To be able to effectively use this menu, the user should have Write access to the SYSTEM SETTINGS facility.

```
-------- Local Device Discovery ------------------------------------------------

 Discover Serial Devices : Yes

 1- Discover Devices Now
 X- System Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Discover Serial Devices
This is a display-only data item that indicates devices on serial ports will be discovered.

Discover Devices Now
Start local device discovery.

4.2.6 Restart PowerAlert Device Manager

The Restart PowerAlert menu provides the end user with an interface to restart the device interface.

Note: *If a setting has changed that requires a system restart, the message "Changes have been made to require a restart to take effect" will display on this menu. This message can only be cleared with a restart. Changing the setting back to the original value will not reset this condition. Not all settings that require a restart to take effect display this indicator message.*

Several restart options exist:

```
-------- Restart PowerAlert ------------------------------------------------------

 1- Restart PowerAlert Now
 2- Reset PowerAlert To Factory Default Settings
 X- System Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

The first option, *Restart PowerAlert Now*, will perform a simple restart of the device interface. You will be prompted whether or not to continue with the restart operation. Type Y to perform the restart, N to exit without restarting.

The default setting under *Reset PowerAlert to Factory Default Settings* performs a reset, but preserves network settings.

```
-------- Reset PowerAlert To Factory Default Settings ----------------------------

 Preserve Network Settings On Factory : Yes

 1- Preserve Network Settings On Factory Default Settings
 2- Restart PowerAlert To Factory Default Settings Now
 X- Restart PowerAlert
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

This option resets all settings to the original factory defaults except for the network settings. Since the LX Platform device has a functioning network connection with the current configuration, the network settings are not cleared. Resetting network settings would potentially disable desired connections to the system.

To change the behavior and Reset PowerAlert to Factory Default Settings (including the network settings), select option 1 and toggle Preserve Network Settings from Yes to No.

```
-------- Preserve Network Settings On Factory Default Settings -------------------

 Current Preserve Network Settings On Factory Default Settings = Yes

 Enter Y or N for Preserve Network Settings On Factory Default Settings
 X- Leave value unchanged
 M- Return to Main Menu
```

Once the Preserve Network Settings option has been configured, select option 2- *Restart PowerAlert To Factory Default Settings Now*. You will be prompted to continue or exit before the reset will take place.

4.3 Network Configuration

The Network Configuration menu is used to configure the network-related items such as the IP Configuration of IPV4 and IPV6 Addresses, Remote Services (e.g. Email settings) and the User Access Information, which defines what user service should be run (HTTP, SSH or Telnet).

All changes to the Network Configuration will be enacted upon the next restart of the web card.

```
-------- Network Configuration --------------------------------------------------

      1- IP Configuration
      2- User Access Interfaces
      3- Remote Services
      X/M- Return to Main Menu
      <ENTER> Refresh Menu
```

4.3.1 IP Configuration

This menu allows the user to have full control over the IP settings of the LX Platform device and how it interacts with the network. Both IPV4 and IPV6 addresses are supported.

```
-------- IP Configuration -------------------------------------------------------

 Host Name             : poweralert-236361842451278
 Domain Name           : tlswdev.local

 IPV4 Address Information
 ========================

 Method                : dhcp
 IPV4 Address          : 10.22.0.127
 Subnet Mask           : 255.224.0.0
 Gateway               : 10.0.0.1
 Manual DNS            : Disabled
 Primary DNS           : 10.0.0.11
 Secondary DNS         : 10.0.0.8

 IPV6 Address Information
 ========================
 Method                : dhcp
 IPV6 Address          : 2001:db9::828f:8f6e:2fac:7ad6
 Prefix Length         : 128
 Gateway               : ::0
 Manual DNS            : Disabled
 Primary DNS           : ::0
 Secondary DNS         : ::0

 1- Host Name
 2- Domain Name
 3- IPV4 Settings
 4- IPV6 Settings
 X- Network Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.3.1.1 Host Name

This is a character string up to 63 characters to be used as the host name for the LX Platform device.

```
-------- Host Name ------------------------------------------------------------
 Current Host Name = poweralert-236361842451278
 Enter a string between 1 and 63 characters for Host Name
 X- Leave value unchanged
 M- Return to Main Menu
```

4.3.1.2 Domain Data Entry Menu

This menu is used for setting the domain name associated with the LX Platform device.

```
-------- Domain Name ----------------------------------------------------------
 Current Domain Name = tlsoftwaredev.local
 Enter a string between 1 and 67 characters for Domain Name
 X- Leave value unchanged
 M- Return to Main Menu
```

4.3.1.3 IPV4 Settings

This menu displays current IPV4 settings and allows a user to reconfigure the method, address, subnet mask and gateway of the protocol.

```
-------- IPV4 Settings ----------------------

 Saved IPV4 Address Information
 ================================
 Method                 : dhcp
 IPV4 Address           : 10.22.0.127
 Subnet Mask            : 255.224.0.0
 Gateway                : 10.0.0.1
 Manual DNS             : Disabled
 Primary DNS            : 10.0.0.11
 Secondary DNS          : 10.0.0.8

 Settings On Restart
 ===================
 Method                 : dhcp
 Manual DNS             : Disabled
 Primary DNS            : 10.0.0.11
 Secondary DNS          : 10.0.0.8

 1- Method
 2- Manual DNS
 A- Apply Changes
 X- IP Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Method
The method used to determine the IPV4 Address associated with the LX Platform device. The valid values are STATIC and DHCP.

The value STATIC means a user-defined fixed IPV4 address will be used by the card. When this option is chosen, the user must also supply the subnet mask and gateway.

The value DHCP (Dynamic Host Configuration Protocol) is used to dynamically assign the IPV4 address at initialization. When the DHCP option is chosen, the user cannot change the subnet mask or the gateway.

Address
Only applies when method is STATIC. This is the user-defined fixed IPV4 address.

Subnet Mask
Only applies when method is STATIC. This is the user-defined subnet mask.

Gateway
Only applies when method is STATIC. This is the user-defined gateway address.

4.3.1.4 IPV6 Settings

This menu displays current IPV6 settings and allows a user to toggle the dynamic host configuration protocol and method. There can be up to six IPV6 addresses for the card. Only two of these are impacted by this menu. A user may choose to have one IPV6 Address determined through DHCP and one set statically. Any others that appear in the list have been automatically assigned by the card's software. They are shown here because they are valid IP addresses and can be used to route to the card. These addresses will have a method of AUTO.

```
-------- IPV6 Settings ---------------------------------------------------------

 Saved IPV6 Address Information
 ================================
 Method               : dhcp
 IPV6 Address         : 2001:db9::828f:8f6e:2fac:7ad6
 Prefix Length        : 128
 Gateway              : ::0
 Manual DNS           : Disabled
 Primary DNS          : ::0
 Secondary DNS        : ::0

 Settings On Restart
 ===================
 Method               : dhcp
 Manual DNS           : Disabled
 Primary DNS          : ::0
 Secondary DNS        : ::0

 1- Method
 2- Manual DNS
 A- Apply Changes
 X- IP Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.3.2 User Access Interfaces

These menus control how the various available LX Platform device interfaces are started.

```
-------- User Access Interfaces ------------------------------------------------
 1- Telnet/SSH
 2- Web
 3- SNMP
 4- FTP/SFTP
 X- Network Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

4.3.2.1 Telnet/SSH

This menu provides configuration access to the way the user and system interact with the Telnet/SSH interface.

```
-------- Telnet/SSH Settings ---------------------------------------------------
Automatically Start SSH Menu       : Yes
SSH Menu Port                      : 22
Automatically Start Telnet Menu    : Yes
Telnet Menu Port                   : 23

 1- Automatically Start SSH Menu
 2- SSH Menu Port
 3- Automatically Start Telnet Menu
 4- Telnet Menu Port
 A- Apply Changes
 X- User Access Interfaces
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

Menu Data

Automatically Start SSH Menu
This menu asks if, when the card is started, the SSH Menu application should be automatically started as well. Valid Values:

- **Yes**
  Start the application. The default is Yes.
- **No**
  Do not start the application.

SSH Menu Port
If the application is to be started, then this is the listening port to use. The default is 22.

Automatically Start Telnet Menu
This menu asks if, when the card is started, the Telnet Menu application should be automatically started as well. Valid Values:

- **Yes**
  Start the application. The default value is Yes.
- **No**
  Do not start the application.

Telnet Menu Port
If the application is to be started, then this is the listening port to use. The default is 23.

4.3.2.2 Web

```
-------- Web Settings -----------------------------------------------------------
Automatically Start HTTPS          : Yes
HTTPS Port                         : 443
Automatically Start HTTP           : Yes
HTTP Port                          : 80

 1- Automatically Start HTTPS
 2- HTTPS Port
 3- Automatically Start HTTP
 4- HTTP Port
 A- Apply Changes
 X- User Access Interfaces
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

Menu Data

Automatically Start HTTPS
This menu asks if, when the card is started, the HTTPS Web access should be started as well. Valid Values:

- **Yes**
  Start the application.
- **No**
  Do not start the application.

HTTPS Port
If the application is to be started, then this is the listening port to use. The default is 443.

Automatically Start HTTP
This menu asks if, when the card is started, the HTTP Web access should be started as well. Valid Values:

- **Yes**
  Start the application.
- **No**
  Do not start the application.

HTTP Port
If the application is to be started, then this is the listening port to use. The default is 80.

4.3.2.3 SNMP Settings

This menu allows the user to configure SNMP set and get settings.

```
-------- SNMP Settings -------------------------------------------------------
Automatically Start SNMP            : Yes
SNMP Port                           : 161
Enable SNMP V1                      : Yes
Enable SNMP V2c                     : Yes
Enable SNMP V3                      : Yes

 1- Automatically Start SNMP
 2- SNMP Port
 3- Enable SNMP V1
 4- Enable SNMP V2c
 5- Enable SNMP V3
 A- Apply Changes
 X- User Access Interfaces
 M- Return to Main Menu
 <ENTER> Refresh Menu
 >>
```

Menu Data

Automatically Start SNMP
This menu asks if, when the card is started, the SNMP application should be started as well. Valid Values:

- **Yes**
  Start the application.
- **No**
  Do not start the application.

SNMP Port
If the application is to be started, then this is the port to use for SNMP set and get requests.

Enable SNMP V1
This indicates if SNMPv1 should be enabled on card startup.

Enable SNMP V2c
This indicates if SNMPv2c should be enabled on card startup.

Enable SNMP V3
This indicates if SNMPv3 should be enabled on card startup.

Note: *The SNMP enable flags will not change the default local users created.*

4.3.2.4 FTP/SFTP

This menu allows the user to configure FTP / SFTP settings. The example below shows how to change the (default) setting to disable automatic start up with Secure FTP. Note that this setting is not available with firmware versions before 15.5.2.

```
-------- User Access Interfaces ----------------------------------------------

        1- Telnet/SSH
        2- Web
        3- SNMP
        4- FTP/SFTP
        X- Network Configuration
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 4

-------- FTP/SFTP Settings ---------------------------------------------------

   Automatically Start Secured FTP    : Yes

        1- Automatically Start Secured FTP
        A- Apply Changes
        X- User Access Interfaces
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 1
```

```
-------- Automatically Start Secured FTP ---------------------------------------

   Current Automatically Start Secured FTP = Yes

        Enter Y or N for Automatically Start Secured FTP
        X- Leave value unchanged
        M- Return to Main Menu

>> n
   You are requesting this service to be turned off with the next restart.
Do you wish to turn it off?

        Y- Yes, continue and perform operation
        N- Do Not Make Change
>> y

-------- FTP/SFTP Settings -----------------------------------------------------

   Automatically Start Secured FTP    : No

        1- Automatically Start Secured FTP
        A- Apply Changes
        X- User Access Interfaces
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

4.3.3 Remote Services

This menu provides access to the configuration of the Remote Services provided by the LX Platform device, including distributing notification emails and logs.

```
-------- Remote Services -------------------------------------------------------
 1- Email Settings
 2- Remote Syslog Servers
 3- Auto Probes
 X- Network Configuration
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.3.3.1 Email Settings

```
-------- Email Settings --------------------------------------------------------

 Relay Server Settings
 Server Name                        :
 Port                               : 25
 Authentication Login Name          :
 Authentication Password            :

 Authentication Methods
 Digest MD5 Authentication Supported: Yes
 CRAM MD5 Authentication Supported  : Yes
 Login Authentication Supported     : Yes
 Plain Authentication Supported     : Yes

 Message Data
 From Address                       : poweralert@tripplite.com
 Subject                            : PowerAlert Notification

 1- Server Name
 2- Port
 3- Authentication Login Name
 4- Authentication Password
 5- Digest MD5 Authentication Supported
 6- CRAM MD5 Authentication Supported
 7- Login Authentication Supported
 8- Plain Authentication Supported
 9- From Address
 10- Subject
 A- Apply Changes
 X- Remote Services
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Server Name
This defines the email server address information used for sending out email messages.

Port
This defines the port on the email server used for sending out email messages.

Authentication Login Name
If authentication is required by the email server, this is the login name to use. This is optional.

Authentication Password
If authentication is required by the email server, this is the password for the authentication login name. If an Authentication Login Name is specified, then the Authentication Password must also be provided.

Digest MD5 Authentication Supported
This indicates if the email server supports Digest MD5 Authentication.

CRAM MD5 Authentication Supported
This indicates if the email server supports CRAM MD5 Authentication.

Login Authentication Supported
This indicates if the email server supports Login Authentication.

Plain Authentication Supported
This indicates if the email server supports Plain Authentication.

From Address
This is the information to be used as the “From” address in the message.

Subject
This is the information to be used as the “Subject” line in the message.

4.3.3.2 Remote Syslog Servers

These settings are used to define the remote syslog servers to send log entries. There are a maximum of four remote syslog servers that can be defined. To enforce this maximum, there are four predefined slots for the servers. An available slot will have a blank Host value and default values for Port, Log Level and Facility. Once all of those slots are used, no more may be defined. To add a new server to a slot, the user will select the number for the slot and then will be prompted for all of the values for that server. When a slot is chosen for a defined remote server, the detail menu for that server will be displayed.

```
-------- Remote Syslog Servers -------------------------------------------------

 -----------------------------------------------------------------------------
 #  |                Host                | Port  | Log Level | Facility
 -----------------------------------------------------------------------------
 1                                         514     disabled       23
 2                                         514     disabled       23
 3                                         514     disabled       23
 4                                         514     disabled       23

 #- Remote Syslog Server
 X- Remote Services
 M- Return to Main Menu
 <ENTER> Refresh Menu

-------- Remote Syslog Server --------------------------------------------------

 Host                   : remotesysloghost
 Port                   : 514
 Log Level              : info
 Facility               : 23
 Application Logging    : Yes
 Event Logging          : Yes
 Data Logging           : Yes

 1- Host
 2- Port
 3- Remote Syslog Severity Level
 4- Facility
 5- Application Logging
 6- Event Logging
 7- Data Logging
 A- Apply Changes
 C- Clear Syslog Server
 X- Remote Syslog Servers
 M- Return to Main Menu
 <ENTER> Refresh Menu

 >> a
```

Menu Data

Host
Host Name or IP address for the Remote Syslog server.

Port
This defines the port for the Remote Syslog server. The default is 514.

Log Level
The supported values are:

- Disabled – no logging to this server
- Emergency
- Alert
- Critical
- Error
- Warning
- Notice
- Info
- Debug
- Trace

The values in this list are equivalent to the Severity values as defined in RFC 4524. The two values that do not match our choices are “Disabled,” which is used to turn off logging to the server without removing the definition, and “Trace” which is a more detailed severity level for debug. This will be mapped to the Debug Syslog Severity level. The default log level is “Disabled.”

Facility
The logging facility values are the Syslog facilities as defined in RFC 5424.

Numerical Code	Facility
-----------------------	-----------------------------------
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages
5	messages generated internally by syslogd
6	line printer subsystem
7	network news subsystem
8	UUCP subsystem
9	clock daemon
10	security/authorization messages
11	FTP daemon
12	NTP subsystem
13	log audit
14	log alert
15	clock daemon
16	local use 0 (local0)
17	local use 1 (local1)
18	local use 2 (local2)
19	local use 3 (local3)
20	local use 4 (local4)
21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

The default logging facility is 23.

Example of assigning a new Remote Syslog Server

```
>> 1
-------- Remote Syslog Server --------------------------------------------------
-------- Host ------------------------------------------------------------------
   Current Host =
        Enter a string between 1 and 128 characters for Host
>> sysloghost

-------- Port ------------------------------------------------------------------
   Current Port = 514
        Enter an integer value for Port
>> 514

-------- Remote Syslog Severity Level ------------------------------------------
   Current Remote Syslog Severity Level =
         1- Disabled
         2- Emergency
         3- Alert
         4- Critical
         5- Error
         6- Warning
         7- Notice
         8- Info
         9- Debug
        10- Trace
        X- Return to Remote Syslog Servers
>> 8

-------- Facility --------------------------------------------------------------
   Current Facility = 23
        Enter an integer between 1 and 23 for Facility
>> 23

-------- Application Logging ---------------------------------------------------
   Current Application Logging = Yes
        Enter Y or N for Application Logging
>> y

-------- Event Logging ---------------------------------------------------------
   Current Event Logging = No
        Enter Y or N for Event Logging
>> y

-------- Data Logging ----------------------------------------------------------
   Current Data Logging = No
        Enter Y or N for Data Logging
>> y

-------- Remote Syslog Server --------------------------------------------------
   Host                       : sysloghost
   Port                       : 514
   Log Level                  : info
   Facility                   : 23
   Application Logging        : Yes
   Event Logging              : Yes
   Data Logging               : Yes

        1- Host
        2- Port
        3- Remote Syslog Severity Level
        4- Facility
        5- Application Logging
        6- Event Logging
        7- Data Logging
        A- Apply Changes
        C- Clear Syslog Server
        X- Remote Syslog Servers
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

4.3.3.3 Auto Probes

The Auto Probe feature allows for the automatic execution of an action when triggered by an unsuccessful confirmation of network connectivity, using Ping and/or NTP probes. For example, an LX Platform PDU can be configured to ping a router over the network; if the router fails to respond, the PDU will automatically power cycle one of its outlets – to which the router is connected – thereby power cycling the router.

When an Auto Probe is added, an event bearing the name of the probe is automatically associated to it. As with other events, actions can be added to the Auto Probe event via the Web or menu interfaces and/or CLI . Email, SNMP trap and logging actions are associated with Auto Probes, as a default

Note: *This feature is not available with firmware versions before 15.5.2.*

```
--------    Remote     Services    -----------------------------------------------------

1-    Email Settings
2-    Remote Syslog Servers
3-    Auto Probes
X-    Network Configuration
M-    Return to Main Menu
<ENTER> Refresh Menu

>> 3

-------- Auto Probes ---------------------------------------------------------------------

   ----------------------------------------------------------------------------------------
   # |        Name       | Type | Primary Address | Interval | Retries | Status
   ----------------------------------------------------------------------------------------
   1     Ping Watchdog      Ping   10.22.0.1         3          5         Okay
   2     NTP Watchdog       NTP    10.22.0.2         15         3         Fault
   3     Probe 3            NTP    10.22.0.5         3          5         InitFl
   4     Probe 4            NTP    10.22.0.6         15         4         Okay

        #- Auto Probe
        0- Add New Auto Probe
        X- Remote Services
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 1

-------- Auto Probes -----------------------------------------------------------

   ----------------------------------------------------------------------------
   # |        Name        |Type | Primary Address | Interval | Retries | Status
   ----------------------------------------------------------------------------
   1   Ping Watchdog        Ping   172.17.48.192     3          3         Okay
   2   NTP Watchdog         NTP    10.22.0.1         3          3         Off

        #- Auto Probe
        0- Add New Auto Probe
        X- Remote Services
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 2

-------- Auto Probe Detail Menu ------------------------------------------------
   Type                        : NTP
   Name                        : NTP Watchdog
   Description                 : Default Watchdog NTP Probe
   Primary Address             : 10.22.0.1
   Primary Port                : 123
   Secondary Address           : 12.22.0.2
   Secondary Port              : 123
   Interval                    : 3
   Retries                     : 3
   Enabled                     : No
```

```
        1- Name
        2- Description
        3- Primary Address
        4- Primary Port
        5- Secondary Address
        6- Secondary Port
        7- Interval
        8- Retries
        9- Enabled
        A- Apply Changes
        C- Clear Auto Probe
        X- Auto Probes
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

Menu Data

Probe Detail
Multiple probes may be defined to perform a selected action, such as verifying network connectivity or turning on/off a specified outlet.

- **Name**
  This is an editable string for naming the probe
- **Description**
  This is an editable string for describing the probe
- **Primary Address**
  This is the primary IPv4 address to which the probe will be sent.
- **Primary Port**
  This is the port associated with the primary address.
- **Secondary Address**
  This is the secondary IPv4 address to which the probe will be sent.
- **Secondary Port**
  This is the port associated with the secondary address.
- **Interval**
  This defines how often, in minutes, the probe will be sent.
- **Retries**
  This is the number of times that the probe request fails before considering the test to be a failure.
- **Enabled**
  This enables or disables the probe

Note: *For a Ping Probe, Ports (Primary and Secondary) are not required.*

Add New Probe

Below is an example of creating and enabling an NTP probe

```
-------- Auto Probes ---------------------------------------------------------------

   -------------------------------------------------------------------------------------
   # |         Name       |Type | Primary Address | Interval | Retries | Status
   -------------------------------------------------------------------------------------
   1     Ping Watchdog     Ping   10.22.0.1         3          5         Okay
   2     NTP Watchdog      NTP    10.22.0.2         15         3         Fault
   3     Probe 3           NTP    10.22.0.5         3          5         InitFl
   4     Probe 4           NTP    10.22.0.6         15         4         Okay

        #- Auto Probe
        0- Add New Auto Probe
        X- Remote Services
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 0
```

```
-------- Auto Probe Detail Menu ---------------------------------------------------

-------- Auto Probe Type Selection ------------------------------------------------
      1 - NTP
      2 - Ping

>> 1

-------- Name -----------------------------------------------------------------------------

   Current Name =
      Enter a string between 1 and 32 characters for Name

>> Probe 5

-------- Description ---------------------------------------------------------------------

   Current Description =
      Enter a string between 1 and 128 characters for Description

>> Cycle Load 5

-------- Primary Address ---------------------------------------------------------------

   Current Primary Address =
      Enter a string between 1 and 255 characters for Probe Address

>> 10.2.0.2
```

Note: *Probe Primary Port is omitted for Ping Probe.*

```
-------- Probe Primary Port-------------------------------------------------------

   Current Port = 0
      Enter an integer between 1 and 65535 for Probe Primary Port

>> 123

-------- Secondary Address ------------------------------------------------------

   Current Secondary Address =
      Enter a string between 1 and 255 characters for Secondary Address

>> 10.2.0.3
```

Note: *Probe Secondary Port is omitted for Ping Probe.*

```
-------- Secondary Port---------------------------------------------------------

   Current Port = 0
      Enter an integer between 1 and 65535 for Secondary Port

>> 123

-------- Interval ----------------------------------------------------------------

   Current Interval = 3
      Enter an integer between 3 and 1440 for Interval

>> 45

-------- Retries -----------------------------------------------------------------

   Current Retries = 3
      Enter an integer between 3 and 10 for Retries

>> 3
```

```
-------- Enabled --------------------------------------------------------

   Current Enabled = No
      Enter Y or N for Enabled

>> y

-------- Auto Probe Detail Menu ------------------------------------------
   Type                                : NTP
   Name                                : Probe 5
   Description                         : Cycle Load 5
   Primary Address                     : 10.2.0.2
   Primary Port                        : 123
   Secondary Address                   : 10.2.0.3
   Secondary Port                      : 123
   Interval                            : 45
   Retries                             : 3
   Enabled                             : Yes
      1 - Type
      2 - Name
      3 - Description
      4 - Primary Address
      5 - Primary Port
      6 - Secondary Address
      7 - Secondary Port
      8 - Interval
      9 - Retries
      10 - Enabled
      A - Apply Changes
      D - Delete
      X - Auto Probes
      M - Return to Main Menu
      <ENTER> Refresh Menu

>> a


-------- Auto Probes ------------------------------------------------------

   ----------------------------------------------------------------------------------------
   # |        Name        |Type | Primary Address | Interval | Retries | Status
   ----------------------------------------------------------------------------------------
   1     Ping Watchdog      Ping   10.22.0.1         3          5         Okay
   2     NTP Watchdog       NTP    10.22.0.2         15         3         Fault
   3     Probe 3            NTP    10.22.0.5         3          5         InitFl
   4     Probe 4            NTP    10.22.0.6         15         4         Okay
   5     Probe 5            Ping   10.10.10.10       5          8         Unk

        #- Auto Probe
        0- Add New Auto Probe
        X- Remote Services
        M- Return to Main Menu
        <ENTER> Refresh Menu

>>
```

The Status column will display one of the following states:

Off - the probe is disabled

Okay – a connection has been established and the probe is active

Fault – a connection had been established but subsequently failed

InitFl – initial connection failed.

Unk – Unknown state. This occurs when an initial connection has not yet been established, i.e. after a reboot, when a new probe is enabled, and when a previously disabled probe is re-enabled.

Associating an Action to an Auto-Probe

In the following example, the action of Cycle All Loads is associated with the Auto-Probe created in the above example.

```
-------- Main Menu ------------------------------------------------------------

        1- Devices
        2- System Configuration
        3- Network Configuration
        4- Alarms and Logging
        5- About
        E- Launch CLI
        Q- Logout
        <ENTER> Refresh Menu

>> 2

-------- System Configuration -------------------------------------------------

        1- Address Book
        2- Global Actions
        3- Security
        4- Date/Time
        5- EnergyWise Settings
        6- Local Device Discovery
        7- Restart PowerAlert
        X/M- Return to Main Menu
        <ENTER> Refresh Menu

>> 2

-------- Global Actions -------------------------------------------------------

        1- Action Profiles
        2- Schedules
        X- System Configuration
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 1

-------- Action Profiles Menu -------------------------------------------------


        1- Email Notification Profiles
        2- Device Shutdown Profiles
        3- SNMP Set OID Profiles
        4- SNMP Trap Notification Profiles
        5- Load Control Action Profiles
        6- Ramp Action Profiles
        7- Shed Action Profiles
        8- Control Execution Action Profiles
        X- Global Actions
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 8
```

```
-------- Control Execution Action Profiles -------------------------------------

   -----------------------------------------------------------------------------
   #   | Name                           | DELAY
   -----------------------------------------------------------------------------
    1    Default Reboot Control Action    30
     Device Number: 1

        #- Edit Profile
        0- Add New Profile
        X- Action Profiles Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 0

-------- Device 1 Control Execute Action Profile Detail ------------------------

-------- Action Profile Name ---------------------------------------------------

   Current Action Profile Name =
      Enter a string for Action Profile Name

>> Auto-Probe Cycle All Loads

-------- Action Profile Delay in Seconds ---------------------------------------

   Current Action Profile Delay in Seconds =
      Enter an integer value for Action Profile Delay in Seconds

>> 5

-------- Select Device Control -------------------------------------------------

        1 Turn All Loads Off
        2 Reboot SNMP Card
        3 Reboot Device
        4 Initiate Self Test
        5 Turn All Loads On
        6 Cycle All Loads

>> 6

-------- Device 1 Control Execute Action Profile Detail ------------------------

   Name: Auto-Probe Cycle All Loads
   Delay: 5
   Device: 1
   Control Executed: Cycle All Loads

        1- Modify Profile Name
        2- Modify Delay
        A- Apply Changes
        D- Delete
        X- Device Control Execute Action Profiles Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> a
```

```
-------- Device 1 Control Execute Action Profile Detail ------------------------

   Name: Auto-Probe Cycle All Loads
   Delay: 5
   Device: 1
   Control Executed: Cycle All Loads

        1- Modify Profile Name
        2- Modify Delay
        3- Apply To Device Events
        A- Apply Changes
        D- Delete
        X- Device Control Execute Action Profiles Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 3

-------- Actions Set/Clear -----------------------------------------------------

        S- Use Action For Only Set Alarm Condition
        B- Use Action For Both Set and Clear Action
        X- None
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> s
   Would you like to choose a clear action now

        Y- Yes, continue and perform operation
        N- Do Not Make Change
>> n

-------- Apply To Device Events ------------------------------------------------

   Set Action           : Auto-Probe Cycle All Loads
   Clear Action         :

        1- Apply To All Device Events
        2- Device0001
        X- None
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 2

-------- Action Events ---------------------------------------------------------

   Set Action           : Auto-Probe Cycle All Loads
   Clear Action         :
   Events Chosen        : None

        1- Apply To All Events
        2- Clear Event List
        3- Add Event To List
        4- Delete Event From List
        X- Apply To Device Events
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> x
```

```
-------- Apply To Device Events ------------------------------------------------

   Set Action           : Auto-Probe Cycle All Loads
   Clear Action         :

        1- Apply To All Device Events
        2- Device0001
        X- None
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> m

-------- Main Menu -------------------------------------------------------------

        1- Devices
        2- System Configuration
        3- Network Configuration
        4- Alarms and Logging
        5- About
        E- Launch CLI
        Q- Logout
        <ENTER> Refresh Menu

>> 1

-------- Device 1  -------------------------------------------------------------

   Device Name          : Device0001
   Location             :                    Region                  :
   Vendor               : TRIPPLITE          Product                 : SMART500RT1U
   Protocol             : 3005               Date Installed          : 2018-01-16
   State                : NORMAL             Type                    : UPS
   Port Mode            : RS232              Port Name               : /dev/ttyS2
   Role                 : UPS                Keyword                 : ups
   Importance           : 1
   Firmware Version     : 29AF (Rev  A)      Serial Number           :
   Device ID            : 65535              Self Test Date          :
   Self Test Status     : No Test

        1- Status
        2- Identification
        3- Controls
        4- Events
        5- Loads
        6- Preferences and Thresholds
        7- Device Alarms
        8- Logs
        X/M- Return to Main Menu
        <ENTER> Refresh Menu

>> 4
```

```
-------- Device Events Menu ----------------------------------------------------

   -----------------------------------------------------------------------------
    #  | CATEGORY     | DESCRIPTION                              | ENABLED
   -----------------------------------------------------------------------------
     1   WARNING        Load Level Above Threshold                   Yes
     2   WARNING        On Battery                                   Yes
     3   CRITICAL       Battery Low                                  Yes
     4   WARNING        Battery Capacity Below Warning Level         Yes
     5   CRITICAL       Overload                                     Yes
     6   WARNING        Temperature High                             Yes
     7   CRITICAL       Output Off                                   Yes
     8   WARNING        Self Test Failed                             Yes
     9   INFORMATION    Battery Age Above Threshold                  Yes
    10   INFORMATION    Communications Lost                          Yes
    11   WARNING        Loads Not All On                             Yes
    12   WARNING        Load 01 Off                                  Yes
    13   WARNING        Ping Watchdog Ping Probe Failed              Yes
    14   WARNING        NTP Watchdog NTP Probe Failed                Yes

        #- Select Event
        X- Device Main Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 14

-------- Device Event Menu -----------------------------------------------------

   Event Set Name       : NTP Watchdog NTP Probe Failed
   Event Clear Name     : NTP Watchdog NTP Probe Ok
   Event Category       : WARNING
   Event Enabled        : Yes
   Event Logging        : Off

   Set Action                Clear Action
   ------------------------- -------------------------
   Default Reboot Control Ac

        1- Manage Actions
        2- Modify Event Category
        3- Disable Event
        4- Enable Logging for Event
        X- Device Events Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 1

-------- Device Event Actions --------------------------------------------------

     # Set Action             Clear Action
      --- ------------------- -------------------------
        1 Default Reboot Control Ac

        #- Modify Event Set/Clear Actions
        0- Add new Event Set/Clear Actions
        X- Device Events
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 0
```

```
-------- Device Event Action Menu ----------------------------------------------

   Event                 : NTP Watchdog NTP Probe Failed
   Event Clear           : NTP Watchdog NTP Probe Ok
   Event Action          :
   Event Clear Action    :

        1- Choose Set Action
        2- Choose Clear Action
        3- Choose Action For Both Set and Clear
        A- Apply Changes
        D- Delete the Event Action
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 1

-------- Device Event Action Selection Menu ------------------------------------

        1- Email Notification Profiles
        2- Device Shutdown Profiles
        3- SNMP Set OID Profiles
        4- SNMP Trap Notification Profile
        5- Load Control Action Profiles
        6- Shed Action Profiles
        7- Control Execution Action Profiles
        X- Device Event Action Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 7

-------- Control Execution Action Profiles -------------------------------------

   -----------------------------------------------------------------------------
   #   | Name                           | DELAY
   -----------------------------------------------------------------------------
    1    Default Reboot Control Action    30
    2    Auto-Probe Cycle All Loads       5

        #- Choose Profile
        0- Add New Profile
        X- Event Action Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> 2
   Would you like to choose a clear action now

        Y- Yes, continue and perform operation
        N- Do Not Make Change
>> n

-------- Device Event Action Menu ----------------------------------------------

   Event                 : NTP Watchdog NTP Probe Failed
   Event Clear           : NTP Watchdog NTP Probe Ok
   Event Action          : Auto-Probe Cycle All Loads
   Event Clear Action    :

        1- Choose Set Action
        2- Choose Clear Action
        3- Choose Action For Both Set and Clear
        A- Apply Changes
        D- Delete the Event Action
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu

>> a
```

```
-------- Device Event Actions --------------------------------------------------

     # Set Action             Clear Action
      --- ------------------- -------------------------
        1 Default Reboot Control Ac
        2 Auto-Probe Cycle All Load

        #- Modify Event Set/Clear Actions
        0- Add new Event Set/Clear Actions
        X- Device Events
        M- Return to Main Menu
        <ENTER> Refresh Menu
```

4.4 Alarms and Logging

This menu allows for in-depth viewing, configuration and acknowledgement of logs and alarms that come across the system.

Alarms and Logging

```
-------- Alarms and Logging ----------------------------------------------------
 1- Alarms
 2- View Logs
 3- Logging Settings
 X/M- Return to Main Menu
 <ENTER> Refresh Menu
```

4.4.1 Alarms

This menu provides a summary of all alarm conditions, where they have occurred and whether they have been acknowledged.

Alarm Summary

```
-------- Alarm List ------------------------------------------------------------

 Auto Acknowledge Alarms: On

  #     Device           Alarm Detail             ACT   ACK
-----   ---------  ----------------------------  ----- -----
 536      1         Loads Not All On              Yes   Yes
 537      1         Load 01 Off                   Yes   Yes

 #- Alarm Id
 A- Acknowledge All Alarms
 D- Disable Alarm Auto Acknowledgement
 X- Alarms and Logging
 M- Return to Main Menu
 <ENTER> Refresh Menu
```

Menu Data

Auto-Acknowledge Alarms
This is a system-wide setting that will automatically acknowledge every alarm on the system. This will force alarm entries to be removed as soon as the alarm condition clears. This setting should be enabled if using with PowerAlert Network Management System (PANMS) or the PowerAlert Network Shutdown Agent (PANSA).

Acknowledge All Alarms
This option gives the user the ability to acknowledge all of the active alarms. Any inactive, unacknowledged alarms will be deleted when this is done. The alarms acknowledged will be marked as such. When the alarm condition clears, it will be removed.

4.4.1.1 Alarm Details

The detail for each alarm can be displayed by choosing its ID. Once it is displayed, the user has the option to acknowledge that alarm only.

Alarm ID
This is a number that uniquely identifies the alarm.

Device ID
This is the numeric device ID with the alarm condition. This value will be 0 if the alarm does not apply to a specific device but is associated with the system as a whole.

Detail
This is the text description of the alarm condition.

Category
This is the severity level category. Alarm categories are:

- CRITICAL
- WARNING
- INFORMATION
- STATUS
- OFFLINE

Active
This indicates if the alarm condition is still present

Time
This is the time that the alarm event occurred.

Time Cleared
This is only displayed for inactive alarms. It is the time that the alarm condition cleared.

Acknowledged
This indicates if the alarm has already been acknowledged.

4.4.2 View Logs

This section of the document allows the user to view the event and data log for the entire system.

```
-------- View Logs -------------------------------------------------------------

      1- Data Log
      2- Event Log
      3- Accounting Log
      X- Alarms and Logging
      M- Return to Main Menu
      <ENTER> Refresh Menu

>>
```

4.4.2.1 Data Log

View the data logs for the system. The data log will log only variables marked in the system to be logged.

```
-------- Data Log -------------------------------------------------------------

   Order                : Descending
   Filter               : None
   Time Range           : Display All Entries

      V- Start Viewing Log
      O- Change Viewing Options
      C- Clear Log (Force Rotation)
      X- Logs Menu
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Data Log Viewing Options

```
-------- Log Viewing Options ---------------------------------------------------

Order       : Descending
Filter      : None
Time Range  : Display All Entries

      1- Display Order
      2- Filter
      3- Choose Time Range
      R- Reset To Defaults
      X- Data Log
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Start Viewing Log
Choosing this option will begin the data log display using the various viewing options chosen. A maximum of 10 entries will be displayed at a time. Once viewing is started, the user has the option to display the next set of entries or reverse the viewing order to go back. The next option will be offered until there are no more entries to be displayed.

Display Order
The logs may be displayed in ascending or descending order by time. The default is to view the log in descending order with the newest entries displayed first.

Filter
The log entries displayed can be limited by applying a filter. Only entries that match the filter criteria will be displayed. The data log can be filtered on device variables. The variables may be all variables for all devices (default), all variables on one specific device or up to three specific variables that are either across all devices or applied to a single device.

Data Log Filter Menu Example

```
-------- Data Log Filter -------------------------------------------------------

   Filter               : None

      1- Device Variable
      C- Clear Filter
      X- Log Viewing Options
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> 1
```

```
-------- Device Selection Menu ----------------------------------------------

      1- Choose from All Device Variables
      2- Choose Variables From Device0001 (SU1500RTXL2U)
      3- Choose Variables From Sensor0002 (E2MTHDI)
      4- Choose Variables From Sensor0003 (E2MTDI)
      X- Data Log Filter
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> 2
```

Data Log Filter Device Variable Selection Menu Example

```
-------- Device Variable ----------------------------------------------------

   Filter on a maximum of 3 variables.
   Filter On            : Only Variables for Device 1

       1- Battery Charge Remaining
       2- Battery Minutes Remaining
       3- Battery Temperature (C)
       4- Battery Temperature (F)
       5- Battery Voltage
       6- Input Voltage
       7- Input Voltage 1
       8- Input Voltage 12
       9- Input Voltage 2
      10- Input Voltage 3
      11- Output Current
      12- Output Current 1
      13- Output Current 2
      14- Output Current 3
      15- Output Load
      16- Output Load 1
      17- Output Load 2
      18- Output Load 3
      19- Self Test Date
      X- Data Log Filter
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Choose Time Range

Display Order
This determines the way the log is displayed. Options are Ascending and Descending.

Filter
The log can be filtered on a maximum of three variables.

Start Date
This sets the starting date for a range of log entries to be displayed. Enter the date in the form YYYY-MM-DD.

Start Time
This sets the starting time for a range of log entries to be displayed. Enter a 24-hour clock time in the form HH:MM[:SS].

End Date
This sets the ending date for a range of log entries to be displayed. Enter the date in the form YYYY-MM-DD.

End Time
This sets the ending time for a range of log entries to be displayed. Enter a 24-hour clock time in the form HH:MM[:SS].

Clear Time Range
This removes any previously applied Time Ranges.

4.4.2.2 Event Log

This menu allows the user to view the event log entries for the entire system.

```
-------- Event Log -------------------------------------------------------------
   Order          : Descending
   Category       : All
   Time Range     : Display All Entries
        V- Start Viewing Log
        O- Change Viewing Options
        C- Clear Log (Force Rotation)
        X- Logs Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>>
```

Start Viewing Log
Choosing this option will begin the data log display. Only 10 entries will be displayed at a time using the various viewing options chosen. Once viewing is started, the user has the option to display the next set of entries or reverse the viewing order to go back. The next option will be offered until there are no more entries to be displayed.

```
-------- Display Event Log -----------------------------------------------------

Display Order: Descending

Date: 2016-06-04
 #     Category         Time        Device      Description
===========================================================================
 329   WARNING          10:07:10     1          Self Test Failed
 328   CRITICAL         10:07:07     1          Output Off
 327   INFO             10:07:04     2          Temperature Okay
 326   CRITICAL         10:07:02     2          Temperature Beyond Limits
 325   INFO             10:06:59     1          Battery Age Above Threshold

 N- Next Page
 X- Event Log
 M- Return to Main Menu
 <ENTER> Refresh Menu

>>
```

Menu Data
The event entries are grouped by the date the events occurred. When the date changes, a new date heading is printed.

# (Event ID)
This is the ID of the event.

Category
This is the severity category of the event. The possible values for the event category are:

- NORMAL
- CRITICAL
- WARNING
- INFORMATION
- STATUS
- OFFLINE

Time
This is the time the event occurred.

Device ID
For an event that occurs on a specific device, this is the ID of that device.

Description
This is a text description of the event that occurred.

Change Viewing Options

Changing the viewing options will allow the user to decide the order to view the log, as well as define filters to limit logs to be viewed. These options are active only for the single instance of viewing the log and are not persisted.

```
-------- Log Viewing Options --------------------------------------------------
   Order          : Descending
   Category       : All
   Time Range     : Display All Entries
        1- Display Order
        2- Category
        3- Choose Time Range
        R- Reset To Defaults
        X- Event Log
        M- Return to Main Menu
        <ENTER> Refresh Menu
>>
```

Menu Data

Display Order

This is the order, by date and time, that the events will be displayed. The valid values are Ascending and Descending. The default value is Descending.

Category

The Category field allows the user to limit which event logs display by limiting the severity categories. Multiple categories may be chosen to be displayed.

Example Menus for Choosing Multiple Event Categories

```
-------- Device Event Category ------------------------------------------------
        1- NORMAL
        2- CRITICAL
        3- WARNING
        4- INFORMATION
        5- STATUS
        6- OFFLINE
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> 2
-------- Device Event Category ------------------------------------------------
   Current Selected Categories: CRITICAL
        1- NORMAL
        2- WARNING
        3- INFORMATION
        4- STATUS
        5- OFFLINE
        C- Clear Selection
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> 2
-------- Device Event Category ------------------------------------------------
   Current Selected Categories: CRITICAL, WARNING
        1- NORMAL
        2- INFORMATION
        3- STATUS
        4- OFFLINE
        C- Clear Selection
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> 2
```

```
-------- Device Event Category -------------------------------------------------
   Current Selected Categories: CRITICAL, WARNING, INFORMATION
        1- NORMAL
        2- STATUS
        3- OFFLINE
        C- Clear Selection
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> 2
-------- Device Event Category -------------------------------------------------
   Current Selected Categories: CRITICAL, WARNING, INFORMATION, STATUS
        1- NORMAL
        2- OFFLINE
        C- Clear Selection
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>> 2
-------- Device Event Category -------------------------------------------------
   Current Selected Categories: CRITICAL, WARNING, INFORMATION, STATUS, OFFLINE
   Maximum Number Of Categories Selected
        C- Clear Selection
        X- Device Event Menu
        M- Return to Main Menu
        <ENTER> Refresh Menu
>>
```

Choose Time Range

Display Order
This determines the way the log is displayed. Options are Ascending and Descending.

Filter
The log can be filtered on a maximum of three variables.

Start Date
This sets the starting date for a range of log entries to be displayed. Enter the date in the form YYYY-MM-DD.

Start Time
This sets the starting time for a range of log entries to be displayed. Enter a 24-hour clock time in the form HH:MM[:SS].

End Date
This sets the ending date for a range of log entries to be displayed. Enter the date in the form YYYY-MM-DD.

End Time
This sets the ending time for a range of log entries to be displayed. Enter a 24-hour clock time in the form HH:MM[:SS].

Clear Time Range
This removes any previously applied Time Ranges.

4.4.3 Logging Settings

This section defines the preference settings for the various types of logs. These settings include maximum log file sizes, logging severity levels and actions to take when the log is rotated.

```
-------- Logging Settings -----------------------------------------------------

      1- Accounting Log
      2- Application Log
      3- Data Log
      4- Event Log
      5- Logging Report Format
      X- Alarms and Logging
      M- Return to Main Menu
      <ENTER> Refresh Menu

>>
```

4.4.3.1 Accounting Log Settings

```
-------- Accounting Log -------------------------------------------------------

   Maximum Entries              : 1024
   Actions On Rotate            : No Actions Defined

      1- Maximum Entries
      2- Actions On Rotate
      X- Logging Settings
      M- Return to Main Menu
      <ENTER> Refresh Menu

>>
```

Menu Data

Maximum Entries
This is the maximum number of entries that can be in the log before it is rotated. Valid values are integers between 64 and 1024. The default value is 1024.

Actions on Rotate
This defines the actions to take when the log is rotated. The accounting log may be archived by sending to a single destination using email or HTTP. The log may be sent to multiple destinations by creating multiple actions.

4.4.3.2 Application Log Settings

```
-------- Application Log ----------------------------------------------------
   Console Log Severity Level    : Info

      1- Console Log Severity Level
      X- Logging Settings
      M- Return to Main Menu
      <ENTER> Refresh Menu

>> 1
```

Menu Data

Console Log Severity Level
This is the minimum level of severity that is logged. For example, if “Error” level is chosen, then “Error,” “Critical,” “Alert” and “Emergency” logs will be displayed on the console log.

The valid logging levels for the console log are:

- Disabled
- Emergency
- Alert
- Critical
- Error
- Warning
- Notice
- Info(default)
- Debug
- Trace

4.4.3.3 Data Log Settings

The data log settings are used to define the maximum data log size and actions to take when the log is rotated.

```
-------- Data Log ------------------------------------------------------------

 Maximum Entries               : 1024
 Actions On Rotate             : No Actions Defined

      1- Maximum Entries
      2- Actions On Rotate
      X- Logging Settings
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Maximum Entries
The maximum number of entries that can be in the log before it is rotated. The valid values are an integer between 64 and 1024.
The default value is 1024.

Actions On Rotate
This defines the actions to take when the log is rotated. The log data may be archived by sending to a single destination using email or HTTP.
The log may be sent to multiple destinations by creating multiple actions.

```
-------- Actions On Rotate ---------------------------------------------------

      #    Format   Protocol             Delivery Target
     ---   ------   --------   ----------------------------------------
      1     log       smtp     Admin John Doe

      #- Edit Rotate Action
      0- Add New Rotate Action
      X- Data Log
      M- Return to Main Menu
      <ENTER> Refresh Menu

-------- Rotate Action -------------------------------------------------------

   Format              : log
   Protocol            : smtp
   Delivery Target     : Admin John Doe

      1- Protocol
      2- Delivery Target
      A- Apply Changes
      D- Delete
      X- Actions On Rotate
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Protocol
This defines the protocol to use when sending the data log file. The valid values are:

- SMTP – email to destination
- HTTP – use HTTP to send to destination

Destination
This field is used to select the destination for the data log file. When the protocol is SMTP, the destination will be an email contact. When the protocol is HTTP, the destination will be an HTTP contact.

If no contacts have been created, or the desired destination has not already been created, the user may create a new destination from this menu. The contacts added here are then also available for use on other menus using the contacts, i.e., the email notification actions.

4.4.3.4 Event Log Settings

The event log settings are used to define the maximum event log size and actions to take when the log is rotated.

```
-------- Event Log ----------------------------------------------------------

 Maximum Entries               : 1024
 Actions On Rotate             : No Actions Defined

      1- Maximum Entries
      2- Actions On Rotate
      X- Logging Settings
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Maximum Entries
The maximum number of entries that can be in the log before it is rotated. The valid values are an integer between 64 and 1024. The default value is 1024.

Actions On Rotate
This defines the actions to take when the log is rotated. The log data may be archived by sending to a single destination using email or HTTP. The log may be sent to multiple destinations by creating multiple actions.

```
-------- Actions On Rotate --------------------------------------------------
      #    Format   Protocol               Delivery Target
     ---   ------   --------   ----------------------------------------
      1     xml       http     httpupload

      #- Edit Rotate Action
      0- Add New Rotate Action
      X- Event Log
      M- Return to Main Menu
      <ENTER> Refresh Menu

-------- Rotate Action ------------------------------------------------------

   Format               : xml
   Protocol             : http
   Delivery Target      : httpupload

      1- Protocol
      2- Delivery Target
      A- Apply Changes
      D- Delete
      X- Actions On Rotate
      M- Return to Main Menu
      <ENTER> Refresh Menu
```

Menu Data

Protocol
This defines the protocol to use when sending the event log file. The valid values are:

- SMTP – email to destination
- HTTP – use HTTP to send to destination

Destination
This field is used to select the destination for the data log file. When the protocol is SMTP, the destination will be an email contact. When the protocol is HTTP, the destination will be an HTTP contact.

If no contacts have been created, or the desired destination has not already been created, the user may create a new destination from this menu. The contacts added here are then also available for use on other menus using the contacts, i.e., the email notification actions.

4.4.3.5 Format Settings

```
-------- Format ----------------------------------------------------------------

   Format=xml

      1- csv
      2- log
      3- xml
      X- Rotate Action
      M- Return to Main Menu
      <ENTER> Refresh Menu
>>
```

Menu Data

Format
This defines the format of the log file to be sent on rotation. The valid values are:

- csv – comma separated values
- log – log text file
- xml – xml format file

4.5 About

This menu contains information about PowerAlert. The data on this menu is read-only. The data on this menu is:

```
-------- About PowerAlert ------------------------------------------------------

   OS                          : Ubuntu 16.04.3 LTS Linux 4.4.31 flash: 3.4G ram: 247204kB
                                 processor: armv7l
   Agent Type                  : PAL_NMC5
   MAC Address                 : 00:06:67:40:04:35
   Card Serial Number          : 2626AV0AC88E200174
   Driver Version              : 15.5.2 (Build 17511)
   Engine Version              : 15.5.2 (Build 17511)
   Driver File Status          : Normal
   EnergyWise API Version      : 1.2.0

        X/M- Return to Main Menu
        <ENTER> Refresh Menu
```

5. Command Line Interface

The LX Platform device firmware supports features on the command line interface (CLI). Many of the functional controls available in the Web console and Telnet interface are available on the command line interface. The CLI allows for the use of user-created scripts and easier integration with third-party systems.

The CLI can be accessed on the LX Platform device via the USB Micro or RJ45 CONFIG port, via SSH on the default port 22, and via Telnet on the default port 23. For security purposes, some features are only enabled on the USB Micro and SSH interfaces. Refer to section 4.3.2 for more information on starting the CLI from the Telnet or SSH menu.

This section of the user manual will familiarize you with the way the CLI interprets your input and the meaning of the CLI output.

5.1 Syntax Conventions

The PowerAlert CLI uses its own standard syntax to interpret your input. The syntax defines standard conventions which are used to describe any problems with the input. The next definitions are important for understanding the rest of this document and the CLI error messages.

1. Program - The 'program' refers to the software module that will interpret the user input and perform the work.
2. Program Name - The command keyword that is typed to invoke the program.
3. Directive - The entire phrase entered, including the program name and any arguments. The directive is broken down into several parts of grammar, like a sentence.
4. Mode - The mode tells the program what to do with your arguments. A program can usually perform several different operations on the same data. Program modes are: List, Add, Update, Delete, and Test. In some programs, the mode can be inferred without your specification; in other programs, entering the mode will be required.
5. Mode Modifier - If the mode alone can't describe your request, the program will have a mode modifier list. The mode modifier usually specifies 'what' to list and 'where' and 'what' to add, update, or delete.
6. Identifier - The update and delete modes support entering a numeric identifier to choose what data your new input will affect. The list mode often allows an optional identifier to display more information about a single set of data.
7. Option - The option precedes your input parameter and specifies which value you are updating. An option will always begin with a dash followed by a letter or double dash followed by a number or word.
8. Parameter - If an option requires a parameter, the parameter will follow the option or be appended to the option (for example, when choosing SNMPv3: '--v3').

The directive syntax breaks down along the grammatical boundaries shown below.

```
|----------------------------------------Directive----------------------------------------------|
|----------Preamble----------------------------|----------Predicate-----------------------------|
|-Program--|-Mode-|-Mode Modifier-|-Identifier-|----------Option List---------------------------|
                                               |-Option-|-Parameter-|-Option-|-----Parameter----|
|-Subject--|-Verb-|-------Direct Object--------|--------------Indirect Object (List)------------|
 addrbook   -u     email           4            --name   santa       --email  santa@morthpole.org
```

All pieces of syntax are separated with single spaces. The interface does not support input containing spaces at this time, and the input cannot include a single quote character.

5.2 Manual Pages

Each program has its own man page (short for ‘manual page’) built right into the software. You will not have to remember long lists of directives. The information you need is available any time by typing ‘man’ followed by the program name.

The program synopsis in each program manual page describes the format of the directive and the valid modes and options for the program. The synopsis uses a familiar format to indicate when you should enter your own data and when you should type exactly what you see. The typical synopsis format interpretation is show in the next table.

Synopsis Format	Interpretation of the Format
< >	Angle brackets mean the argument is required.
[ ]	Square brackets mean the argument is optional.
|	The vertical bar is used to separate mutually exclusive choices.
…	A list of space-separated parameters can be entered here.
<word>	You must enter a value. The value is chosen by you. The ‘word’ loosely describes what the value is supposed to mean.
<a|b>	You must enter a value. The value is exactly either ‘a’ or ‘b’.
[--word <value>]	The ‘--word’ option is optional, but if used then ‘value’ is required.
--word <x1…xN>	The ‘--word’ option supports a list of parameters separated by spaces. The values are chosen by you. You do not append a ‘1’ or ‘N’ to your input. Usually, the values in a list are data identifiers, but they are sometimes preceded by a ‘+’ or ‘-‘, indicating your choice to add or remove the identifier within the directive’s context.

5.3 Output Conventions

Additions, updates and deletions usually result in simple output messages prefixed with either an error code or a data identifier return code, followed by a colon and a short result string. The prefixes are described in the next table.

Result Prefix	Interpretation of the Result Prefix
X00:	The ‘X’ indicates that program is responding with an error. If available, the error code will follow the ‘X’, and the result string will contain an error message.
00:	The program is indicating a success message if no ‘X’ is preceding the return value. If the number is non-zero, the return value is the data identifier of the last piece of data used. For example, in add mode, the return value will be the data identifier of the new data. To update this data later, provide the same identifier to the update mode.
YN:	The program is requesting a Yes or No confirmation before taking action.
QQ:	The program is requesting additional input that is not a simple Yes or No.
..:	The program has dispatched your request and it should happen in a few moments.

5.4 Getting Started with the PowerAlert CLI

Remember, most of your configuration changes will take effect immediately, so you can try out your configuration before committing to it. However, the changes are not saved permanently until you ‘reboot’ the device interface. You should reboot when your configuration is complete and prior to testing configurations that simulate a power outage. Refer to **Section 2. Installation and Configuration** for additional information.

When you first log in to the CLI, you can type ‘**help**’ to invoke the ‘help’ program and see a list of all programs. Each program does only a small amount of the work, and programs can be used in succession to accomplish a task. The next paragraphs describe example goals and which programs can be used together to accomplish them.

Note: *Most programs are available only after the system has fully booted.*

How Do I …

See the list of available programs?

1. Use the ‘help’ program to display all available programs.

See the manual for any program?

1. Use the ‘man’ program to display the manual for any program. It is invoked by typing ‘man <program name>’ without the angle brackets and the ‘program name’ replaced by the name of the program you are interested in.

See my devices?

1. Use the program ‘devmgr’ to view the list of devices and individual device details.
2. Use the program ‘devselect’ to choose a device to work with.

See my device status?

1. Use the program ‘devstatus’ to view the device status (called ‘variables’).
2. Use the program ‘alarm’ to view the active alarms.

Set the time?

1. Use either ‘hwclock’ to change the Real-Time Clock (RTC) or ‘ntpcfg’ to change the network time settings.
2. Use either ‘hwclock’ to synchronize the system clock or skip ahead and use ‘reboot’ to persist the changes and synchronize automatically on the next restart.

Set up email?

1. Use the program ‘addrbook’ to add your email addresses.
2. Use the program ‘emailcfg’ to configure outgoing email.
3. [Optional] Use the ‘action’ program to create an email action. Do this if you want to add only a few of the email addresses or if you want to make the system delay before emailing.
4. [Optional] Use the ‘actcfg’ program to assign the email action to alarm triggers. By default an email action is already assigned to all alarms, but if you made a new action you will assign it yourself.

Control my power protection device loads?

1. [Optional] Use the program ‘loadcfg’ to configure ramp and shed settings and create load groups.
2. Use the program ‘loadctl’ to control loads and load groups, the main load, and execute ramp or shed sequences.

Add a user or SNMP Community?

1. Use the program ‘user’ to add or modify local user accounts & SNMP communities.
2. Use the program ‘passwd’ to set the password for any new non-SNMP account, which will cause the account to activate.
3. [Optional] Use the ‘snmpcfg’ program to modify SNMP protocol access.

Reset PowerAlert to factory default settings?

1. Use the program ‘freset’ to reset all user data to factory default.
2. Use the ‘reboot’ program to bring the system down and back up with factory default settings.

Enable or disable SFTP?

1. Use either ‘sftpcfg –enable’ or ‘sftpcfg –disable’n

6. Troubleshooting

If you encounter a problem:

- Check all connections and confirm that they are secure.
- Refer to the following list of problems and implement any recommended solutions.
- If the problem persists after trying the recommended steps, contact Tripp Lite Technical Support.

Problem	Possible Solution
The IP address of the LX Platform device is unknown.	If your network’s DHCP server assigned an IP address to the LX Platform device, contact your network administrator to learn the IP address assigned to the card or view it during terminal session at boot-up. You'll need to know the MAC address of the LX Platform device. If your network does not use DHCP, or if you need to assign a static IP address for another reason, follow the instructions for assigning a static IP address via terminal mode configuration. Refer to the printed manual that came with your LX platform device for more information.
Unable to perform SNMP get operations.	Check the SNMP settings of the LX Platform device (See **Section 3.4.6**). Select “User” in the settings dropdown menu. The IP address and community name of the device or application trying to perform the SNMP get operation must be entered with a “Read Only” or “Read/Write” (“Manager” or “Administrator”) role.
Unable to perform SNMP set operations.	Check the SNMP settings of the LX Platform device (See **Section 3.4.6**). Select “User” in the settings dropdown menu. The IP address and community name of the device or application trying to perform the SNMP set operation must be entered with a “Read Only” or “Read/Write” (“Manager” or “Administrator”) role.
Unable to receive traps at your management station.	Check the SNMP settings of the LX Platform device (See **Section 3.4.3**). Verify that you have added an SNMP trap action profile to send traps to the IP address of the management station of choice. See **Section 3.4.4.1.3** for configuring actions.
LX Platform device email notifications are not working.	Verify that you have added an email action profile to send emails to the appropriate destination entered in the address book. See **Section 3.4.4.1.1** for configuring actions. ***Note:*** *Confirm email notification works by sending a test message. See* ***Section 4.2.1.1*** *for instructions.*

7. Technical Support

Before contacting Tripp Lite Technical Support, refer to **Section 6. Troubleshooting** for possible solutions. If you are still unable to resolve the problem, contact Tripp Lite Technical Support at:

www.tripplite.com/support
Email: techsupport@tripplite.com

Tripp Lite has a policy of continuous improvement. Specifications are subject to change without notice.

Configuring RADIUS Authentication in PowerAlert

PowerAlert supports RADIUS authentication, authorization and accounting. In addition to configuring PowerAlert to use RADIUS, one or more RADIUS servers must be configured to provide the appropriate exchange of information. This document assumes the following:

- The user understands the steps necessary to configure one or more RADIUS hosts in PowerAlert
- The user understands the steps necessary to configure PowerAlert to use RADIUS for authentication and/or accounting, either as a sole option or in relationship to local authentication and/or accounting
- Some flavor of RADIUS server has been installed and configured and is accessible by PowerAlert

For the rest of this document, when we reference a specific RADIUS server type, we will be using FreeRadius (www.freeradius.org) as our default. Your specific configuration may vary.

Configuring the Dictionary

This refers to the definition of the attributes that can be exchanged between a RADIUS server and a RADIUS client, in this case PowerAlert. Sample A of this document shows a sample 'dictionary.tripplite' configuration for use with a FreeRadius server.

The first thing that needs to be configured is a Vendor ID for TrippLite; the assigned code is 850. This is necessary so that the vendor-specific attributes that PowerAlert will send to the RADIUS server are understood and accepted. Likewise, it allows the server to respond with vendor-specific information. The configuration requires and defines three string attributes.

TrippLite-Authorization

This string contains the authorization definition for a defined user. It is how PowerAlert determines what facilities within PowerAlert may be accessed or modified by a given user.

TrippLite-Outlet-Realms

This string contains the individual outlet realms for which a user is granted access. This is how PowerAlert has implemented user-controlled outlets.

TrippLite-Message

This is a simple string containing a textual message that will be sent from PowerAlert to the RADIUS server during the accounting process.

Once the dictionary has been configured, the RADIUS server should now understand how to handle information exchange with PowerAlert.

Configuring the Users

Each user requires a unique configuration. For the sample FreeRadius server, those entries go into a single file called “users.” A sample of the configuration file is given in Sample B.

Sample Administrative User

This entry in the user table defines a sample administrative user for PowerAlert:

```
radiusadmin     Cleartext-Password := "radiusadmin"
                Reply-Message = "Hello, %{User-Name}",
                TrippLite-Authorization = "default=rw",
                Session-Timeout = 2400,
                Idle-Timeout = 1200
```

This entry defines a user with the name of 'radiusadmin' and a password of 'radiusadmin'. It is important to note that PowerAlert will only generate authentication requests with a **Cleartext-Password**; no other exchange mechanism is supported at this time.

The **Reply-Message** line simply indicates a textual response sent back if the user authenticates successfully. It is not required by PowerAlert, but is a standard component of a response to an authentication request.

The **TrippLite-Authorization** string is required in all successful authentication responses. Failure to return said string will default the user to no authorization. In this case, as described in the dictionary, this user has default Read-Write access to all of the facilities within PowerAlert.

The **Session-Timeout** and **Idle-Timeout** strings are not defined in the dictionary. They are not vendor-specific attributes, but are instead part of the standard RADIUS configuration defined by RFC 2865.

> **Session-Timeout** “sets the maximum number of seconds of service to be provided to the user before termination of the session or prompt. This Attribute is available to be sent by the server to the client in an Access-Accept or Access-Challenge.” In the case of PowerAlert, if this value is not sent, a user’s session will never timeout.
>
> **Idle-Timeout** “sets the maximum number of consecutive seconds of idle connection allowed to the user before termination of the session or prompt. This Attribute is available to be sent by the server to the client in an Access-Accept or Access-Challenge.” In the cause of PowerAlert, if this value is not sent, a user’s session will never expire due to inactivity.

Sample Managerial User

This entry in the user table defines a sample managerial user for PowerAlert:

```
radiusmanager   Cleartext-Password := "radiusmanager"
                Reply-Message = "Hello, %{User-Name}",
                TrippLite-Authorization =
                "default=rw,security=ro",
                Session-Timeout = 1200,
                Idle-Timeout = 600
```

For the most part, this is identical to the administrative account above: A user name and password on the first line, a **Reply-Message** on the second line, and a **Tripplite-Authorization** string on the third line. We end the entry with slightly shorter **Session-Timeout** and **Idle-Timeout** entries. The only major difference between the default manager and the default administrator is that the manager is explicitly denied Write access to the security facility, meaning they can view security resources, such as user accounts and authentication schemes, but not change them.

Sample Guest User

This entry in the user table defines a sample guest user for PowerAlert:

```
radiusguest    Cleartext-Password := "radiusguest"

               Reply-Message = "Hello, %{User-Name}",

               TrippLite-Authorization = "default=ro,security=none",

               TrippLite-Outlet-Realms = "1-10,31",

               Session-Timeout = 600,

               Idle-Timeout = 300
```

Once again, the format remains fairly standard in terms of username, password, **Reply-Message** and timeout parameters. The shorter idle and session timeout values reflect the limited scope of access. The two major changes are in the **TrippLite-Authorization** and **TrippLite-Outlet-Realm** definitions. The guest user has read-only access to all facilities by default and explicitly has no access to the security realm. This gives the guest the ability to monitor PowerAlert, but not change any of the configuration.

This is also the only entry with a **TrippLite-Outlet-Realm** definition. In this case, while the guest can monitor the rest of the system, they have been provided the ability to control individual outlets on devices that support them that fall within the realms of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 31. In this manner, an account can be restricted to only be able to change the state of those specific outlets.

Configuring Client Access

Once the dictionary and user configurations are in place, the RADIUS server must be configured to allow PowerAlert to send requests and receive responses. This is very specific to the particular RADIUS server involved, so check your documentation carefully. For the FreeRadius server, entries would be added to the clients.conf file following the instructions provided with the sample entries.

Sample A

Sample 'dictionary.tripplite' FreeRadius Configuration File

```
##############################################################################
VENDOR            TrippLite                     850

BEGIN-VENDOR      TrippLite

#
# Access is granted to the various facilities within the PowerAlert software
# by means of the TrippLite-Authorization attribute, which is a comma-delimited
# string of facility-code to access-level pairs.
#
# Facility Codes: default, security, networksettings, systemsettings, systreminfo,
#                 logging, devicestatus, devicecontrols, deviceevents,
#                 deviceloads, actions, schedules, discovery
#
# Access Levels: none (or 0), ro (or 1), rw (or 2)
#
# Example: default=rw,security=none,systemsettings=ro
#
#          - The default access for all non-specified facilitys is read/write
#          - The user has no access to the security facility
#          - The user has read-only access to the system settings
#
ATTRIBUTE   TrippLite-Authorization      1     string

#
# Comma-delimited string of outlet security realms from 1 through 32 to which
# an otherwise restricted user has read-write access.
#
# Example: 1-5,10,15
#
#           - User has read-write access to realms 1, 2, 3, 4 and 5
#           - User has read-write access to realms 10 and 15
#
ATTRIBUTE   TrippLite-Outlet-Realms      2     string

#
# Simple message, usually sent as part of accounting
#
ATTRIBUTE   TrippLite-Message      3     string

END-VENDOR TrippLite
```

Sample B

Sample 'users' FreeRadius Configuration File Snippet

The following snippet defines simple sample of an administrative, managerial and guest account for PowerAlert.

```
# --------------------------------------------------------------------------#
# PowerAlert Entries
# --------------------------------------------------------------------------#

radiusadmin       Cleartext-Password := "radiusadmin"
                  Reply-Message = "Hello, %{User-Name}",
                  TrippLite-Authorization = "default=rw",
                  Session-Timeout = 2400,
                  Idle-Timeout = 1200

radiusmanager     Cleartext-Password := "radiusmanager"
                  Reply-Message = "Hello, %{User-Name}",
                  TrippLite-Authorization = "default=rw,security=ro",
                  Session-Timeout = 1200,
                  Idle-Timeout = 600

radiusguest       Cleartext-Password := "radiusguest"
                  Reply-Message = "Hello, %{User-Name}",
                  TrippLite-Authorization = "default=ro,security=none",
                  TrippLite-Outlet-Realms = "1-10,31",
                  Session-Timeout = 600,
                  Idle-Timeout = 300
```