

# Instructional Manual

## PowerAlert for VMware Servers

Tripp Lite's PowerAlert software can perform a scripted shutdown of the ESX(i) host and its VMs. This document will guide you through the process of connecting your Tripp Lite UPS and installing and configuring PowerAlert on VIMA.

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# 1 Introduction

## 1.1 Scope

In this document, PowerAlert is installed on VIMA and can monitor the UPS via a serial connection or a network connection. PowerAlert's script execution feature is used to execute the VMware shutdown scripts written by William Lam and Tuong Duong. The scripts use the VI Perl Toolkit to attempt a graceful shutdown of all running VMs on one or more ESX(i) hosts. The scripts do not attempt a graceful shutdown of the executing VIMA.

You are responsible for performing appropriate testing in your own staging or development environment prior to implementing this solution in any production environment.

## 1.2 Document Conventions

The Tripp Lite PowerAlert Software Suite provides two different programs of interest, PowerAlert Local (PAL) and PowerAlert Network Shutdown Agent (PANSA). You will need one or the other of them to install on VIMA. This document makes distinctions between the two programs based on how you have connected the UPS to your VMware server. If you have connected your UPS via serial cable, you will install PAL and follow the serial cable instructions in the later sections of this document. If you have a Tripp Lite SNMPWEBCARD installed in your UPS, you will install PANSA and follow the network connection instructions.

Command line instructions and file edits are both presented in monospaced font.

## 1.3 Intended Audience

These instructions are intended for administrators of the VMware server. The command line instructions are specifically written for the vi-admin user.

## 1.4 Document Authors

This document has been authored by the Tripp Lite Software Development Team.

## 1.5 Requirements and Support

The ESX(i) minimal Essentials paid license is required. This shutdown solution supports a paid license of ESX or ESX(i) version 3.5 (updates 1 through 4). There are no plans to support the free version of ESX(i) because of licensing limitations on the VI Perl Toolkit which the shutdown scripts depend on. These directions were tested on ESX 3.5 and ESX 4.0.

VIMA is required and must run at all times to support shutdown. PowerAlert and the shutdown scripts are both installed on VIMA. These directions were tested on VIMA 1.0.0 and vMA 4.0. The shutdown scripts are considered deprecated with regard to vMA 4.0.

VM hosts should have VMware Tools installed to support graceful shutdown, but they will implement a hard shutdown if the tools are not installed. The executing VIMA is treated as an appliance and does not shut down gracefully if it is running on the host which needs to shut down. PowerAlert and any other services running on VIMA which require graceful shutdown need to be stopped using the script before initiating the ESX host shutdown. Performing actions other than shutting down PowerAlert will typically require Perl skill.

A network or serial connection to the UPS is required. You may need to configure the serial port device for VIMA if you intend to connect your UPS via a serial connection. If using the network connection, you will want your VIMA to have a static IPv4 address to ensure communication from the SNMPWEBCARD. USB support for VIMA 1.0.0 is not available. The USB controller for vMA 4.0 is not adequate for UPS communications. USB over TCP/IP products are untested but unlikely to work off the shelf.

A networked connection with the SNMPWEBCARD is the simplest configuration.

## 1.6 References

<http://communities.vmware.com/docs/DOC-9531>

<http://viops.vmware.com/home/docs/DOC-1341>

# 1 Introduction (continued)

## 1.7 Attribution

### 1.7.1 Special Thanks

Tripp Lite thanks William Lam and the VMware Community for their assistance in troubleshooting this shutdown solution.

### 1.7.2 Trademarks

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# 2 Environment Setup

## 2.1 Cable Connection

If you do not have an SNMPWEBCARD, connect the UPS via serial cable to the ESX(i) server.

## 2.2 File Download

In all configurations, you will need the scripts written by [William Lam](#) and Tuan Duong: “ghettoShutdown.pl” and “upsVIShutdown.pl”. The scripts can be downloaded directly from [VTMN DOC-9531](#), below “Sample Output” in the “Attachments:” section.

**Table 1: VIMA Shutdown Script Downloads**

Script by William Lam & Tuan Duong
upsVIShutdown.pl (1.9k)
ghettoShutdown.pl (5.1k)

These scripts are released under the GNU GPL. They are not owned by or maintained by Tripp Lite. Tripp Lite has tested the use of these scripts in combination with PowerAlert and is responsible for these instructions.

The combination of PowerAlert software you will need depends on how you have connected your UPS. To determine which PowerAlert software packages to download for VIMA, go to <http://www.tripplite.com/en/support/PowerAlert/Downloads.cfm> and download according to the guidelines presented there.

## 2.3 File Installation

Put the shutdown scripts (from Table 1) and the Linux PowerAlert RPMs in VIMA’s /home/vi-admin/ directory.

On VIMA, log in as vi-admin and make the “upsVIShutdown.pl” and “ghettoShutdown.pl” scripts executable.

```
[vi-admin@vima ~]$ chmod 755 /home/vi-admin/upsVIShutdown.pl
[vi-admin@vima ~]$ chmod 755 /home/vi-admin/ghettoShutdown.pl
```

Next, install PowerAlert on VIMA. Your RPM might have a different file name, depending on which version of PowerAlert you download.

*Note: A bug in PowerAlert 12.04.0048 prevented scripts from executing for events other than On Battery. PowerAlert 12.04.0049 is required to support alternate events.*

When using an SNMPWEBCARD connection, install PowerAlert Shutdown Agent.

```
[vi-admin@vima ~]$ sudo rpm -ivh pasda-12.04.0048-1-fedora.i386.rpm --nodeps
```

## 2 Environment Setup (continued)

### 2.3 File Installation (continued)

When using a serial connection, install PowerAlert Local.

```
[vi-admin@vima ~]$ sudo rpm -ivh pal-12.04.0048-1-fedora.i386.rpm --nodeps
```

The daemon name on VIMA is either “pald” or “pasdad”, depending on whether you installed PowerAlert Local or PowerAlert Shutdown Agent. The program name on VIMA is either “pal” or “pasda”. You should use the program name if you later decide to uninstall PowerAlert. An example of the command line someday to uninstall PowerAlert on VIMA is the following:

```
[vi-admin@vima ~]$ sudo service pald stop
[vi-admin@vima ~]$ sudo chkconfig pald off
[vi-admin@vima ~]$ sudo rpm -e pal
```

### 2.4 Script Configuration

The scripts are written to have the ability to shut down multiple ESX servers. Configuring an ESX server to shut down always causes all VMs on that server to shut down. From the VIMA terminal where your PowerAlert is installed, get the list of known ESX servers. If you have recently deployed VIMA, you might first have to use the ‘vifp’ command to configure the servers managed by VIMA. Consult the ‘vifp’ man page for instructions on how to do this.

```
[vi-admin@vima ~]$ sudo vifp listservers
Password:
esx-example2.triplite.com
```

The VIMA console will display a list of the ESX servers that it knows about. You can add all of the known servers to the upsVISshutdown.pl script. Add them in the desired order of shutdown. Make sure that the server running VIMA is the last one in the list. We will do two more things before editing the script. The next ‘vifpinit’ command is required to run the following ‘vminfo.pl’ script successfully, but you do not have to run ‘vifpinit’ every time VIMA starts in order to allow for successful shutdown.

```
[vi-admin@vima ~]$ vifpinit esx-example2.triplite.com
```

Make sure you use the name of your server as printed by the “vifp listservers” command. Next, all on one line, we will have the server print out the names of the VMs it knows about. Your DNS server must know the name of your ESX server.

*Note: VIMA must be able to resolve the name of your ESX server AT ALL TIMES for the scripts to work. If your ESX server IP address changes but your DNS server is not updated, your shutdown solution will stop working until the DNS entry and/or /etc/hosts file are updated.*

```
[vi-admin@vima ~]$ /usr/lib/vmware-viper1/apps/vm/vminfo.pl --server esx-example2.
triplite.com | grep Name
```

On vMA 4.0

```
[vi-admin@vima ~]$ /usr/lib/vmware-vcli/apps/vm/vminfo.pl --server esx-example2.
triplite.com | grep Name
```

One of the names displayed will be the name of your VIMA. The VIMA name is added to the upsVISshutdown.pl script as well. Now that we have all the information, you can use the program ‘nano’ to edit the script in the VIMA terminal.

```
[vi-admin@vima ~]$ nano upsVISshutdown.pl
```

- There are four things you want to edit in the script:
- The names of the ESX servers to shutdown
- The name of your VIMA which is running PowerAlert
- The number of seconds to delay after a guestOS shutdown is initiated
- The name of the shutdown log file (optional)

```
my @hosts = ("esx-example1.triplite.com", "esx-example2.triplite.com");
my $log_output = "/tmp/upsShutdown.log";
my $ups_vm_name = "vima";
my $sec_to_sleep = 15;
```

## 2 Environment Setup (continued)

### 2.4 Script Configuration (continued)

Make sure you add the correct name of your VIMA, which we found earlier by using `vminfo.pl`. If you have the VIMA name set correctly, the ESX server should power down when we test this script. If you have it set incorrectly, the ESX server will kill all of the VMs, including VIMA, but you will still have communication to the server from the VMware Infrastructure Client, and the shutdown log file will be empty or contain a complaint about the name of the VIMA.

The `shutdownVM()` function is a non-blocking function. You need to set your sleep time correctly, otherwise the ESX server could be powered down before your VMs are done shutting down. The default in the script is 15 seconds, but depending on the number of VMs, the applications running, and the VM guestOS, you might need more time. When the timer expires, VIMA will initiate ESX shutdown. All VMs need to be able to shut down before this timer expires.


Attribution: <http://communities.vmware.com/docs/DOC-9531>

After the `upsVIShutdown.pl` script is saved, open the `ghettoShutdown.pl` script. We want to add a Perl command to the `shutdownHost()` subroutine, which is near the bottom of the file. Follow the next steps to open the `ghettoShutdown.pl` script using nano and add two new lines.

```
[vi-admin@vima ~]$ nano ghettoShutdown.pl
```

In nano, arrow down to the second-to-last subroutine in the file named “`shutdownHost`” and find the text which says, “Shutting down final host”. You will add the next two lines directly before that statement. If you are using the serial connection, you will need to stop “`pasdad`” instead of “`pald`” in the second command.

```
print "\t", giveMeDate('MDYHMS')," - Shutting Down PowerAlert." ;
my $pal = `service pald stop` ;
```



```
GNU nano 1.3.12 File: ghettoShutdown.pl

sub shutdownHost {
    my ($host,$shutdown_type) = @_;
    my $hostname = $host->name;
    if($shutdown_type eq '1') {
        print "\t", giveMeDate('MDYHMS')," -- HOST: ", $hostname, " is$
        eval { $host->ShutdownHost(force => 1); };
    } else {
        print "\t", giveMeDate('MDYHMS')," -- Shutting Down PowerAlert.$
        my $pal = `service pald stop` ;
        print "\t", giveMeDate('MDYHMS')," -- Shutting down final host:$
        sleep($final_host_wait);
        eval { $host->ShutdownHost(force => 1); };
        print "=====$
    }
}

sub giveMeDate {
    my ($date_format) = @_;
    my %dttime = ();
    [ Wrote 162 lines ]
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

Figure 1: Stopping PowerAlert in `ghettoShutdown.pl`

The scripts are written such that VIMA does not execute a graceful shutdown before the ESX host powers down. You might want to add stop commands for other programs which you are running on VIMA. All other VMs will execute a graceful shutdown if VMware Tools are installed on the individual VMs.

### 2.5 Script Test

Test the script configuration before trying to use it in combination with PowerAlert. You can kick off the script manually from the VIMA command line. You may want to start some extra VMs other than VIMA, to ensure that these VMs are getting shut down.

**WARNING: Doing this will shut down your VMs and shut down the ESX server.**

```
[vi-admin@vima ~]$ sudo /home/vi-admin/upsVIShutdown.pl
```

## 2 Environment Setup (continued)

### 2.5 Script Test (continued)

When you execute the script, you should see all VMs except VIMA power down, and after the timer expires, the ESX service console (if available) will display its own shutdown sequence and power down the unit. You can test this as much as you like to adjust your timer choice, but remember that the UPS can only provide power for a limited amount of time. Even if the power returns, there is not a way to cancel the script once it has started.

Your VMs should have VMware tools installed for graceful shutdown of these VMs, although the shutdown should still work even if the tools have not been installed.

### 2.6 Firewall Configuration

In order for PowerAlert to function properly, you will need to open VIMA firewall ports 161, 162, 3664 and 3665. You will need to stop other VIMA services which utilize these ports.

On VIMA, if you would prefer to disable the firewall:

```
[vi-admin@vima ~]$ sudo chkconfig iptables off
[vi-admin@vima ~]$ sudo service iptables save
[vi-admin@vima ~]$ sudo service iptables stop
```

Otherwise open the specific ports: 161, 162, 3664 and 3665.

```
[vi-admin@vima ~]$ sudo iptables -I INPUT -p UDP --dport 161 -m state --state NEW
-j ACCEPT
[vi-admin@vima ~]$ sudo iptables -I INPUT -p UDP --dport 162 -m state --state NEW
-j ACCEPT
[vi-admin@vima ~]$ sudo iptables -I INPUT -p UDP --dport 3664 -m state --state NEW
-j ACCEPT
[vi-admin@vima ~]$ sudo iptables -I INPUT -p UDP --dport 3665 -m state --state NEW
-j ACCEPT
```

Finally, save the firewall configuration.

```
[vi-admin@vima ~]$ sudo /etc/init.d/iptables save
```

Attribution: <http://viops.vmware.com/home/docs/DOC-1341>

### 2.7 PowerAlert Pre-Configuration

Before configuring PowerAlert, you need to disable the SNMP daemons, which are probably already using ports 161 and 162.

```
[vi-admin@vima ~]$ sudo chkconfig snmpd off
[vi-admin@vima ~]$ sudo chkconfig snmptrapd off
[vi-admin@vima ~]$ sudo service snmpd stop
[vi-admin@vima ~]$ sudo service snmptrapd stop
```

Next, we will enable PowerAlert to run at startup. Use the daemon name “pasdad” or “pald”.

```
[vi-admin@vima ~]$ sudo chkconfig pasdad on
```

PowerAlert may have started up on its own, following the install. Stop PowerAlert so that we can configure it. Again, use the daemon name pasdad or pald.

```
[vi-admin@vima ~]$ sudo service pasdad stop
```

Once we’ve confirmed that PowerAlert is not running, we will delete any generated data files prior to making configuration file changes. Whenever you change the configuration file, you need to delete the PowerAlert data files to force the configuration file to be re-parsed.

```
[vi-admin@vima ~]$ cd /var/triplite/poweralert/data
[vi-admin@vima ~]$ sudo rm -rf *
```

## 3 PowerAlert Configuration

### 3.1 Configuration Quick Reference

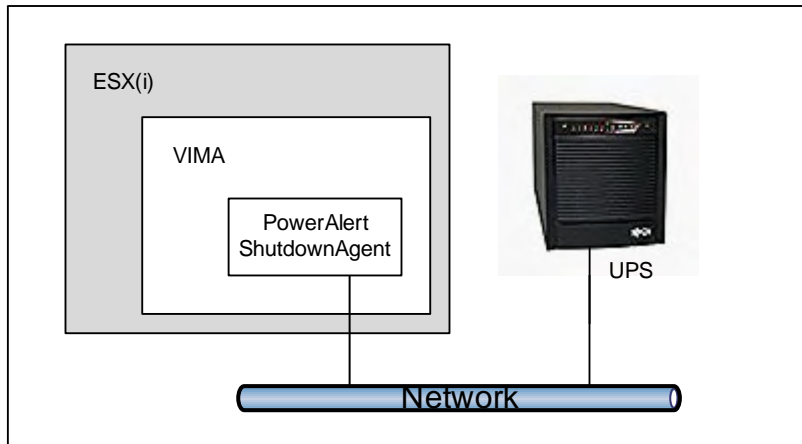
Your PowerAlert configuration will vary depending on how you have connected the UPS. Skip to the applicable subsection.

**Table 2: PowerAlert Configuration Quick Reference**

UPS Connection	Document Reference
SNMPWEBCARD	<a href="#">SNMPWEBCARD PowerAlert Configuration (Section 3.2)</a>
Serial Connection	<a href="#">Serial PowerAlert Configuration (Section 3.3)</a>

### 3.2 SNMPWEBCARD PowerAlert Configuration

For conceptual convenience and sanity checking, the architecture of the SNMPWEBCARD shutdown solution is shown below.



**Figure 2: SNMPWEBCARD Shutdown Architecture**

Before starting PowerAlert Shutdown Agent, you need to configure it. If you forget to configure it before it has started, then you should follow the instructions in the INI file which cover changing the configuration after running the Shutdown Agent.

To configure the Shutdown Agent, you will make a copy of the sample INI file and edit that copy. The name of the copied INI file is specific and case-sensitive.

```
[vi-admin@vima ~]$ cd /var/tripplite/poweralert
[vi-admin@vima ~]$ sudo cp sample_paconfig.ini paconfig.ini
[vi-admin@vima ~]$ sudo nano paconfig.ini
```

Follow the instructions in the INI file. For example, if the SNMPWEBCARD is at 10.0.0.25, your configuration modifications may look as shown. The INI file must have an IP address and does not accept a hostname at this time.

```
GNU nano 1.3.12 File: paconfig.ini Modified
# REQUIRED: IPv4 address of the remote agent
#
Server=10.0.0.25

# OPTIONAL: MAC Address of the remote agent
#
#SNMPMacAddress=00:00:00:00:00:00

# REQUIRED: SNMPv1 read/write community string configured for the remote agent
#
SNMPCommunity=tripplite

# REQUIRED: Remote agent SNMP get/set port. If the agent is a SNMPWEBCARD,
# use 161. If it is a PowerAlert Local, use 3664
#
SNMPPort=161

# -----#
# PA_Remote_2
#
^G Get Help ^O WriteOut ^R Read File ^V Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^N Next Page ^U UnCut Text ^T To Spell
```

**Figure 3: pasdad UPS Configuration**

## 3 PowerAlert Configuration (continued)

### 3.2 SNMPWEBCARD PowerAlert Configuration (continued)

Set your 'ShutdownDelay' to a number large enough to allow the upsVIShutdown.pl script to execute and your VIMA to have shut down before the timer would have expired. You do not want the Shutdown Agent to shutdown VIMA because we will run the upsVIShutdown.pl script instead. The script needs enough time to complete running on VIMA or the ESX server will not be shut down.

```
GNU nano 1.3.12 File: paconfig.ini Modified
#
ShutdownEvents=0n Battery
#
# REQUIRED: Delay in seconds between the event(s) in ShutdownEvents being
# triggered and the actual shutdown being initiated. If the
# event is cleared before the shutdown starts, the shutdown will
# not be triggered.
#
ShutdownDelay=180
#
# OPTIONAL: Whether or not to execute scripts when a Shutdown event is
# triggered or cleared. If you choose to enable script execution,
# you must specify at least one script name in either
# 'ExecuteCommandOnSet' or 'ExecuteCommandOnClear'.
# If desired, you can specify both an 'ExecuteCommandOnSet' and an
# 'ExecuteCommandOnClear'.
#
# To enable script execution:
# EnableExecuteCommand=true
# To disable script execution:
# EnableExecuteCommand=false
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^U Next Page ^U UnCut Text ^T To Spell
```

Figure 4: pasdad Shutdown Delay Configuration

Finally, setup the script execution parameters, 'EnableExecuteCommand=true', 'ExecuteCommandOnSet=/<path to shutdown scripts>/upsVIShutdown.pl', and the 'ExecuteCommandDelay' as desired. Earlier, we put the shutdown scripts in /home/vi-admin/.

```
GNU nano 1.3.12 File: paconfig.ini Modified
# EnableExecuteCommand=false
EnableExecuteCommand=true
#
# OPTIONAL: The fully-qualified path to a script to execute when an event is
# triggered. Make sure your linux file permissions will allow
# execution of the script.
#
# Example:
# ExecuteCommandOnSet=/var/tripplite/poweralert/<myscriptname>.sh
ExecuteCommandOnSet=/home/vi-admin/upsVIShutdown.pl
#
# OPTIONAL: The number of seconds to delay before executing the script given
# in ExecuteCommandOnSet.
ExecuteCommandDelay=5
#
# OPTIONAL: The fully-qualified path to a script to execute when an event is
# cleared. Make sure your linux file permissions will allow
# execution of the script.
#
# When an event is cleared, the clear script will always run
```

Figure 5: pasdad Script Execution Configuration

You do not need to set 'ExecuteCommandOnClear' unless you have your own custom script for handling cleared events. You cannot cancel the upsVIShutdown.pl script once it has started to shutdown the VMs and ESX host.

Save the configuration file. Make sure the 'data' directory under /var/tripplite/poweralert is empty. If it is not, delete all the files in the 'data' directory. The information is regenerated with defaults the next time the Shutdown Agent runs.

Now that the configuration file has been edited and the data directory is clear, start the Shutdown Agent.

```
[vi-admin@vima ~]$ sudo service pasdad start
```

### 3 PowerAlert Configuration (continued)

#### 3.2 SNMPWEBCARD PowerAlert Configuration (continued)

Your configuration is complete, but you might want to check that the Shutdown Agent has registered with the SNMPWEBCARD. Using any web browser, enter the IP address of your SNMPWEBCARD and log in. The default username and password are both the word 'admin'. On the Settings->Contacts SNMP tab, you should see the IP address of VIMA.



Figure 6: SNMPWEBCARD pasdad Registration

You may want to make sure that traps will be sent for an On Battery event. Navigate to Events, and scroll down to the On Battery warning. Make sure the check mark appears in the Traps column. If you click on the On Battery event in the Event Response column, the On Battery row should highlight.

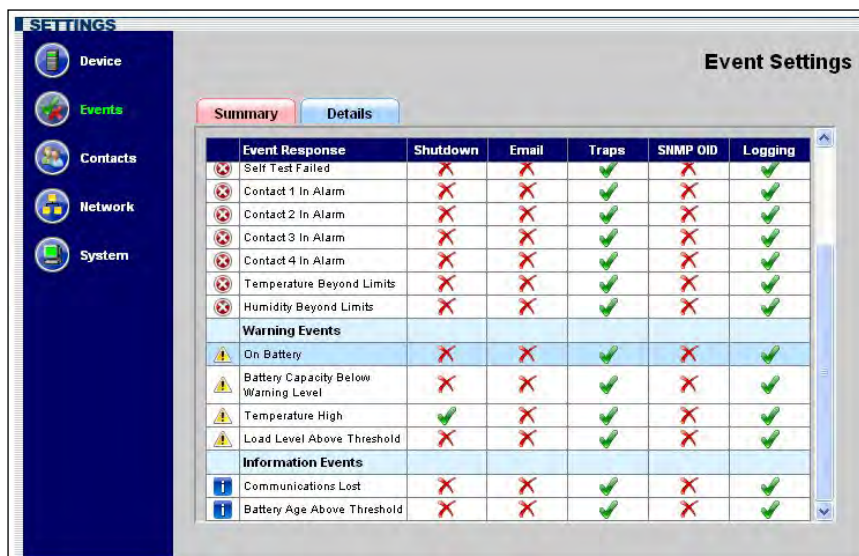


Figure 7: SNMPWEBCARD Event Settings

## 3 PowerAlert Configuration (continued)

### 3.2 SNMPWEBCARD PowerAlert Configuration (continued)

If you click on the checkbox in the Traps column, the page will switch to the Details tab, where you should again see your same VIMA IP address as a contact. (The IP address shown in the next picture does not match the IP address shown in earlier pictures in this document, but your IP should and must match.)

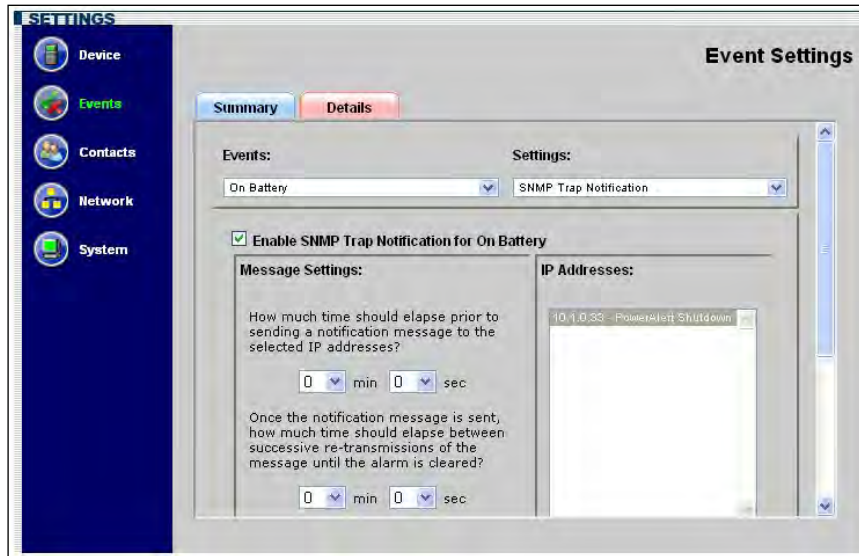


Figure 8: SNMPWEBCARD Traps Event Details

Shutdown agent and SNMPWEBCARD configuration are complete. Continue to Section 4: Testing PowerAlert.

### 3.3 Serial PowerAlert Configuration

For conceptual convenience and sanity checking, the architecture of the serial connection shutdown solution is shown below.

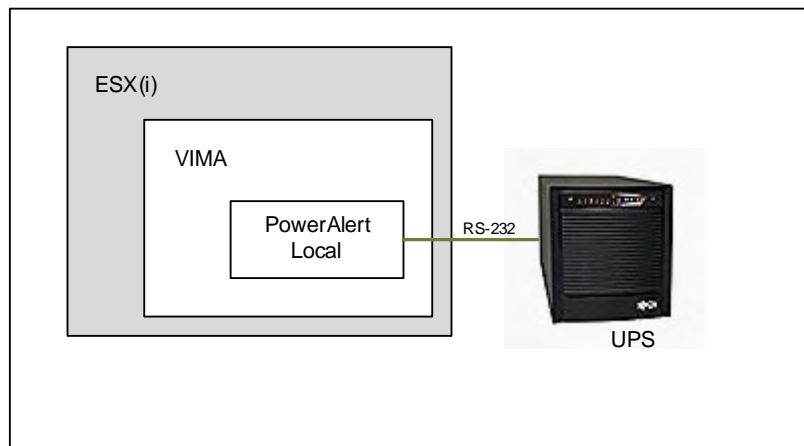


Figure 9: Serial Connection Shutdown Architecture

Before starting PowerAlert Local, you need to configure it. PowerAlert Local should have already started running after you installed it. In the pre-configuration instructions, you stopped the PowerAlert Local daemon (“pald”) and deleted the files in the `/var/triplite/poweralert/data/` directory.

To configure PowerAlert Local, you will create and edit a very simple configuration file. The name of the INI file is specific and case sensitive.

```
[vi-admin@vima ~]$ cd /var/triplite/poweralert
[vi-admin@vima ~]$ sudo touch paconfig.ini
[vi-admin@vima ~]$ sudo nano paconfig.ini
```

## 3 PowerAlert Configuration (continued)

### 3.3 Serial PowerAlert Configuration (continued)

PowerAlert Local needs to be configured to execute the shutdown scripts when the UPS goes on battery. To do this, edit the contents of the paconfig.ini file to match the file shown below. Please make sure to press ‘return’ after the last option.



```
GNU nano 1.3.12 File: paconfig.ini
[Event:On Battery]
EnableBroadcasting=1
EnableOSShutdown=0
OSShutdownDelay=180
EnableExecuteCommand=1
ExecuteCommandDelay=15
ExecuteCommandOnSet=/home/vi-admin/upsVIShutdown.pl
ExecuteCommandOnClear=

[ Read 9 lines ]
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text    ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^U Next Page  ^U UnCut Text ^T To Spell
```

**Figure 10: PowerAlert Local Configuration File**

This small configuration file prevents PowerAlert Local from shutting down VIMA by setting ‘EnableOSShutdown’ equal to 0. The ‘OSShutdownDelay’ is configured to a valid value, but this timer should not be executed because OS shutdown is disabled.

Script execution is enabled and configured in the last four lines of the file. You can adjust the ‘ExecuteCommandDelay’ as desired. This is the delay time between the notification from the UPS and the execution of the script in ‘ExecuteCommandOnSet’. When adjusting the ‘ExecuteCommandDelay’, please keep in mind that the PowerAlert console can only display configurations in 15-second increments. PowerAlert will still function if you assign a value such as ‘5’ seconds, but the GUI will not be able to display your setting.

You do not need to set ‘ExecuteCommandOnClear’ unless you have your own custom script for handling cleared events. You cannot cancel the upsVIShutdown.pl script once it has started to shut down the VMs and ESX host.

Save the configuration file. Make sure the ‘data’ directory under /var/triplite/poweralert is empty. If it is not, delete all the files in the ‘data’ directory. The information is regenerated with defaults the next time PowerAlert Local runs.

Now that the configuration file has been created and the data directory is clear, and making sure that your UPS serial cable is connected, start PowerAlert Local.

```
[vi-admin@vima ~]$ sudo service pald start
```

You can check the PowerAlert log file in /var/triplite/poweralert/log/ directory to see if there are any issues discovering the device connected to your serial port. Because we created a very small configuration file, you can expect to see log messages complaining about missing configuration file sections. Do not worry unless there is a problem with the [Event:On Battery] section. PowerAlert will default any missing configuration settings.

PowerAlert should now be configured to shutdown your VMs and ESX server. If you want to configure additional options like email, you will find some hints in the Advanced Configuration Information below.

#### Advanced Serial Configuration Information

If you want to configure any more advanced features of PowerAlert Local, you will need the PowerAlert Local Console (GUI). The PowerAlert Console is a Java program, which installs with every PowerAlert package. The Console can connect remotely from another VM to the PowerAlert engine running on VIMA. If you install PowerAlert Local on a separate VM or PC, you can launch the console using the next sets of commands.

The PowerAlert Local daemon should start each time the VIMA is started. Figure out what the IP address of VIMA is, as it is probably different than the IP address of the ESX server.

```
[vi-admin@vima ~]$ /sbin/ifconfig
```

## 3 PowerAlert Configuration (continued)

### 3.3 Serial PowerAlert Configuration (continued)

You need to launch a PowerAlert Local Console and connect to the PowerAlert engine daemon (“pald”) running on VIMA. You can do this from any machine which has a network connection to VIMA. The PowerAlert console is a Java GUI, so you need to install PowerAlert on whichever VM or computer you planned to use to configure PowerAlert. You may want to make sure that your non-VIMA PowerAlert is either configured not to start automatically, unable to detect the UPS being used by VIMA, or uninstalled when you are finished with your configuration

**Table 3: Path to Power Alert Console on VM**

VM or PC Operating System	Default Path to PowerAlert Console
VIMA	/var/tripplite/poweralert/console
Linux	/var/tripplite/poweralert/console
Windows XP	C:\ProgramFiles\TrippLite\PowerAlert\console

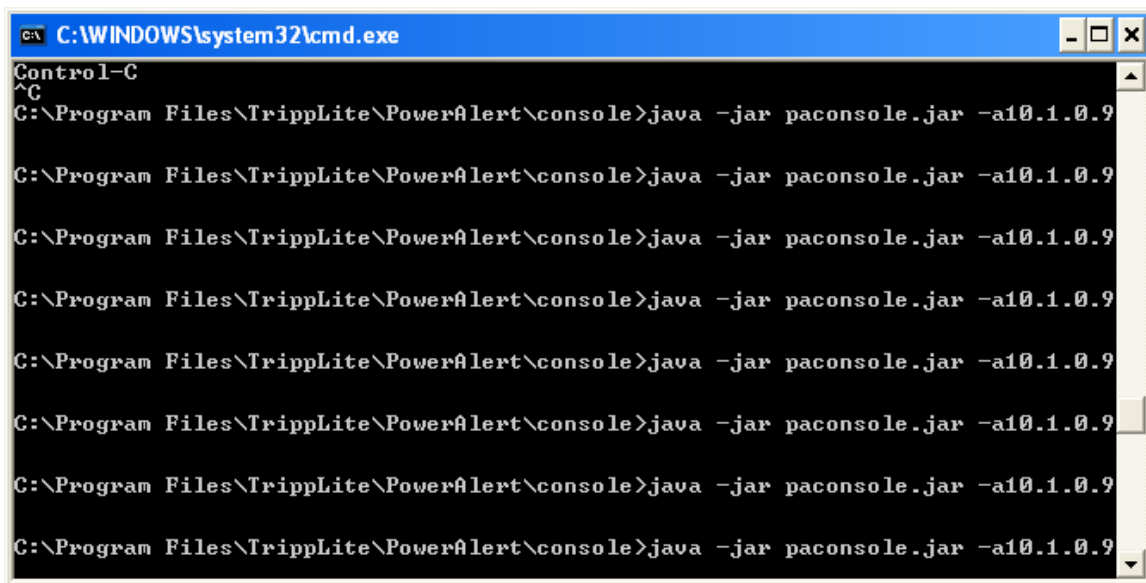
Log in to whichever system you plan to use to configure VIMA on PowerAlert. Open a terminal and navigate to the console directory where you installed PowerAlert. Run the PowerAlert console, and specify the IP address of VIMA. VIMA has to be running and “pald” needs to be running on VIMA for this to work.

```
[admin@linuxvm ~]$ sudo cd /var/tripplite/poweralert/console
[admin@linuxvm ~]$ sudo ./pal_console.sh -a<your-ip-address>
```

The “-a” option does not have a space between it and the IP address.

On a Windows system your command would look like this:

```
C:\Program Files\TrippLite\PowerAlert\console>java -jar paconsole.jar -a<vima-ip-address>
```



**Figure 11: Launch PowerAlert Console on Windows VM**

The PowerAlert console should launch. If your remote communication worked, you will see the Manufacturer and Model of the UPS connected to your UPS. If the connection did not work or is lost, you may see the phrase “Engine Offline” next to a grey “X” instead of the green check mark next to the phrase “Alarm Status”. If this happens, verify that the PowerAlert engine is running on VIMA, and that the destination IP address of VIMA is reachable. In addition, try disabling or reconfiguring the VIMA firewall and the remote PC or VM firewall, and then try the connection again.

## 3 PowerAlert Configuration (continued)

### 3.3 Serial PowerAlert Configuration (continued)

You are now free to do whatever you like in the PowerAlert GUI, and the ESX shutdown should already have been configured by our configuration file. The next screenshots will show you the GUI screens which will verify that the configuration file was accepted.



Figure 12: PowerAlert Console, Main View

We want check that PowerAlert will execute the `upsVIShutdown.pl` script when the UPS detects a power loss. So, click on Settings button at the top-right, and then the Events button when it pops up. Note the green text beneath the top row of buttons shows you which menu is the active menu.

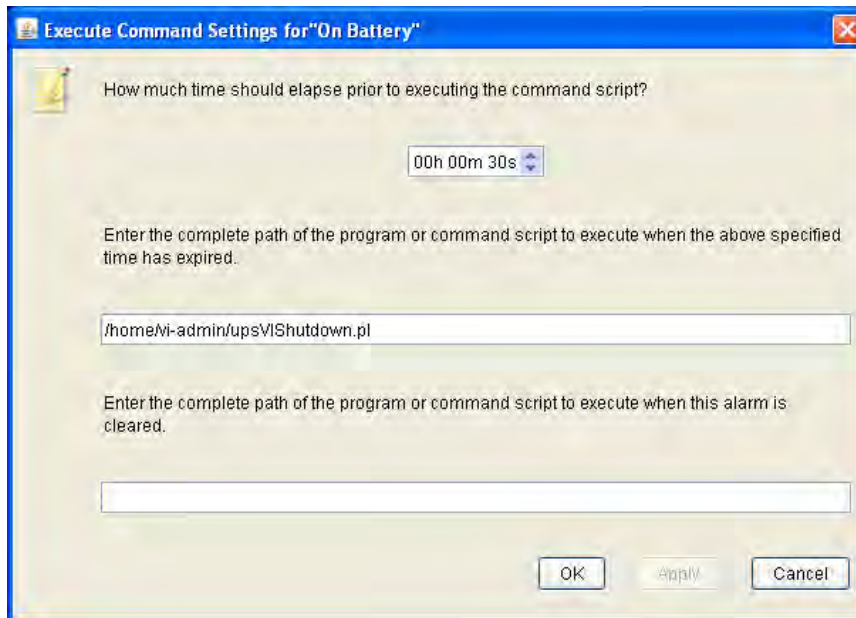


Figure 13: PowerAlert Console, UPS Event Settings

## 3 PowerAlert Configuration (continued)

### 3.3 Serial PowerAlert Configuration (continued)

Select “On Battery” and then in the right panel, verify that the checkbox for “Execute Command Script” is checked and that the “Shutdown” checkbox is unchecked. You do not need the “Shutdown” check box because we are going to run a script that does the shutdown instead. You will double click on the words “Execute Command Script” to get the script settings to pop up.



**Figure 14: PowerAlert Console, Script Execution Configuration**

Here you should see the path to your script and your timer configuration parameters.

## 4 Testing PowerAlert

Before testing PowerAlert, make sure your UPS is turned on, has battery charge, and that you will not disturb other hardware which might be powered through the UPS. When you are ready to test the shutdown using PowerAlert, disconnect the UPS power from the wall. You may see a Broadcast message on the VIMA terminal telling you the UPS is on battery. After the amount of time you specified in the PowerAlert console or 'ExecuteCommandDelay' configuration file option, the script should start execution. You will notice VMs start to shut down if you are watching using the VMware Infrastructure Client. After the timer you set in the upsVIShutdown.pl script, you will see the service console begin its shutdown. The ESX server should shut down shortly afterward.

If you are viewing the UPS status from a remotely connected PowerAlert Local GUI, you should see the alarm appear in the lower left corner of the GUI in around 20 seconds or less.



Figure 15: PowerAlert Local On Battery Alarm

If you are viewing the SNMPWEBCARD webpage GUI, you should see the alarm appear at the bottom of the webpage in the Alarm Status section. Depending on the UPS and the timing of your action, it could take a few seconds before the webpage updates with an alarm. If the webpage does not update after around 30 seconds, you can try refreshing the page.

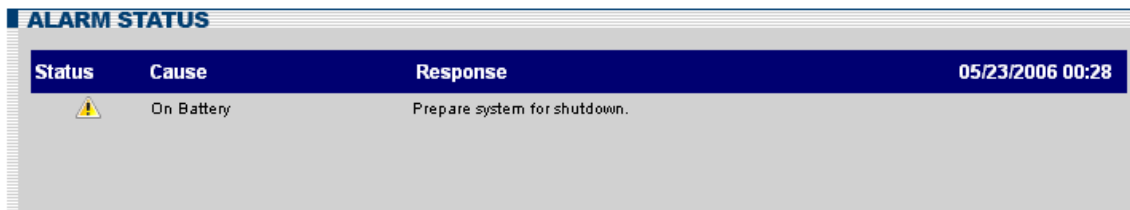


Figure 16: SNMPWEBCARD On Battery Alarm

After the UPS On Battery alarm is detected, the PowerAlert on VIMA will start the timer specified in the configuration file in ExecuteCommandDelay. If the On Battery event has not cleared before the ExecuteCommandDelay expires, then the upsVIShutdown.pl script will execute if the setup was correct.

## 5 Technical Support

If you experience any problems with PowerAlert on VIMA which you are unable to resolve, contact Tripp Lite Technical Support at [www.tripplite.com/support](http://www.tripplite.com/support) and/or at [techsupport@tripplite.com](mailto:techsupport@tripplite.com)



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