How To Configure
PowerAlert on Linux with the APC BackUPS Pro 280VA
(v2.0, 5Sept2002)

This How-To explains the steps involved in setting up a Dell or Penguin computer system with Red Hat Linux v7.3 for use with the APC BackUPS Pro 280VA uninterruptible power supply (UPS) and Poweralert Plus UPS software. The document is divided into 7 sections:

> **1. Requirements**
> **2. Hardware Configuration**
> **3. Software, Part 1** (installation and configuration)
> **4. OS Configuration**
> **5. Software, Part 2** (configuration)
> **6. Testing**
> **7. Troubleshooting**

1. Requirements:

> Red Hat Linux v7.3 (RH7.1)
> PowerAlert UPS software from Tripplite (pa11_04.tar.gz)
> APC BackUPS Pro 280VA
> APC UPS cable (PN: 940-0095B)

Note that the version of PowerAlert listed here is has been tested and found to work with RedHat v7.3. There are older versions available. You will find this and other versions of the software here:

> http://www.tripplite.com/products/powermgmt/software_download.cfm

The following Linux versions were current as of 5 September 2002:

```
PowerAlert V10.2 (Size: 2.9MB)
PowerAlert V11.0X (Size: 2.95MB)
```

2. Hardware Configuration

Make available one COM port and connect the UPS using the APC UPS cable with part number 940-0095B. The cable should have been supplied with the UPS unit. Otherwise request one from APC and they will send it out free of charge.

Turn the computer on and enter the bios settings display. Shortly after you power on the computer system you should see a brief message showing how to do this. Usually, depressing the F2 key during the boot process will get you there.

Once in, look for power settings and ensure that the following requirement is met:

> state after AC power failure should be ON upon power restore

Save the change and continue booting.

3. Software Installation and Configuration, Part 1

Log in as root and create a new user called *poweralert.*

Obtain a copy of PowerAlert V11.0X and place the file in the newly created /home/poweralert directory. This should be available for download at:

http://www.tripplite.com/products/powermgmt/software_download.cfm

Issue the following command to extract the files within */home/poweralert*:

```
[root@localhost]# tar zxf pa11_04.tar.gx
```

You should then find the following files:

```
[root@localhost]# ls
linux.pa  pa11_04.tar.gz  pa_install  pa_uninstall  README
```

Run the installation script:

```
[root@localhost]# ./pa_install
```

Answer the script's prompts such that:

```
Installation directory:               /home/poweralert
Automatically start at boot time:     yes
```

4. OS Configuration

Edit system file:

```
/etc/rc.d/init.d/halt
```

Just about at the end of file you'll find these lines:

```
HALTARGS="-i -d"
    if [ -f /poweroff -o ! -f /halt ]; then
    HALTARGS="HALTARGS -p"
fi
```

Remove the *-p* option from HALTARGS="HALTARGS -p"

Explanation:
   -p tells the computer to power-down after a shutdown command. If the computer is powered down in this manner (with -p option enabled) the system will not power-up automatically after a utility power restore. The bios interprets this as a normal shutdown procedure; i.e., shutdown not due to a power failure. Removing the '-p' flag results in a properly shutdown OS but not physically powered down. Therefore, once the inverter in the UPS is killed the bios interprets this event as a power failure. When power is restored and the inverter is reset the bios automatically turns the system back on.

Now reboot the machine

5. Software Configuration, Part 2

Configuring the PowerAlert software requires two steps.

1. Run pasetup (as root) to tell PowerAlert what type of UPS you have.

```
[root@localhost]# cd ~poweralert/engine
[root@localhost]# ./pasetup
```

Select "*American Power Conversion*" for the UPS manufacturer.
Select "*SmartUPS*" for the UPS model.
Enter the port the UPS is connected to (e.g., /dev/ttyS0).
Leave the remaining fields alone.

Click on "Ok."

Fig 1. pasetup main screen.

2. Run paclient (as root) to fine-tune the behavior of PowerAlert.

```
[root@localhost]# cd ~poweralert/console
[root@localhost]# ./paclient
```

Upon startup the software will display a summary of the current state of the UPS.
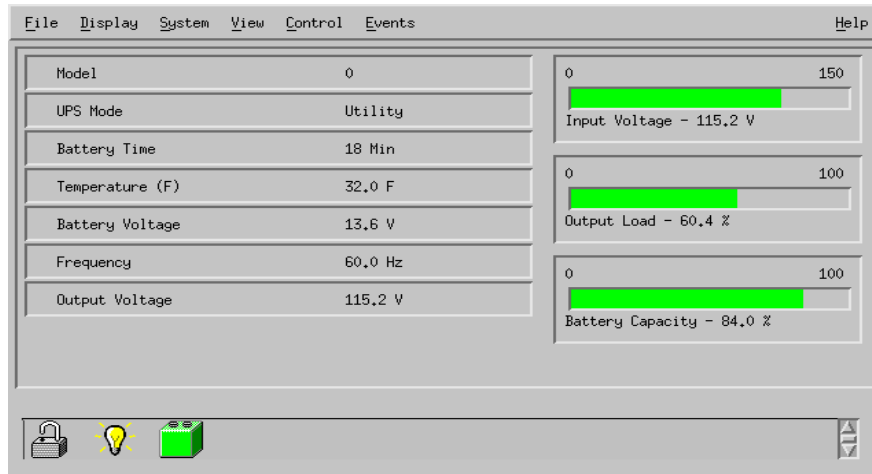It may take up to 10 to 15 seconds for it to display the information.

Fig 2. paclient summary screen (default upon startup).

From the main screen click on the "Events" menu and choose the "Events
Manager…" Then select the "Shutdown" tab.

Make selections such that:

```
Operating System Shutdown:            Enabled for this event
Operating System Shutdown Delay:      2 minutes

UPS Shutdown:                         Enabled for this event
UPS Shutdown delay:                   3 minutes

Remote Shutdown:                      Leave default setting
```
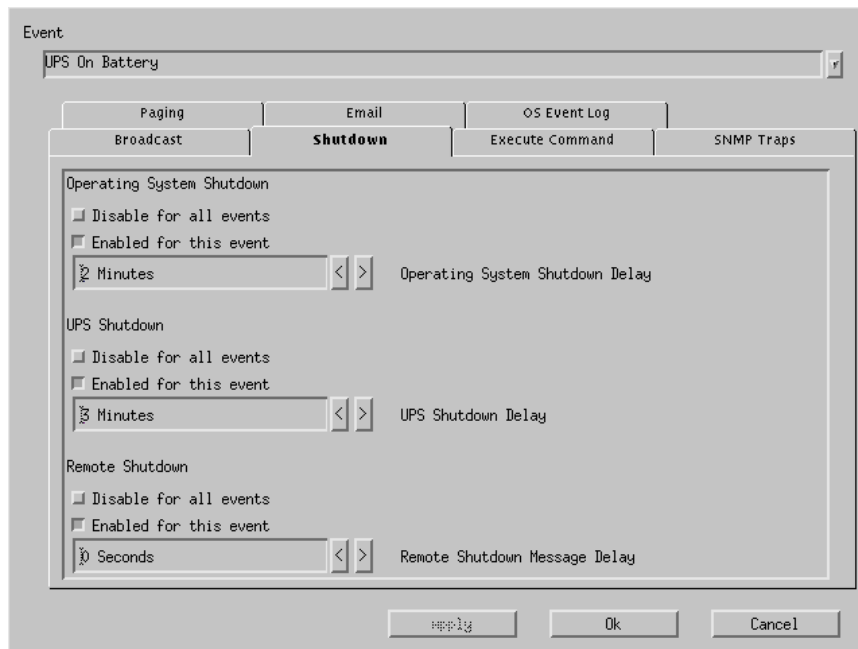
Fig 3. paclient Events Manager - shutdown parameters screen.

Next choose the "Broadcast" tab.

Make selections such that broadcasting is enabled and…

Delay Before First Broadcast: 0 seconds
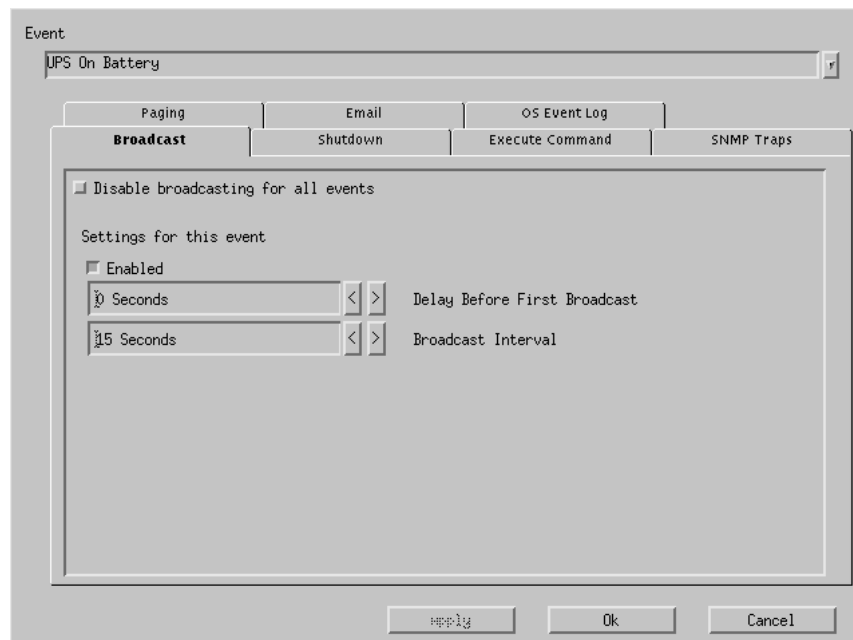**Broadcast Interval:**   15 seconds

Fig 4. paclient Events Manager - broadcast parameters screen.

Click on "Ok" to get back to the main screen then select "File" then "Exit" when you are done. You may observe in real time the state of the system from the "Summary" screen. Test to make sure that everything is working in good order. Disconnect the UPS and the main screen should look like the following:
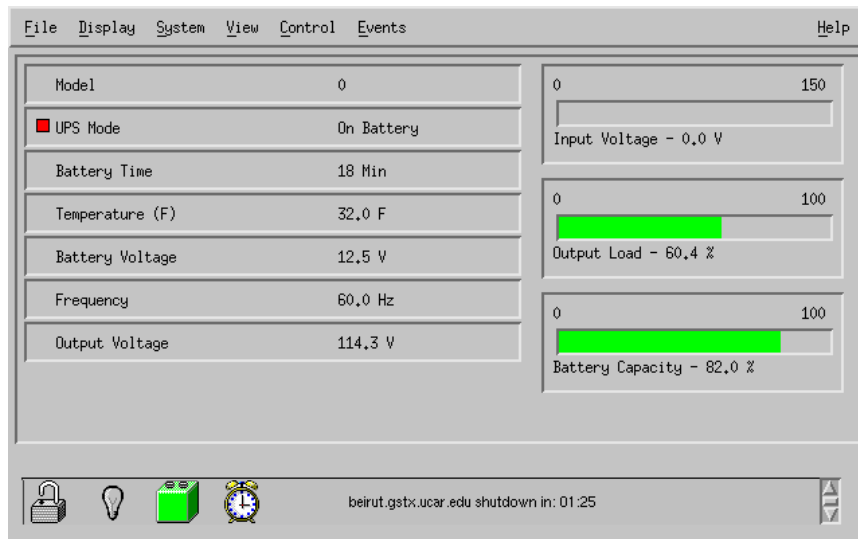

Fig 5. paclient summary screen showing a utility power failure (system on battery). Notice that the time until system shutdown is displayed at the bottom of the screen.

6. Testing

Simulate a power failure to test the machine. Perform the following three tests to confirm a properly working system:

 i) disconnect power, wait for full shutdown (inverter kill), restore power
 ii) disconnect power *during bootup*, wait for full shutdown, restore power
 iii) disconnect power, wait for shutdown process to begin, then *restore power during shutdown* process

The computer should recover from all these circumstances. Keep in mind the time delays you have set. Impatience may bring about the appearance of a system not working properly. Just wait and see what happens keeping in mind the time delay you set. For the purpose of expediency you may want to temporarily set the ShutdownDelay variables to 30 seconds, for example. Just remember to change them back after confirming positive test results. If the system does not appear to be functioning as you would expect, refer to the troubleshooting section of this document.

7. Troubleshooting

Problem	Remark
1. PowerAlert does not appear to install properly or won't install.	*a.* Check that the version of PowerAlert matches the version of Red Hat Linux OS
2. pa_install script not able to create new directory	*a.* Run installer script as root only.
3. pasetup does not appear to be communicating with the UPS	*a.* Make sure you're using the correct UPS serial cable (940-0095B). *b.* Did you choose the right UPS from the list? *c.* Is there a port conflict? Make sure the port is available for use. *d.* Is the UPS plugged into the port?
4. Computer won't shut down after disconnecting utility power.	*a.* Did you reboot machine after installing the software? *b.* Refer to Remarks for Problem #2
5. Computer powers down completely after disconnecting utility power. Does not reboot automatically after restoring utility power. Must manually turn it back on.	Remove the *-p* option from the `HALTARGS="HALTARGS -p"` line in `/etc/rc.d/init.d/halt` file.
6. Computer remains on after cutting utility power to the UPS and the UPS inverter shuts down.	Did you plug the computer into the UPS in the first place???
7. The OS is halted (proper shutdown) and the inverter shuts off after utility power disconnect but after restoring the utility power the UPS turns back on but the computer doesn't.	Make sure the bios power settings are set so that the computer is on after a power failure recovery.
8. If all else fails…	TrippLite tech support: http://www.tripplite.com/support/index.cfm