

USER'S MANUAL

Power Management Software PowerPanel for Linux

Rev. 3

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SAVE THESE INSTRUCTIONS

Please read this manual and follow the instructions for installation and use.

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1 Getting Started

1.1 The Manual Page

Name

`pwrstat` The UPS power state command tool.

Synopsis

`pwrstat` `[-help]` `[-version]`

`pwrstat` `[-status]` `[-config]` `[-reset]` `[-alarm on | off]` `[-mute]` `[-test]` `[-hibernate on | off]`

`pwrstat` `[-pwrfail [-delay [0-3600]] [-active on | off] [-cmd [script_name]] [-duration [0-3600]] [-shutdown on | off] ]`

`pwrstat` `[-lowbatt [-runtime [0-3600]] [-capacity [0-90]] [-active on | off] [-cmd [script_name]] [-duration [0-60]] [-shutdown on | off] ]`

`pwrstat` `[-cloud [-active on | off] [-account [cloud_account]] [-password [cloud_password] ] [-verify]`

Description

`pwrstat` is an interface in PowerPanel for Linux which allows users to receive UPS status and configure UPS settings. Type the following command to list the manual:

`man pwrstat`

Options

The `pwrstat` parameters, their functions, and the examples are described below:

<code>-help</code>	Display the help content.
<code>-version</code>	Display the version of PowerPanel for Linux being used.
<code>-config</code>	Display all daemon configurations. (Users may refer to chapter 2 for details.)
<code>-status</code>	Display the current UPS status. (Users may refer to chapter 3 for details.)
<code>-reset</code>	Reset all daemon configurations to default.
<code>-alarm</code>	Turn UPS alarm on or off. For example: <code>-alarm on</code> .
<code>-mute</code>	Mute UPS alarm temporarily when the alarm is enabled.
<code>-test</code>	Perform battery test.
<code>-hibernate</code>	Make the system hibernate when the power event occurs.
<code>-pwrfail</code>	Set the commands when the power failure occurs. (<code>pwrfail</code> must be followed by at least one of the arguments in Note 1.)
<code>-lowbatt</code>	Set the commands when battery capacity is low.

-
- | | |
|---------|--|
| | (lowbatt must be followed by at least one of the arguments in Note 2.) |
| -cloud | Set the functions related to PowerPanel Cloud solution.
(cloud must be followed by at least one of the arguments in Note 3.) |
| -verify | Verify whether user's PowerPanel Cloud account and password are correct.
(Users may refer to example 3b in chapter 1.1.1 for more details.) |

Note 1

The following arguments should follow -pwrfail.

(Users may refer to example 1 in chapter 1.1.1 for more details.)

- | | |
|-----------|---|
| -delay | Set the delay time when the power failure event occurs. The delay time is 60 seconds by default and the maximum delay time is 3600 seconds [0-3600].
For example: -delay 60. |
| -active | Activate or deactivate the commands when the power failure event occurs.
For example: -active on. |
| -cmd | Assign the command file when the power failure event occurs. |
| -duration | Set how long the time takes to execute the command when the power failure event occurs. The command executed time is 0 second by default and the maximum time is 3600 seconds [0-3600]. For example: -duration 1. |
| -shutdown | Determine whether to shut down the OS when the power failure event occurs.
For example: -shutdown on. |

Note 2

The following arguments should follow -lowbatt.

(Users may refer to example 2 in chapter 1.1.1 for more details.)

- | | |
|-----------|---|
| -runtime | Set the remaining runtime threshold when low battery event occurs. The remaining runtime threshold is 300 seconds by default and the maximum time is 3600 seconds [0-3600]. For example: -runtime 300. |
| -capacity | Set the battery capacity threshold when low battery event occurs. The battery capacity threshold is 35% by default and the allowance is 0% ~ 90% [0-90]. For example: -capacity 35. |
| -active | Activate or deactivate the commands when the low battery event occurs. For example: -active on. |
| -cmd | Assign the command file when the low battery event occurs. |
| -duration | Set how long the time takes to execute the command when the low battery event occurs. The command executed time is 0 second by default and the maximum time is 60 seconds [0-60]. For example: -duration 1. |
| -shutdown | Determine whether to shut down the OS when the low battery event occurs.
For example: -shutdown on. |

Note 3

The following arguments should follow -cloud.

(Users may refer to example 3a and 3b in chapter 1.1.1 for more details.)

-active	Activate or deactivate PowerPanel Cloud solution. For example: -active on.
-account	Enter user's PowerPanel Cloud account.
-password	Enter user's PowerPanel Cloud password.

Note 4

1. The parameters of **-pwrfail** and **-lowbatt** need to be set independently.
2. Both the shell scripts **pwrstatd-lowbatt.sh** and **pwrstatd-powerfail.sh** will be copied to **/etc** during the installation procedure.
3. The parameter **-cmd** can be any shell script in the system, and it should be run as root in order to modify the settings.
4. The default system settings for **-pwrfail** and **-lowbatt** are the same as Example 1 and 2 in chapter 1.1.1.

1.1.1 The Examples for Configuring pwrstat Options

Example 1: Configure the setting when a power failure event occurs.

```
pwrstat -pwrfail -delay 60 -active on -cmd /etc/pwrstatd-powerfail.sh -duration 1  
-shutdown on
```

In the setting above, it will take 1 second to run a shell script named **pwrstatd-powerfail.sh** in the directory **/etc**, and the system will be shut down after a power failure event occurs for 60 seconds.

Example 2: Configure the setting when the low battery event occurs.

```
pwrstat -lowbatt -runtime 300 -capacity 35 -active on -cmd /etc/pwrstatd-lowbatt.sh  
-duration 1 -shutdown on
```

In the setting above, it will take 1 second to run a shell script named **pwrstatd-lowbatt.sh** in the directory **/etc**, and the system will be shut down when either the remaining runtime is less than 300 seconds, or the battery capacity is lower than 35%.

Example 3a: Configure the connection to PowerPanel Cloud.

```
pwrstat -cloud -active on -account example@cyberpower.com -password pass123  
* Assuming PowerPanel Cloud account / password: example@cyberpower.com / pass123.
```

In the setting above, the connection to PowerPanel Cloud will be activated when users correctly enter PowerPanel Cloud account and password.

Example 3b: Verify the connection to PowerPanel Cloud.

```
pwrstat -verify
```

To verify whether the account and password are correct, enter the command above.

There are three results, described below:

1. When both the account and password are correct, the system will show **Verify successfully**.
2. When either the account or password is incorrect, the system will show **Verify failed**.
3. When a network issue exists, the system will show **Connect failed**.

1.2 The Daemon Page

Name

`pwrstatd` The UPS power state daemon.

Description

`pwrstatd` is the daemon of PowerPanel for Linux which runs immediately when the system starts up and communicates with the UPS. Type the following command to list the operations and the configuration files of daemon:

```
man pwrstatd
```

Operations of the Daemon

The commands for operating the `pwrstatd` daemon and their functions are described below:

<code>/etc/init.d/pwrstatd start</code>	start <code>pwrstatd</code> daemon
<code>/etc/init.d/pwrstatd stop</code>	stop <code>pwrstatd</code> daemon
<code>/etc/init.d/pwrstatd restart</code>	restart <code>pwrstatd</code> daemon
<code>/etc/init.d/pwrstatd status</code>	show the running status of <code>pwrstatd</code> daemon

Configuration Files of the Daemon

The configuration files and their functions are described below:

<code>/etc/pwrstatd.conf</code>	The configuration file of <code>pwrstatd</code> , including the options for shutting down or hibernating UPS when the power event occurs.
<code>/etc/pwrstatd-lowbatt.sh</code>	The default shell command is sending the e-mail notification. When the low battery event occurs, the notification e-mail will be sent if it is enabled and both the recipient and the sender e-mail addresses are correctly entered. Users can also add user-defined commands.
<code>/etc/pwrstatd-powerfail.sh</code>	The default shell command is sending the e-mail notification. When the power failure event occurs, the notification e-mail will be sent if it is enabled and both the recipient and the sender e-mail addresses are correctly entered. Users can also add user-defined commands.
<code>/etc/pwrstatd-email.sh</code>	The default shell command of e-mail content. When either the low battery or power failure event occurs, it will be sent to users.

Note 5

`pwrstatd.conf` can be edited by using any text editor. To start editing the configuration file, type

the following command as root:

```
vi/etc/pwrstatd.conf
```

* Take the text editor, vi, for example.

The changes edited in the text editor will take effect after restarting **pwrstatd**. To restart the daemon, type the following command:

```
/etc/init.d/pwrstatd restart
```

Note 6

To send the e-mail content in `/etc/pwrstatd-email.sh`, it is necessary to set `ENABLE_EMAIL=yes` and enter both the `RECEIPT_ADDRESS` and the `SENDER_ADDRESS` correctly in `/etc/pwrstatd-lowbatt.sh` or `/etc/pwrstatd-powerfail.sh`. For details about installing e-mail package in Ubuntu, please refer to troubleshooting 6.

Event Logs of the Daemon

The event logs of the `pwrstatd` daemon are located in the directory:

```
/var/log
```

The file named `pwrstatd.log` records all the power events.

2 Checking Daemon Settings

Type the following command to show the configuration of pwrstat:

```
pwrstat -config
```

Below is the example for daemon configuration:

Daemon Configuration:

Alarm..... On

Hibernate..... Off

Cloud..... On

Action for Power Failure:

Delay time since Power Failure..... 60 sec.

Run script command..... On

Path of script command..... /etc/pwrstatd-powerfail.sh

Duration of command running..... 1 sec

Enable shutdown system..... On

Action for Battery Low:

Remaining runtime threshold 300 sec.

Battery capacity threshold 35 %.

Run script command..... On

Path of script command..... /etc/pwrstatd-lowbatt.sh

Duration of command running..... 1 sec

Enable shutdown system..... On

3 Monitoring UPS Status

Type the following command to show UPS properties and the current status:

```
pwrstat -status
```

Below is an example for the UPS model, CP585:

Properties:

Model Name..... UPS CP585
Firmware Number..... BFH8102-6O1.5
Rating Voltage..... 120 V
Rating Power..... 515 VA (335 Watt)

Current UPS status:

State..... Normal
Power Supply by..... Utility Power
Utility Voltage..... 111 V
Output Voltage..... 110 V
Battery Capacity..... 100 %
Remaining Runtime..... 60 min.
Load..... 0 Watt(0 %)
Test Result..... Passed at 2022/03/15 09:35:35
Last Power Event..... Blackout at 2022/03/14 09:03:32 for 2 min

Note 7

Some of the listed items above will only be displayed when the UPS model supports the related functions.

4 Troubleshooting

1. How does the UPS communicate with PowerPanel for Linux?
 - a. PowerPanel for Linux communicates with the UPS via USB port or Serial port.
 - b. The UPS uses the USB HID/Power Class architecture; The UPS has DB-9 connector for RS-232 or Dry-Contact communication.
2. Why is the UPS unable to establish communication with PowerPanel for Linux?
 - a. Ensure the UPS model is supported by PowerPanel for Linux.
 - b. Ensure a USB or Serial cable is connected to the UPS and computer. Directly connecting the UPS to a computer without a USB Hub is also helpful.
 - c. Try to unplug the USB cable from the UPS and plugging it back in again.
 - d. Ensure HID device can be found in the directory `/dev/hiddev`, `/dev/usb/hiddev`, and `/dev/usb/hid/hiddev`, such as `hiddev0` if the USB cable is being used. Ensure HID device can be found in the directory `/dev`, such as `ttyS0` if the serial cable is being used.
3. Why PowerPanel for Linux cannot be installed or uninstalled?
 - a. Run the installation or uninstallation with `sudo/root`.
 - b. The Linux system may not be compatible with PowerPanel for Linux. Please refer to the file `doc/deploy-guide` for more information.
4. Why does `pwrstat` not work?
 - a. Ensure `pwrstatd` is working.
 - b. Ensure the option `prohibit-client-access` is set as `no` in the `pwrstatd` configuration file.
5. Why can't the `pwrstatd` daemon detect a UPS with a H2C USB adapter?
 - a. Ensure the Linux system has the `libusb` library. It can be found in the directory `/usr/lib`.
 - b. Ensure the soname of `libusb` is `libusb-0.1.so.4`.
 - c. If the soname version of `libusb` is prior to `libusb-0.1.so.4`, please go to the website, `rpmfind` or `sourceforge`, to download the `libusb` rpm package and install it. The URLs of the mentioned websites are:
 - z `rpmfind`: <http://rpmfind.net>
 - z `sourceforge`: <http://sourceforge.net>
6. How to install e-mail package?

Take Ubuntu for example.

 - a. Type the following commands:

```
sudo apt-get update
sudo apt-get install mailutils
```
 - b. Choose Internet Site as the type of mail configuration.

-
- c. Users may refer to Note 6 in chapter 1.2 for details.

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