Linux Laptop Display Battery Status And Thermal Temperature From Command Line

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Last updated: July 26, 2021

10 comments

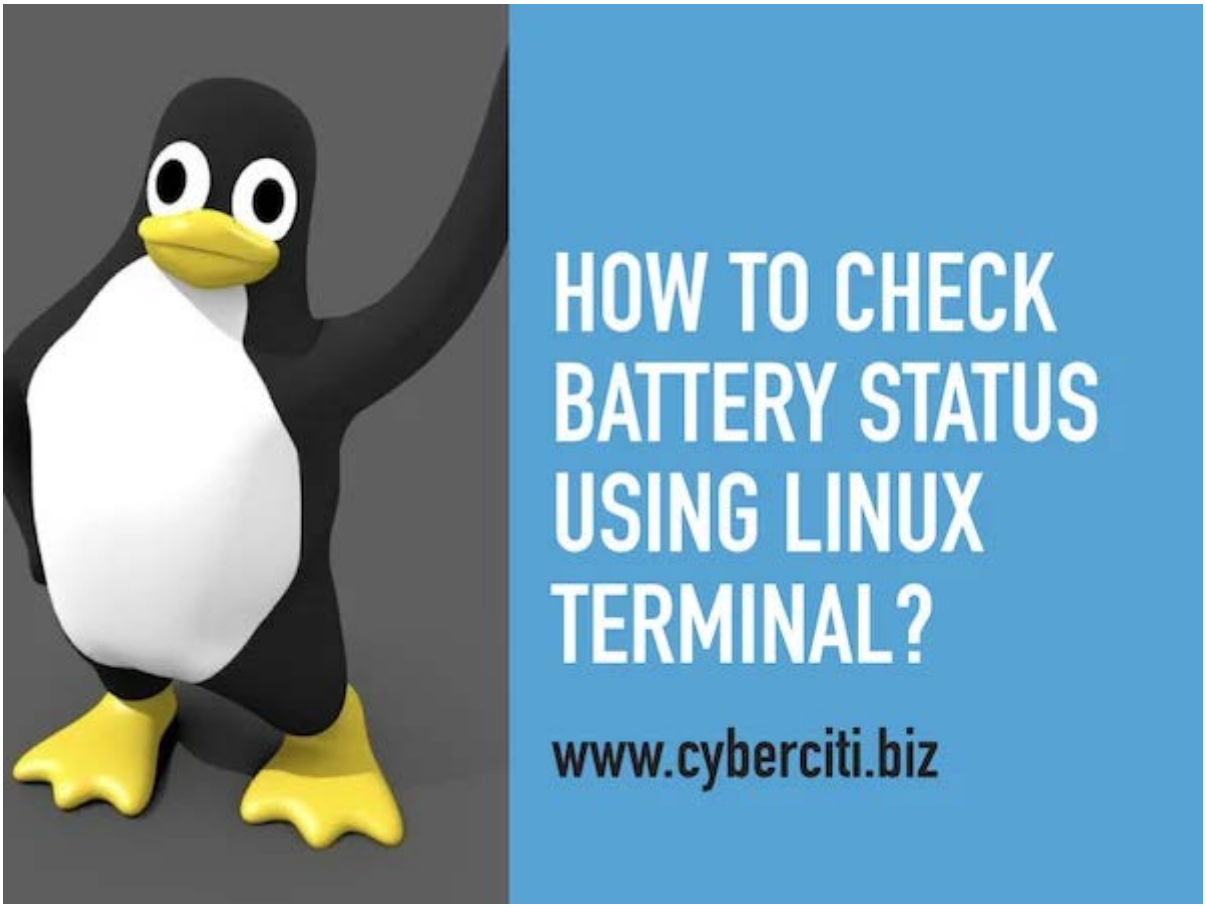
How do I find out details about my Linux Laptops temperature, battery status and other information from the command prompt? How can I check battery status using the terminal on Linux?

Tutorial details	
Difficulty level	Easy
Root privileges	Yes
Requirements	Linux Laptop
Est. reading time	6 mintues

The information regarding your battery status and ACPI is stored in `/proc` and `/sys` file system. The easiest way to read this information is using the various commands line option tools as well as GUI tool on Linux operating system.

Linux Laptop Display Battery Status And Thermal Temperature Command

- `upower` **command** : A command line tool for UPower which provides an interface to enumerate power sources on the system and control system-wide power management.
- `acpi` **command** : Shows battery status and other ACPI information from /proc and /sys file system.
- `/sys/class/power_supply/BAT0/` **directory** : Store ACPI information about your first battery.



Use upower command to check battery status from command line

Type the following command:

```
$ upower -i /org/freedesktop/UPower/devices/battery_BAT0
```

Sample outputs:

```
  native-path:          /sys/devices/LNXSYSTM:00/LNXSYBUS:00/PNP0C0A:00/pow
  vendor:               Samsung SDI
  model:                DELL 1C75X35
  serial:               1820
  power supply:         yes
  updated:              Tuesday 21 January 2014 06:01:52 PM IST (1757 secon
  has history:          yes
  has statistics:       yes
  battery
    present:             yes
    rechargeable:        yes
    state:               fully-charged
    energy:              98.235 Wh
    energy-empty:        0 Wh
    energy-full:         98.235 Wh
    energy-full-design:  98.235 Wh
    energy-rate:         0.0111 W
    voltage:             12.864 V
    percentage:          100%
    capacity:            100%
    technology:          lithium-ion
```

Displaying Linux Laptop Battery Status Using the apci terminal command

The acpi command may not be installed by default so use apt-get command or yum command to install the same:

```
$ sudo yum install acpitool
## OR ##
$ sudo apt-get install acpitool
```

From my Ubuntu LTS 20.04 Linux powered ThinkPad laptop:

```
[sudo] password for vivek:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer requi
  acpi tcl
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  acpitool
0 upgraded, 1 newly installed, 0 to remove and 6 not upgraded.
Need to get 44.4 kB of archives.
After this operation, 147 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/universe amd64 acpitool amd64
Fetched 44.4 kB in 1s (48.7 kB/s)
Selecting previously unselected package acpitool.
(Reading database ... 293991 files and directories currently installed.)
Preparing to unpack .../acpitool_0.5.1-5build1_amd64.deb ...
Unpacking acpitool (0.5.1-5build1) ...
Setting up acpitool (0.5.1-5build1) ...
Processing triggers for man-db (2.9.1-1) ...
```

Linux check battery command

Type the following command:

```
$ acpi -V
```

Sample outputs:

```
Battery 0: Full, 100%
Battery 0: design capacity 8400 mAh, last full capacity 8044 mAh = 95%

Adapter 0: on-line
Thermal 0: ok, 53.5 degrees C
Thermal 0: trip point 0 switches to mode critical at temperature 107.0 degr
Cooling 0: LCD 0 of 15
Cooling 1: Processor 0 of 10
Cooling 2: Processor 0 of 10
Cooling 3: Processor 0 of 10
Cooling 4: Processor 0 of 10
Cooling 5: Processor 0 of 10
Cooling 6: Processor 0 of 10
Cooling 7: Processor 0 of 10
```

To just see status, enter:

```
$ acpi
```

Sample outputs:

```
Battery 0: Charging, 17%, 01:20:06 until charged
```

See ac adapter information

```
$ acpi -a
```

Sample outputs:

```
Adapter 0: on-line
```

The above output indicates that laptop is plugged in use i.e. connected.

Show thermal information

```
$ acpi -t
```

Sample outputs

```
Thermal 0: ok, 39.5 degrees C
```

To use fahrenheit as the temperature unit:

```
$ acpi -tf
```

To use kelvin as the temperature unit:

```
$ acpi -tk
```

Use `/proc/acpi/` directory to get laptop battery info (deprecated method)

You can browse the same data by visiting /proc/acpi/ directory:

```
$ cd /proc/acpi/
$ ls -l
```

Sample outputs:

```
dr-xr-xr-x  3 root root 0 2010-07-07 14:29 ac_adapter
dr-xr-xr-x  3 root root 0 2010-07-07 14:29 battery
dr-xr-xr-x  5 root root 0 2010-07-07 14:29 button
-r--------  1 root root 0 2010-07-07 14:29 dsdt
dr-xr-xr-x  3 root root 0 2010-07-07 14:29 embedded_controller
-r--------  1 root root 0 2010-07-07 13:14 event
-r--------  1 root root 0 2010-07-07 14:29 fadt
dr-xr-xr-x  2 root root 0 2010-07-07 14:29 fan
-r--r--r--  1 root root 0 2010-07-07 14:29 info
dr-xr-xr-x  2 root root 0 2010-07-07 14:29 power_resource
dr-xr-xr-x 10 root root 0 2010-07-07 14:29 processor
-rw-r--r--  1 root root 0 2010-07-07 14:29 sleep
dr-xr-xr-x  3 root root 0 2010-07-07 14:29 thermal_zone
dr-xr-xr-x  3 root root 0 2010-07-07 13:14 video
-rw-r--r--  1 root root 0 2010-07-07 14:29 wakeup
```

OR

```
$ cat /proc/acpi/thermal_zone/THM/temperature
```

I guess it is a litter hot here:

```
temperature:             55 C
```

IBM and Thinkpad (Lenovo) laptop users please check /proc/acpi/ibm/ directory:

```
$ ls -l /proc/acpi/ibm/
```

Again from my office Thinkpad laptop:

```
-rw-r--r-- 1 root root 0 Oct  9 16:06 beep
-rw-r--r-- 1 root root 0 Oct  9 16:06 bluetooth
-r--r--r-- 1 root root 0 Oct  9 16:06 driver
-rw-r--r-- 1 root root 0 Oct  9 16:06 fan
-rw-r--r-- 1 root root 0 Oct  9 16:06 hotkey
-rw-r--r-- 1 root root 0 Oct  9 16:06 kbdlight
-rw-r--r-- 1 root root 0 Oct  9 16:06 lcdshadow
-rw-r--r-- 1 root root 0 Oct  9 16:06 led
-r--r--r-- 1 root root 0 Oct  9 16:06 thermal
-rw-r--r-- 1 root root 0 Oct  9 16:06 volume
```

Then I use the following cat command to see Thinkpad thermal details:

```
$ cat /proc/acpi/ibm/thermal
```

Use `/sys/class/power_supply/BAT0/` directory to get battery info

As of Linux kernel 2.6.x you need to use /sys/class/power_supply/BAT0 directory:

```
$ ls -l /sys/class/power_supply/BAT0
```

Here is what we see and make sure you explore all those files using the cat or less command/more command:

```
total 0
-rw-r--r-- 1 root root 4096 Oct  9 16:09 alarm
-r--r--r-- 1 root root 4096 Oct  9 13:11 capacity
-r--r--r-- 1 root root 4096 Oct  9 16:09 capacity_level
-rw-r--r-- 1 root root 4096 Oct  9 16:09 charge_start_threshold
-rw-r--r-- 1 root root 4096 Oct  9 16:09 charge_stop_threshold
-r--r--r-- 1 root root 4096 Oct  9 16:09 cycle_count
lrwxrwxrwx 1 root root    0 Oct  9 13:10 device -> ../../../PNP0C0A:00
-r--r--r-- 1 root root 4096 Oct  9 13:11 energy_full
-r--r--r-- 1 root root 4096 Oct  9 13:11 energy_full_design
```

```
-r--r--r-- 1 root root 4096 Oct  9 13:11 energy_full_design
-r--r--r-- 1 root root 4096 Oct  9 13:11 energy_now
drwxr-xr-x 3 root root    0 Oct  9 13:10 hwmon2
-r--r--r-- 1 root root 4096 Oct  9 13:11 manufacturer
-r--r--r-- 1 root root 4096 Oct  9 13:11 model_name
drwxr-xr-x 2 root root    0 Oct  9 16:09 power
-r--r--r-- 1 root root 4096 Oct  9 13:11 power_now
-r--r--r-- 1 root root 4096 Oct  9 13:11 present
-r--r--r-- 1 root root 4096 Oct  9 13:11 serial_number
-r--r--r-- 1 root root 4096 Oct  9 13:11 status
lrwxrwxrwx 1 root root    0 Oct  9 13:10 subsystem -> ../../../../../../../
-r--r--r-- 1 root root 4096 Oct  9 13:11 technology
-r--r--r-- 1 root root 4096 Oct  9 13:10 type
-rw-r--r-- 1 root root 4096 Oct  9 13:10 uevent
-r--r--r-- 1 root root 4096 Oct  9 13:11 voltage_min_design
-r--r--r-- 1 root root 4096 Oct  9 13:11 voltage_now
```

Using GUI tool find out battery status on Linux

> Desktop environments like Gnome or KDE will warn you when the battery is too low, and you must enable charging to avoid data loss and shutting down a Linux laptop.

The `gnome-power-statistics` is the gui program for the gnome power management infrastructure. It allows users to visualize the power consumption of laptop hardware. Type the following command to view stats or click on GUI power icon located on right side:

```
$ gnome-power-statistics
```

Sample outputs:

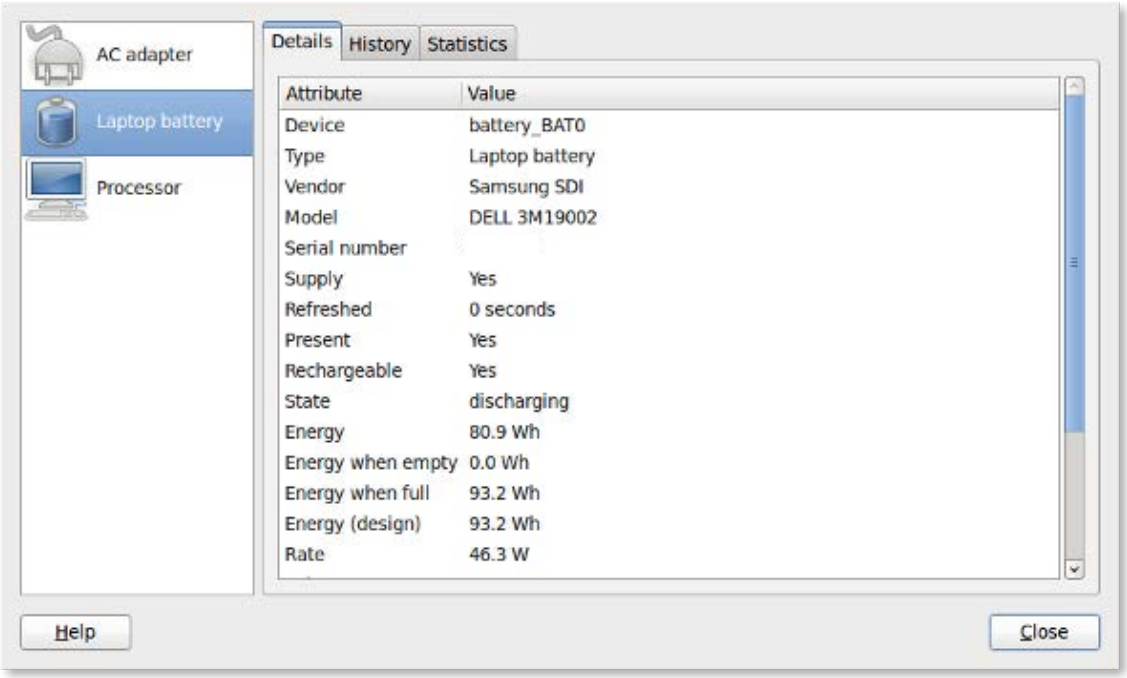
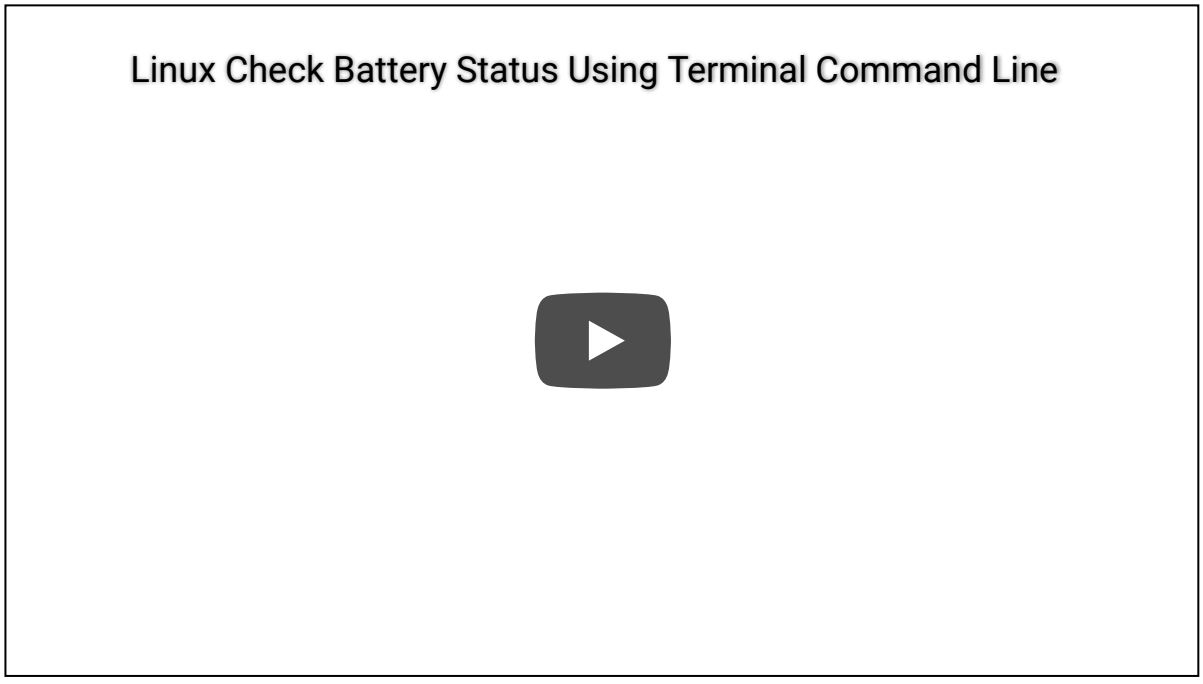


Fig.01: Linux Battery Monitor / Stats GUI App

Related media



(Video 01: Linux Check Battery Status Using Terminal Command Line)