

Astra Linux

-
- [PowerTOP](#)
 -
 -
 - [PowerTOP](#)
- [TLP](#)
 -
 -
- [LMT](#)
 -
 -



:

- Astra Linux Special Edition .10015-01 (1.7), .10015-10
- Astra Linux Special Edition .10015-17
- Astra Linux Special Edition .10015-37 (7.7)
- Astra Linux Special Edition .10152-02 (4.7)
- Astra Linux Special Edition .10015-01 (1.6) [20200327SE16 \(5\)](#)
- Astra Linux Special Edition .10015-16 . 1
- Astra Linux Special Edition .10015-16 . 2
- Astra Linux Special Edition .10265-01 (8.1)
- Astra Linux Common Edition 2.12



, Astra Linux. :

- [powertop \(powertop\)](#). Astra Linux;
- [tlp \(tlp\)](#). :
 - Astra Linux Common Edition;
 - Astra Linux Special Edition .10015-01 (1.6) [20200327SE16 \(5\)](#);
 - Astra Linux Special Edition x.7;
- [laptop_mode \(laptop-mode-tools\)](#). :
 - Astra Linux Common Edition 2.12.42;
 - Astra Linux Special Edition x.7;



tlp laptop-mode . . .

, laptop-mode (,) Astra Linux (fly-admin-power, powerdevil). , .

PowerTOP Intel . PowerTOP , , . , .

TLP laptop-mode-tools (- LMT) , . , , / - .



:

- TLP , IBM/Lenovo ThinkPad;
- TLP , , , powerdevil, Astra Linux ;
- LMT , Astra Linux powerdevil;

- "[laptop](#)", .
, , , , .

(TLP):

- [Laptop-](#) "" ;
- ("turbo boost" / "turbo core") ("undervoltage");
- / (intel_pstate);
- HWP (HWP ,);
- / (x86_energy_perf_policy);
- (Advanced Power Magement level, APM) ;
- AHCI (Link Power Management, ALPM) ;
- AHCI ();
- PCIe (PCIe active state power management, ASPM);
- , PCIe;
- Intel/AMD Radeon GPU (KMS and DPM);

- / ;
- ;
- .
- / ;
- USB / ;
- / wifi, bluetooth, wwan / ;
- ;
- : / ;
- (Wake On LAN);
- WWAN bluetooth /;
- (ThinkPad-);

PowerTOP

powetop :

- Astra Linux Special Edition .10015-16 . 2;
- Astra Linux Special Edition .10265-01 (8.1);
- Astra Linux Common Edition 2.12.

.

- , , , , WEB-.

- , , , , . , SSD- Wi-Fi.

(Asvanded Configuration and Power Interface, ACPI) - , , , .

C- ACPI (ACPI C-states) - , ACPI, 4- : C0, C1, C2 C3. BIOS- C- . acpi_idle intel_idle.

```
sudo cat /sys/devices/system/cpu/cpuidle/current_driver
```

intel_idle - Intel, acpi_idle - ACPI.

itel_idle - , Intel. .

- (CPU C-state) - . (-) . C0 . (C1 - Cn) .

- (PC-state PCx) - , . , , 4- , C3, - C6, PC3.

. , . , , , . - cpufreq intel_pstates. intel_pstates , cpufreq, ACPI, , , - . :

```
sudo cat /sys/devices/system/cpu/cpu0/cpufreq/scaling_driver.
```

intel_pstate /sys/devices/system/cpu/intel_pstate/:

no_turbo	0 1	/ CPU Turbo Boost. 1
max_perf_pct	0% - 100%	. 100%. 0% LFM ().
min_perf_pct	0% - 100%	. 20%. 100% HFM ().

PowerTOP



PowerTOP .

:

--	--

sudo powertop	...
sudo powertop --html[=]	HTML. _ - powertop.html.
sudo powertop --csv[=]	CSV. _ - powertop.csv.
sudo powertop --debug	. 750 , , . .
sudo powertop --calibrate	. .
sudo powertop --auto_tune	().
sudo powertop --workload=	. _ , .
sudo powertop --extech=	.

:

--version	
--time[=x]	
--iteration[=x]	
--quiet	
--help	

Overview

"Overview" , . , , , . :

1. /var/cache/posertop/;
2. , ;
3. , /sys/class/powecap/intel_rapl (Astra Linux);
4. PowerTOP ().
/var/cache/powertop/saved_results.powertop.
PowerTOP ,,:

```
for (( i=0 ; i<1000; i++ )) ; do sudo powertop -time=10 --html ; done
```

Idle Stats

"Idle Stats" - . Intel - , .

Frequency Stats

"Frequency Stats" . , Intel, intel_idle. , , "performance", .

Device Stats

"Device Stats" , .

Tunables

"Tunables" , . , , "Bad", - "Good". , . , . , . , .
"Good"

```
sudo powertop --auto_tune
```

.

TLP

tlp Astra Linux:

- Astra Linux Special Edition x.7;
- Astra Linux Special Edition .10015-01 1.6 - [20200327SE16 \(5\)](#);
- Astra Linux Special Edition .10015-16 .1 .2
- Astra Linux Common Edition 2.12.19;
- : Debian stretch-backport, Astra Linux Special Edition Astra Linux Common Edition:

:

```
sudo apt update && sudo apt install tlp tlp-rdw
```

- linux-tools - ;

, tlp . /etc/default/tlp WOL_DISABLE :

```
WOL_DISABLE=N
```

:

```
sudo systemctl start tlp
```

.

, :

```
sudo tlp start
```

TLP /etc/default/tlp. .
.:

```
# -----  
# tlp -  
# . : http://linrunner.de/en/tlp/docs/tlp-configuration.html  
  
# : , # .  
  
# 0 -, 1 - TLP.  
TLP_ENABLE=1  
  
# (AC, BAT) .  
# .  
TLP_DEFAULT_MODE=AC  
  
# : 0= , 1= TLP_DEFAULT_MODE  
# : TLP_DEFAULT_MODE=BAT (BAT) (AC).  
TLP_PERSISTENT_DEFAULT=0  
  
# laptop- () "" .  
# laptop-, laptop- .  
DISK_IDLE_SECS_ON_AC=0  
DISK_IDLE_SECS_ON_BAT=2  
  
# () .  
MAX_LOST_WORK_SECS_ON_AC=15  
MAX_LOST_WORK_SECS_ON_BAT=60  
  
# : CPU , # , .
```

```

# .
# Intel Core i intel_pstate:
# powersave(*), performance.
# acpi-cpufreq:
# ondemand(*), powersave, performance, conservative, schedutil.
# (*).
# : tlp-stat -p .
# :
# powersave intel_pstate ondemand acpi-cpufreq
#
# " " ,
# , ! ** ,
# , .
#CPU_SCALING_GOVERNOR_ON_AC=powersave
#CPU_SCALING_GOVERNOR_ON_BAT=powersave

# / , .
# .
# tlp-stat -p.
#CPU_SCALING_MIN_FREQ_ON_AC=0
#CPU_SCALING_MAX_FREQ_ON_AC=0
#CPU_SCALING_MIN_FREQ_ON_BAT=0
#CPU_SCALING_MAX_FREQ_ON_BAT=0

# (HWP) Intel P-state:
# performance, balance_performance, default, balance_power, power
# .
# : Intel Skylake >= 4.10.
CPU_HWP_ON_AC=balance_performance
CPU_HWP_ON_BAT=balance_power

# Intel P-state: 0..100 (%).
# / P-state .
# .
# Intel Core i intel_pstate.
#CPU_MIN_PERF_ON_AC=0
#CPU_MAX_PERF_ON_AC=100
#CPU_MIN_PERF_ON_BAT=0
#CPU_MAX_PERF_ON_BAT=30

# "turbo boost": 0=, 1=
# Intel Core i.
# :
# - .
# - 1 , .
#CPU_BOOST_ON_AC=1
#CPU_BOOST_ON_BAT=0

# /
# 0=, 1=.
SCHED_POWERSAVE_ON_AC=0
SCHED_POWERSAVE_ON_BAT=1

# (Kernel NMI Watchdog):
# 0= ( , ), 1= ( ).
NMI_WATCHDOG=0

# ("undervolting") - PHC.
# / :
# /sys/devices/system/cpu/cpu0/cpufreq/phc_controls
# : , !
#PHC_CONTROLS="F:V F:V F:V F:V"

# / :
# performance, balance-performance, default, balance-power, power.
# .
# msr x86_energy_perf_policy linux-tools , .
ENERGY_PERF_POLICY_ON_AC=performance
ENERGY_PERF_POLICY_ON_BAT=power

# ; ( : sda).
# ( : tlp diskid).
DISK_DEVICES="sda sdb"

```

```

# : 1..254, 255 (1 - , 254 - , 255 - ).
# 1..127 ; 255 .
# . 'keep'
# .
DISK_APM_LEVEL_ON_AC="254 254"
DISK_APM_LEVEL_ON_BAT="128 128"

# :
# 0: spin down disabled
# 1..240: timeouts from 5s to 20min (in units of 5s)
# 241..251: timeouts from 30min to 5.5 hours (in units of 30min)
# . 'man hdparm' .
# . 'keep'
# .
#DISK_SPINDOWN_TIMEOUT_ON_AC="0 0"
#DISK_SPINDOWN_TIMEOUT_ON_BAT="0 0"

# : cfq, deadline, noop ( : cfq).
# . 'keep'
# , .
#DISK_IOSCHED="cfq cfq"

# AHCI link power management (ALPM) :
# min_power, med_power_with_dipm(*), medium_power, max_performance.
# (*) >= 4.15, .
# , .
SATA_LINKPWR_ON_AC="med_power_with_dipm max_performance"
SATA_LINKPWR_ON_BAT="med_power_with_dipm min_power"

# host- AHCI link power management.
# .
#SATA_LINKPWR_BLACKLIST="host1"

# AHCI host- :
# on=, auto=.
# **: auto .
#AHCI_RUNTIME_PM_ON_AC=on
#AHCI_RUNTIME_PM_ON_BAT=on

# () .
AHCI_RUNTIME_PM_TIMEOUT=15

# PCI (PCIe ASPM):
# default, performance, powersave.
PCIE_ASPM_ON_AC=performance
PCIE_ASPM_ON_BAT=powersave

# Radeon (profile method): low, mid, high, auto, default;
# auto = mid on BAT, high on AC; default = use hardware defaults.
RADEON_POWER_PROFILE_ON_AC=high
RADEON_POWER_PROFILE_ON_BAT=low

# Radeon (DPM): battery, performance.
RADEON_DPM_STATE_ON_AC=performance
RADEON_DPM_STATE_ON_BAT=battery

# Radeon DPM: auto, low, high; auto.
RADEON_DPM_PERF_LEVEL_ON_AC=auto
RADEON_DPM_PERF_LEVEL_ON_BAT=auto

# WiFi: on=, off=; .
WIFI_PWR_ON_AC=off
WIFI_PWR_ON_BAT=on

# (wake on LAN): Y/N.
WOL_DISABLE=Y

# Intel HDA, AC97 ( ).
# 0, >=1 ( 1).
SOUND_POWER_SAVE_ON_AC=0
SOUND_POWER_SAVE_ON_BAT=1

# (HDA): Y/N.
SOUND_POWER_SAVE_CONTROLLER=Y

```

```

# UltraBay/MediaBay: 0=, 1=.
#
#
# : UltraBay/MediaBay
BAY_POWEROFF_ON_AC=0
BAY_POWEROFF_ON_BAT=0
# ( sr0).
BAY_DEVICE="sr0"

# PCI(e) : on=, auto=.
RUNTIME_PM_ON_AC=on
RUNTIME_PM_ON_BAT=auto

# PCI(e), .
# (. lspci (1- ).
#RUNTIME_PM_BLACKLIST="bb:dd:f 11:22:3 44:55:6"

# PCI(e), .
# "amdgpu nouveau nvidia radeon"
#
# "" . tlp-stat -e .
#
#RUNTIME_PM_DRIVER_BLACKLIST="amdgpu nouveau nvidia radeon"

# 0 , 1 USB .
USB_AUTOSUSPEND=1

# (.
# lsusb .
# : (usbhid) .
#USB_BLACKLIST="1111:2222 3333:4444"

# Bluetooth :
# 0= , 1=.
USB_BLACKLIST_BTUSB=0

# Phone :
# 0= , 1= (.
USB_BLACKLIST_PHONE=0

# :
# 0= , 1=.
USB_BLACKLIST_PRINTER=1

# WWAN:
# 0= , 1=.
USB_BLACKLIST_WWAN=1

#
# .
# lsusb .
#USB_WHITELIST="1111:2222 3333:4444"

# 1 , 0
# ( , ).
#USB_AUTOSUSPEND_DISABLE_ON_SHUTDOWN=1

# (Bluetooth, WiFi, WWAN)
# : 0=, 1=.
# : DEVICES_TO_DISABLE/ENABLE_ON_STARTUP/SHUTDOWN
# , !
RESTORE_DEVICE_STATE_ON_STARTUP=0

# : bluetooth, wifi, wwan.
#DEVICES_TO_DISABLE_ON_STARTUP="bluetooth wifi wwan"

# : bluetooth, wifi, wwan.
#DEVICES_TO_ENABLE_ON_STARTUP="wifi"

# : bluetooth, wifi, wwan.
# ( , ).
#DEVICES_TO_DISABLE_ON_SHUTDOWN="bluetooth wifi wwan"

# : bluetooth, wifi, wwan.
# ( ).
#DEVICES_TO_ENABLE_ON_SHUTDOWN="wwan"

# : bluetooth, wifi, wwan.
#DEVICES_TO_ENABLE_ON_AC="bluetooth wifi wwan"

```

```
# : bluetooth, wifi, wwan.
#DEVICES_TO_DISABLE_ON_BAT="bluetooth wifi wwan"

# ( ): bluetooth, wifi, wwan.
#DEVICES_TO_DISABLE_ON_BAT_NOT_IN_USE="bluetooth wifi wwan"

# ( ThinkPad, tp-smapi acpi-call.
#
# START_CHARGE_THRESH STOP_CHARGE_THRESH
# / ( %)
#START_CHARGE_THRESH_BAT0=75
#STOP_CHARGE_THRESH_BAT0=80
# Ultrabay / Slice / Replaceable battery ( %)
#START_CHARGE_THRESH_BAT1=75
#STOP_CHARGE_THRESH_BAT1=80

# : 0=, 1=.
#RESTORE_THRESHOLDS_ON_BAT=1

# -----
# tlp-rdw -
# : bluetooth, wifi, wwan.

# :
# - , #
# - -

#
#DEVICES_TO_DISABLE_ON_LAN_CONNECT="wifi wwan"
#DEVICES_TO_DISABLE_ON_WIFI_CONNECT="wwan"
#DEVICES_TO_DISABLE_ON_WWAN_CONNECT="wifi"

#
#DEVICES_TO_ENABLE_ON_LAN_DISCONNECT="wifi wwan"
#DEVICES_TO_ENABLE_ON_WIFI_DISCONNECT=""
#DEVICES_TO_ENABLE_ON_WWAN_DISCONNECT=""

# / :
#DEVICES_TO_ENABLE_ON_DOCK=""
#DEVICES_TO_DISABLE_ON_DOCK=""

# / :
#DEVICES_TO_ENABLE_ON_UNDOCK="wifi"
#DEVICES_TO_DISABLE_ON_UNDOCK=""
```

LMT

laptop-mode-tools Astra Linux. Debian stretch:

 deb <http://archive.debian.org/debian/stretch/main/contrib/non-free>

:

```
sudo apt update && sudo apt install laptop-mode-tools
```

laptop-mode . .

LMT /etc/laptop-mode/laptop-mode.conf.
, /etc/laptop-mode/conf.d/ ("") .

CONTROL_*, /etc/laptop-mode/laptop-mode.conf ENABLE_AUTO_MODULES=1, LMT , CONTROL_* "auto". : auto-hibernate.conf
battery-level-polling.conf ENABLE_* CONTROL_*.


```
grep -r '^\(CONTROL\|ENABLE\)_' /etc/laptop-mode/conf.d
```



hdparm sdparm.

LMT (hdparm -S), (read-ahead, hdparm -a), LMT (hdparm -B). 1 254., 254 20., (, 128). hdparm -S
hdparm -B /etc/laptop-mode/laptop-mode.conf.



..

CONTROL_MOUNT_OPTIONS (on), LMT, commit=600,noatime. commit (jbd2) (commit=600 10 5).



(commit=600) 10 .
noatime () . realtime.



CONTROL_MOUNT_OPTIONS nilfs2 (NTFS).

SSD-

Laptop- , SSD, , , , ALPM. .

```
' .  
/etc/laptop-mode/conf.d/:
```

```
# cpufreq.conf  
# ThinkPad T40/T42/T60 Example  
#  
CONTROL_CPU_FREQUENCY=1  
BATT_CPU_MAXFREQ=fastest  
BATT_CPU_MINFREQ=slowest  
BATT_CPU_GOVERNOR=ondemand  
BATT_CPU_IGNORE_NICE_LOAD=1  
LM_AC_CPU_MAXFREQ=fastest  
LM_AC_CPU_MINFREQ=slowest  
LM_AC_CPU_GOVERNOR=ondemand  
LM_AC_CPU_IGNORE_NICE_LOAD=1  
NOLM_AC_CPU_MAXFREQ=fastest  
NOLM_AC_CPU_MINFREQ=slowest  
NOLM_AC_CPU_GOVERNOR=ondemand  
NOLM_Acsudo ap_CPU_IGNORE_NICE_LOAD=0  
CONTROL_CPU_THROTTLING=0
```

Intel SATA

Intel SATA AHCI controller Aggressive Link Power Management: ./.
/etc/laptop-mode/conf.d/intel-sata-powermgmt.conf

```
#  
# Configuration file for Laptop Mode Tools module intel-sata-powermgmt.  
#  
# For more information, consult the laptop-mode.conf(8) manual page.  
#
```

```
#####
# Intel SATA power management settings
# -----
#
# __COMMENT If you enable this setting, laptop mode tools will automatically enable the
# __COMMENT link power management mode of Intel AHCI compliant SATA chipsets.
# __COMMENT On newer kernels (4.6+), it can also help enable AHCI Runtime PM savings
#
#####

# Enable debug mode for this module
# Set to 1 if you want to debug this module
DEBUG=0

# Control Intel SATA chipset power management?
# Set to 0 to disable
CONTROL_INTEL_SATA_POWER="auto"

# Enable AHCI Runtime PM
# This feature was added with Linux kernels 4.6+
CONTROL_AHCI_RUNTIME_PM=1

# Handle power management of the Intel SATA host controller under specific
# circumstances. Legal values are "min_power" (maximum power saving at the
# expense of higher latencies), "medium_power" (reduce latencies to a minimum
# while still trying to enable power-saving features), "max_performance" (power
# management is disabled). Note that setting any level besides
# "max_performance" also disables device hotplug.
BATT_SATA_POLICY=min_power
LM_AC_SATA_POLICY=max_performance
NOLM_AC_SATA_POLICY=max_performance
```

USB

```
/etc/laptop-mode/conf.d/runtime-pm.conf, (, , USB), .

#
# Configuration file for Laptop Mode Tools module runtime-pm
#
# For more information, consult the laptop-mode.conf(8) manual page.
#

#####
# Runtime Power Management Settings
# -----
#
# __COMMENT If you enable this setting, laptop mode tools will automatically enable
# __COMMENT the Runtime Power Management feature for all devices.
# __COMMENT
# __COMMENT NOTE: Some devices claim they support autosuspend, but implement it in a
# __COMMENT broken way. This can mean keyboards losing keypresses, or optical mice
# __COMMENT turning their LED completely off. If you have a device that misbehaves,
# __COMMENT add its DEVICE ID to the blacklist section below and complain to your
# __COMMENT hardware / device driver contact
#
#####

# Enable debug mode for this module
# Set to 1 if you want to debug this module
DEBUG=0

# Enable Runtime autosuspend feature?
# Set to 0 to disable
CONTROL_RUNTIME_AUTOSUSPEND=1

# Set this to use opt-in/whitelist instead of opt-out/blacklist for deciding
# which devices should be autosuspended.
# AUTOSUSPEND_USE_WHITELIST=0 means AUTOSUSPEND_*_BLACKLIST will be used.
# AUTOSUSPEND_USE_WHITELIST=1 means AUTOSUSPEND_*_WHITELIST will be used.
AUTOSUSPEND_USE_WHITELIST=0

# The list of Device IDs that should not use autosuspend. Use system commands or
# look into sysfs to find out the IDs of your devices.
# Example: AUTOSUSPEND_DEVICE_BLACKLIST="046d:c025 0123:abcd"
AUTOSUSPEND_RUNTIME_DEVICE_BLACKLIST=""
```

```
# The list of device driver types that should not use autosuspend. The driver
# type is given by "DRIVER=..." in a device's uevent file.
# Example: AUTOSUSPEND_DEVID_BLACKLIST="usbhid usb-storage"
AUTOSUSPEND_RUNTIME_DEVTYPE_BLACKLIST="hub usbhid usb-storage"
```

```
# The list of Device IDs that should use autosuspend. Use system commands or
# look into sysfs to find out the IDs of your devices.
# Example: AUTOSUSPEND_DEVID_WHITELIST="046d:c025 0123:abcd"
AUTOSUSPEND_RUNTIME_DEVID_WHITELIST=""
```

```
# The list of device driver types that should use autosuspend. The driver
# type is given by "DRIVER=..." in a device's uevent file.
# Example: AUTOSUSPEND_DEVTYPE_WHITELIST="usbhid usb-storage"
AUTOSUSPEND_RUNTIME_DEVTYPE_WHITELIST=""
```

```
# Trigger auto-suspension of the device under conditional circumstances
# Warning: DO NOT CHANGE THESE DEFAULTS UNLESS YOU KNOW
BATT_SUSPEND_RUNTIME=1
LM_AC_SUSPEND_RUNTIME=1
NOLM_AC_SUSPEND_RUNTIME=0
```

```
# Auto-Suspend timeout in seconds
# Number of seconds after which the USB devices should suspend
AUTOSUSPEND_TIMEOUT=2
```

/etc/laptop-mode/conf.d.

```
cat /proc/acpi/video/VID/LCD/brightness
```

ThinkPad T40/T42

ThinkPad T40/T42 :

```
cat /sys/class/backlight/acpi_video0/brightness
cat /sys/class/backlight/acpi_video0/max_brightness
```

/etc/laptop-mode/conf.d:

```
# lcd-brightness.conf
# ThinkPad T40/T42 Example
#
DEBUG=0
CONTROL_BRIGHTNESS=1
BATT_BRIGHTNESS_COMMAND="echo 0"
LM_AC_BRIGHTNESS_COMMAND="echo 7"
NOLM_AC_BRIGHTNESS_COMMAND="echo 7"
BRIGHTNESS_OUTPUT="/sys/class/backlight/thinkpad_screen/brightness"
```

ThinkPad T60

ThinkPad T60 :

```
cat /sys/class/backlight/thinkpad_screen/max_brightness
cat /sys/class/backlight/thinkpad_screen/brightness
```

/etc/laptop-mode/conf.d:

```
# lcd-brightness.conf
# ThinkPad T60 Example
#
DEBUG=0
CONTROL_BRIGHTNESS=1
BATT_BRIGHTNESS_COMMAND="echo 0"
LM_AC_BRIGHTNESS_COMMAND="echo 7"
NOLM_AC_BRIGHTNESS_COMMAND="echo 7"
BRIGHTNESS_OUTPUT="/sys/class/backlight/acpi_video0/brightness"
```

/etc/laptop-mode/conf.d/terminal-blanking.conf:

```
# terminal-blanking.conf
# ThinkPad T40/T42/T60 Example
#
DEBUG=0
CONTROL_TERMINAL=1
TERMINALS="/dev/tty1"
BATT_TERMINAL_BLANK_MINUTES=1
BATT_TERMINAL_POWERDOWN_MINUTES=2
LM_AC_TERMINAL_BLANK_MINUTES=10
LM_AC_TERMINAL_POWERDOWN_MINUTES=10
NOLM_AC_TERMINAL_BLANK_MINUTES=10
NOLM_AC_TERMINAL_POWERDOWN_MINUTES=10
```

Ethernet

/etc/laptop-mode/conf.d/ethernet.conf:

```
# ethernet.conf
# ThinkPad T40/T42/T60 Example
#
DEBUG=0
CONTROL_ETHERNET=1
LM_AC_THROTTLE_ETHERNET=0
NOLM_AC_THROTTLE_ETHERNET=0
DISABLE_WAKEUP_ON_LAN=1
DISABLE_ETHERNET_ON_BATTERY=1
ETHERNET_DEVICES="eth0"
```

. : .

- /etc/laptop-mode/conf.d/wireless-power.conf ("iwconfig wlan0 power on/off"), (Intel , .);
- /etc/laptop-mode/conf.d/wireless-ipw-power.conf Intel ipw. IPW3945, IPW2200 IPW2100. iwpriv IPW3945, iwconfig iwpriv IPW2100 IPW2200.. /usr/share/laptop-mode-tools/modules/wireless-ipw-power for details.
- /etc/laptop-mode/conf.d/wireless-iwl-power.conf Intel iwl4965, iwl3945 iwlagnd (4965, 5100, 5300, 5350, 5150, 1000, 6000)

, LMT , .

iwlagnd (5300 , ,). IWL_AC_POWER IWL_BATT_POWER /etc/laptop-mode/conf.d/wireless-iwl-power.conf , /sys/class/net/wlan*/device /power_level . ("iwconfig wlan0 power on/off") .

Audio

AC97

/etc/laptop-mode/conf.d/ac97-powersave.conf:

```
# ac97-powersave.conf
# ThinkPad T40/T42/T60 Example
#
DEBUG=0
CONTROL_AC97_POWER=1
```

Intel HDA

/etc/laptop-mode/conf.d/intel-hda-powersave.conf:

```
# intel-hda-powersave.conf
# ThinkPad T40/T42/T60 Example
#
DEBUG=0
CONTROL_INTEL_HDA_POWER=1
BATT_INTEL_HDA_POWERSAVE=1
LM_AC_INTEL_HDA_POWERSAVE=1
NOLM_AC_INTEL_HDA_POWERSAVE=0
INTEL_HDA_DEVICE_TIMEOUT=10
INTEL_HDA_DEVICE_CONTROLLER=0
```