Kernel

The Linux kernel user's and administrator's guide

Info

- query CPU information: `cpuid`
- show system/kernel info: `uname -a`
- show (or configure) kernel parameters at runtime: `sysctl -a`
- show kernel memory usage: `free`
- show modules loaded: `lsmod`
- show all module parameters: `modinfo -p <modname>`
- show current module parameters: `systool -m <modname> -av`

Logs

- show kernel (boot) messages: `dmesg`
- configure to show more kernel messages (with timestamp)

```
echo 8 > /proc/sys/kernel/printk
echo Y > /sys/module/printk/parameters/time
```

or use for example `loglevel=7` as kernel boot parameter (as recommended at StackOverflow).

Udev

Links

- Ubuntuusers Wiki: udev
- ArchWiki: udev
- Daniel Drake: Writing udev rules
- Stack Exchange: Automount USB sticks on Gentoo

Commands

- show *udev* daemon[1] events: `udevadm monitor --environment`
- after changing *udev* rules: `udevadm control --reload`

Files

- `/etc/udev/rules.d`, `/lib/udev/rules.d`: *udev* rules

Block Devices

- show all block devices: `lsblk`
- show hard drive information: `hdparm -I /dev/sda`
- blacklist the UAS driver for LaCie USB mass storage in file `/etc/modprobe.d/usb-storage-quirks.conf`:[2)]

```
# Do not use USB driver UAS (USB Attached SCSI) with LaCie mass
storage.
# This is a younger USB 3.x protocol and not stable at the moment.
# See usb-storage.quirks in
https://www.kernel.org/doc/Documentation/admin-guide/kernel-parameters.
txt
options usb-storage quirks=059f:105e:u
```

Hardware

Links

- Super User: What is the Linux command to find out hardware info?
- Pratham Patel: Get All Kind of System Information in Linux Terminal With inxi

PCI

- show PCI information: `lspci -k -nn`

USB

- show tree of USB devices: `lsusb -t`

Bluetooth

Links

- ArchWiki: Bluetooth
- ArchWiki: Bluetooth keyboard
- ArchWiki: Bluetooth mouse
- ArchWiki: Bluetooth - Pairing
- BITblokes (JDO): MX Keys Mini (Logitech) mit Linux verbinden – gute Tastatur, ABER

Troubleshooting

Checklist:

1. check kernel module *btusb* is load and running: `lsmod | grep btusb`
2. check for kernel problems: `dmesg | grep -i bluetooth`
3. check *Bluetooth* status: `sudo systemctl status bluetooth`, or `sudo service bluetooth status`
4. after changing files in `/etc/bluetooth` do: `sudo service bluetooth restart`
5. use `sudo bluetoothctl` to check for *Bluetooth* devices and their state (also the *Blueman* applet might be useful for this)
6. check Laptop Power Management for *Bluetooth* status: `sudo tlp-stat -u -v`
7. change `/etc/default/tlp` to adjust *Laptop Power Management* regarding *Bluetooth*:
   - TLP Settings
   - TLP FAQ

1)

User space device manager for `/dev`.

2)

See also StackExchange: Connection problem with USB3 external storage on Linux (UAS driver problem).

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