Ubuntu Linux Sharing

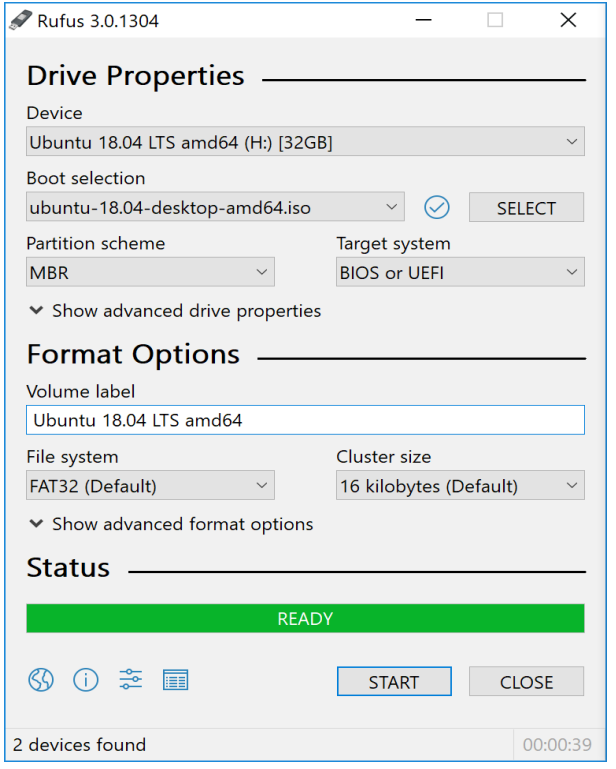
Wells Wang

Most popular Linux platform

- Ubuntu / Debain
  - http://releases.ubuntu.com/16.04/
- Redhat/Centos
- Suse/Gentoo
- ubuntu ISO download
  - http://releases.ubuntu.com/
  -

ubuntu install preparation

- Why install server first ?
- Usb storage stick
- Ubuntu images (server)
- Rufus utility (burn usb image)
  - https://rufus.ie/
-



Ubuntu system consideration

- How to plan partition
  - Performance issue ? One sata dom or 2 sata dom
  - Ext4 /btrfs ?
  - Swap ?
  - Lvm is necessory ?
  - direct_IO / cache ?
  - –
- fdisk/parted/mkfs/mount
- lsblk/ lsusb/ lspci
- /etc/fstab
- /etc/networks/interfaces

apt skill

- echo ‘Acquire::proxy::http “http://user:pass@XXX.XXX.XXX:port”;’ > /etc/apt/apt.conf

- apt update
- apt install ntp nmon smartmontools python3-venv python3-pip
- apt install ubuntu-desktop
- apt upgrade
- apt depends
- apt purge
- apt autoremove
- apt install -f
- dpkg -l /dpkg -i
-

Set time zone

- timedatectl set-timezone Asia/shanghai
- vi */etc/ntp.conf*
- *ntpq -p*

System message

- dmesg
- journal
  - http://manpages.ubuntu.com/manpages/bionic/man1/journalctl.1.html
- logger
  - log a informantion to syslog
- /var/log/syslog

Windows remote X-server and ssh client

- Putty
- X-shell
  - https://www.netsarang.com/en/xshell/
- Mobaxterm
  - https://mobaxterm.mobatek.net/download.html

Popular Linux forum

- Any thing you can find in “Stackoverflow”
- 鳥哥的 Linux 私房菜
- 马哥 Linux 运维
- Digital Ocean (package installation)

Developing USB driver ??User model USB device driver

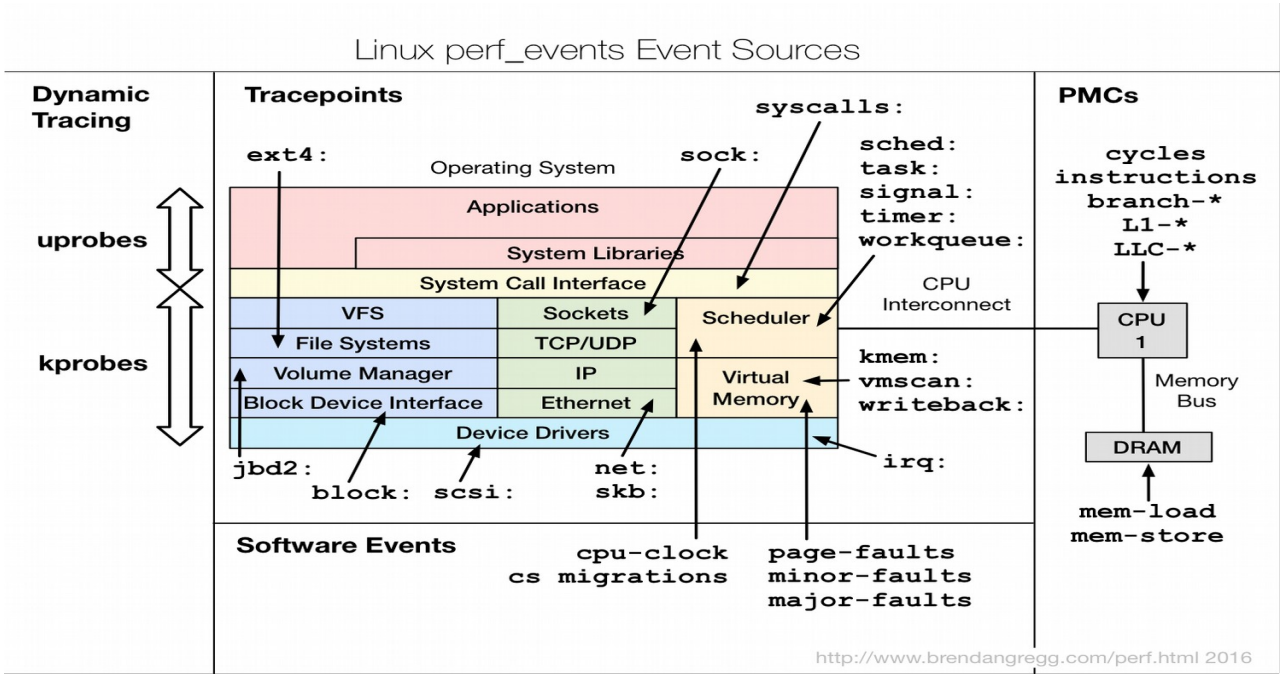
- http://www.linux-usb.org/
- https://github.com/libusb/libusb
-

• Resources

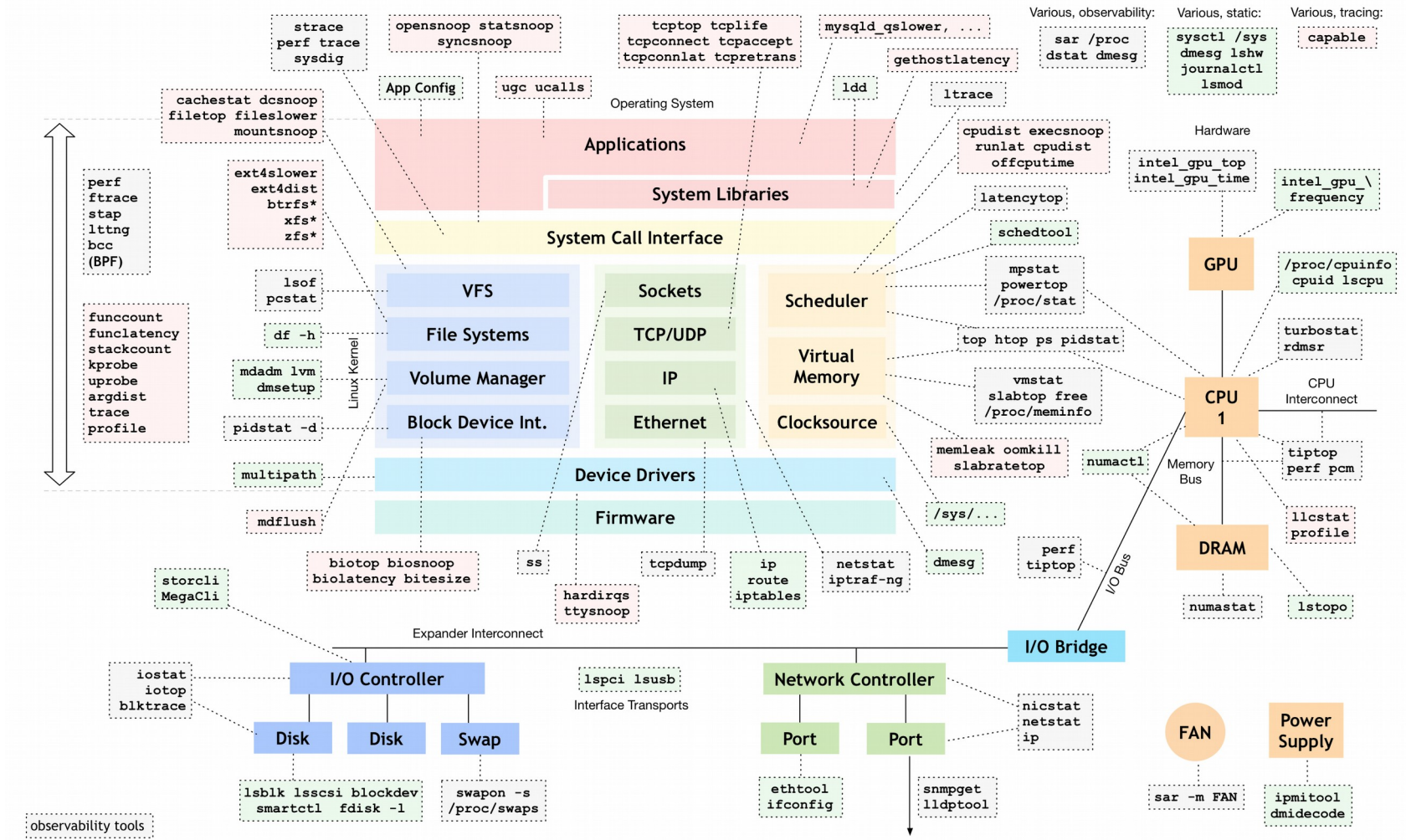
- The Linux USB Project: http://www.linux-usb.org/
- Linux Hotplug Project: http://linux-hotplug.sourceforge.net/
- Linux USB Working Devices List: http://www.qbik.ch/usb/devices/
- http://usb.cs.tum.edu/usbdoc

System profiling

- http://www.brendangregg.com/perf.html
- http://www.brendangregg.com/linuxperf.html



Linux Performance Tools



nmon

- http://www.admin-magazine.com/HPC/Articles/Nmon-All-Purpose-Admin-Tool
- nmon_analyser
  - https://www.ibm.com/developerworks/community/wikis/home?lang=en-us#!/wiki/Power+Systems/page/nmon_analyser
  - –
- https://oss.oetiker.ch/rrdtool/

Networking

- Dual NIC == Dual Networking ??
  - https://www.thegeekstuff.com/2012/04/route-examples/
- vi /etc/networking/interfaces
- sudo service networking restart
- NIC High availability
  - NIC bonding LACP support
  - https://www.tecmint.com/configure-network-bonding-teaming-in-ubuntu/
-

Network config

```
wellsadmin@bddllab01: /etc
# This file describes the network interfaces available on y
# and how to activate them. For more information, see inter

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto enp2s0
iface enp2s0 inet dhcp
```

```
# The primary network interface
auto eno1
#iface eno1 inet dhcp
iface eno1 inet static

address 10.161.32.66
netmask 255.255.252.0
gateway 10.161.32.1
dns-nameserver 10.134.129.227 10.134.129.135 8.8.8.8

auto enp5s0
iface enp5s0 inet dhcp

~
```

```
auto  enp7s0f1
        iface enp7s0f1 inet static
        address 10.157.137.172
        netmask 255.255.252.0

        up route add default gw 10.157.136.1 metric 100  dev enp7s0f1
        up ip route add 10.157.136.0/22 dev enp7s0f1 table 2
        up ip route add 0/0 via 10.157.136.1 dev enp7s0f1 table 2

auto enp7s0f0
        iface enp7s0f0 inet static
        address 172.16.10.2
        netmask 255.255.255.0

auto enp5s0f0
        iface enp5s0f0 inet manual
        bond-master bond0

auto enp5s0f1
        iface enp5s0f1 inet manual
        bond-master bond0

auto bond0
        iface bond0 inet static
        address 192.168.1.172
        netmask 255.255.255.0

        bond-mode 4
        bond-miimon 100
        bond-lacp-rate 1
        bond-slaves enp5s0f0 enp5s0f1

        post-up route add default gw 192.168.1.1 metric 110 dev bond0
        post-up ip route add 192.168.1.0/24 dev bond0 table 3
        post-up ip route add 192.168.1.0 via 192.168.1.1 dev bond0 table 3
~
```

Security issue in Linux

- Firewall ufw
  - https://www.digitalocean.com/community/tutorials/how-to-set-up-a-firewall-with-ufw-on-ubuntu-18-04
- Open-ssh security
  - https://devops.profitbricks.com/tutorials/secure-the-ssh-server-on-ubuntu/
- Rsync
  - https://www.upguard.com/articles/secure-rsync-in-the-enterprise
- Do not allow root in remote side

Linux system watchdog

- http://www.sat.dundee.ac.uk/psc/watchdog/watchdog-background.html
- https://linux.die.net/man/5/watchdog.conf
- https://blog.gtwang.org/iot/raspberry-pi-hardware-watchdog/

要使用樹莓派的硬體看門狗，首先啟用 `bcm2708_wdog` 這個核心模組，編輯 `/etc/modules` 核心模組設定檔，加入這一行：

```
bcm2708_wdog
```

這樣在下次重新開機時，硬體看門狗模組就會自動載入。如果想要立即啟用，可以執行：

```
sudo modprobe bcm2708_wdog
```

安裝好之後，編輯 `/etc/watchdog.conf` 這個設定檔，首先設定看門狗的設備檔案（device file），將 `watchdog-device` 註解拿掉：

```
watchdog-device = /dev/watchdog
```

接著設定想要監控的系統狀態，您可以自由選擇要監控哪一些。

watchdog.conf

- max-load-1 = <load1>
- Set the maximal allowed load average for a 1 minute span. Once this load average is reached the system is rebooted. Default value is 0. That means the load average check is disabled. Be careful not to this parameter too low. To set a value less then the predefined minimal value of 2, you have to use the -f commandline option.
- max-load-5 = <load5>
- Set the maximal allowed load average for a 5 minute span. Once this load average is reached the system is rebooted. Default value is 3/4*max-load-1. Be careful not to this parameter too low. To set a value less then the predefined minimal value of 2, you have to use the -f commandline option.
- max-load-15 = <load15>
- Set the maximal allowed load average for a 15 minute span. Once this load average is reached the system is rebooted. Default value is 1/2*max-load-1. Be careful not to this parameter too low. To set a value less then the predefined minimal value of 2, you have to use the -f commandline option.
- min-memory = <minpage>
- Set the minimal amount of virtual memory that has to stay free. Note that this is in pages. Default value is 0 pages which means this test is disabled. The page size is taken from the system include files.
- max-temperature = <temp>
- Set the maximal allowed temperature. Once this temperature is reached the system is halted. Default value is 120. There is no unit conversion, so make sure you use the same unit as your hardware. Watchdog will issue warnings once the temperature increases 90%, 95% and 98% of this temperature.
- watchdog-device = <device>
- Set the watchdog device name. Default is to disable keep alive support.
- temperature-device = <temp-dev>
- Set the temperature device name. Default is to disable temperature checking.
- ping = <ip-addr>
- Set IP address for ping mode. This option can be used more than once to check different connections.
- interface = <if-name>
- Set interface name for network mode. This option can be used more than once to check different interfaces.
-

System crash

-
- File system crash(some times system still on)
- Kernel Panic
- System overload (DISKIO CPU)
- Memory ECC failure
- Hardware failed
- USB power low

popular monitoring utility

- Zabbix
  - https://www.zabbix.com/
- Graylog
  - https://www.graylog.org/
- Monitorix
  - https://www.monitorix.org/
-

How install ubuntu in windows

- Virtual machine
  - –
- Windows 10 turn on WSL
  - https://docs.microsoft.com/en-us/windows/wsl/install-win10
  - And download ubuntu on marketplace

File system

- https://zh.wikipedia.org/wiki/Btrfs
- https://www.fujitsu.com/jp/documents/products/software/os/linux/catalog/LinuxConEurope2014-takeuchi.pdf
- events.linuxfoundation.jp/sites/events/files/slides/linux_file_system_analysis_for_IVI_systems.pdf

Custom your ubuntu image

- https://www.techrepublic.com/article/how-to-create-a-custom-ubuntu-iso-with-cubic/
- Ubuntu PxE installation
- http://blog.topspeedsnail.com/archives/7728

Linux 系统目录

Linux 系统目录是树状目录结构，“ /” 根是所有目录的起点。

/usr/local ： 存放用户自己安装的程序。

/bin ： 常用的二进制命令目录。 Eg： ls 、 cp, 和 /usr/bin 类似

/boot ： 启动 linux 时使用的一些核心文件，包括一些连接文件以及镜像文件。

/dev ： 设备文件目录，比如声卡、磁盘、光驱等

/etc ： 所有系统管理所需要的配置文件和子目录。

/home ： 用户的主目录，默认数据存放目录。

/lib ： 这个目录里存放着系统最基本的动态连接共享库。几乎所有的应用程序都需要用到这些共享库。

/media ： linux 系统会自动识别一些设备，例如 U 盘，光驱等，当识别后， linux 会把识别的设备挂载到这个目录下

/mnt ： 让用户临时挂载别的文件系统的，我们可以将光驱挂载在 /mnt/ 上 .

/proc ： 操作系统运行时，进程信息及内核信息 (比如 cpu 、内存信息等) 存放在这里

/sbin ： super user ，存放的是系统管理员使用的系统管理程序。

/sys ： 和 /proc 目录类似，是一个虚拟的文件系统，主要记录与系统核心相关的信息。

/tmp ： 临时文件目录。

/usr ： 这个是系统存放程序的目录

Linux 基础命令

ls [- 选项] [文件名或者目录名]：列出当前目录下的所有内容

mkdir 目录名：创建目录

rm [- 选项] 文件名或者目录名 ：删除一个文件或者目录

cat 文件名：显示一个文件的内容

pwd ：查看当前路径

more 文件名 ：对文件内容或者查询结果进行分屏显示

ps ：报告当前系统的运行状态 ps –aux/ –ef PID

kill -9 PID: 杀死进程

lsof –i: 查看端口占用情况