

# Chapter 01: Introduction and Environment Setup

```
adam@adam-XPS-13-9360: ~
File Edit View Search Terminal Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

adam@adam-XPS-13-9360:~$ sudo apt install virtualbox
[sudo] password for adam:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  build-essential dkms dpkg-dev fakeroot g++ g++-7 gcc gcc-7
  libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl
  libasan4 libatomic1 libc-dev-bin libc6-dev libcilkrts5 libdouble-conversion1
  libfakeroot libgcc-7-dev libgsoap-2.8.60 libitm1 liblsan0 libmpx2
  libqt5core5a libqt5dbus5 libqt5gui5 libqt5network5 libqt5opengl5
  libqt5printsupport5 libqt5svg5 libqt5widgets5 libqt5x11extras5 libquadmath0
  libstdl1.2debian libstdc++-7-dev libtsan0 libubsan0 libvncserver1
  libxcb-xinerama0 linux-libc-dev make manpages-dev qt5-gtk-platformtheme
  qttranslations5-l10n virtualbox-dkms virtualbox-qt
Suggested packages:
  menu debian-keyring g++-multilib g++-7-multilib gcc-7-doc libstdc++6-7-dbg
  gcc-multilib autoconf automake libtool flex bison gcc-doc gcc-7-multilib
  gcc-7-locales libgcc1-dbg libgomp1-dbg libitm1-dbg libatomic1-dbg
  libasan4-dbg liblsan0-dbg libtsan0-dbg libubsan0-dbg libcilkrts5-dbg
  libmpx2-dbg libquadmath0-dbg glibc-doc qt5-image-formats-plugins qtwayland5
  libstdc++-7-doc make-doc vde2 virtualbox-guest-additions-iso
The following NEW packages will be installed:
  build-essential dkms dpkg-dev fakeroot g++ g++-7 gcc gcc-7
  libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl
  libasan4 libatomic1 libc-dev-bin libc6-dev libcilkrts5 libdouble-conversion1
  libfakeroot libgcc-7-dev libgsoap-2.8.60 libitm1 liblsan0 libmpx2
  libqt5core5a libqt5dbus5 libqt5gui5 libqt5network5 libqt5opengl5
  libqt5printsupport5 libqt5svg5 libqt5widgets5 libqt5x11extras5 libquadmath0
  libstdl1.2debian libstdc++-7-dev libtsan0 libubsan0 libvncserver1
  libxcb-xinerama0 linux-libc-dev make manpages-dev qt5-gtk-platformtheme
  qttranslations5-l10n virtualbox virtualbox-dkms virtualbox-qt
0 to upgrade, 47 to newly install, 0 to remove and 4 not to upgrade.
Need to get 63.4 MB of archives.
After this operation, 275 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

---



The screenshot shows a web browser window with the address bar displaying <https://www.virtualbox.org/wiki/Downloads>. The page features the VirtualBox logo on the left and a navigation menu with links for About, Screenshots, Downloads, Documentation (including End-user docs and Technical docs), Contribute, and Community. The main content area is titled "Download VirtualBox" and includes the following text:

Here you will find links to VirtualBox binaries and its source code.

### VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

If you're looking for the latest VirtualBox 5.1 packages, see [VirtualBox 5.1 builds](#). Consider upgrading.

### VirtualBox 5.2.16 platform packages

- [Windows hosts](#)
- [OS X hosts](#)
- [Linux distributions](#)
- [Solaris hosts](#)

The binaries are released under the terms of the GPL version 2.

See the [changelog](#) for what has changed.

← → ↻ 🏠 ⓘ isoredirect.centos.org/centos/7/isos/x86\_64/CentOS-7-x86\_64-Minimal-1804.iso



# CentOS

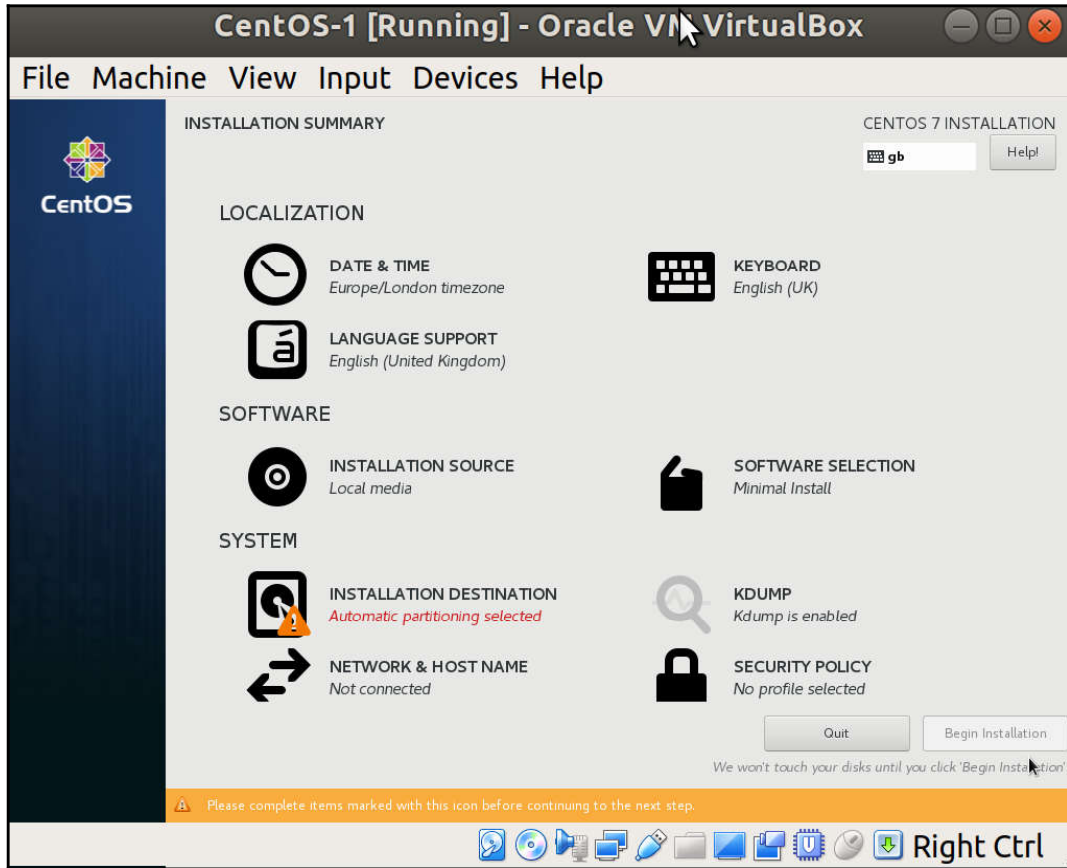
CentOS on the Web: [CentOS.org](#) | [Mailing Lists](#) | [Mirror List](#) | [IRC](#) | [Forums](#) | [Bugs](#) | [Donate](#)

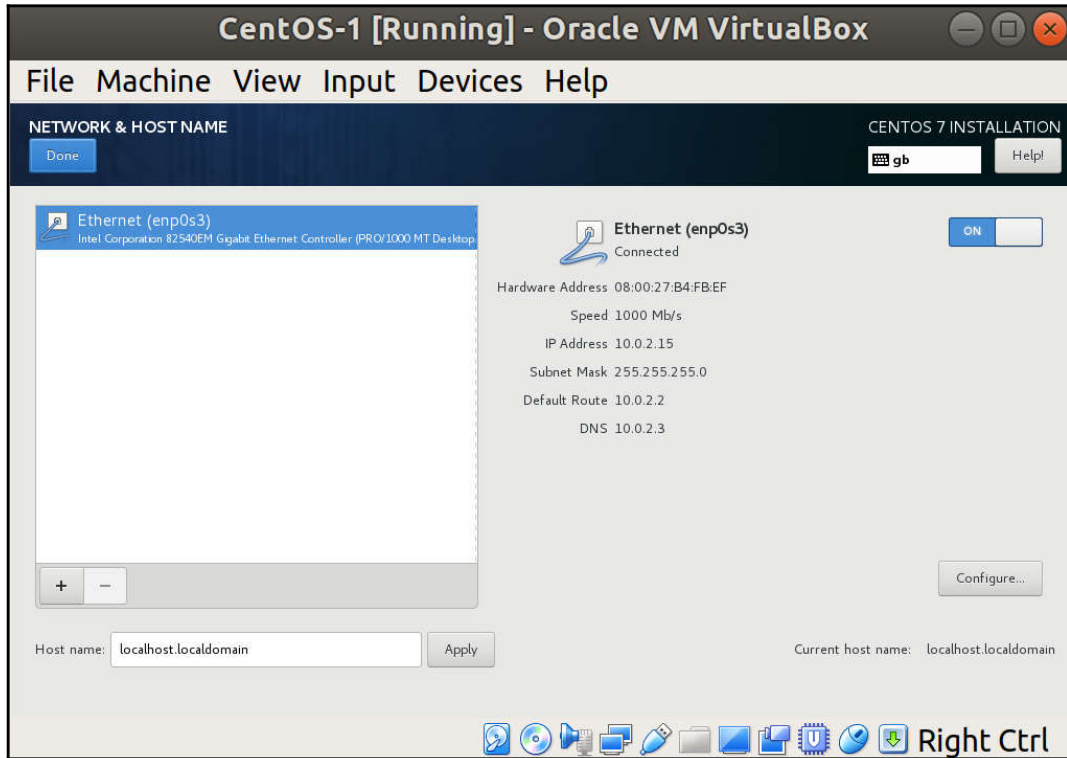
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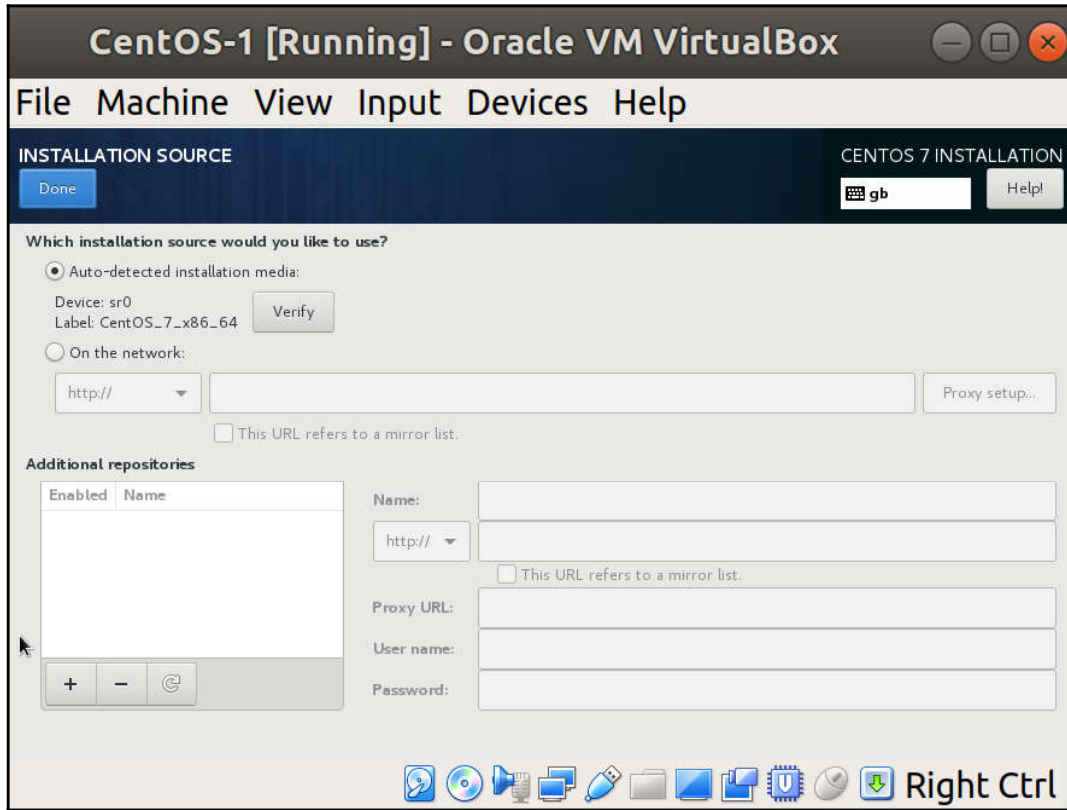
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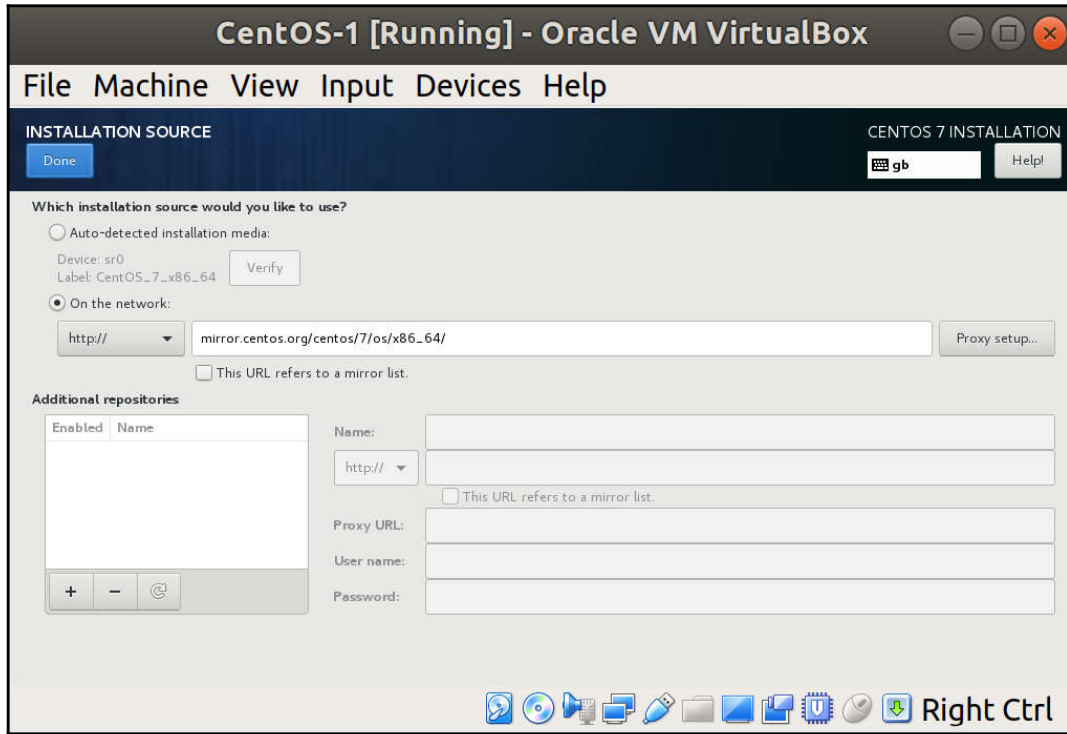
Actual Country -

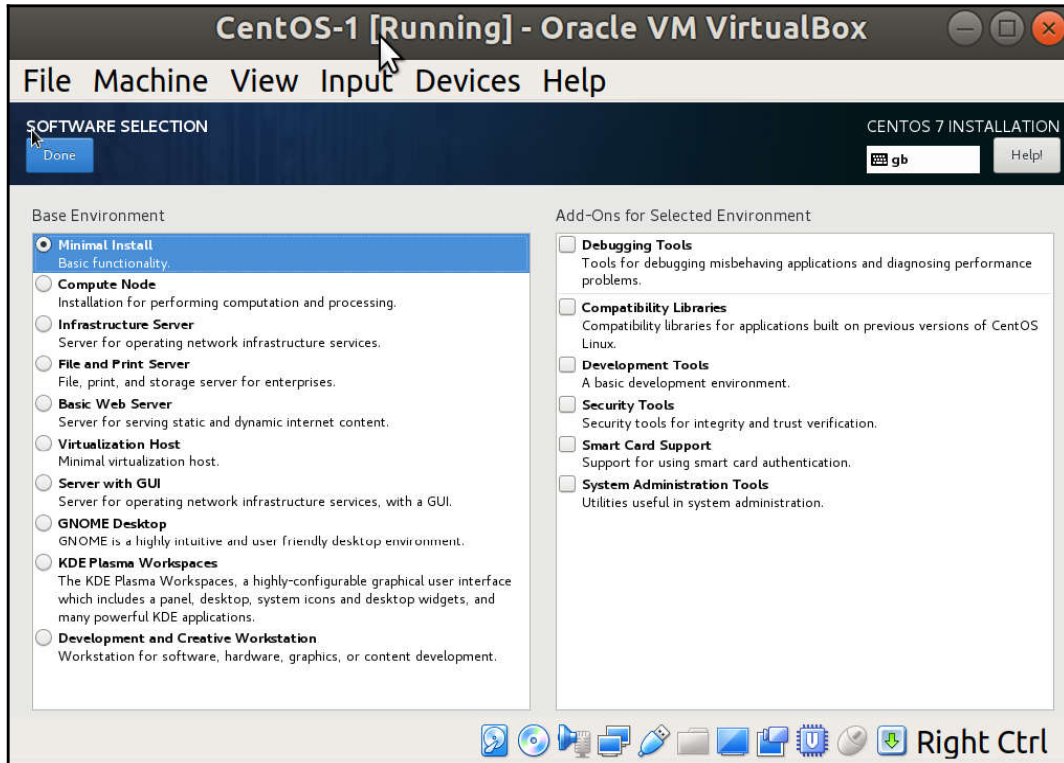
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- [http://mirror.mhd.uk.as44574.net/mirror.centos.org/7/isos/x86\\_64/CentOS-7-x86\\_64-Minimal-1804.iso](http://mirror.mhd.uk.as44574.net/mirror.centos.org/7/isos/x86_64/CentOS-7-x86_64-Minimal-1804.iso)
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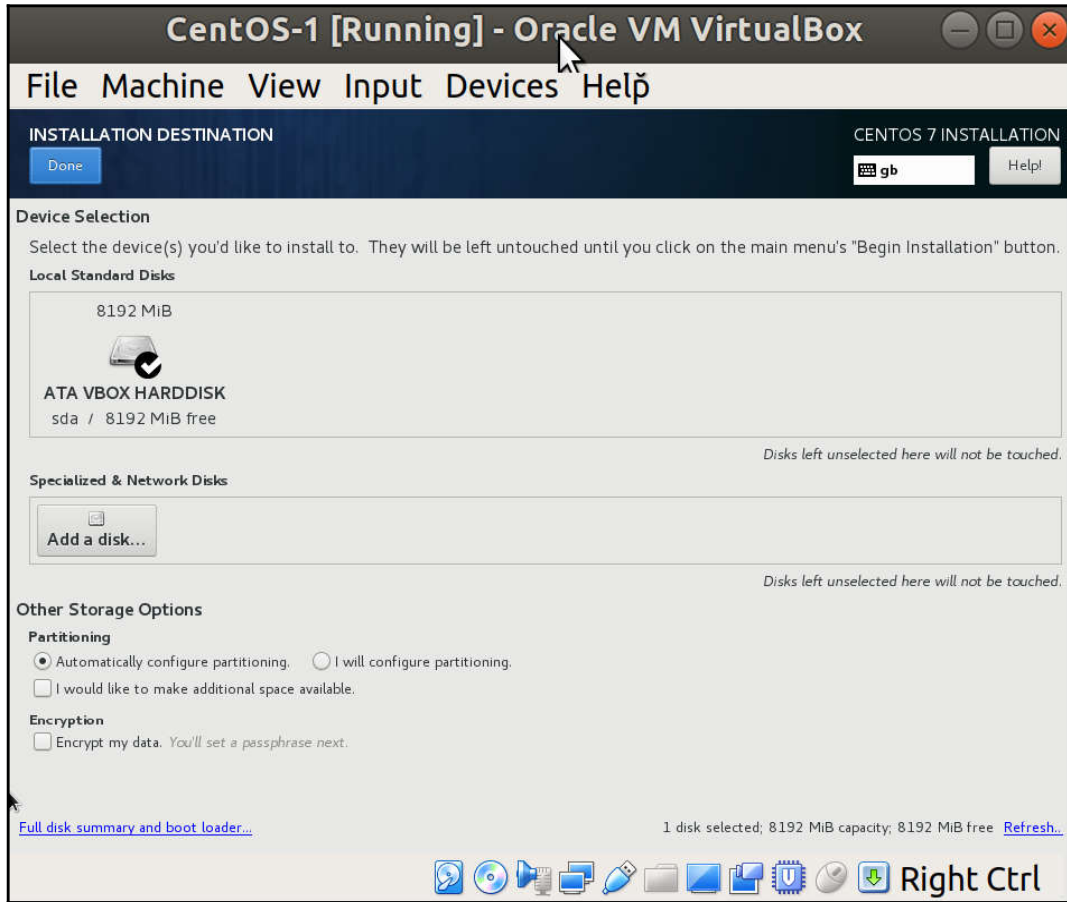




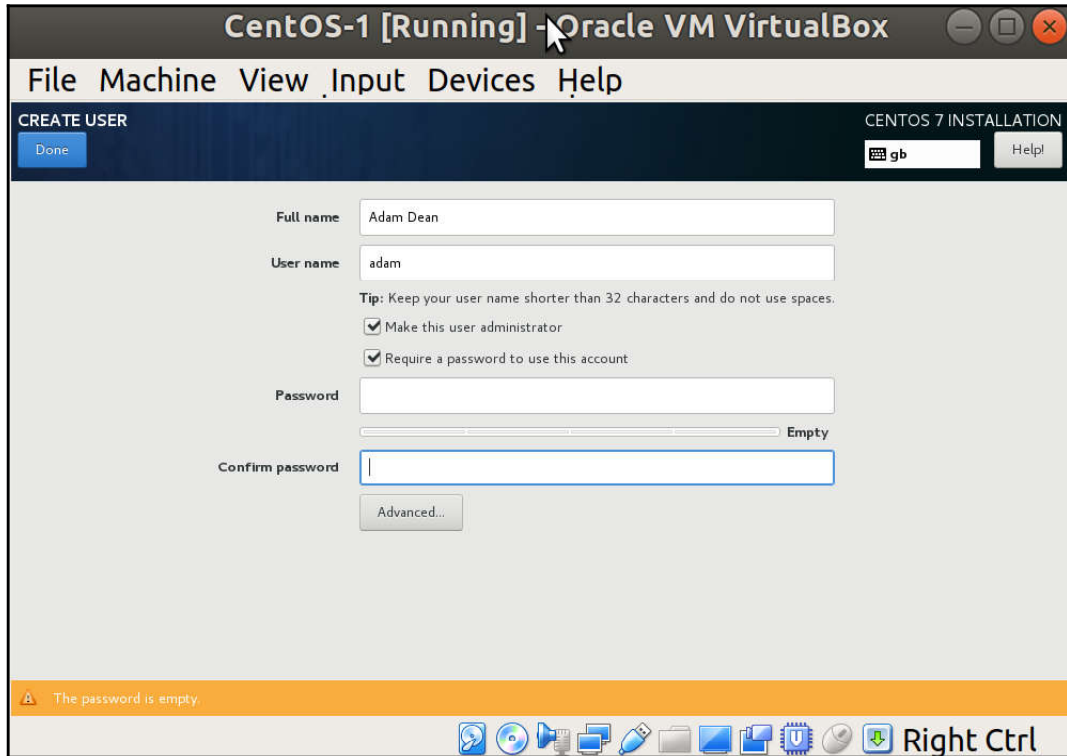


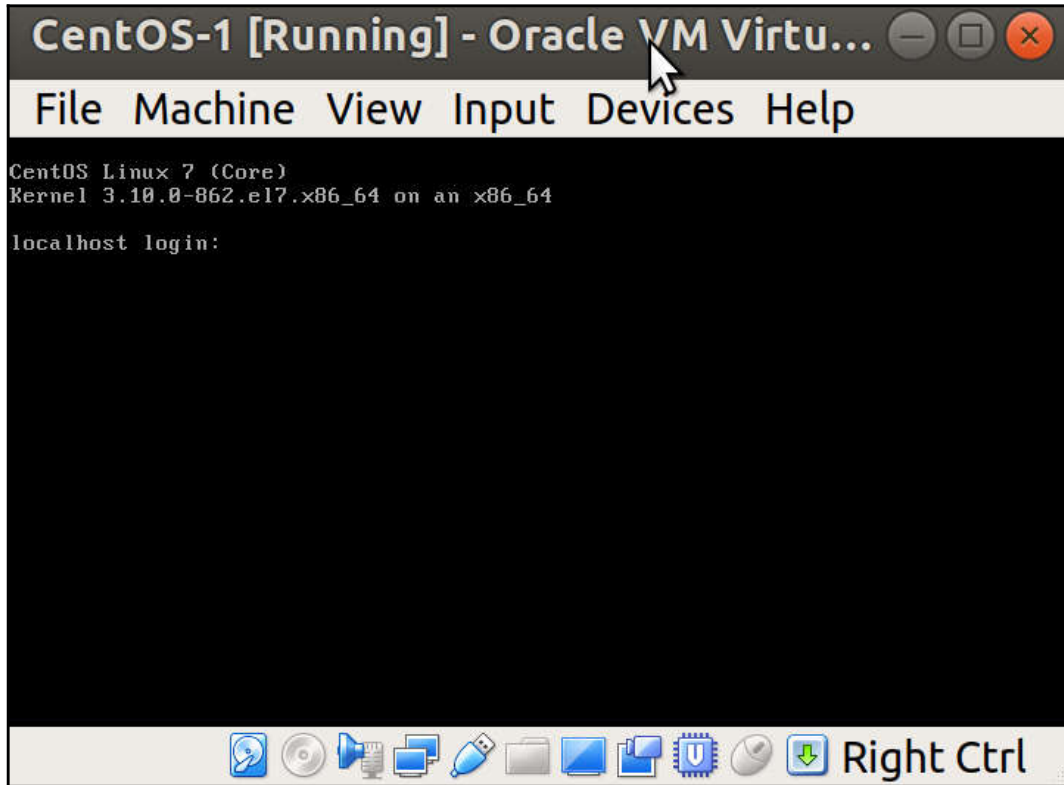




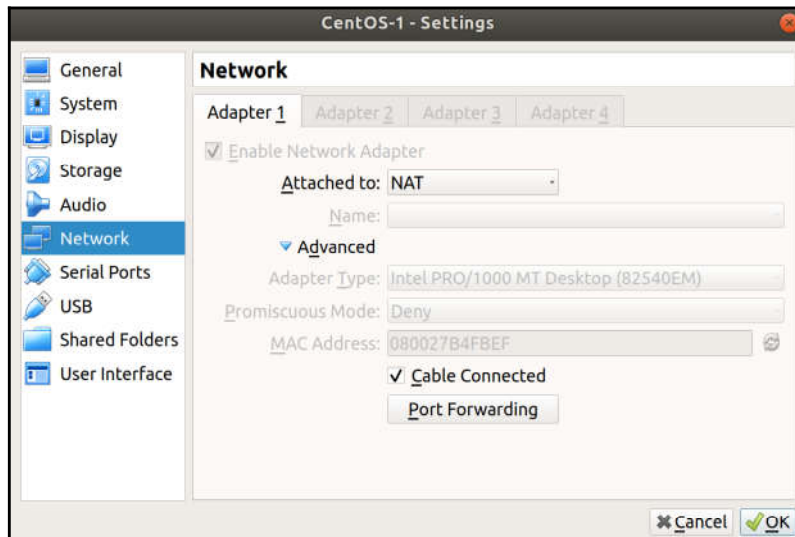
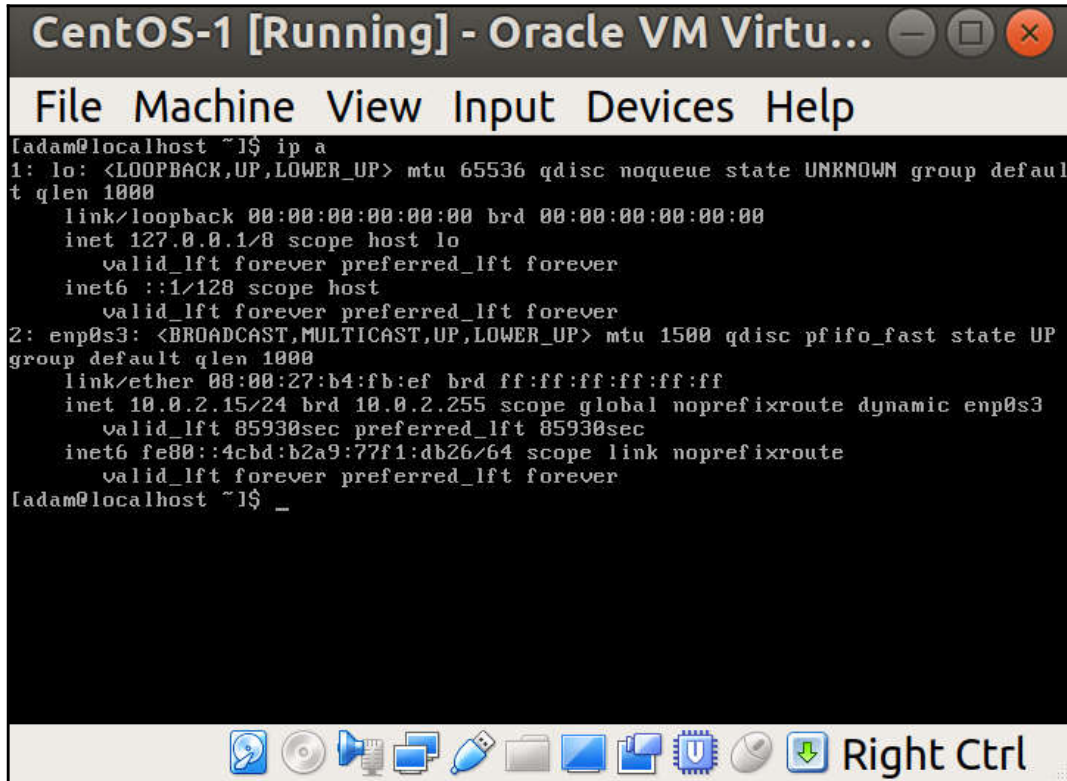


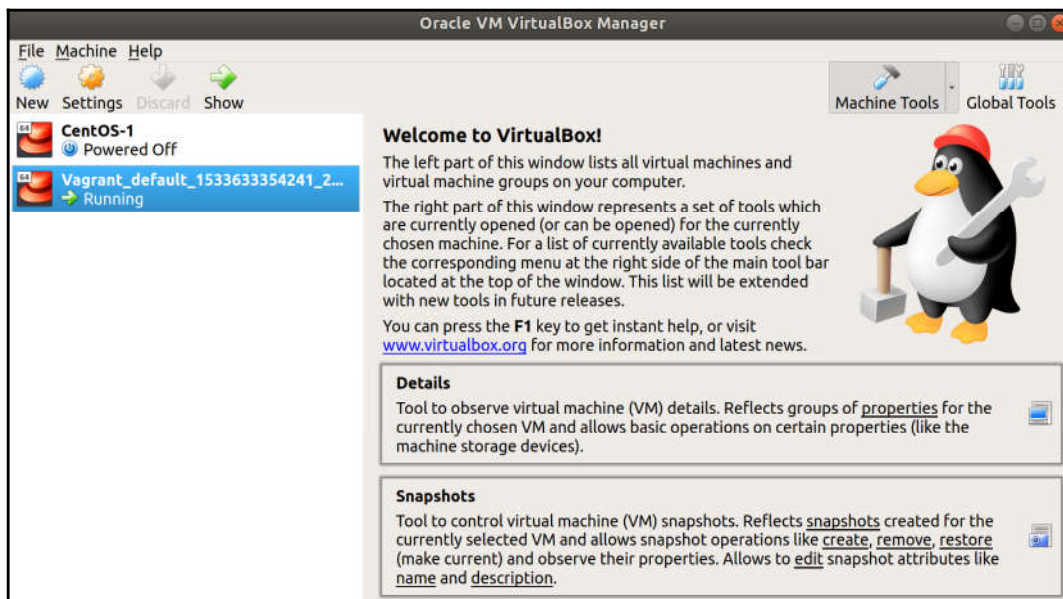
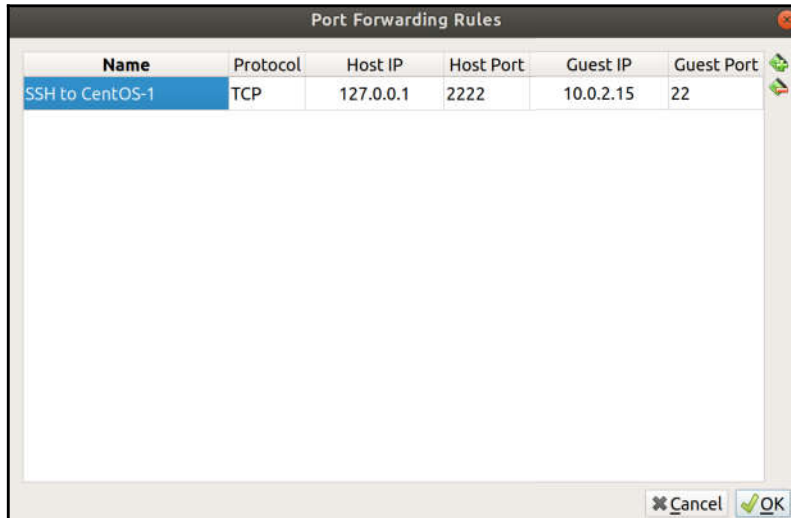






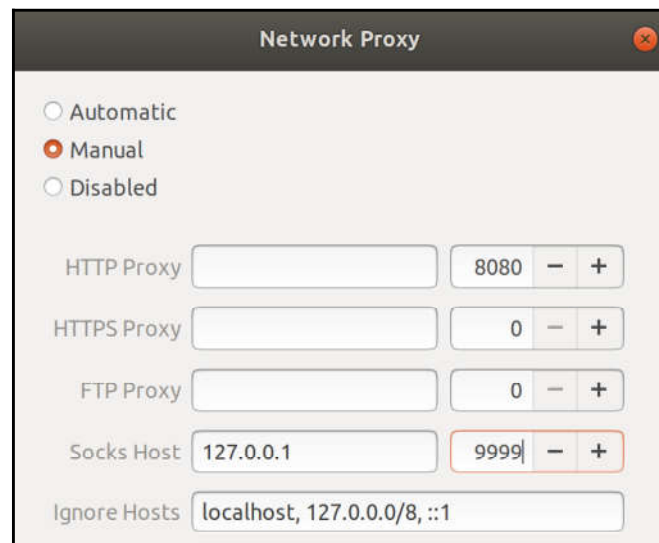






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## Chapter 02: Remote Administration with SSH





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# Chapter 03: Networking and Firewalls

```
vagrant@centos2:~$ ss -ttns -s 192.168.33.10
State     Recv-Q    Send-Q   Local Address:Port  Peer Address:Port  Rate
LISTEN    128Kb    128Kb    *.*.*.*.*:*.      *.*.*.*.*:*.      0
ESTAB     25.0Kb   25.0Kb    192.168.33.10:22  192.168.33.10:22  7.72Kb 16.7Kb 4.23Kb
         268b   1.57Kb 459b
TOTAL:    2
TX:       cum: 24.7Kb peak: 38.6Kb      rates: 7.72Kb 16.7Kb 4.23Kb
RX:       5.42Kb  3.53Kb                    268b   1.57Kb 459b
TOTAL:    30.3Kb 42.1Kb                    7.92Kb 18.3Kb 4.68Kb
```

```
TX:       cum: 265KB peak: 32.8Kb      rates: 32.6Kb 25.9Kb 18.5Kb
RX:       10.6KB  976b                    976b   486b  378b
TOTAL:    275KB  33.5Kb
```

```
vagrant@centos2:~$ ss -ttns -s 192.168.33.10
State     Recv-Q    Send-Q   Local Address:Port  Peer Address:Port  Rate
LISTEN    128Kb    128Kb    *.*.*.*.*:*.      *.*.*.*.*:*.      0
ESTAB     25.0Kb   25.0Kb    192.168.33.10:22  192.168.33.10:22  34.9Kb 15.4Kb 16.9Kb
         976b   483b 347b
TOTAL:    2
TX:       cum: 265KB peak: 32.8Kb      rates: 32.6Kb 25.9Kb 18.5Kb
RX:       10.6KB  976b                    976b   486b  378b
TOTAL:    275KB  33.5Kb
```

```

vagrant@centos2:~$ curl -s -o /dev/null -w '%{url}\n%{http_code}\n%{content_length}\n%{header_size}\n%{total_size}\n' \
10.0.2.3
10.0.2.3
200
0b
656b
241b
gateway
200
752b
874b
770b
vps.ty-penguin.org.uk
200
160b
160b
179b
85.199.214.102
200
0b
243b
72b
5751b502.skybroadband.com
200
0b
243b
72b
lyla.preshweb.co.uk
200
0b
243b
72b

```

TX:	cum:	peak:	rates:
752b	5.42KB	4.91KB	752b 2.45KB 1.27kb
160b	3.39KB	6.41KB	160b 2.12KB 818b
912b	8.81KB	11.3KB	912b 4.56KB 2.07kb

# Chapter 04: Services and Daemons

```
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
proc-sys-fs-binfmt_misc.automount  loaded active waiting Arbitrary Executable File Formats File System Automount Point
sys-devices-pci0000:00-0000:00:01-1-ata1-host0-target0:0:0-0:0:0-block-sda-sda1.device loaded active plugged VBOX_HARDDISK 1
sys-devices-pci0000:00-0000:00:01-1-ata1-host0-target0:0:0-0:0:0-block-sda-sda2.device loaded active plugged VBOX_HARDDISK 2
sys-devices-pci0000:00-0000:00:01-1-ata1-host0-target0:0:0-0:0:0-block-sda-sda3.device loaded active plugged LVM PV vrrtbx-g480-HcJI-5wLn-4a0f-0l1d-rc03AY on /dev/sda3 3
sys-devices-pci0000:00-0000:00:03-0-net-eth0.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
sys-devices-pci0000:00-0000:00:05-0-sound-card0.device loaded active plugged 82801AA AC'97 Audio Controller
sys-devices-pci0000:00-0000:00:08-0-net-eth1.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
sys-devices-pci0000:00-0000:00:09-0-net-eth2.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
sys-devices-platform-serial8250-tty-ttyS0.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS0
sys-devices-platform-serial8250-tty-ttyS1.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS1
sys-devices-platform-serial8250-tty-ttyS2.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS2
sys-devices-platform-serial8250-tty-ttyS3.device loaded active plugged /sys/devices/platform/serial8250/tty/ttyS3
sys-devices-virtual-block-dm1x200.device loaded active plugged /sys/devices/virtual/block/dm-0
sys-devices-virtual-block-dm1x201.device loaded active plugged /sys/devices/virtual/block/dm-1
sys-module-configfs.device loaded active plugged /sys/module/configfs
sys-subsystem-net-devices-eth0.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
sys-subsystem-net-devices-eth1.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
sys-subsystem-net-devices-eth2.device loaded active plugged 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
-.nmount loaded active mounted /
boot.mount loaded active mounted /boot
dev-hugepages.mount loaded active mounted Huge Pages File System
dev-mqueue.mount loaded active mounted POSIX Message Queue File System
run-user-0.mount loaded active mounted /run/user/0
run-user-1000.mount loaded active mounted /run/user/1000
sys-kernel-config.mount loaded active mounted Configuration File System
sys-kernel-debug.mount loaded active mounted Debug File System
var-lib-nfs-rpc-pipefs.mount loaded active mounted RPC Pipe File System
systemd-ask-password-plymouth.path loaded active waiting Forward Password Requests to Plymouth Directory Watch
systemd-ask-password-wall.path loaded active waiting Forward Password Requests to Wall Directory Watch
session-4.scope loaded active running Session 4 of user vagrant
session-5.scope loaded active abandoned Session 5 of user root
auditd.service loaded active running Security Auditing Service
chronyd.service loaded active running NTP Client/Server
cron.service loaded active running Command Scheduler
dbus.service loaded active running D-Bus System Message Bus
getty@tty1.service loaded active running Getty on tty1
gssproxy.service loaded active running GSSAPI Proxy Daemon
kmod-static-nodes.service loaded active exited Create list of required static device nodes for the current kernel
lvm2-lvmetad.service loaded active running LVM2 metadata daemon
lvm2-monitor.service loaded active exited Monitoring of LVM2 mirrors, snapshots etc. using dmeventd or progress pollit
lvm2-pvscan@0:1.service loaded active exited LVM2 PV scan on device 8:1
network.service loaded active exited LSB: Bring up/down networking
```

```

UNIT                                LOAD ACTIVE SUB    DESCRIPTION
auditd.service                     loaded active running Security Auditing Service
chronyd.service                    loaded active running NTP client/server
crond.service                       loaded active running Command Scheduler
dbus.service                       loaded active running D-Bus System Message Bus
getty@tty1.service                 loaded active running Getty on tty1
gssproxy.service                   loaded active running GSSAPI Proxy Daemon
kmod-static-nodes.service          loaded active exited Create list of required static device
lvm2-lvmetad.service               loaded active running LVM2 metadata daemon
lvm2-monitor.service              loaded active exited Monitoring of LVM2 mirrors, snapshots
lvm2-pvscan@0:3.service            loaded active exited LVM2 PV scan on device 8:3
network.service                   loaded failed failed Network Manager Wait Online
● NetworkManager-wait-online.service
NetworkManager.service            loaded active running Network Manager
polkit.service                     loaded active running Authorization Manager
postfix.service                   loaded active running Postfix Mail Transport Agent
rhel-dmesg.service                 loaded active exited Dump dmesg to /var/log/dmesg
rhel-domainname.service            loaded active exited Read and set NIS domainname from /etc/
rhel-readonly.service              loaded active exited Configure read-only root support
rpcbind.service                   loaded active running RPC bind service
rsyslog.service                   loaded active running System Logging Service
● selinux-policy-migrate-local-changes@targeted.service
sshd.service                       loaded active running OpenSSH server daemon
systemd-hostnamed.service          loaded active running Hostname Service
systemd-hwdb-update.service        loaded active exited Rebuild Hardware Database
systemd-journal-catalog-update.service
loaded active exited Rebuild Journal Catalog
systemd-journal-flush.service      loaded active exited Flush Journal to Persistent Storage
systemd-journald.service           loaded active running Journal Service
systemd-logind.service             loaded active running Login Service
systemd-machine-id-commit.service  loaded active exited Commit a transient machine-id on disk
systemd-random-seed.service        loaded active exited Load/Save Random Seed
systemd-remount-fs.service         loaded active exited Remount Root and Kernel File Systems
systemd-sysctl.service             loaded active exited Apply Kernel Variables
systemd-tmpfiles-setup-dev.service loaded active exited Create Static Device Nodes in /dev
systemd-tmpfiles-setup.service     loaded active exited Create Volatile Files and Directories
systemd-udev-trigger.service       loaded active exited udev Coldplug all Devices
systemd-udevd.service              loaded active running udev Kernel Device Manager
systemd-update-done.service        loaded active exited Update is Completed
systemd-update-utmp.service        loaded active exited Update UTMP about System Boot/Shutdown
systemd-user-sessions.service      loaded active exited Permit User Sessions
systemd-vconsole-setup.service     loaded active exited Setup Virtual Console
tuned.service                      loaded active running Dynamic System Tuning Daemon

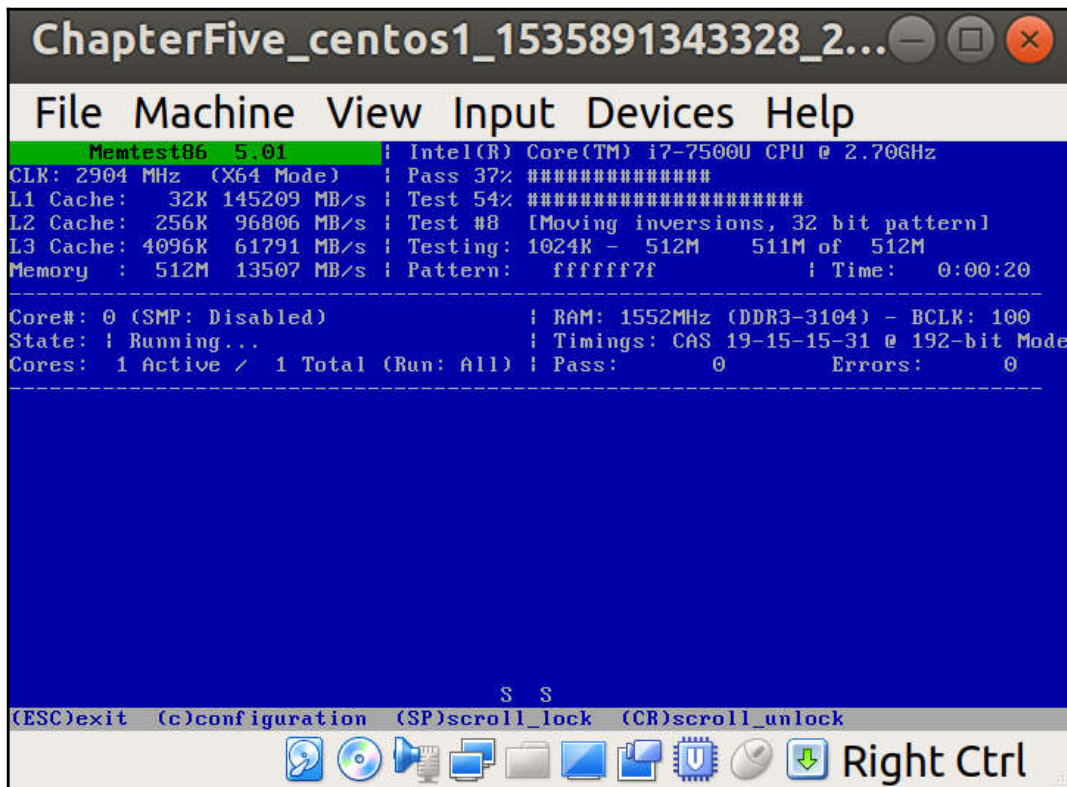
LOAD = Reflects whether the unit definition was properly loaded.
ACTIVE = The high-level unit activation state, i.e. generalization of SUB.
SUB = The low-level unit activation state, values depend on unit type.

41 loaded units listed. Pass --all to see loaded but inactive units, too.
To show all installed unit files use 'systemctl list-unit-files'.

```

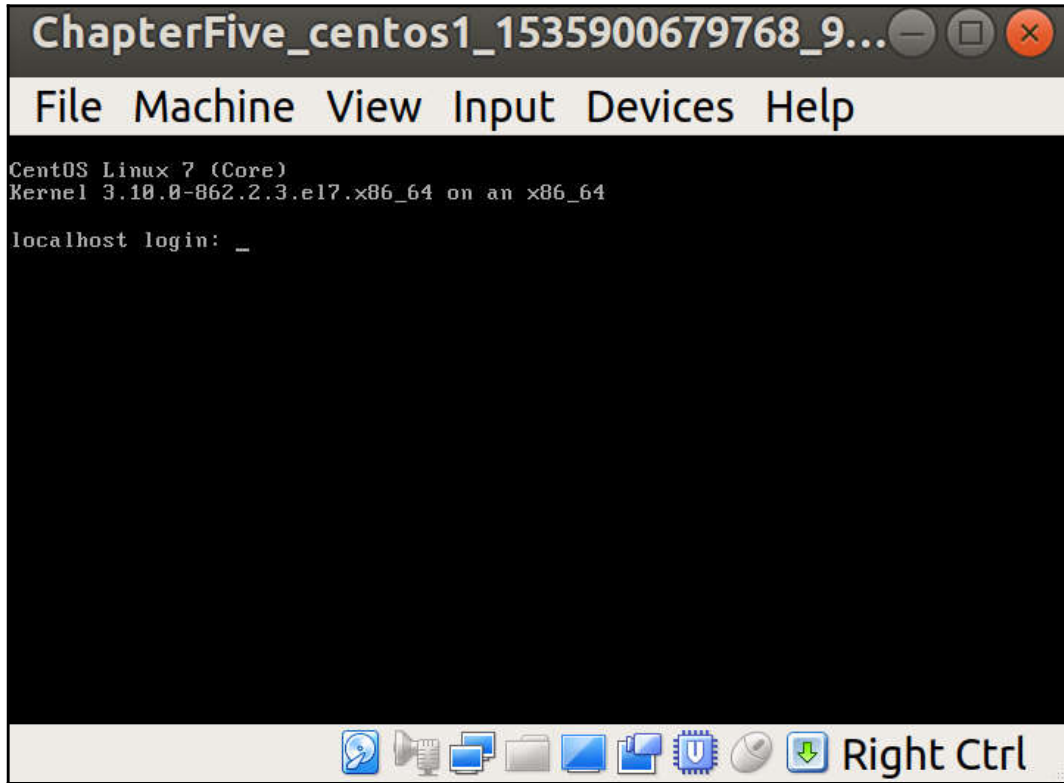
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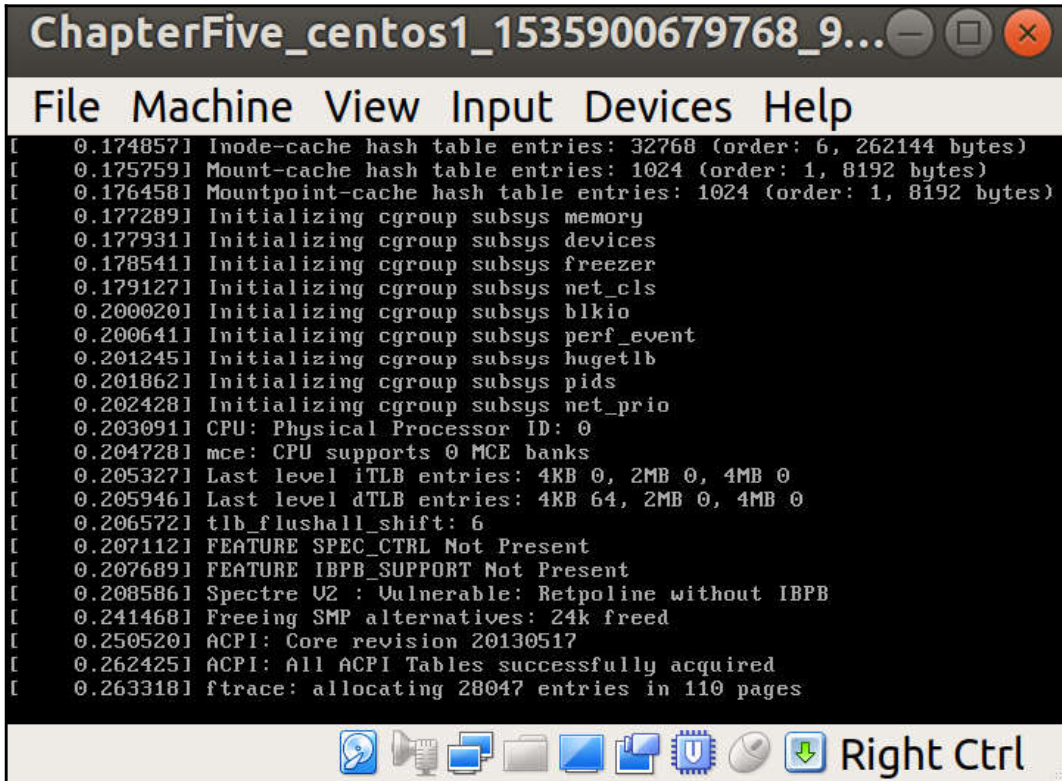
## Chapter 05: Hardware and Disks



The screenshot shows a terminal window titled "ChapterFive\_centos1\_1535891343328\_2...". The terminal content is as follows:

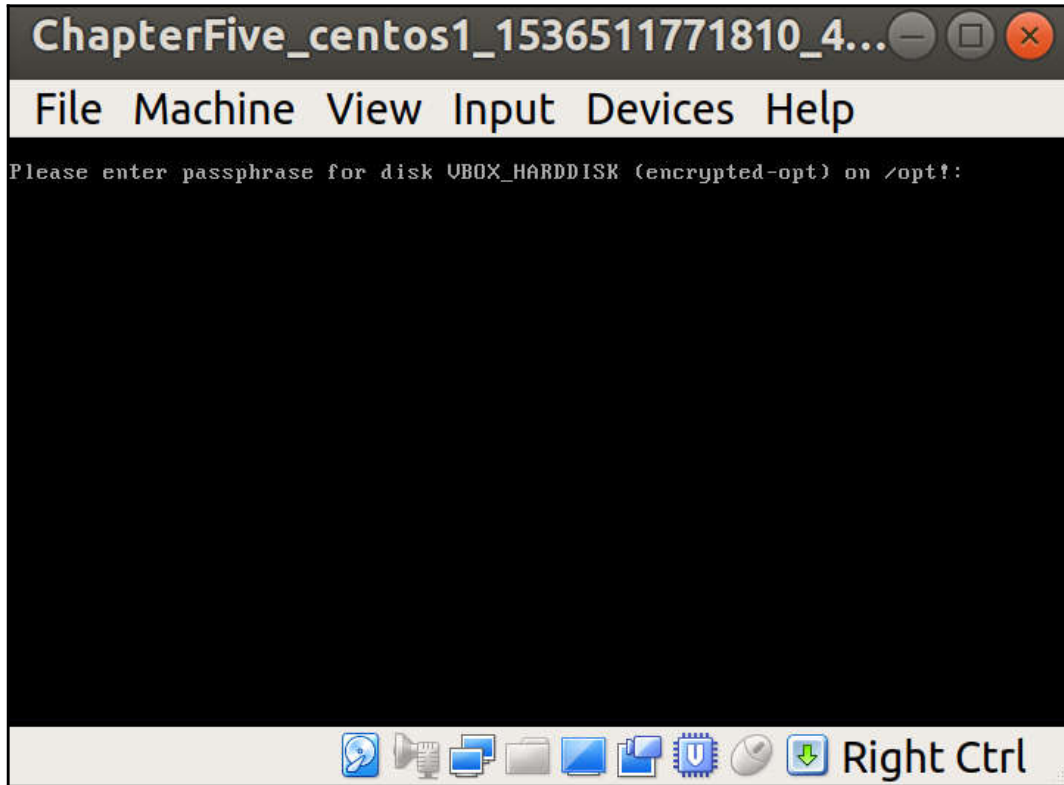
```
File Machine View Input Devices Help
Memtest86 5.01 | Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz
CLK: 2904 MHz (X64 Mode) | Pass 37% #####
L1 Cache: 32K 145209 MB/s | Test 54% #####
L2 Cache: 256K 96806 MB/s | Test #8 [Moving inversions, 32 bit pattern]
L3 Cache: 4096K 61791 MB/s | Testing: 1024K - 512M 511M of 512M
Memory : 512M 13507 MB/s | Pattern: ffffffff | Time: 0:00:20
-----
Core#: 0 (SMP: Disabled) | RAM: 1552MHz (DDR3-3104) - BCLK: 100
State: | Running... | Timings: CAS 19-15-15-31 @ 192-bit Mode
Cores: 1 Active / 1 Total (Run: All) | Pass: 0 Errors: 0
-----
S S
(ESC)exit (c)configuration (SP)scroll_lock (CR)scroll_unlock
[Icons: Network, CD, Speaker, Monitor, Folder, File, CPU, Mouse, Download] Right Ctrl
```





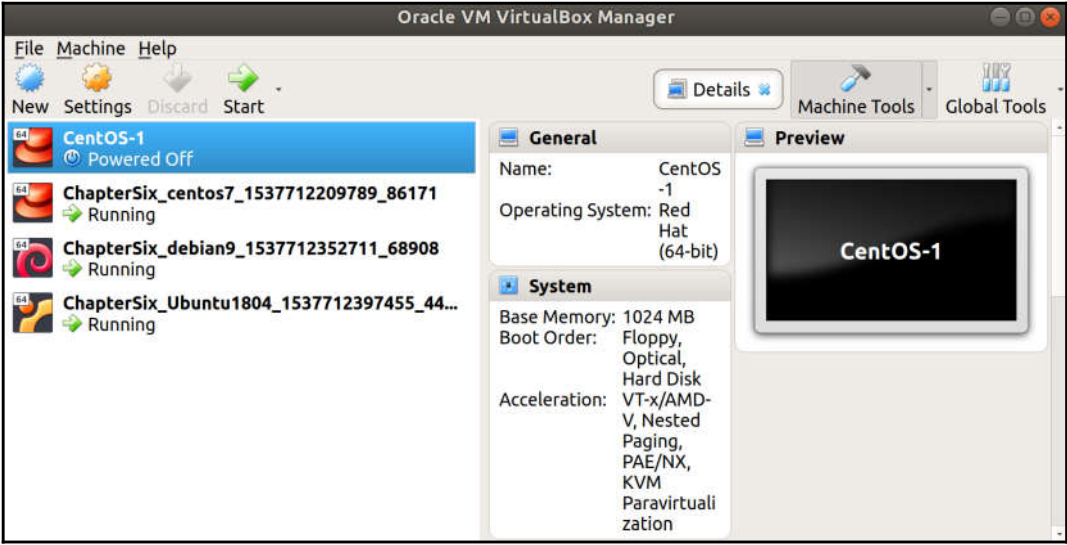
```
vagrant@localhost:~$ man hier
NAME
    hier - description of the file system hierarchy
DESCRIPTION
    A typical Linux system has, among others, the following directories:
    /
        This is the root directory. This is where the whole tree starts.
    /bin
        This directory contains executable programs which are needed in single user mode and to bring the system up or repair it.
    /boot
        Contains static files for the boot loader. This directory holds only the files which are needed during the boot process. The map installer and configuration files should go to /sbin and /etc.
    /dev
        Special or device files, which refer to physical devices. See mkdev(1).
    /etc
        Contains configuration files which are local to the machine. Some larger software packages, like X11, can have their own subdirectories below /etc. Site-wide configuration files may be placed here or in /usr/etc. Nevertheless, programs should always look for these files in /etc and you may have links for these files to /usr/etc.
    /etc/opt
        Host-specific configuration files for add-on applications installed in /opt.
    /etc/samba
        This directory contains the configuration files for Samba (optional).
    /etc/skel
        When a new user account is created, files from this directory are usually copied into the user's home directory.
    /etc/X11
        Configuration files for the X11 window system (optional).
    /home
        On machines with home directories for users, these are usually beneath this directory, directly or not. The structure of this directory depends on local administration decisions.
    /lib
        This directory should hold those shared libraries that are necessary to boot the system and to run the commands in the root file system.
    /media
        This directory contains mount points for removable media such as CD and DVD disks or USB sticks.
    /mnt
        This directory is a mount point for a temporarily mounted file system. In some distributions, /mnt contains subdirectories intended to be used as mount points for several temporary file systems.
    /opt
        This directory should contain add-on packages that contain static files.
    /proc
        This is a mount point for the proc file system, which provides information about running processes and the kernel. This pseudo-file system is described in more detail in proc(5).
    /root
        This directory is usually the home directory for the root user (optional).
    /sbin
        Like /bin, this directory holds commands needed to boot the system, but which are usually not executed by normal users.
    /srv
        This directory contains site-specific data that is served by this system.
    /tmp
        This directory contains temporary files which may be deleted with no notice, such as by a regular job or at system boot up.
Manual page hier(7) line 1 (press h for help or q to quit)
```





---

# Chapter 06: Security, Updating, and Package Management



```
vagrant@stretch: ~
File Edit View Search Terminal Help
Actions Undo Package Resolver Search Options Views Help
C-T: Menu ?: Help q: Quit u: Update g: Preview/Download/Install/Remove Pkgs
aptitude 0.8.7 @ stretch
--- Security Updates (15)
--- Installed Packages (354)
--- Not Installed Packages (50561)
--- Virtual Packages (6132)
--- Tasks (216)

Security updates for these packages are available from security.debian.org (or mirrors).
This group contains 15 packages.
```

```
vagrant@stretch: ~
File Edit View Search Terminal Help
Actions Undo Package Resolver Search Options Views Help
C-T: Menu ?: Help q: Quit u: Update g: Preview/Download/Install/Remove Pkgs
aptitude 0.8.7 @ stretch
--- Security Updates (15)
  --\ kernel      Kernel and kernel modules (2)
  --\ main        The main Debian archive (2)
t A linux-image-4.9.0-7-amd64      4.9.110-1  4.9.110-3+deb9
t linux-image-amd64              4.9+80+deb9u5 4.9+80+deb9u6
  --\ libs        Collections of software routines (2)
  --\ net         Programs to connect to and provide various services (3)
  --\ python      Python programming language and libraries (8)
--- Installed Packages (354)
  --\ Tasks       Packages which set up your computer to perform a particular task (2)
  --\ admin       Administrative utilities (install software, manage users, etc) (42)
  --\ devel       Utilities and programs for software development (1)
  --\ doc         Documentation and specialized programs for viewing documentation (4)
  --\ editors     Text editors and word processors (5)
  --\ interpreters Interpreters for interpreted languages (1)
  --\ kernel      Kernel and kernel modules (3)
  --\ main        The main Debian archive (3)
t A firmware-linux-free          3.4        3.4
t A linux-base                   4.5        4.5
t A linux-image-4.9.0-6-amd64    4.9.88-1+deb9u 4.9.88-1+deb9u
  --\ libs        Collections of software routines (160)

Security updates for these packages are available from security.debian.org (or mirrors).
This group contains 15 packages.
```

```

vagrant@localhost:~$
File Edit View Search Terminal Help
iptables x86_64 1.4.21-24.1.el7_5 updates 432 k
kernel-tools x86_64 3.10.0-862.14.4.el7 updates 6.3 M
kernel-tools-libs x86_64 3.10.0-862.14.4.el7 updates 6.2 M
kpartx x86_64 0.4.9-119.el7_5.1 updates 76 k
libblkid x86_64 2.23.2-52.el7_5.1 updates 178 k
libcom_err x86_64 1.42.9-12.el7_5 updates 41 k
libgcc x86_64 4.8.5-28.el7_5.1 updates 161 k
libgomp x86_64 4.8.5-28.el7_5.1 updates 156 k
libmount x86_64 2.23.2-52.el7_5.1 updates 180 k
libss x86_64 1.42.9-12.el7_5 updates 45 k
libstdc++ x86_64 4.8.5-28.el7_5.1 updates 303 k
libuuid x86_64 2.23.2-52.el7_5.1 updates 81 k
linux-firmware noarch 20180220-62.2.git6d51311.el7_5 updates 57 M
marladb-libs x86_64 1:5.5.60-1.el7_5 updates 758 k
nspr x86_64 4.19.0-1.el7_5 updates 127 k
nss x86_64 3.36.0-7.el7_5 updates 835 k
nss-softokn x86_64 3.36.0-5.el7_5 updates 315 k
nss-softokn-freebl x86_64 3.36.0-5.el7_5 updates 222 k
nss-sysinit x86_64 3.36.0-7.el7_5 updates 62 k
nss-tools x86_64 3.36.0-7.el7_5 updates 515 k
nss-util x86_64 3.36.0-1.el7_5 updates 78 k
openldap x86_64 2.4.44-15.el7_5 updates 355 k
procps-ng x86_64 3.3.10-17.el7_5.2 updates 290 k
python x86_64 2.7.5-69.el7_5 updates 93 k
python-firewall noarch 0.4.4.4-15.el7_5 updates 328 k
python-libs x86_64 2.7.5-69.el7_5 updates 5.6 M
python-perf x86_64 3.10.0-862.14.4.el7 updates 6.3 M
qemu-quest-agent x86_64 10:2.8.0-2.el7_5.1 updates 150 k
rsyslog x86_64 8.24.0-16.el7_5.4 updates 607 k
selinux-policy noarch 3.13.1-192.el7_5.6 updates 453 k
selinux-policy-targeted noarch 3.13.1-192.el7_5.6 updates 6.6 M
sudo x86_64 1.8.19p2-14.el7_5 updates 1.1 M
systemd x86_64 219-57.el7_5.3 updates 5.0 M
systemd-libs x86_64 219-57.el7_5.3 updates 462 k
systemd-sysv x86_64 219-57.el7_5.3 updates 80 k
tuned noarch 2.9.0-1.el7_5.2 updates 244 k
util-linux x86_64 2.23.2-52.el7_5.1 updates 2.0 M
yum-plugin-fastestmirror noarch 1.1.31-46.el7_5 updates 33 k
yum-utils noarch 1.1.31-46.el7_5 updates 120 k

Transaction Summary
-----
Install 1 Package
Upgrade 60 Packages

Total download size: 164 M
Is this ok [y/d/N]:

```

```
vagrant@localhost:~$
File Edit View Search Terminal Help
initscripts          x86_64 9.49.41-1.el7_5.2 updates 437 k
iptables            x86_64 1.4.21-24.1.el7_5 updates 432 k
kernel-tools        x86_64 3.10.0-862.14.4.el7 updates 6.3 M
kernel-tools-libs   x86_64 3.10.0-862.14.4.el7 updates 6.2 M
kpartx              x86_64 0.4.9-119.el7_5.1 updates 76 k
libblkid            x86_64 2.23.2-52.el7_5.1 updates 178 k
libcom_err          x86_64 1.42.9-12.el7_5 updates 41 k
libgcc              x86_64 4.8.5-28.el7_5.1 updates 101 k
libgomp             x86_64 4.8.5-28.el7_5.1 updates 156 k
libmount            x86_64 2.23.2-52.el7_5.1 updates 180 k
libss               x86_64 1.42.9-12.el7_5 updates 45 k
libstdc++           x86_64 4.8.5-28.el7_5.1 updates 303 k
libuuid             x86_64 2.23.2-52.el7_5.1 updates 81 k
linux-firmware      noarch 20180220-62.2.git0d51311.el7_5 updates 57 M
mariadb-libs        x86_64 1:5.5.60-1.el7_5 updates 758 k
nspr                x86_64 4.19.0-1.el7_5 updates 127 k
nss                 x86_64 3.36.0-7.el7_5 updates 835 k
nss-softokn         x86_64 3.36.0-5.el7_5 updates 315 k
nss-softokn-freebl x86_64 3.36.0-5.el7_5 updates 222 k
nss-sysinit         x86_64 3.36.0-7.el7_5 updates 62 k
nss-tools           x86_64 3.36.0-7.el7_5 updates 515 k
nss-util            x86_64 3.36.0-1.el7_5 updates 78 k
openldap            x86_64 2.4.44-15.el7_5 updates 355 k
procps-ng           x86_64 3.3.10-17.el7_5.2 updates 290 k
python              x86_64 2.7.5-69.el7_5 updates 93 k
python-firewall     noarch 0.4.4.4-15.el7_5 updates 328 k
python-libs         x86_64 2.7.5-69.el7_5 updates 5.6 M
python-perf         x86_64 3.10.0-862.14.4.el7 updates 6.3 M
qemu-guest-agent    x86_64 10:2.8.0-2.el7_5.1 updates 150 k
rsyslog             x86_64 8.24.0-16.el7_5.4 updates 607 k
selinux-policy      noarch 3.13.1-192.el7_5.6 updates 453 k
selinux-policy-targeted noarch 3.13.1-192.el7_5.6 updates 6.6 M
sudo                x86_64 1.8.19p2-14.el7_5 updates 1.1 M
systemd             x86_64 219-57.el7_5.3 updates 5.0 M
systemd-libs        x86_64 219-57.el7_5.3 updates 402 k
systemd-sysv        x86_64 219-57.el7_5.3 updates 80 k
tuned               noarch 2.9.0-1.el7_5.2 updates 244 k
util-linux          x86_64 2.23.2-52.el7_5.1 updates 2.0 M
yum-plugin-fastestmirror noarch 1.1.31-46.el7_5 updates 33 k
yum-utils           noarch 1.1.31-46.el7_5 updates 120 k

Transaction Summary
=====
Install 1 Package
Upgrade 60 Packages
Updates downloaded successfully.
[vagrant@localhost ~]$
```

```
vagrant@localhost:~  
File Edit View Search Terminal Help  
initscripts          x86_64 9.49.41-1.el7_5.2      updates 437 k  
iptables            x86_64 1.4.21-24.1.el7_5           updates 432 k  
kernel-tools        x86_64 3.10.0-862.14.4.el7         updates 6.3 M  
kernel-tools-libs   x86_64 3.10.0-862.14.4.el7         updates 6.2 M  
kpartx              x86_64 0.4.9-119.el7_5.1          updates 76 k  
libblkid            x86_64 2.23.2-52.el7_5.1           updates 178 k  
libcom_err          x86_64 1.42.9-12.el7_5             updates 41 k  
libgcc              x86_64 4.8.5-28.el7_5.1            updates 101 k  
libgomp             x86_64 4.8.5-28.el7_5.1            updates 156 k  
libmount            x86_64 2.23.2-52.el7_5.1           updates 180 k  
libss               x86_64 1.42.9-12.el7_5             updates 45 k  
libstdc++           x86_64 4.8.5-28.el7_5.1            updates 303 k  
libuuid            x86_64 2.23.2-52.el7_5.1           updates 81 k  
linux-firmware      noarch 20180220-62.2.git6d51311.el7_5 updates 57 M  
marladb-libs        x86_64 1:5.5.60-1.el7_5           updates 758 k  
nspr                x86_64 4.19.0-1.el7_5             updates 127 k  
nss                 x86_64 3.36.0-7.el7_5             updates 835 k  
nss-softokn         x86_64 3.36.0-5.el7_5             updates 315 k  
nss-softokn-freebl x86_64 3.36.0-5.el7_5             updates 222 k  
nss-sysinit         x86_64 3.36.0-7.el7_5             updates 62 k  
nss-tools           x86_64 3.36.0-7.el7_5             updates 515 k  
nss-util            x86_64 3.36.0-1.el7_5            updates 78 k  
openldap            x86_64 2.4.44-15.el7_5            updates 355 k  
procps-ng           x86_64 3.3.10-17.el7_5.2          updates 290 k  
python              x86_64 2.7.5-69.el7_5             updates 93 k  
python-firewall     noarch 0.4.4.4-15.el7_5           updates 328 k  
python-libs         x86_64 2.7.5-69.el7_5             updates 5.6 M  
python-perf         x86_64 3.10.0-862.14.4.el7         updates 6.3 M  
qemu-guest-agent    x86_64 10:2.8.0-2.el7_5.1         updates 150 k  
rsyslog             x86_64 8.24.0-16.el7_5.4          updates 607 k  
selinux-policy      noarch 3.13.1-192.el7_5.6         updates 453 k  
selinux-policy-targeted noarch 3.13.1-192.el7_5.6         updates 6.6 M  
sudo                x86_64 1.8.19p2-14.el7_5          updates 1.1 M  
systemd             x86_64 219-57.el7_5.3            updates 5.0 M  
systemd-libs        x86_64 219-57.el7_5.3            updates 402 k  
systemd-sysv        x86_64 219-57.el7_5.3            updates 80 k  
tuned               noarch 2.9.0-1.el7_5.2           updates 244 k  
util-linux          x86_64 2.23.2-52.el7_5.1           updates 2.0 M  
yum-plugin-fastestmirror noarch 1.1.31-46.el7_5           updates 33 k  
yum-utils           noarch 1.1.31-46.el7_5           updates 120 k  
  
Transaction Summary  
-----  
Install 1 Package  
Upgrade 60 Packages  
The updates were successfully applied  
[vagrant@localhost ~]$
```

```
vagrant@stretch:~$
File Edit View Search Terminal Help
Setting up linux-image-4.9.0-8-amd64 (4.9.110-3deb9u5) ...
I: /vmlinuz.old is now a symlink to boot/vmlinuz-4.9.0-7-amd64
I: /initrd.img.old is now a symlink to boot/initrd.img-4.9.0-7-amd64
I: /vmlinuz is now a symlink to boot/vmlinuz-4.9.0-8-amd64
I: /initrd.img is now a symlink to boot/initrd.img-4.9.0-8-amd64
/etc/kernel/postinst.d/initramfs-tools:
update-initramfs: Generating /boot/initrd.img-4.9.0-8-amd64
/etc/kernel/postinst.d/zz-update-grub:
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-4.9.0-8-amd64
Found initrd image: /boot/initrd.img-4.9.0-8-amd64
Found linux image: /boot/vmlinuz-4.9.0-7-amd64
Found initrd image: /boot/initrd.img-4.9.0-7-amd64
Found linux image: /boot/vmlinuz-4.9.0-6-amd64
Found initrd image: /boot/initrd.img-4.9.0-6-amd64
done
Processing triggers for libc-bin (2.24-11+deb9u3) ...
Setting up linux-image-4.9.0-7-amd64 (4.9.110-3+deb9u2) ...
/etc/kernel/postinst.d/initramfs-tools:
update-initramfs: Generating /boot/initrd.img-4.9.0-7-amd64
/etc/kernel/postinst.d/zz-update-grub:
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-4.9.0-8-amd64
Found initrd image: /boot/initrd.img-4.9.0-8-amd64
Found linux image: /boot/vmlinuz-4.9.0-7-amd64
Found initrd image: /boot/initrd.img-4.9.0-7-amd64
Found linux image: /boot/vmlinuz-4.9.0-6-amd64
Found initrd image: /boot/initrd.img-4.9.0-6-amd64
done
Processing triggers for systemd (232-25+deb9u4) ...
Processing triggers for man-db (2.7.6-1-2) ...
Setting up libpython2.7-minimal:amd64 (2.7.13-2+deb9u3) ...
Setting up openssh-client (1:7.4p1-10+deb9u4) ...
Setting up libpython2.7-stdlib:amd64 (2.7.13-2+deb9u3) ...
Setting up python2.7-minimal (2.7.13-2+deb9u3) ...
Setting up libpython3.5-minimal:amd64 (3.5.3-1+deb9u1) ...
Setting up libpython3.5-stdlib:amd64 (3.5.3-1+deb9u1) ...
Setting up python2.7 (2.7.13-2+deb9u3) ...
Setting up python3.5-minimal (3.5.3-1+deb9u1) ...
Setting up linux-image-amd64 (4.9+88+deb9u6) ...
Setting up openssh-sftp-server (1:7.4p1-10+deb9u4) ...
Setting up python3.5 (3.5.3-1+deb9u1) ...
Setting up openssh-server (1:7.4p1-10+deb9u4) ...
All upgrades installed
InstCount=0 DelCount=0 BrokenCount=0
Extracting content from "/var/log/unattended-upgrades/unattended-upgrades-dpkg.log" since "2018-10-01 17:05:16"
vagrant@stretch:~$
```

```
vagrant@localhost:~$ cat /var/log/updates/updates.log
File Edit View Search Terminal Help
* Tue Sep 25 2018 CentOS Sources <bugs@centos.org> - 3.10.0-862.14.4.el7
- Apply debranding changes
- Signed with the new secureboot key

* Fri Sep 21 2018 Rado Vrbovsky <ravrbovsk@redhat.com> [3.10.0-862.14.4.el7]
- [scsi] Revert: lpfc: Fix port initialization failure (Radomir Vrbovsky) [1605235 1584377]
- [scsi] Revert: qla2xxx: Fix NULL pointer access for fcport structure (Radomir Vrbovsky) [1597546 1547714]

* Thu Sep 13 2018 Rado Vrbovsky <ravrbovsk@redhat.com> [3.10.0-862.14.3.el7]
- [fs] exec: Limit arg stack to at most 75 of _STK_LIM (Yauheni Kaliuta) [1625980 1625991] {CVE-2018-14634}
- [fs] exec: account for argv/envp pointers (Yauheni Kaliuta) [1625980 1625991] {CVE-2018-14634}

* Mon Sep 10 2018 Jan Stancek <jstancek@redhat.com> [3.10.0-862.14.2.el7]
- [ulo] Fix possible circular locking dependency (Xiubo Li) [1608677 1560418]
- [scsi] tcmu: Don't pass KERN_ERR to pr_err (Xiubo Li) [1608677 1560418]
- [scsi] tcmu: add module wide block/reset_netlink support (Xiubo Li) [1608677 1560418]
- [scsi] tcmu: simplify nl interface (Xiubo Li) [1608677 1560418]
- [scsi] tcmu: track nl commands (Xiubo Li) [1608677 1560418]
- [scsi] tcmu: delete unused __wait (Xiubo Li) [1608677 1560418]
- [ulo] Fix crash after the device is unregistered (Xiubo Li) [1608677 1560418]
- [ulo] change to use the mutex lock instead of the spin lock (Xiubo Li) [1608677 1560418]
- [ulo] Prevent device destruction while fds are open (Xiubo Li) [1608677 1560418]
- [ulo] Reduce return paths from uio_write() (Xiubo Li) [1608677 1560418]
- [ulo] Fix incorrect memory leak cleanup (Xiubo Li) [1608677 1560418]
- [ulo] add missing error codes (Xiubo Li) [1608677 1560418]
- [ulo] Fix false positive __might_sleep warning splat (Xiubo Li) [1608677 1560418]
- [ulo] Destroy uio_ldr on module exit (Xiubo Li) [1608677 1560418]
- [ulo] don't free irq that was not requested (Xiubo Li) [1608677 1560418]
- [ulo] support memory sizes larger than 32 bits (Xiubo Li) [1608677 1560418]
- [ulo] we cannot mmap unaligned page contents (Xiubo Li) [1608677 1560418]
- [ulo] Pass pointers to virt_to_page(), not integers (Xiubo Li) [1608677 1560418]
- [ulo] Fix memory leak (Xiubo Li) [1608677 1560418]
- [ulo] Request/free irq separate from dev lifecycle (Xiubo Li) [1608677 1560418]
- [ulo] Simplify uio error path by using devres functions (Xiubo Li) [1608677 1560418]

* Wed Aug 22 2018 Rado Vrbovsky <ravrbovsk@redhat.com> [3.10.0-862.14.1.el7]
- [x86] microcode: Allow late microcode loading with SMT disabled (Josh Poimboeuf) [1619622 1614515]
- [infiniband] core: Fix nospec regression (Josh Poimboeuf) [1619624 1616346]
- [x86] microcode/amd: Do not load when running on a hypervisor (Vitaly Kuznetsov) [1618390 1607899]

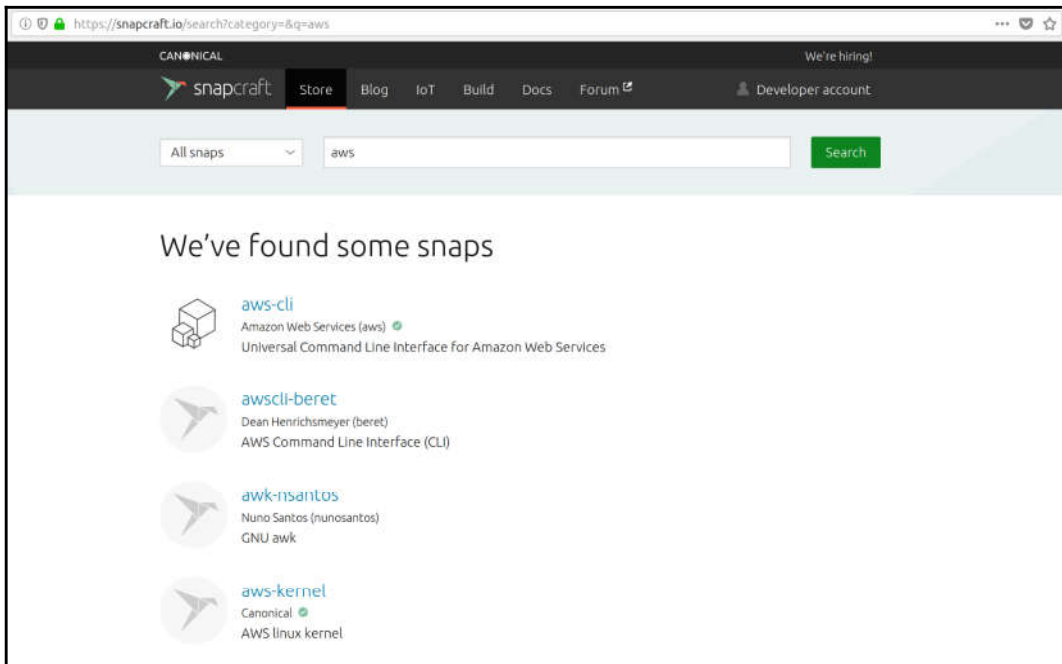
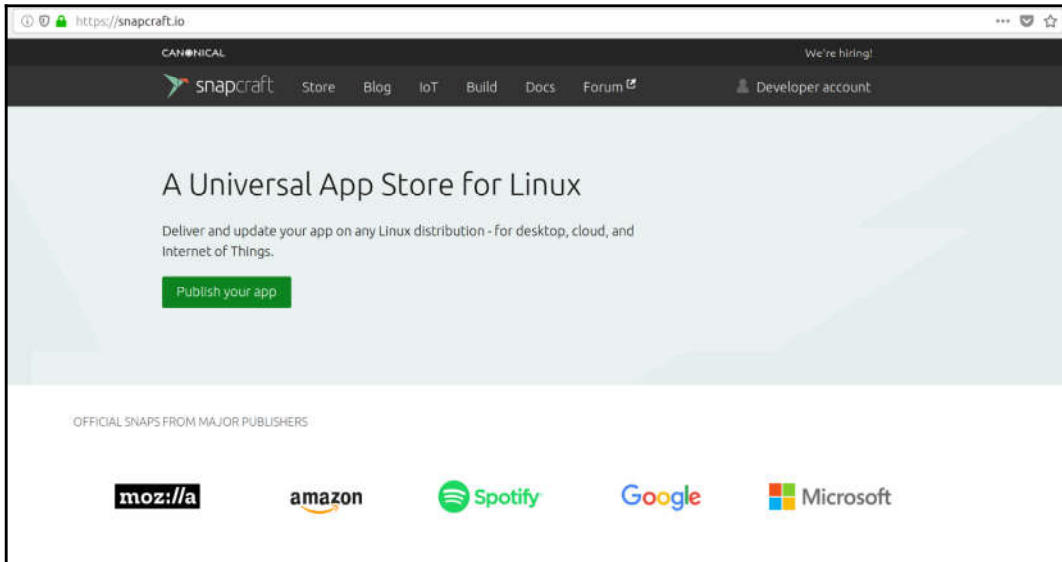
* Sat Aug 18 2018 Rado Vrbovsky <ravrbovsk@redhat.com> [3.10.0-862.13.1.el7]
- [infiniband] ib/ipoib: Fix race condition in neigh creation (Don Duttile) [1616164 1520300]
- [gpu] qxl: hook monitors_config updates into crtc, not encoder (Gerd Hoffmann) [1614349 1544322]
- [gpu] qxl: move qxl_send_monitors_config() (Gerd Hoffmann) [1614349 1544322]
- [gpu] qxl: remove qxl_io_log() (Gerd Hoffmann) [1614349 1544322]
- [kernel] locking: Introduce smp_mb__after_spinlock() (Steve Best) [1613814 1496574]
```



```
vagrant@localhost:~  
File Edit View Search Terminal Help  
* Tue Sep 05 2017 Jan Rybar <jrybar@redhat.com> - 4.87-5  
- LTsock test failure on ppc64le  
- Resolves: rhbz#1459256  
  
* Fri Jan 24 2014 Daniel Mach <dmach@redhat.com> - 4.87-4  
- Mass rebuild 2014-01-24  
  
* Fri Dec 27 2013 Daniel Mach <dmach@redhat.com> - 4.87-3  
- Mass rebuild 2013-12-27  
  
* Thu Feb 14 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 4.87-2  
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_19\_Mass\_Rebuild  
  
* Thu Jan 03 2013 Peter Schiffer <pschiffe@redhat.com> - 4.87-1  
- resolves: #891508  
- updated to 4.87  
  
* Tue Aug 28 2012 Peter Schiffer <pschiffe@redhat.com> - 4.86-4  
- .spec file cleanup  
  
* Thu Jul 19 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 4.86-3  
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_18\_Mass\_Rebuild  
  
* Mon Jun 04 2012 Peter Schiffer <pschiffe@redhat.com> - 4.86-2  
- added support for files on anon_inodefs  
  
* Fri Apr 20 2012 Peter Schiffer <pschiffe@redhat.com> - 4.86-1  
- resolves: #811520  
- update to 4.86  
  
* Fri Jan 13 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 4.85-2  
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_17\_Mass\_Rebuild  
  
* Fri Sep 30 2011 Peter Schiffer <pschiffe@redhat.com> - 4.85-1  
- resolves: #741882  
- update to 4.85  
  
* Tue Feb 08 2011 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 4.84-4  
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_15\_Mass\_Rebuild  
  
* Thu Jan 13 2011 Ville Skyttä <ville.skytta@iki.fi> - 4.84-3  
- Fix man page permissions.  
  
* Wed Sep 29 2010 jkeating - 4.84-2  
- Rebuilt for gcc bug 634757  
:  
|
```

```
vagrant@stretch: ~
File Edit View Search Terminal Help
linux-latest (80+deb9u6) stretch-security; urgency=high
  * Update to 4.9.0-8
-- Salvatore Bonaccorso <carnil@debian.org> Sun, 19 Aug 2018 20:28:09 +0200
linux-latest (80+deb9u5) stretch; urgency=medium
  * Update to 4.9.0-7
-- Ben Hutchings <ben@decadent.org.uk> Thu, 14 Jun 2018 15:07:03 +0100
linux-latest (80+deb9u4) stretch-security; urgency=high
  * Update to 4.9.0-6
-- Yves-Alexis Perez <corsac@debian.org> Thu, 22 Feb 2018 08:32:44 +0100
linux-latest (80+deb9u3) stretch-security; urgency=high
  * Update to 4.9.0-5
-- Salvatore Bonaccorso <carnil@debian.org> Thu, 04 Jan 2018 12:57:17 +0100
linux-latest (80+deb9u2) stretch; urgency=medium
  * Update to 4.9.0-4
-- Ben Hutchings <ben@decadent.org.uk> Tue, 19 Sep 2017 14:51:35 +0100
linux-latest (80+deb9u1) stretch; urgency=medium
  * Revert changes to debug symbol meta-packages (Closes: #866691)
-- Ben Hutchings <ben@decadent.org.uk> Sat, 01 Jul 2017 01:31:49 +0100
linux-latest (80) unstable; urgency=medium
  * Re-introduce xen-linux-system-amd64 *again* as transitional package
  (Closes: #857039)
  * Update to 4.9.0-3
-- Ben Hutchings <ben@decadent.org.uk> Thu, 04 May 2017 16:33:51 +0100
linux-latest (79) unstable; urgency=medium
/tmp/apt-changelog-Hq0jA0/linux-latest.changelog
```

```
vagrant@ubuntu-bionic: ~
File Edit View Search Terminal Help
vagrant@ubuntu-bionic:~$ sudo snap install lxd
Download snap "core" (5548) from channel "stable" 35% 6.01MB/s 9.99s
```





```
vagrant@localhost:usr/local/src/htop-master
File Edit View Search Terminal Help
[![Build Status](https://travis-ci.org/hishamhm/htop.svg?branch=master)](https://travis-ci.org/hishamhm/htop)
[![PayPal donate](https://img.shields.io/badge/paypal-donate-green.svg)](http://hisham.hm/htop/index.php?page=donate)

[htop](http://hisham.hm/htop/)
====

by Hisham Muhammad <hisham@gobolinux.org> (2004 - 2016)

Introduction
-----

This is 'htop', an interactive process viewer.
It requires 'ncurses'. It is developed primarily on Linux,
but we also have code for running under FreeBSD and Mac OS X
(help and testing are wanted for these platforms!)

This software has evolved considerably over the years,
and is reasonably complete, but there is always room for improvement.

Comparison between 'htop' and classic 'top'
-----

* In 'htop' you can scroll the list vertically and horizontally
  to see all processes and full command lines.
* In 'top' you are subject to a delay for each unassigned
  key you press (especially annoying when multi-key escape
  sequences are triggered by accident).
* 'htop' starts faster ('top' seems to collect data for a while
  before displaying anything).
* In 'htop' you don't need to type the process number to
  kill a process, in 'top' you do.
* In 'htop' you don't need to type the process number or
  the priority value to renice a process, in 'top' you do.
* In 'htop' you can kill multiple processes at once.
* 'top' is older, hence, more tested.

Compilation instructions
-----

This program is distributed as a standard autotools-based package.
See the [INSTALL](/INSTALL) file for detailed instructions.

When compiling from a [release tarball](https://hisham.hm/htop/releases/), run:

    ./configure && make

For compiling sources downloaded from the Git repository, run:

    ./autogen.sh && ./configure && make

By default 'make install' will install into '/usr/local', for changing
the path use './configure --prefix=/some/path'.
README
```

```
vagrant@localhost:usr/local/src/htop-master
File Edit View Search Terminal Help
Installation Instructions
*****

Copyright (C) 1994-1996, 1999-2002, 2004-2013 Free Software Foundation,
Inc.

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notice and this notice are preserved. This file is offered as-is,
without warranty of any kind.

Basic Installation
=====

Briefly, the shell commands './configure; make; make install' should
configure, build, and install this package. The following
more-detailed instructions are generic; see the 'README' file for
instructions specific to this package. Some packages provide this
'INSTALL' file but do not implement all of the features documented
below. The lack of an optional feature in a given package is not
necessarily a bug. More recommendations for GNU packages can be found
in *note Makefile Conventions: (standards)Makefile Conventions.

The 'configure' shell script attempts to guess correct values for
various system-dependent variables used during compilation. It uses
those values to create a 'Makefile' in each directory of the package.
It may also create one or more '.h' files containing system-dependent
definitions. Finally, it creates a shell script 'config.status' that
you can run in the future to recreate the current configuration, and a
file 'config.log' containing compiler output (useful mainly for
debugging 'configure').

It can also use an optional file (typically called 'config.cache'
and enabled with '--cache-file=config.cache' or simply '-C') that saves
the results of its tests to speed up reconfiguring. Caching is
disabled by default to prevent problems with accidental use of stale
cache files.

If you need to do unusual things to compile the package, please try
to figure out how 'configure' could check whether to do them, and mail
diffs or instructions to the address given in the 'README' so they can
be considered for the next release. If you are using the cache, and at
some point 'config.cache' contains results you don't want to keep, you
may remove or edit it.

The file 'configure.ac' (or 'configure.in') is used to create
'configure' by a program called 'autoconf'. You need 'configure.ac' if
you want to change it or regenerate 'configure' using a newer version
of 'autoconf'.

The simplest way to compile this package is:

1. 'cd' to the directory containing the package's source code and type
   './configure' to configure the package for your system.

INSTALL
```

```
vagrant@localhost: /usr/local/src/htop-master
File Edit View Search Terminal Help
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT InfoScreen.o -MD -MP -MF $depbase.Tpo -c -o
InfoScreen.o InfoScreen.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo XAlloc.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT XAlloc.o -MD -MP -MF $depbase.Tpo -c -o XAl
loc.o XAlloc.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/Platform.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/Platform.o -MD -MP -MF $depbase.Tpo -c
-o linux/Platform.o linux/Platform.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/IOPriorityPanel.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/IOPriorityPanel.o -MD -MP -MF $depbase
.Tpo -c -o linux/IOPriorityPanel.o linux/IOPriorityPanel.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/IOPriority.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/IOPriority.o -MD -MP -MF $depbase.Tpo
-c -o linux/IOPriority.o linux/IOPriority.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/LinuxProcess.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/LinuxProcess.o -MD -MP -MF $depbase.Tp
o -c -o linux/LinuxProcess.o linux/LinuxProcess.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/LinuxProcessList.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/LinuxProcessList.o -MD -MP -MF $depbas
e.Tpo -c -o linux/LinuxProcessList.o linux/LinuxProcessList.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/LinuxCRT.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/LinuxCRT.o -MD -MP -MF $depbase.Tpo -c
-o linux/LinuxCRT.o linux/LinuxCRT.c &&
mv -f $depbase.Tpo $depbase.Po
depbase='echo linux/Battery.o | sed 's|[^/]*|.deps/&;s|\.o$||'`;
gcc -DHAVE_CONFIG_H -I. -DNDEBUG -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCON
FDIR="/usr/local/etc/" -I"/linux" -rdynamic -g -O2 -MT linux/Battery.o -MD -MP -MF $depbase.Tpo -c
-o linux/Battery.o linux/Battery.c &&
mv -f $depbase.Tpo $depbase.Po
gcc -pedantic -Wall -Wextra -std=c99 -D_XOPEN_SOURCE_EXTENDED -DSYSCONFDIR="/usr/local/etc/" -I"/li
nux" -rdynamic -g -O2 -o htop AvailableMetersPanel.o CategoriesPanel.o CheckItem.o ClockMeter.o
ColorsPanel.o ColumnsPanel.o CPUMeter.o CRT.o MainPanel.o DisplayOptionsPanel.o FunctionBar.o Hashtab
le.o Header.o htop.o ListItem.o LoadAverageMeter.o MemoryMeter.o Meter.o MetersPanel.o Object.o Panel
.o BatteryMeter.o Process.o ProcessList.o RichString.o ScreenManager.o Settings.o SignalsPanel.o Stri
ngUtils.o SwapMeter.o TasksMeter.o UptimeMeter.o TraceScreen.o UsersTable.o Vector.o AvailableColumns
Panel.o AffinityPanel.o HostnameMeter.o OpenFilesScreen.o Affinity.o IncSet.o Action.o EnvScreen.o In
foScreen.o XAlloc.o linux/Platform.o linux/IOPriorityPanel.o linux/IOPriority.o linux/LinuxProcess.o
linux/LinuxProcessList.o linux/LinuxCRT.o linux/Battery.o -lncursesw -linfo -lm
make[1]: Leaving directory '/usr/local/src/htop-master'
[vagrant@localhost htop-master]$
```

# Chapter 07: Monitoring and Logging

```
vagrant@centos1--
File Edit View Search Terminal Tabs Help
vagrant@centos1-- adam@adam-XPS-13-9360: ~/Vagrant/Chapter Seven
-- Logs begin at Tue 2018-10-09 16:55:02 UTC, end at Tue 2018-10-09 18:47:43 UTC. --
Oct 09 16:55:02 localhost.localdomain systemd-journal[84]: Runtime journal is using 4.0M (max allowed 24.3M, trying to leave 36.5M free of 239.8M available) -current li
Oct 09 16:55:02 localhost.localdomain kernel: Initializing cgroup subsys cpuset
Oct 09 16:55:02 localhost.localdomain kernel: Initializing cgroup subsys cpu
Oct 09 16:55:02 localhost.localdomain kernel: Linux version 3.10.0-862.2.3.el7.x86_64 (builder@kbuilder.dev.centos.org) (gcc version 4.8.5 20150623 (Red Hat 4.8.5-28) ) (
Oct 09 16:55:02 localhost.localdomain kernel: Command line: BOOT_IMAGE=/vmlinuz-3.10.0-862.2.3.el7.x86_64 root=/dev/napper/VolGroup00-LsgVol00 ro no_timer_check console
Oct 09 16:55:02 localhost.localdomain kernel: e820: BIOS-provided physical RAM map:
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x0000000000000000-0x0000000009f0bfff] usable
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x0000000009f0c000-0x0000000009ffff] reserved
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x0000000009ff0000-0x0000000009ffff] reserved
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x0000000010000000-0x000000001fffffff] usable
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x000000001ffff000-0x000000001fffffff] ACPI data
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x00000000fe000000-0x00000000fe00ffff] reserved
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x00000000fffc0000-0x00000000fffcffff] reserved
Oct 09 16:55:02 localhost.localdomain kernel: BIOS-e820: [mem 0x00000000fffc0000-0x00000000fffcffff] reserved
Oct 09 16:55:02 localhost.localdomain kernel: NX (Execute Disable) protection: active
Oct 09 16:55:02 localhost.localdomain kernel: SMBIOS 2.5 present.
Oct 09 16:55:02 localhost.localdomain kernel: DMI: innotek GmbH VirtualBox/VirtualBox, BIOS VirtualBox 12/01/2006
Oct 09 16:55:02 localhost.localdomain kernel: Hypervisor detected: KVM
Oct 09 16:55:02 localhost.localdomain kernel: e820: update [mem 0x00000000-0x00000fff] usable ==> reserved
Oct 09 16:55:02 localhost.localdomain kernel: e820: remove [mem 0x00000000-0x0000ffff] usable
Oct 09 16:55:02 localhost.localdomain kernel: e820: last_pfn = 0x1ffff max_arch_pfn = 0x400000000
Oct 09 16:55:02 localhost.localdomain kernel: MTRR default type: uncachable
Oct 09 16:55:02 localhost.localdomain kernel: MTRR variable ranges disabled:
Oct 09 16:55:02 localhost.localdomain kernel: PAT configuration [0-7]: WB WC UC- UC WB WP UC- UC
Oct 09 16:55:02 localhost.localdomain kernel: CPU MTRRs all blank - virtualized system.
Oct 09 16:55:02 localhost.localdomain kernel: found SMP NP-table at [mem 0x0009ffff-0x0009ffff] mapped at [ffffffffff200ff0]
Oct 09 16:55:02 localhost.localdomain kernel: Base memory trampoline at [ffff9b52c0099000] 99000 size 24576
Oct 09 16:55:02 localhost.localdomain kernel: BRK [0x0682e000, 0x0682e000] PGTABLE
Oct 09 16:55:02 localhost.localdomain kernel: BRK [0x0682f000, 0x0682f000] PGTABLE
Oct 09 16:55:02 localhost.localdomain kernel: BRK [0x06830000, 0x06830000] PGTABLE
Oct 09 16:55:02 localhost.localdomain kernel: BRK [0x06831000, 0x06831000] PGTABLE
Oct 09 16:55:02 localhost.localdomain kernel: BRK [0x06832000, 0x06832000] PGTABLE
Oct 09 16:55:02 localhost.localdomain kernel: MAMDISK: [mem 0x1e21e000-0x1f10bfff]
Oct 09 16:55:02 localhost.localdomain kernel: Early table checksum verification disabled
Oct 09 16:55:02 localhost.localdomain kernel: ACPI: XSDP 0000000000000000 00024 (v02 VBOX )
Oct 09 16:55:02 localhost.localdomain kernel: ACPI: XSDT 000000001ffff030 0003C (v01 VBOX VBOXXSDT 00000001 ASL 00000061)
Oct 09 16:55:02 localhost.localdomain kernel: ACPI: FACP 000000001ffff0f0 000f4 (v04 VBOX VBOXFACP 00000001 ASL 00000061)
Oct 09 16:55:02 localhost.localdomain kernel: ACPI: DSDT 000000001ffff470 021ff (v02 VBOX VBOXDSDT 00000002 INTL 20180105)
Oct 09 16:55:09 localhost.localdomain kernel: ACPI: FACS 000000001ffff200 00040
Oct 09 16:55:02 localhost.localdomain kernel: ACPI: APIC 000000001ffff240 00034 (v02 VBOX VBOXAPIC 00000001 ASL 00000061)
lines 1-42
```

```
vagrant@centos2--
File Edit View Search Terminal Tabs Help
vagrant@centos1-- vagrant@centos2--
[vagrant@centos2 ~]$ sudo tcpdump port 514 -i eth1
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth1, link-type EN10MB (Ethernet), capture size 262144 bytes
18:35:48.463598 IP 192.168.33.10.48278 > centos2.syslog: SYSLOG syslog.info, length: 64
```

```
vagrant@centos2--
File Edit View Search Terminal Tabs Help
vagrant@centos1-- vagrant@centos2--
[vagrant@centos2 ~]$ sudo tcpdump port 514 -i eth1
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth1, link-type EN10MB (Ethernet), capture size 262144 bytes
18:39:09.481134 IP 192.168.33.10.36858 > centos2.shell: Flags [P.], seq 2623585401:2623585469, ack 1572365378, win 457, options [nop,nop,TS val 310222 ecr 233742], leng
th 68
18:39:09.481228 IP centos2.shell > 192.168.33.10.36858: Flags [.], ack 68, win 470, options [nop,nop,TS val 267937 ecr 310222], length 8
^C
2 packets captured
2 packets received by filter
0 packets dropped by kernel
[vagrant@centos2 ~]$
```



```
vagrant@debian2:~$ nano /etc/systemd/system/systemd-journal-remote.service.d/override.conf
GNU nano 2.7.4 File: /etc/systemd/system/systemd-journal-remote.service.d/override.conf#9a9655f9843dc20
[Service]
ExecStart=
ExecStart=/lib/systemd/systemd-journal-remote --listen-http=3 --output=/var/log/journal/remote
```

```
vagrant@debian2:~$ sudo journalctl -D /var/log/journal/remote/ -f
-- Logs begin at Thu 2018-10-11 19:33:03 GMT. --
Oct 11 20:24:41 debian1 systemd[1]: Started Journal Remote Upload Service.
Oct 11 20:24:41 debian1 sudo[2078]: pam_unix(sudo:session): session closed for user root
Oct 11 20:24:48 debian1 sudo[2088]: vagrant : TTY=pts/0 ; PWD=/home/vagrant ; USER=root ; COMMAND=/bin/systemctl restart systemd-journal-upload
Oct 11 20:24:48 debian1 sudo[2088]: pam_unix(sudo:session): session opened for user root by vagrant(uid=0)
Oct 11 20:24:48 debian1 systemd-journal-upload[2085]: Received SIGTERM from PID 1 (systemd).
Oct 11 20:24:48 debian1 systemd[1]: Stopping Journal Remote Upload Service...
Oct 11 20:24:48 debian1 systemd[1]: Stopped Journal Remote Upload Service.
Oct 11 20:24:48 debian1 systemd[1]: Started Journal Remote Upload Service.
Oct 11 20:24:48 debian1 sudo[2088]: pam_unix(sudo:session): session closed for user root
Oct 11 20:24:53 debian1 vagrant[2095]: Debian1 Logs, on Debian2.
```

```

vagrant@centos1:~$ top
File Edit View Search Terminal Help
top - 17:09:46 up 8 min, 1 user, load average: 0.00, 0.03, 0.03
Tasks: 90 total, 1 running, 89 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni,100.0 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 499428 total, 160020 free, 64900 used, 274508 buff/cache
KiB Swap: 1572860 total, 1572860 free, 0 used, 394420 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 3367 vagrant  20   0 154904  2696  1280  S   0.7   0.5   0:00.15 sshd
3429 root      20   0     0     0     0  S   0.3   0.0   0:00.21 kworker/0:0
   1 root      20   0 128060  6648  4096  S   0.0   1.3   0:01.01 systemd
   2 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kthreadd
   3 root      20   0     0     0     0  S   0.0   0.0   0:00.06 ksoftirqd/0
   5 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kworker/0:0H
   6 root      20   0     0     0     0  S   0.0   0.0   0:00.05 kworker/u2:0
   7 root      rt    0     0     0     0  S   0.0   0.0   0:00.00 migration/0
   8 root      20   0     0     0     0  S   0.0   0.0   0:00.00 rcu_bh
   9 root      20   0     0     0     0  S   0.0   0.0   0:00.10 rcu_sched
  10 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 lru-add-drain
  11 root      rt    0     0     0     0  S   0.0   0.0   0:00.00 watchdog/0
  13 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kdevtmpfs
  14 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 netns
  15 root      20   0     0     0     0  S   0.0   0.0   0:00.00 khungtaskd
  16 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 writeback
  17 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kintegrityd
  18 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 bioset
  19 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kblockd
  20 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 md
  21 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 edac-poller
  22 root      20   0     0     0     0  S   0.0   0.0   0:00.43 kworker/0:1
  30 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kswapd0
  31 root      25   5     0     0     0  S   0.0   0.0   0:00.00 ksm
  32 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 crypto
  40 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kthrotld
  41 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kmpath_rdacd
  42 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kaluad
  43 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kpsmouse
  44 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 ipv6_addrconf
  58 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 deferwq
  90 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kauditd
  91 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kworker/0:3
232 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 ata_sff
235 root      20   0     0     0     0  S   0.0   0.0   0:00.00 scsi_eh_0
237 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 scsi_tmf_0
238 root      20   0     0     0     0  S   0.0   0.0   0:00.00 scsi_eh_1
240 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 scsi_tmf_1
243 root      20   0     0     0     0  S   0.0   0.0   0:00.00 kworker/u2:3
309 root      0 -20     0     0     0  S   0.0   0.0   0:00.00 kdmflush

```

```

KiB Mem : 20.6/499428 [|||||||||||||||||]
KiB Swap: 0.0/1572860 [ ]

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3453	vagrant	20	0	61668	2196	1548	R	0.7	0.4	0:00.61	top
1	root	20	0	128060	6648	4096	S	0.0	1.3	0:01.05	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.10	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
6	root	20	0	0	0	0	S	0.0	0.0	0:00.05	kworker/u2:0
7	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	20	0	0	0	0	S	0.0	0.0	0:00.22	rcu_sched
10	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	lru-add-drain
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.02	watchdog/0
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtmpfs
14	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	netns
15	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungtaskd
16	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	writeback
17	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kintegrityd
18	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	bioaset
19	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kblockd
20	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	md
21	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	edac-poller
30	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kswapd0
31	root	25	5	0	0	0	S	0.0	0.0	0:00.00	ksmd
32	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	crypto
40	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kthrotld
41	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kmpath_rdacd
42	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kaluad
43	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kpsmoused

```
[vagrant@centos1 ~]$ free -ht
              total          used          free        shared  buff/cache       available
Mem:           487M           62M          291M           4.5M           134M          386M
Swap:          1.5G             0B           1.5G
Total:          2.0G           62M          1.8G
```

```

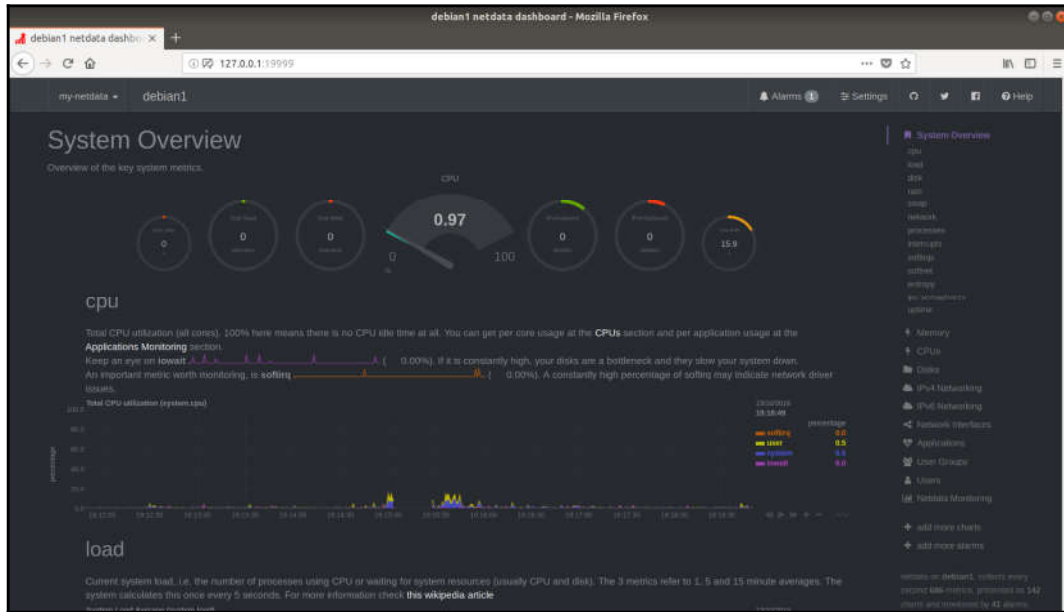
vagrant@centos1:~$ top
top - 07:53:00 up 10:00, 1 user, load averages: 0.12 0.10 0.06
total 1000k
  PID USER      PRI  NI  VIRT     RES   SHR  S CPU% MEM%   TTY Cmd
  ---
 1 root      20    0 153k  628  896 S  0.0 1.3 0:00.93 /usr/lib/systemd/systemd --switched-root --system --deserialize 22
395 root      20    0 3098k 2556 228 S  0.0 0.5 0:00.23 /usr/lib/systemd/systemd-journald
412 root      20    0 180k  492  548 S  0.0 0.0 0:00.00 /usr/sbin/lnetd -F
426 root      20    0 4704k 4676 880 S  0.0 0.9 0:00.18 /usr/lib/systemd/systemd-udev
526 root      16    0 1508  900  492 S  0.0 0.2 0:00.00 /sbin/auditd
525 root      16    0 55508 980  492 S  0.0 0.2 0:00.05 /sbin/auditd
568 dbus      20    0 66424 2580 884 S  0.0 0.5 0:00.00 /usr/bin/dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation
552 dbus      20    0 66424 2580 884 S  0.0 0.5 0:00.18 /usr/bin/dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation
556 chronyd   20    0 114k  1856 396 S  0.0 0.4 0:00.07 /usr/sbin/chronyd
590 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
591 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.01 /usr/lib/polkit-1/polkitd --no-debug
582 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
593 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
600 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
565 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:01.27 /usr/lib/polkit-1/polkitd --no-debug
567 root      20    0 20376 1752 444 S  0.0 0.4 0:00.05 /usr/lib/systemd/systemd-logind
577 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
578 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
579 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
580 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
581 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
570 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
571 rps        20    0 60220 1860 520 S  0.0 0.2 0:00.01 /sbin/rpcbind -w
597 root      20    0 76100 1680 852 S  0.0 0.3 0:00.27 /usr/sbin/crond -n
686 root      20    0 8904  860  728 S  0.0 0.2 0:00.01 /sbin/agetty --noclear tty1 linux
885 root      20    0 110k  4324 300 S  0.0 0.9 0:00.02 /usr/sbin/sshd -D -u0
1118 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
1119 root      20    0 462k 1824 832 S  0.0 3.4 0:00.18 /usr/bin/python -Es /usr/sbin/tuned -l -P
1120 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
1121 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
1134 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
886 root      20    0 462k 1824 832 S  0.0 3.4 0:00.33 /usr/bin/python -Es /usr/sbin/tuned -l -P
893 root      20    0 207k  3932 668 S  0.0 0.8 0:00.10 /usr/sbin/rsyslogd -n
894 root      20    0 207k  3932 668 S  0.0 0.8 0:00.01 /usr/sbin/rsyslogd -n
890 root      20    0 207k  3932 668 S  0.0 0.8 0:00.12 /usr/sbin/rsyslogd -n
1106 root      20    0 80620 2080 868 S  0.0 0.4 0:00.02 /usr/libexec/postfix/master -w

```

```

vagrant@centos1:~$ top
top - 07:53:00 up 10:00, 1 user, load averages: 0.02 0.06 0.05
total 1000k
  PID USER      PRI  NI  VIRT     RES   SHR  S CPU% MEM%   TTY Cmd
  ---
 1 root      20    0 153k  628  896 S  0.0 1.3 0:00.95 /usr/lib/systemd/systemd --switched-root --system --deserialize 22
2796 root      20    0 430k  9444 836 S  0.0 1.9 0:00.09 /usr/sbin/NetworkManager --no-daemon
2815 root      20    0 104k  452  456 S  0.0 1.1 0:00.01 /usr/sbin/dhclient -d -q -sf /usr/libexec/nm-dhcp-helper -pf /var/run/dhclient-eth0.pid -lf /var/lib/NetworkManager/NetworkManager.conf
2880 root      20    0 430k  9444 836 S  0.0 1.9 0:00.00 /usr/sbin/NetworkManager --no-daemon
2798 root      20    0 430k  9444 836 S  0.0 1.9 0:00.03 /usr/sbin/NetworkManager --no-daemon
1106 postfix    20    0 80792 4076 1076 S  0.0 0.8 0:00.01 /usr/libexec/postfix/master -w
1117 postfix    20    0 80792 4076 1076 S  0.0 0.8 0:00.01 /usr/libexec/postfix/master -w
1116 postfix    20    0 80724 4060 856 S  0.0 0.8 0:00.01 /usr/libexec/postfix/master -w
890 root      20    0 207k  3932 668 S  0.0 0.8 0:00.13 /usr/sbin/rsyslogd -n
894 root      20    0 207k  3932 668 S  0.0 0.8 0:00.01 /usr/sbin/rsyslogd -n
893 root      20    0 207k  3932 668 S  0.0 0.8 0:00.11 /usr/sbin/rsyslogd -n
886 root      20    0 462k 1824 832 S  0.0 3.4 0:00.36 /usr/bin/python -Es /usr/sbin/tuned -l -P
1134 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
1120 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
1119 root      20    0 462k 1824 832 S  0.0 3.4 0:00.19 /usr/bin/python -Es /usr/sbin/tuned -l -P
1118 root      20    0 462k 1824 832 S  0.0 3.4 0:00.00 /usr/bin/python -Es /usr/sbin/tuned -l -P
885 root      20    0 110k  4324 300 S  0.0 0.9 0:00.02 /usr/sbin/sshd -D -u0
3418 root      20    0 150k  5520 200 S  0.0 1.1 0:00.17 /usr/sbin/sshd: vagrant [priv]
3421 vagrant    20    0 150k  5596 200 S  0.0 0.5 0:00.18 /usr/sbin/sshd: vagrant@pts/0
3422 vagrant    20    0 13776 2592 668 S  0.0 0.5 0:00.05 /usr/sbin/sshd: vagrant@pts/0
3645 vagrant    20    0 22612 2552 524 R  0.7 0.5 0:00.72 /usr/sbin/sshd: vagrant@pts/0
686 root      20    0 8904  860  728 S  0.0 0.2 0:00.01 /sbin/agetty --noclear tty1 linux
597 root      20    0 76100 1680 852 S  0.0 0.3 0:00.27 /usr/sbin/crond -n
571 rps        20    0 60220 1860 520 S  0.0 0.2 0:00.01 /sbin/rpcbind -w
582 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
580 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
579 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
578 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
577 root      20    0 80896 1216 768 S  0.0 0.2 0:00.00 /usr/sbin/gssproxy -D
567 root      20    0 20376 1752 444 S  0.0 0.4 0:00.05 /usr/lib/systemd/systemd-logind
565 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:01.27 /usr/lib/polkit-1/polkitd --no-debug
600 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
593 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
592 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
591 polkitd    20    0 520k  9240 848 S  0.0 1.9 0:00.01 /usr/lib/polkit-1/polkitd --no-debug

```



```

vagrant@centos1:~$ top
top - centos1 2018/10/13 18:51:10
PRC  sys  0.27s  user  1.34s  #proc  88  #trun  2  #tslpi  106  #tslpu  0  #zombie  0  clones  4769  currf  2.90GHz  curscal  7%
CPU  sys  0%    user  0%    irq    0%    idle  100%  wolt   0%    csw   193947  intr  185120  vmbal  0.0M  hptot  0.0M  nuncpu  1
CPL  avgl  0.82  avgs  0.87  avg15  0.86  cache  313.0M  buff  0.0M  slab  42.0M  shmem  3.2M  shrss  0.0M  vncon  282.4M  vnlin  1.7G  swout  323
MEM  tot  487.7M  free  71.8M  read  8299  write  7498  KIB/r  55  KIB/w  85  MBr/s  0.1  MBw/s  0.1  avq  17.46  avto  0.37 ms
LWM  p00-LogVol08  busy  0%    read  109  write  323  KIB/r  20  KIB/w  4  MBr/s  0.0  MBw/s  0.0  avq  3.92  avto  0.54 ms
DSK  sda  busy  0%    read  8887  write  7445  KIB/r  53  KIB/w  86  MBr/s  0.1  MBw/s  0.1  avq  16.24  avto  0.37 ms
NET  transport  tcpi  21181  tcpo  17887  udpi  901  udpo  962  tcpao  701  tcppo  6  tcprs  157  tcpte  0  udpte  0
NET  network  tpi  22898  tpo  18977  tpfw  0  dtlv  22091  i  i  i  i  icmpt  7  icnpo  32
NET  eth0  0%    pckl  38213  pcko  19924  sp 1000 Mbps  sl  71 Kbps  so  2 Kbps  erri  0  erro  0  drpi  0  drpo  0
NET  eth1  0%    pckl  0  pcko  20  sp 1000 Mbps  sl  0 Kbps  so  0 Kbps  erri  0  erro  0  drpi  0  drpo  0

* * * * *
PID  SYS%CPU  USR%CPU  VGRON  RGRON  RUID  EUID  ST  EXC  THR  S  CPUBR  CPU  CHD
565  0.81%    0.46%    526.0M  5340K  polklt  polklt  N-  -  0  S  0%  0%  polklt  1/4
1    1.09%    0.08%    125.1M  5508K  root    root    N-  -  1  S  0%  0%  systemd  1
886  0.89%    0.18%    462.5M  12816K  root    root    N-  -  5  S  0%  0%  tuned
341  0.77%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  xfsalld/dn-0
426  0.66%    0.04%    47040K  2620K  root    root    N-  -  1  S  0%  0%  systemd-udev
597  0.61%    0.01%    26132K  1412K  root    root    N-  -  1  S  0%  0%  cron
4093 0.50%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kworker/0:2
890  0.41%    0.07%    207.3M  2908K  root    root    N-  -  3  S  0%  0%  rsyslogd
4177 0.34%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kworker/0:1
395  0.29%    0.02%    34980K  2172K  root    root    N-  -  1  S  0%  0%  systemd-journ
9    0.13%    0.17%    0K      0K      root    root    N-  -  1  R  0%  0%  rcu_sched
2796 0.15%    0.08%    439.5M  3864K  root    root    N-  -  3  S  0%  0%  NetworkManager
552  0.13%    0.18%    66424K  1792K  dbus    dbus    N-  -  2  S  0%  0%  dbus-daemon
4153 0.19%    0.00%    151.2M  2304K  vagrant  vagrant  N-  -  1  S  0%  0%  sshd
4150 0.17%    0.00%    151.0M  2232K  root    root    N-  -  1  S  0%  0%  sshd
556  0.17%    0.00%    115.0M  1248K  chrony   chrony   N-  -  1  S  0%  0%  chronyd
3    0.16%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  ksoftirqd/0
23   0.13%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kworker/0:1
242  0.13%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kworker/0:2
30   0.12%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kswapd0
567  0.10%    0.00%    26612K  1556K  root    root    N-  -  1  S  0%  0%  systemd-logind
4154 0.07%    0.02%    15776K  2132K  vagrant  vagrant  N-  -  1  S  0%  0%  bash
1106 0.03%    0.03%    89620K  1516K  root    root    N-  -  1  S  0%  0%  master
11   0.00%    0.06%    0K      0K      root    root    N-  -  1  S  0%  0%  watchdog/0
525  0.05%    0.00%    55508K  904K   root    root    N-  -  2  S  0%  0%  auditd
4749 0.05%    0.00%    0K      0K      root    root    N-  -  1  S  0%  0%  kworker/0:0
4768 0.03%    0.00%    23476K  2132K  vagrant  vagrant  N-  -  1  R  0%  0%  atop

```

```

vagrant@centos1:~$ top
top - centos1 2018/10/13 18:57:10
-----
PRC  sys 0.06s user 0.00s #proc 89 #trun 2 #tslpi 107 #tslpu 0 #zombie 0 clones 0 curf 2.90GHz no_prowackl
CPU  sys 0% user 0% irq 0% idle 100% wait 0% csw 329 intr 534 steal 0% guest 0%
MEM  tot 487.7M free 65.0M cache 314.1M buff 0.0M slab 42.2M shmem 3.2M shrss 0.0M vmbal 0.0M hptot 0.0M hpuse 0.0M
SNP  tot 1.5G free 1.5G
NET  transport tcpl 3 tcpo 3 udpl 0 udpo 0 tcpao 0 tcppo 0 tcprs 0 vncon 287.3M vnlm 1.7G
NET  network tpci 3 tpo 3 ipfw 0 delv 3
NET  eth0 0% pckl 3 pcko 3 sp 1000 Mbps sl 0 Kbps so 1 Kbps errl 0 erro 0 drpl 0 drpo 0

PID  SYSCPU  USRCPU  VCRON  RGRON  RUID  EUID  ST  EXC  THR  S  CPUNR  CPU  CHD  I/4
4860  0.03s  0.00s  2360K  1500K  vagrant  --  -  1  R  0  0%  atop
9  0.01s  0.00s  0K  0K  root  --  -  1  R  0  0%  rcu_sched
341  0.01s  0.00s  0K  0K  root  --  -  1  S  0  0%  xfsalld/dn-0
4835  0.01s  0.00s  0K  0K  root  --  -  1  S  0  0%  kworker/0:2

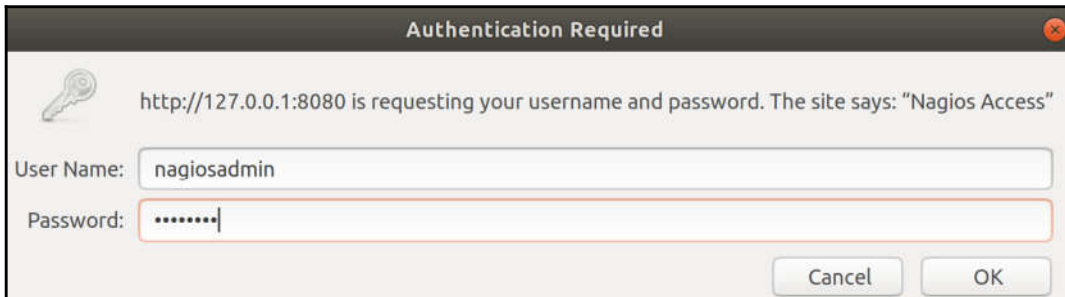
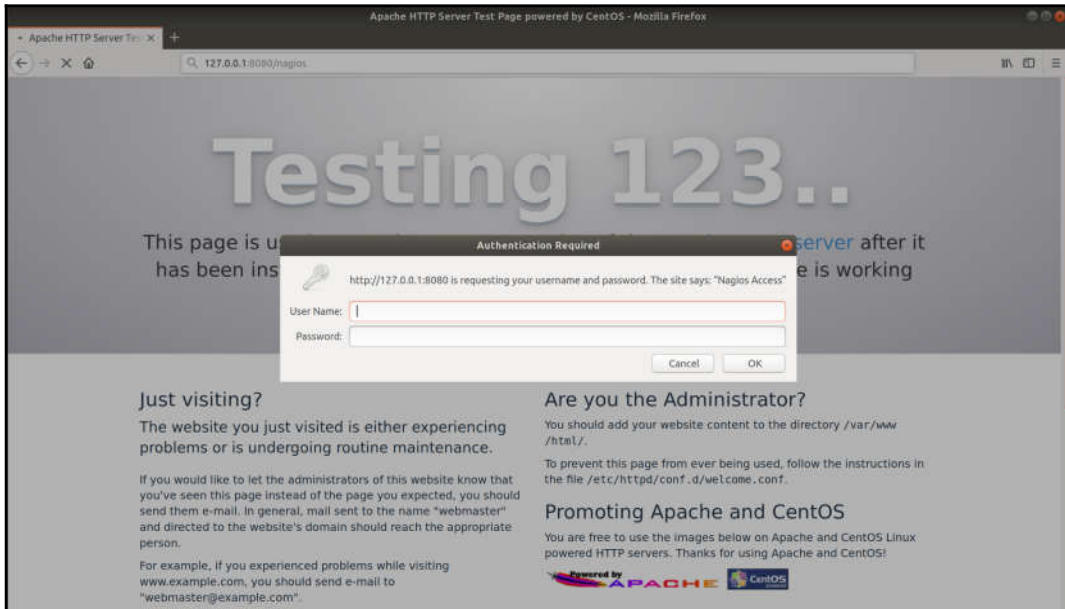
```

```

vagrant@centos1:~$ top
top - centos1 2018/10/13 18:56:14
-----
PRC  sys 0.62s user 1.51s #proc 92 #trun 4 #tslpi 108 #tslpu 0 #zombie 0 clones 4872 1h24m44s elapsed
CPU  sys 0% user 0% irq 0% idle 100% wait 0% csw 204985 intr 195370 steal 0% guest 0% curf 2.90GHz curscal 7%
MEM  tot 487.7M free 67.2M cache 313.8M buff 0.0M slab 42.1M shmem 3.2M shrss 0.0M vmbal 0.0M hptot 0.0M hpuse 0.0M
SNP  tot 1.5G free 1.5G
PRG  scan 187051 steal 183000 stall 1008
LWM  p00-LogVol00 busy 0% read 8341 write 7557 Kib/r 55 Kib/w 84 MBr/s 0.1 MBw/s 0.1 avq 17.18 avio 0.38 ms
LWM  p00-LogVol01 busy 0% read 117 write 323 Kib/r 19 Kib/w 4 MBr/s 0.0 MBw/s 0.0 avq 3.95 avio 0.53 ms
DSK  sda busy 0% read 8930 write 7502 Kib/r 52 Kib/w 85 MBr/s 0.1 MBw/s 0.1 avq 15.96 avio 0.38 ms
NET  transport tcpl 21588 tcpo 18114 udpl 903 udpo 904 tcpao 701 tcppo 0 tcprs 157 tcpte 0 udple 0
NET  network tpci 22587 tpo 19286 ipfw 0 delv 22580
NET  eth0 0% pckl 30623 pcko 19254 sp 1000 Mbps sl 0 Kbps so 2 Kbps errl 0 erro 0 drpl 0 drpo 0
NET  eth1 0% pckl 8 pcko 20 sp 1000 Mbps sl 0 Kbps so 0 Kbps errl 0 erro 0 drpl 0 drpo 0

PID  SYSCPU  USRCPU  VCRON  RGRON  RDSK  WRDSK  RUID  EUID  ST  EXC  THR  S  CPUNR  CPU  CHD  I/4
565  0.00s  0.51s  5235M  6076K  7112K  0K  polkitd  polkitd  N  -  6  S  0  0%  polkitd
1  1.14s  0.10s  125.1M  5548K  132.2M  152.6M  root  root  N  -  1  S  0  0%  systemd
886  0.94s  0.19s  462.5M  12816K  8128K  16K  root  root  N  -  5  S  0  0%  tuned
341  0.85s  0.00s  0K  0K  208K  0K  root  root  N  -  1  S  0  0%  xfsalld/dn-0
426  0.69s  0.04s  47040K  2628K  10452K  0K  root  root  N  -  1  S  0  0%  systemd-udev
507  0.61s  0.01s  26132K  1412K  4068K  4K  root  root  N  -  1  S  0  0%  cron
890  0.45s  0.07s  207.3M  2916K  1540K  296K  root  root  N  -  3  S  0  0%  rsyslogd
4153  0.34s  0.00s  151.3M  2304K  1376K  0K  vagrant  vagrant  N  -  1  S  0  0%  sshd
4177  0.34s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kworker/0:1
395  0.30s  0.02s  34900K  2216K  1400K  0K  root  root  N  -  1  R  0  0%  systemd-journ
9  0.13s  0.17s  0K  0K  0K  0K  root  root  N  -  1  R  0  0%  rcu_sched
4749  0.27s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kworker/0:0
552  0.14s  0.12s  66468K  1888K  1328K  0K  dbus  dbus  N  -  2  S  0  0%  dbus-daemon
2796  0.10s  0.00s  419.3M  3084K  2712K  12K  root  root  N  -  3  S  0  0%  NetworkManager
4154  0.13s  0.09s  15904K  2440K  282.0M  454.0M  vagrant  vagrant  N  -  1  S  0  0%  bash
4150  0.17s  0.00s  151.0M  2232K  0K  0K  root  root  N  -  1  S  0  0%  sshd
556  0.17s  0.00s  115.0M  1240K  724K  4K  chrony  chrony  N  -  1  S  0  0%  chronyd
3  0.16s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  ksoftirqd/0
23  0.13s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kworker/u2:1
242  0.13s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kworker/u2:2
30  0.12s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kswapd0
567  0.10s  0.00s  26612K  1556K  1288K  0K  root  root  N  -  1  S  0  0%  systemd-logind
1896  0.08s  0.03s  89620K  1516K  128K  0K  root  root  N  -  1  S  0  0%  naster
525  0.06s  0.00s  55508K  984K  180K  390K  root  root  N  -  2  S  0  0%  auditd
11  0.00s  0.06s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  watchdog/0
4864  0.05s  0.00s  23476K  7112K  4K  4K  root  root  N  -  1  R  0  0%  atop
4835  0.05s  0.00s  0K  0K  0K  0K  root  root  N  -  1  S  0  0%  kworker/0:2

```



Nagios Core on 127.0.0.1 - Mozilla Firefox

Nagios Core on 127.0.0.1 X

127.0.0.1:8080/nagios/

# Nagios® Core™

✓ Daemon running with PID 6824

## Nagios® Core™ Version 4.3.4

August 24, 2017  
Check for updates

**Nagios XI**

Easy Configuration  
Advanced Reporting

[Download](#)

**Nagios Log Server**

Monitor and analyze logs from anywhere

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**Nagios Network Analyzer**

Real-time netflow and bandwidth analysis

[Download](#)

### Get Started

- Start monitoring your infrastructure
- Change the look and feel of Nagios
- Extend Nagios with hundreds of addons
- Get support
- Get training
- Get certified

### Quick Links

- Nagios Library (tutorials and docs)
- Nagios Labs (development blog)
- Nagios Exchange (plugins and addons)
- Nagios Support (tech support)
- Nagios.com (company)
- Nagios.org (project)

### Latest News

- Nagios Core Selected as SourceForge "Project of the Week"
- NCPA 2 Released
- Nagios Core 4.2.4 and NSCA 2.9.2 Released
- More news...

### Don't Miss...

- Monitoring Log Data with Nagios - Nagios Log Server can handle all log data in one central location.
- Can Nagios monitor netflow? - Yes! Nagios Network Analyzer can take in a variety of flow data. [Learn More](#)
- Nagios XI 5 Available Now! - Easier configuration, Advanced Reporting. [Download Today!](#)

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Nagios Core on 127.0.0.1 - Mozilla Firefox

Nagios Core on 127.0.0.1 X

127.0.0.1:8080/nagios/

# Nagios®

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**Current Status**

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Summary  
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Hosts (Unhandled)  
Network Outages

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**Current Network Status**  
Last Updated: Sat Oct 13 20:42:14 UTC 2018  
Updates every 30 seconds  
Nagios® Core™ 4.3.4 - www.nagios.org  
Logged in as nagios@127.0.0.1

**Host Status Totals**  
Up: 0 Down: 0 Unreachable: 0 Pending: 0

**Service Status Totals**  
OK: 1 Warning: 0 Unknown: 0 Critical: 0 Pending: 0

**Service Status Details For All Hosts**

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	10-13-2018 20:41:57	0d 0h 36m 3s	1/4	OK - load average: 0.00, 0.03, 0.05
	Current Users	OK	10-13-2018 20:42:36	0d 0h 36m 28s	1/4	USERS OK - 1 users currently logged in
	HTTP	WARNING	10-13-2018 20:41:12	0d 0h 12m 46s	4/4	HTTP WARNING: HTTP/1.1 403 Forbidden - 5179 bytes in 0.003 second response time
	PING	OK	10-13-2018 20:38:50	0d 0h 14m 8s	1/4	PING OK - Packet loss = 0%, RTT = 0.10 ms
	Root Partition	OK	10-13-2018 20:38:27	0d 0h 15m 31s	1/4	FSCK OK - New appear: 7 16095 MB (68.36% inode=100%)
	SSH	OK	10-13-2018 20:40:05	0d 0h 12m 53s	1/4	SSH OK - OpenSSH_7.4 (protocol 2.0)
	Swap Usage	OK	10-13-2018 20:40:42	0d 0h 12m 53s	1/4	SWAP OK - 100% free (3533 MB out of 3533 MB)
Total Processes	OK	10-13-2018 20:41:20	0d 0h 12m 38s	1/4	PROCS OK - 305 processes with 33 STATE = RSLZDZ	

Results: 1 - 8 of 8 Matching Services



**Nagios Core on 127.0.0.1 - Mozilla Firefox**

check\_nrpecheck\_load

127.0.0.1:8080/nagios/

**Nagios**

Current Network Status  
Last updated: Sat Oct 13 22:00:21 UTC 2018  
Updated every 30 seconds  
Nagios Core™ 4.3.4 - www.nagios.org  
Logged in as nagiosadmin

**Host Status Totals**  
Up Down Unreachable Pending  
2 0 0 0  
All Problems All Types  
0 2

**Service Status Totals**  
OK Warning Unknown Critical Pending  
14 1 0 1 0  
All Problems All Types  
2 18

**Service Status Details For All Hosts**

Host	Service	Status	Last Check	Duration	Attempt	Status Information
default	Current Load	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	OK - load average: 0.02, 0.06, 0.04
	Current Users	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	USERS OK - 1 users currently logged in
	HTTP	CRITICAL	10-13-2018 21:58:19	06:10:0m:36s	4/4	connect to address 192.168.33.12 and port 80: Connection refused
	PING	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	PING OK - Packet loss = 0%, RTT = 0.81 ms
	Root Partition	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	DISK OK - free space / 7217 MB (89% inode=59%)
	SSH	OK	10-13-2018 21:58:19	06:08:58m:43s	1/4	SSH OK - OpenSSH_7.4p1 Debian 10+deb8u3 (protocol 2.0)
	Swap Usage	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	SWAP OK - 100% free (1021 MB out of 1021 MB)
	Total Processes	OK	10-13-2018 21:58:19	06:08:1m:42s	1/4	PROCS OK: 37 processes with STATE = RSZDT
	Current Load	OK	10-13-2018 21:57:50	06:10:39m:4s	1/4	OK - load average: 0.00, 0.01, 0.05
	Current Users	OK	10-13-2018 21:57:37	06:10:32m:26s	1/4	USERS OK - 1 users currently logged in
localhost	HTTP	WARNING	10-13-2018 21:58:15	06:10:29m:40s	4/4	HTTP WARNING: HTTP/1.1 403 Forbidden - 5179 bytes in 0.025 second response time
	PING	OK	10-13-2018 21:58:52	06:10:31m:11s	1/4	PING OK - Packet loss = 0%, RTT = 0.89 ms
	Root Partition	OK	10-13-2018 21:59:30	06:10:30m:34s	1/4	DISK OK - free space / 36953 MB (96.96% inode=100%)
	SSH	OK	10-13-2018 21:55:07	06:10:29m:56s	1/4	SSH OK - OpenSSH_7.4 (protocol 2.0)
	Swap Usage	OK	10-13-2018 21:55:45	06:10:29m:18s	1/4	SWAP OK - 100% free (1534 MB out of 1535 MB)
Total Processes	OK	10-13-2018 21:59:50	06:10:29m:41s	1/4	PROCS OK: 112 processes with STATE = RSZDT	

Results 1 - 19 of 16 Matching Services

**Icinga Web - Mozilla Firefox**

127.0.0.1:8181/icingaweb2/setup

Welcome Modules Requirements Configuration Finish

**Welcome to the configuration of Icinga Web 2!**

This wizard will guide you through the configuration of Icinga Web 2. Once completed and successfully finished you are able to log in and to explore all the new and stunning features!

Setup Token

**Generating a New Setup Token**

To run this wizard a user needs to authenticate using a token which is usually provided to him by an administrator who'd followed the instructions below.

In any case, make sure that all of the following applies to your environment:

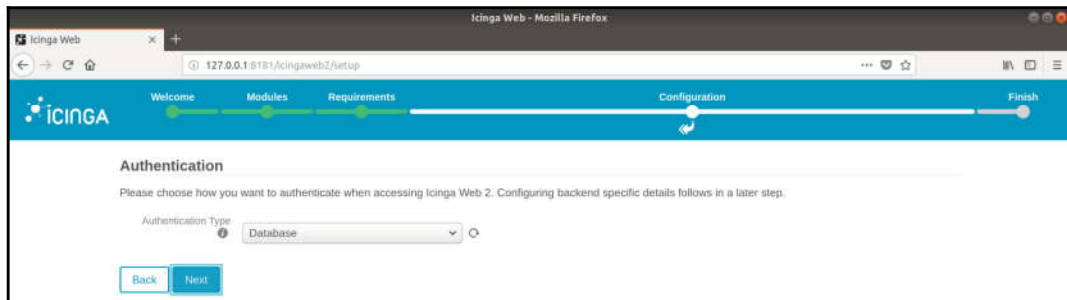
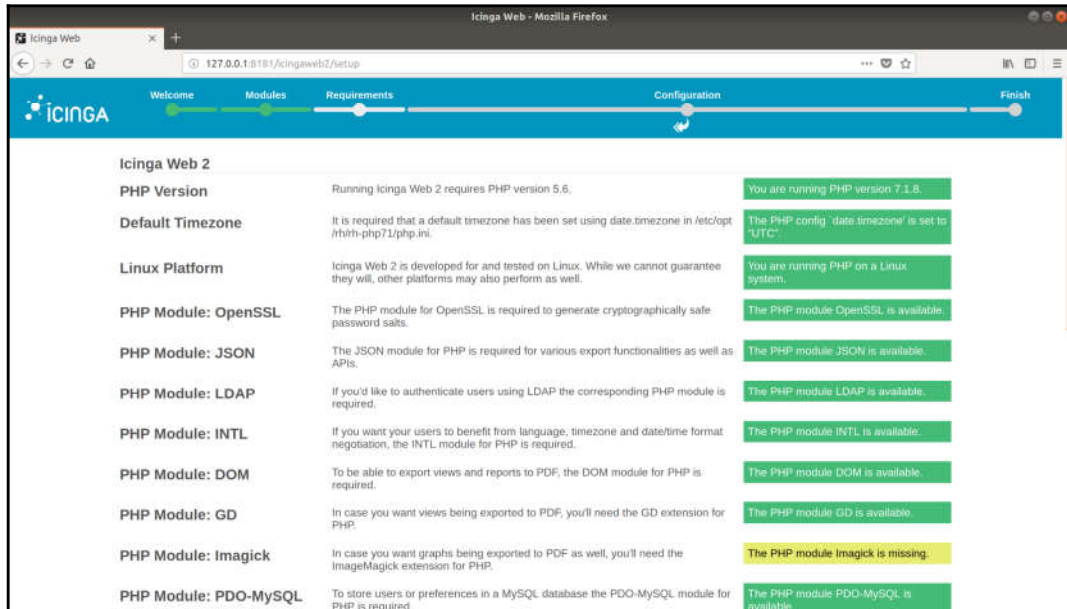
- A system group called "icingaweb2" exists
- Your webserver's user is a member of the system group "icingaweb2"

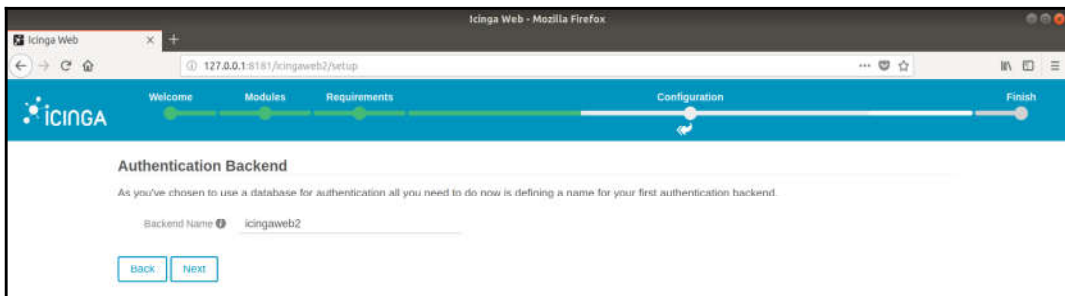
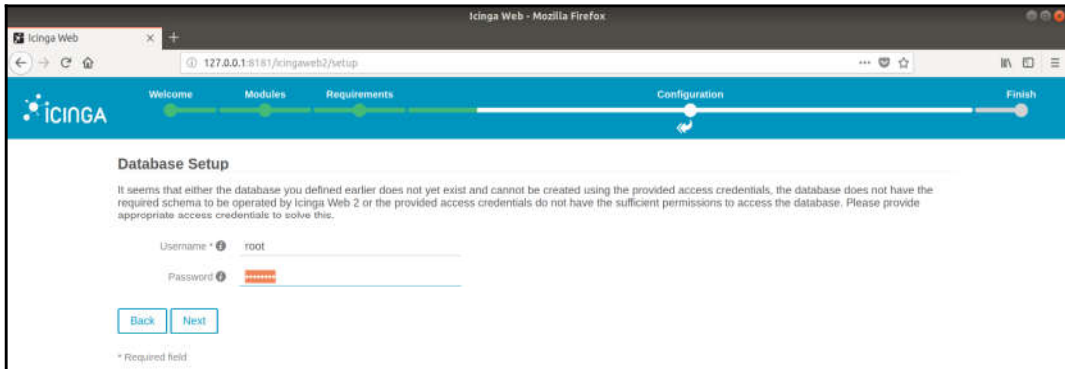
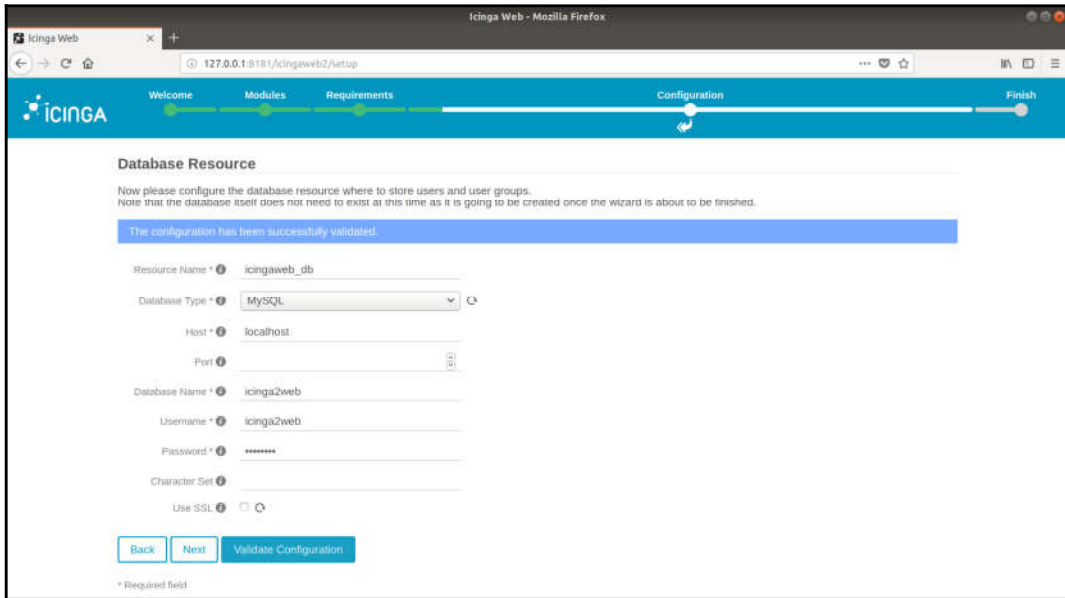
```
groupadd -r icingaweb2;
usermod -s /bin/bash apache;
```

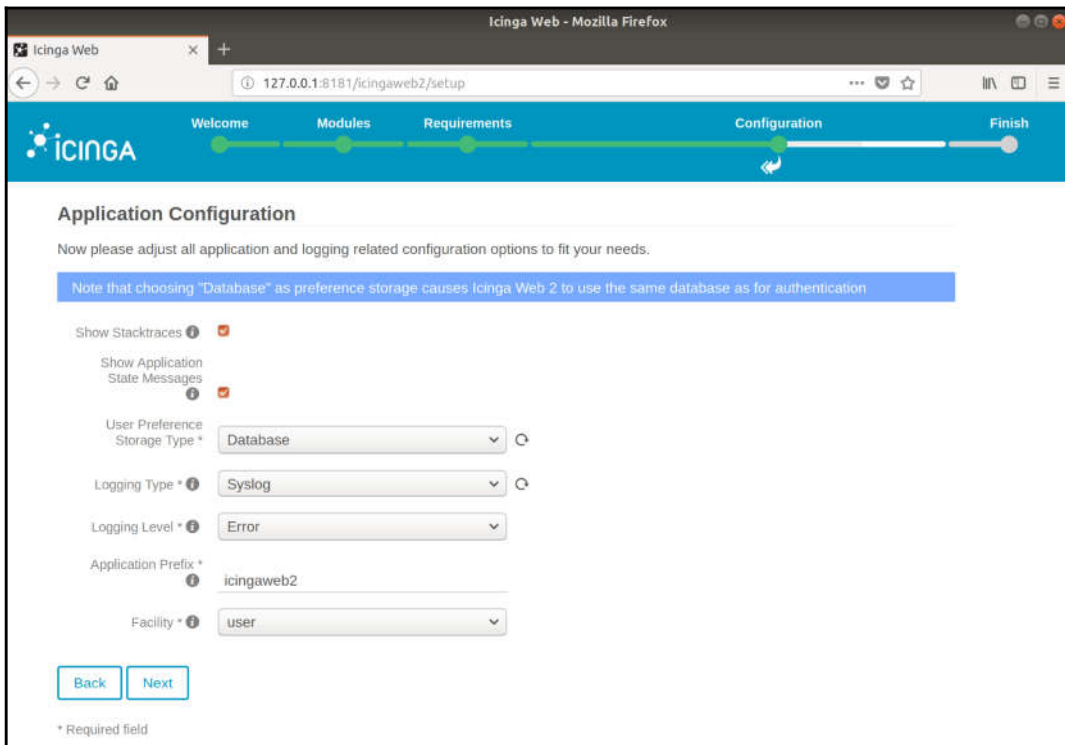
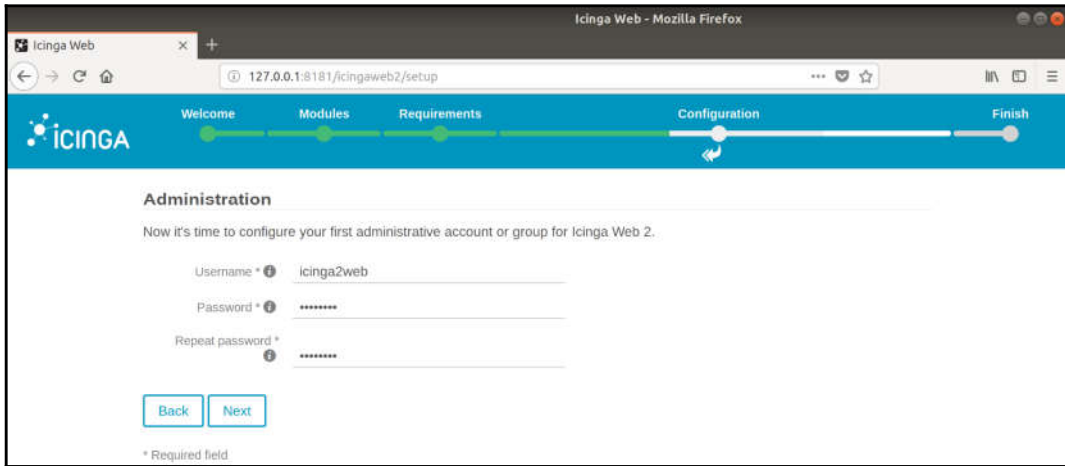
If you've got the IcingaCLI installed you can do the following:

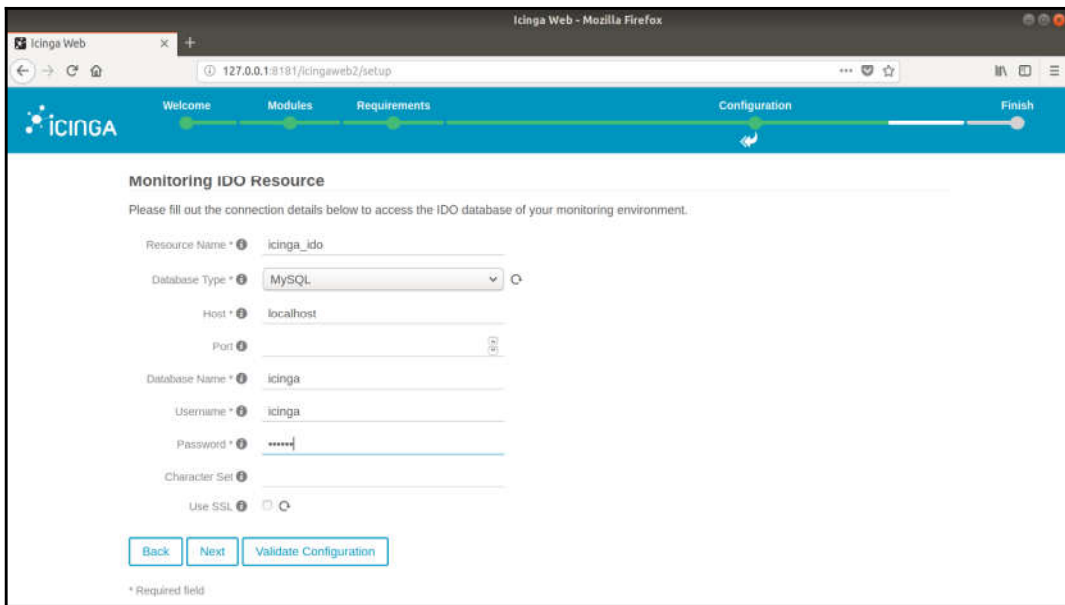
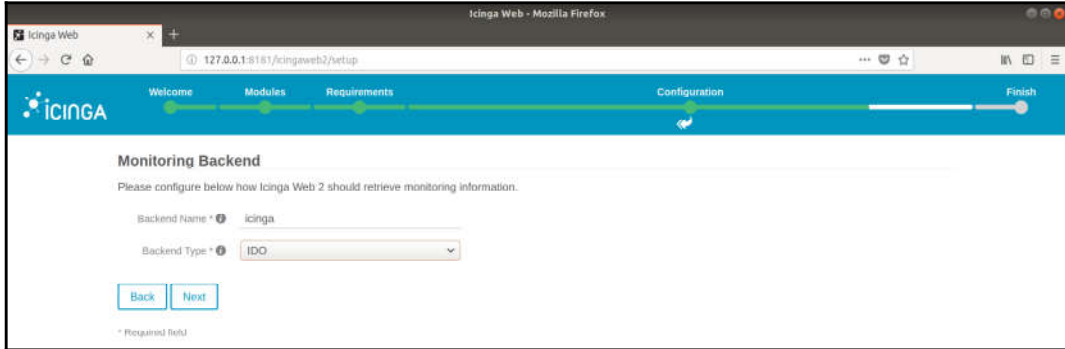
```
icingacli setup config directory --group icingaweb2;
icingacli setup token create;
```

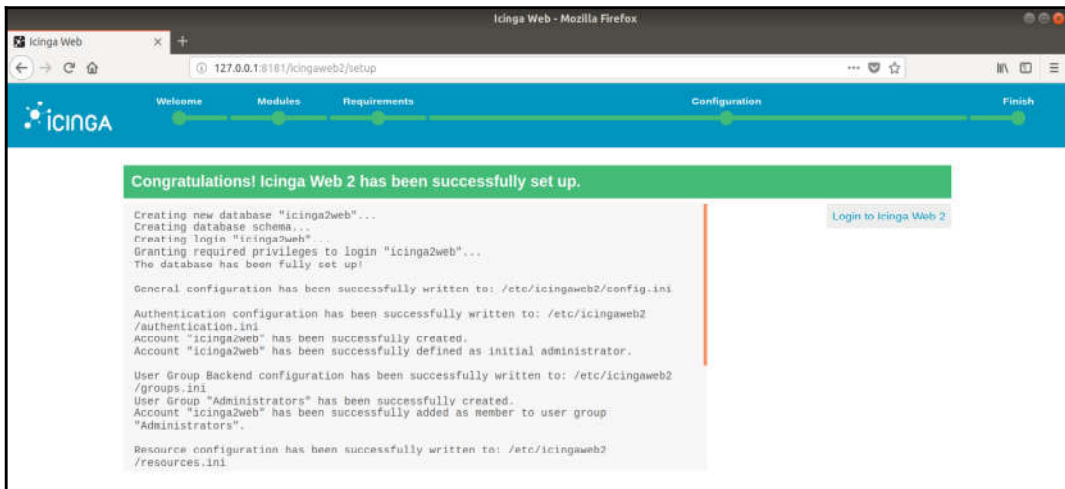
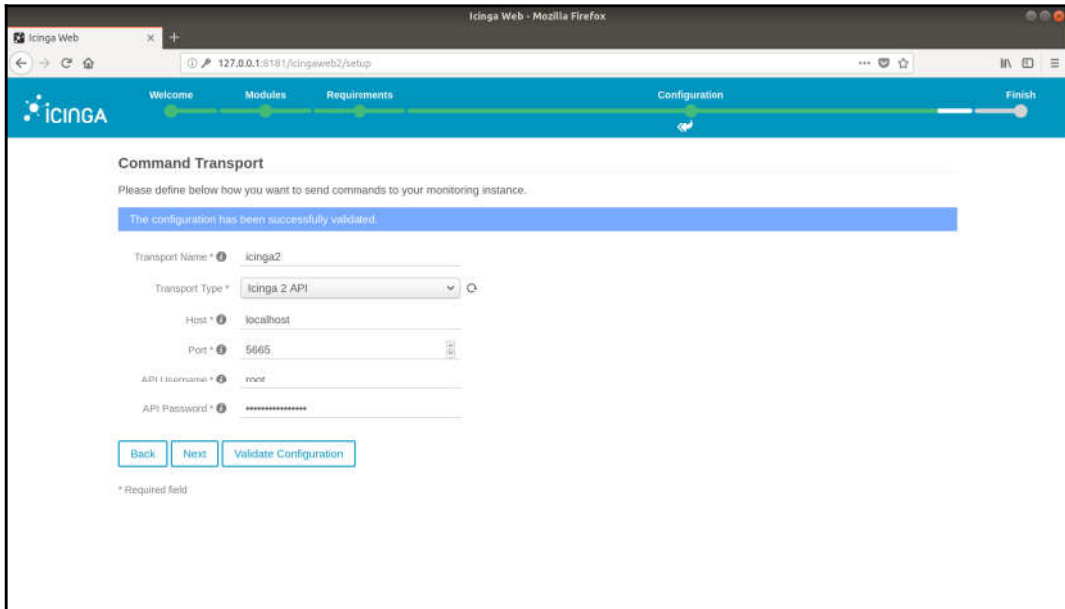
In case the IcingaCLI is missing you can create the token manually:

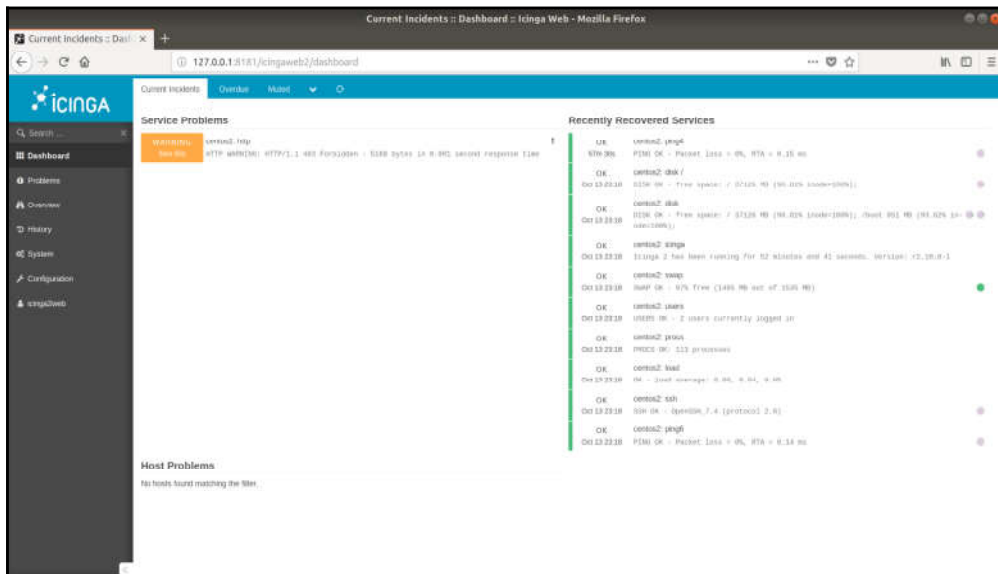


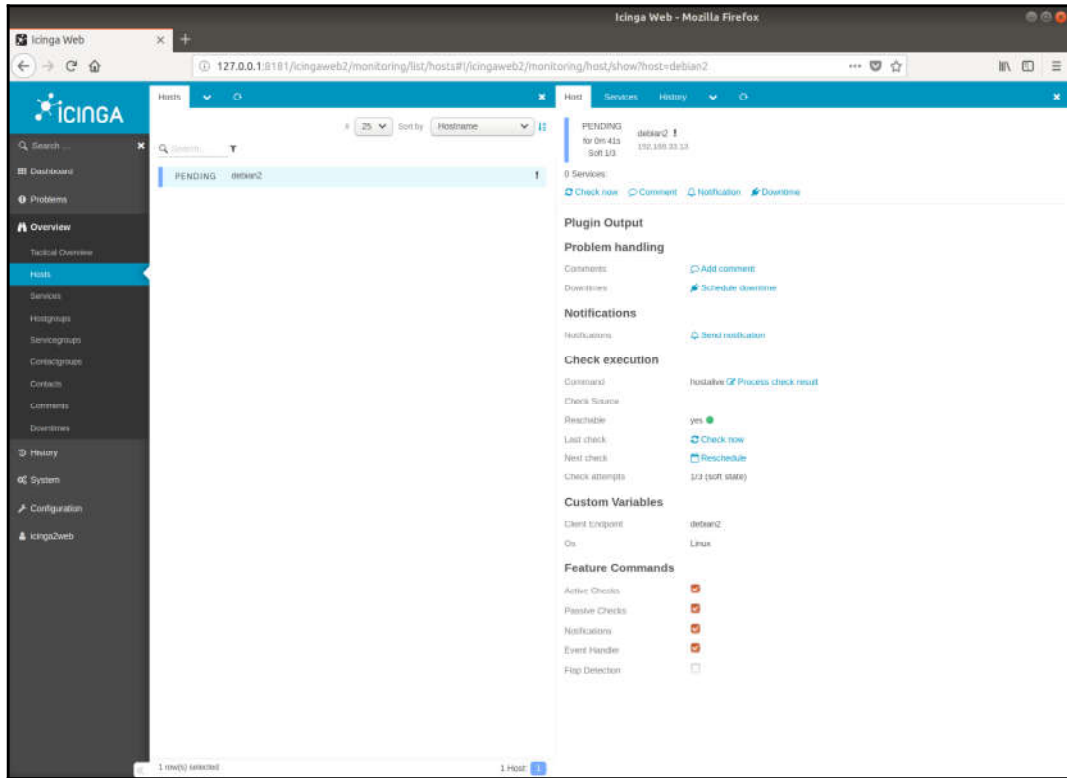




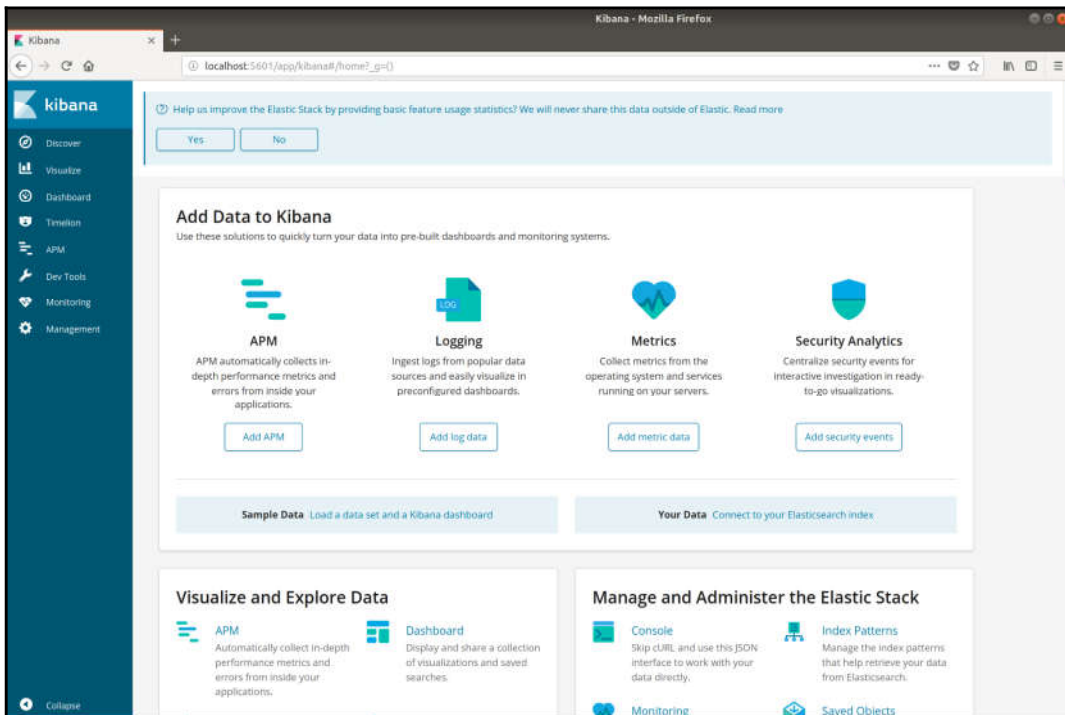
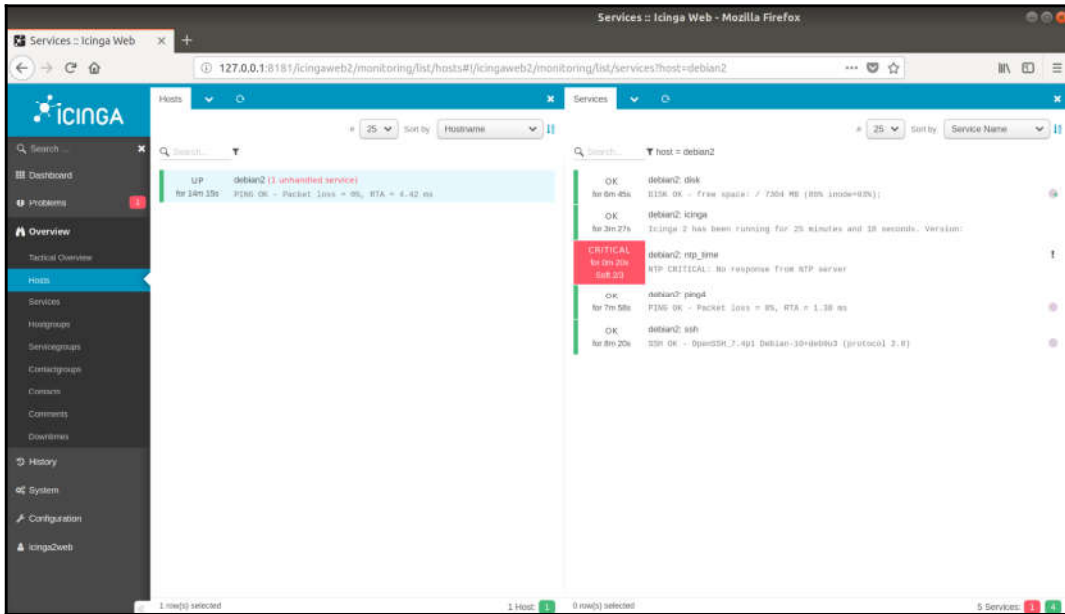


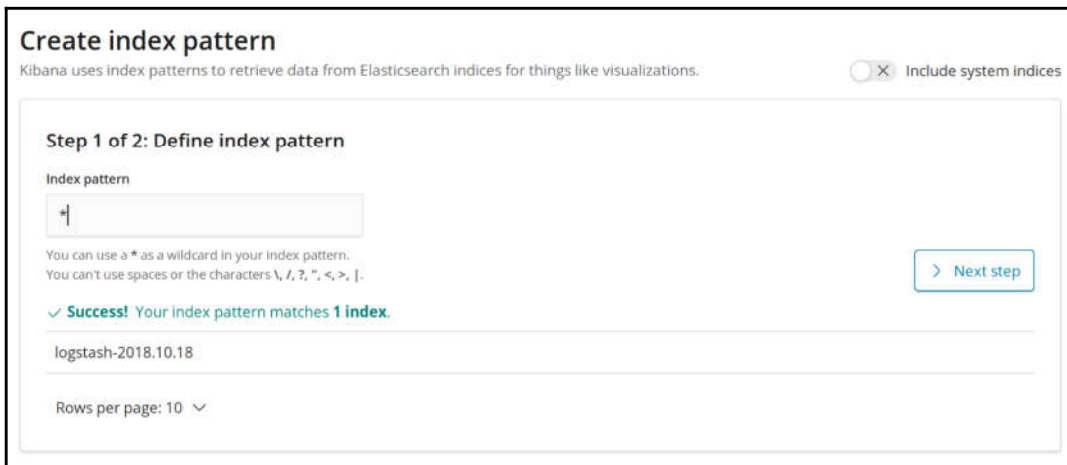
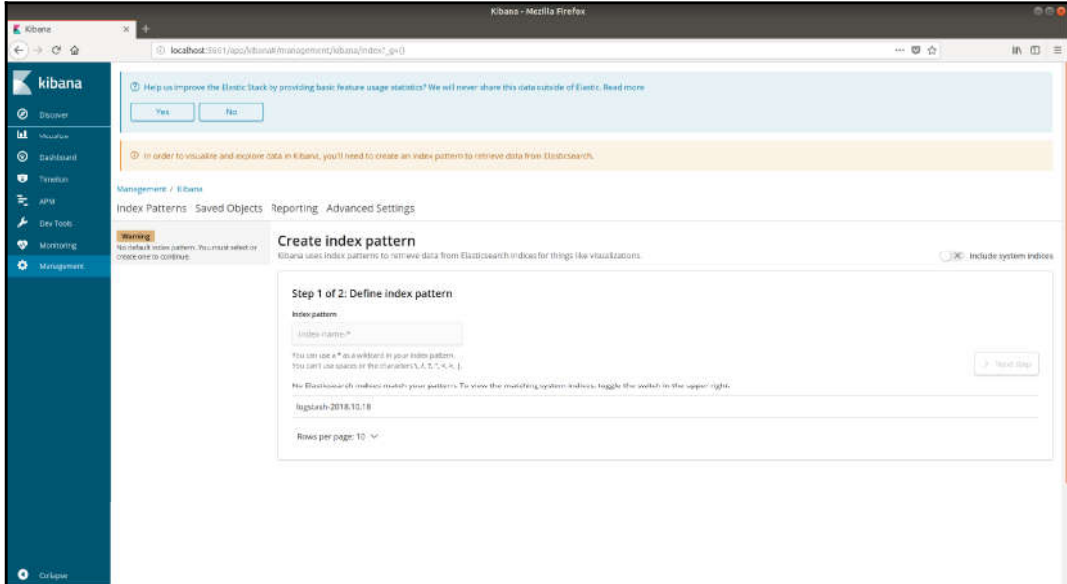










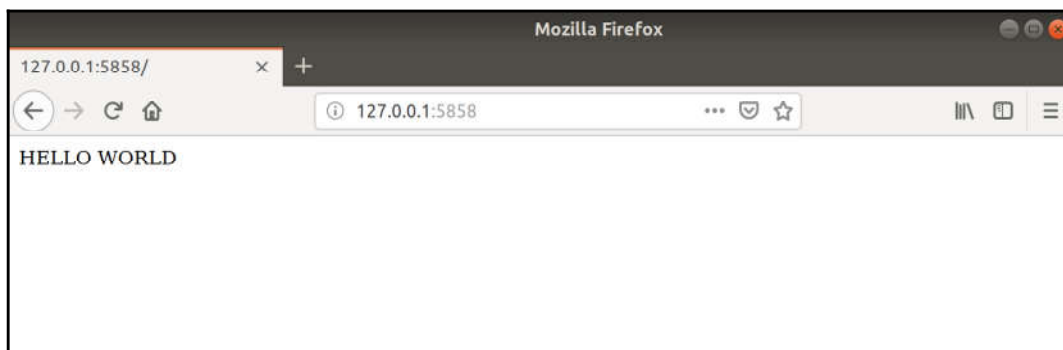
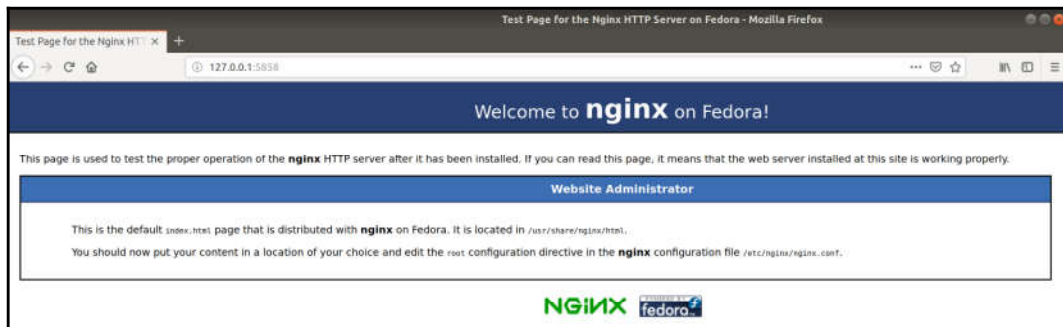






---

## Chapter 08: Permissions, SELinux, and AppArmor



# Chapter 09: Containers and Virtualization

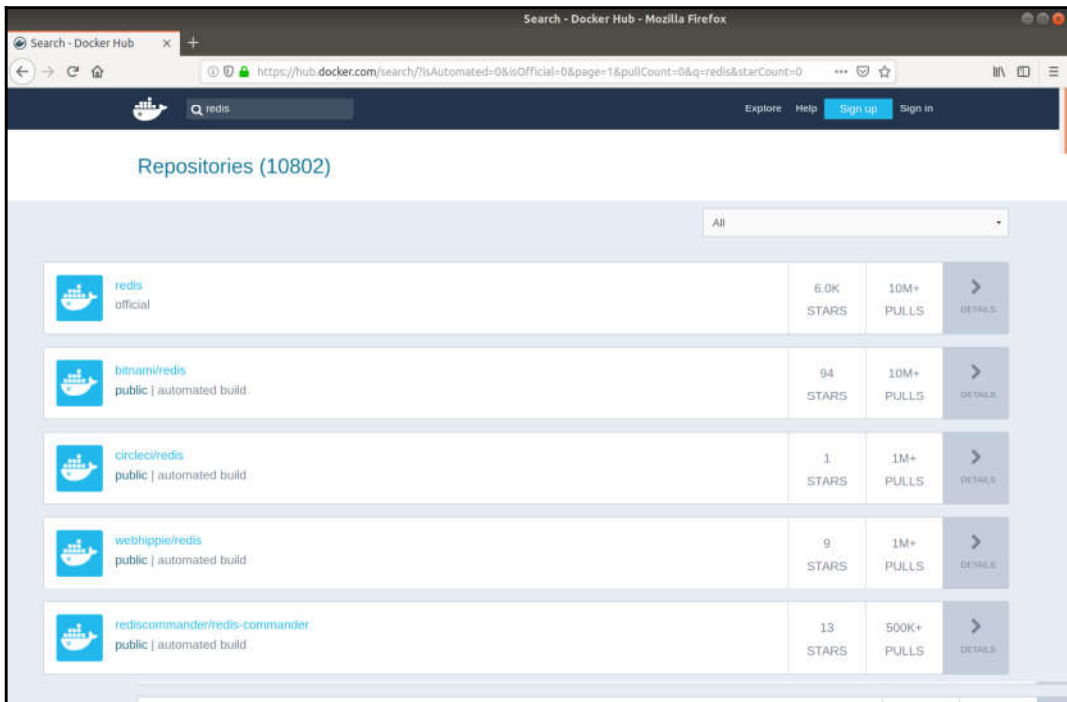
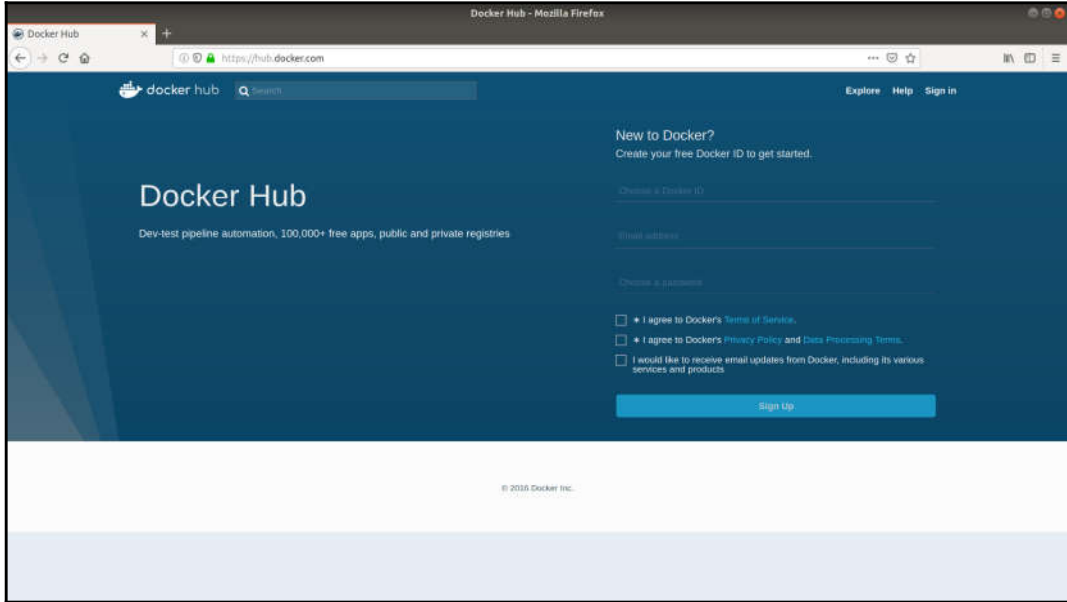
```
vagrant@ubuntu-bionic:~$ ps uF -p 3988 --ppid 3988 --ppid 3919
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root      3988  0.0  0.7 538556 7248 ?        Ss   16:16   0:00 [lxc monitor] /var/lib/lxd/containers/example-container
100000    3919  0.0  0.8 77924 8616 ?        Ss   16:16   0:00 \_ /sbin/init
100000    404  0.0  0.9 78416 9420 ?        Ss   16:16   0:00 \_ /lib/systemd/systemd-journald
100000    4036  0.0  0.3 33352 3512 ?        Ss   16:16   0:00 \_ /lib/systemd/systemd-udev
100000    4321  0.0  0.5 71820 5240 ?        Ss   16:16   0:00 \_ /lib/systemd/systemd-networkd
100101    4336  0.0  0.5 70612 5180 ?        Ss   16:16   0:00 \_ /lib/systemd/systemd-resolved
100000    4438  0.0  0.6 287992 6948 ?        SsL  16:16   0:00 \_ /usr/lib/accounts-service/accounts-daemon
100102    4439  0.0  0.4 197632 4312 ?        SsL  16:16   0:00 \_ /usr/sbin/rsyslogd -n
100000    4445  0.0  0.3 31740 3140 ?        Ss   16:16   0:00 \_ /usr/sbin/cron -F
100000    4446  0.0  0.5 62004 5580 ?        Ss   16:16   0:00 \_ /lib/systemd/systemd-logind
100000    4455  0.0  1.7 178908 17268 ?       SsL  16:16   0:00 \_ /usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-triggers
100000    4460  0.0  1.8 693772 18216 ?       SsL  16:16   0:00 \_ /usr/lib/snapd/snapd
100001    4462  0.0  0.2 28332 2340 ?        Ss   16:16   0:00 \_ /usr/sbin/atd -F
100103    4463  0.0  0.4 49928 4140 ?        Ss   16:16   0:00 \_ /usr/bin/dbus-daemon --system --address=systemd: --nofork --nopdfll --systemd-activation --syslog-on
100000    4591  0.0  0.5 72296 5520 ?        Ss   16:16   0:00 \_ /usr/sbin/sshd -D
100000    4596  0.0  0.6 288876 6412 ?        SsL  16:16   0:00 \_ /usr/lib/policykit-1/polkitd --no-debug
100000    4603  0.0  0.2 16412 2280 pts/1  Ss+  16:16   0:00 \_ /sbin/agetty -o -p -- /u --noclear --keep-baud console 115200,38400,9600 vt220
vagrant@ubuntu-bionic:~$
```

```
vagrant@ubuntu-bionic:~$ top - 15:55:57 up 3 min, 0 users, load average: 0.01, 0.03, 0.01
Tasks: 17 total, 1 running, 16 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.2 us, 0.0 sy, 0.0 ni, 99.7 id, 0.0 wa, 0.0 hi, 0.2 st, 0.0 st
KiB Mem : 1008936 total, 855360 free, 41448 used, 112128 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 967488 avail Mem

  PID USER      PR  NI   VIRT    RES    SHR  S  %CPU  %MEM    TIME+  COMMAND
    1 root        20   0   77508    856    650  S   0.0   0.8   0:00.16 systemd
   57 root        20   0   78440   9384   8772  S   0.0   0.9   0:00.04 systemd-journal
   60 root        20   0   33352   3492   2908  S   0.0   0.3   0:00.04 systemd-udev
  152 systemd+   20   0   71820   5188   4596  S   0.0   0.5   0:00.01 systemd-network
  153 systemd+   20   0   70612   5260   4704  S   0.0   0.5   0:00.01 systemd-resolve
  188 message+   20   0   49928   4036   3564  S   0.0   0.4   0:00.01 dbus-daemon
  189 syslog     20   0   197632  4168   3632  S   0.0   0.4   0:00.01 rsyslogd
  190 root        20   0   287992  6968   6104  S   0.0   0.7   0:00.00 accounts-daemon
  191 root        20   0   62004   5420   4852  S   0.0   0.5   0:00.00 systemd-logind
  196 root        20   0   31748   3164   2876  S   0.0   0.3   0:00.00 cron
  199 daemon     20   0   28332   2432   2224  S   0.0   0.2   0:00.00 atd
  200 root        20   0   170908  17480   9688  S   0.0   1.7   0:00.07 networkd-dispat
  203 root        20   0   693772 18248  10772  S   0.0   1.8   0:00.02 snapd
  207 root        20   0   72296   5832   5108  S   0.0   0.6   0:00.00 sshd
  210 root        20   0   288876  6596   5808  S   0.0   0.7   0:00.00 polkitd
  211 root        20   0   16412   2348   2204  S   0.0   0.2   0:00.00 agetty
  284 root        20   0   42116   3612   3104  R   0.0   0.4   0:00.00 top
```

```
vagrant@ubuntu-bionic:~$ Mem: 748356K used, 260580K free, 712K shrd, 15300K buff, 502312K cached
CPU:  0% usr  0% sys  0% nic 99% idle  0% io  0% irq  0% sirq
Load average: 0.00 0.00 0.00 1/173 14

  PID  PPID  USER      STAT  VSZ %VSZ CPU %CPU COMMAND
    1    0 root        S     1592  0%  1  0% /bin/ash
    7    0 root        S     1592  0%  0  0% /bin/ash
   13   7 root        R     1528  0%  0  0% top
```



library/redis - Docker Hub - Mozilla Firefox

library/redis - Docker Hub - Mozilla Firefox

https://hub.docker.com/\_/redis/

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OFFICIAL REPOSITORY

redis ☆

Last pushed: 20 days ago

Repo info Tags

Short Description

Redis is an open source key-value store that functions as a data structure server.

Docker Pull Command

```
docker pull redis
```

Full Description

Supported tags and respective Dockerfile links

- 5.0.0, 5.0, 5, latest, 5.0.0-stretch, 5.0-stretch, 5-stretch, stretch ([5.0/Dockerfile](#))
- 5.0.0-32bit, 5.0-32bit, 5-32bit, 32bit, 5.0.0-32bit-stretch, 5.0-32bit-stretch, 5-32bit-stretch, 32bit-stretch ([5.0/32bit/Dockerfile](#))
- 5.0.0-alpine, 5.0-alpine, 5-alpine, alpine, 5.0.0-alpine3.8, 5.0-alpine3.8, 5-alpine3.8, alpine3.8 ([5.0/alpine/Dockerfile](#))
- 4.0.11, 4.0, 4, 4.0.11-stretch, 4.0-stretch, 4-stretch ([4.0/Dockerfile](#))
- 4.0.11-32bit, 4.0-32bit, 4-32bit, 4.0.11-32bit-stretch, 4.0-32bit-stretch, 4-32bit-stretch ([4.0/32bit/Dockerfile](#))
- 4.0.11-alpine, 4.0-alpine, 4-alpine, 4.0.11-alpine3.8, 4.0-alpine3.8

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library/redis - Docker Hub - Mozilla Firefox

https://hub.docker.com/\_/redis/tags/

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Tag Name	Compressed Size	Last Updated
alpine3.8	15 MB	20 days ago
5-alpine3.8	15 MB	20 days ago
5.0-alpine3.8	15 MB	20 days ago
5.0.0-alpine3.8	15 MB	20 days ago
alpine	15 MB	20 days ago
5-alpine	15 MB	20 days ago
5.0-alpine	15 MB	20 days ago
5.0.0-alpine	15 MB	20 days ago



```

vagrant@ubuntu-bionic:~$ sudo docker search redis
NAME                DESCRIPTION                                     STARS     OFFICIAL   AUTOMATED
redis               Redis is an open source key-value store that... 6019      [OK]
bitnami/redis      Bitnami Redis Docker Image                    94        [OK]
sameersbn/redis    Redis is an open source key-value store that... 73        [OK]
grokzen/redis-cluster  Redis cluster 3.0, 3.2, 4.0 & 5.0           39
hyprriot/rpi-redis  Raspberry Pi compatible redis image          34
kubeguide/redis-master  redis-master with "Hello World!"            27
kubeguide/guestbook-redis-slave  Guestbook redis slave                       22
redislabs/redis     Clustered in-memory database engine compatib... 16
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oliver006/redis-exporter  Prometheus Exporter for Redis Metrics. Supp... 5
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arn64v8/redis       Redis is an open source key-value store that... 2
wodby/redis         Redis container image with orchestration      2
frodinas/redis     A Docker Image for Redis                     1
tiredofit/redis    Redis Server w/ Zabbix monitoring and S6 Ove... 1
circleci/redis     CircleCI images for Redis                    1
google/guestbook-python-redis  A simple guestbook example written in Python... 1
kilsoo75/redis-master  This image is for the redis master of SK Clo... 0
cflondonservices/redis  Docker image for running redis               0
ladvize/redis       forking redis-resource                       0
xetanus/redis-resource  forked redis-resource                        0
anchorfree/redis    redis cache server for logging                0
vagrant@ubuntu-bionic:~$

```

```

vagrant@ubuntu-bionic:~$ qemu-system-x86_64 -drive file=example-disk,format=raw -cdrom alpine-virt-3.8.1-x86_64.iso -boot d -nographic
qemu-system-x86_64: warning: TCG doesn't support requested feature: CPUID.01H:ECX.vmx [bit 5]

ISOLINUX 6.04 6.04-pre1 Copyright (C) 1994-2015 H. Peter Anvin et al
boot:
[ 0.030000] Spectre V2 : Spectre mitigation: LFBENCE not serializing, switching to generic retpoline

OpenRC 0.35.5.07biff59c1 is starting up Linux 4.14.69-0-virt (x86_64)

* /proc is already mounted
* Mounting /run ... * /run/openrc: creating directory
* /run/lock: creating directory
* /run/lock: correcting owner
* Caching service dependencies ... [ ok ]
* Remounting devtmpfs on /dev ... [ ok ]
* Mounting /dev/mqueue ... [ ok ]
* Mounting modloop ... [ ok ]
* Mounting security filesystem ... [ ok ]
* Mounting debug filesystem ... [ ok ]
* Mounting persistent storage (pstore) filesystem ... [ ok ]
* Starting busybox mdev ... [ ok ]
* Loading hardware drivers ... [ ok ]
* Loading modules ... [ ok ]
* Setting system clock using the hardware clock [UTC] ... [ ok ]
* Checking local filesystems ... [ ok ]
* Remounting filesystems ... [ ok ]
* Mounting local filesystems ... [ ok ]
* Configuring kernel parameters ... [ ok ]
* Migrating /var/lock to /run/lock ... [ ok ]
* Creating user login records ... [ ok ]
* Wiping /tmp directory ... [ ok ]
* Setting hostname ... [ ok ]
* Starting busybox syslog ... [ ok ]
* Starting firstboot ... [ ok ]

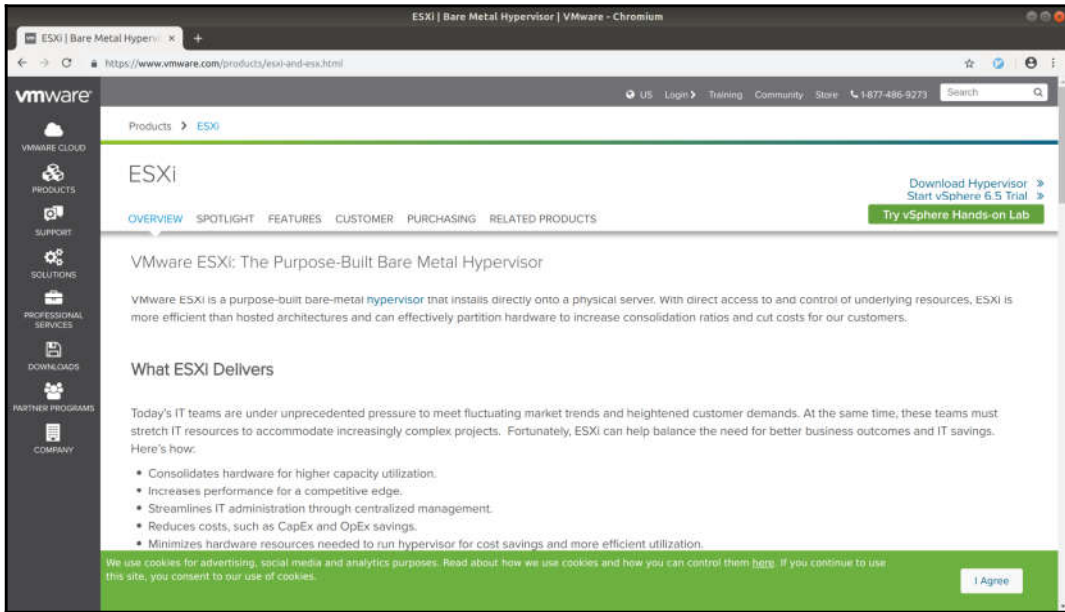
Welcome to Alpine Linux 3.8
Kernel 4.14.69-0-virt on an x86_64 (/dev/ttyS0)

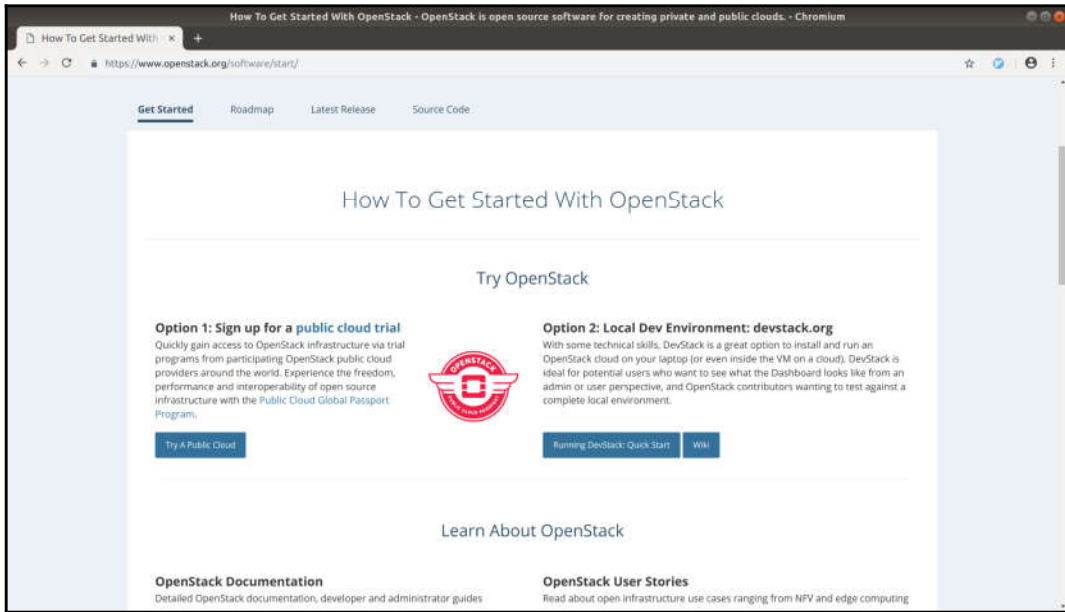
localhost login:

```

```
vagrant@ubuntu-bionic: ~  
File Edit View Search Terminal Help  
CPU[#####] 22.1%] Tasks: 15, 0 thr; 1 running  
Mem[||||#####] 16.0M/112M] Load average: 0.08 0.08 0.03  
Swp[ ] 0K/224M] Uptime: 00:02:15  
  
PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Command  
2031 root 20 0 3540 1128 872 R 3.2 1.0 0:00.26 htop  
1 root 20 0 1516 40 32 S 0.0 0.0 0:00.77 /sbin/init  
1834 root 20 0 1516 48 0 S 0.0 0.0 0:00.01 udhcpc -b -p /var  
1894 root 20 0 1520 40 0 S 0.0 0.0 0:00.04 /sbin/syslogd -Z  
1945 root 20 0 1516 44 0 S 0.0 0.0 0:00.00 /sbin/acpid  
1971 root 20 0 1520 44 0 S 0.0 0.0 0:00.03 /usr/sbin/crond -  
2000 root 20 0 7412 364 0 S 0.0 0.3 0:00.02 /usr/sbin/sshd  
2007 root 20 0 1516 4 0 S 0.0 0.0 0:00.05 /sbin/getty 38400  
2008 root 20 0 1516 4 0 S 0.0 0.0 0:00.03 /sbin/getty 38400  
2011 root 20 0 1516 4 0 S 0.0 0.0 0:00.02 /sbin/getty 38400  
2014 root 20 0 1516 4 0 S 0.0 0.0 0:00.00 /sbin/getty 38400  
2017 root 20 0 1516 4 0 S 0.0 0.0 0:00.02 /sbin/getty 38400  
2019 root 20 0 1516 4 0 S 0.0 0.0 0:00.01 /sbin/getty 38400  
2022 root 20 0 1516 4 0 S 0.0 0.0 0:00.15 /bin/login -- roo  
2024 root 20 0 1588 972 848 S 0.0 0.8 0:00.12 -ash  
  
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice - F8Nice + F9Kill F10Quit
```

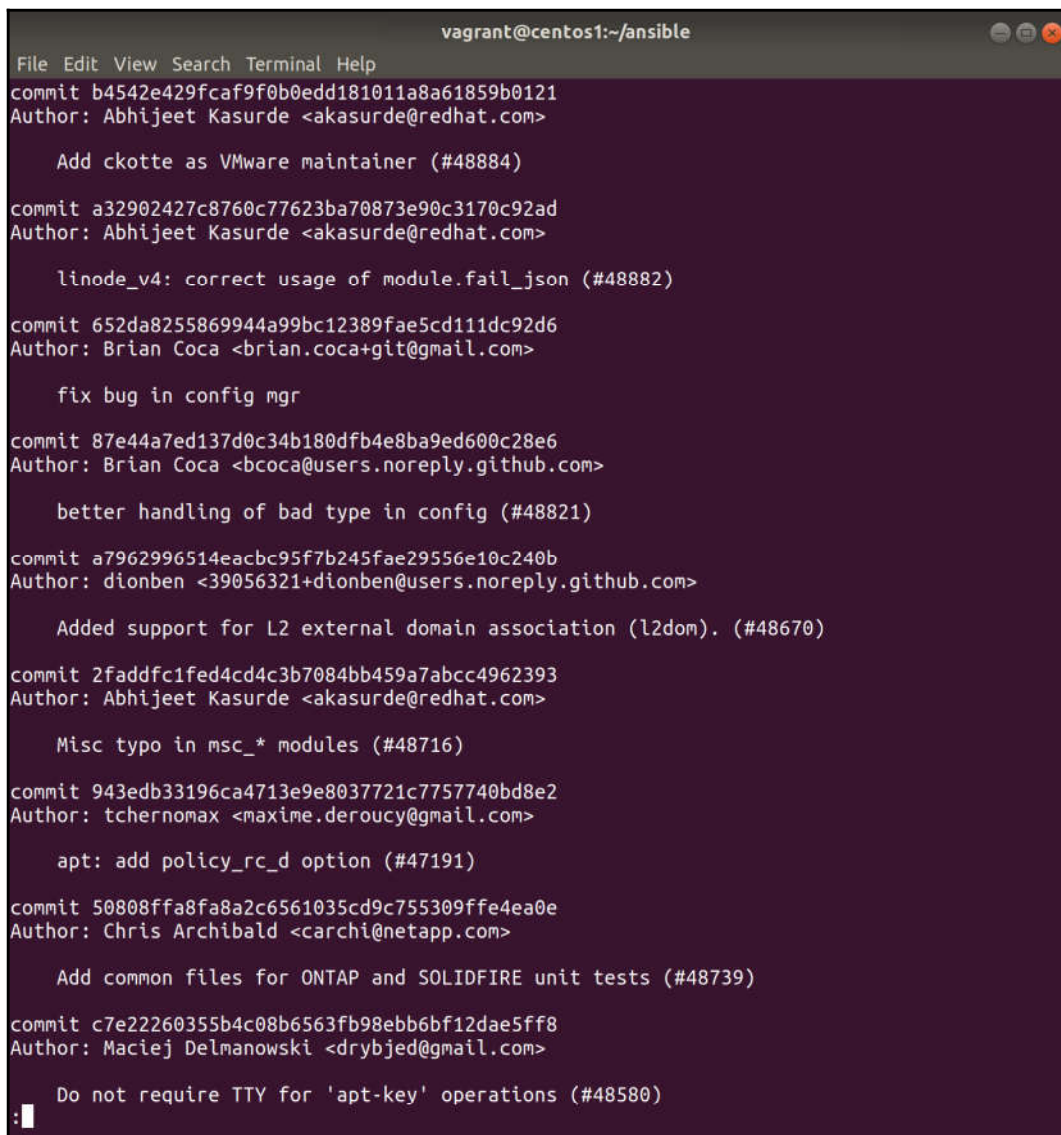
```
vagrant@ubuntu-bionic: ~  
File Edit View Search Terminal Help  
domain type='qemu'  
<name>ex-alpine-2</name>  
<uuid>80361635-25a3-403b-9d15-e292df27908b</uuid>  
<memory unit='KiB'>524288</memory>  
<currentMemory unit='KiB'>524288</currentMemory>  
<vcpu placement='static'>1</vcpu>  
<os>  
  <type arch='x86_64' machine='pc-i440fx-bionic'>hvm</type>  
  <boot dev='hd' />  
</os>  
<features>  
  <acpi />  
  <apic />  
</features>  
<clock offset='utc'>  
  <timer name='rtc' tickpolicy='catchup' />  
  <timer name='pit' tickpolicy='delay' />  
  <timer name='hpet' present='no' />  
</clock>  
<on_poweroff>destroy</on_poweroff>  
<on_reboot>restart</on_reboot>  
<on_crash>destroy</on_crash>  
<pm>  
  <suspend-to-mem enabled='no' />  
  <suspend-to-disk enabled='no' />  
</pm>  
<devices>  
  <emulator>/usr/bin/qemu-system-x86_64</emulator>  
  <disk type='file' device='disk'>  
    <driver name='qemu' type='raw' />  
    <source file='/home/vagrant/ex-alpine-2-disk' />  
    <target dev='vda' bus='virtio' />  
    <address type='pci' domain='0x0000' bus='0x00' slot='0x04' function='0x0' />  
  </disk>  
  <disk type='file' device='cdrom'>  
    <driver name='qemu' type='raw' />  
    <target dev='hda' bus='ide' />  
    <readonly />  
    <address type='drive' controller='0' bus='0' target='0' unit='0' />  
  </disk>  
  <controller type='usb' index='0' model='ich9-ehci1'>  
    <address type='pci' domain='0x0000' bus='0x00' slot='0x03' function='0x7' />  
  </controller>  
  <controller type='usb' index='0' model='ich9-uhci1'>  
    <address type='pci' domain='0x0000' bus='0x00' slot='0x03' function='0x8' />  
  </controller>  
</devices>  
1,1 Top
```





---

## Chapter 10: Git, Configuration Management, and Infrastructure as Code

A terminal window titled 'vagrant@centos1:~/ansible' showing a list of git commit messages. The window has a dark purple background and a menu bar with 'File Edit View Search Terminal Help'. The commit messages are as follows:

```
commit b4542e429fc9f0b0edd181011a8a61859b0121
Author: Abhijeet Kasurde <akasurde@redhat.com>

    Add ckotte as VMware maintainer (#48884)

commit a32902427c8760c77623ba70873e90c3170c92ad
Author: Abhijeet Kasurde <akasurde@redhat.com>

    linode_v4: correct usage of module.fail_json (#48882)

commit 652da8255869944a99bc12389fae5cd111dc92d6
Author: Brian Coca <brian.coca+git@gmail.com>

    fix bug in config mgr

commit 87e44a7ed137d0c34b180dfb4e8ba9ed600c28e6
Author: Brian Coca <bcoca@users.noreply.github.com>

    better handling of bad type in config (#48821)

commit a7962996514eacbc95f7b245fae29556e10c240b
Author: dionben <39056321+dionben@users.noreply.github.com>

    Added support for L2 external domain association (l2dom). (#48670)

commit 2faddfc1fed4cd4c3b7084bb459a7abcc4962393
Author: Abhijeet Kasurde <akasurde@redhat.com>

    Misc typo in msc_* modules (#48716)

commit 943edb33196ca4713e9e8037721c7757740bd8e2
Author: tchernonax <maxime.deroucy@gmail.com>

    apt: add policy_rc_d option (#47191)

commit 50808ffa8fa8a2c6561035cd9c755309ffe4ea0e
Author: Chris Archibald <carchi@netapp.com>

    Add common files for ONTAP and SOLIDFIRE unit tests (#48739)

commit c7e22260355b4c08b6563fb98ebb6bf12dae5ff8
Author: Maciej Delmanowski <drybjed@gmail.com>

    Do not require TTY for 'apt-key' operations (#48580)
:
```

Kernel.org git repositories - Mozilla Firefox

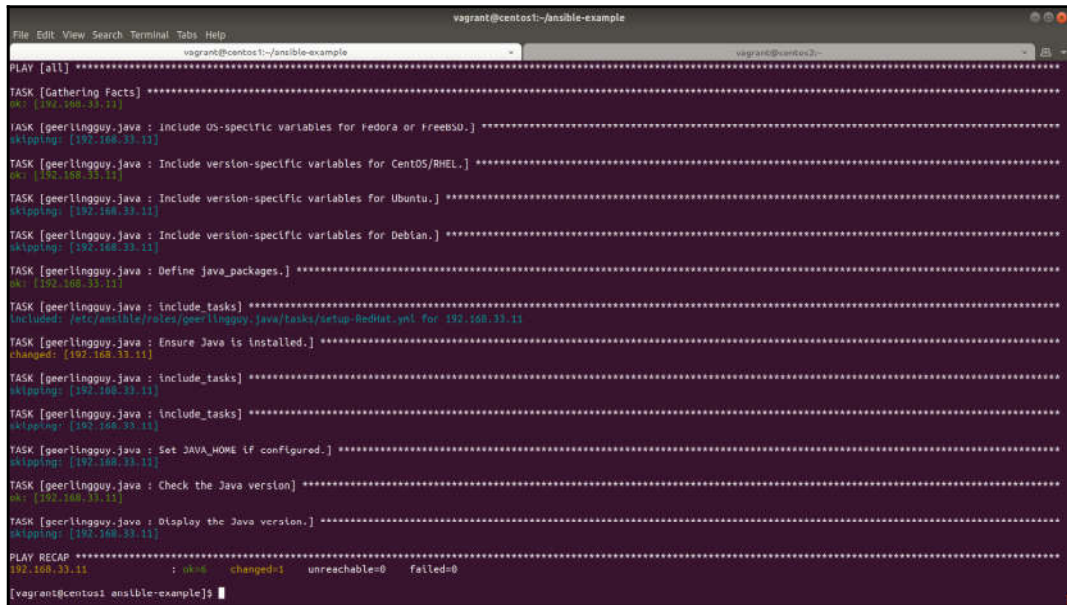
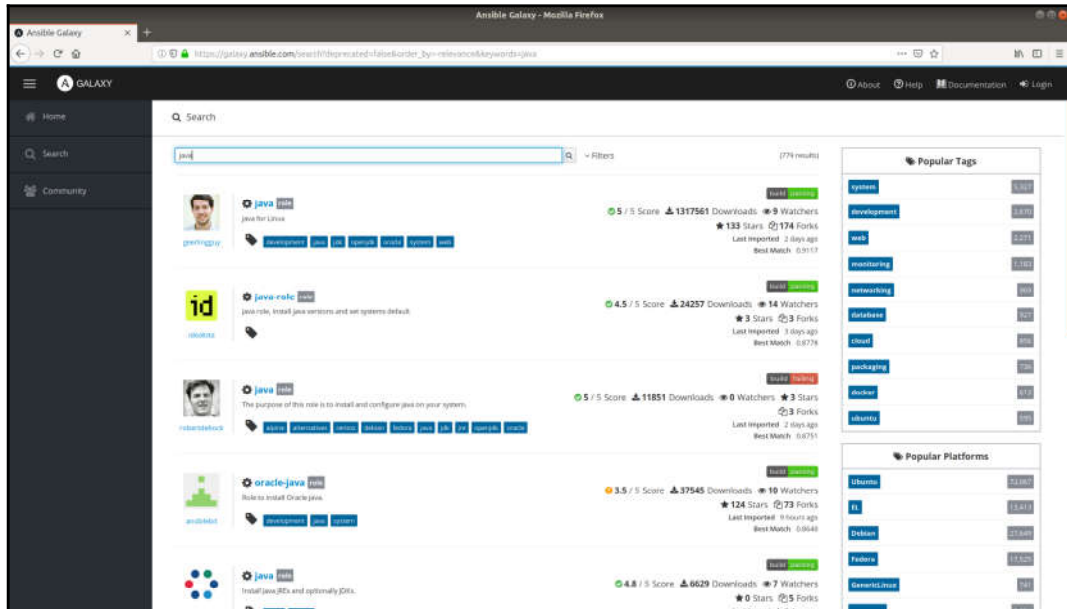
Kernel.org git repositories  
Git repositories hosted at kernel.org (henkfu1)

Index

Name	Description	Owner	Idle	Links
<i>pub/scrn/bluetooth</i>				
bluez.git	Bluetooth protocol stack for Linux	Marcel Holtmann	13 days	summary log tree
bt.git	Bluetooth low-complexity, subband codec (SBC) library	Marcel Holtmann	2 months	summary log tree
<i>pub/scrn/boot</i>				
dracut/dracut.git	dracut - Initramfs generator using udev	Harald Hoyer	4 weeks	summary log tree
eflinux/eflinux.git	The eflinux UEFI boot loader	Matt Fleming	4 years	summary log tree
syllinux/sylinux.git	Unnamed repository; edit this file 'description' to name the repository.	Syylinux workgroup	24 months	summary log tree
<i>pub/scrn/dev</i>				
pahole/pahole.git	Pahole and other DWARF utils	Arnaldo Carvalho de Melo	7 weeks	summary log tree
sparse/chris/sparse.git	Chris Li's sparse repository.	Christopher Li	9 months	summary log tree
sparse/lucvo/sparse.git	Luc's sparse repository	Luc Van Oostenryck	34 hours	summary log tree
sparse/sparse.git	C semantic parser	Sparse Group	34 hours	summary log tree
<i>pub/scrn/docs</i>				
kernel/kernel-docs.git	Kernel Documentation tree	Doc Group	1 years	summary log tree
kernel/ksmap.git	Kernel.org keysign map source	Kernel.org users	11 days	summary log tree
kernel/website.git	Kernel.org website source	Website Editors	6 days	summary log tree
man-pages/man-pages.git	Linux man pages Sections 2, 3, 4, 5, and 7	Michael Timothy Kerrisk	7 hours	summary log tree
man-pages/website.git	Website files for kdoc/man-pages	Michael Timothy Kerrisk	12 months	summary log tree
<i>pub/scrn/editors</i>				
uemacs/uemacs.git	Micro-emacs	Linus Torvalds	4 months	summary log tree
<i>pub/scrn/fs</i>				
ext2/3/4	Ext2/3/4 filesystem userspace utilities	Theodore T'so	4 weeks	summary log tree
ext2/xfstests-bld.git	Build framework and autorun scripts for xfstests	Theodore T'so	2 weeks	summary log tree
fat/fatattr/fatattr.git	FAT attribute set utility	H. Peter Anvin	10 years	summary log tree
fuse/bfs.git	FUSE fs w/ Berkeley DB backend.	Jeff Garzik	10 years	summary log tree
fuse/fuse-ext2.git	FUSE ext2 filesystem driver.	Jeff Garzik	12 years	summary log tree
squashfs/squashfs-tools.git	squashfs tools development	Phillip Lougher	12 months	summary log tree
xfs/maapi-dev.git	Data Management API runtime environment	Christoph Hellwig	7 years	summary log tree
xfs/xfs-documentation.git	XFS AsciiDoc Documentation tree	XFS FS Group	2 months	summary log tree
xfs/xfs-linux.git	XFS kernel development tree	XFS FS Group	2 weeks	summary log tree
xfs/xfsdocs-xmi-dev.git	XFS documentation in DocBook xmi format	Eric Sandeen	8 years	summary log tree

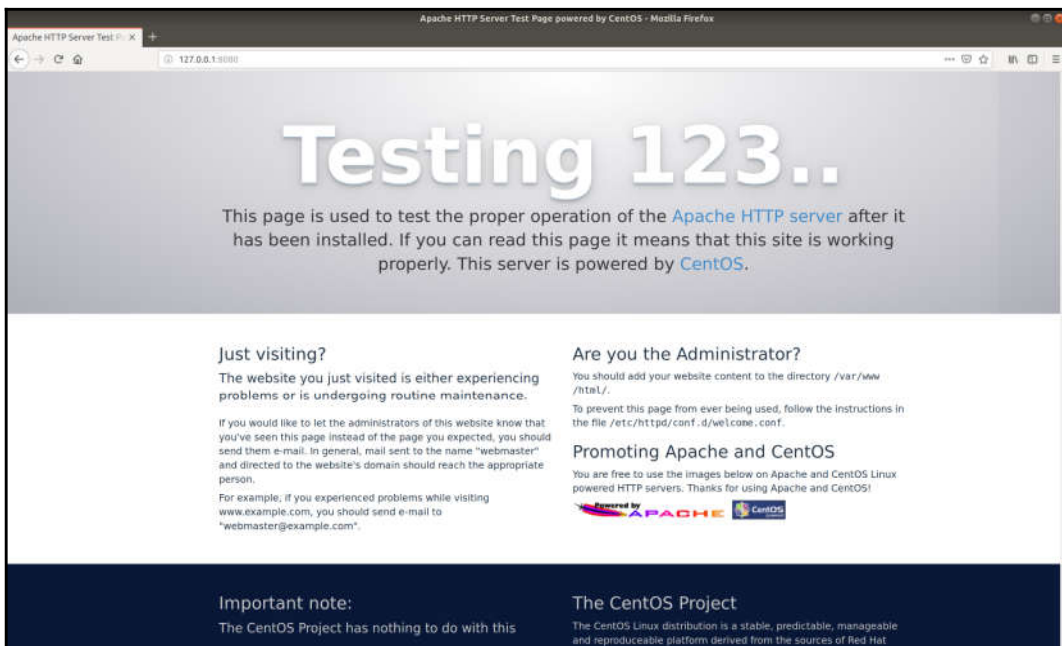
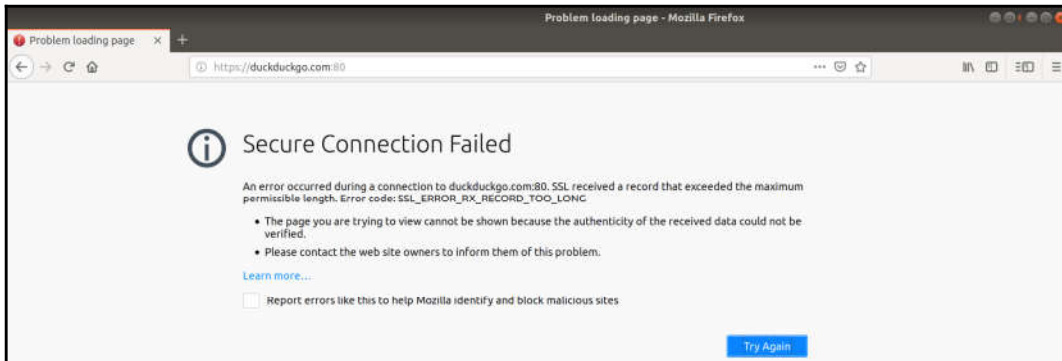
```
vagrant@centos1:~
File Edit View Search Terminal Tabs Help
vagrant@centos1:~
vagrant@centos2:~
package Generic OS package manager
packet_device Manage a bare metal server in the Packet Host.
packet_sshkey Create/delete an SSH key in Packet host.
pacman Manage packages with 'pacman'
pagerduty Create PagerDuty maintenance windows
pagerduty_alert Trigger, acknowledge or resolve PagerDuty incidents
pam_limits Modify Linux PAM limits
pamd Manage PAM Modules
panos_admin Add or modify PAN-OS user accounts password.
panos_admpwd change admin password of PAN-OS device using SSH with SSH key
panos_cert_gen_ssh generates a self-signed certificate using SSH protocol with SSH key
panos_check check if PAN-OS device is ready for configuration
panos_commit commit firewall's candidate configuration
panos_dag create a dynamic address group
panos_import import file on PAN-OS devices
panos_interface configure data-port network interface for DHCP
panos_lic apply authcode to a device/instance
panos_loadcfg load configuration on PAN-OS device
panos_mgtconfig configure management settings of device
panos_nat_policy create a policy NAT rule
panos_nat_rule create a policy NAT rule
panos_object create/read/update/delete object in PAN-OS or Panorama
panos_pg create a security profiles group
panos_restart restart a device
panos_sag Create a static address group.
panos_security_policy Create security rule policy on PanOS devices.
panos_security_rule Create security rule policy on PAN-OS devices or Panorama management console.
parted Configure block device partitions
patch Apply patch files using the GNU patch tool
pause Pause playbook execution
pear Manage pear/pecl packages
ping Try to connect to host, verify a usable python and return 'pong' on success
pingdom Pause/unpause Pingdom alerts
pip Manages Python library dependencies.
pkg5 Manages packages with the Solaris 11 Image Packaging System
pkg5_publisher Manages Solaris 11 Image Packaging System publishers
pkgin Package manager for SmartOS, NetBSD, et al.
pkgng Package manager for FreeBSD >= 9.0
pkgutil Manage CSW-Packages on Solaris
pn_cluster CLI command to create/delete a cluster.
pn_ospf CLI command to add/remove ospf protocol to a vRouter.
pn_ospfarea CLI command to add/remove ospf area to/from a vrouter.
pn_show Run show commands on nvOS device.
pn_trunk CLI command to create/delete/modify a trunk.
pn_vlag CLI command to create/delete/modify vlag.
pn_vlan CLI command to create/delete a VLAN.
pn_vrouter CLI command to create/delete/modify a vrouter.
pn_vrouterbgp CLI command to add/remove/modify vrouter-bgp.
pn_vrouterif CLI command to add/remove/modify vrouter-interface.
pn_vrouterlbif CLI command to add/remove vrouter-loopback-interface.
portage Package manager for Gentoo
portinstall Installing packages from FreeBSD's ports system
.
```





---

# Chapter 11: Web Servers, Databases, and Mail Servers

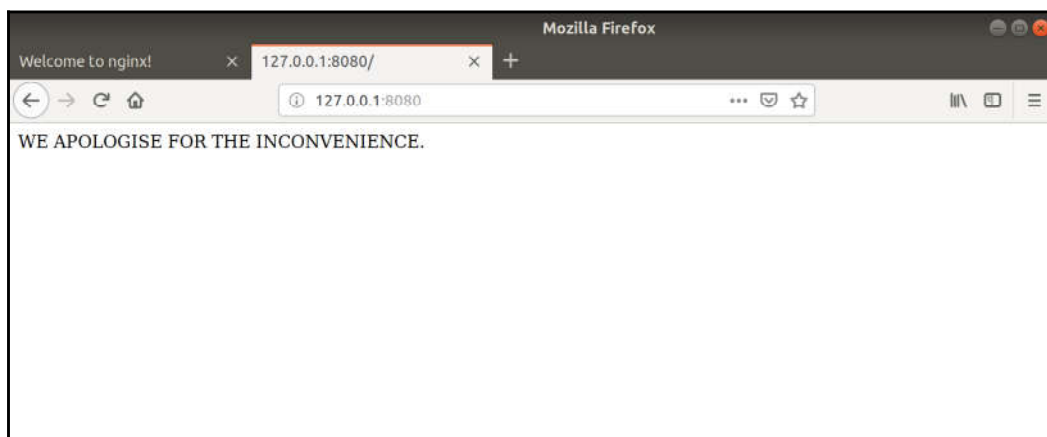


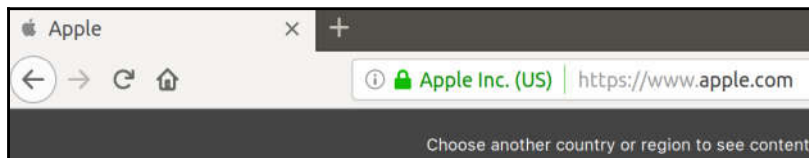


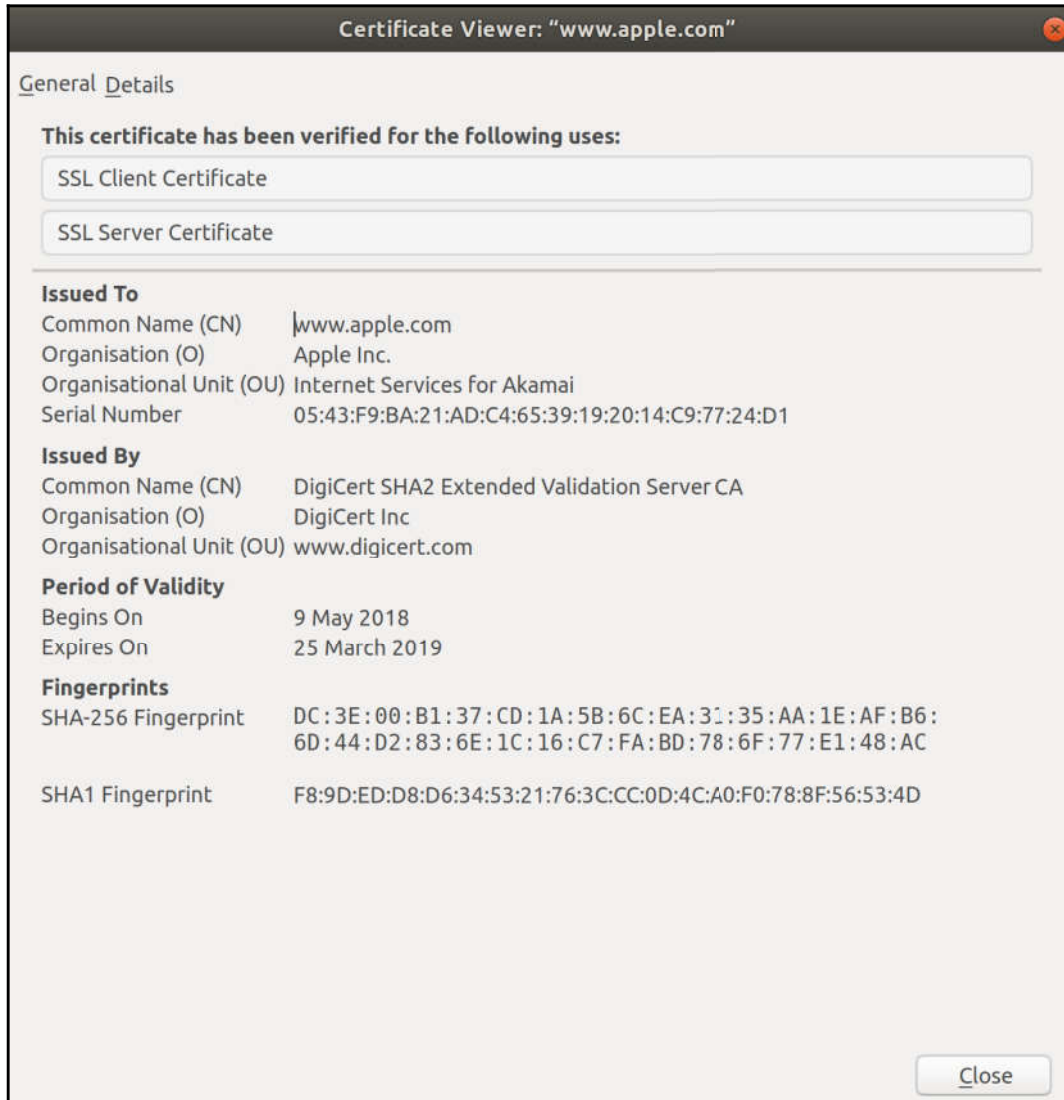
## Are you the Administrator?

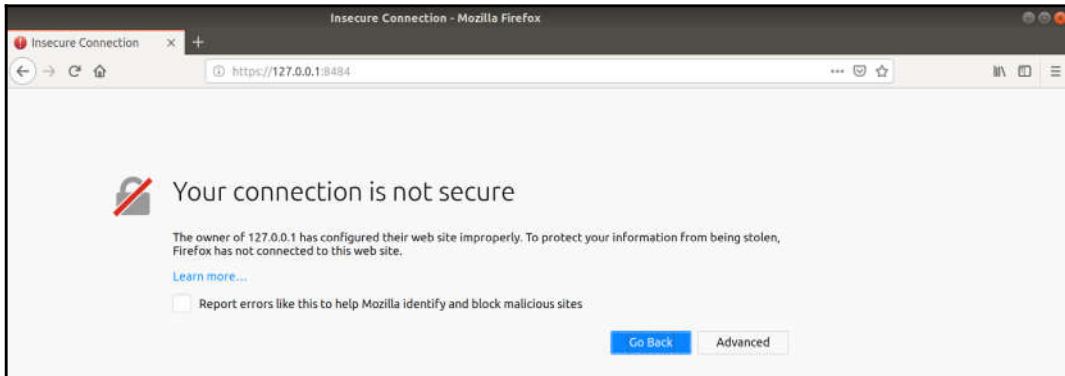
You should add your website content to the directory `/var/www/html/`.

To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.









```
vagrant@centos1:~  
File Edit View Search Terminal Help  
Message 1:  
From MAILER-DAEMON Mon Dec 3 09:35:43 2018  
Return-Path: <>  
X-Original-To: vagrant@centos1.localdomain  
Delivered-To: vagrant@centos1.localdomain  
Date: Mon, 3 Dec 2018 09:35:43 +0000 (UTC)  
From: MAILER-DAEMON@centos1.localdomain (Mail Delivery System)  
Subject: Undelivered Mail Returned to Sender  
To: vagrant@centos1.localdomain  
Auto-Submitted: auto-replied  
Content-Type: multipart/report; report-type=delivery-status;  
boundary="8E9A1206B117.1543829743/centos1.localdomain"  
Status: R0  
  
Part 1:  
Content-Description: Notification  
Content-Type: text/plain; charset=us-ascii  
  
This is the mail system at host centos1.localdomain.  
  
I'm sorry to have to inform you that your message could not  
be delivered to one or more recipients. It's attached below.  
  
For further assistance, please send mail to postmaster.  
  
If you do so, please include this problem report. You can  
delete your own text from the attached returned message.  
  
The mail system  
  
<packt@example.co>: Host or domain name not found. Name service error for  
name=example.co type=AAAA: Host not found  
  
Part 2:  
Content-Description: Delivery report  
Content-Type: message/delivery-status  
  
Part 3:  
Content-Description: Undelivered Message  
Content-Type: message/rfc822  
  
From vagrant@centos1.localdomain Mon Dec 3 09:35:43 2018  
Return-Path: <vagrant@centos1.localdomain>  
Date: Mon, 03 Dec 2018 09:35:43 +0000  
To: packt@example.co  
Subject: Example Subject  
User-Agent: Heirloom mailx 12.5 7/5/10  
Content-Type: text/plain; charset=us-ascii  
From: vagrant@centos1.localdomain (vagrant)  
  
This is an example email.  
We end emails written in this way, using the '.' symbol.  
That way, the client knows when the email has come to a close.  
& █
```

```
vagrant@debian1: ~
File Edit View Search Terminal Help
Return-path: <>
Envelope-to: vagrant@debian1
Delivery-date: Wed, 05 Dec 2018 17:46:39 +0000
Received: from Debian-exim by debian1 with local (Exim 4.89)
       id 1gUbFv-0001Wz-3Q
       for vagrant@debian1; Wed, 05 Dec 2018 17:46:39 +0000
X-Failed-Recipients: packt@example.co
Auto-Submitted: auto-replied
From: Mail Delivery System <Mailer-Daemon@debian1>
To: vagrant@debian1
Content-Type: multipart/report; report-type=delivery-status; boundary=1544031999-exim
dsn-1804289383
MIME-Version: 1.0
Subject: Mail delivery failed: returning message to sender
Message-Id: <E1gUbFv-0001Wz-3Q@debian1>
Date: Wed, 05 Dec 2018 17:46:39 +0000

--1544031999-eximdsn-1804289383
Content-type: text/plain; charset=us-ascii

This message was created automatically by mail delivery software.

A message that you sent could not be delivered to one or more of its
recipients. This is a permanent error. The following address(es) failed:

    packt@example.co
      Mailing to remote domains not supported

--1544031999-eximdsn-1804289383
Content-type: message/delivery-status

Reporting-MTA: dns; debian1

Action: failed
Final-Recipient: rfc822;packt@example.co
Status: 5.0.0

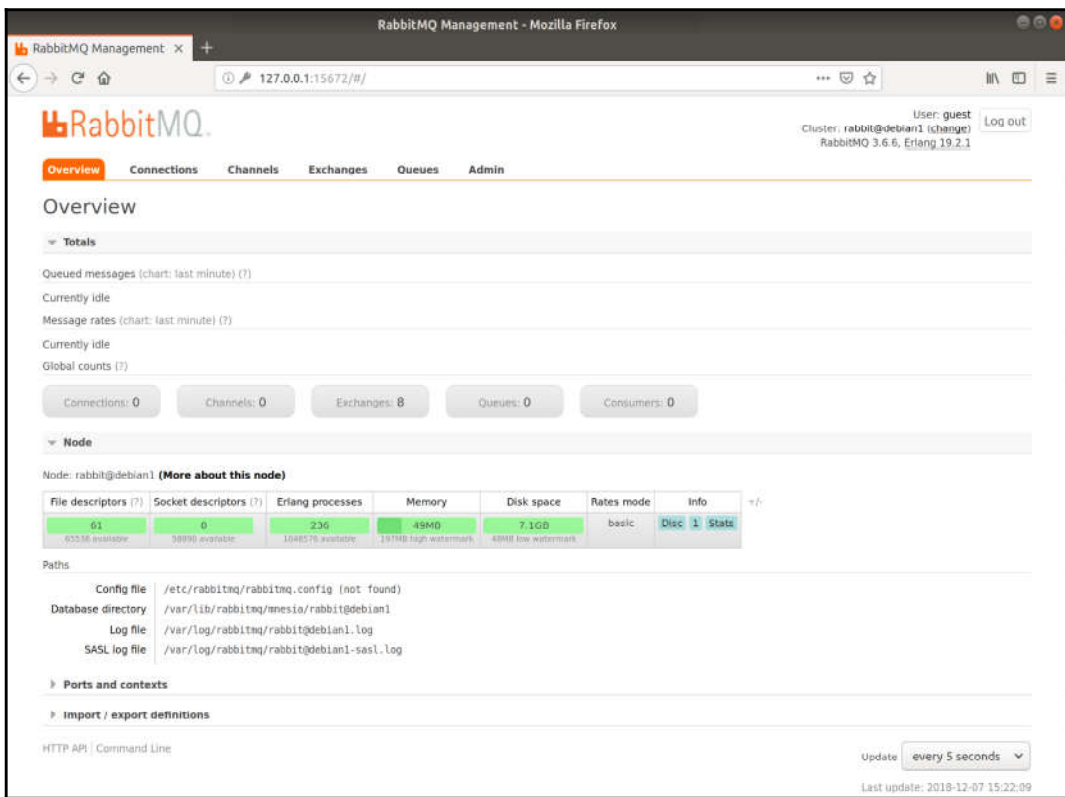
--1544031999-eximdsn-1804289383
Content-type: message/rfc822

Return-path: <vagrant@debian1>
Received: from vagrant by debian1 with local (Exim 4.89)
       (envelope-from <vagrant@debian1>)
       id 1gUbFu-0001Wx-W4
--More--
```



```
vagrant@debian1: ~  
File Edit View Search Terminal Help  
Package configuration  
  
Mail Server configuration  
Please select the mail server configuration type that best meets your needs.  
  
Systems with dynamic IP addresses, including dialup systems, should generally be configured to send outgoing mail to another machine, called a 'smarthost' for delivery because many receiving systems on the Internet block incoming mail from dynamic IP addresses as spam protection.  
  
A system with a dynamic IP address can receive its own mail, or local delivery can be disabled entirely (except mail for root and postmaster).  
  
General type of mail configuration:  
  
internet site; mail is sent and received directly using SMTP  
mail sent by smarthost; received via SMTP or fetchmail  
mail sent by smarthost; no local mail  
local delivery only; not on a network  
no configuration at this time  
  
<Ok> <Cancel>
```

```
vagrant@centos1:~  
File Edit View Search Terminal Help  
[vagrant@centos1 ~]$ mongo  
MongoDB shell version: 2.6.12  
connecting to: test  
Server has startup warnings:  
2018-12-05T18:10:42.971+0000 [initandlisten]   
2018-12-05T18:10:42.971+0000 [initandlisten] ** WARNING: Readahead for /var/lib/mongodb is set to 4096KB  
2018-12-05T18:10:42.971+0000 [initandlisten] ** We suggest setting it to 256KB (512 sectors) or less  
2018-12-05T18:10:42.971+0000 [initandlisten] ** http://dochub.mongodb.org/core/readahead  
>
```



---

## Chapter 12: Troubleshooting and Workplace Diplomacy

```
vagrant@centos1:~  
File Edit View Search Terminal Tabs Help  
vagrant@centos1:~ x vagrant@centos1:~ x  
12.5Kb 25.0Kb 37.5Kb 50.0Kb 62.5Kb  
centos1 => gateway 1.30Kb 2.54Kb 2.61Kb  
centos1 <=> 480b 2.10Kb 2.12Kb  
centos1 => server-54-230-129-152.ams50.r.cloud 672b 470b 118b  
centos1 <=> 672b 470b 118b  
centos1 => 10.0.2.3 0b 160b 120b  
centos1 <=> 0b 304b 181b  
centos1 => 151.101.64.81 0b 67b 101b  
centos1 <=> 0b 67b 101b  
centos1 => 151.101.128.81 0b 0b 218b  
centos1 <=> 0b 0b 218b  
  
TX: cum: 16.7KB peak: 13.5Kb rates: 1.95Kb 3.22Kb 3.15Kb  
RX: 14.1KB 14.0Kb 1.12Kb 2.92Kb 2.72Kb  
TOTAL: 30.8KB 27.4Kb 3.08Kb 6.14Kb 5.87Kb
```

```

vagrant@centos1:~
File Edit View Search Terminal Tabs Help
vagrant@centos1:~ x adam@adam-XPS-13-9360: ~/Vagrant/Chapter Twelve x
Total DISK READ : 0.00 B/s | Total DISK WRITE : 0.00 B/s
Actual DISK READ: 0.00 B/s | Actual DISK WRITE: 0.00 B/s
TID PRIO USER DISK READ DISK WRITE SWAPIN IO> COMMAND
1 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % systemd --switched-r--ten --deserialize 22
2 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kthreadd]
3 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [ksoftirqd/0]
5 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kworker/0:0H]
7 rt/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [migration/0]
8 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rcu_bh]
9 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rcu_sched]
10 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [lru-add-drain]
11 rt/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [watchdog/0]
524 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rpciod]
13 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kdevtmpfs]
14 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [netns]
15 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [khungtaskd]
16 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [writeback]
17 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kintegrityd]
18 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [bioset]
19 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kblockd]
20 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [md]
21 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [edac-poller]
23 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kworker/u2:1]
30 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kswapd0]
31 be/5 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [ksmd]
32 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [crypto]
546 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug
550 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon
551 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % systemd-logind
40 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kthrotld]
41 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kmpath_rdad]
42 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kaluad]
555 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
44 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [lpv6_addrconf]
520 be/3 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % auditd
563 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [gmain]
2612 be/4 postfix 0.00 B/s 0.00 B/s 0.00 % 0.00 % pickup -l -t unix -u
565 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
566 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
567 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
568 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
569 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [gdbus]
58 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [deferwq]
572 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [JS GC Helper]
574 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [JS Sour~ Thread]
575 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug
1090 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % python -Es /usr/sbin/tuned -l -P [gmain]
579 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % crond -n
1092 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % python -Es /usr/sbin/tuned -l -P
2629 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kworker/0:1]
583 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 %agetty --noclear tty1 linux
584 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon [gmain]
586 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon [gdbus]

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vagrant@centos1:~
File Edit View Search Terminal Tabs Help
vagrant@centos1:~ x vagrant@centos1:~
Total DISK READ : 0.00 B/s | Total DISK WRITE : 95.21 M/s
Actual DISK READ: 0.00 B/s | Actual DISK WRITE: 91.17 M/s
TID PRIO USER DISK READ DISK WRITE SWAPIN IO> COMMAND
2706 be/4 vagrant 0.00 B/s 95.21 M/s 0.00 % 0.00 % rsync -z -P --bwlimit=e examplefile-copied
1 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % systemd --switched-r~tem --deserialize 22
2 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kthreadd]
3 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [ksoftirqd/0]
5 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kworker/0:0H]
7 rt/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [migration/0]
8 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rcu_bh]
9 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rcu_sched]
10 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [lru-add-drain]
11 rt/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [watchdog/0]
524 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [rpciod]
13 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kdevtmpfs]
14 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [netns]
15 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [khungtaskd]
16 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [writeback]
17 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kintegrityd]
18 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [bioreset]
19 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kblockd]
20 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [md]
21 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [edac-poller]
23 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kworker/u2:1]
542 be/4 dbus 0.00 B/s 0.00 B/s 0.00 % 0.00 % dbus-daemon --system---systemd-activation
31 be/5 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [ksmd]
32 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [crypto]
546 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug
550 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon
551 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % systemd-logind
40 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kthrotld]
41 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kmpath_rdadcd]
42 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [kaluad]
555 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
44 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [ipv6_addrconf]
520 be/3 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % auditd
563 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [gmain]
564 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
565 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
566 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
1079 be/4 postfix 0.00 B/s 0.00 B/s 0.00 % 0.00 % qmgr -l -t unix -u
568 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % gssproxy -D
569 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [gdbus]
58 be/0 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % [deferwq]
572 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [JS GC Helper]
574 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug [JS Sour~ Thread]
575 be/4 polkitd 0.00 B/s 0.00 B/s 0.00 % 0.00 % polkitd --no-debug
1090 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % python -Es /usr/sbin/tuned -l -P [gmain]
579 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % crond -n
1092 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % python -Es /usr/sbin/tuned -l -P
583 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 %agetty --noclear tty1 linux
584 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon [gmain]
586 be/4 root 0.00 B/s 0.00 B/s 0.00 % 0.00 % NetworkManager --no-daemon [gdbus]

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vagrant@centos1:~
File Edit View Search Terminal Tabs Help
vagrant@centos1:~ x vagrant@centos1:~
top - 15:37:20 up 2 days, 17 min, 2 users, load average: 0.01, 0.12, 0.11
Tasks: 93 total, 1 running, 92 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.3 sy, 0.0 ni, 99.7 id, 0.0 wa, 0.0 hi, 0.0 st, 0.0 st
KiB Mem : 499428 total, 14736 free, 64684 used, 420008 buff/cache
KiB Swap: 1572860 total, 1572860 free, 0 used, 395016 avail Mem

  PID USER   PR   NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 343 root    20    0     0     0    0  S   0.3   0.0   0:04.68 xfsalld/dm-0
   1 root    20    0 127928 6504 4072  S   0.0   1.3   0:03.34 systemd
   2 root    20    0     0     0    0  S   0.0   0.0   0:00.01 kthreadd
   3 root    20    0     0     0    0  S   0.0   0.0   0:01.82 ksoftirqd/0
   5 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kworker/0:0H
   7 root    rt     0     0     0    0  S   0.0   0.0   0:00.00 migration/0
   8 root    20    0     0     0    0  S   0.0   0.0   0:00.00 rcu_bh
   9 root    20    0     0     0    0  S   0.0   0.0   0:01.01 rcu_sched
  10 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 lru-add-drain
  11 root    rt     0     0     0    0  S   0.0   0.0   0:03.43 watchdog/0
  13 root    20    0     0     0    0  S   0.0   0.0   0:00.00 kdevtmpfs
  14 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 netns
  15 root    20    0     0     0    0  S   0.0   0.0   0:00.10 khungtaskd
  16 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 writeback
  17 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kintegrityd
  18 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 bioset
  19 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kblockd
  20 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 md
  21 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 edac-poller
  23 root    20    0     0     0    0  S   0.0   0.0   0:01.22 kworker/u2:1
  30 root    20    0     0     0    0  S   0.0   0.0   0:00.29 kswapd0
  31 root    25    5     0     0    0  S   0.0   0.0   0:00.00 ksm
  32 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 crypto
  40 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kthrotld
  41 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kmpath_rdad
  42 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kaluad
  43 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kpsmoused
  44 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 ipv6_addrconf
  58 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 deferwq
  89 root    20    0     0     0    0  S   0.0   0.0   0:00.00 kauditd
 232 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 ata_sff
 237 root    20    0     0     0    0  S   0.0   0.0   0:00.00 scsi_ah_0
 239 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 scsi_tmF_0
 240 root    20    0     0     0    0  S   0.0   0.0   0:00.00 scsi_ah_1
 241 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 scsi_tmF_1
 243 root    20    0     0     0    0  S   0.0   0.0   0:00.01 kworker/u2:3
 309 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kdmflush
 310 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 bioset
 320 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 kdmflush
 321 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 bioset
 333 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 bioset
 334 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 xfsalloc
 335 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 xfs_mru_cache
 336 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 xfs_buf/dm-0
 337 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 xfs-data/dm-0
 338 root    0  -20     0     0    0  S   0.0   0.0   0:00.00 xfs-conv/dm-0

```