

Basic Health Monitoring of a Linux System
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The following is an explanation of the commands contained within a script I use to perform basic health checks on a daily basis. Almost all of these commands are standard Unix/Linux commands with more details available via the “man” command.

df on the file system, what’s full

Check to make sure the filesystem(s) is not full.

```
[root@needles]# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                32G  11G  19G  37% /
/dev/sda1        99M   24M   71M  25% /boot
/dev/sdb1       294G   93G  187G  34% /vol1
tmpfs           1006M    0 1006M   0% /dev/shm
```

last, see who has logged in

Has anyone you don’t know logged on?

```
[root@needles]# last | head -10
reboot  system boot  2.6.18-53.1.4.el Mon Dec 10 08:59    (00:01)
mward  tty1              Mon Dec 10 08:57 - down (00:00)
reboot  system boot  2.6.18-53.1.4.el Mon Dec 10 08:57    (00:01)
mward  pts/2            150.182.158.48 Mon Dec 10 08:00 - down (00:14)
mward  pts/2            c-67-161-239-144 Sun Dec  9 15:23 - 17:39 (02:15)
mward  pts/2            c-67-161-239-144 Tue Dec  4 22:57 - 01:09 (02:11)
mward  pts/2            150.182.158.29 Tue Dec  4 13:08 - 13:11 (00:03)
mward  pts/2            c-67-161-239-144 Sat Dec  1 14:34 - 14:56 (00:22)
```

wtmp begins Sat Dec 1 14:34:10 2007

du on tmp, any bigger than last time?

Get to know your /tmp directory. Rootkits and hackers like to put stuff there.

```
[root@needles]# du -h /tmp
4.0K  /tmp/.X11-unix
4.0K  /tmp/gconfd-chattonline
4.0K  /tmp/.font-unix
```

4.0K /tmp/.ICE-unix
etc...

364K /tmp

dmidecode, all about the motherboard

This command returns all strings containing “Stat” (Status, State) which shows the relative health of your motherboard.

```
[root@needles ~]# dmidecode |grep -B 2 Stat
  Serial Number: .....
  Asset Tag:
  Boot-up State: Safe
  Power Supply State: Safe
  Thermal State: Safe
  Security Status: None
--
  Max Speed: 5200 MHz
  Current Speed: 2400 MHz
  Status: Populated, Enabled
--
On Board Device Information
  Type: Ethernet
  Status: Enabled
--
On Board Device Information
  Type: Sound
  Status: Enabled
--
On Board Device Information
  Type: Other
  Status: Enabled
--
  Access Method: Memory-mapped physical 32-bit address
  Access Address: 0xFFF81000
  Status: Valid, Not Full
--
Handle 0x1800, DMI type 24, 5 bytes.
Hardware Security
  Power-On Password Status: Enabled
  Keyboard Password Status: Not Implemented
  Administrator Password Status: Enabled
  Front Panel Reset Status: Not Implemented
--
```

Cooling Device
Type: Fan
Status: OK

--

Cooling Device
Type: Fan
Status: OK

--

Cooling Device
Type: Fan
Status: OK

--

Handle 0x2000, DMI type 32, 11 bytes.
System Boot Information
Status: No errors detected

ifconfig, network errors

Take a look at the amount of errors, dropped packets, and overruns. These should not increase significantly on a daily basis.

```
[root@needles]# ifconfig eth0
eth0  Link encap:Ethernet HWaddr 00:50:04:63:28:DF
       inet addr:66.129.11.6 Bcast:66.129.11.7 Mask:255.255.255.252
       inet6 addr: fe80::250:4ff:fe63:28df/64 Scope:Link
       UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
       RX packets:145332486 errors:2 dropped:0 overruns:13 frame:3
       TX packets:232847187 errors:0 dropped:0 overruns:0 carrier:0
       collisions:0 txqueuelen:1000
       RX bytes:1179365874 (1.0 GiB) TX bytes:45021004 (42.9 MiB)
       Interrupt:209 Base address:0x4c00
```

ethtool, check the link status

```
[root@needles]# ethtool eth0
Settings for eth0:
    Supported ports: [ TP MII ]
    Supported link modes:  10baseT/Half 10baseT/Full
                          100baseT/Half 100baseT/Full
    Supports auto-negotiation: Yes
    Advertised link modes:  10baseT/Half 10baseT/Full
                          100baseT/Half 100baseT/Full
    Advertised auto-negotiation: Yes
    Speed: 100Mb/s
    Duplex: Full
```

Port: MII
PHYAD: 24
Transceiver: internal
Auto-negotiation: on
Current message level: 0x00000001 (1)
Link detected: yes

lmsensors, voltages, temperatures, and fan speeds

To check the thermal and electrical properties of your motherboard and associate hardware, you will probably have to install `lm_sensors`. You'll probably also have to run `sensors-detect` after the install and follow the instructions.

```
[root@needleslog]# sensors
lm85b-i2c-0-2e
Adapter: SMBus I801 adapter at c400

V1.5:    +1.47 V (min = +1.42 V, max = +1.58 V)
VCore:   +1.49 V (min = +1.45 V, max = +1.60 V)
V3.3:    +3.33 V (min = +3.13 V, max = +3.47 V)
V5:      +5.03 V (min = +4.74 V, max = +5.26 V)
V12:     +12.25 V (min = +11.38 V, max = +12.62 V)
CPU_Fan: 2386 RPM (min = 4000 RPM)           ALARM
fan2:    0 RPM (min = 0 RPM)
fan3:    0 RPM (min = 0 RPM)
fan4:    300 RPM (min = 0 RPM)
CPU:     +29°C (low = +10°C, high = +50°C)
Board:   +29°C (low = +10°C, high = +35°C)
Remote:  +28°C (low = +10°C, high = +35°C)
CPU_PWM: 255
Fan2_PWM: 255
Fan3_PWM: 77
vid:    +1.525 V (VRM Version 9.0)
```

smartctl, check on the SMART status of your drives

Serial ATA (sata) and regular ATA drives have “SMART” health monitoring, which can be viewed via `smartctl`. Make sure you do it for all drives. This doesn't work for SCSI drives.

```
[root@needleslog]# smartctl -d ata -iH /dev/sda
smartctl version 5.36 [i686-redhat-linux-gnu] Copyright (C) 2002-6 Bruce Allen
Home page is http://smartmontools.sourceforge.net/
```

=== START OF INFORMATION SECTION ===

Model Family: Western Digital Raptor family
Device Model: WDC WD360GD-00FNA0
Serial Number: WD-WMAH91265708
Firmware Version: 35.06K35
User Capacity: 37,019,566,080 bytes
Device is: In smartctl database [for details use: -P show]
ATA Version is: 6
ATA Standard is: Exact ATA specification draft version not indicated
Local Time is: Thu Mar 26 14:41:07 2009 EDT
SMART support is: Available - device has SMART capability.
SMART support is: Enabled

=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED

dmesg the drives, any errors?

You should routinely look at the output of dmesg, especially with regards to your drives. Errors, when they occur, will be logged.

```
[root@needleslog]# dmesg |grep sda
SCSI device sda: 72303840 512-byte hdwr sectors (37020 MB)
sda: Write Protect is off
sda: Mode Sense: 00 3a 00 00
SCSI device sda: drive cache: write back
SCSI device sda: 72303840 512-byte hdwr sectors (37020 MB)
sda: Write Protect is off
sda: Mode Sense: 00 3a 00 00
SCSI device sda: drive cache: write back
sda: sda1 sda2
sd 0:0:0:0: Attached scsi disk sda
EXT3 FS on sda1, internal journal
```

top, showing cpu hogs and zombies

Find what processes are eating up your RAM and cpu. Make sure the number of zombie processes is low.

```
[root@needleslog]# top -bn 2 >> /tmp/top.txt
```

```
top - 14:48:39 up 129 days, 4:08, 1 user, load average: 0.01, 0.02, 0.01
Tasks: 174 total, 1 running, 173 sleeping, 0 stopped, 0 zombie
Cpu(s): 0.8%us, 0.3%sy, 0.1%ni, 98.4%id, 0.3%wa, 0.0%hi, 0.0%si, 0.1%st
Mem: 2058616k total, 1951164k used, 107452k free, 215688k buffers
Swap: 2031608k total, 400k used, 2031208k free, 1224684k cached
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	15	0	2060	584	508	S	0.0	0.0	0:00.75	init
2	root	RT	-5	0	0	0	S	0.0	0.0	0:00.00	migration/0
3	root	34	19	0	0	0	S	0.0	0.0	0:00.24	ksoftirqd/0
4	root	RT	-5	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
5	root	10	-5	0	0	0	S	0.0	0.0	0:00.05	events/0
6	root	10	-5	0	0	0	S	0.0	0.0	0:00.00	khelper
7	root	20	-5	0	0	0	S	0.0	0.0	0:00.00	kthread
10	root	10	-5	0	0	0	S	0.0	0.0	0:08.35	kblockd/0
11	root	20	-5	0	0	0	S	0.0	0.0	0:00.00	kacpid

the bash script

Here's the script that I run daily (from /etc/cron.daily).

```
#!/bin/sh
uname -a > /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
df -h >> /tmp/mhc.txt
last |head -10 >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
du -h /tmp >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
ethtool eth0 >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
ifconfig eth0 >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
dmidecode |grep -B 2 Stat >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
sensors >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
top -bn 2 >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
smartctl -d ata -iH /dev/sda >> /tmp/mhc.txt
smartctl -d ata -iH /dev/sdb >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
dmesg |grep sda >> /tmp/mhc.txt
dmesg |grep sdb >> /tmp/mhc.txt
echo "-----">>/tmp/mhc.txt
```

```
cat /tmp/mhc.txt |mail -s mike-health-check mward@slug.ceca.utc.edu
```