Linux Shell script to monitor CPU utilization with email alert

There are many opensource monitoring tools are available to monitor Linux systems performance which will send an email alert when the system reaches the given threshold limit.

It monitors everything such as CPU utilization, Memory utilization, swap utilization, disk space utilization and much more.

If you only have few systems and want to monitor them then writing a small shell script can achieve this.

In this tutorial we have added two shell script to monitor CPU utilization on Linux system.

When the system reaches the given threshold then it will trigger a mail to corresponding email id.

#### **Method-1 : Linux Shell script to monitor CPU utilization with email alert**

If you want to get CPU utilization percentage through mail alert when the system reaches the given threshold, use the following script.

This is very simple and straightforward one line script.

It will trigger an email when your system reaches 80% CPU utilization.

\*/5 \* \* \* \* /usr/bin/cat /proc/loadavg | awk '{print $1}' | awk '{ if($1 > 80) printf("Current CPU Utilization is: %.2f%\n"), $0;}' | mail -s "High CPU Alert" daygeek@gmail.com

**Note:** Please change the email id and CPU utilization threshold value as per your requirement.

**Output:** You will be getting an email alert similar to below.

Current CPU Utilization is: 80.40%

We added many useful shell scripts in the past. If you want to check those, navigate to the below link.

* [**How to automate day to day activities using shell scripts?**](https://www.2daygeek.com/category/shell-script/)

#### **Method-2 :Linux Shell script to monitor CPU utilization with email alert**

If you want to get more information about the CPU utilization in the mail alert.

Then use the following script, which includes top CPU utilization process details based on the **top** Command and **ps** Command.

This will instantly gives you an idea what is going on your system.

It will trigger an email when your system reaches 80% CPU utilization.

**Note:** Please change the email id and CPU utilization threshold value as per your requirement.

# vi /opt/scripts/cpu-alert.sh

#!/bin/bash

cpuuse=$(cat /proc/loadavg | awk '{print $1}')

if [ "$cpuuse" > 80 ]; then

SUBJECT="ATTENTION: CPU Load Is High on $(hostname) at $(date)"

MESSAGE="/tmp/Mail.out"

TO="daygeek@gmail.com"

echo "CPU Current Usage is: $cpuuse%" >> $MESSAGE

echo "" >> $MESSAGE

echo "+------------------------------------------------------------------+" >> $MESSAGE

echo "Top CPU Process Using top command" >> $MESSAGE

echo "+------------------------------------------------------------------+" >> $MESSAGE

echo "$(top -bn1 | head -20)" >> $MESSAGE

echo "" >> $MESSAGE

echo "+------------------------------------------------------------------+" >> $MESSAGE

echo "Top CPU Process Using ps command" >> $MESSAGE

echo "+------------------------------------------------------------------+" >> $MESSAGE

echo "$(ps -eo pcpu,pid,user,args | sort -k 1 -r | head -10)" >> $MESSAGE

mail -s "$SUBJECT" "$TO" < $MESSAGE

rm /tmp/Mail.out

fi

Finally add a [**cronjob**](https://www.2daygeek.com/crontab-cronjob-to-schedule-jobs-in-linux/) to automate this. It will run for every 5 minutes.

# crontab -e

\*/10 \* \* \* \* /bin/bash /opt/scripts/cpu-alert.sh

**Note:** Since the script has scheduled to run once for every 5 minutes  , you will be getting the email alert on 5 minutes interval

Say for example If your system reaches the given limit after  8.25 minutes  then you will be getting an email alert on the second cycle i.e after 10 minutes ( 2nd 5 minute cycle)

**Output:** You will be getting an email alert similar to below.

CPU Current Usage is: 80.51%

+------------------------------------------------------------------+

Top CPU Process Using top command

+------------------------------------------------------------------+

top - 13:23:01 up 1:43, 1 user, load average: 2.58, 2.58, 1.51

Tasks: 306 total, 3 running, 303 sleeping, 0 stopped, 0 zombie

%Cpu0 : 6.2 us, 6.2 sy, 0.0 ni, 87.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu1 : 18.8 us, 0.0 sy, 0.0 ni, 81.2 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu2 : 50.0 us, 37.5 sy, 0.0 ni, 12.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu3 : 5.9 us, 5.9 sy, 0.0 ni, 88.2 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu4 : 0.0 us, 5.9 sy, 0.0 ni, 94.1 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu5 : 29.4 us, 23.5 sy, 0.0 ni, 47.1 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu6 : 0.0 us, 5.9 sy, 0.0 ni, 94.1 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

%Cpu7 : 5.9 us, 0.0 sy, 0.0 ni, 94.1 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

KiB Mem : 16248588 total, 223436 free, 5816924 used, 10208228 buff/cache

KiB Swap: 17873388 total, 17871340 free, 2048 used. 7440884 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND

8867 daygeek 20 2743884 440420 360952 R 100.0 2.7 1:07.25 /usr/lib/virtualbox/VirtualBoxVM --comment CentOS7 --startvm 002f47b8-2af2-48f5-be1d-67b67e03514c --no-startvm-errormsgbox

9119 daygeek 20 36136 784 R 46.7 0.0 0:00.07 /usr/bin/CROND -n

1057 daygeek 20 889808 487692 461692 S 13.3 3.0 4:21.12 /usr/lib/Xorg vt2 -displayfd 3 -auth /run/user/1000/gdm/Xauthority -nolisten tcp -background none -noreset -keeptty -verbose 3

3098 daygeek 20 1929012 351412 120532 S 13.3 2.2 16:42.51 /usr/lib/firefox/firefox -contentproc -childID 6 -isForBrowser -prefsLen 9236 -prefMapSize 184485 -parentBuildID 20190521202118 -greomni /us+

1 root 20 188820 10144 7708 S 6.7 0.1 0:06.92 /sbin/init

818 gdm 20 199836 25120 15876 S 6.7 0.2 0:01.85 /usr/lib/Xorg vt1 -displayfd 3 -auth /run/user/120/gdm/Xauthority -nolisten tcp -background none -noreset -keeptty -verbose 3

1170 daygeek 9 -11 2676516 16516 12520 S 6.7 0.1 1:28.30 /usr/bin/pulseaudio --daemonize=no

8271 root 20 I 6.7 0:00.21 [kworker/u16:4-i915]

9117 daygeek 20 13528 4036 3144 R 6.7 0.0 0:00.01 top -bn1

+------------------------------------------------------------------+

Top CPU Process Using ps command

+------------------------------------------------------------------+

%CPU PID USER COMMAND

8.8 8522 daygeek /usr/lib/virtualbox/VirtualBox

86.2 8867 daygeek /usr/lib/virtualbox/VirtualBoxVM --comment CentOS7 --startvm 002f47b8-2af2-48f5-be1d-67b67e03514c --no-startvm-errormsgbox

76.1 8921 daygeek /usr/lib/virtualbox/VirtualBoxVM --comment Ubuntu-18.04 --startvm e8c32dbb-8b01-41b0-977a-bf28b9db1117 --no-startvm-errormsgbox

5.5 8080 daygeek /usr/bin/nautilus --gapplication-service

4.7 4575 daygeek /usr/lib/firefox/firefox -contentproc -childID 12 -isForBrowser -prefsLen 9375 -prefMapSize 184485 -parentBuildID 20190521202118 -greomni /usr/lib/firefox/omni.ja -appomni /usr/lib/firefox/browser/omni.ja -appdir /usr/lib/firefox/browser 1525 true tab

4.4 3511 daygeek /usr/lib/firefox/firefox -contentproc -childID 8 -isForBrowser -prefsLen 9308 -prefMapSize 184485 -parentBuildID 20190521202118 -greomni /usr/lib/firefox/omni.ja -appomni /usr/lib/firefox/browser/omni.ja -appdir /usr/lib/firefox/browser 1525 true tab

4.4 3190 daygeek /usr/lib/firefox/firefox -contentproc -childID 7 -isForBrowser -prefsLen 9237 -prefMapSize 184485 -parentBuildID 20190521202118 -greomni /usr/lib/firefox/omni.ja -appomni /usr/lib/firefox/browser/omni.ja -appdir /usr/lib/firefox/browser 1525 true tab

4.4 1612 daygeek /usr/lib/firefox/firefox -contentproc -childID 1 -isForBrowser -prefsLen 1 -prefMapSize 184485 -parentBuildID 20190521202118 -greomni /usr/lib/firefox/omni.ja -appomni /usr/lib/firefox/browser/omni.ja -appdir /usr/lib/firefox/browser 1525 true tab

4.2 3565 daygeek /usr/bin/../lib/notepadqq/notepadqq-bin