

```
tdgunes — vtop — vtop — 80x24

System Information:
Model: MacBookPro10,1
CPU: Intel(R) Core(TM) i7-3720QM CPU @ 2.60GHz
Boot Time: Thu, 14/05/2015 19:09:54
Physical Memory: 8 GB
  PID  USER  COMMAND
18879  tdgunes  vtop
18876  tdgunes  bash
18875    root  com.apple.Accoun
18874    root  login
18871 _nsurlsessiond  nsurlsessiond
18870  tdgunes  nsurlsessiond
18869  tdgunes  cloudd
18868  tdgunes  ScopedBookmarkAg
18867  tdgunes  secinitd
18865    root  com.apple.Perfor
18864  tdgunes  tcdd
18862    root  systemstatsd
18861    root  networkd_privile
18860  tdgunes  com.apple.iCloud
18859    root  cfprefsd
18858  tdgunes  cfprefsd
18857  tdgunes  syncdefaultsd
18856    root  diagnosticd
```

vtop

Taha Doğan Güneş
Deniz Sökmen

Outline

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Problem

- Viewing and killing processes is hard.
 - Traditionally super users can view processes and their PIDs by *ps aux* or *top*
 - Hard to deal with outputs of these commands.
 - Additional pipe is required to filter process. (*grep*)
 - For killing, user is required to write *kill \$PID*.
 - Later checking whether process is killed or not, user again required to write another command.
- Super users with lots of remote servers.
 - Hard to get all system information on one place.

Alternatives

```
tdgunes — top — 80x24
Processes: 213 total, 2 running, 14 stuck, 197 sleeping, 1572 threads 18:25:43
Load Avg: 1.95, 2.02, 2.04 CPU usage: 1.81% user, 2.53% sys, 95.65% idle
SharedLibs: 12M resident, 18M data, 0B linkedit.
MemRegions: 111717 total, 2359M resident, 41M private, 913M shared.
PhysMem: 8153M used (1392M wired), 32M unused.
VM: 594G vsize, 1065M framework vsize, 2501301(0) swapins, 2767294(0) swapouts.
Networks: packets: 105050753/33G in, 98714130/10G out.
Disks: 3364081/91G read, 3106909/111G written.

PID  COMMAND  %CPU  TIME  #TH  #WQ  #PORT  MEM  PURG  CMPRS  PGRP
18943 screencaptur 0.0 00:00.03 6 4 52 2040K 20K 0B 238
18942 top 2.9 00:00.43 1/1 0 20 3420K 0B 0B 18942
18923 bash 0.0 00:00.01 1 0 15 692K 0B 0B 18923
18922 login 0.0 00:00.02 3 1 28 1376K 0B 0B 18922
18914 pkd 0.0 00:00.11 2 0 46 1604K 0B 1152K 18914
18912 bird 0.0 00:00.23 2 0 92 5180K 0B 3810K 18912
18905 tcdd 0.0 00:00.04 2 1 32
18903 VTDecoderXPC 0.0 00:00.03 2 0 40
18899 com.apple.au 0.0 00:00.03 2 1 38
18898 com.apple.au 0.0 00:00.01 3 2 20
18897- com.apple.qt 0.0 00:00.06 2 0 65
18896 com.apple.Sa 0.0 00:00.41 7 3 69
18895 sysmond 0.0 00:00.06 2 1 18
18891 pbs 0.0 00:00.07 2 1 41
```

top

```
tdgunes — bash —
17019 1.2 0.5 2638372 38144 ?? U
tdgunes 0B 16675 1.0 0.6 1245428 50228 ?? S
tdgunes 0B 16933 0.9 3.4 7561408 282976 ?? S
tdgunes 0B 17581 0.3 5.4 4678948 449248 ?? U
tdgunes 0B 289 0.1 0.1 2778668 7916 ?? S
tdgunes 0B 16638 0.1 3.6 4632560 304044 ?? S
tdgunes 0B 18899 0.0 0.0 2501956 1900 ?? S
tdgunes 0B 18898 0.0 0.1 2479196 4328 ?? U
tdgunes 0B 18897 0.0 0.0 674692 1796 ?? S
tdgunes 0B 18896 0.0 0.1 2579976 8460 ?? S
root 0B 18895 0.0 0.0 2498088 1164 ?? S
tdgunes 0B 18891 0.0 0.0 2543032 3220 ?? S
root 0B 18889 0.0 0.0 2495340 912 ?? U
tdgunes 0B 18887 0.0 0.1 2550108 4732 ?? U
iconservices 0B 18885 0.0 0.1 2498388 6084 ?? S
tdgunes 0B 18884 0.0 0.0 2503660 3540 ?? S
root 0B 18881 0.0 0.0 2516940 2908 ?? S
root 0B 18875 0.0 0.0 2506424 2244 ?? S
_nsrurlsessiond 0B 18871 0.0 0.1 2488756 4532 ?? S
tdgunes 0B 18870 0.0 0.1 2544644 9496 ?? S
tdgunes 0B 18869 0.0 0.3 2556928 26836 ?? S
tdgunes 0B 18868 0.0 0.0 2520512 2948 ?? S
tdgunes 0B 18867 0.0 0.1 2520004 5012 ?? S
root 0B 18865 0.0 0.0 2515580 2356 ?? S
tdgunes 0B 18864 0.0 0.1 2545232 4248 ?? S
root 0B 18862 0.0 0.0 2477688 1084 ?? S
root 0B 18861 0.0 0.0 2495848 728 ?? S
tdgunes 0B 18860 0.0 0.1 2538372 7056 ?? S
root 0B 18859 0.0 0.0 2516348 1960 ?? S
tdgunes 0B 18858 0.0 0.0 2516944 2016 ?? U
root 0B 18856 0.0 0.0 2469252 744 ?? S
```

ps aux

```
tdgunes — bash — 98x31
|---- 16695 tdgunes /Applications/Steam.app/Contents/Frameworks/Steam Helper.app/Contents/M
|---- 16697 tdgunes /System/Library/Frameworks/CoreServices.framework/Frameworks/Metadate.frameo
|---- 16811 tdgunes /System/Library/Frameworks/CoreServices.framework/Frameworks/Metadate.frameo
|---- 16923 tdgunes /Applications/Spotify.app/Contents/MacOS/Spotify
|---- 16926 tdgunes /Applications/Spotify.app/Contents/Frameworks/Spotify Helper.app/Contents/M
|---- 16929 tdgunes /Applications/Spotify.app/Contents/Frameworks/Spotify Helper.app/Contents/M
|---- 16933 tdgunes /Applications/CLion.app/Contents/MacOS/clion
|---- 16948 tdgunes /Applications/CLion.app/Contents/bin/fsnotifier
|---- 16946 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 16990 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 16992 tdgunes /System/Library/Frameworks/WebKit.framework/Versions/A/XPCServices/com.apple.q
|---- 17004 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17019 tdgunes /Applications/Utilities/Terminal.app/Contents/MacOS/Terminal
|---- 18801 root login -pf tdgunes
|---- 18802 tdgunes -bash
|---- 18922 root login -pf tdgunes
|---- 18923 tdgunes -bash
|---- 19024 tdgunes ps tree
|---- 19025 root ps -axwwo user,pid,ppid,pgid,command
|---- 17058 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17065 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17458 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17581 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17595 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17601 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17734 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17850 tdgunes /System/Library/StagedFrameworks/Safari/WebKit.framework/Versions/A/XPCServic
|---- 17858 tdgunes /Applications/Mail.app/Contents/MacOS/Mail
|---- 17863 tdgunes /System/Library/Frameworks/WebKit.framework/Versions/A/XPCServices/com.apple.
|---- 17865 tdgunes /System/Library/Frameworks/WebKit.framework/Versions/A/XPCServices/com.apple.
```

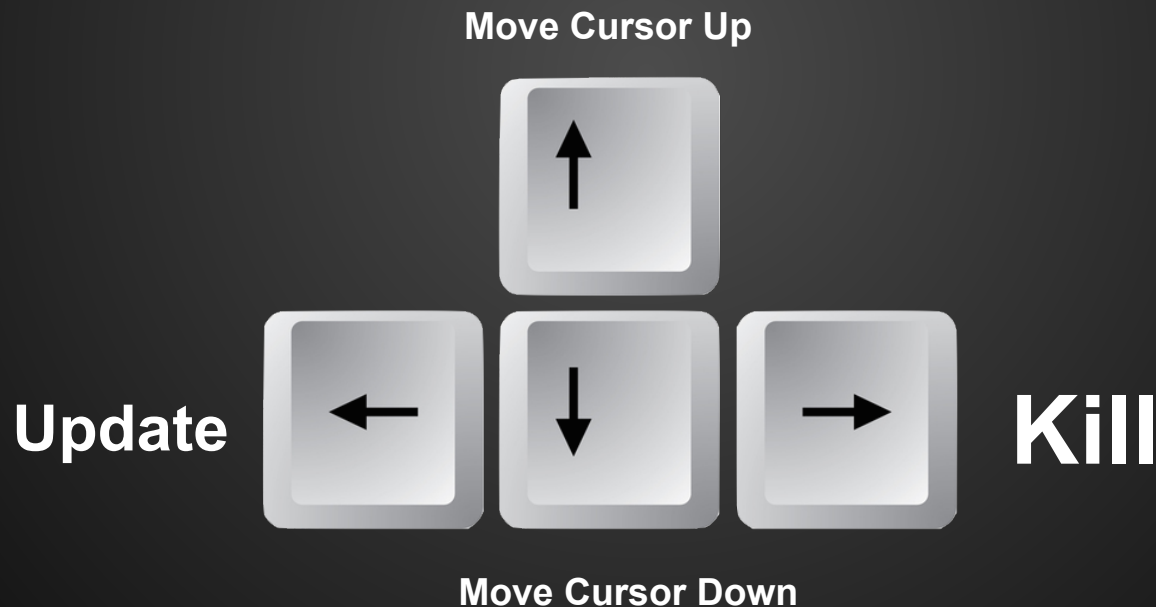
ps tree

Alternatives

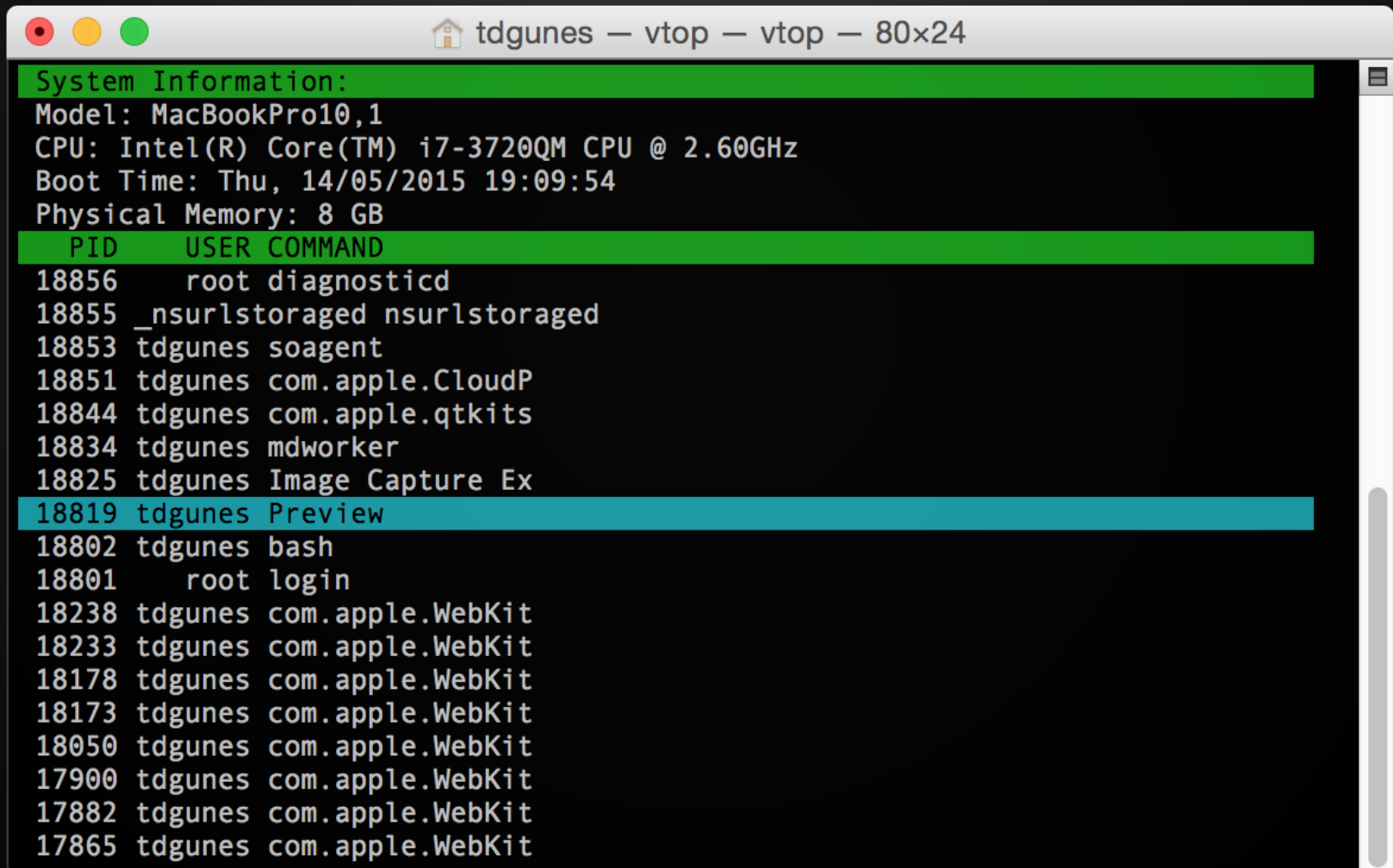
- All of them require a learning curve:
 - top
 - kill
 - pstree
 - ps
 - killall
 - pgrep
- Using one of them requires another one.
- Lack of BSD support.

vtop *will be published on Github*

- Simple terminal application to view system information and processes for BSD Systems.



vtop



```
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Boot Time: Thu, 14/05/2015 19:09:54
Physical Memory: 8 GB

PID    USER  COMMAND
18856   root  diagnosticd
18855   _nsurlstoraged nsurlstoraged
18853   tdgunes  soagent
18851   tdgunes  com.apple.CloudP
18844   tdgunes  com.apple.qtkits
18834   tdgunes  mdworker
18825   tdgunes  Image Capture Ex
18819   tdgunes  Preview
18802   tdgunes  bash
18801   root    login
18238   tdgunes  com.apple.WebKit
18233   tdgunes  com.apple.WebKit
18178   tdgunes  com.apple.WebKit
18173   tdgunes  com.apple.WebKit
18050   tdgunes  com.apple.WebKit
17900   tdgunes  com.apple.WebKit
17882   tdgunes  com.apple.WebKit
17865   tdgunes  com.apple.WebKit
```

System Calls

- **sysctl.h**
 - get or set kernel state for BSD System.
 - *kern.boottime*
 - *hw.model*
 - *machdep.cpu.brand_string*
 - *hw.mem_size*
 - *kinfo_proc*
- **malloc**
- **signal.h**
 - *for sending processes signals like SIGKILL*

CMake

- CMake is an open-source build system that can be used to create cross-platform makefiles and package software.
- We have used CMake in case we might plan to port the application to other platforms, since CMake works independent from the platform.

ncurses

- ncurses is a library to design text-based UI for applications that work under a terminal or a shell.
- Since vtop is a terminal tool, we have decided to use ncurses to easily design a GUI.