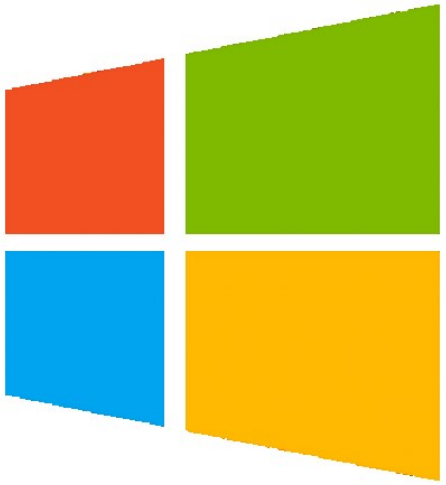
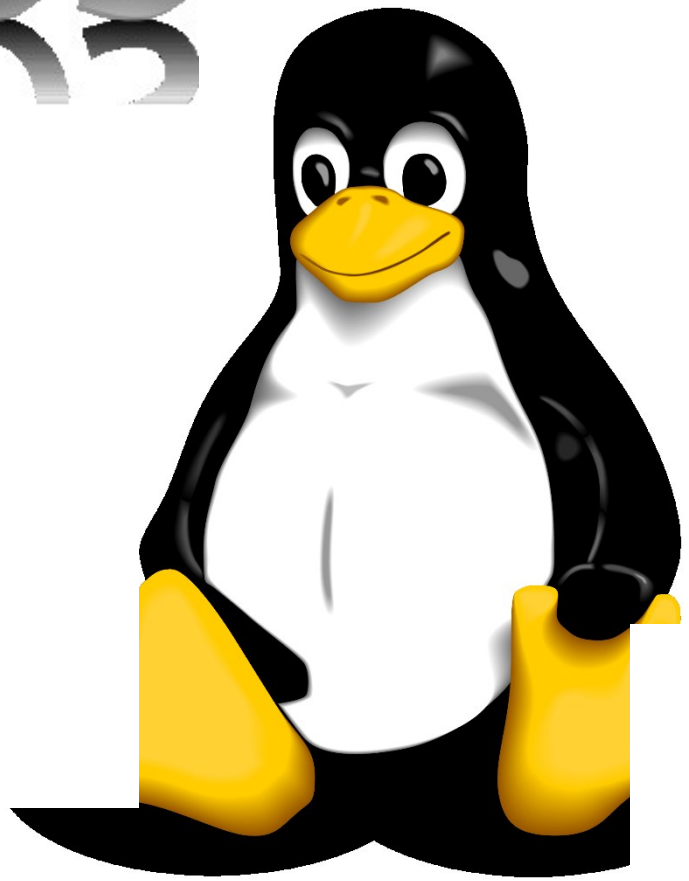
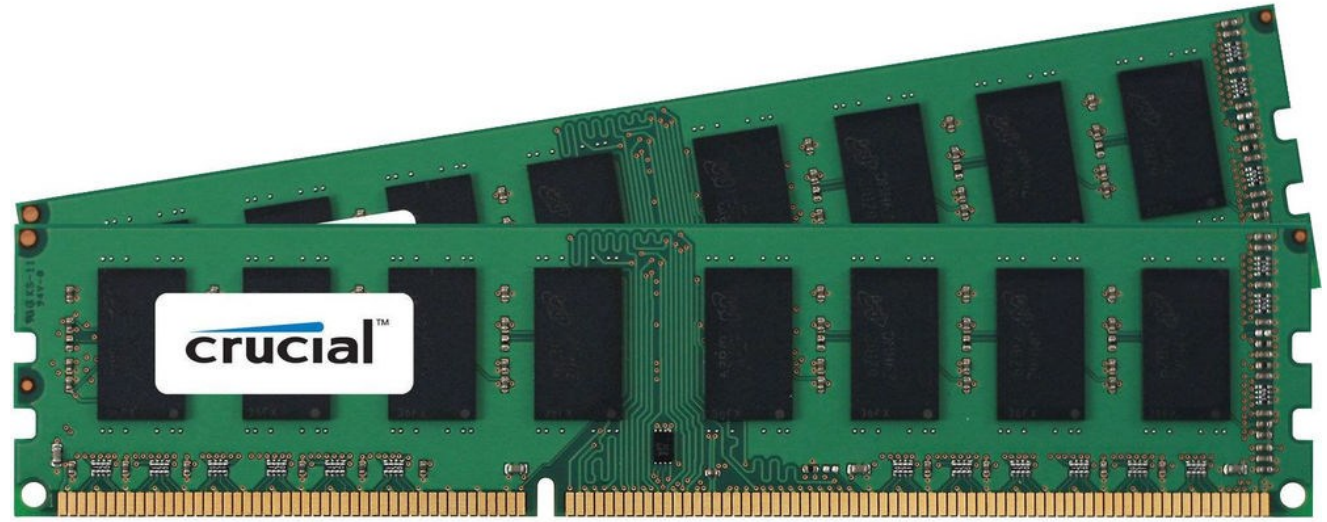
Virtualization
Its Magic



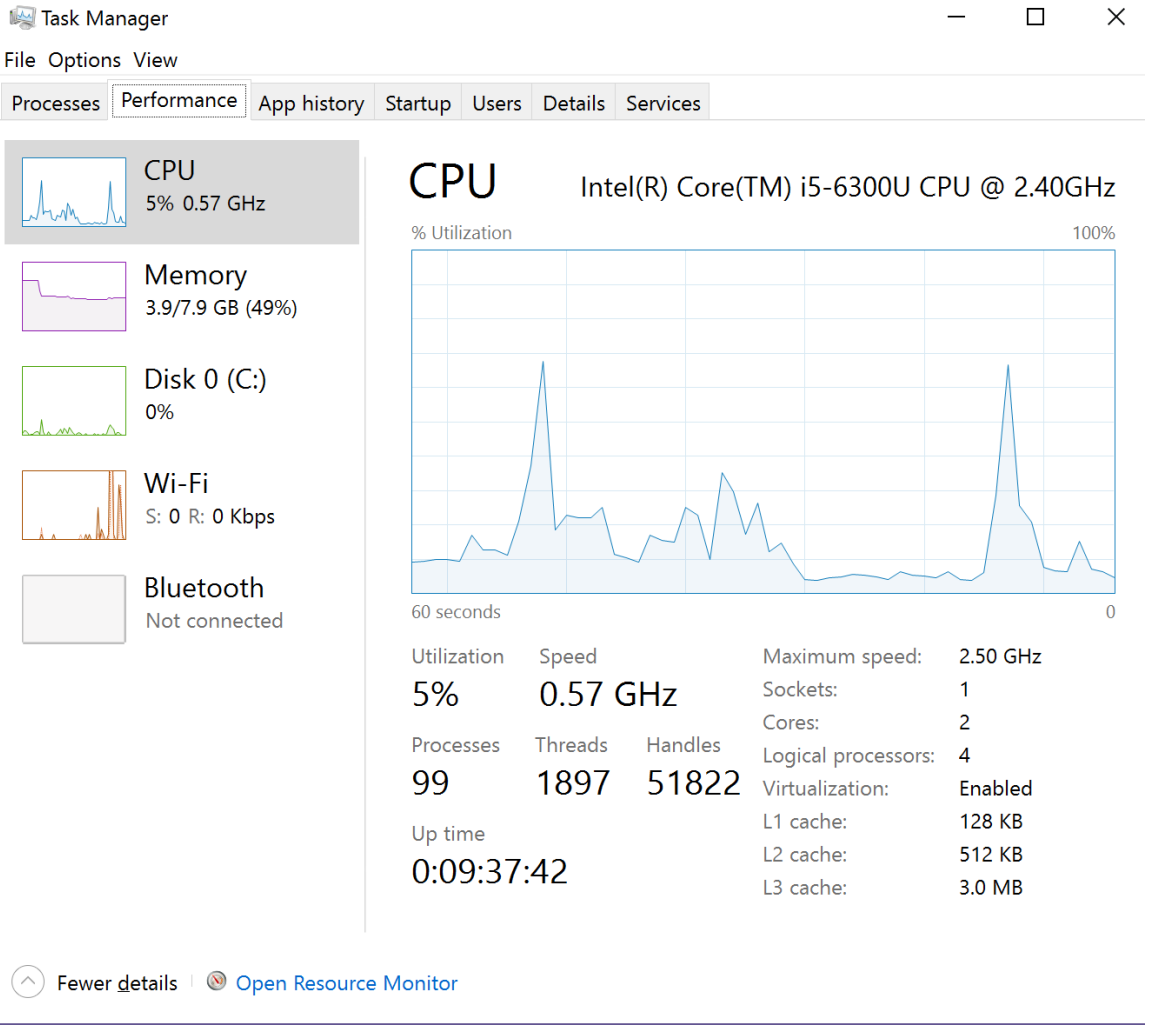


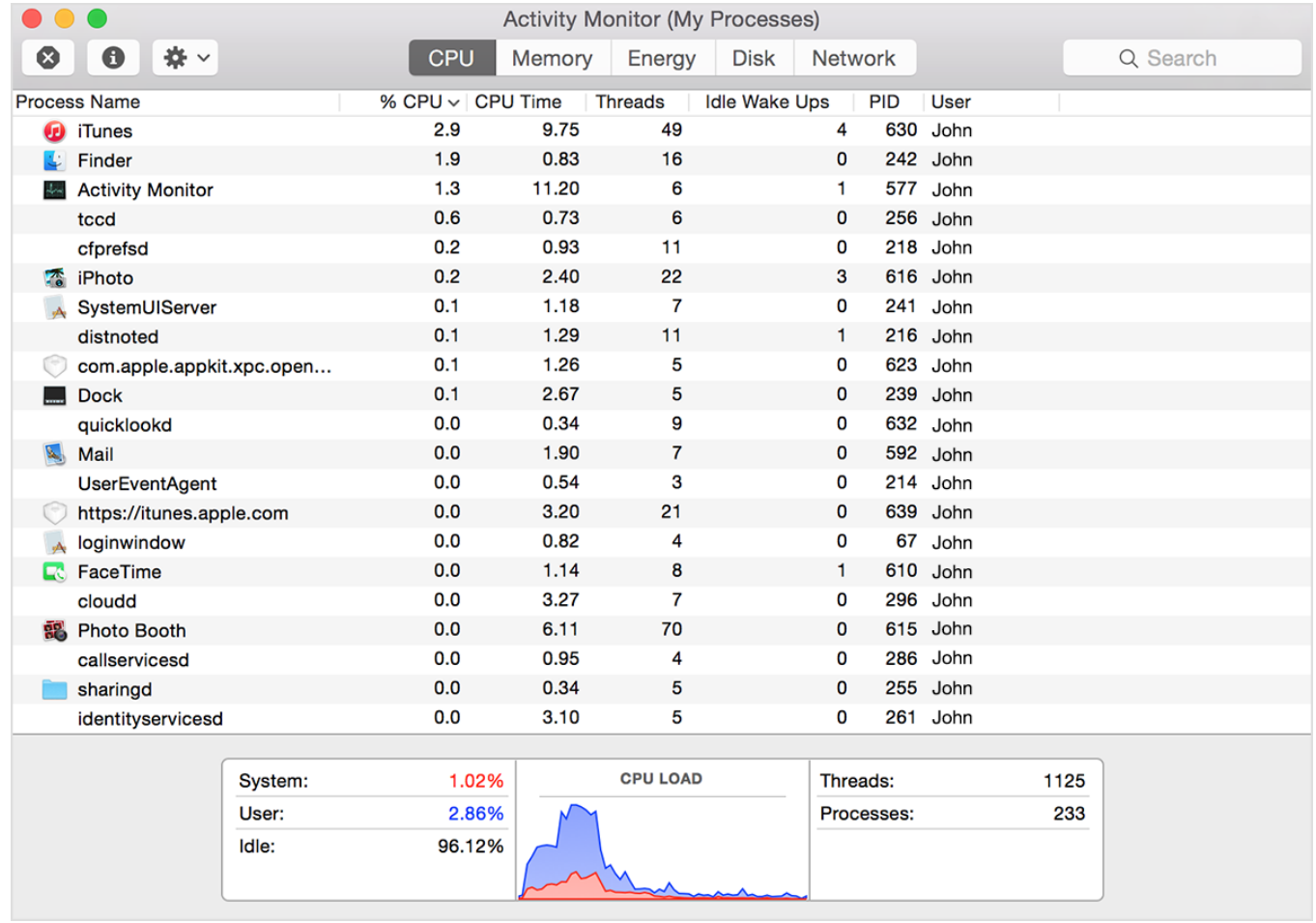
Operating systems

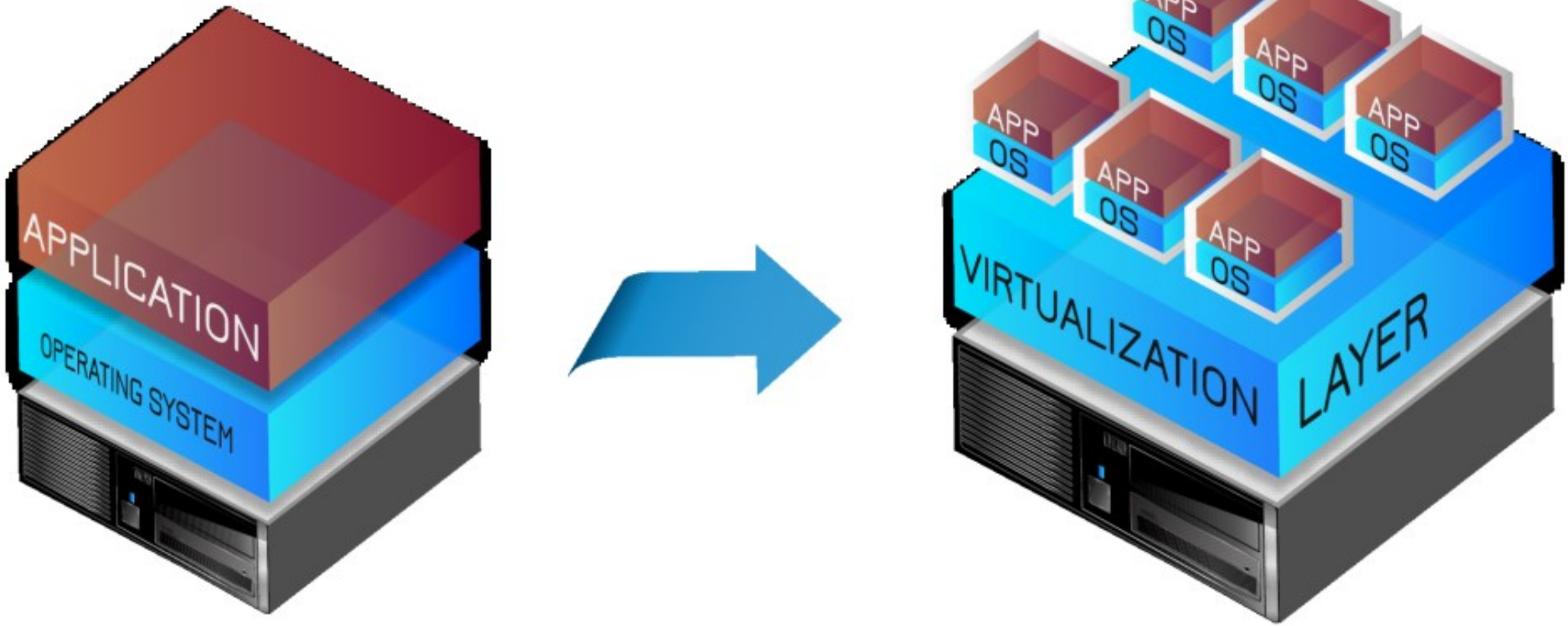
intel


crucial

Seagate

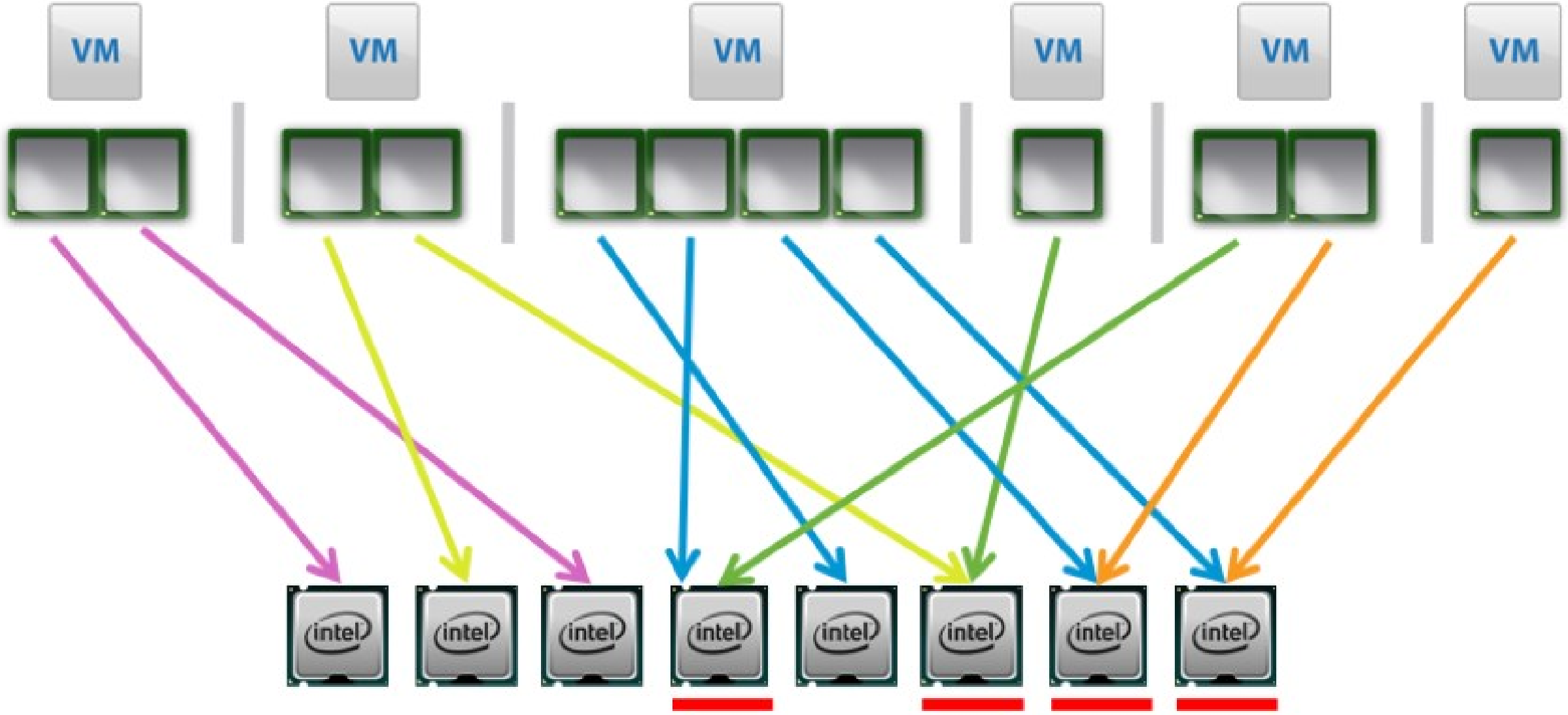

Task Manager
File Options View
Processes Performance App history Startup Users Details Services
CPU
5% 0.57 GHz
Memory
3.9/7.9 GB (49%)
Disk 0 (C:)
0%
Wi-Fi
S: 0 R: 0 Kbps
Bluetooth
Not connected
CPU
Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz
% Utilization
100%
60 seconds
0
Utilization
5%
Speed
0.57 GHz
Processes
99
Threads
1897
Handles
51822
Up time
0:09:37:42
Maximum speed: 2.50 GHz
Sockets: 1
Cores: 2
Logical processors: 4
Virtualization: Enabled
L1 cache: 128 KB
L2 cache: 512 KB
L3 cache: 3.0 MB
Fewer details
Open Resource Monitor


Activity Monitor (My Processes)
CPU Memory Energy Disk Network
Search
Process Name % CPU CPU Time Threads Idle Wake Ups PID User
iTunes 2.9 9.75 49 4 630 John
Finder 1.9 0.83 16 0 242 John
Activity Monitor 1.3 11.20 6 1 577 John
tccd 0.6 0.73 6 0 256 John
cfprefsd 0.2 0.93 11 0 218 John
iPhoto 0.2 2.40 22 3 616 John
SystemUIServer 0.1 1.18 7 0 241 John
distnoted 0.1 1.29 11 1 216 John
com.apple.appkit.xpc.open... 0.1 1.26 5 0 623 John
Dock 0.1 2.67 5 0 239 John
quicklookd 0.0 0.34 9 0 632 John
Mail 0.0 1.90 7 0 592 John
UserEventAgent 0.0 0.54 3 0 214 John
https://itunes.apple.com 0.0 3.20 21 0 639 John
loginwindow 0.0 0.82 4 0 67 John
FaceTime 0.0 1.14 8 1 610 John
cloudd 0.0 3.27 7 0 296 John
Photo Booth 0.0 6.11 70 0 615 John
callservicesd 0.0 0.95 4 0 286 John
sharingd 0.0 0.34 5 0 255 John
identityservicesd 0.0 3.10 5 0 261 John
System: 1.02%
User: 2.86%
Idle: 96.12%
CPU LOAD
Threads: 1125
Processes: 233



Traditional Architecture

Virtual Architecture


VM
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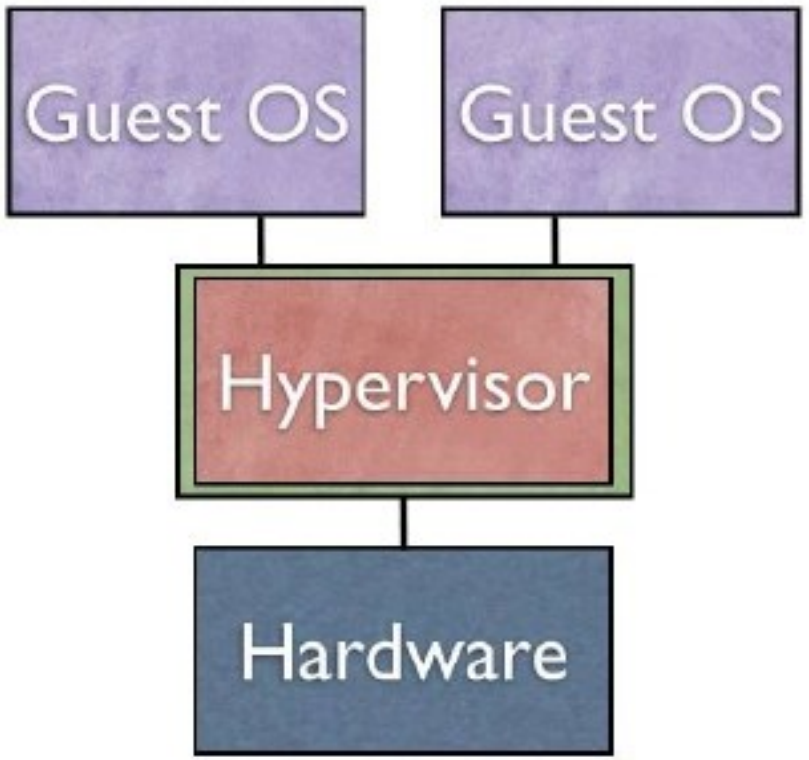
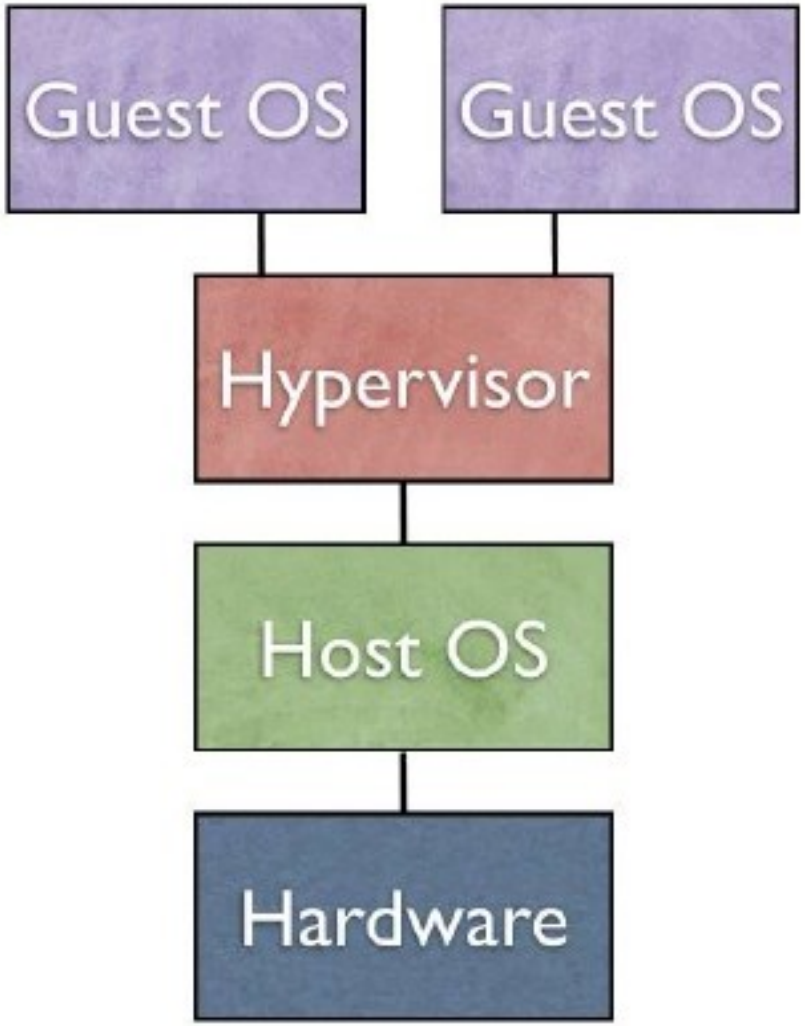


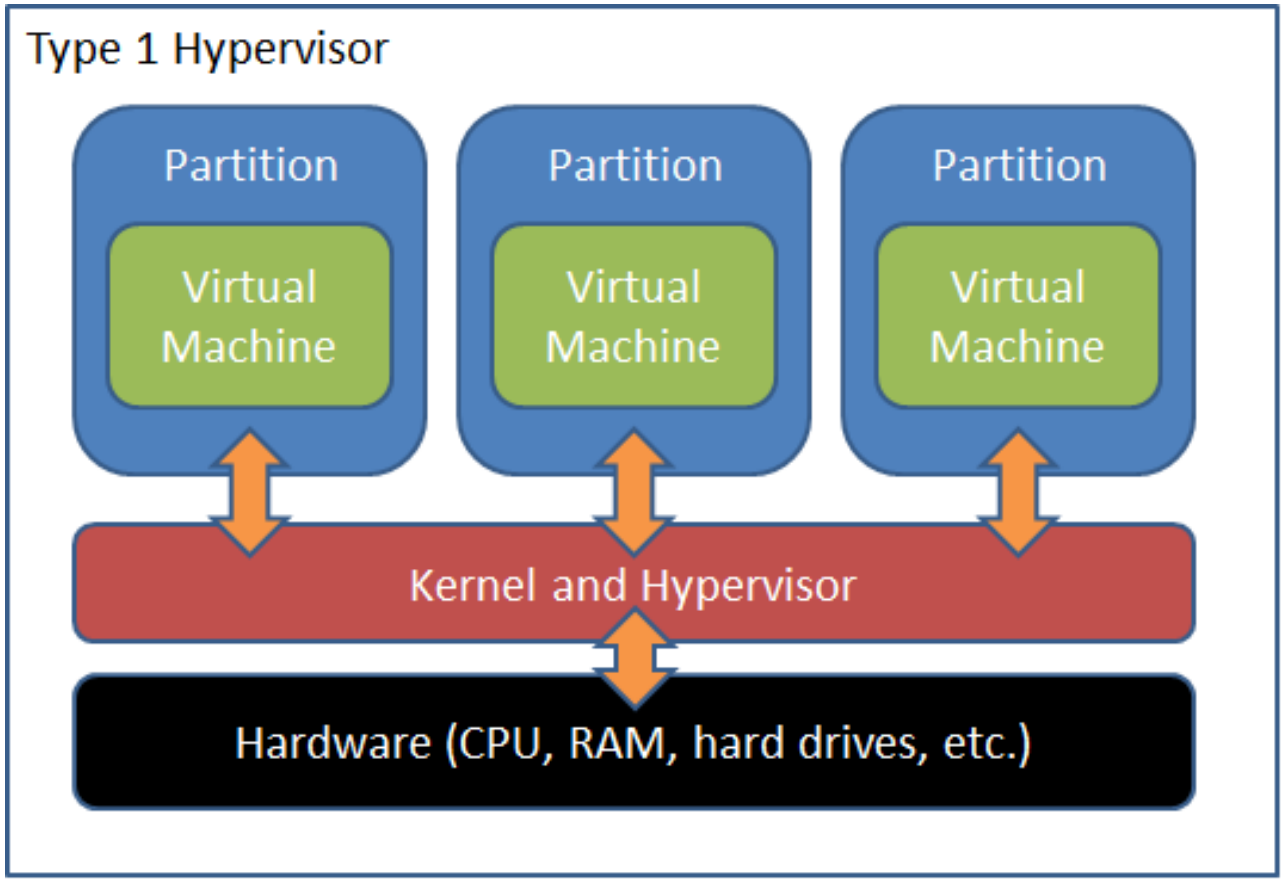
Type 1 (Hardware Level)

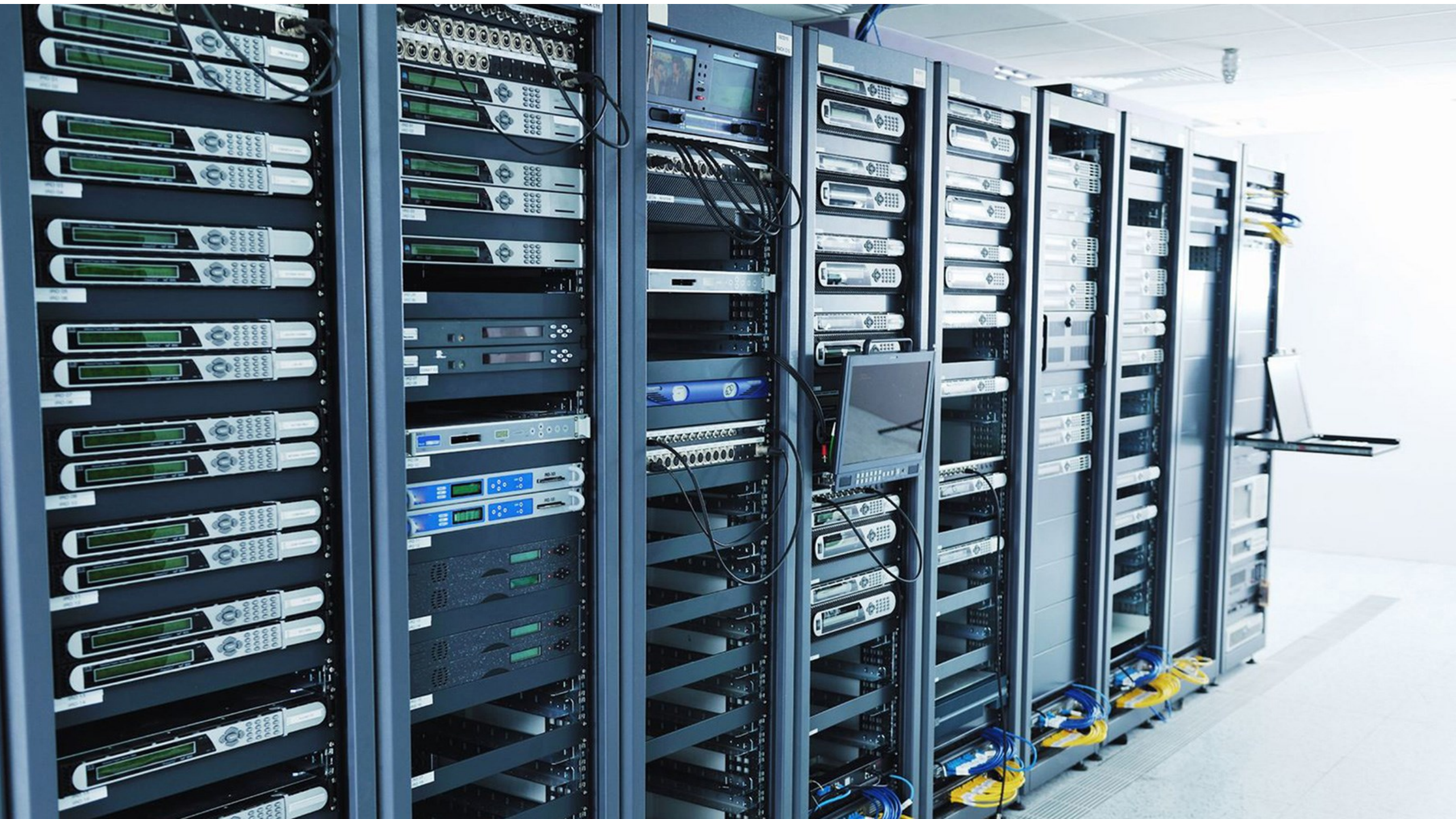


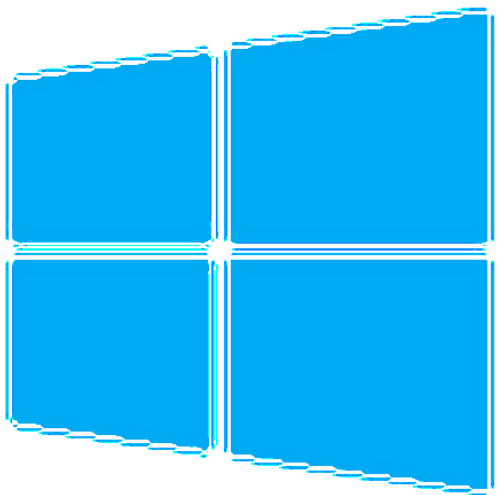
Type 2 (OS Level)

Type 1 Virtualization (Bare Metal)

- Hypervisor runs on bare metal
- Typical for servers
- Dedicated virtualization machine



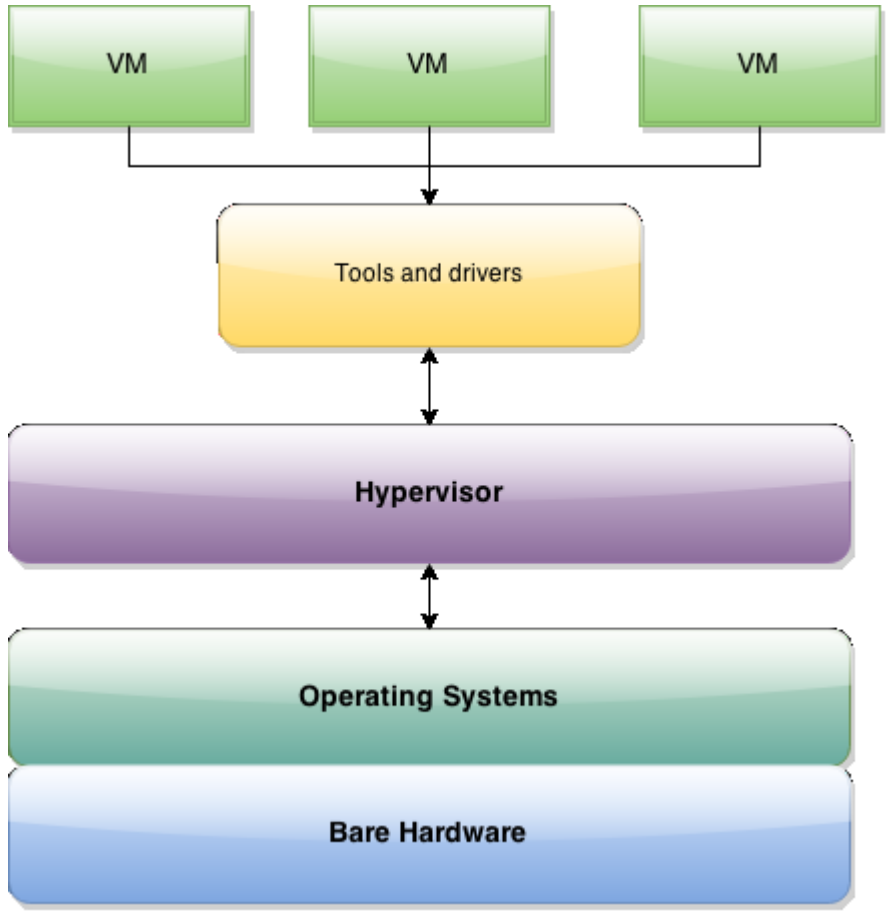




Microsoft
Hyper-V

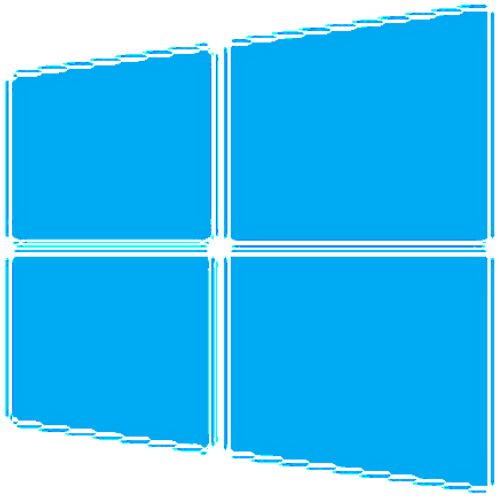
Type 2 Virtualization (Hosted)

- Hypervisor runs on top of OS
- Typical for home virtualization
- Can run on desktop/laptop



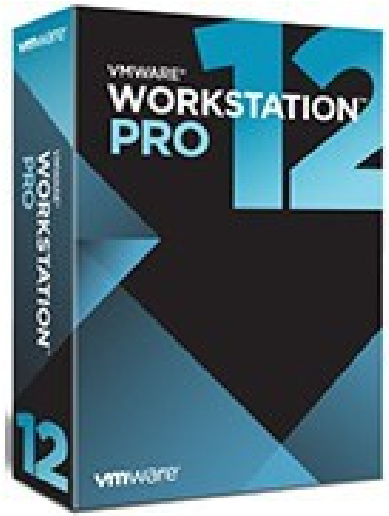
Boot Camp partition
Start Up
Take Snapshot
Revert to Snapshot
Settings
Unity
Full Screen
start
To direct input to this virtual machine, click inside the window.

VirtualBox



Microsoft
Hyper-V

Parallels®



vmware®

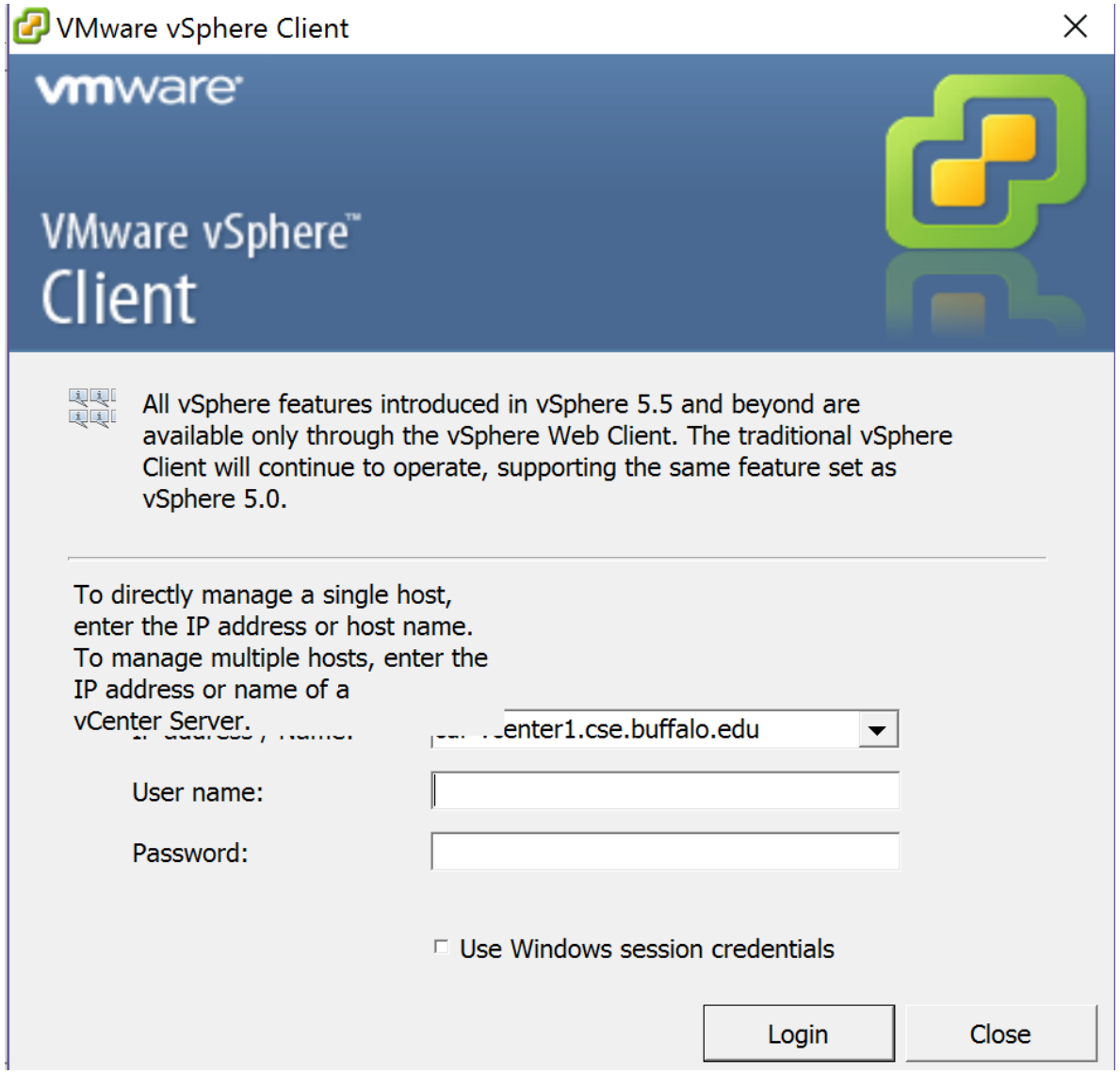
Benefits of Virtualization?

- Security: Separate applications from interfering with each other
- Testing: Open unknown, potentially malicious files
- Learning: Try out new programs without having to worry
- Resource optimization: Use what you have more efficiently
- Many more!

Key Terms

- **Virtual Machine (VM):** virtualized computer
- **Hypervisor:** dedicated OS with purpose of allocating physical resources to VM's
- **Host System:** OS installed on physical hardware
- **Guest System:** Virtualized OS on top of **Host System**
- **IaaS:** Form of virtualization where virtual resources are accessed over the internet

Microsoft Azure

amazon

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- Username: ad\UBIT
- Password: UBIT Password