

Computer, end program

Making virtual worlds possible

Sameer Verma, Ph.D.
Professor, Information Systems Department
College of Business, San Francisco State University
San Francisco, CA 94132 USA
<http://verma.sfsu.edu/>
sverma@sfsu.edu



Unless noted otherwise



Holodeck on StarTrek Enterprise TNG

Holodeck

- Star Trek:
<http://en.wikipedia.org/wiki/Holodeck>
- A simulated reality, where 3D worlds could be simulated with force fields and projections.
- Load, run, freeze and store programs.



Final scene of Star Trek: Enterprise

<http://youtu.be/pXotJu1CapU>

As it was in the beginning

- Mainframe virtualization.
- IBM's CP-40 research system in 1967.
- Compartmentalize large processing capabilities.
- Run processes separately.
- Lease “slices” to different customers.

Too many servers?

- Data center challenges
 - One physical server for one application
 - Web
 - Storage
 - Authentication
 - Network
- = 4

Power, Cooling, Bandwidth...

Rise of Apache

- Apache VirtualHost.
- Multiple virtual web hosts in each physical server.
- Led to the adoption of Apache in server rooms.
- Eventually led to Linux to run these websites.
- Still one underlying OS.

Single point of failure?

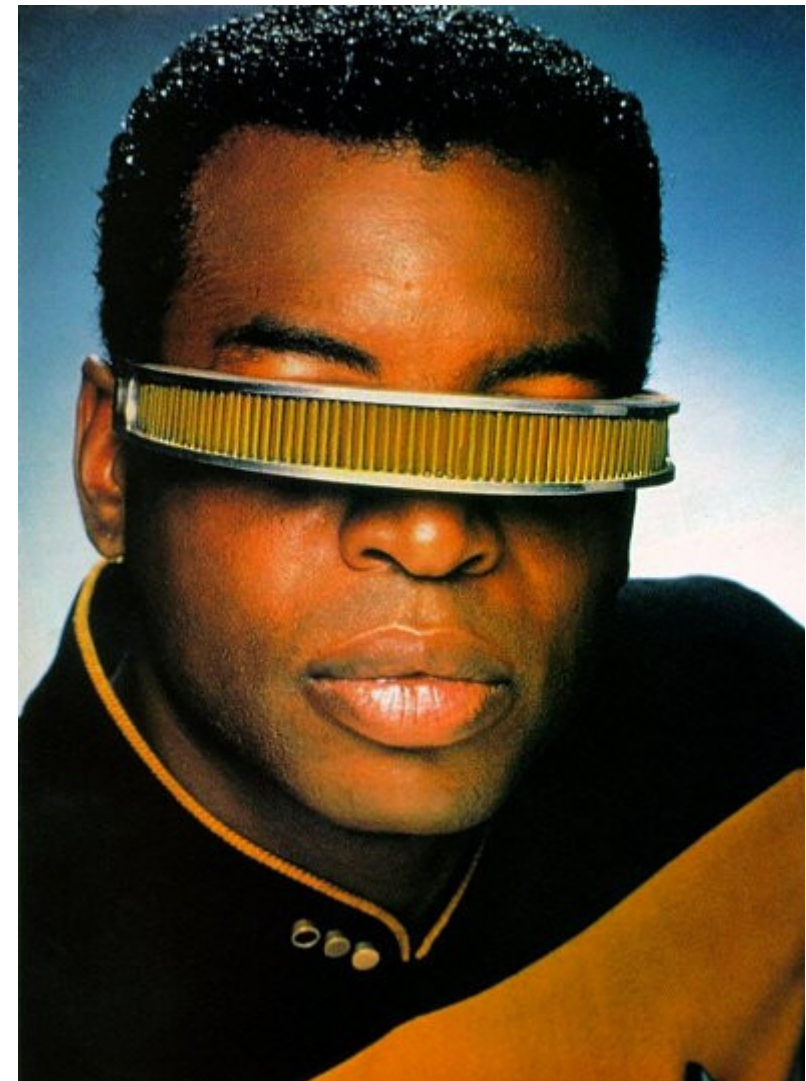


Hypervisor

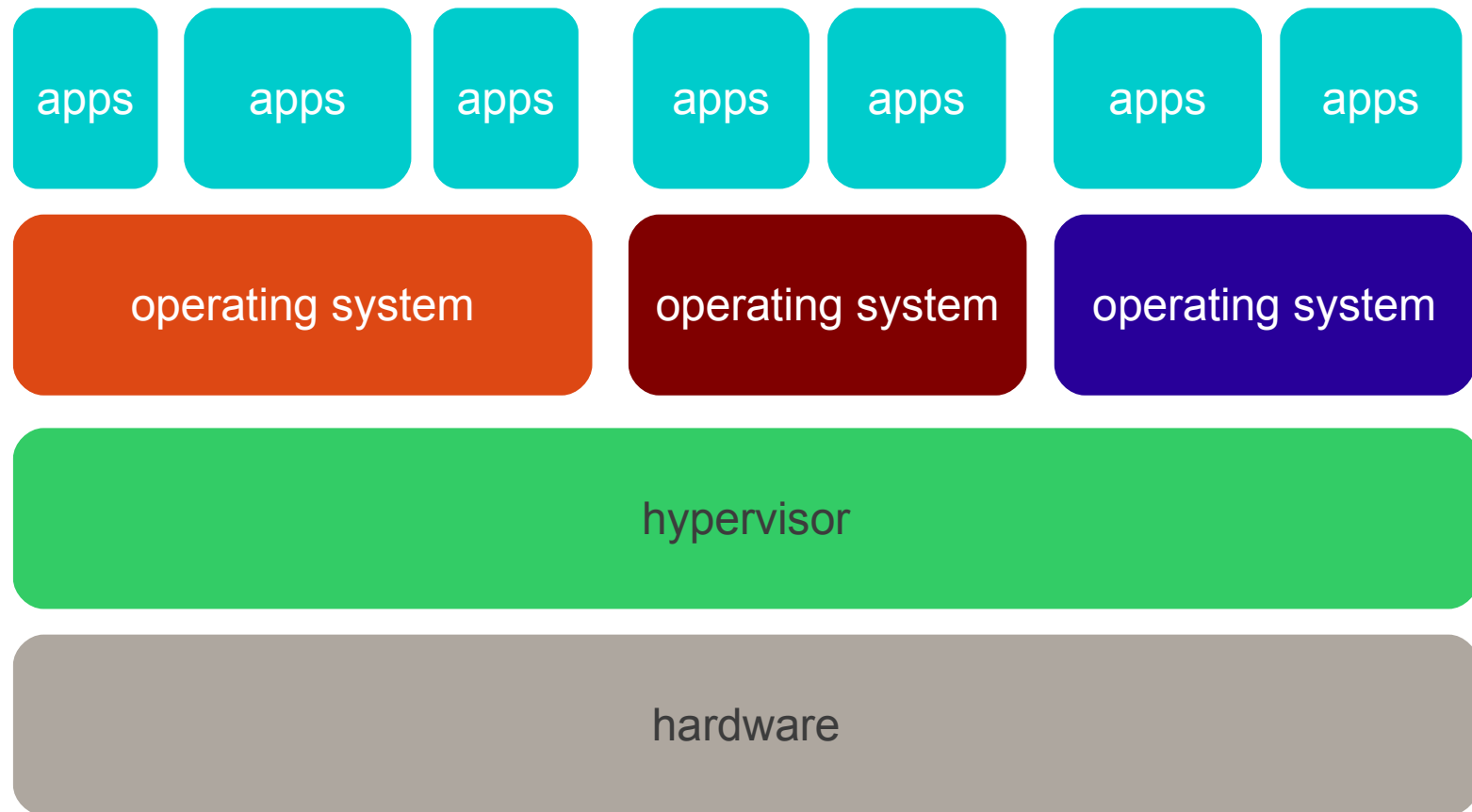
This is **not** a hypervisor

...although it is a VISOR

http://en.wikipedia.org/wiki/Geordi_La_Forge#VISOR

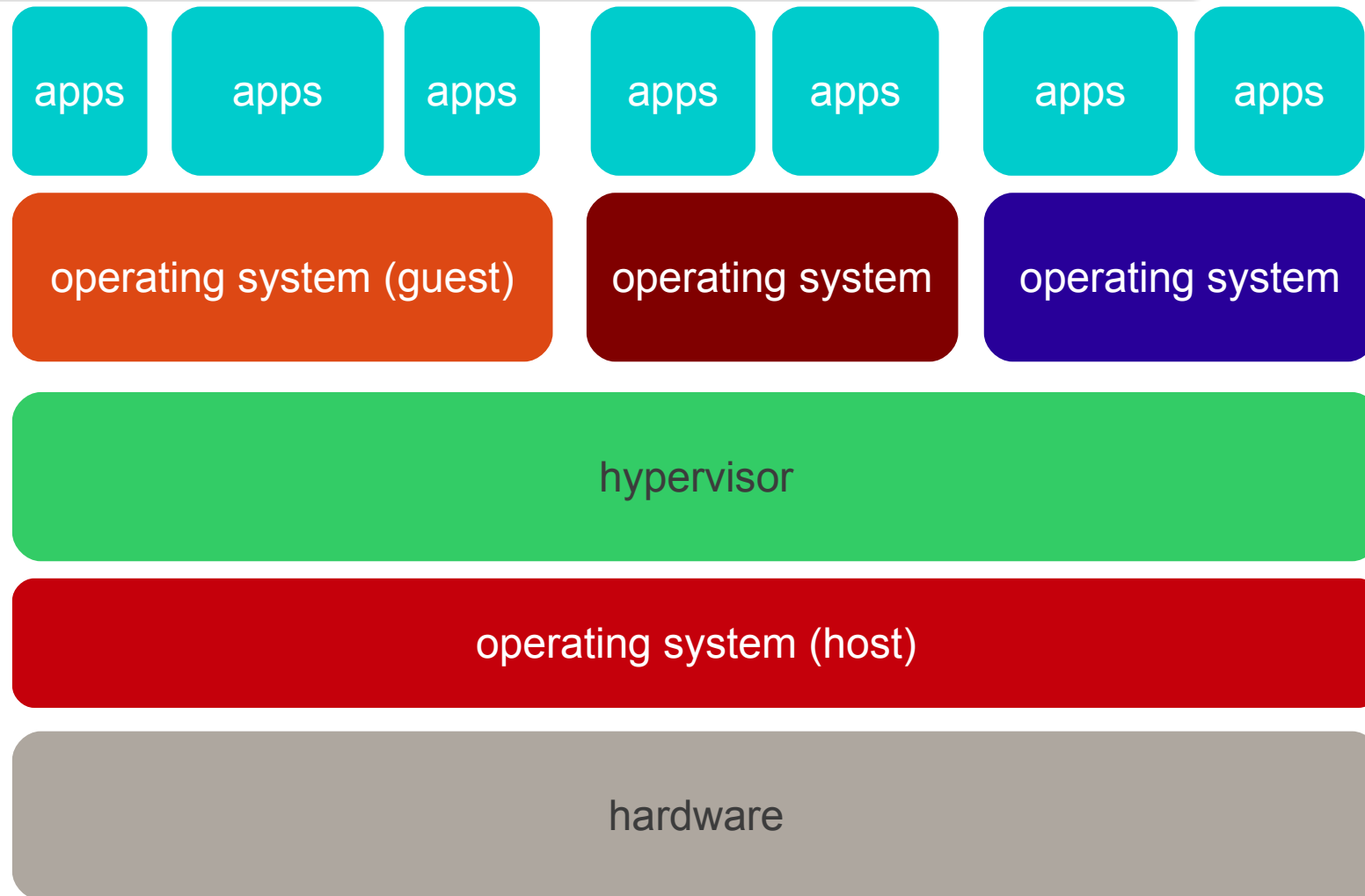


Hypervisor



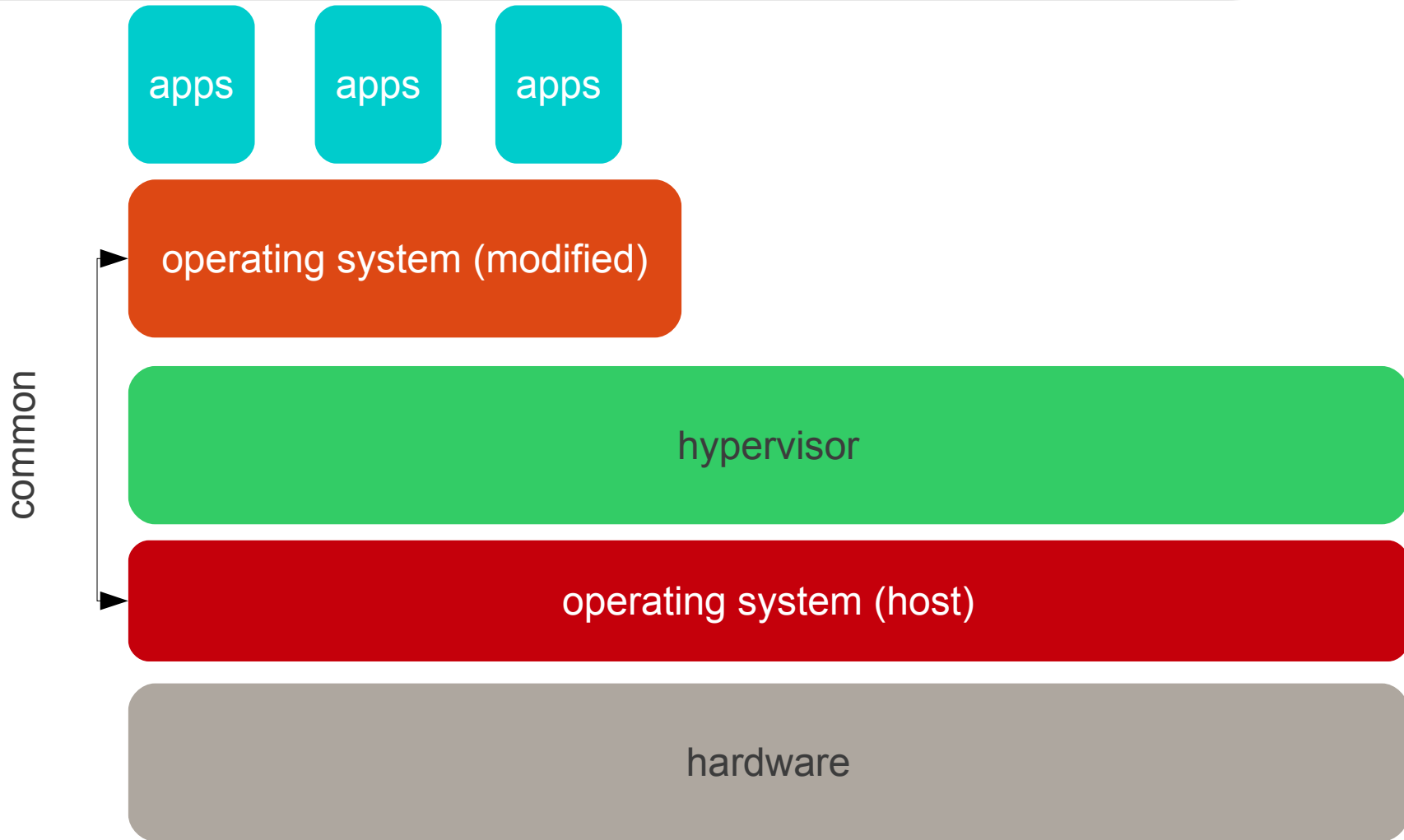
Type 1: Bare Metal

Hypervisor



Type 2: Hosted

Paravirtualization



Cloud



Public and Private clouds

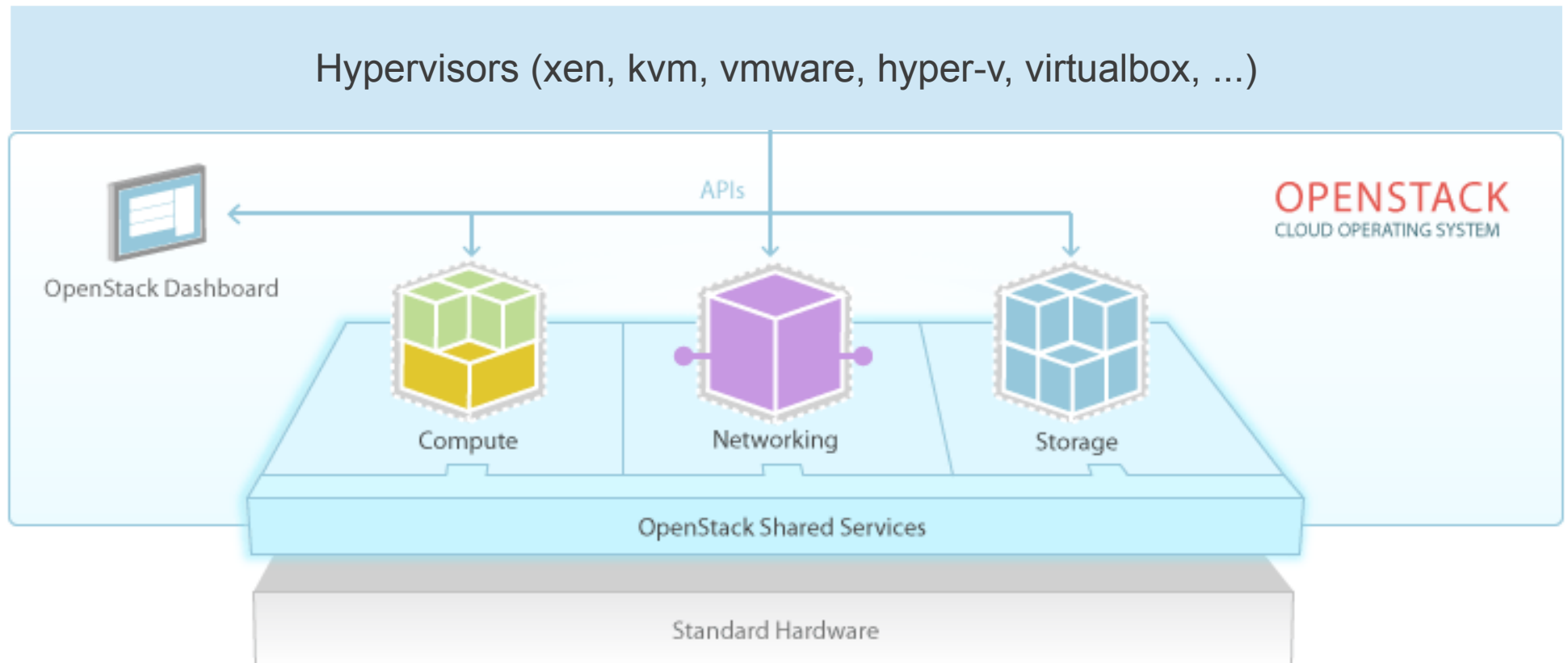
Public



Private



Hypervisors galore!



Let's begin!

<http://virtualbox.org>