



Licensing in Virtualized Environments – Disaster or Opportunity?

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Overview

- Virtualization's benefits widely publicized for:
 - Enterprise IT
 - Enterprise developers
 - QA engineers
- This presentation is for:
 - Developers who license software to enterprises

Agenda

Define virtualization (it's not just VMware)

Virtualization challenges license models

Virtualization provides opportunities

Virtualization is a threat

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Define Virtualization

- Virtual Machines
 - Many operating system instances on one physical machine each believe they're the only operating system; running VMs can be moved
- Application Virtualization
 - Many application instances on one operating system instance each believe they're the only application
 - Executables, registry/configuration, and data stored in a virtual file system on hard disk or USB key

Define Virtualization (continued)

- Terminal Servers
 - Many users on one operating system instance each believe they're the only user
- Grids
 - Heterogeneous clusters
- Multi-Core / Hyper-Threading
 - Many CPUs act as one / One CPU acts as many

Define Virtualization (continued)

- Application Streaming
 - Application downloaded, installed, configured and run on demand
- Remote Control
 - Controlling the keyboard, video and mouse of a remote computer

Virtualization Technologies

Technology	Vendors
Virtual Machines	x86: MS VirtualPC/Server, VMware, Xen; Sun: Solaris Zones; IBM pSeries: LPARs; HP: VPARs
Application Virtualization	Windows: MS/Softricity, Citrix, Altiris; UNIX: chroot sandbox
Terminal Services	Windows: MS Remote Desktop, Citrix; UNIX: Tarantella, rlogin/rsh
Grid	Platform Computing, United Devices, Sun N1 Grid
Multi-core / Hyper-Threading	Intel, AMD, Sun, HP, IBM
Application Streaming	Windows: AppStream, Ardence
Remote Control	Windows: GoToMyPC, PC Anywhere, VNC

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Virtualization Challenges License Models

- Resource-based licensing is dead
- Do your customer buy your application so that it can occupy disk space?
- Do your customer buy your application so that it **might** consume CPU cycles?

What do your customers value?

- Determine the true value that your customers can feel and measure; license that value!
- Virtualization is not first time resource-based licensing has been challenged
- How did you monetize the extra value derived by your customers from the rise in price-performance of CPU, disk, memory, etc?

Your Application's Denominator

- What is the denominator of your application's value?
- From *Good to Great*¹: “If you could pick one and only one ~~ratio~~ metric...to systematically increase over time, what would have the greatest and most sustainable impact on your ~~economic engine~~ customers?”

¹Collins, Jim. *Good to Great*. 1st ed. HarperCollins; 2001, pg. 94.

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Opportunities and Virtual Machines

- Reduce installation / configuration
- Reduce hardware targets
- Extend life of application
- Per-platform pricing

Each of these benefits increase as the proliferation of VM use in the enterprise increases

Reduce Installation / Configuration

- Virtual appliances
 - Pre-configure virtual machine(s)
 - Pre-install and configure operating system(s)
 - Pre-install and configure infrastructure software
 - Pre-install and configure application(s)
 - Distribute the virtual machine(s)
-
- Opportunity – Simplified customer installation!
 - Challenge – now you distribute operating systems and/or infrastructure software!

Reduced Hardware Targets

- A focused customer base who standardizes on a certain virtual machine technology can insulate you from hardware variations
- Opportunity – Focus your porting efforts
- Challenge – a virtual machine might be yet another hardware platform to support!

Extend Life of Application

- A virtual machine can live a lot longer than the physical machine upon which it is based
- Opportunity – since enterprises use virtual machines to run old applications, use that to your benefit
- Challenge – don't use this as a reason to remain stagnant

Per-Platform Pricing

- Virtual machines might start to differentiate themselves from their physical counterparts
- Opportunity – support the new machines, but price per-platform
- Challenge – if you don't, you'll do more ports for free

Opportunities and Application Virtualization/ Terminal Services / Grid

- If you've done the work to enable your application for the benefit of your customer, monetize it!
- Charge an uplift for the ability to run your applications in these environments

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Be a Good Citizen, or else...

- Some virtualization technologies demand flexibility from applications
- Don't node-lock for grids
- Don't node-lock for virtual machines
- Alternatives are floating, user, pay-per-use

Compliance versus Anti-Piracy

- Some publishers use license enforcement to assure themselves and their customers that the customer will remain in compliance
 - Assume most of their customers are honest
- Other publishers only want assurance for themselves
 - Assume many of their customers are dishonest

Compliance

- VM: Bind licenses to an ID that is unique per virtual machine instance (e.g. Ethernet MAC address, IP address, hostname)
- AV: For mutex'ed node-locked applications, convert to floating licenses to avoid problems with some AV technologies
- TS: For node-locked applications, convert to floating licenses, allow one instance on host session, or mutex application

Piracy and Virtual Machines

- Piracy threats are independent of the proliferation of VMs in the enterprise
- On Solaris 10, AIX 5.3 and HP-UX 11, bind licenses to per-virtual machine ID

Piracy and Virtual Machines, continued

- On x86 machines using node-locked licenses
 - Convert to floating licenses, or
 - Allow application to run only if it is on a global virtual machine, or
 - Use Ethernet MAC address, but grant a license to those addresses whose OUI is not registered with VMware, Microsoft, or Xen, or
 - Allow application to run only if it is on a physical machine

Piracy and Virtual Machines, continued

- On x86 machines using floating licenses
 - Protect license server by locking floating licenses to a USB dongle, or
 - Allow license server to run only if it is on a global virtual machine, or
 - Use Ethernet MAC address, but grant a license to those addresses whose OUI is not registered with VMware, Microsoft, or Xen, or
 - Allow license server to run only if it is on a physical machine

Piracy and Application Virtualization and Terminal Services

- Do the same as for compliance assurance

Piracy and Application Streaming and Remote Control

- No vulnerabilities introduced by either of these technologies

The Grid Loophole

- 8x5 usage becomes 24x7 usage
- Revisit how your licensing measures value
- Pay-per-use a good alternative
 - Avoid denial of service

Summary

- Be on the offensive, don't just reduce threats
- Consider these to be new platforms
- Re-think your license models
- Seize virtualization opportunities

Summary

Technology	Opportunities	Threats
Virtual Machines	Virtual appliances; Reduced hardware targets; Extend life of application; Per platform pricing	Customer dis-satisfaction with resource-based licensing; Machine ID cloning; No node-locking
Application Virtualization	None	Some defeat mutex locks
Terminal Services	Monetize terminal services-enabled applications	Node-locked application can have multiple users; No node-locking
Grid	Monetize grid-enabled applications	Customer dis-satisfaction with resource-based licensing; 8x5 usage → 24x7; No node-locking
Multi-Core / Hyper-Threading	None	Customer dis-satisfaction with resource-based licensing
Application Streaming	None	None
Remote Control	None	None

Questions?

Email

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to get white paper on how FLEXnet Publisher
addresses these issues



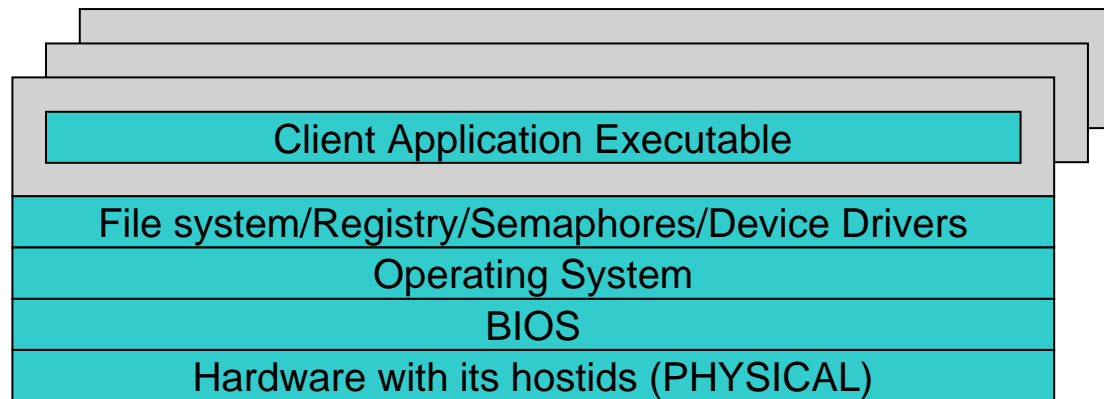
Physical Machines, Virtual Machines, Application Isolation

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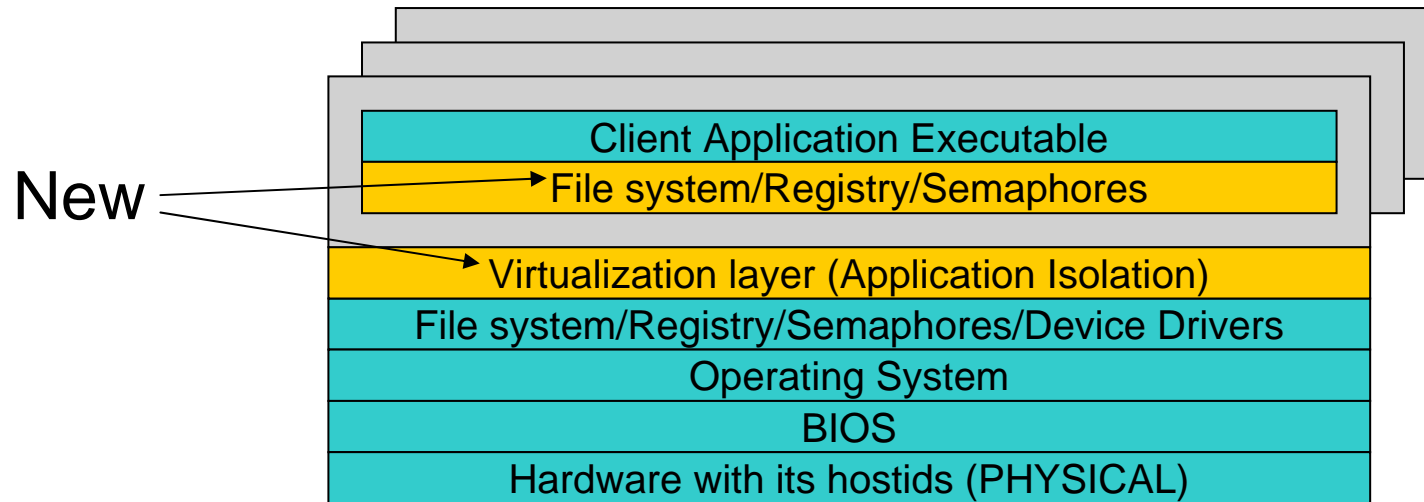


Client Applications

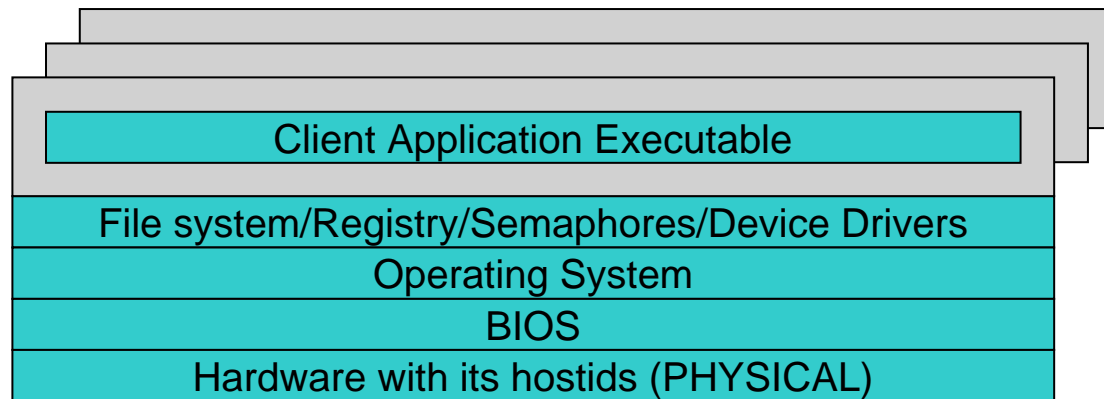
Physical Client Machine



Physical Client Machine with Application Isolation

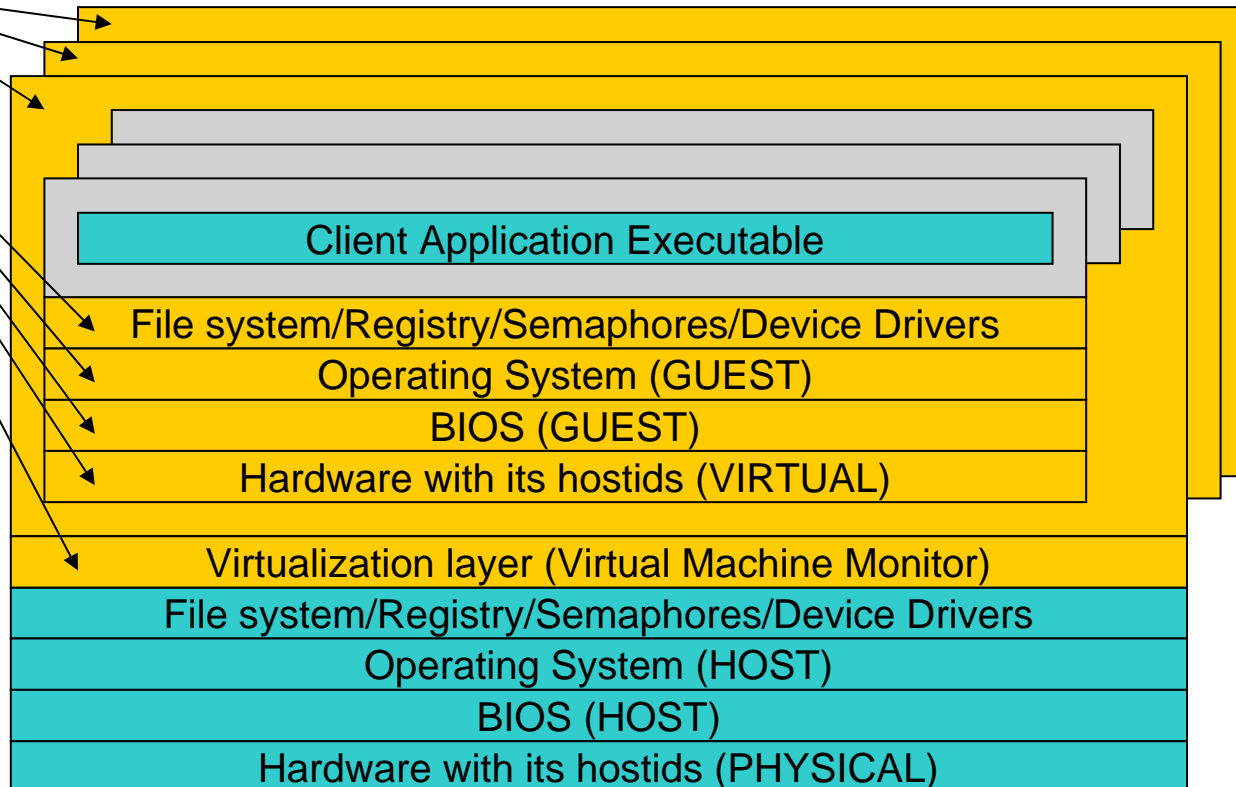


Physical Client Machine

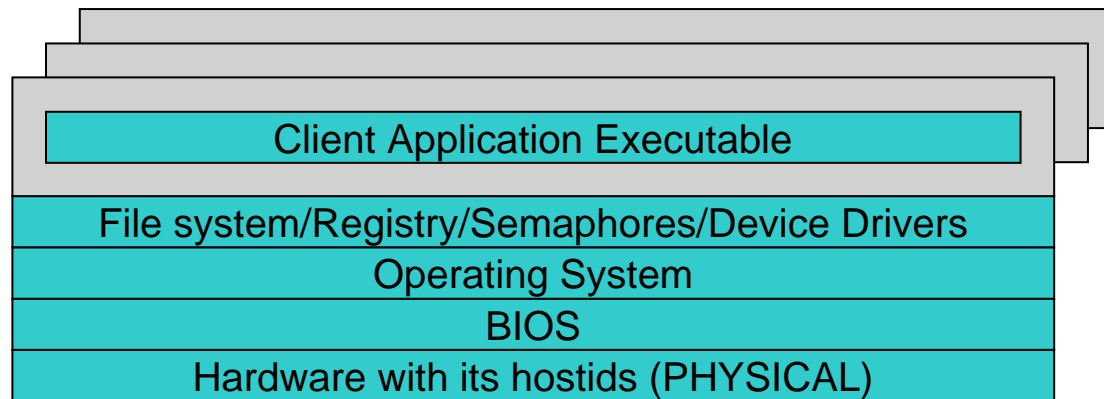


Physical Client Machine with Virtual Machines

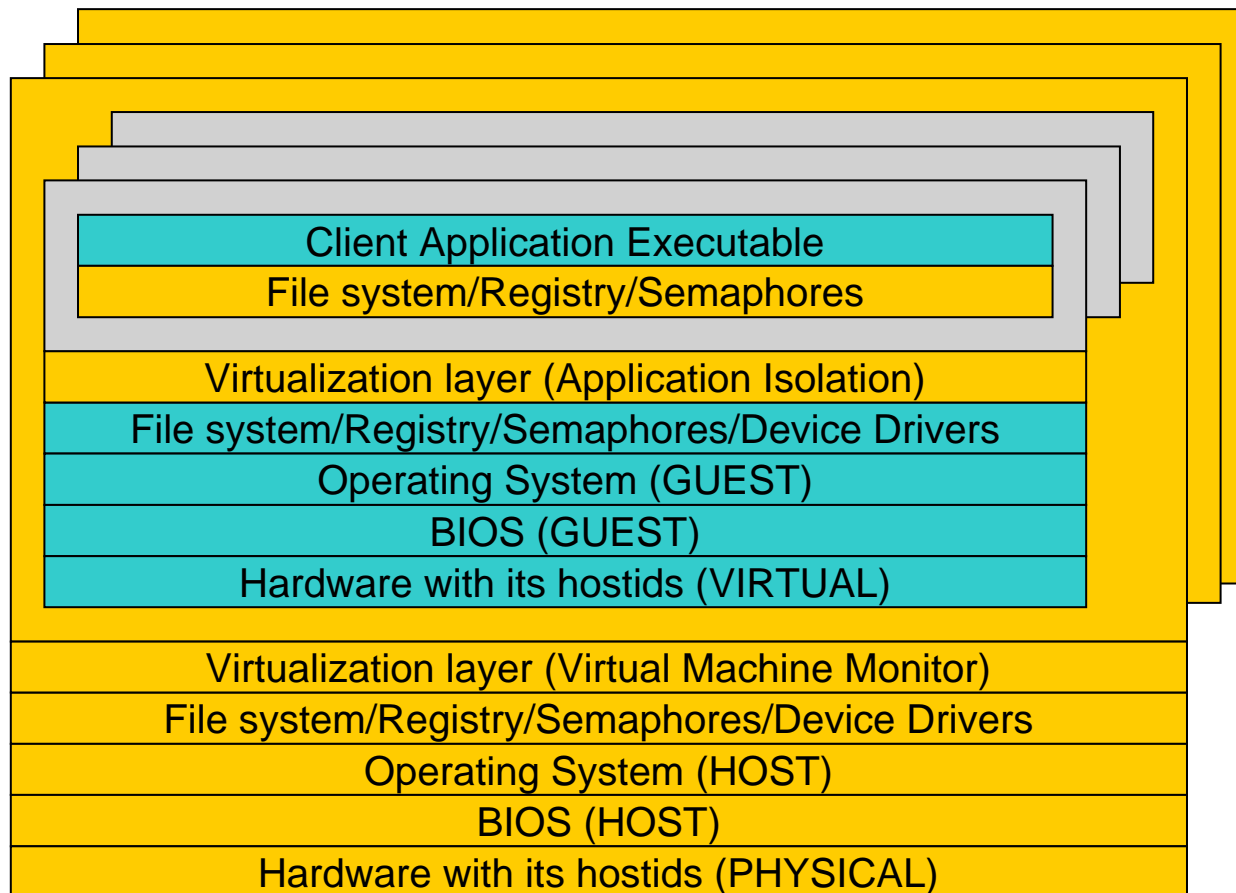
New



Physical Client Machine



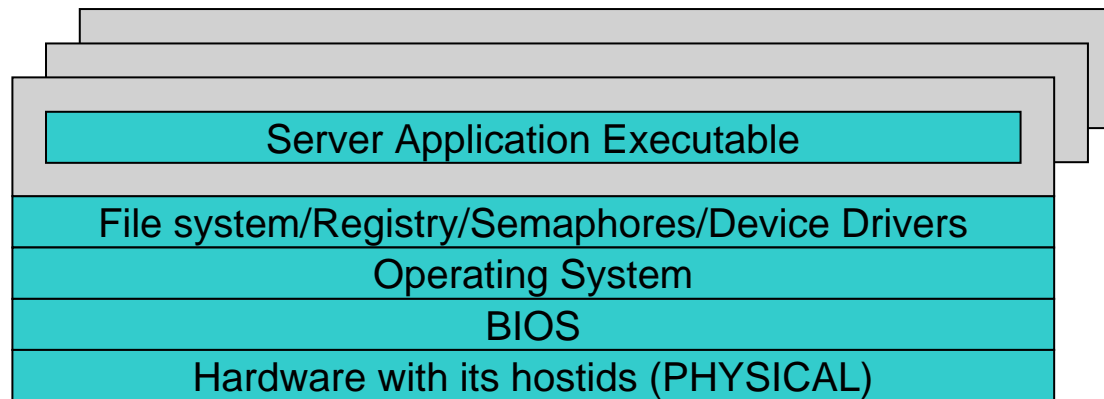
Physical Client Machine with Virtual Machines and Application Isolation



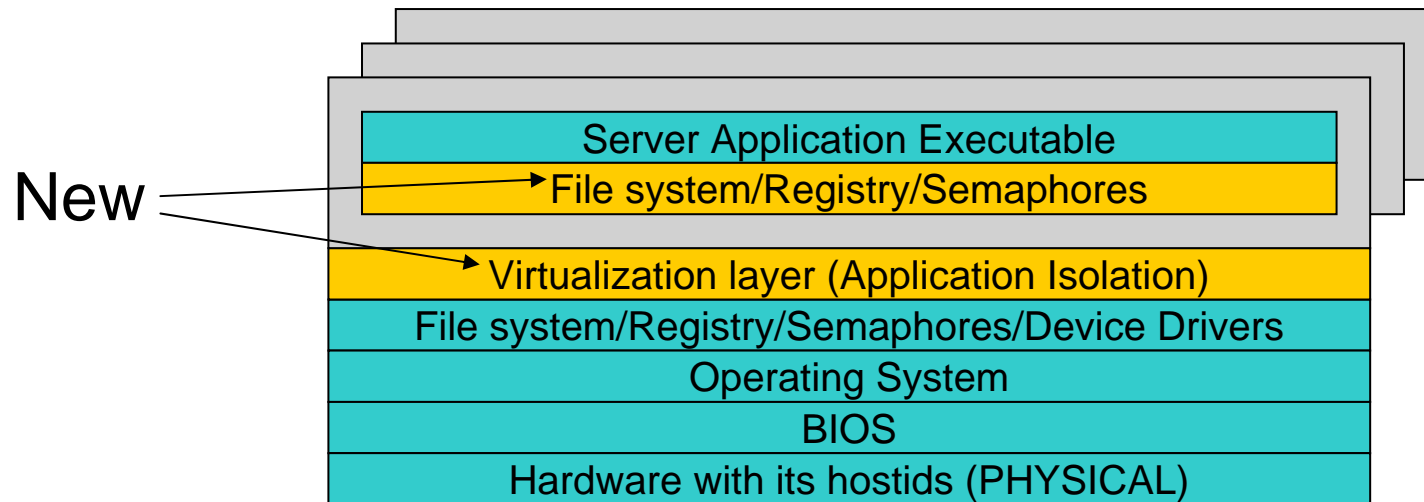


Server Applications

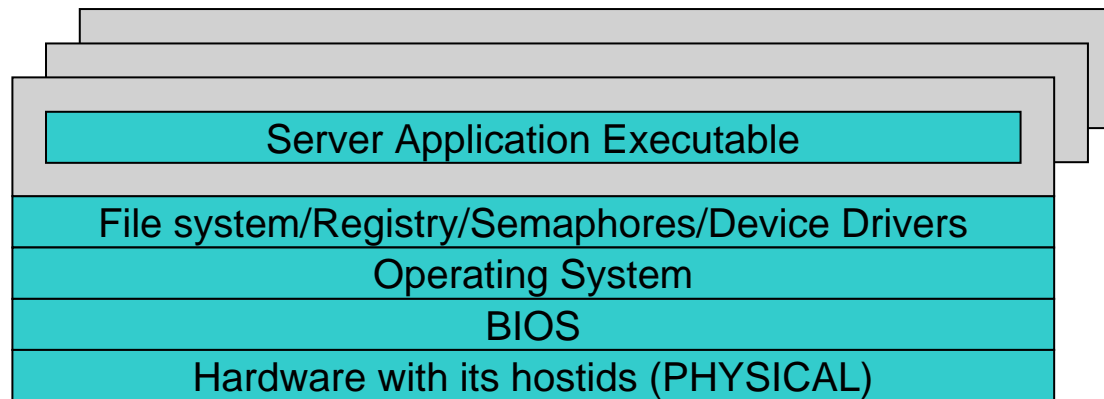
Physical Server Machine



Physical Server Machine with Application Isolation

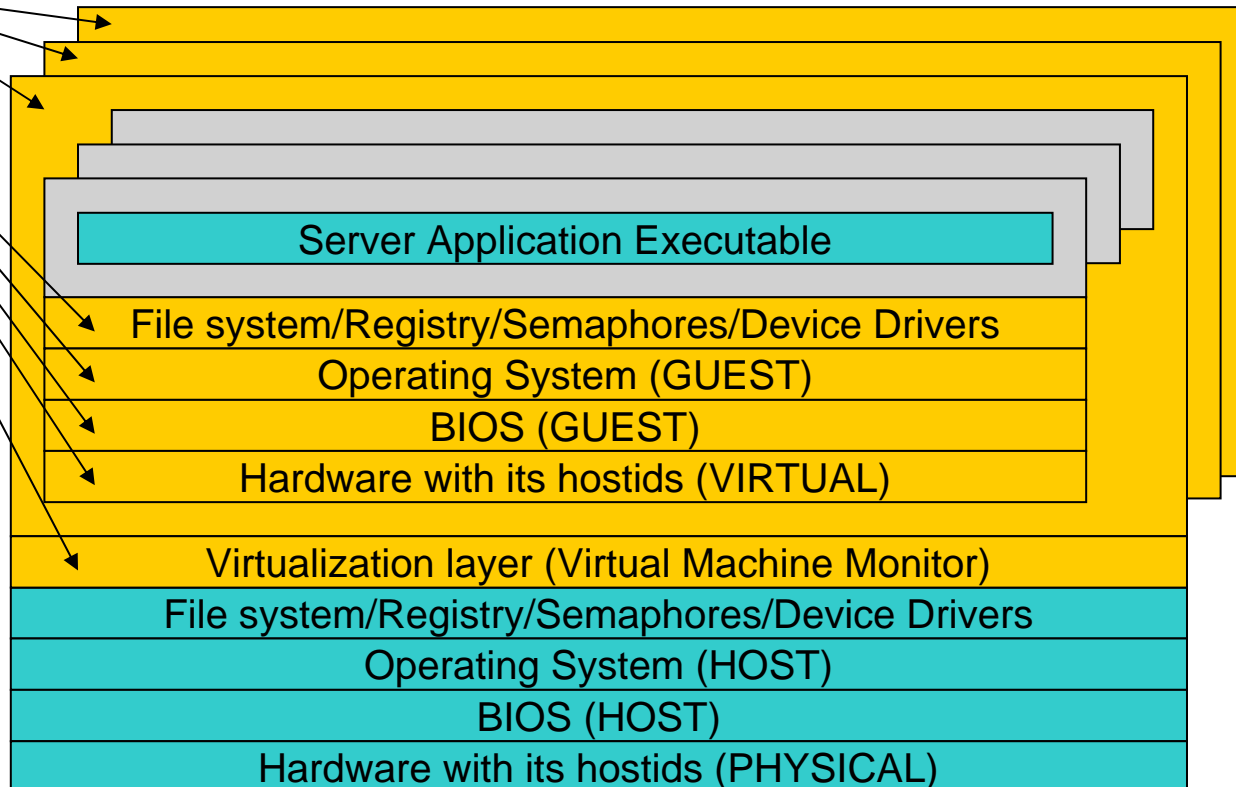


Physical Server Machine

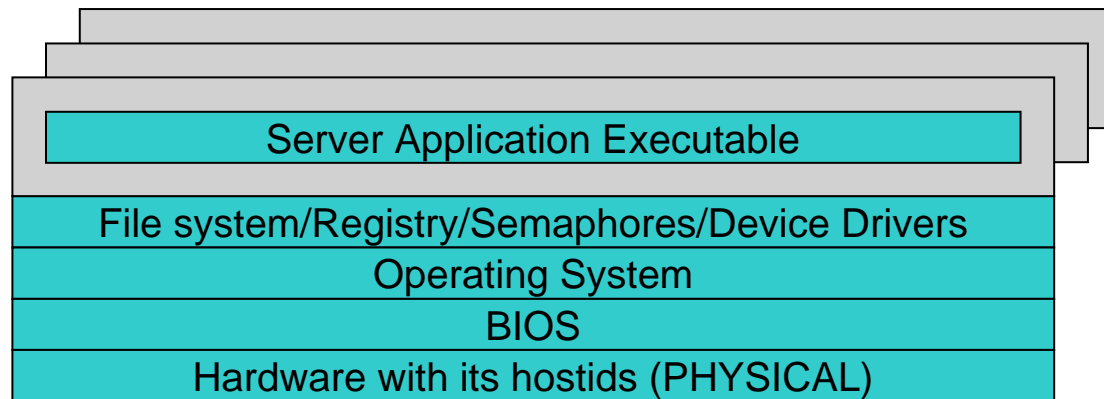


Physical Server Machine with Virtual Machines via Host Operating System

New

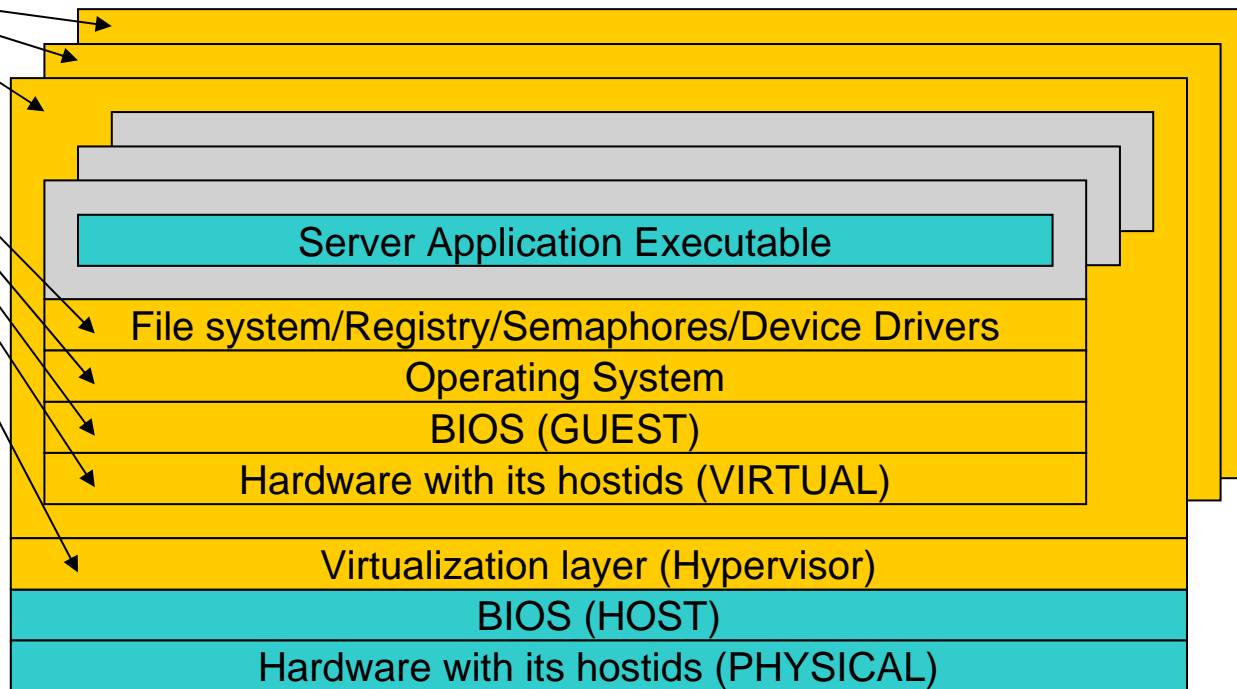


Physical Server Machine

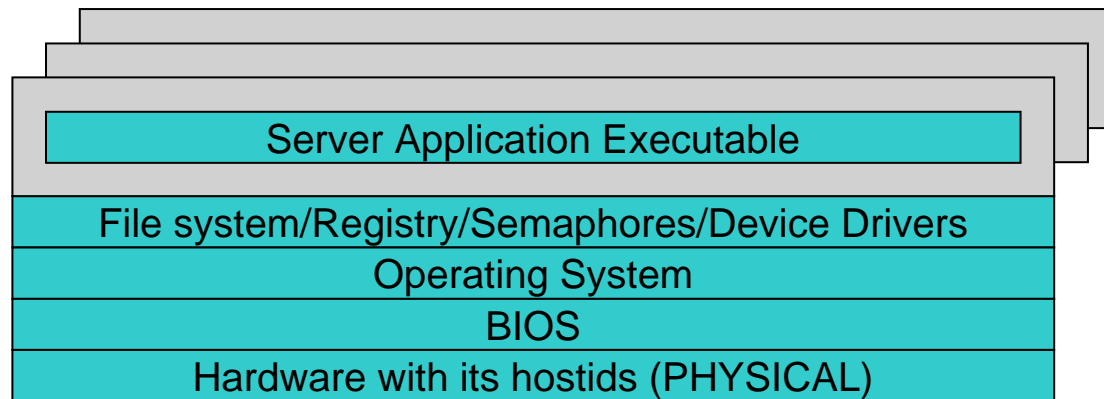


Physical Server Machine with Virtual Machines via Hypervisor

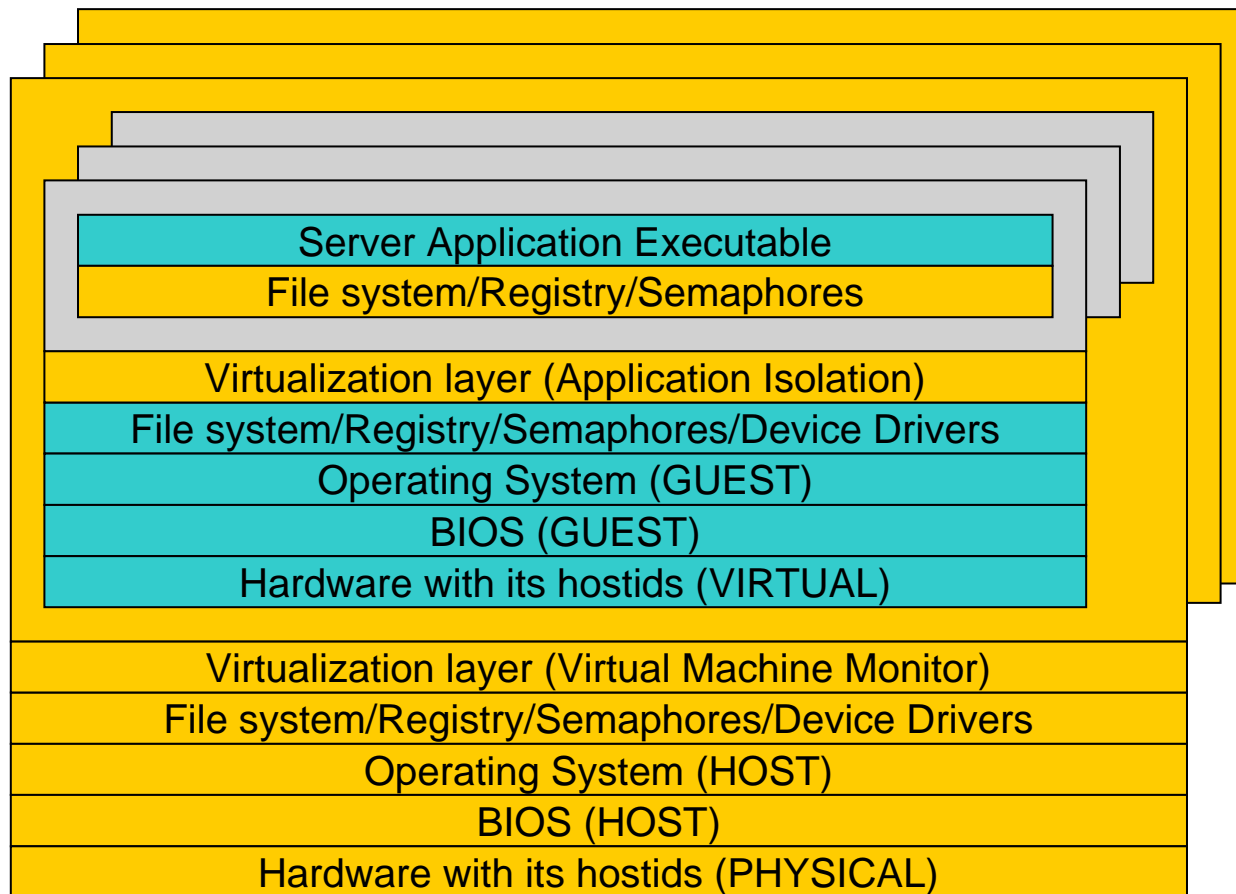
New



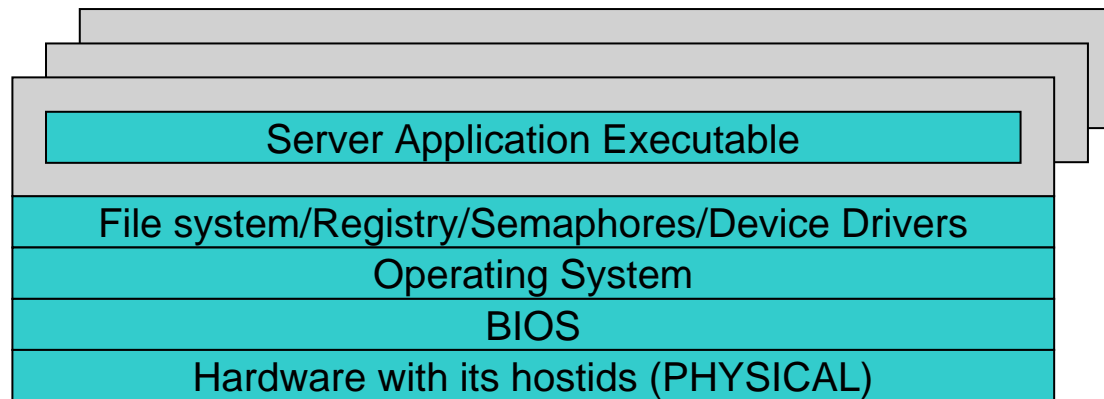
Physical Server Machine



Physical Server Machine with Virtual Machines and Application Isolation via Host Operating System



Physical Server Machine



Physical Server Machine with Virtual Machines and Application Isolation via Hypervisor

