



RED HAT  
**FORUM**  
Beijing

# APPLICATIONS ON THE MOVE

RED HAT ENTERPRISE LINUX ATOMIC HOST  
AND LINUX CONTAINERS

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Red Hat Inc

# TOP IT CONCERNS

How do I respond rapidly to increasing line-of-business demands?



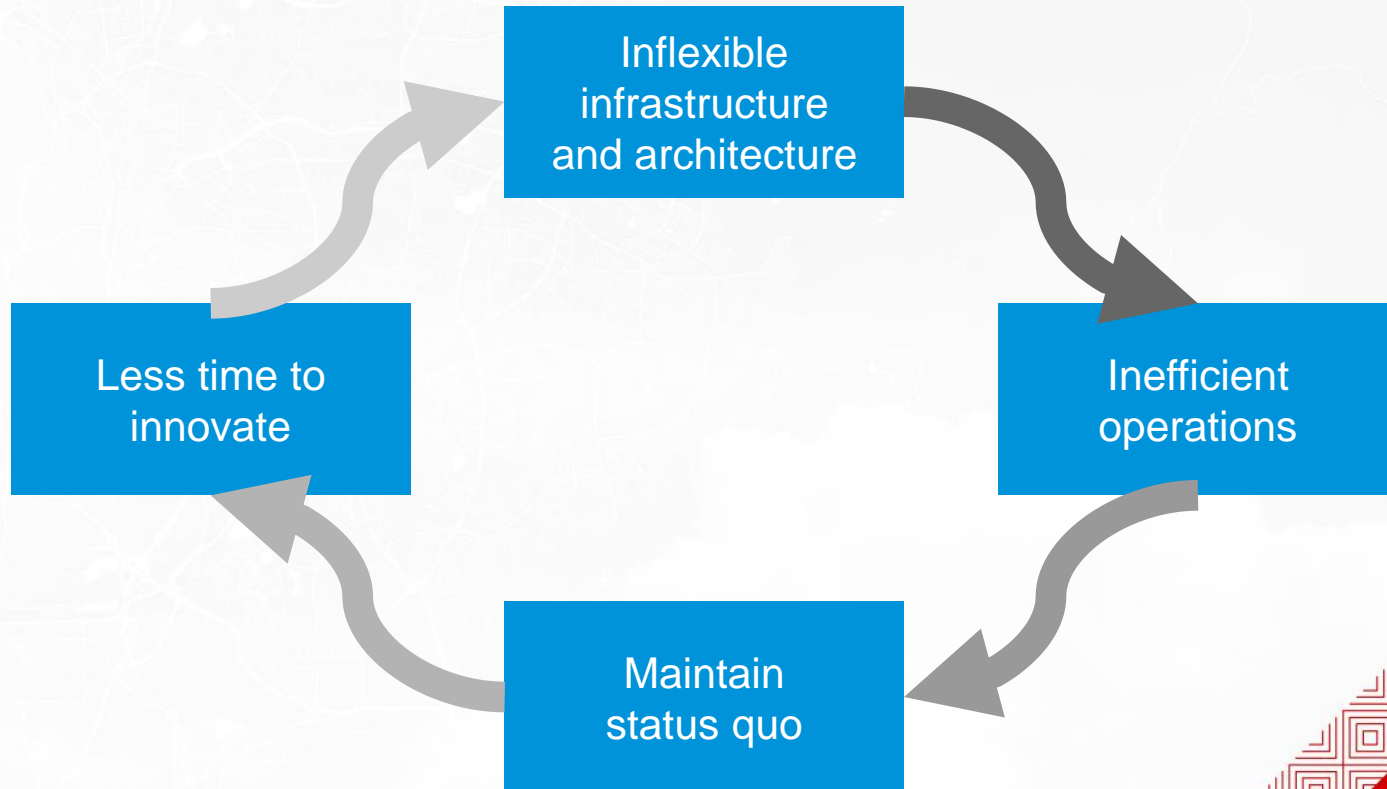
How do I increase efficiency and reduce costs with existing resources?



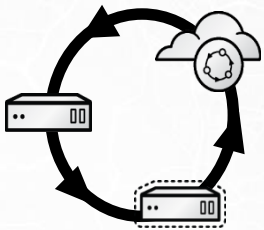
How can I keep my enterprise secure?



# IT CHALLENGES



# BENEFITS OF LINUX CONTAINERS



DEPLOYMENT  
FLEXIBILITY



FASTER APP  
DELIVERY



OPERATIONAL  
EFFICIENCY



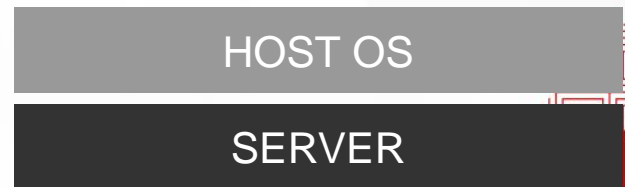
LOWERED  
DEPLOYMENT  
COSTS

**TRANSFORM THE WAY YOU DELIVER APPLICATIONS  
TO ACCELERATE INNOVATION**

# LINUX CONTAINERS

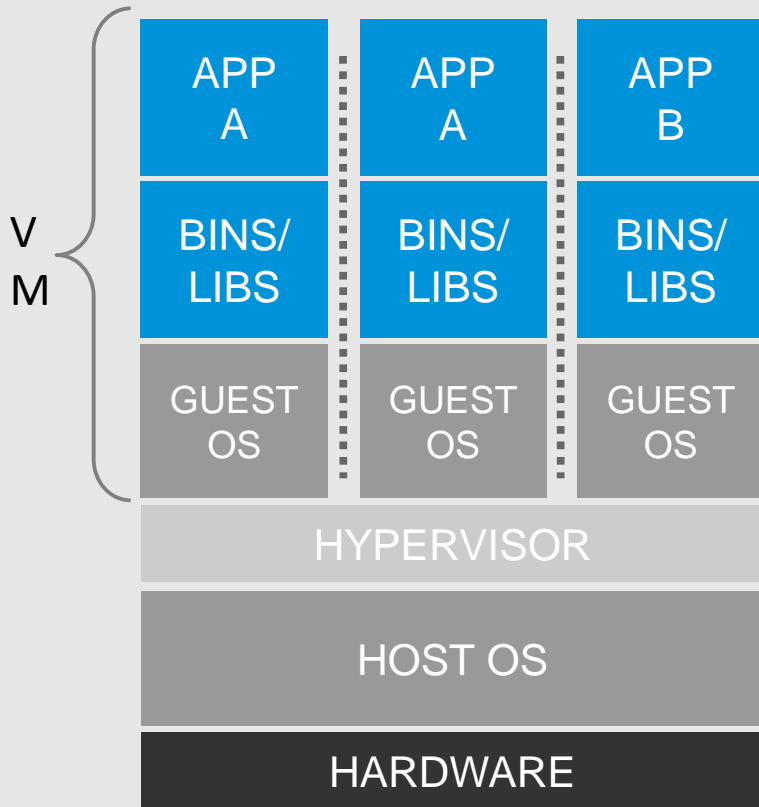
Software packaging concept that typically includes an application and all of its runtime dependencies.

- Easy to deploy and portable across host systems
- Isolates applications on a host operating system. In RHEL, this is done through:
  - Control Groups (cgroups)
  - kernel namespaces
  - SELinux, sVirt, iptables



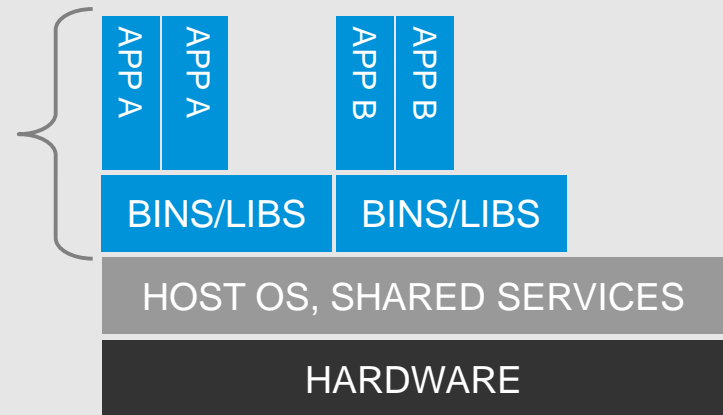
# VIRTUALIZATION AND CONTAINERS

## VIRTUALIZATION



## CONTAINERIZATION

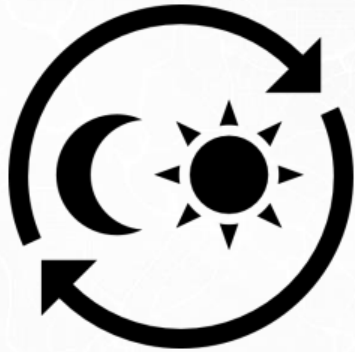
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# OPERATIONAL EFFICIENCY

## TIME TO SET UP

27 HRS



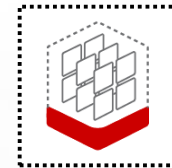
PHYSICAL  
SERVER

12 MINS



VIRTUAL  
MACHINE

10 SECS



CONTAINER  
INSTANCE

# WHAT ABOUT DENSITY?

**10** virtual machines

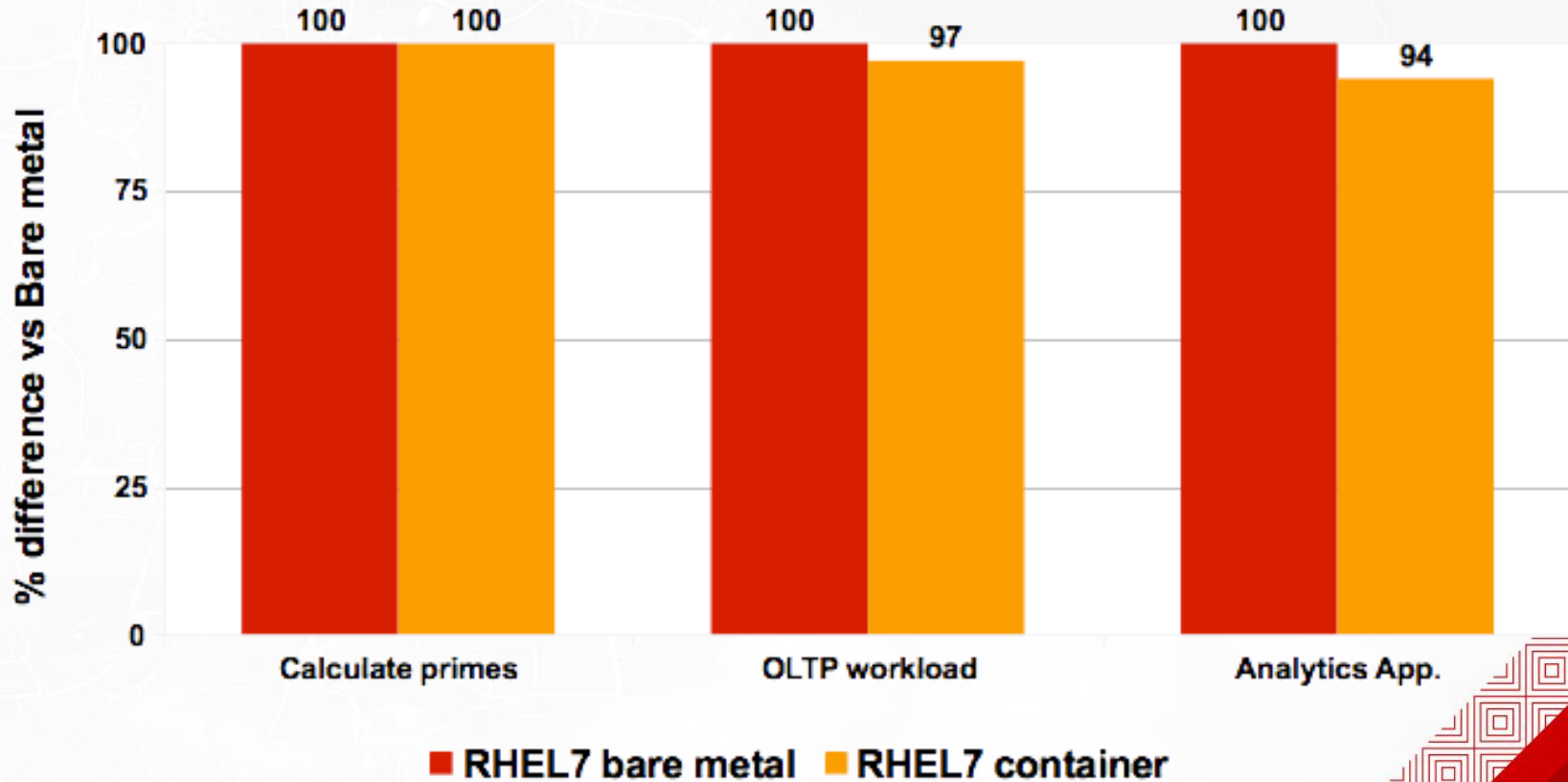
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**100** containers



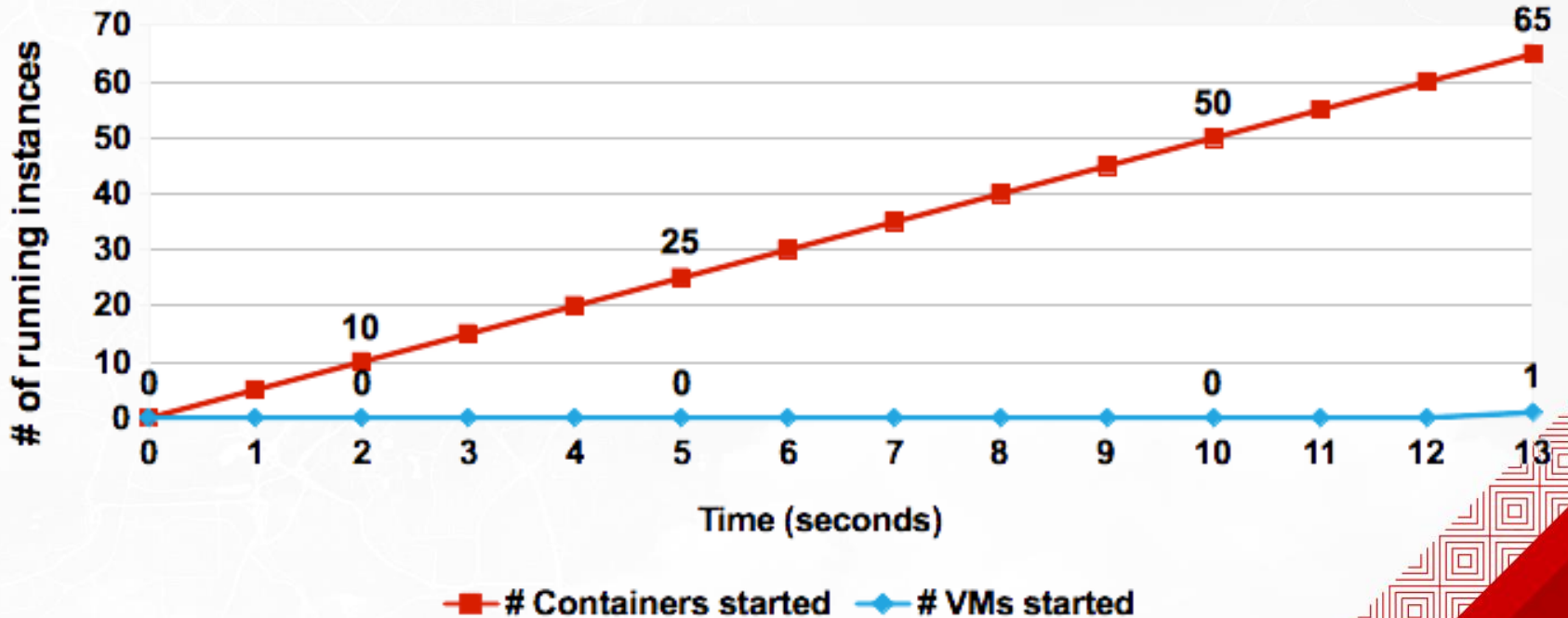
# PERFORMANCE ACROSS WORKLOADS

Time to Complete Test Workload  
Higher is Better

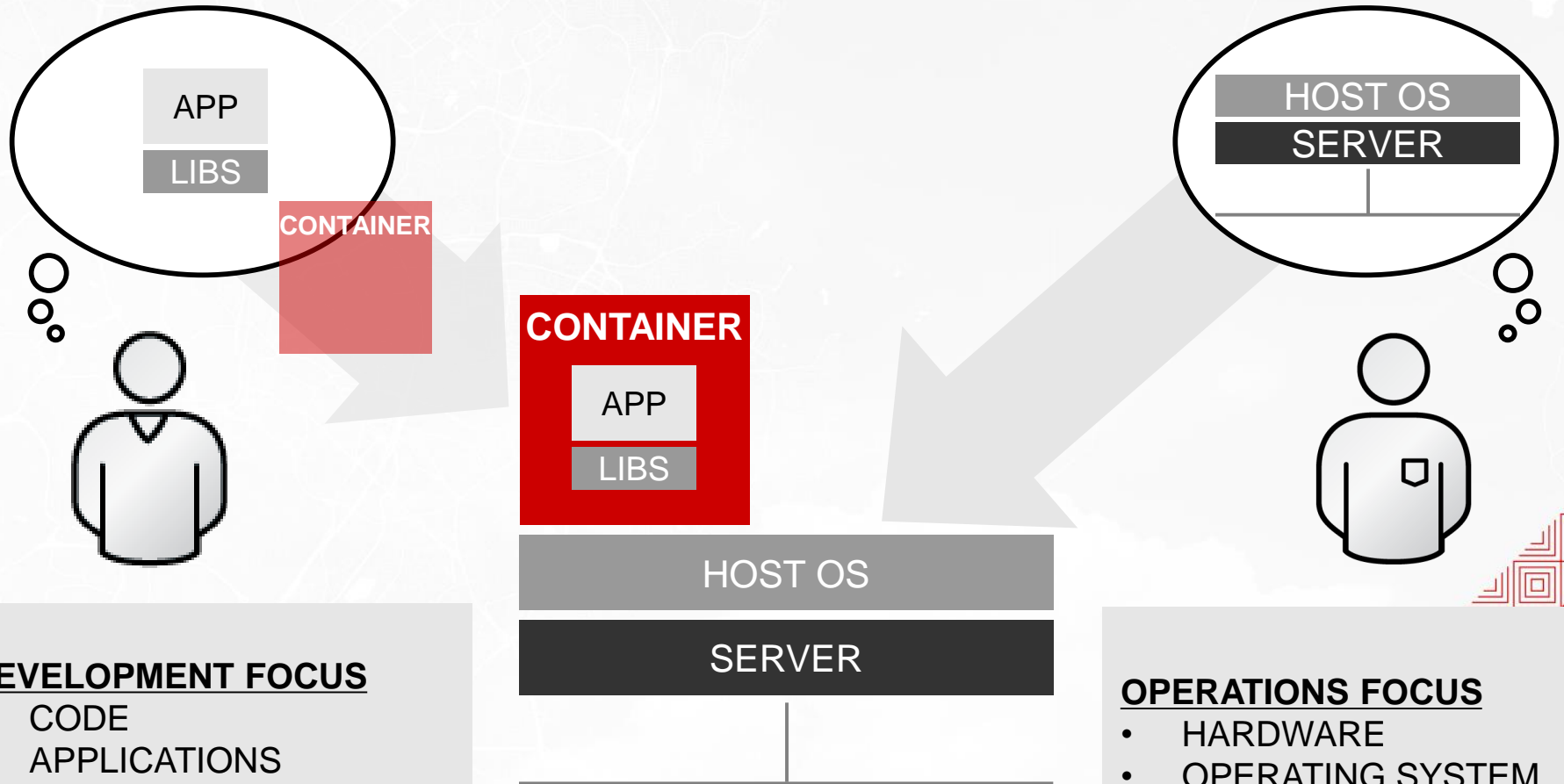


# CONTAINER CREATION SPEED VS VMs

Creation Speed  
Higher is Better



# CONTAINERS ENABLE CONTINUOUS DELIVERY



## DEVELOPMENT FOCUS

- CODE
- APPLICATIONS
- LIBRARIES AND OTHER DEPENDENCIES
- DATA STORE

## OPERATIONS FOCUS

- HARDWARE
- OPERATING SYSTEM
- NETWORKING
- MONITORING

# WHAT ABOUT SECURITY? ARE CONTAINERS SAFE?



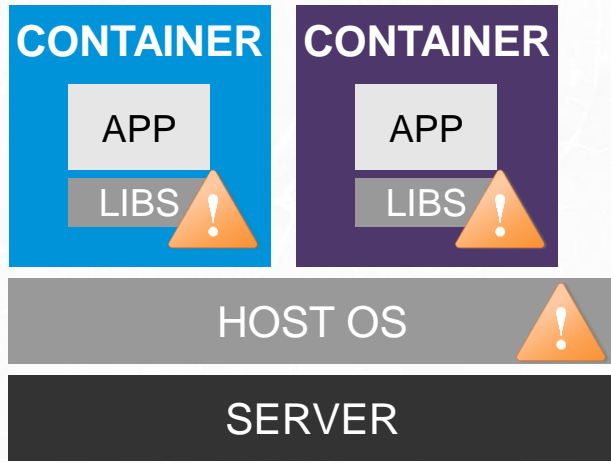
- World Health Organization: Guidelines for Drinking-water Quality
- China Ministry of Environmental Protection: GB3838-2002 drinking water standard
- European Drinking Water Directive (DWD), Council Directive 98/83/EC
- United States Environmental Protection Agency (EPA): Safe Drinking Water Act

# SECURING HOSTS AND CONTAINERS

## RED HAT CONTAINER CERTIFICATION

### UNTRUSTED

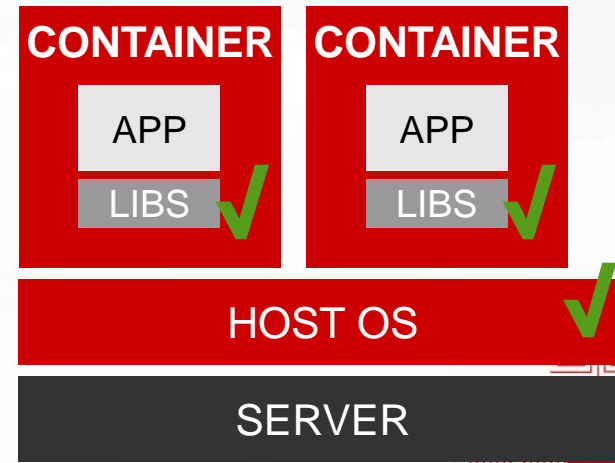
- How can you validate what's in the host and the containers? Will it compromise your infrastructure?
- It "should" work from host to host, but can you be sure?



### CERTIFIED

Trusted source for the host and the containers

Instant portability across multiple hosts



# OPENSIFT: BUILT ON CONTAINERS



## RED HAT ENTERPRISE LINUX NODE

RESOURCE CONTROL  
(Linux Control Groups)

SECURITY ISOLATION  
(Security Enhanced Linux)

# RED HAT ENTERPRISE LINUX ATOMIC HOST



## IT IS RED HAT ENTERPRISE LINUX



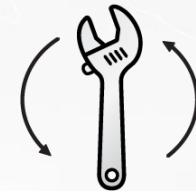
Inherits the complete hardware ecosystem, military-grade security, stability and reliability Red Hat Enterprise Linux is known for.

## OPTIMIZED FOR CONTAINERS



### MINIMAL FOOTPRINT

Minimal environment, tuned for running Linux Containers while maintaining compatibility with Red Hat Enterprise Linux.



### SIMPLIFIED MAINTENANCE

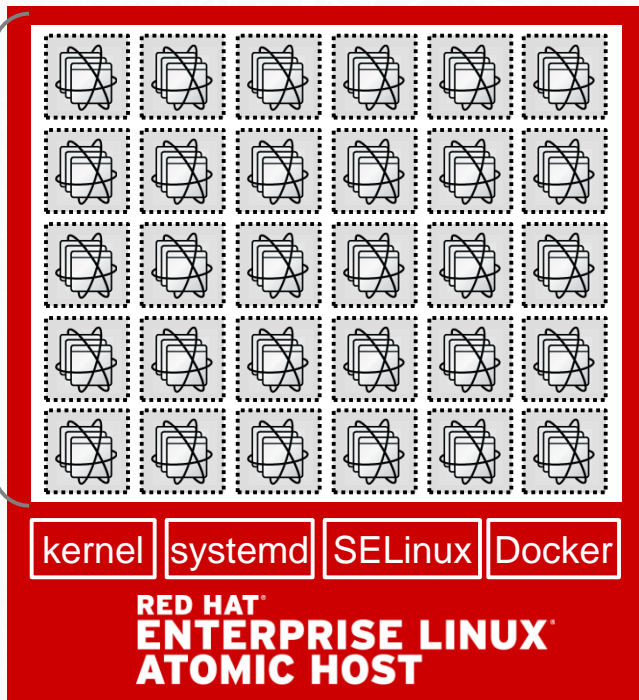
Easy to deploy, update, and rollback using image-based technology.

<sup>1</sup> Red Hat Enterprise Linux Atomic Host is not generally available. Visit <http://www.redhat.com/about/news/press-archive/2014/4/linux-container-innovations> for additional information.

# RED HAT ENTERPRISE LINUX ATOMIC HOST



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## MINIMAL, SECURE FOOTPRINT

Minimal host provides “just enough” to support apps.

## RAPID PROVISIONING

Apps can be provisioned and started in milliseconds.

## SIMPLIFIED MAINTENANCE

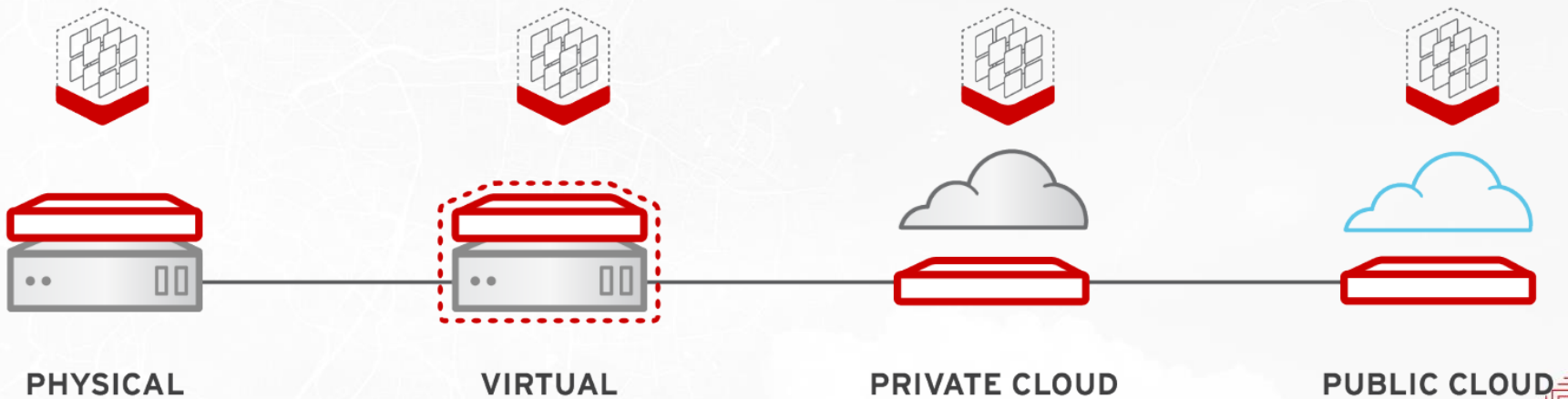
Atomic updates are quick, reliable, and can be rolled back.

<sup>1</sup> Red Hat Enterprise Linux Atomic Host is not generally available. Visit <http://www.redhat.com/about/news/press-archive/2014/4/linux-container-innovations> for additional information.



# PORTABILITY ACROSS THE OPEN HYBRID CLOUD

LIGHTWEIGHT, SIMPLIFIED APPLICATION DELIVERY AND ISOLATION



“Red Hat continues to lead the commercial Linux market with a dominant market share and an appetite for adopting new technology as quickly as product cycles permit.”

Source: IDC - RHEL Containers: The Center of a New Strategy? IDC #248456, May 2014

“Red Hat Enterprise Linux 7 helps to **introduce newer technology**, such as Linux Containers and related Docker software, to large enterprise environments along with the **stability and certifications that enterprises demand.**”



Jay Lyman, senior analyst, 451 Research

“Red Hat Enterprise Linux 7 is the crystallization of four years' worth of such collaborative efforts across all the stack into an **enterprise-class distribution**, which we view as **a rock-solid foundation for new services in the cloud era.**”



Masahiko Iwata, general manager, NTT Open Source Software Center, Nippon Telegraph and Telephone Corp.

# LEARN MORE

Stay informed by following the Red Hat Enterprise Linux blog

<http://rhelblog.redhat.com/tag/containers/>

Visit Project Atomic

<http://www.projectatomic.io/>

Read related Red Hat news

<http://www.redhat.com/en/about/press-releases/docker-and-red-hat-expand-collaboration-around-container-technologies>

**THANK YOU**