

# Red Hat Enterprise Linux 8 / Universal Base Image

What's new?

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## At a glance

<b>KERNEL VERSION</b>	4.18+
<b>SYSTEM COMPILER</b>	GCC 8.2, LLVM 6.0
<b>HARDWARE ARCHITECTURES</b>	Intel/AMD 64-bit, IBM Power LE, IBM z Systems, ARM 64-bit
<b>DEFAULT FILE SYSTEM</b>	XFS
<b>PACKAGE MANAGEMENT</b>	Yum v4
<b>TIME SYNCHRONIZATION</b>	Chrony
<b>NETWORKING</b>	NetworkManager

## Predictable updates

3 years

Major releases

6 months

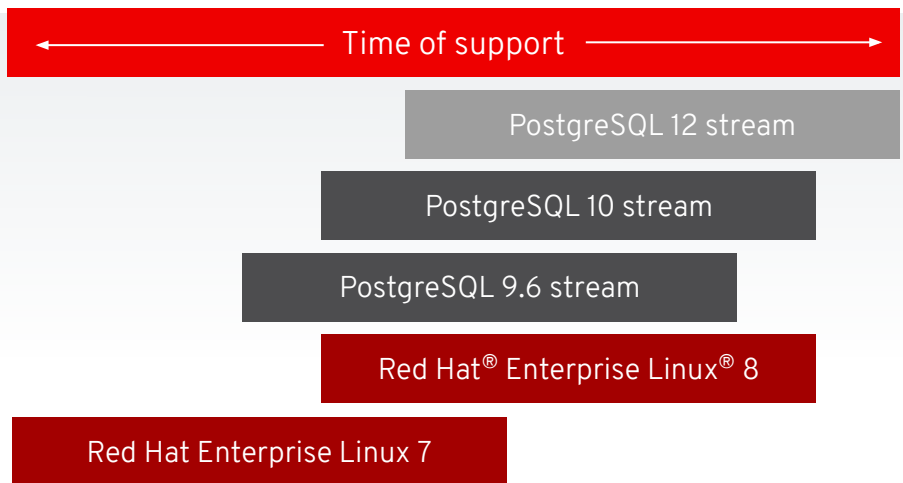
Minor updates

2 phases

Support life cycle



# Application streams



## More choice

Offers versions of the open source tools and frameworks developers need

## Newer versions

Provides access to newer versions as they stabilize

## Simpler access

Maintains standard locations for tools and libraries

# Simplified access to software

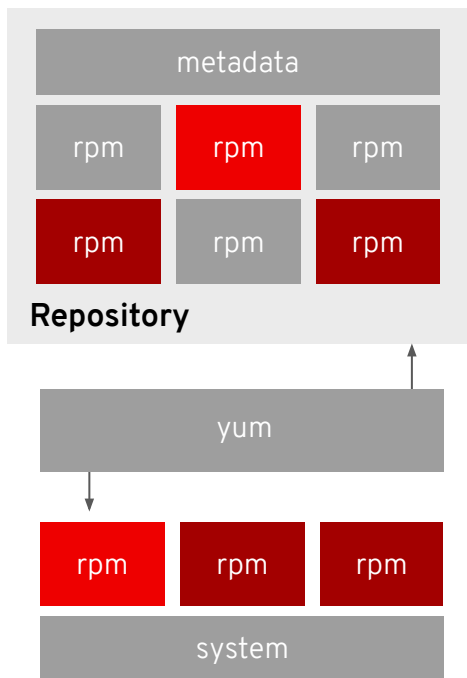
Red Hat Enterprise Linux 7 repositories



Red Hat Enterprise Linux 8 repositories



## The newest yum package manager: version 4



### **New technology**

Maintains the same experience while adding new tools

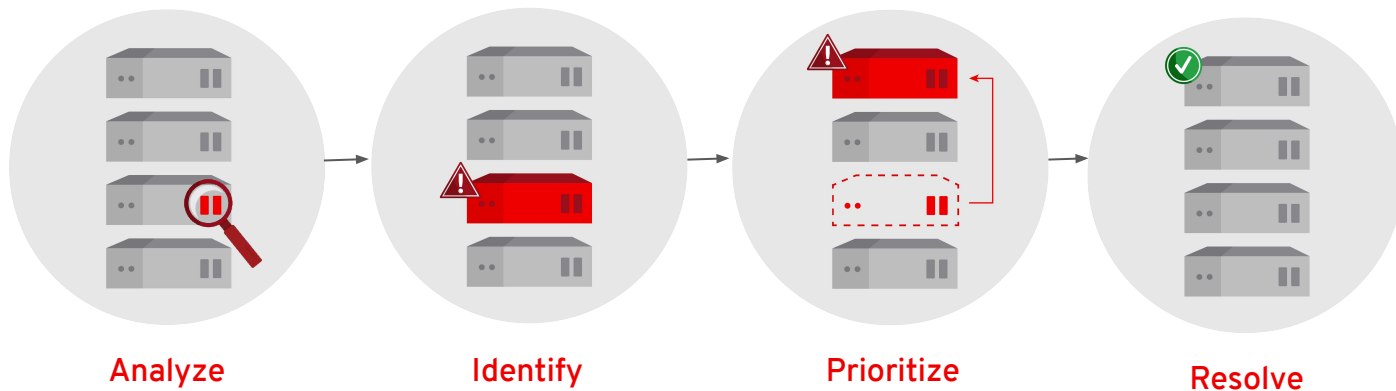
### **Better dependency management**

Offers faster resolution and easier minimization of what's installed

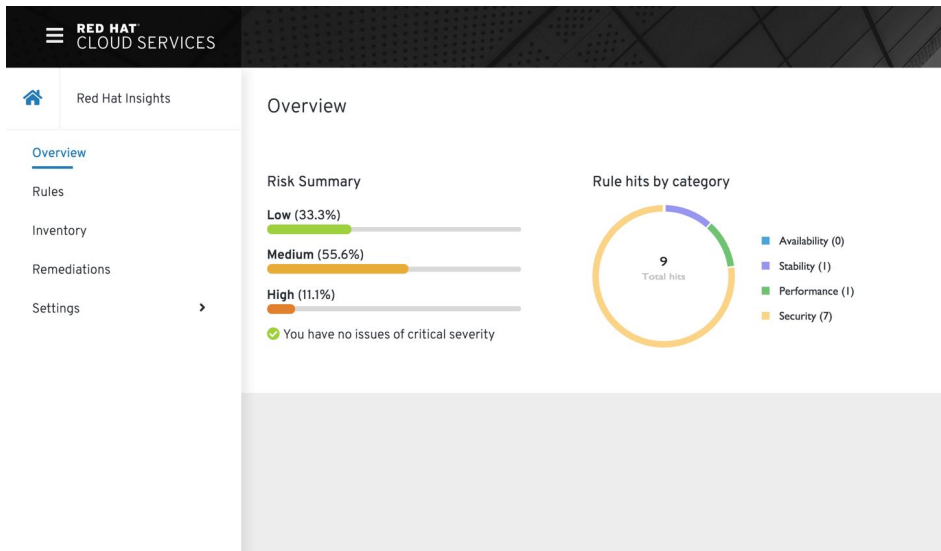
### **Stable API**

Provides new application programming interface (API) for extending yum that will progress into the future

## Insights is now included with all RHEL Subscriptions



# Detect and fix issues with Red Hat Insights



## Proactive advice

Identification of issues before they become problems

## Continuous assessment

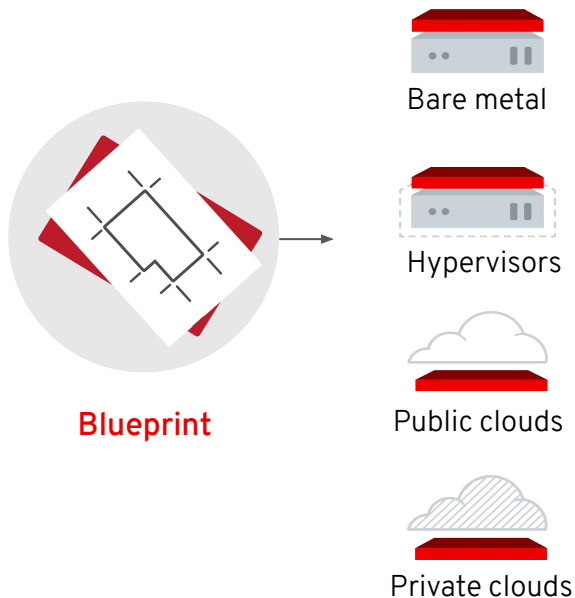
Real-world results to help find new risks

## Simpler remediations

Tailored results at the host level



# Create images for all your environments with image builder



## Single source

Lets you create gold images for any environment from the same blueprint increasing stability and consistency

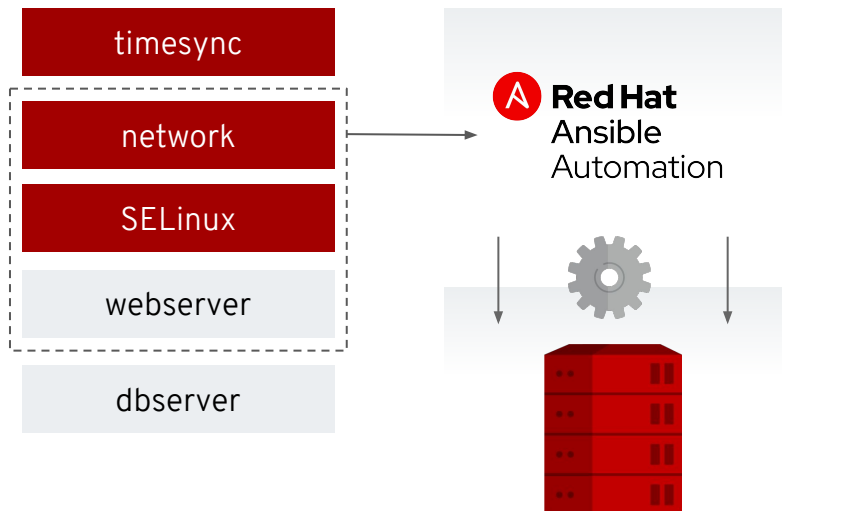
## Any footprint

Supports public cloud, private cloud, enterprise hypervisors, and bare metal

## Simple interface

Provides web-based view within the web console for selecting packages and creating blueprints

## Speed automation creation with system roles



### Common automation

Manage multiple versions of Red Hat Enterprise Linux from a single role

### Reduced rework

Import provided roles to eliminate task creation in playbooks

### Easy switching of providers

Change between default and optional tools quickly and safely

## Optimized experiences for mission-critical databases

### Microsoft SQL Server

- Red Hat Enterprise Linux is the reference platform for SQL Server on Linux
- Benchmark-breaking performance
- Fast deployment and portability via containers

## Red Hat Certified Cloud and Service Providers



# Configuring systemwide cryptographic policies



## Central configuration

Set acceptable algorithms from a single tool

## Improved consistency

Covers multiple cryptographic providers and consumers like TLS, kerberos, and Java

## Built-in policies

Including legacy systems requiring 64-bit security and FIPS allowed or approved algorithms

# Recording user terminal sessions

The image displays three screenshots related to session recording in Red Hat Enterprise Linux 8:

- Top Left:** The 'General Configuration' window for 'rhel8-1.examp...'. The 'Session Recording' section is expanded, showing options like 'File Path', 'Syslog Facility' (set to 'authpriv'), 'Syslog Priority' (set to 'info'), 'Journal Priority' (set to 'info'), and 'Journal Augment' (checked).
- Top Right:** The 'Session Recording' window, showing a 'Player: cloud-user@rhel8-1->' and a terminal window with the command `sudo cat /etc/sss/conf.d/sss-session-recording.conf`.
- Bottom:** A terminal window showing the execution of `ssh cloud-user@rhel8-1.example.com`. The session is recorded, and the user performs the following actions:
 

```

$ ssh cloud-user@rhel8-1.example.com
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Tue Apr 2 13:10:47 2019 from 192.168.122.1

ATTENTION! Your session is being recorded!

[cloud-user@rhel8-1 ~]$ sudo ls /etc/sss/conf.d
sss-session-recording.conf
[cloud-user@rhel8-1 ~]$ sudo cat /etc/sss/conf.d/sss-session-recording.conf
[session_recording]
scope=some
users=cloud-user
groups=
[cloud-user@rhel8-1 ~]$ exit
logout

Connection to rhel8-1.example.com closed.
$
      
```

## Audit activities

Create a record of actions taken for review against security policies

## Create visual guides

Build run books and training materials with demonstrations

## Record and play back

Logged via standard channels with multiple playback options

# Remote single-system views in the web console

The screenshot displays the Red Hat Enterprise Linux web console interface for a system named 'rhel8-1.examp...'. The interface is divided into several sections:

- System Overview:** Includes 'Reading' and 'Writing' graphs showing I/O activity in KB/s over time.
- Filesystems:** A table listing mounted filesystems:
 

Name	Mount Point	Size
/dev/vda1	/	1.63 / 9.99 GiB
cidata	-	366 KiB
- NFS Mounts:** A section indicating 'No NFS mounts set up'.
- Storage Logs:** A log viewer showing system events for 'udisksd' on 'April 2, 2019', including module loading and daemon startup.
- RAID Devices:** A section indicating 'No storage set up as RAID'.
- Volume Groups:** A section indicating 'No volume groups created'.
- VDO Devices:** A section with an 'Install VDO support' button, indicating 'VDO support not installed'.
- iSCSI Targets:** A section indicating 'No iSCSI targets set up'.
- Drives:** A list of storage devices:
  - VirtIO Disk: 10 GiB Hard Disk (R: 0 B/s, W: 0 B/s)
  - QEMU DVD-ROM (QM00001): Optical Drive (R: 0 B/s, W: 0 B/s)

## Browser-based interface

Offers remotely accessible user interface using host security mechanisms

## Consolidated view

Provides single view of tasks to speed understanding and completion

## Standard management tools

Uses system tools to change state, not a separate workflow

# New in the web console

The screenshot displays the Red Hat Enterprise Linux web console interface. The top navigation bar shows the system name 'rhel8-1.exempl...' and the user 'Cloud User'. The left sidebar contains a menu with categories: System, Logs, Storage, Networking, Virtual Machines, Accounts, Services, Session Recording, Applications, Diagnostic Reports, Kernel Dump, SELinux, Software Updates, Subscriptions, and Terminal. The main content area is divided into several sections:

- System Monitoring:** Two line graphs showing 'Reading' and 'Writing' in KIB/s over time (13:25 to 13:29).
- Filesystems:** A table listing mounted filesystems.
 

Name	Mount Point	Size
/dev/vda1	/	1.63 / 9.99 GiB
cidata	-	366 KiB
- NFS Mounts:** A section indicating 'No NFS mounts set up' with a '+ ' button.
- Storage Logs:** A log viewer for 'Storage Logs' dated 'April 2, 2019'. The log entries show the 'udisksd' daemon starting and loading modules like 'libudisks2\_lvm2.so...' and 'libudisks2\_iscsi.so...'.
 

```

13:16 g_object_notify: object class 'UDisksObjectS... udisksd
13:16 g_object_notify: object class 'UDisksObjectS... udisksd
13:16 Loading module libudisks2_lvm2.so... udisksd
13:16 Loading module libudisks2_iscsi.so... udisksd
13:16 Acquired the name org.freedesktop.UDisks2 on... udisksd
13:16 udisks daemon version 2.8.0 starting udisksd
      
```
- RAID Devices:** A section indicating 'No storage set up as RAID' with a '+ ' button.
- Volume Groups:** A section indicating 'No volume groups created' with a '+ ' button.
- VDO Devices:** A section with an 'Install VDO support' button and the text 'VDO support not installed'.
- iSCSI Targets:** A section indicating 'No iSCSI targets set up' with a '+ ' button.
- Drives:** A list of system drives:
  - VirtIO Disk: 10 GiB Hard Disk, R: 0 B/s, W: 0 B/s
  - QEMU DVD-ROM (QM00001): Optical Drive, R: 0 B/s, W: 0 B/s

## Virtual machines

Create and manage virtual machines

## Network-bound disk encryption

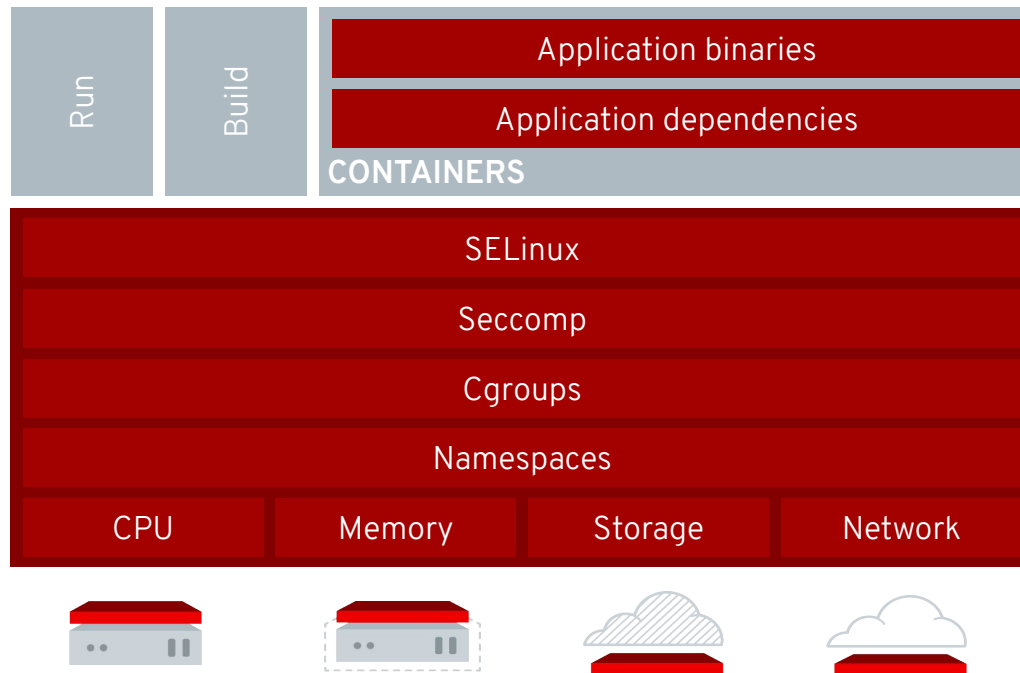
Enroll disks with Tang server and manage LUKS keys

## Single sign-on configuration

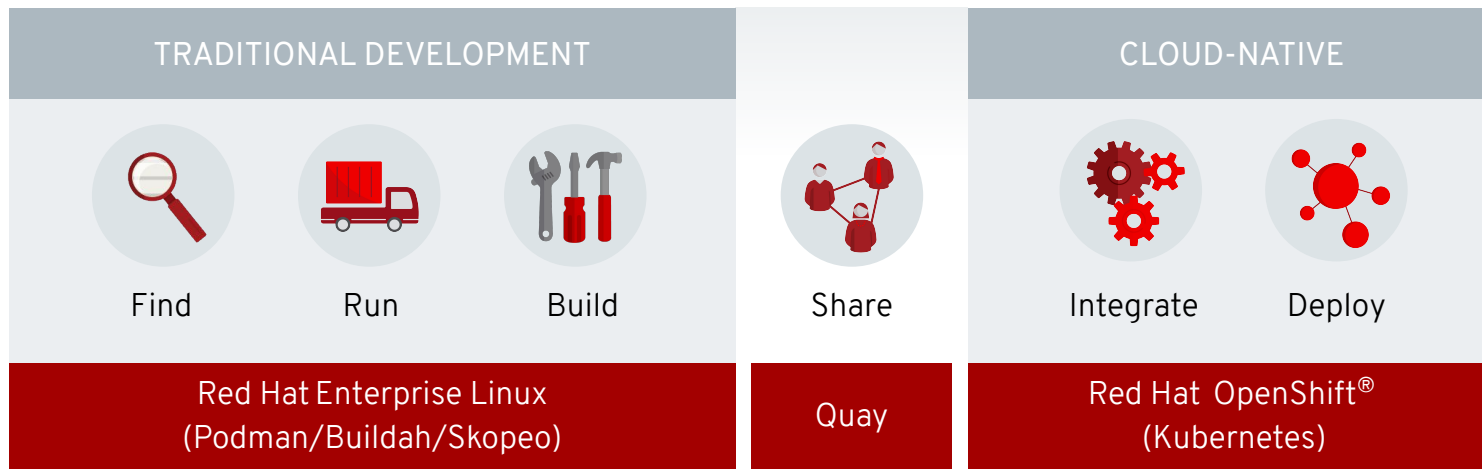
Automatically configure when joining a domain



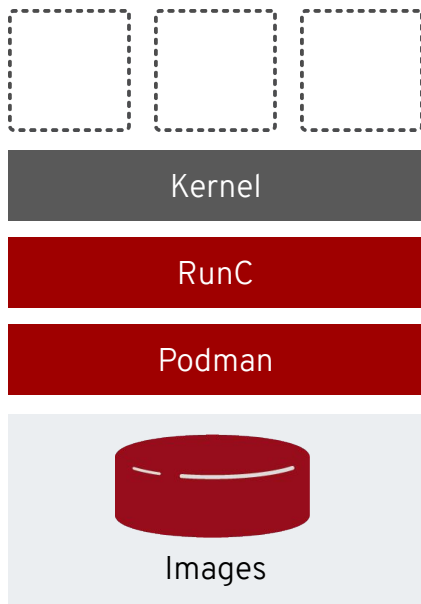
# Containers are Linux



## Powering the adoption of containerized workloads



# Manage containers with Podman



## Fast and lightweight

No daemons required

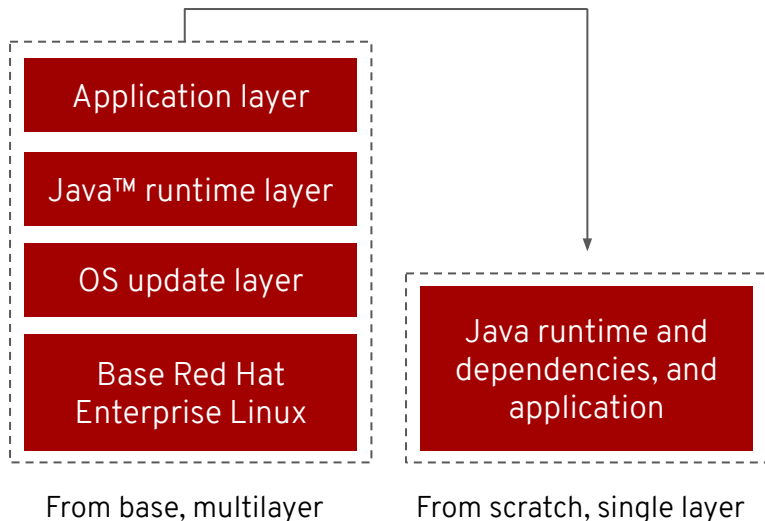
## Advanced namespace isolation

Rootless operations for container run and build

## Open standards compliant

Creates and maintains any standard Open Containers Initiative (OCI) -compliant containers and pods

## Create images with Buildah



### More control

Scriptable tooling for fine-grained image control, and maximum control starting from base or scratch images

### Minimization of images

Elimination of unneeded dependencies by using host-based tools

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# Challenges in selecting the right Container Base Image

# THERE ARE A LOT OF DIFFERENT OPTIONS

Figuring out which container base image to use can be difficult

## Traditional Options

- Red Hat Enterprise Linux
- Fedora
- CentOS
- Debian
- Ubuntu
- Windows

## Minimal Options

- Distroless
- Scratch
- RHEL Minimal
- Alpine

# HOW TO SELECT THE RIGHT IMAGE

There is some standard criteria that can help

## Architecture

- C Library
- Core Utilities
- Size
- Life Cycle
- Compatibility
- Troubleshooting
- Technical Support
- ISV Support
- Distributability

## Security

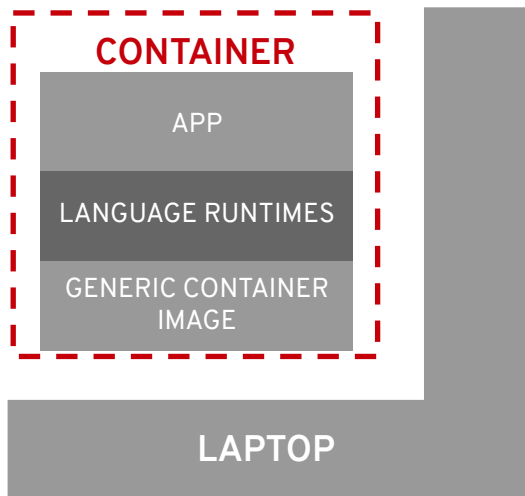
- Updates
- Tracking
- Security Response Team

## Performance

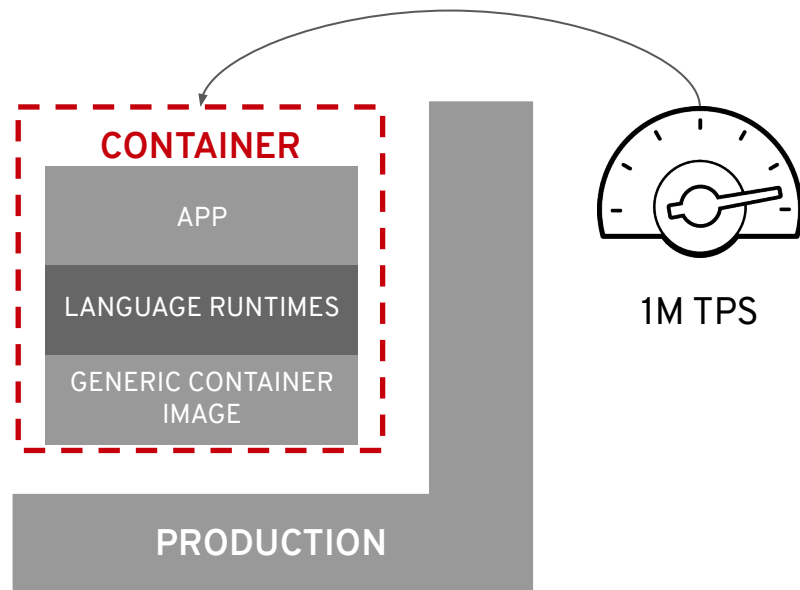
- Automated
- Performance Engineering

# IT WORKS ON MY LAPTOP, BUT...

What about performance?



Works on my laptop

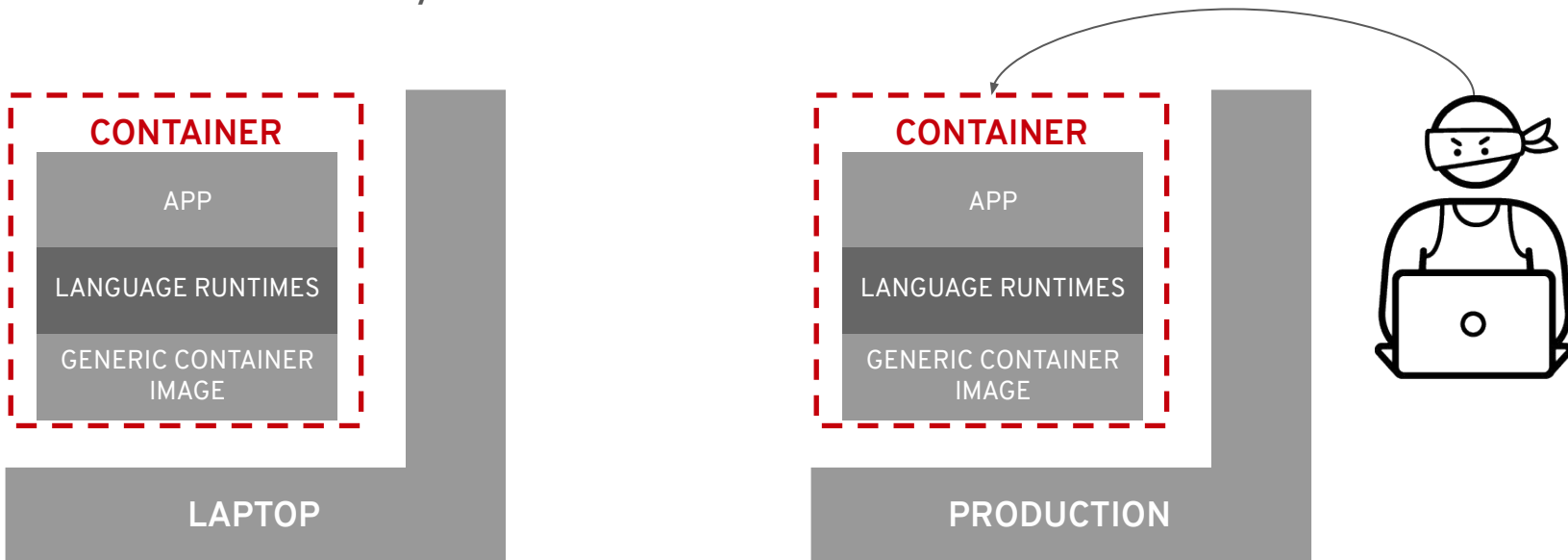


But, what about at 1M transactions per second



# IT WORKS ON MY LAPTOP, BUT...

What about security?

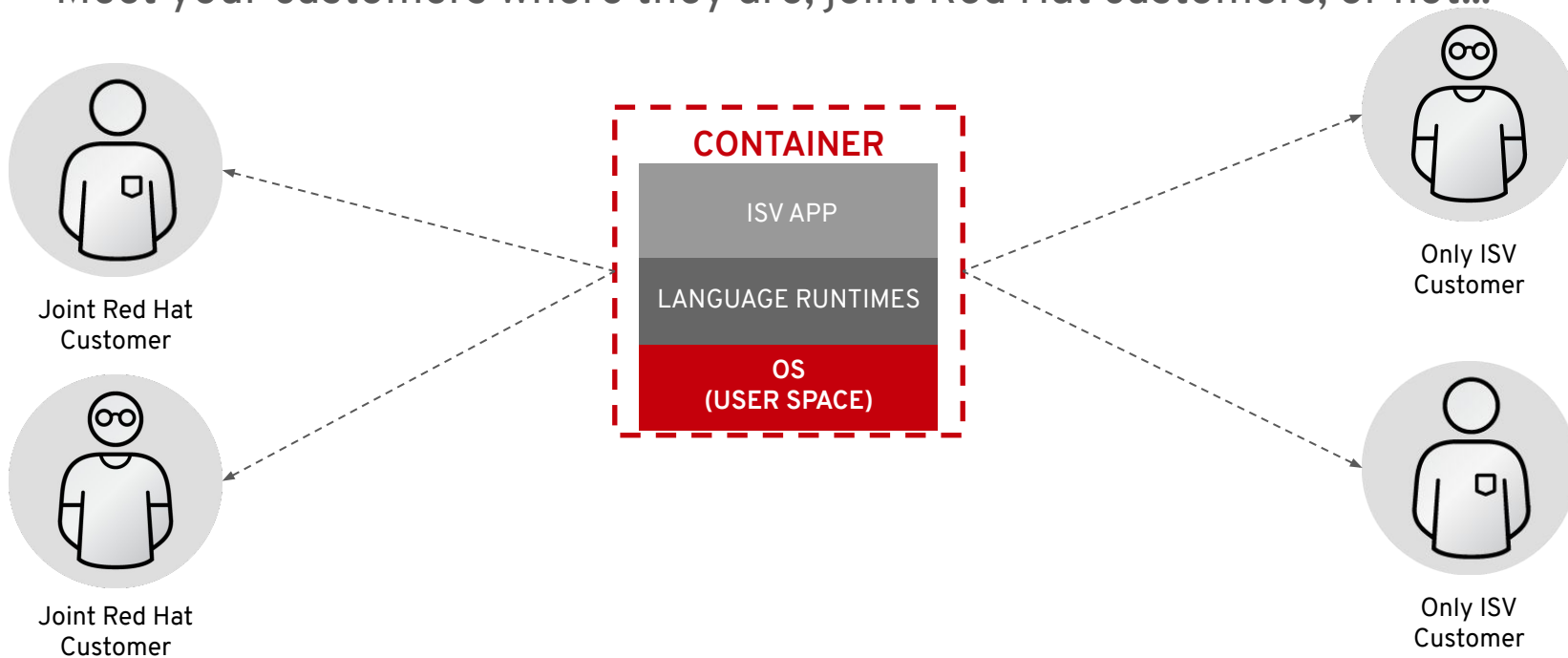


Works on my laptop

What about hackers?

# ISVs NEED TO DISTRIBUTE ANYWHERE

Meet your customers where they are, joint Red Hat customers, or not...

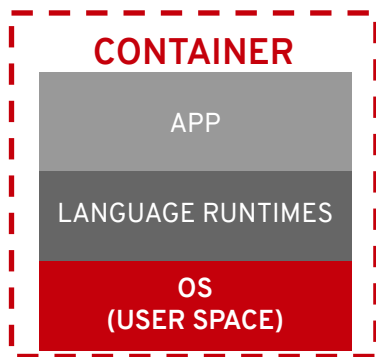


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# Introducing the Universal Base Image

# THE BASE IMAGE FOR ALL OF YOUR NEEDS

Enterprise architecture, security and performance



The Red Hat Universal Base Image is based on RHEL and made available at no charge by a new end user license agreement.

## Development

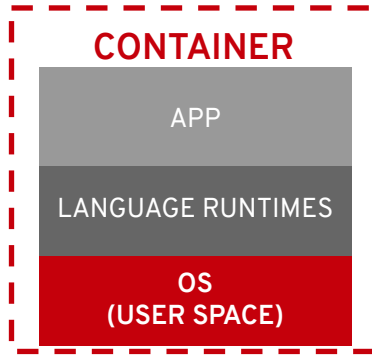
- Minimal footprint (~90 to ~200MB)
- Programming languages (Modularity & AppStreams)
- Enables a single CI/CD chain

## Production

- Supported as RHEL when running on RHEL
- Same Performance, Security & Life cycle as RHEL
- Can attach RHEL support subscriptions as RHEL

# THE BASE IMAGE FOR ALL OF YOUR NEEDS

Engineered by Red Hat with an enterprise roadmap, security and performance

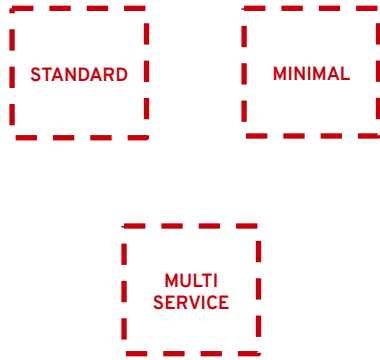


Trusted:

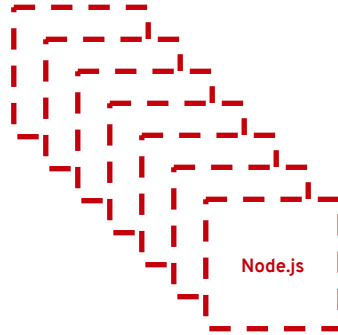
- Libraries
- Packaging format
- Core Utilities
- Security Response
- Patching
- Performance Response
- Technical Support
- More

# WHAT IS THE RED HAT UNIVERSAL BASE IMAGE?

Three base images, language runtime images, and software packages



Base Images



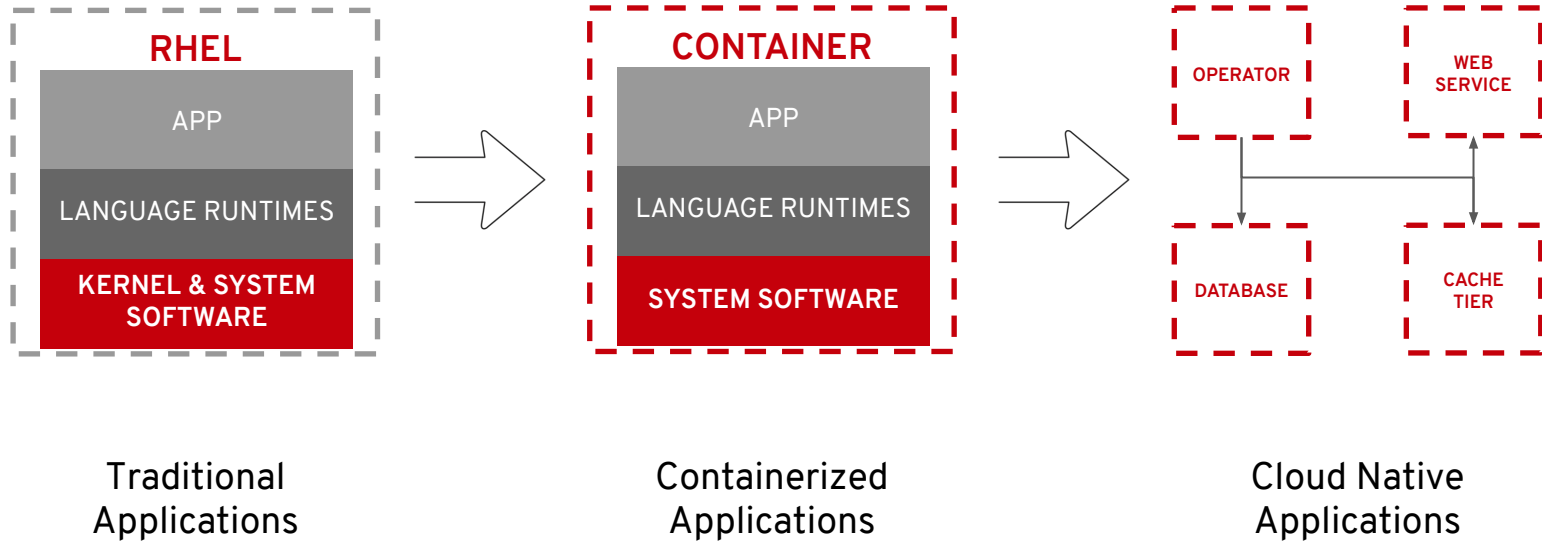
Pre-Built Language Images



Package Subset

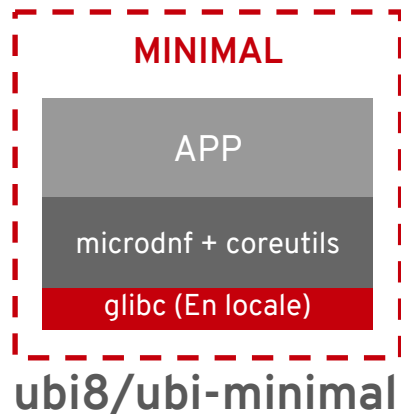
# THE BASE IMAGE FOR ALL OF YOUR NEEDS

Bringing the value of RHEL to cloud native applications



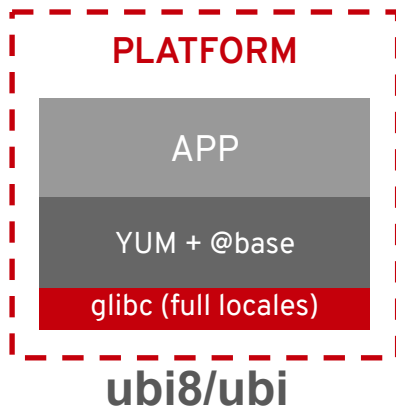
# WHAT IS THE RED HAT UNIVERSAL BASE IMAGE?

Providing the right level of content for application stability via the RHEL API/ABI



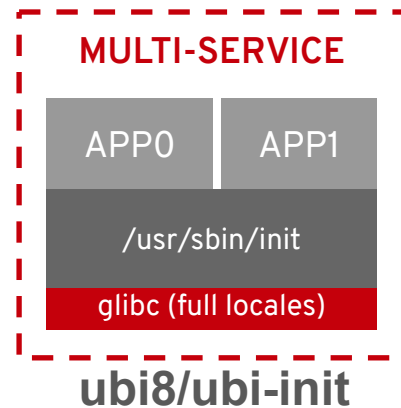
Designed for applications that contain all dependencies (Golang, dotnet, etc)

- Minimized content set
- No suid binaries
- Minimal package manager (install, update, remove)



For any application that runs on RHEL

- Unified, openssl crypto stack
- Full YUM stack
- Includes useful basic OS tools (tar, gzip, vi, etc)



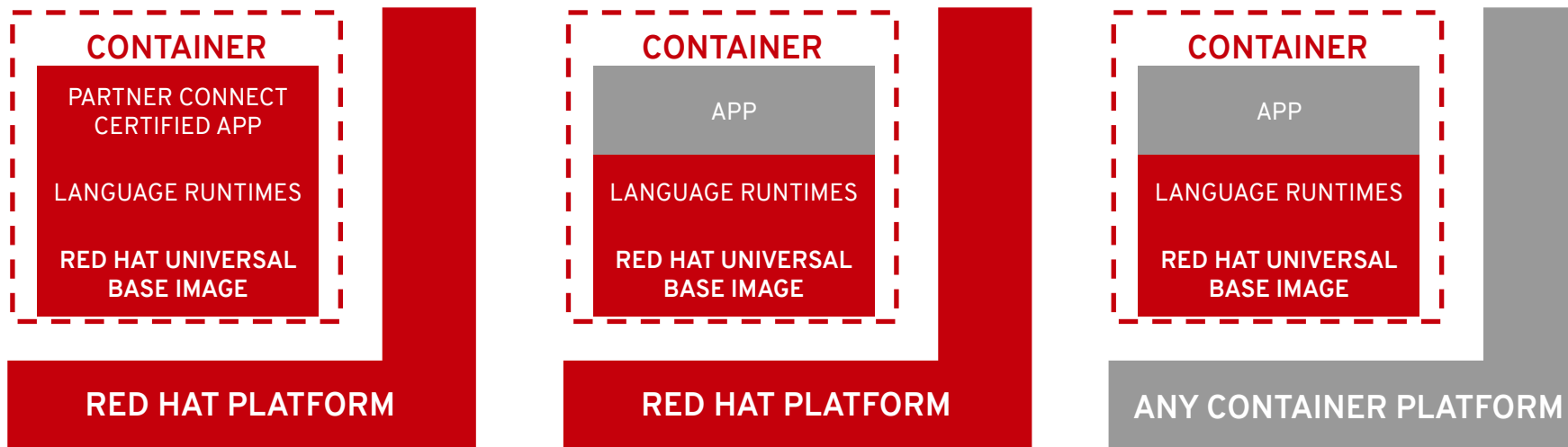
Eases running multiple services in a single container

- Configured to run systemd on start
- Simply enable the services at build time



# CAN BE BUILT & DEPLOYED ANYWHERE

Building on UBI is the first step



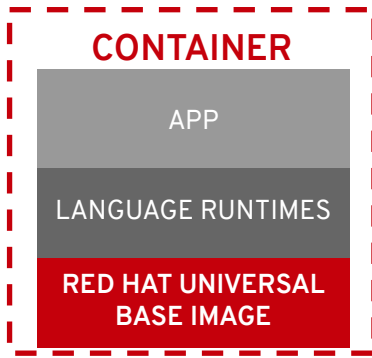
Certification provides the highest level of support

Enterprise support when run on Red Hat platforms

Trusted base for any environment

# TWO WAYS TO GET UPDATES

Red Hat provides updated base images & RPM updates so you can rebuild any time you want



Base Image Updates



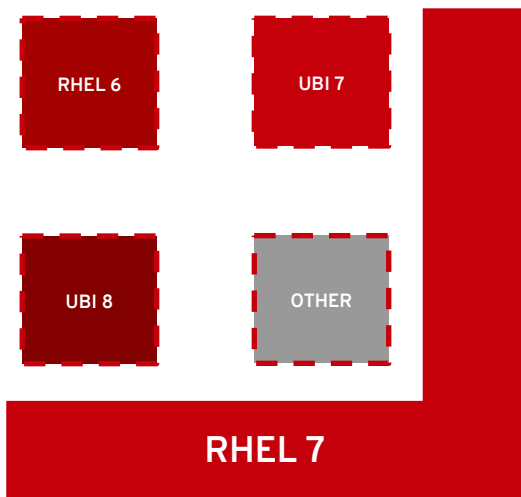
Associated RPM Updates

# LEVELS OF SUPPORTABILITY

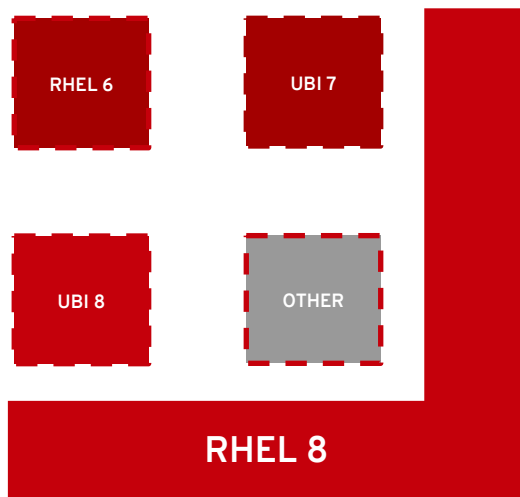
	ANYWHERE	+RED HAT PLATFORM	+CERTIFICATION	+OPERATOR CERTIFICATION
Trusted Roadmap	Yes	Yes	Yes	Yes
Proven Images	Yes	Yes	Yes	Yes
Minimal Images	Yes	Yes	Yes	Yes
Package/Image Updates	Only UBI Content	All RHEL Content	All RHEL Content	All RHEL Content
Cloud Native Language Runtimes	Yes	Yes	Yes	Yes
Distribution/Redistribution	Yes	Yes	Yes	Yes
Platform Testing	None	Yes	Yes	Yes
Customer Support	None	Red Hat Components	Joint (All Components)	Joint (All Componentes)
Joint Promotion	None	None	Yes	Yes
ISV Build Support	None	None	Yes	Yes
Automated Deployment Support	None	None	None	Yes
Automated Operations Support	None	None	None	Yes

# SUPPORTABILITY MATRIX

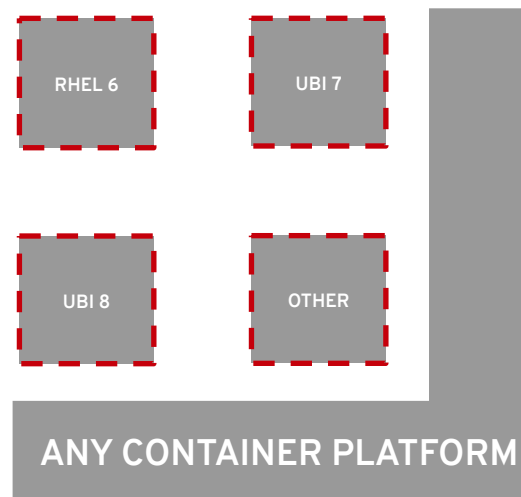
Tiered support model



Red Hat Enterprise Linux 7



Red Hat Enterprise Linux 8



Like any upstream project

# Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



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[youtube.com/user/RedHatVideos](https://www.youtube.com/user/RedHatVideos)



[facebook.com/redhatinc](https://www.facebook.com/redhatinc)



[twitter.com/RedHat](https://twitter.com/RedHat)

# UNIVERSAL BASE IMAGE - TIMELINE

## Planning and Launch readiness

- WCR plan for UBI launch

## Select Partner disclosure and enablement

- Disclosure under NDA
- **Developer Preview release**
- Updated Container Certification Appendix  
(Terms-based registry already GA)

## RHEL8 GA (May 2019)

- **Public Launch of UBI**
- **RHEL8 GA with UBI only**
- **OpenShift 4.0**
- Transition RH portfolio onto new Image
- Transition certified ISV onto new Image

Q1 FY2020

H2 FY2020

Q3/Q4 FY2019

Q2 FY2020

### UBI 7

- **Partner Launch / GA**
- **Launch Operator Certification**
- **Container Certification 2.0**

### Update ISV Commercial Models

- ISV Embedded to reference Container Certification 2.0
- FY19 Sales Incentives adjust

### Red Hat Community Initiatives

- UBI can now be the default

### UBI Future

- UBI 8 images
- UBI 7 Images
- RHEL 7 Images for layered products & customers

RHEL 7 base image

Dev Preview

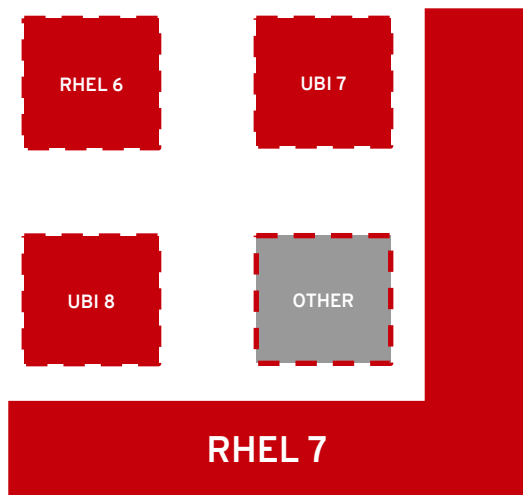
Universal Base Image 7

Dev Preview

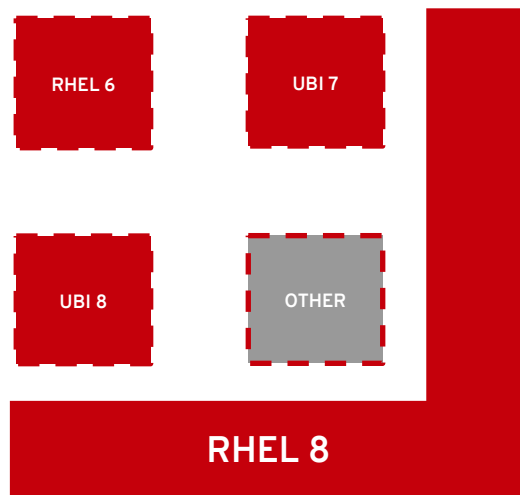
Universal Base Image 8

# SUPPORTABILITY MATRIX

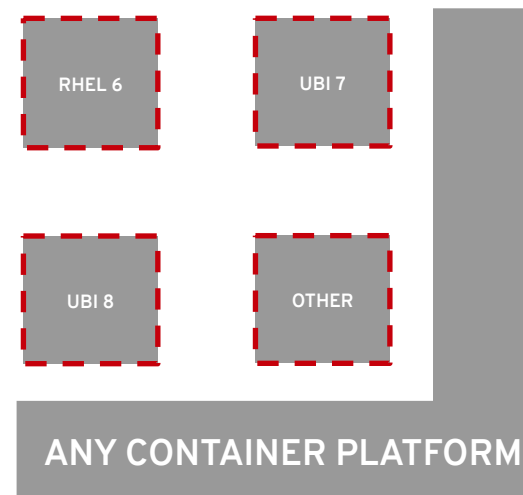
Red Hat Support and Community Support



Red Hat Enterprise Linux 7



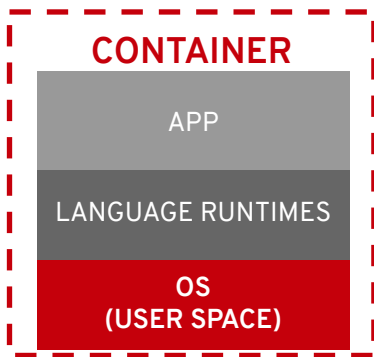
Red Hat Enterprise Linux 8



Like any upstream project

# WHAT IS THE RED HAT UNIVERSAL BASE IMAGE?

The UBI is a subset of content from RHEL...



1. A set of three base images (ubi, ubi-minimal, ubi-init)
2. A set of language runtime images (nodejs, ruby, python, php, perl, etc)
3. A set of associated YUM repositories with common application dependency components