Red Hat
Enterprise Linux

RHEL 7 & 8 New Features vs. RHEL 6

What's new?

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RHEL 6, 7 and 8 At A Glance

	RHEL 6	RHEL 7	RHEL 8
KERNEL VERSION	2.6+	3.10+	4.18+
SYSTEM COMPILER	GCC 4.4+	GCC 4.8+	GCC 8.2, LLVM 6.0
HARDWARE ARCHITECTURES	Intel/AMD 64-bit, IBM Power BE, IBM z Systems	Intel/AMD 64-bit, IBM Power LE, IBM z Systems, ARM 64-bit	Intel/AMD 64-bit, IBM Power LE, IBM z Systems, ARM 64-bit
SERVICES MGMT	init	systemd	systemd
DEFAULT FILE SYSTEM	ext4	XFS	XFS
PACKAGE MANAGEMENT	Yum	Yum	Yum v4
TIME SYNCHRONIZATION	ntp	ntp	Chrony
NETWORKING	ifcfg	NetworkManager	NetworkManager

RHEL 6, 7 and 8 Feature Table

	RHEL 6	RHEL 7	RHEL 8
CONTAINER ENGINE	Docker 1.13	Docker 1.13, Podman	podman
fIREWALL	iptables	Iptables + firewalld	Nftables + firewalld
DEV TOOLS	Software Collecitons (SCL)	Software Collections (SCL)	AppStreams
IN_PLACE UPGRADE	No	Yes	Yes (LEAPP)
IMAGE BUILDER	No	No	Yes
ANSIBLE SYSTEM ROLES	No	Yes	Yes
UNIFIED FILESYSTEM MGMT	No	No	Stratis

RHEL 6, 7 and 8 Feature Table

	RHEL 6	RHEL 7	RHEL 8
HA CLUSTERING	Corosync	Pacemaker	Pacemaker
DEBUGGING	Systemtap	Systemtap	ebpf
TERMINAL SESSION RECORDING	No	No	Yes
STORAGE ENCRYPTION	LUKS 1.0	LUKS 1.0	LUKS 2.0
NBDE SUPPORT	No	Yes	Yes
ROLLBACK	No	Relax and Recover (ReAR) with thinsnapshot	Relax and Recover (ReAR)

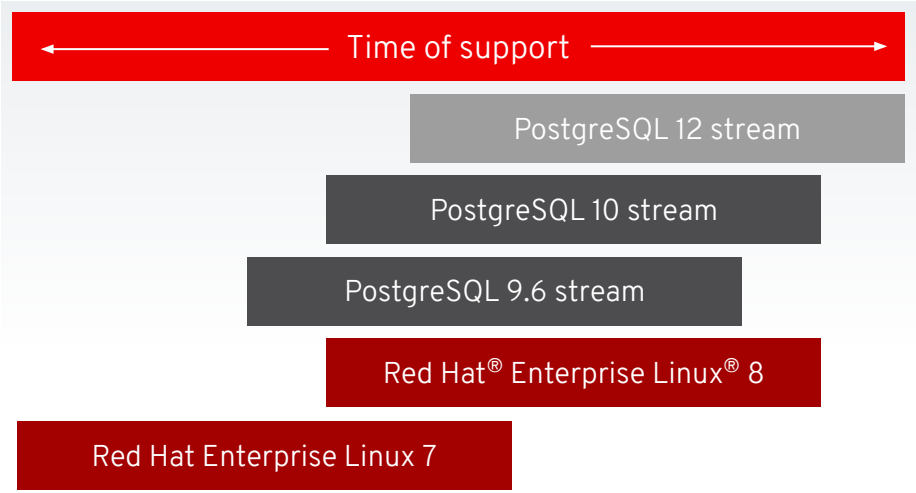
RHEL 6, 7 and 8 Feature Table

	RHEL 6	RHEL 7	RHEL 8
GUI MANAGEMENT	None	Web Console	Web Console
PERFORMANCE	Good	Good	Better
End of Life	Nov. 2020	June 2024	May 2029
Extended Lifecycle Support end date	June 2024	TBD	TBD
Bug fixes?	No	Yes	Yes
New Feature Enablement?	No	No	Yes
Critical Security patches?	Yes (requires ELS)	Yes	Yes

RHEL 6, 7 and 8 Ecosystem

	RHEL 6	RHEL 7	RHEL 8
nVIDIA DGX SUPPORT	No	Yes	Yes, + precompiled libraries
OPENSHIFT SUPPORT	3.x	3.x, 4.x worker node	3.X, $.x
CoreOS Support	no	No	Yes
MICROSOFT SQLSERVER SUPPORT	No	Yes	Yes

New Feature (RHEL 8): **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

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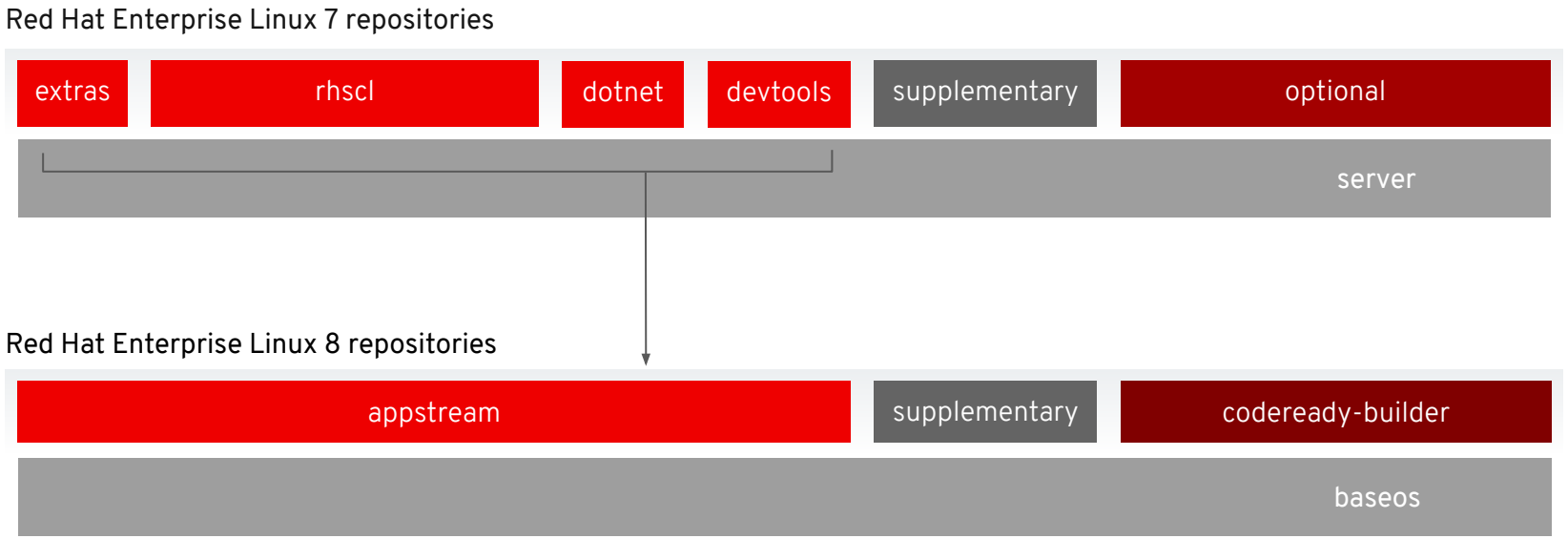
App Streams (RHEL 8): Simplified access to software



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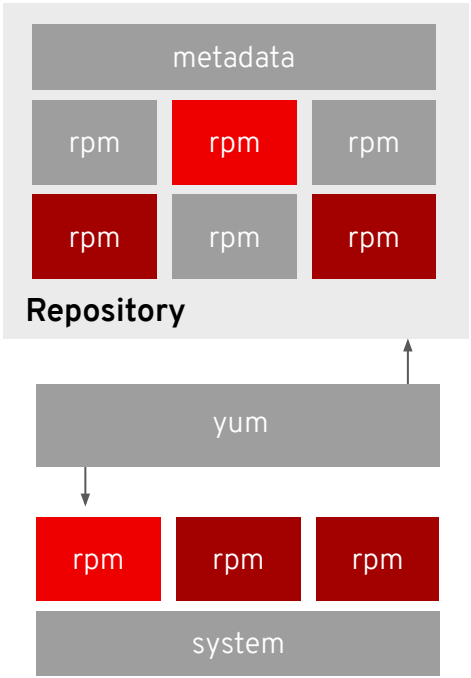
New Feature (RHEL 8): **yum version 4**



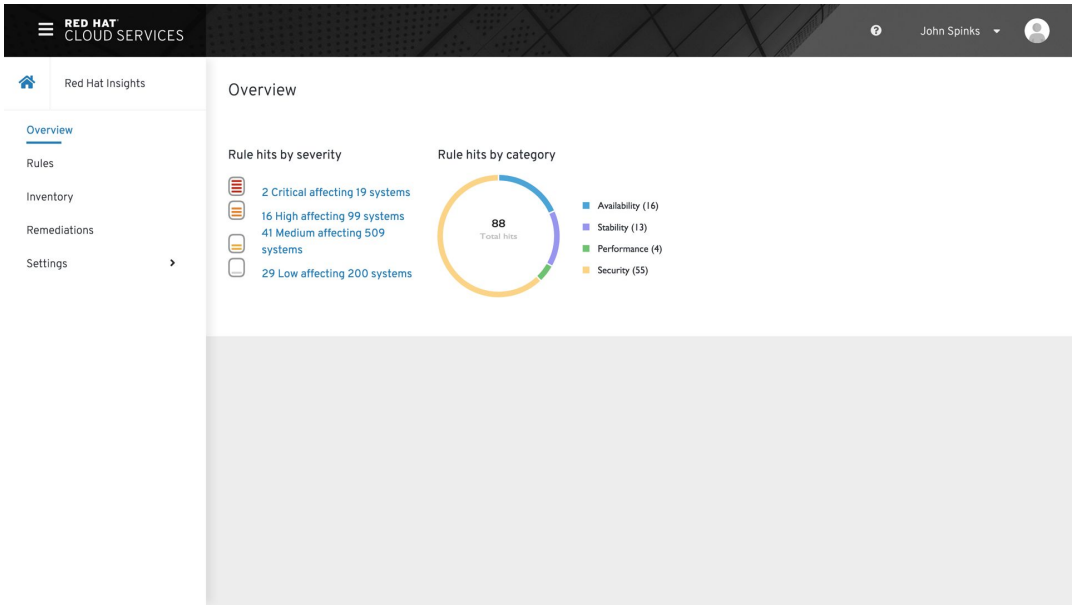
New technology
Maintains the same experience while adding new tools

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

Lighter Weight
Enables smaller (<40 MB) system images

New Feature: 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

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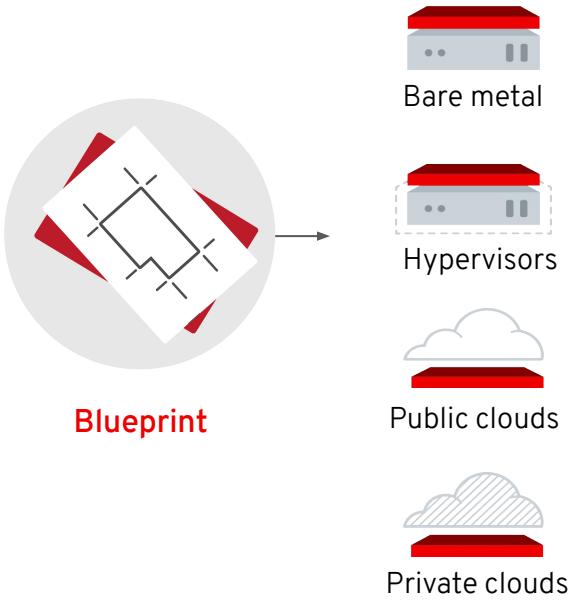
New Feature (RHEL 7 & 8): Create images for all your environments with **image builder**

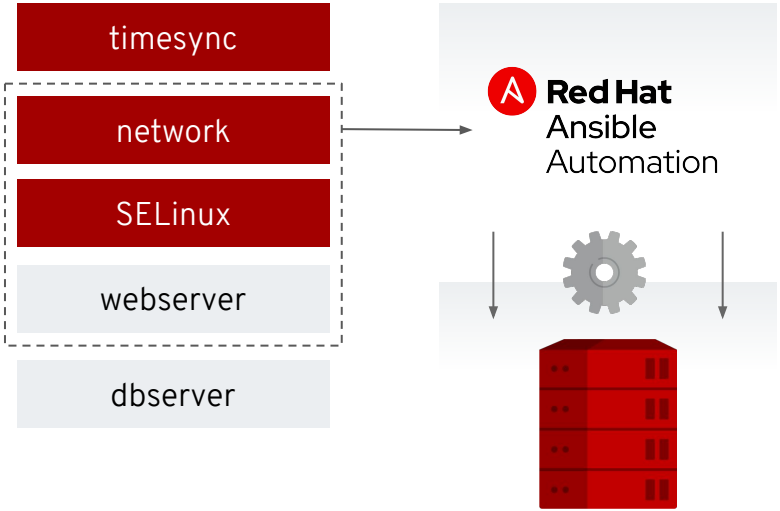


Single source
Lets you create gold images for any environment from the same blueprint increasing stability and consistency

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

New Feature (RHEL 7 & 8): 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

New Feature (RHEL 8): Optimized experiences for mission-critical databases

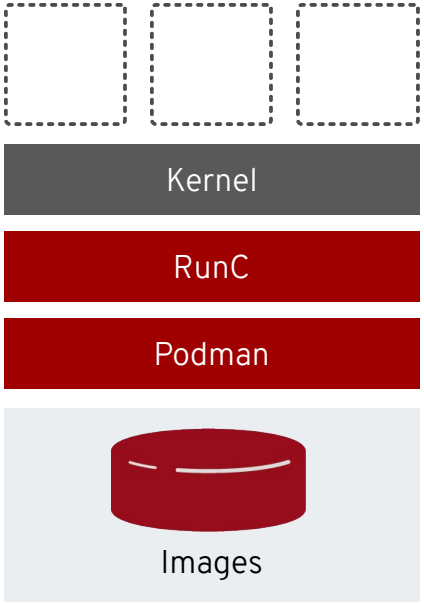
Microsoft SQL Server

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

SAP HANA

- Red Hat Enterprise Linux is 1 of only 2 certified Linux distributions
- More than 20 years of Red Hat and SAP joint engineering collaboration
- Exceptional performance and scalability —the largest SAP install in the world runs on Red Hat Enterprise Linux

New Feature (RHEL 7 & 8): Manage containers with **Podman**



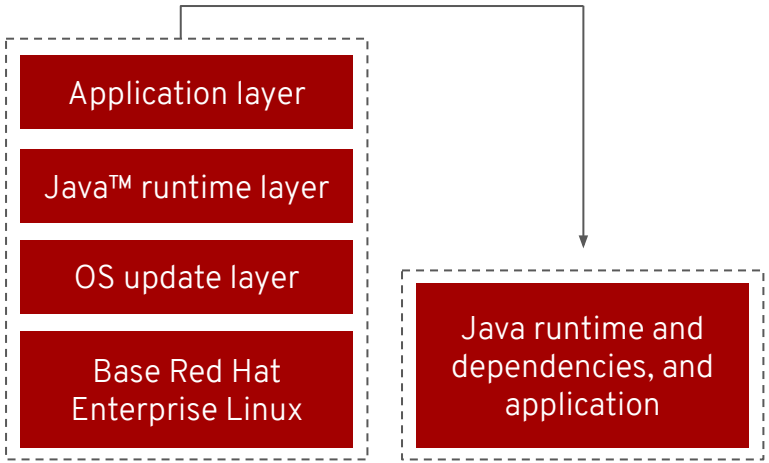
Fast and lightweight
No daemons required

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

No root privileges required
Greater security

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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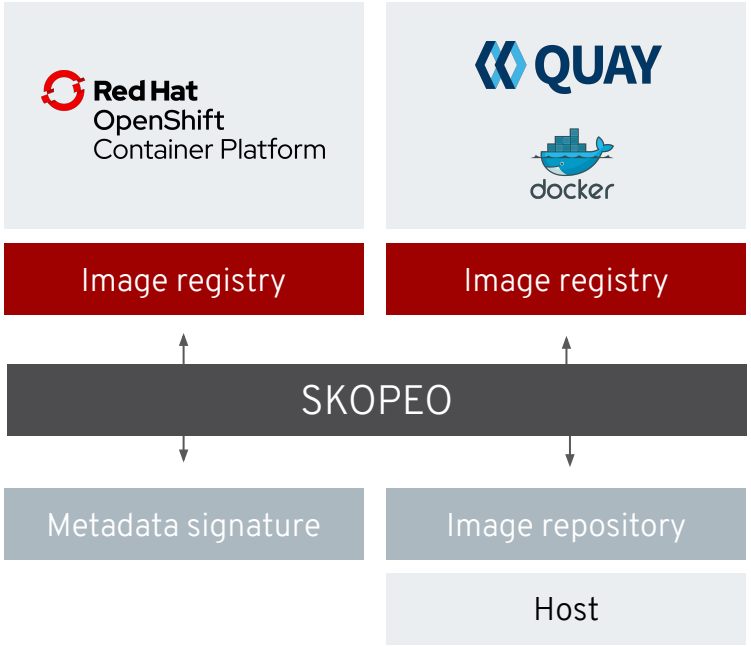
Inspect and transport images with Skopeo

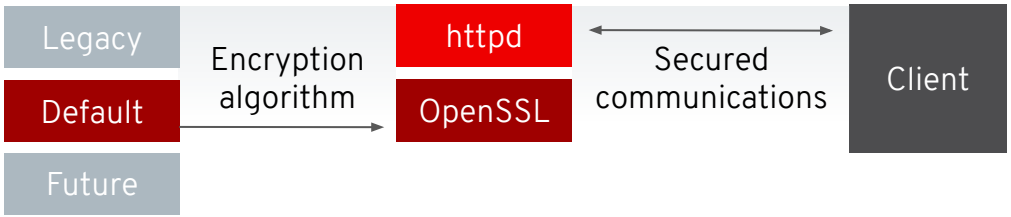


Inspect images remotely
Examine image metadata without needing to download

Publish and transfer images
Copy images from registries to hosts or directly between registries

Sign and verify images
Supports GPG key signing on publish

New Feature (RHEL 8): Configuring **system wide cryptographic policies**

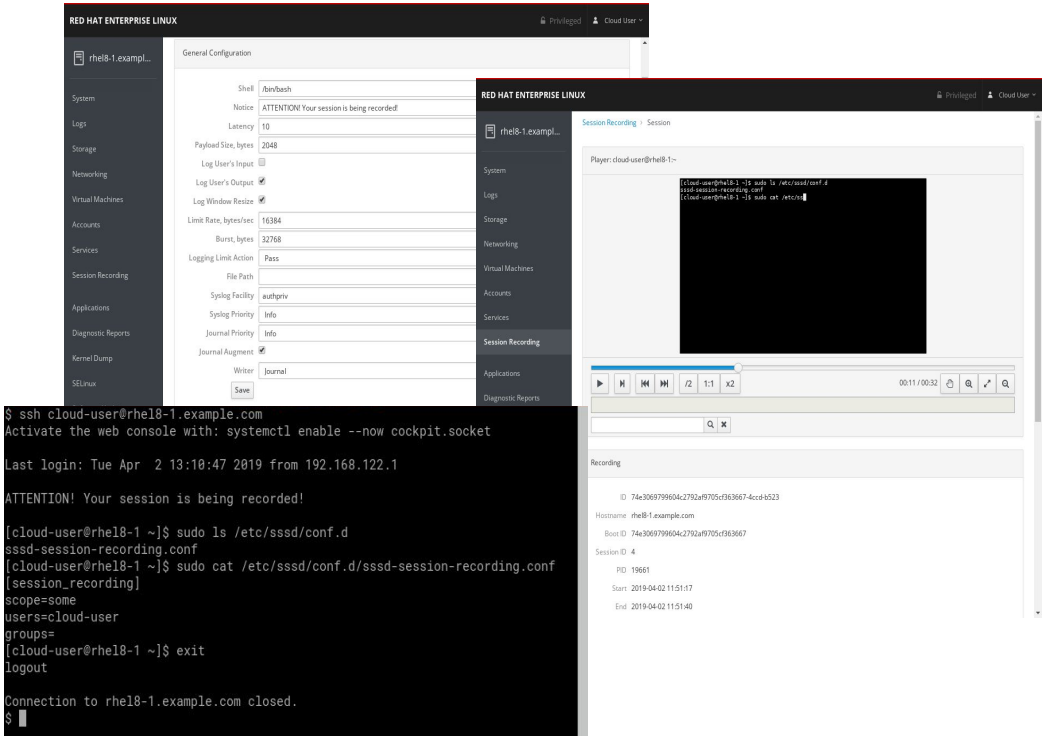


Central configuration
Set acceptable algorithms from a single tool

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

New Feature (RHEL 8): **Recording user terminal sessions**



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

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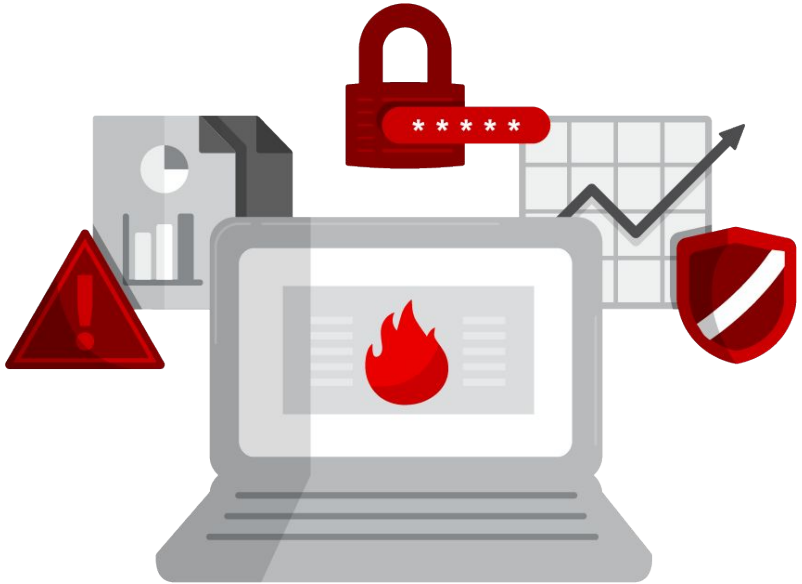
New Featuer (RHEL 8): Improved firewall management with **nftables**

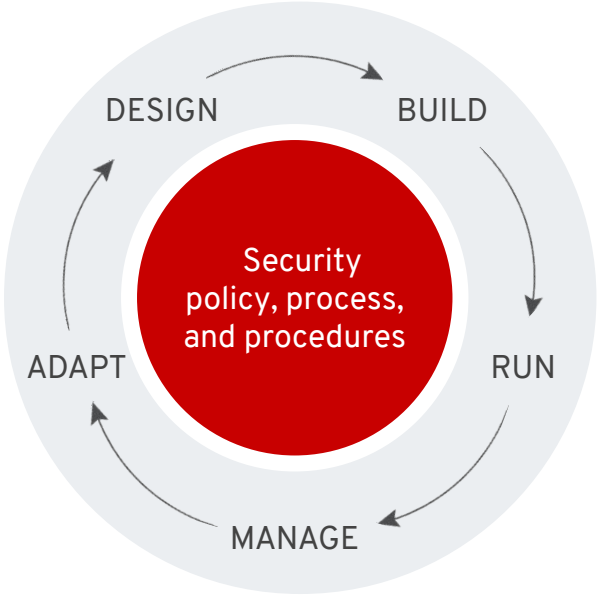


Consolidated filtering
Supports IPv4, IPv6, ARP, and Bridge filtering in a single tool

Simpler rule creation
Multiple matches and actions reduce the number of rules required

Improved tracing
Provides easier debugging and verification of actions taken on any packet

Improved **Security** (ongoing, RHEL 7 & 8)



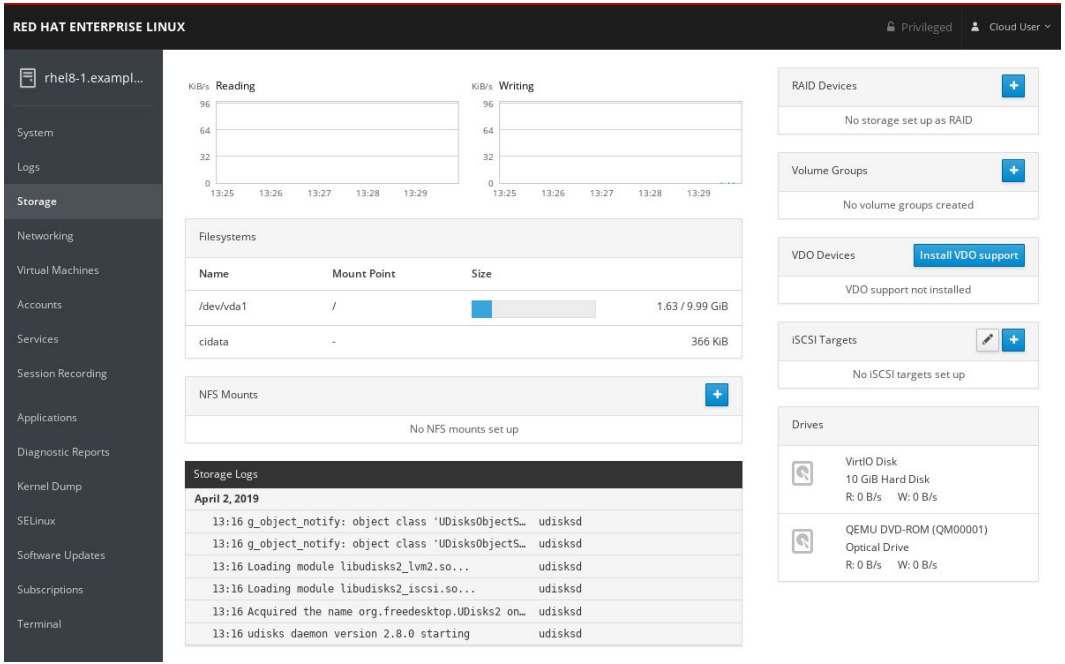
Latest protocol support
Including TLS 1.3 via OpenSSL 1.1.1

Hardened code
Including PIE and RELRO binaries and code analysis in our pipelines

Integrated identity management
As a stand-alone provider or trusted member of an Active Directory, with expanded integrations to tools like the web console

Updated tools
Including the LUKS v2 on-disk format for encryption

Remote single-system views in the web console



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

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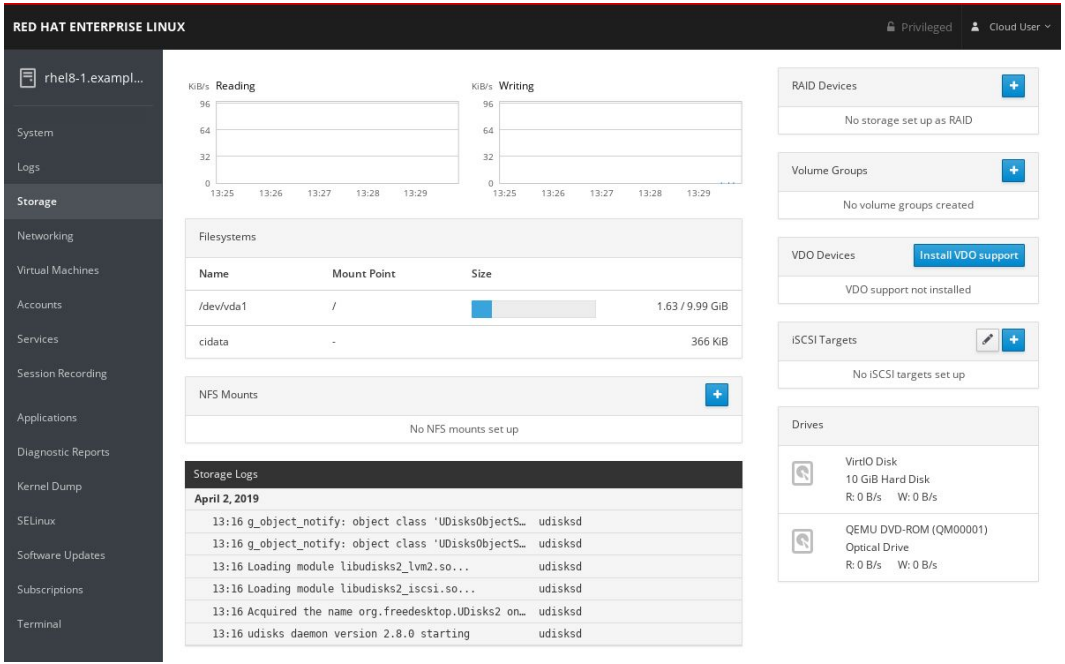
New in the web console



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

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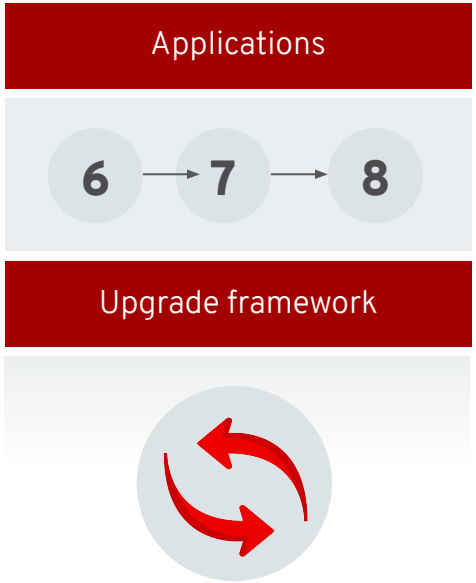
New Feature (RHEL 7 & 8): **In-place upgrades** for your systems

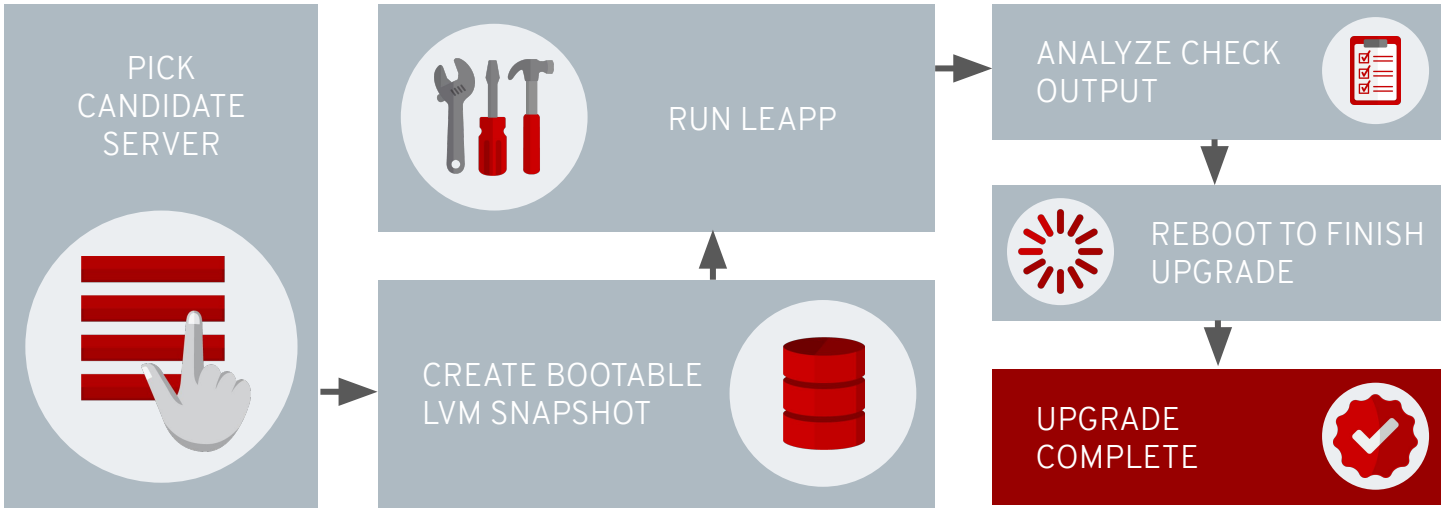


Reduced migrations
Analyze systems to determine if upgrading in place can avoid a costly migration

Easy rollback options
Combine with bootable LVM snapshots for safety

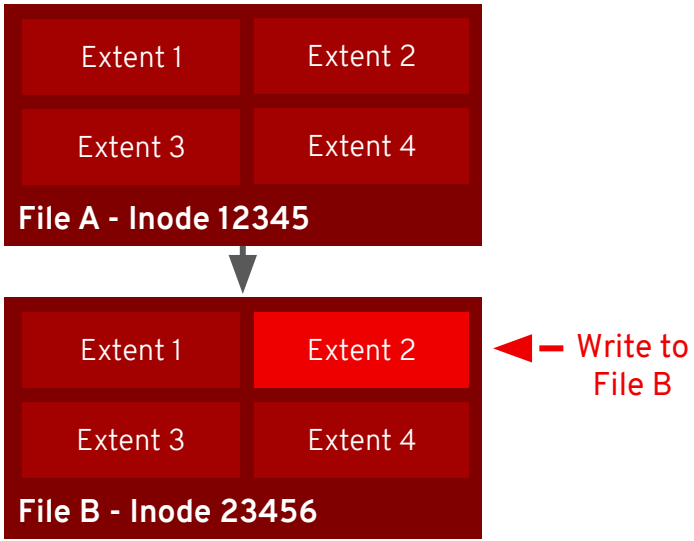
Improved framework
Get better analysis and a simplified process with a more extensible framework

Can I upgrade this host?



Now Included (RHEL 7 & 8): **Fast file copy with XFS**

shared data extents

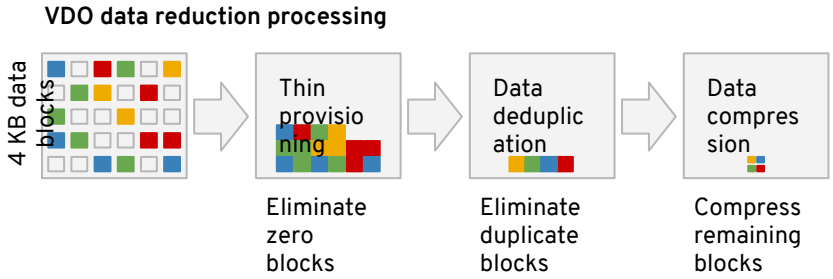


Filesystem level copy-on-write
XFS creates new extents when data is changed in a copy without additional application integrations

Separate metadata
Copies have unique file system metadata allowing for owner, group, and permission changes

Fast operations
XFS creates new inode and metadata instead of full data copy

Now Included (RHEL 8): **VDO** disk dedup and compression



Proven technology
Built on Permabit, now a Red Hat company, used by major disk array manufactuers

Implemented in device mapper
Usable across XFS, ext4, and all other RHEL filesystems, compression and deduplication done at the block device level

Onnline, On-the-fly data reduction
Typical data reduction of 50-83%

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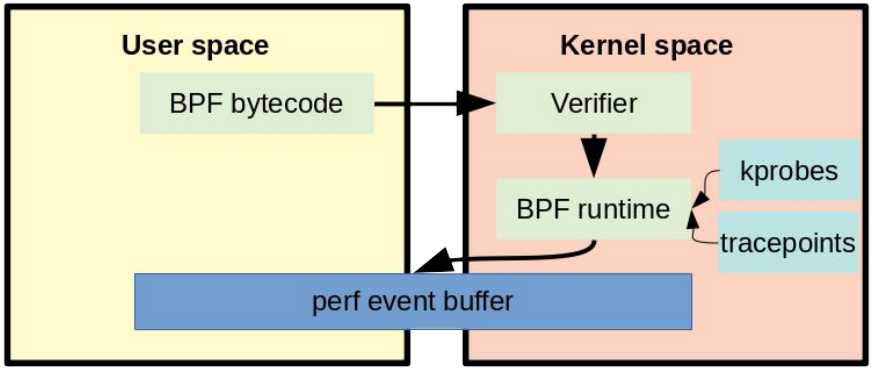
New Feature (RHEL 8) Easier ML/AI and data anlytics with **precompiled nVidia drivers**

Direct support from nVidia
Provided by nVidia and supported by nVidia (propiretary, non-open-source code)

Simplifies adoption of latest GPU
No more need to compile and build drivers for GPU support

Supports common ML/AI & Data analytics frameworks
Tensorflow, Caffe, Apache Spark...

New Feature (RHEL 8) better tracing, troubleshooting, and monitoring with **ebpf**



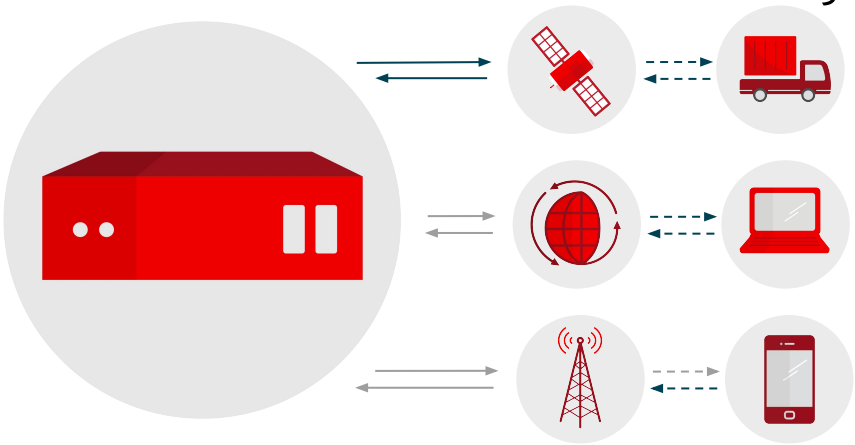
Ebpf = Enhanced Berkely Packet Filter
Dynamic and static tracing at kernel and user level running in a safe kernel pseudo-VM

Includes kernel level verifier for code safety

Bcc-tools examples shipped

PCP and systemtap support shipped

Improve network performance (RHEL 8) with bandwidth and round-trip propagation time congestion algorithm



End-to-end performance

Link capacity calculation and management at server do not require client end modifications

High-latency links

Improved performance over other algorithms on networks with high latency and congestion

More choices

An improved network stack combined with BBR and other algorithms lets you select the highest performance combinations

Thank you

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