Red Hat Summit

Connect

Red Hat Enterprise Linux 10

Reimagine Linux

Red Hat
Enterprise Linux 10

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Red Hat Enterprise Linux 10 addresses these market forces

Tight resource constraints

Accelerated cloud adoption

Security threats

Artificial Intelligence

Red Hat Enterprise Linux 10 will help you...

Address the Linux skills gap
with decades of Red Hat's Linux knowledge and expertise

Contain drift and accelerate delivery
with container tools and technologies

Make better decisions at build time
when it's typically easier and cheaper to make changes

Resist security attacks from hackers
when quantum computers become prevalent

Leverage Red Hat Enterprise Linux as a trusted AI foundation
with an extensive ecosystem of trusted partners and tools

Deploy workloads in the cloud faster
with images pre-configured for performance on your cloud of choice

Red Hat

Addressing the Linux skills gap

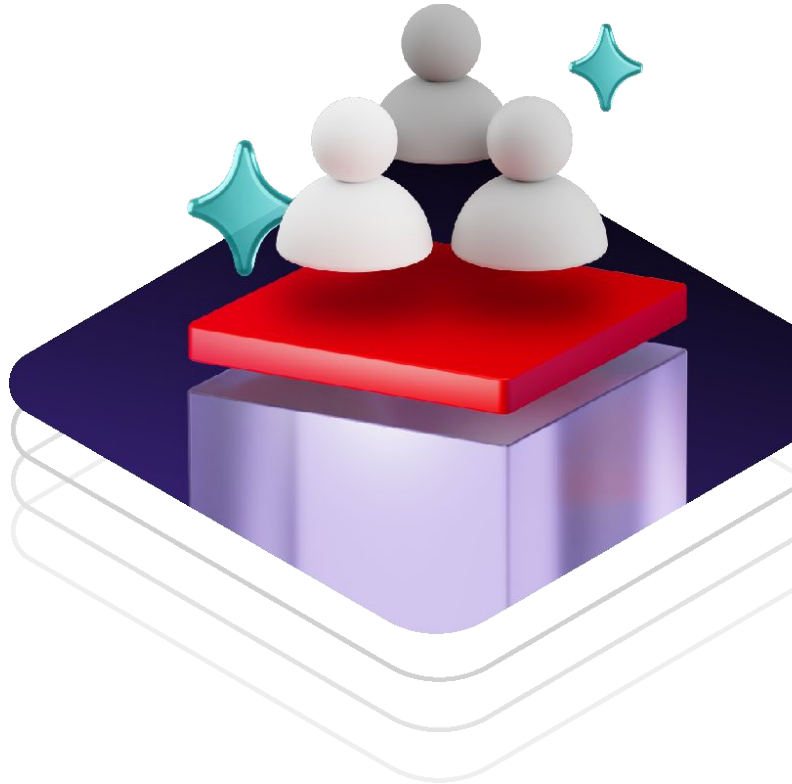
with decades of Red Hat's Linux knowledge and expertise

Red Hat Enterprise Linux Lightspeed

combines decades of Red Hat Enterprise Linux expertise with AI technologies to proactively inform and simplify how both newer and experienced IT professionals build, deploy, and manage Red Hat Enterprise Linux.

- Use plain language to simplify the way you interact with Red Hat Enterprise Linux
- Make better decisions with recommendations and actionable guidance

Simplify tasks. Amplify results.



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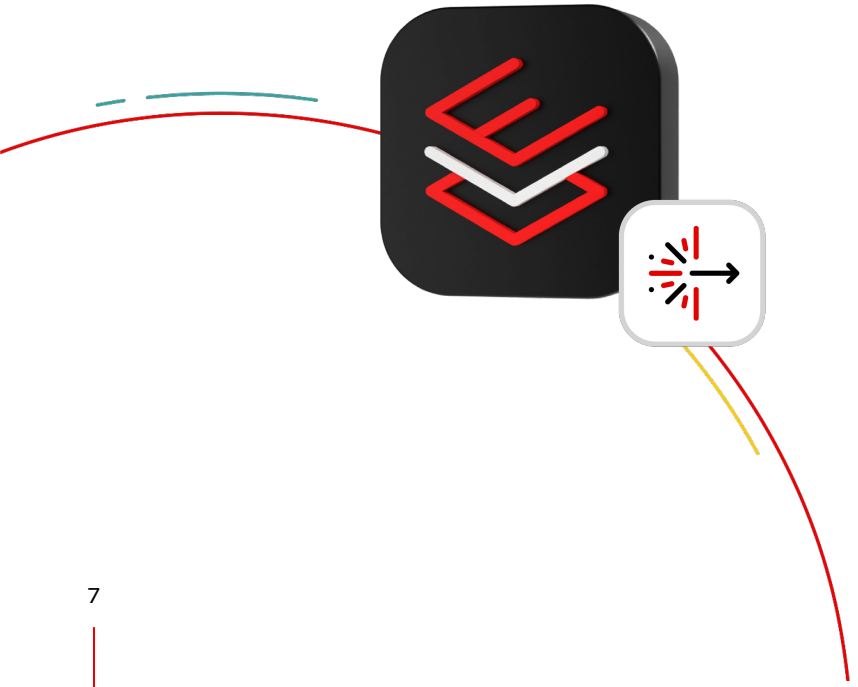
Red Hat Enterprise Linux Lightspeed vision and goals



Artificial Intelligence

Harnesses the power of AI to help increase productivity

Unlock Red Hat’s expertise

Provide Red Hat's decades of Linux experience to help your workloads succeed

Level up skills

Makes Red Hat Enterprise Linux easier to use, secure, tune, and troubleshoot for both new and experienced users

Proactive guidance

Proactively provide relevant information and guidance

Red Hat

RHEL Lightspeed features

Image builder package recommendations

Command line assistant

Red Hat

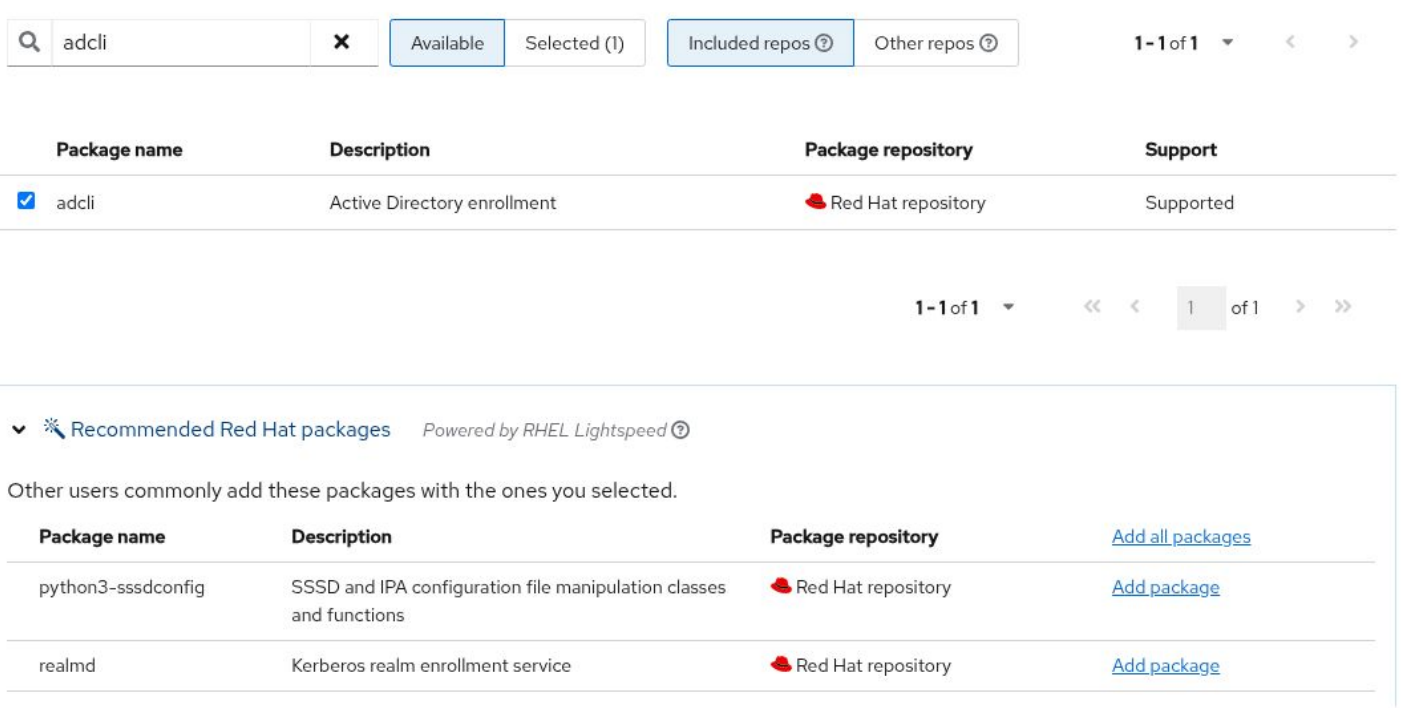
RHEL Lightspeed features

Image builder package recommendations

Command line assistant

Recommendations

Image Builder analyzes selected packages and recommends related, relevant packages to also be included



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RHEL Lightspeed features

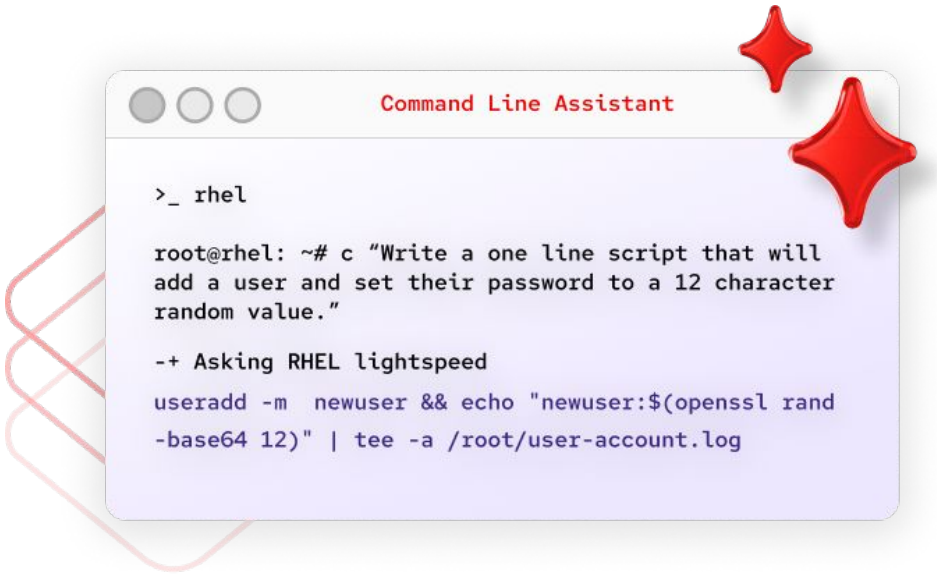
Image builder package recommendations

Command line assistant

The command line assistant is an optional generative AI assistant available directly in the RHEL command line interface. It can help you more easily manage, troubleshoot, and work with your systems.

With the command line assistant, you can:

- Ask and receive answers to RHEL-related questions in plain language.
- Gain access to information from the RHEL documentation and Red Hat knowledgebase
- Get assistance with troubleshooting configuration issues, deciphering log entries, and more.



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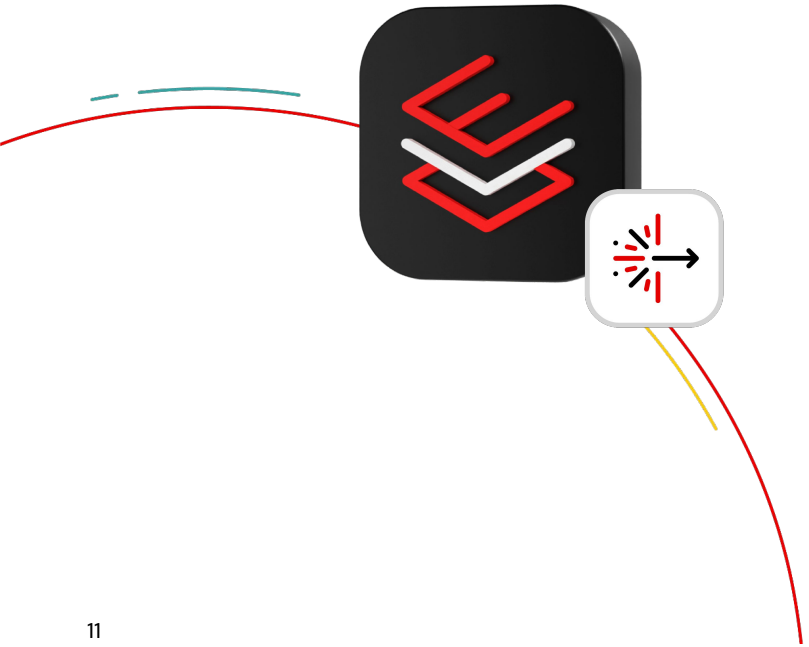
Resources available to RHEL Lightspeed that help it with answering questions



RHEL documentation

RHEL 9 documentation and release notes

Red Hat knowledgebase

RHEL 9 verified knowledge base solutions

CVE info

RHEL 9 related CVE's

Errata info

RHEL 9 related errata

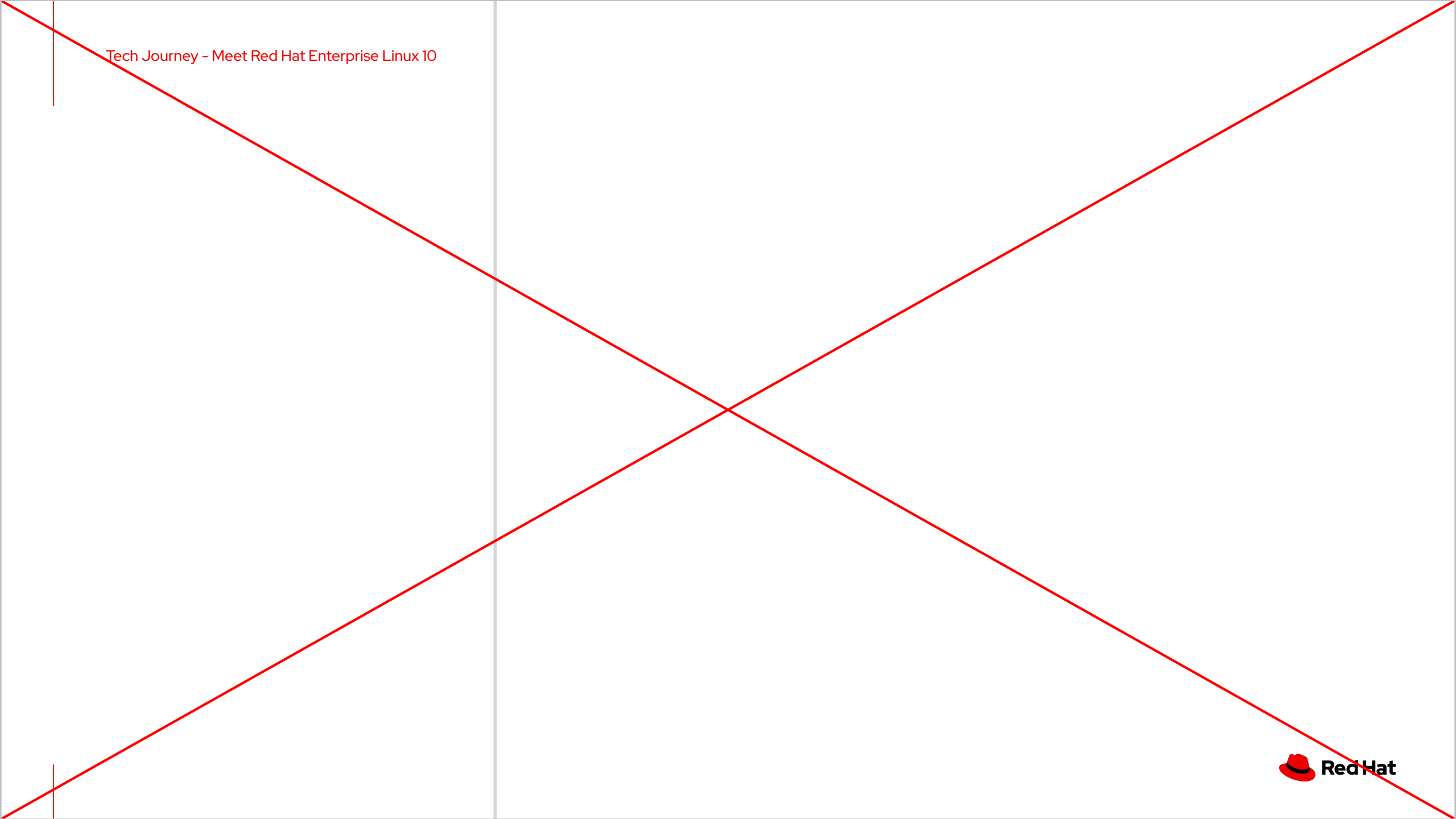
Developer Preview

Can command line assistant work without connection?

YES!

[Link to Red Hat Blog post]

Red Hat



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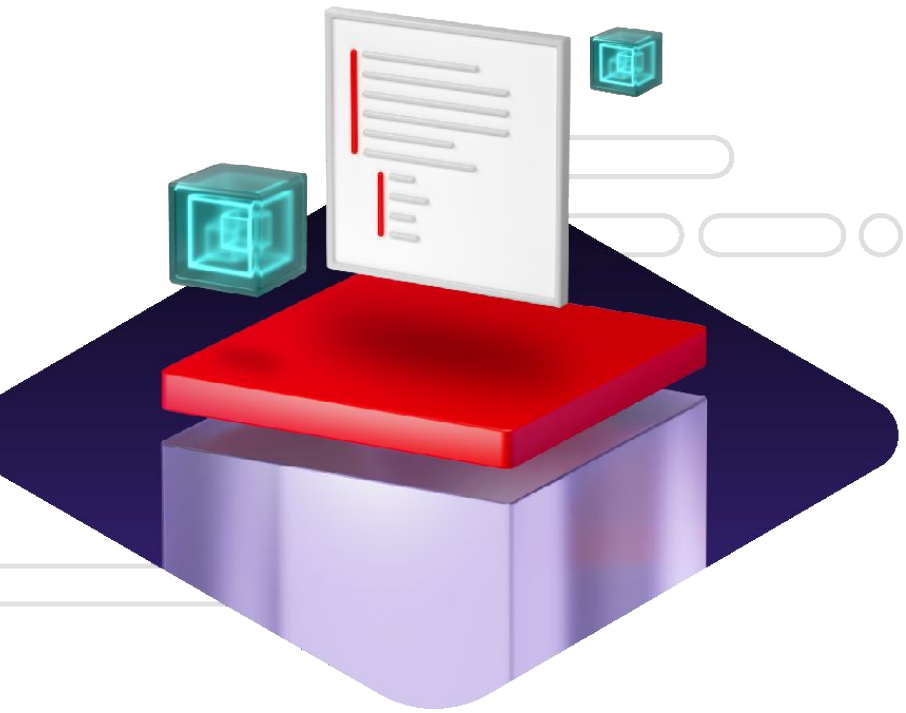
Contain drift and accelerate delivery

using container tools and technologies



With image mode for Red Hat Enterprise Linux, you can:

- **Speed time to market**
  using DevOps and CI/CD practices, which now include the OS
- **Streamline operations**
  by automating updates and rollbacks—just like your smartphone
- **Enhance security**
  by reducing your attack surface with immutable system images
- **Simplify appliance creation**
  by combining the OS with apps and drivers for faster development and delivery

Because systems should be as easy to update as smartphones

Red Hat

“I want it to work like my smartphone”

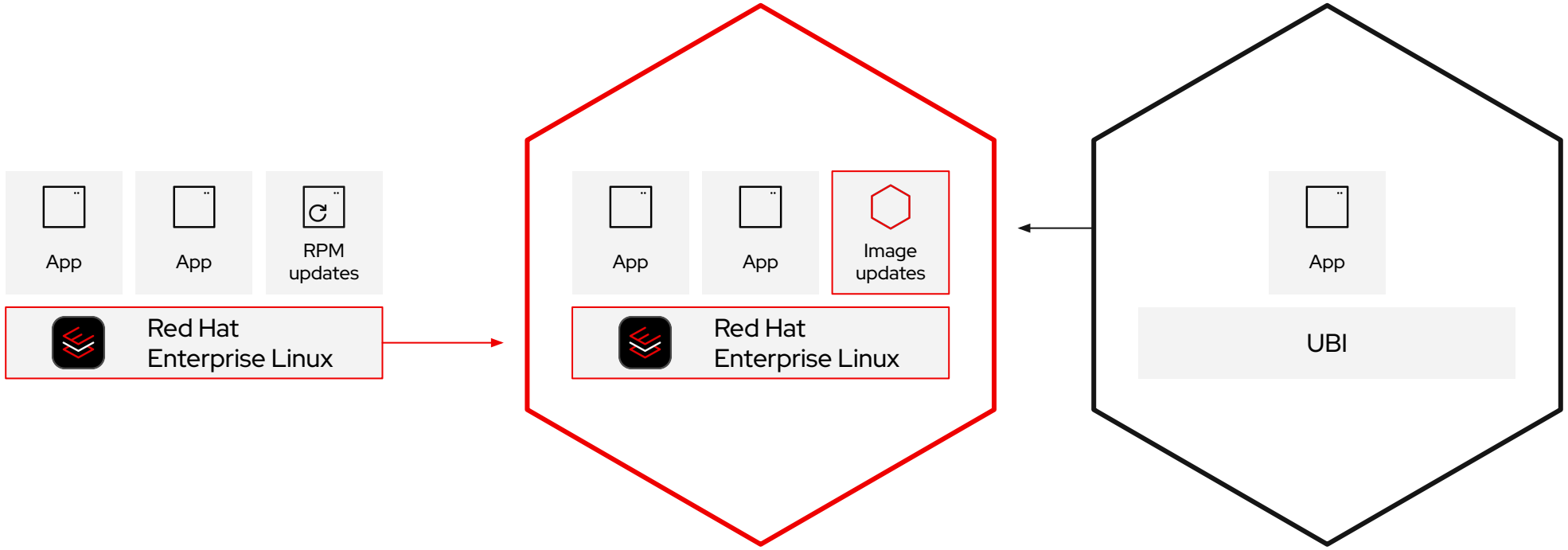
Factors that drove the search for a new solution

- Pain over regulatory process of CVEs
- Smaller footprint | decreased surface area of attack
- Enhanced security | hardened platform
- Quick turn around | lower downtime
- Easy rollbacks

FSI early adopter
Image mode for Red Hat Enterprise Linux

Red Hat

Standardizing and innovating with containers



Package mode

Image mode

Application container

Red Hat

Standardizing and innovating with containers

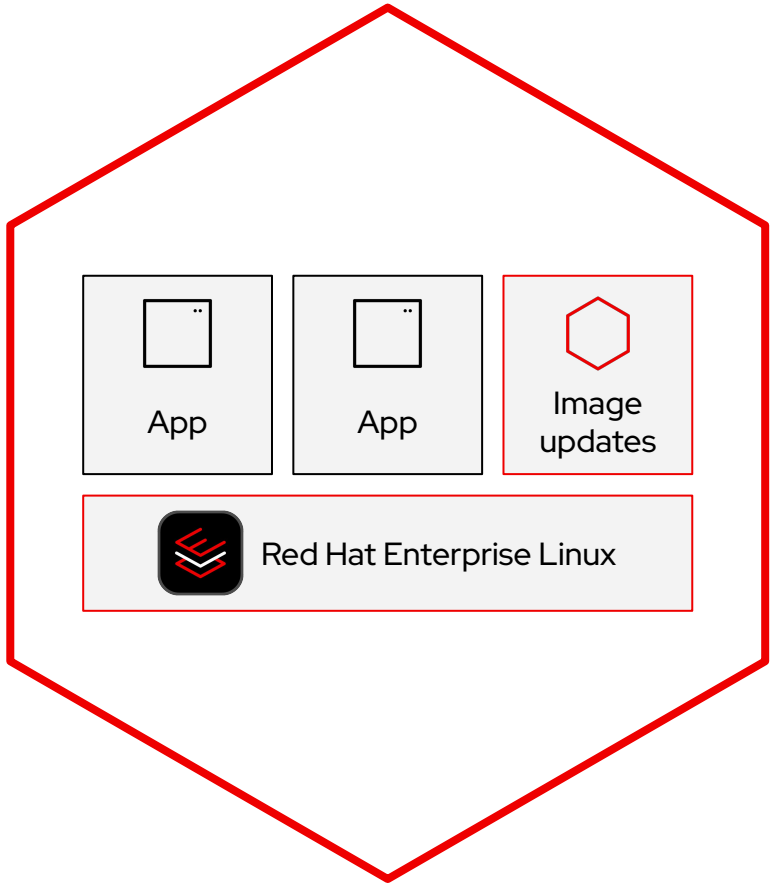


Image mode for Red Hat Enterprise Linux is a simple, consistent approach to build, deploy and manage the operating system using container technologies.

Now you can manage the operating system with the same tools and workflows as applications, promoting a common experience and language across teams.

Image mode for Red Hat Enterprise Linux

A container-native workflow for the life cycle of a system

```
FROM rhel10/rhel-bootc:latest

RUN dnf install -y [software]
[dependencies] && dnf clean
all

ADD [application]
ADD [configuration files]

RUN [config scripts]
```

Build

Define your entire system—OS, applications, and dependencies —with just a bootc base image and container file. Leverage your existing container tools and pipelines for rapid image creation and testing.

Deploy

Easily convert to VM/cloud images, deploy on bare metal via the Red Hat Enterprise Linux installer, or even reinstall on existing cloud images using bootc.

Manage

Engineered for modern GitOps and CI/CD workflows. Fully drive and automate systems via pipelines or scale control through Red Hat Insights, Satellite, and Ansible.

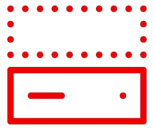
Use Cases

Where does image mode fit today?

Use Cases Blog

AI/ML Stacks

Perfectly version app dependencies from kernel, GPU & accelerator drivers, frameworks, runtimes, etc

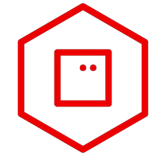


1:1 App/Host

Manage the OS AND app as a single unit

Edge appliances

Easily manage a fleet of systems with registries and auto-updates



Standalone container hosts

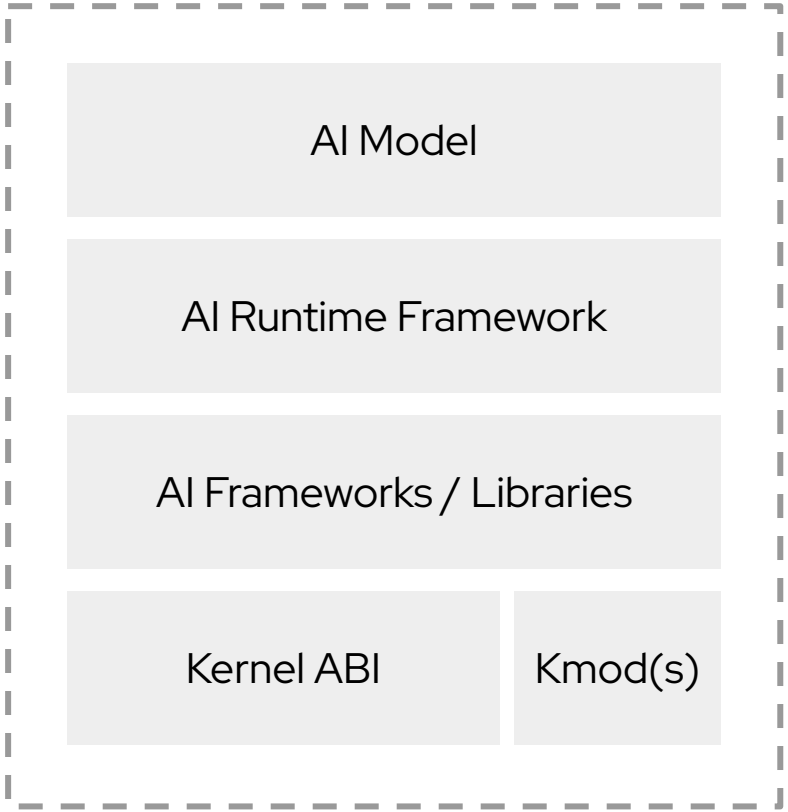
Use common toolchains and pipelines to build containerized applications and the hosting OS

Red Hat

AI/ML Stacks

Deploy AI stacks confidently with image mode

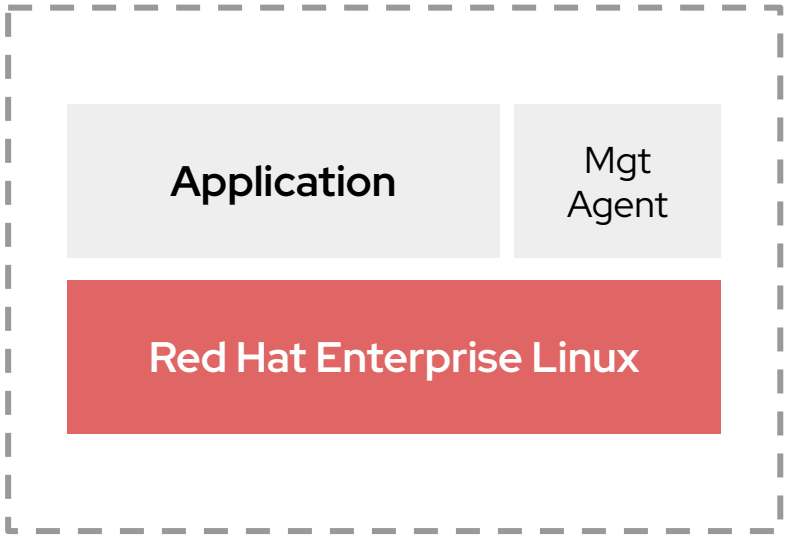
- **Simple**: Much of the AI world already leverages containers, image mode helps deploy AI stacks quickly and efficiently.
- **Portable**: AI workloads often need to run in close proximity to data sources and image mode helps target multiple environments (better way to say that?)
- **Easy experimentation**: Image layering makes it effortless to test different models & frameworks and helps brings order to image sprawl.
- **Limit downtime**: version & test components and dependencies at build time before they go to production.



1:1 App/Host

Version & manage OS + app as a single unit

- **Efficient**: reduces the management footprint
- **Repeatable**: enforces consistency and reproducibility making it easy to “scale up”
- **Zero drift**: moves configuration to build time, leading to a more consistent fleet.
- **Rollbacks**: A/B boot model means fast recoveries in the case of unforeseen issues.
- Leverage containers for the *uncontainerizable* apps



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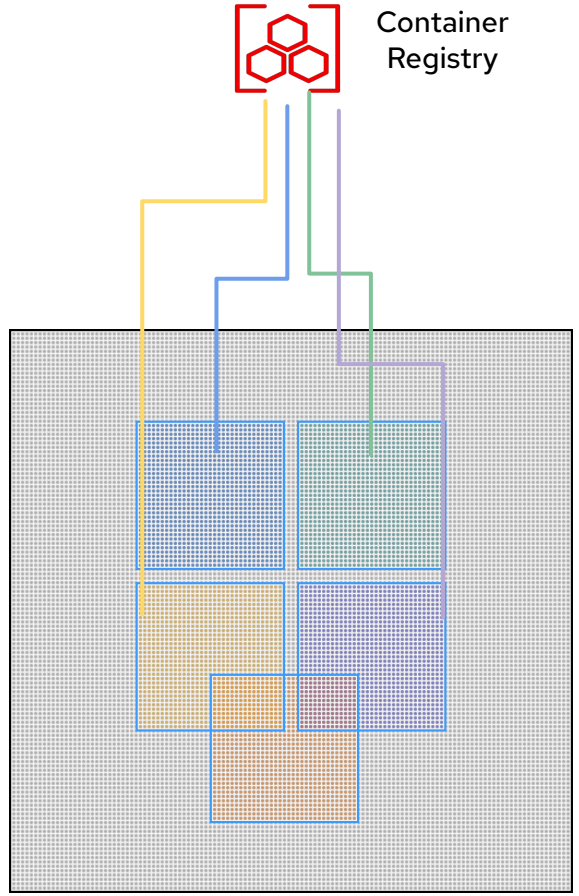
Edge Appliances

Registries and auto-updates make managing a fleet of identical systems a snap

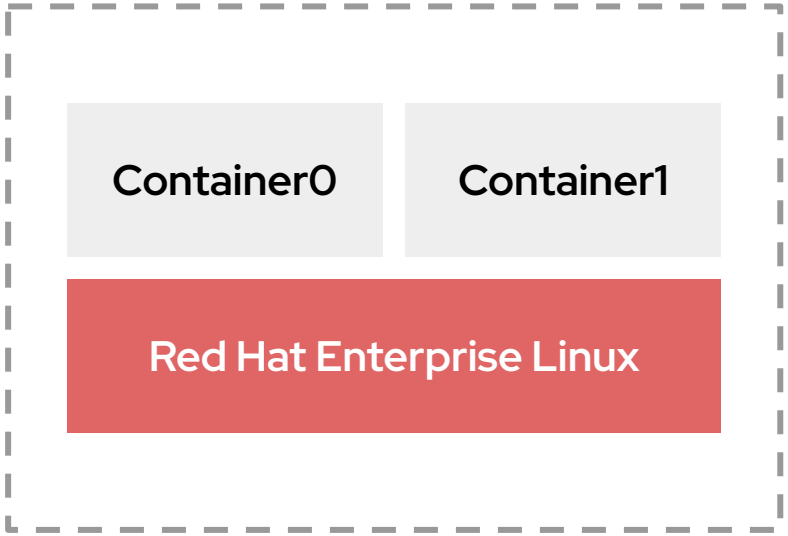
- **Image-based updates**: provide increased reliability over the life of the system.
- **Rollbacks**: A/B boot model means fast recoveries in the case of unforeseen issues.
- **Updates at scale**: Control OS & App container versioning through industry standard registries and tags.
- Support for air-gapped and DIL environments



Standalone Container Hosts

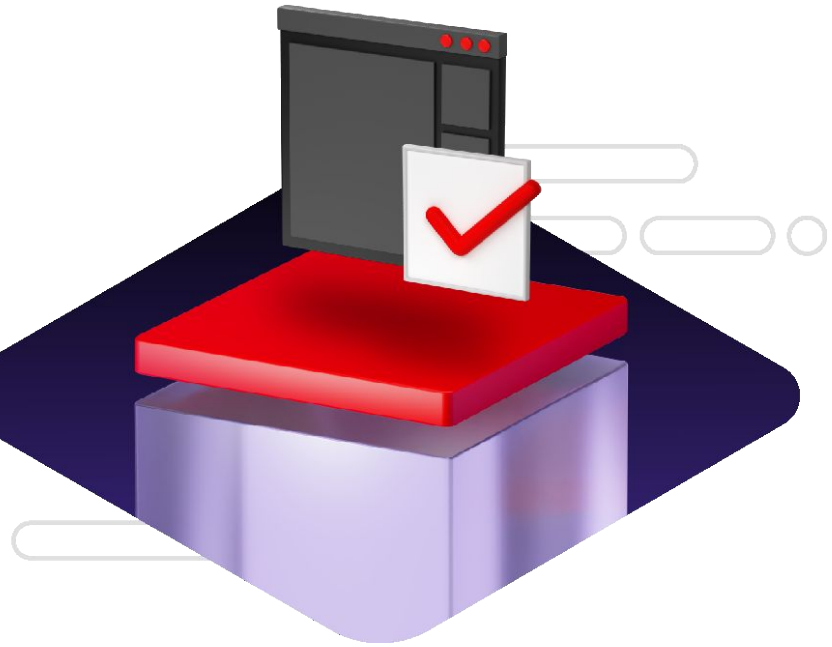
Simplify and manage the OS in the same way as your applications

- **Flexible**: image mode provides a higher degree of host-level customization than previous immutable OSs.
- **Common tools**: use existing container tools and pipelines to build applications and the OS for better compatibility
- Align teams & operations around tools and process.



Make better decisions at build time

when it's typically easier and cheaper to make changes

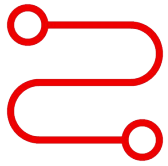


- "Shift left" with new capabilities in Red Hat Insights
  - Package recommendations powered by Red Hat Enterprise Linux Lightspeed
  - Red Hat Insights planning (Lifecycle and roadmap details)
- Use pre-hardened images with image mode to drastically reduce time required for configuring, domain-join etc.
  - Applying guardrails at build time helps users remain secure and compliant
- Securely build and automatically generate SBOM artifacts to easily prove a secure supply chain process

Smart from the start. Fast to the finish.

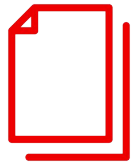
Make better decisions at build time

available in Red Hat Insights (Shift Left)



Future roadmap information

Discover what's on the future Red Hat Enterprise Linux roadmap, including planned new AppStream releases and info on significant changes coming to Red Hat Enterprise Linux



Red Hat Enterprise Linux and AppStream lifecycle information

Allows customers to easily evaluate their environment to understand if the AppStreams and Red Hat Enterprise Linux minor releases they are using are supported, and provides customers the ability to plan ahead for upgrades

Red Hat

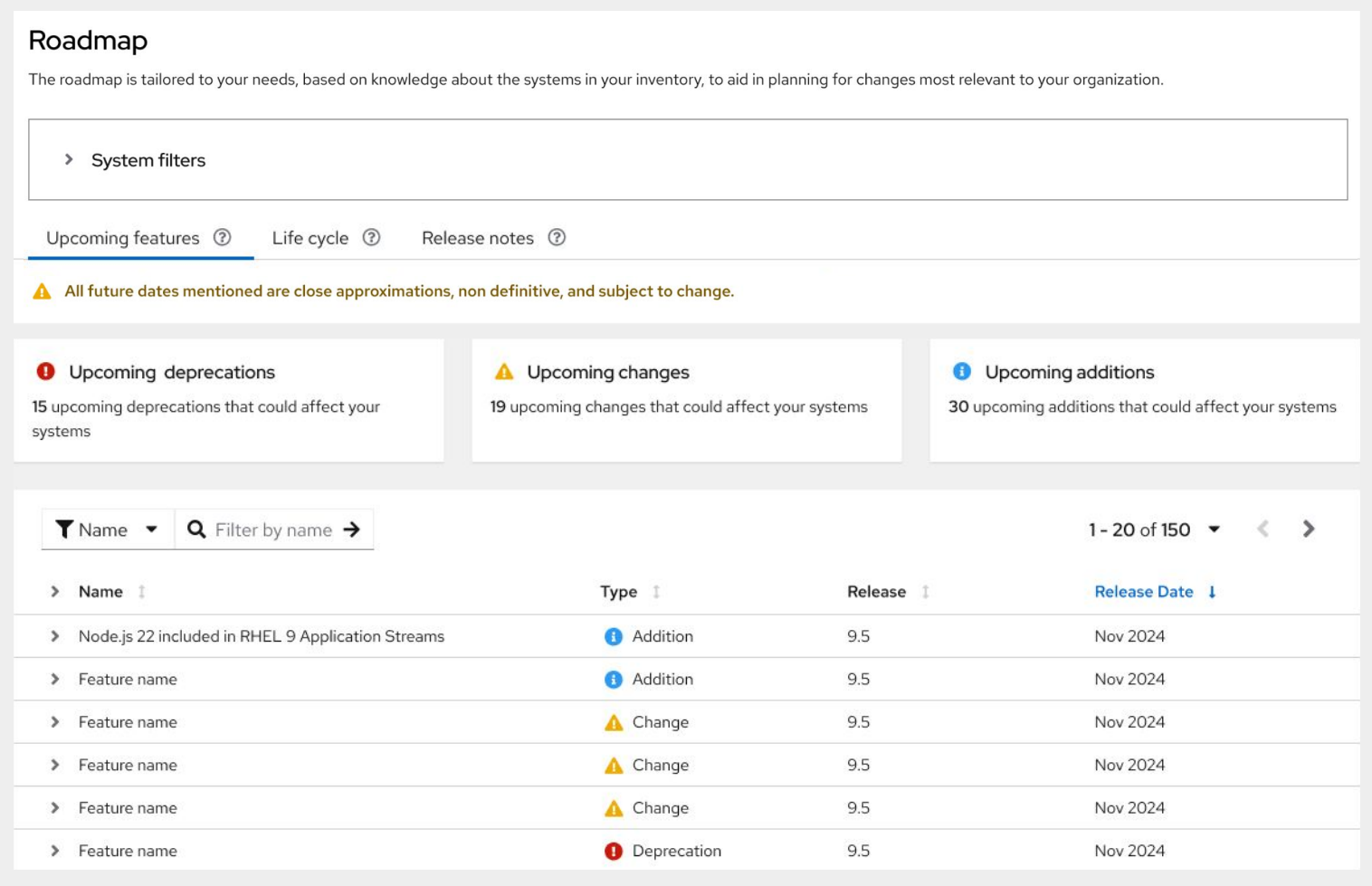
Red Hat Enterprise Linux and AppStream life cycle information

(Shift Left)

Red Hat

Red Hat Enterprise Linux roadmap

(Shift Left)



Red Hat

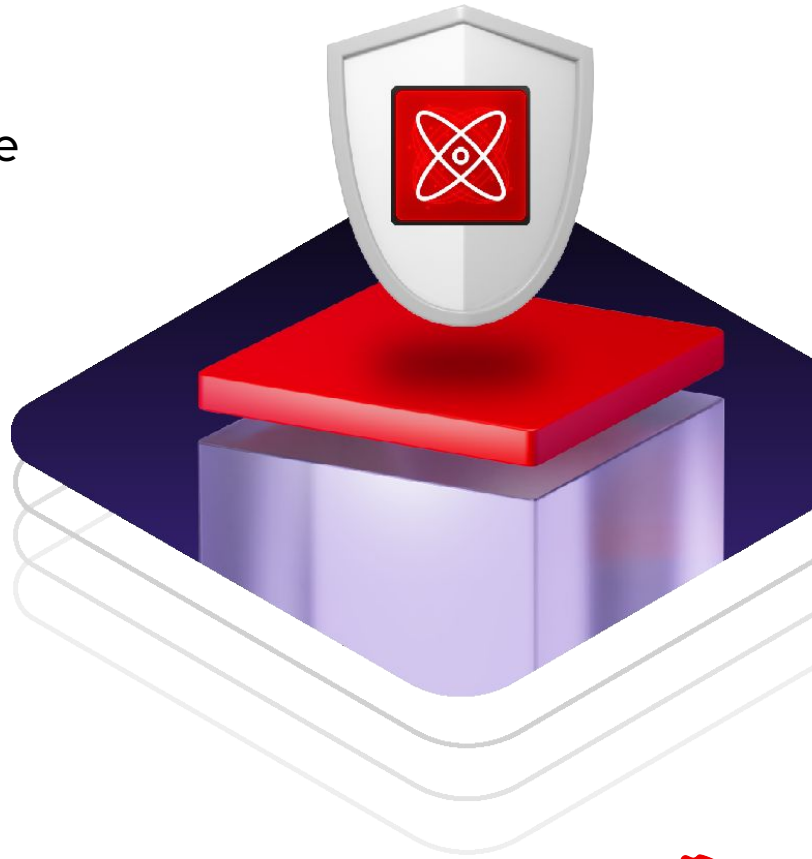
Resist security attacks from hackers

when quantum computers become prevalent

- Red Hat Enterprise Linux 10 is the first enterprise Linux distribution to be post-quantum capable with new quantum-resistant algorithms (and more to come) so you can prepare now for future compliance mandates
  - OpenSSL
  - ML-KEM (FIPS 203)
  - ML-DSA (FIPS 204)
- A new FIPS module

  simplifies development of FIPS-compliant app deployments on containers, VMs or bare metal
- FIPS cryptographic standards can be validated separately

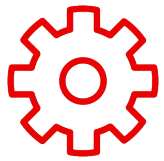
  meaning CVE fixes related to Open SSL or crypto libraries can be done *without* requiring a new FIPS validation certificate (average time to obtain is >300 days!)



The best defense is a strong partner.

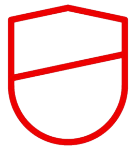
Red Hat's transition phases

We anticipate having to support a long, hybrid transition period



Classical

Traditional Cryptography; no quantum resistant algorithms (QRAs) available.



PQ-Capable

Includes available QRAs and PQC functions. Not available for all applications. Still classical by default with configurable use of available QRAs.

PQ-Ready

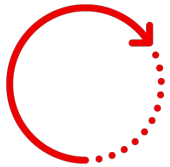
QRAs and PQC functions by default where available, configurable classical where needed.

Deprecation & Removal

Classical Algorithms and functions will be marked as deprecated with eventual removal. Capabilities and solutions to be resistant to downgrade attacks.

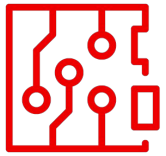
Post Quantum Cryptography (PQC) simplified

POST



After...

QUANTUM



Refers to quantum computers which will be able to crack[1] today's security algorithms

CRYPTOGRAPHY

Refers to the process of protecting content and communications, keeping material authentic for intended users

***Therefore**, PQC simply refers to the ability to protect information after quantum computers become available.*

1: Superposition, Parallelism, Entanglement, and Synchronicity are the Quantum computing capabilities that allow for full use of Shor's algorithm, used for solving prime numbers critical to asymmetric cryptography.

What cryptography is at risk ?

Asymmetric (Signatures, Encryption, Key Exchange)

Schemes that depend on classical hard mathematical problems where public / private key pairs are used.

At Risk

Symmetric Encryption

Ciphers that use a secret key to both encrypt and decrypt data.

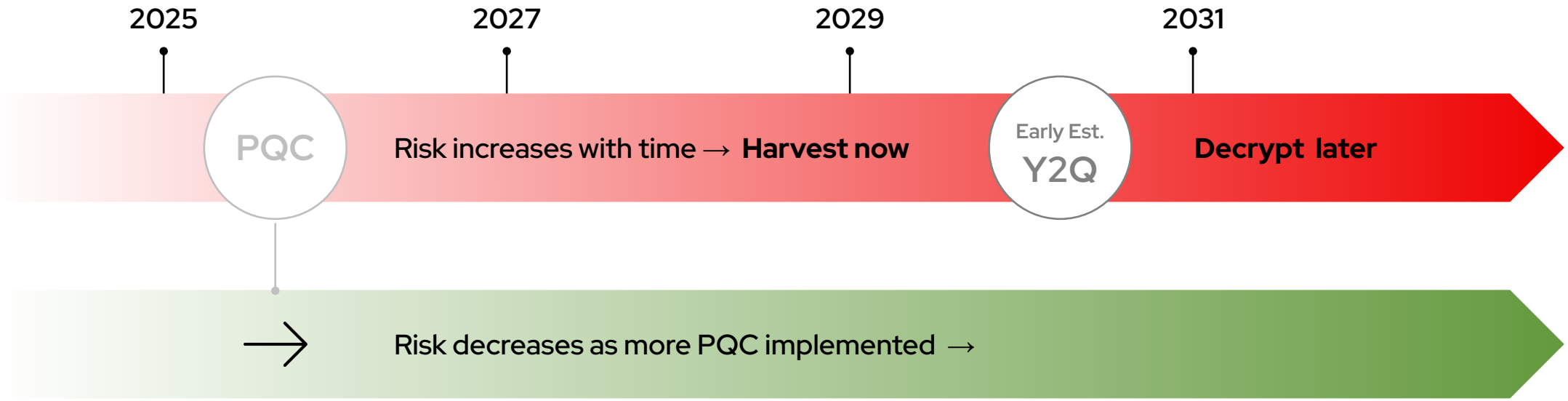
Safe (with large enough keys)

Hashes, HMACs[1]

Digest algorithms that are used for fingerprinting and compressing data into a short ID.

Safe (with large enough keys)

PQC is a future challenge, but the threat is already here

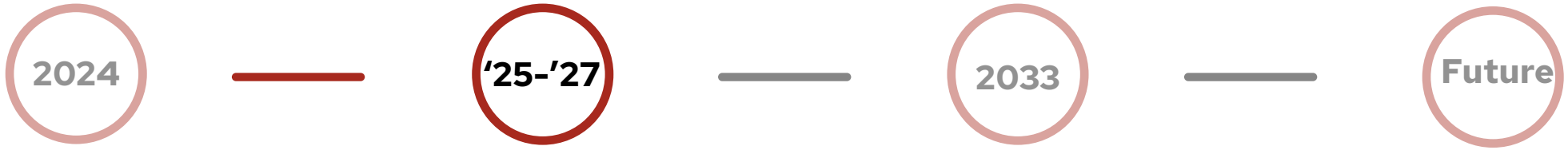


Organizations adopting PQC today are protecting their data now **and in the future**

Y2Q Year when quantum starts defeating current encryption | **PQC** Start of PQC adoption

Red Hat

Overall Implementation Strategy



Classical

Red Hat products and services use classical cryptography algorithms

PQ-Capable

Red Hat products or services include classical cryptography by default

PQC functions are configurable

Classical and PQC available and both are supported (as available)

PQ-Ready

Red Hat products or services include PQC functions by default

Classical cryptography is configurable

Deprecation and Removal

Classical cryptography algorithms are marked as deprecated

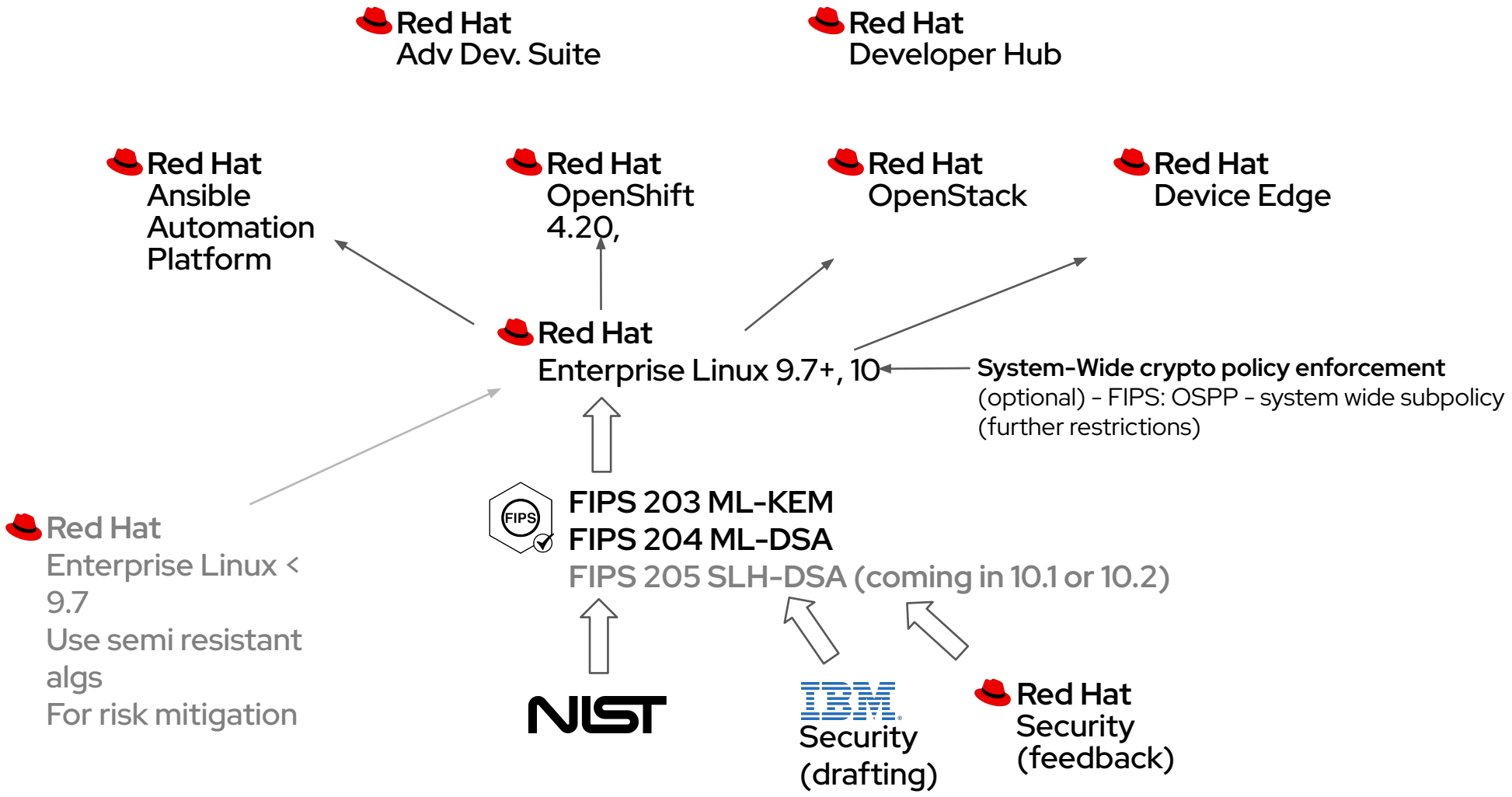
Classical cryptography algorithms are removed

RHEL 10 includes the first installment of QRAs:

- ML-KEM [FIPS 203]
- ML-DSA [FIPS 204]

Red Hat

PQC Influence on Red Hat Portfolio



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Top 10 RHEL 10 security features everyone should be using

- Image Mode
- SBOMs
- Shift Left Security
- SELinux
- Fapolicyd

  - Keylime: Remote Attestation
  - Identity Management
  - Encrypted DNS
  - Crypto-Agility
  - Post-Quantum Cryptography

Red Hat

Cloud-optimized Red Hat Enterprise Linux

Built specifically for AWS, Microsoft Azure, and Google Cloud

Pre-tuned, ready to run image

Deploy a Red Hat Enterprise Linux image that is deeply integrated into the cloud provider's fabric, pre-configured for performance with cloud provider-specific profiles.

Enhanced observability and reporting

See your Red Hat Enterprise Linux estate along with the rest of your services in your cloud provider dashboard for a more unified view of your usage.

Increased security from boot to runtime

Secure boot and image attestation ensure customer workloads run on the latest top-down security technologies from image boot through runtime.

Optimize for efficiency in the cloud

Red Hat

Cloud-optimized Red Hat Enterprise Linux

Built specifically for AWS, Microsoft Azure, and Google Cloud

Integrated cloud management tooling

Pre-configured with each cloud provider's specific tools, enabling “ready to run” management on your cloud of choice.

Deployment options to contain drift

Image mode simplifies the building, deployment and management of Red Hat Enterprise Linux with container tools and technologies and allows for automated updates and rollbacks - just like your smartphone.

Optimize for efficiency in the cloud

Red Hat

Additional announcements...

Red Hat Insights advisor in Satellite

Now In tech preview as a self-hosted option for Satellite users

Satellite 6.17

Support for RHEL 10, systems created with image mode and new Red Hat Insights advisor functionality

New Red Hat Enterprise Linux Security Select add-on

Provides organizations Moderate and Low CVE fixes

RISC-V with Red Hat Enterprise Linux in Developer Preview

RHEL 10 packaged with RISC-V in partnership with SiFive

Red Hat Enterprise Linux Extensions Repository

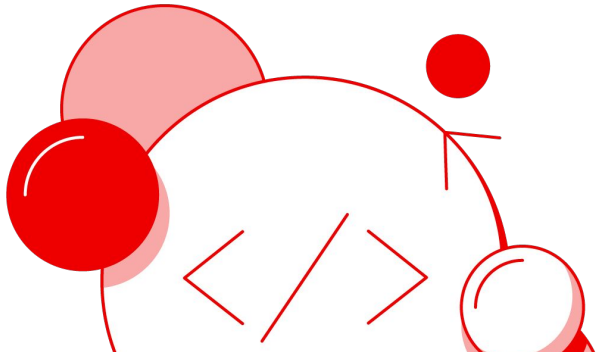
Deliver high-value software in a convenient location

Partner Validation Program

Deliver the building blocks for the latest innovations in AI technology

Available for Microsoft Windows Subsystem for Linux (WSL)

WSL is now a validated software platform for Red Hat Enterprise Linux



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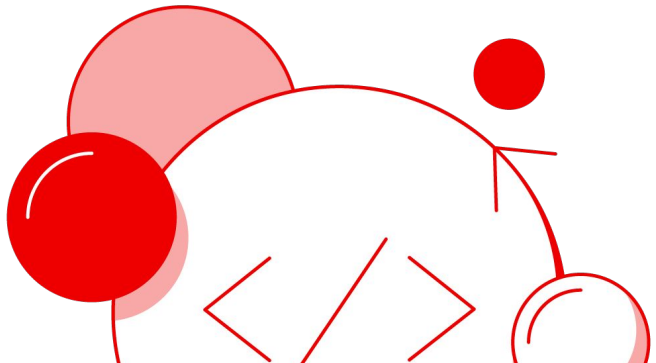
Red Hat Enterprise Linux extensions repository

High-quality software in a convenient location with minimal maintenance requirements

The Red Hat Enterprise Linux extensions repository includes developer tools, open source libraries, and niche utilities that make Red Hat Enterprise Linux valuable to developers and system administrators



These packages will be:

- Efficient process to access high value packages
- Validated by Red Hat
- Community-supported, having gone through Red Hat's Secure Supply Chain
- Consumable and manageable within the Red Hat ecosystem

Red Hat

Red Hat Enterprise Linux for Microsoft Windows Subsystem for Linux (WSL)

WSL is now a validated software platform for Red Hat Enterprise Linux*

Eliminate the need for a VM

Run a Red Hat Enterprise Linux development environment on Windows without having to spin up a traditional virtual machine (VM)

Ease operations

Download Red Hat Enterprise Linux as a WSL image during install, or build a customized image using Insights image builder and install it in WSL to easily run both Windows and RHEL at the same time on a Windows machine

Save time

Use Red Hat Enterprise Linux via WSL to build Linux apps on a Windows machine, and then deploy on a RHEL environment for production to save significant time and resources

* Intended for developer use only

Red Hat

Leverage Red Hat Enterprise Linux as a trusted AI foundation

with an extensive ecosystem of trusted partners and tools

- Get new AI advances faster, with safety and trust
  - New Partner Validation Program for the latest AI hardware/software
  - New Extensions Repository for community content that is trusted by Red Hat
- Experiment with and develop AI capabilities easily and efficiently
  - Simplify management of containerized applications with Podman Desktop
  - Use foundational building blocks like the Postgres Vector Database Extension to improve the accuracy of Generative AI and planned support for Model Context Protocol (MCP) to add agentic capabilities
  - Streamline deployment of pre-configured base images with image mode
- Optimize data storage and security
  - Protect data in use with confidential computing support

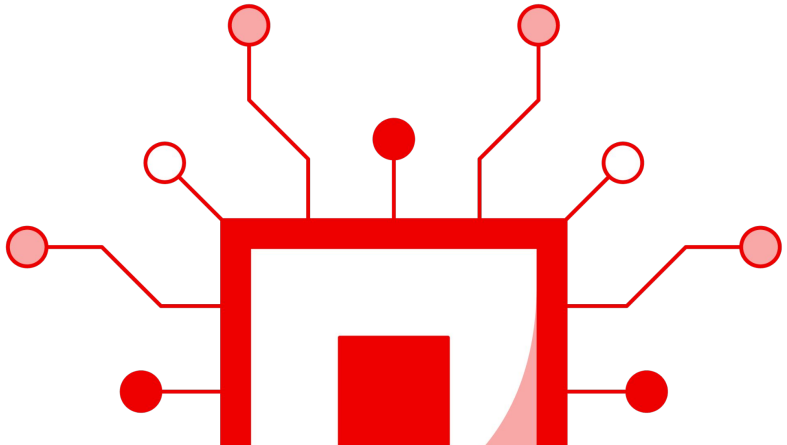
Wait less to put AI to work.

Red Hat

Red Hat Enterprise Linux and AI

The trusted foundation for AI

Red Hat has developed an optimized version of RHEL that has been specifically built to run AI models in RHEL AI



Partner validation and extensions repository
Accelerate time to market for the latest AI hardware/software with partner validation, and use the Extensions Repository with the latest community content trusted by Red Hat.

Image mode
Streamlines deployment and updates using pre-configured container images.

Confidential computing support
Allows an AI model to use data in a secure and isolated manner.

Integration with a Postgres Vector database
Allows AI models to seamlessly integrate with external data sources and tools.

Red Hat

Upgrade paths to Red Hat Enterprise Linux 10

RHEL 7.9 to RHEL 8.10 upgrades

Upgrade path available for two years

Red Hat will offer a LEAPP version that enables RHEL 7.9 to RHEL 8.10 upgrades.

RHEL 8.10 to RHEL 9.6 upgrades

Upgrade path available for two years

Red Hat will offer a LEAPP version that enables RHEL 8.10 to RHEL 9.6 upgrades.

RHEL 9.6 to RHEL 10 upgrade

Upgrade path available for two years

Red Hat will offer a LEAPP version that enables RHEL 9.6 to RHEL 10.0 upgrades.

Red Hat Summit

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