



# Red Hat Enterprise Linux 10 Roadmap

Reimagining a Linux platform

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Senior Director, Engineering

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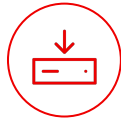
# Hot Ones and Zeros

The presentation with hot RHEL 10 features, and even hotter tortilla chips

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## RHEL 10 Contents

Kernel, build chain, languages, features



## Leverage RHEL as a trusted AI foundation

With an extensive ecosystem of trusted partners and tools



## Resist security attacks from hackers

When Quantum computers become prevalent



## Address the Linux skills gap

With decades of Red Hat's Linux knowledge and expertise



## Contain drift and accelerate delivery

With using container tools and technologies on Linux itself



## Make better decisions at build time

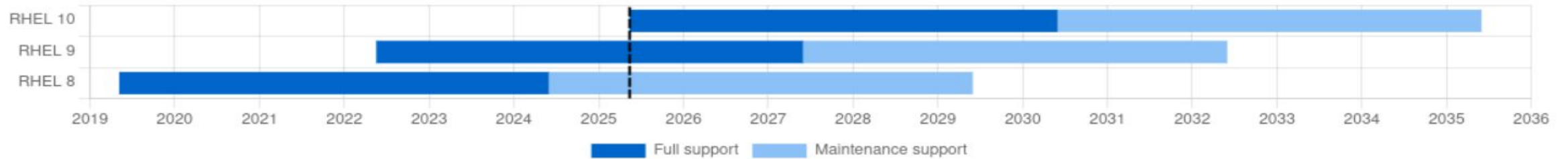
When it's typically easier and cheaper to make changes



# What Does it Mean to Re-imagine a Linux Platform?

RHEL 10 is not just a release, it's an event

Release lifecycle



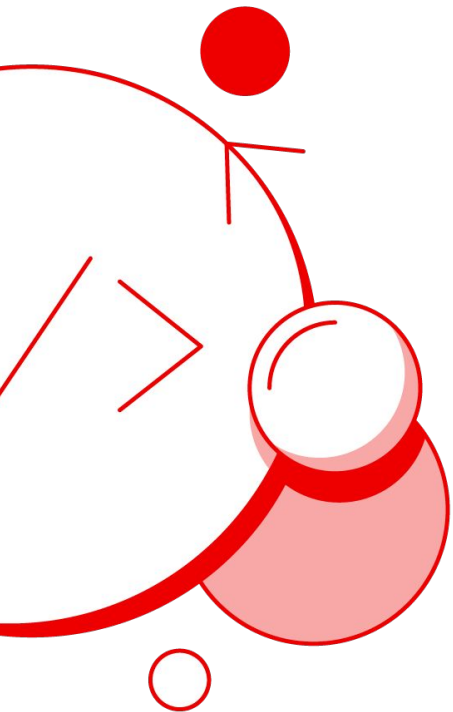
# RHEL 10 Contents

Unboxing



# New features and enhancements

RHEL 10 contains these features and enhancements and so much more



## Linux Kernel 6.12

Realtime included! New hardware and so much more.

## GCC 14

Latest C and C++ language features, and more.

## systemd 257

Removes cgroups v1 support. Soft reboots.

## System Python 3.12

Supported for the life of RHEL 10

## Podman 5.4

Solid quadlets support, performant networking

## AMD SEV: Secure Encrypted Virtualization

Prevents malicious hypervisor-based attacks

## PHP 8.3

Faster application execution

## Git 2.47

Improve speed and efficiency of Git operations

## OpenJDK 21

Five year bump in features and performance.

## NGINX 1.26

Offers faster HTTP request handling

## Postgresql 16 / MySQL 8.4

Enhanced performance and scalability

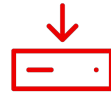
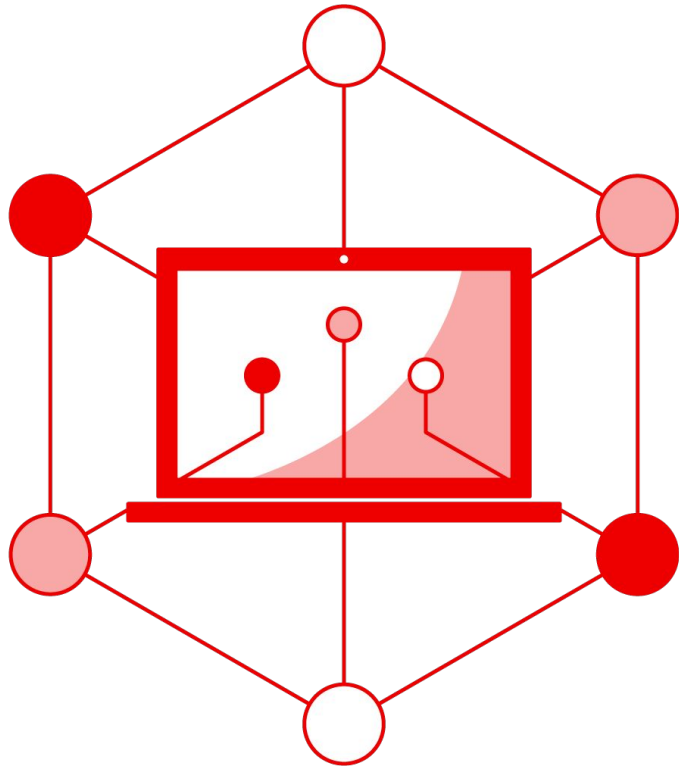
## WSL

Seamless integration between Windows and Linux



# RHEL 10 Contents

Your subscription gives you access to all versions of RHEL so...



## Why choose 10 over 9?

- ▶ New hardware enablement
- ▶ RISC-V as a developer preview
- ▶ Performance on CPU bound workloads: x86\_64 V3 ISA
- ▶ Initial Post Quantum algorithms, updated SSH algorithms
- ▶ 32bit “year 2038” preparation
- ▶ Better workstation: Wayland, PipeWire, RDP everywhere
- ▶ Real Time included, no longer an add-on
- ▶ Longer horizon for support: 13+ years including ELS
- ▶ Red Hat Security Select\*





## Learn More

Blog: Build RHEL 10 with Insights Image Builder

▶ **What**

- Insights Image Builder

▶ **Who**

- [Terry Bowling](#), Principal Product Manager, Red Hat

▶ **Description**

- Insights image builder has added Red Hat Enterprise Linux (RHEL) 10 Public to the list of operating systems that you can build for all of your hybrid-cloud environments. You can learn more about RHEL 10 in the announcement [here](#). This makes it easier than ever to customize and launch a new RHEL 10 instance, as well as installation images for physical systems.





# AI Foundation

The Classic:  
**Garlic Fresno  
Hot Sauce**

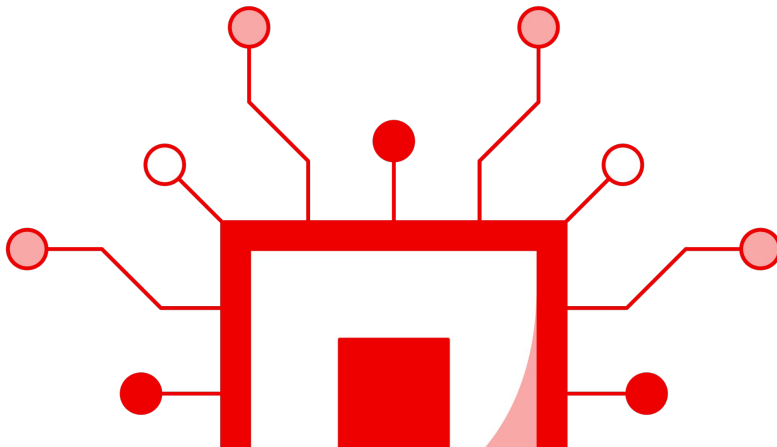
1,600  
scoville heat units



# 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



**AMD GPU and Intel NPU kernel (tech preview) drivers in the box**  
Run your AI workload, without changing the kernel, or the secure boot stack.

**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**  
The perfect deployment pattern for large and complex AI drivers and frameworks.

**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.



# Faster Time to Market

The world of AI is moving faster than any technology wave before

Good	Better	Best
<ul style="list-style-type: none"><li>Other software and hardware from vendors and open source communities</li><li><a href="#">EPEL</a></li><li><a href="#">Flathub</a></li></ul>	<div>NEW</div> <ul style="list-style-type: none"><li>Partner <i>validated</i> products</li><li>Extensions repository</li></ul>	<ul style="list-style-type: none"><li>Red Hat <i>certified</i> hardware and software: <a href="https://catalog.redhat.com">catalog.redhat.com</a></li><li>BaseOS</li><li>AppStreams</li></ul>

## Partner Validated Products

Red Hat is making it easier for partners to **support** Red Hat Enterprise Linux 10 with the availability of partner validated products in the Red Hat Ecosystem Catalog.

Partner validated products are tested based on a partner's own criteria and methodology to verify that software and hardware infrastructure is **compatible** with Red Hat Enterprise Linux 10.

Partner Validated

Red Hat Enterprise Linux 9.0 - 9.x  
Architecture: x86\_64

# Extensions Channel

New channel in RHEL



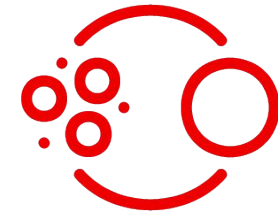
## Known By Default

- Consumable & Manageable by the Red Hat Ecosystem
  - RHEL
  - Satellite
  - Image Builder



## Secure

- Benefits from Red Hat's Secure Supply Chain
- Fast Updates From Community Support
- CVE Communication from Red Hat



## Always Up To Date

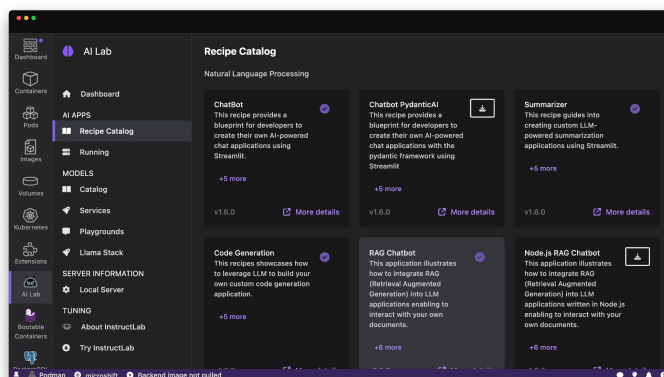
- Fast Builds for Updated Versions from EPEL
- Not Tied to RHEL Release Cadence
- Abandoned Packages Removed

# Podman Desktop now available on RHEL 10

## Install from the Extension Channel

The Podman Desktop you love – *simplified container management and intuitive UI* – now extends to your RHEL workflows.

- ▶ **Standardize Container Environment between Developers and IT/Ops**
- ▶ **Cross-Platform Consistency**
- ▶ **Built for RHEL with dedicated extensions:** Quadlet, BootC, RHEL LightSpeed and RHEL
- ▶ **Podman AI Lab**



- ▶ **Flexible AI App Development:** Build apps starting from recipes like RAG, agentic workflows, and chatbots with interactive playgrounds for testing models.
- ▶ **Seamless Integration:** container-native, openAI APIs, MCP and LLama Stack support.



# Post Quantum Cryptography

Original:  
**Buffalo  
Hot Sauce**

1,600  
scoville heat units





# Y2Q

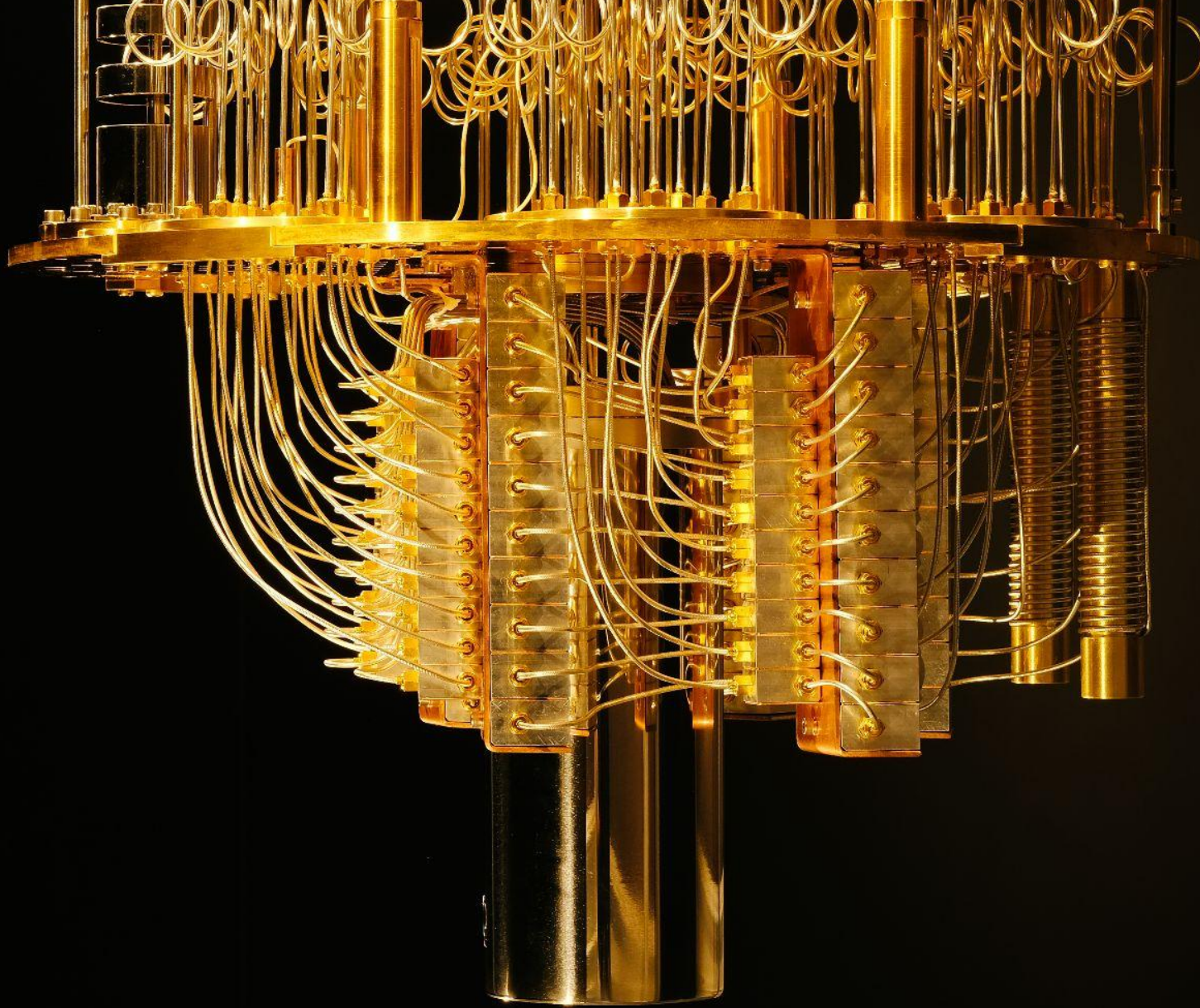
RHEL 10 includes

Key Exchange

**ML-KEM**

Digital Signatures

**ML-DSA**



Source:

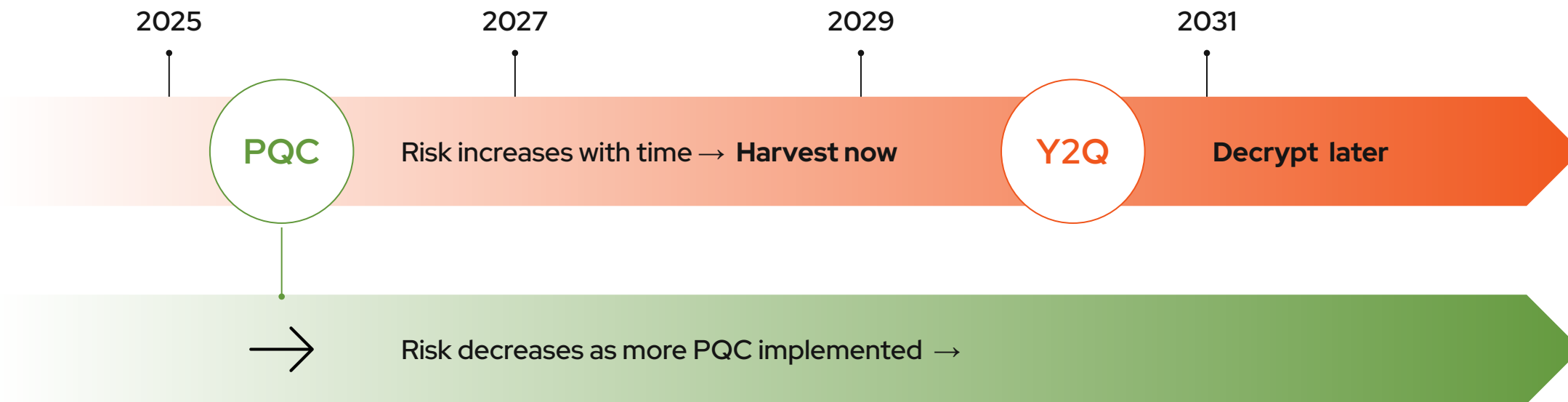
[https://newsroom.ibm.com/download/quantum-computers-and-accelerated-discovery\\_40645906341\\_o.jpg](https://newsroom.ibm.com/download/quantum-computers-and-accelerated-discovery_40645906341_o.jpg)

<https://quantum.ibm.com/services/resources?limit=50&view=table>

<https://security.stackexchange.com/q/87345>

<https://crypto.stackexchange.com/q/436>

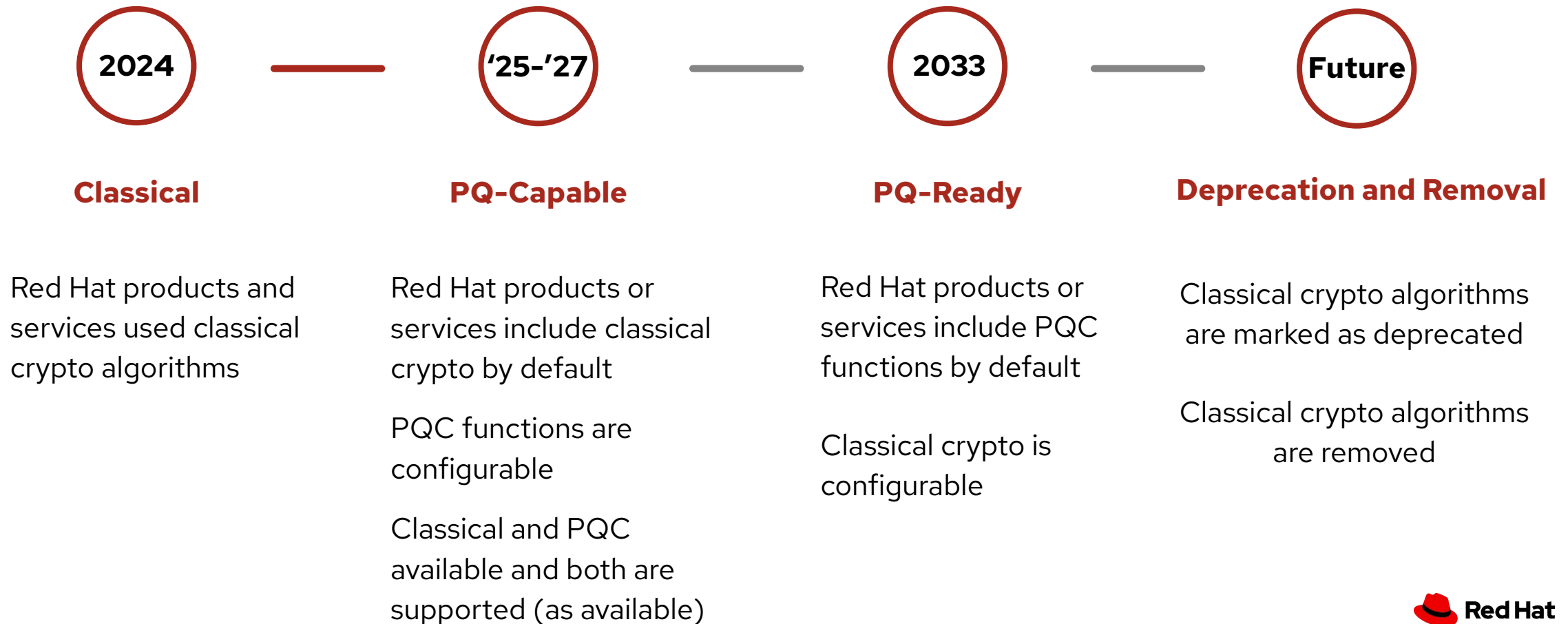
# PQC is a future challenge, but the threat is already here



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



# Overall Implementation Strategy



## Learn More

### Session: Top 10 RHEL 10 security features everyone should be using

► **When**

- Tuesday, May 20 2:15 PM – 2:55 PM EDT

► **Where**

- BCEC – Room 254 B

► **Who**

- [Marek Haičman](#), Product Owner, RHEL Compliance and Certifications, Red Hat
- [Amy Ralph](#), Principal Product Manager, Security and Identity, Red Hat
- [Lukas Vrabec](#), Principal Software Engineer / Product Owner, Red Hat

► **Description**

- In this session, we'll examine features from sophisticated access controls to innovative encryption methods, which offer peace of mind by minimizing vulnerabilities and helping prevent sensitive information from being compromised. Whether you're a seasoned system administrator or new to enterprise Linux, this session will equip you with valuable insights and practical solutions for building resilient defenses



# Address the skills gap

with Lightspeed



Verde:  
**Los Calientes**  
**Hot Sauce**

33,000  
scoville heat units

```
stef@thewalter-lan:~$ SERVER1=ec2-34-235-198-240.compute-1.amazonaws.com
stef@thewalter-lan:~$ SERVER2=ec2-52-200-142-250.compute-1.amazonaws.com
stef@thewalter-lan:~$ diff <(ssh $SERVER1 'rpm -qa | sort') <(ssh $SERVER2 'rpm
-qa | sort')
241c240
< kernel-6.12.0-55.9.1.el10_0.x86_64
---
> kernel-6.12.0-55.7.1.el10.x86_64
317d315
< libsmi-0.4.8-43.el10
727,728d724
< wget-1.24.5-5.el10
< wireshark-1:4.4.2-1.el10
stef@thewalter-lan:~$
```



[illegible]



# Red Hat Enterprise Linux Lightspeed

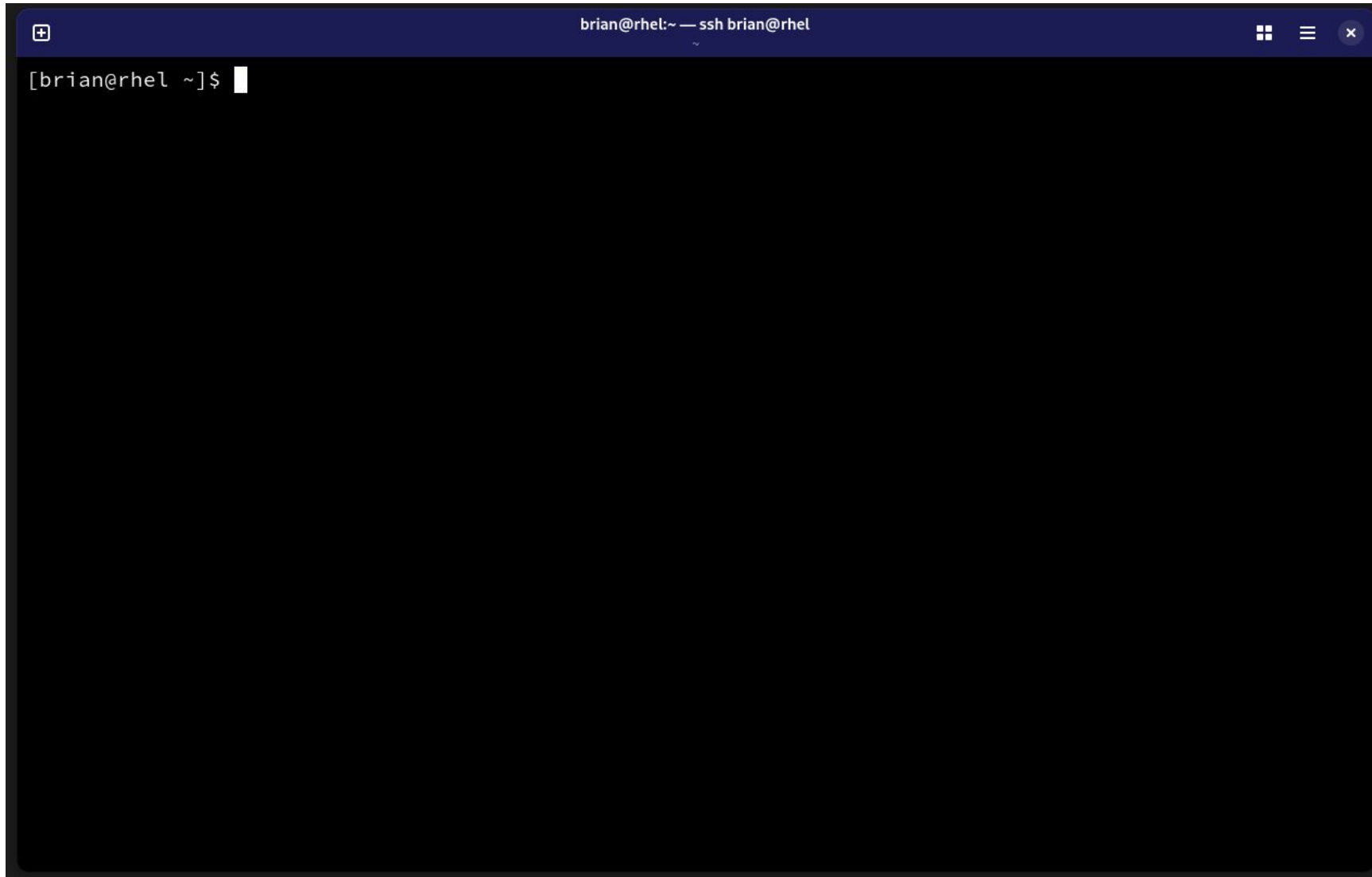


Assistive technology which utilizes artificial intelligence and leverages decades of Red Hat Enterprise Linux expertise to proactively **inform and simplify** how both novice and experienced IT professionals build, deploy, and manage Red Hat Enterprise Linux.

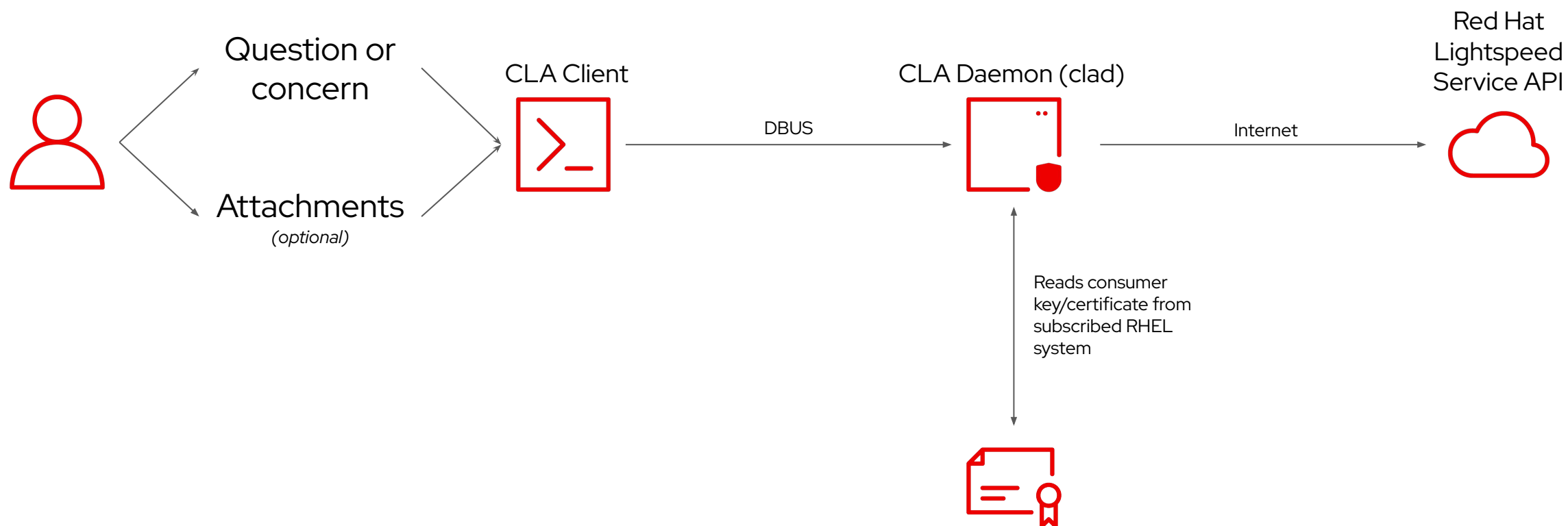
- Simplifies the way you interact with Red Hat Enterprise Linux by using **plain language** rather than complex commands
- Helps you make better tuning and troubleshooting decisions with **recommendations and actionable guidance**

# LIVE DEMO

## Find relevant info from the Red Hat knowledgebase



## CLA: What happens on the customer's system?



# RHEL Lightspeed tentative roadmap



## On premises command line assistant

We'll be investigating if we can bring the command line assistant functionality on premises



## Miscellaneous improvements

- Context aware sessions
- Increase 2 KB input limit
- *Let us know what other improvements you'd like to see!* Our roadmap is shaped with customer feedback



## Evaluating emerging technologies

- AI field is moving rapidly
- We will be evaluating emerging technologies such as the model context protocol (MCP)

# 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

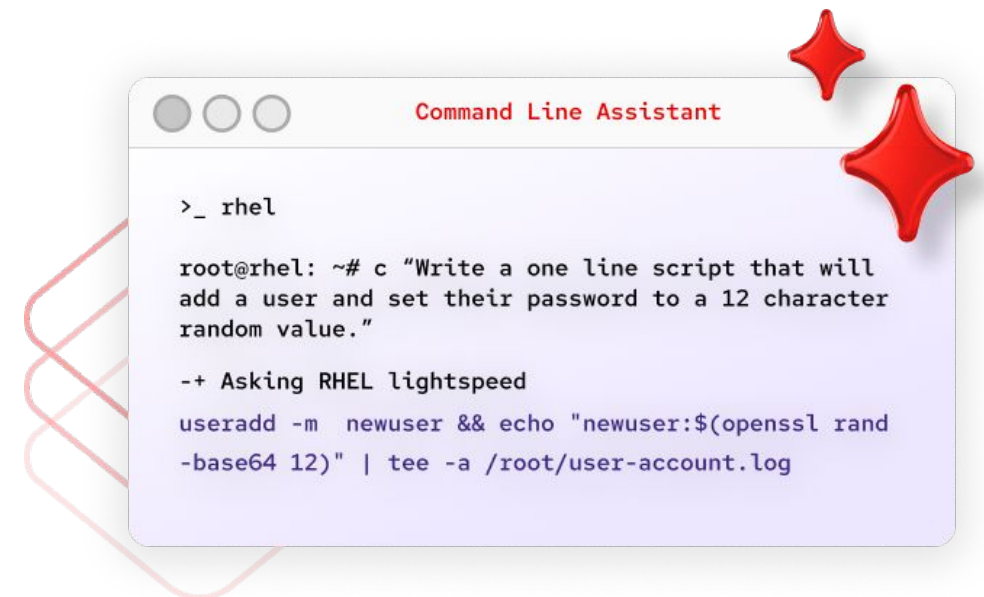


# Experience an AI enabled command line

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.



# Learn More

## Session: RHEL Lightspeed Mitigating Chaos

▶ **When**

- Tuesday, May 20 10:30 AM - 11:30 AM EDT

▶ **Where**

- BCEC - Room 253 ABC

▶ **Who**

- [Matthew Yee](#), Technical Marketing Manager, Red Hat
- [Major Hayden](#), Senior Principal Software Engineer, Red Hat
- [Brian Smith](#), Principal Product Manager, Red Hat

▶ **Description**

- Managing IT infrastructure can be chaotic. Software incompatibility, security vulnerabilities, and hardware changes all can lead to service interruptions and downtime. Troubleshooting and mitigating risk requires deep domain knowledge that takes a lot of time to acquire.



Contain drift and  
accelerate delivery  
with image mode for RHEL

Rojo:  
Los Calientes  
Hot Sauce

49,000  
scoville heat units

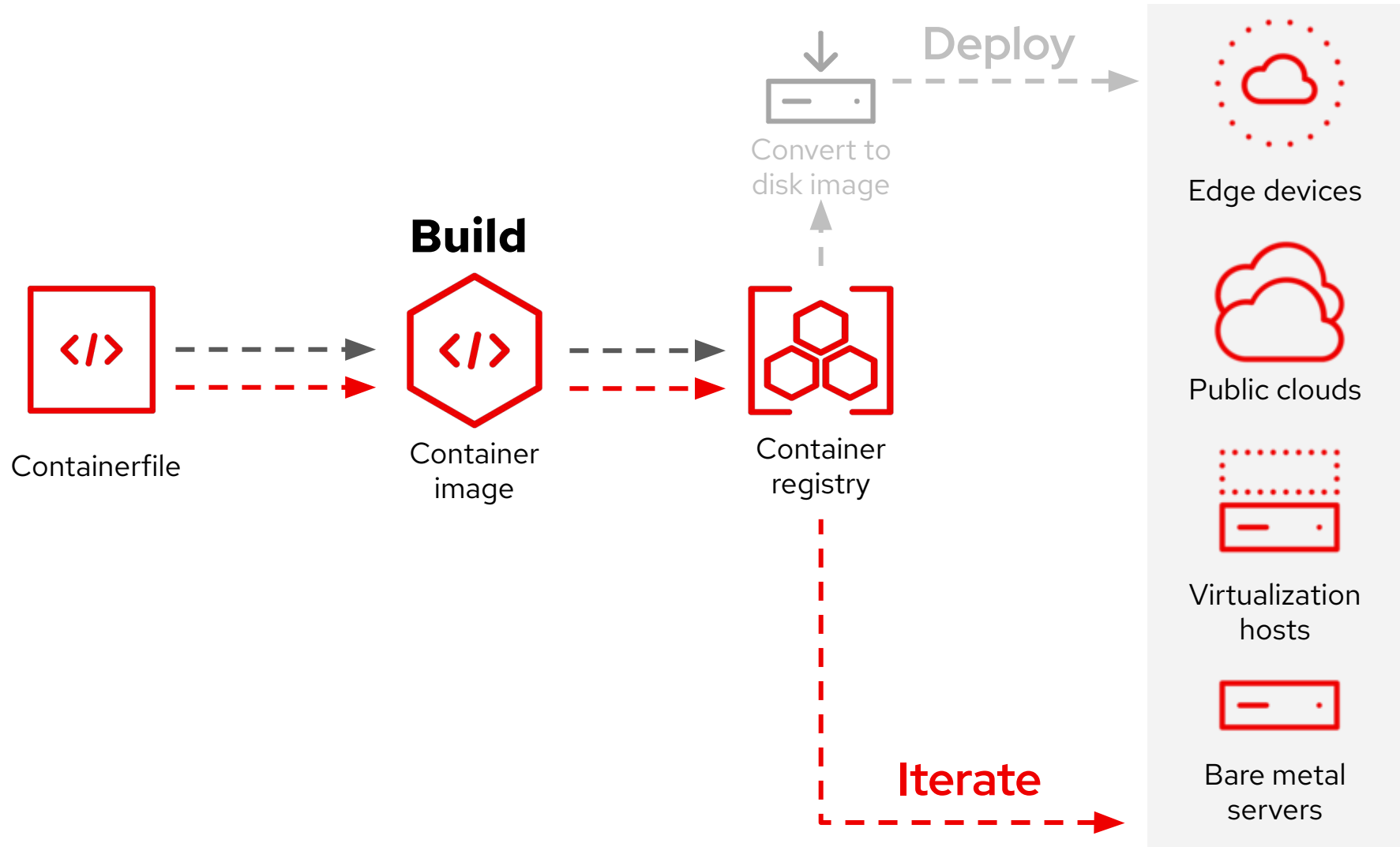






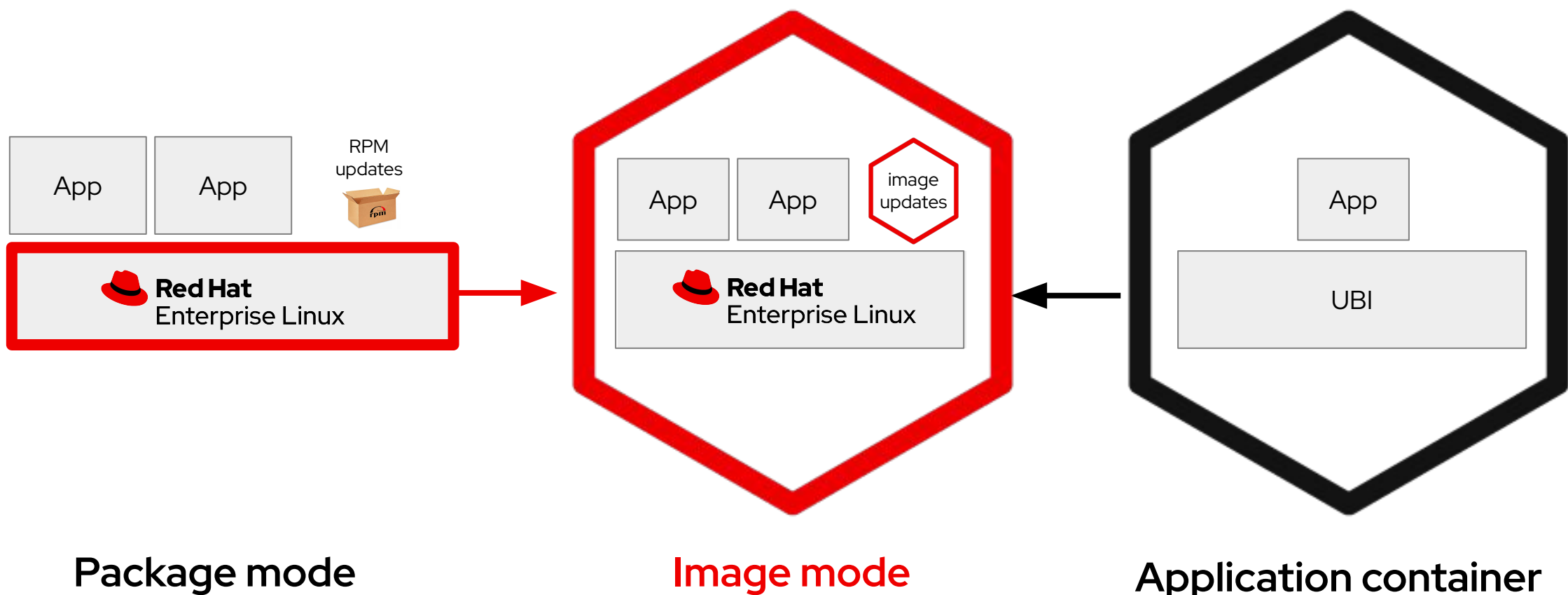


# Simple. Consistent. Anywhere.



# Introducing image mode for Red Hat Enterprise Linux

Combining the power of RHEL with the benefits of containers



# The choice is yours!

Select the most suitable approach for your organizational needs

	Package mode	Image mode
<b>Image creation</b>	Image builder	Container tools
<b>Updates</b>	Packages (dnf)	Images (bootc)
<b>Update distribution</b>	rpm repository	Container registry
<b>Management</b>	Red Hat Insights, Satellite*, Ansible*	
<b>Deployment footprint</b>	Bare metal, VM, cloud, edge	



# LIVE DEMO

# Recommended use cases



## 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

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



## Container hosts

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

## Container & Image mode Roadmap



- ▶ Image sealing to provide higher integrity of the boot chain and image content
- ▶ Soft-reboot support (10 only) helps limit downtime and can “reboot userspace” and switch the root filesystem to an update
- ▶ Improved storage architecture between podman & bootc
- ▶ Custom live ISO & PXE image creation

## Learn More

### Workshop: Unleashing the power of image mode for Red Hat Enterprise Linux

▶ **When**

- Tuesday, May 20 3:30pm - 5pm

▶ **Where**

- LB1054

▶ **Who**

- [Matt Micene](#), Senior Principal Product Marketing Manager - Technical
- [Costin Gament](#), Principal Software Engineer

▶ **Description**

- As IT continues to evolve, containers have emerged as a fundamental component for software development, deployment, and management. These lightweight, portable units encapsulate applications and their dependencies.  
However, operating system customization remains a persistent challenge during Day 2 configuration management and the initial creation of operating system (OS) images. This workshop introduces image mode, a novel approach to address these issues using bootc images. This approach combines the capabilities of Open Container Initiative (OCI) container images with the power and flexibility of Red Hat Enterprise Linux.



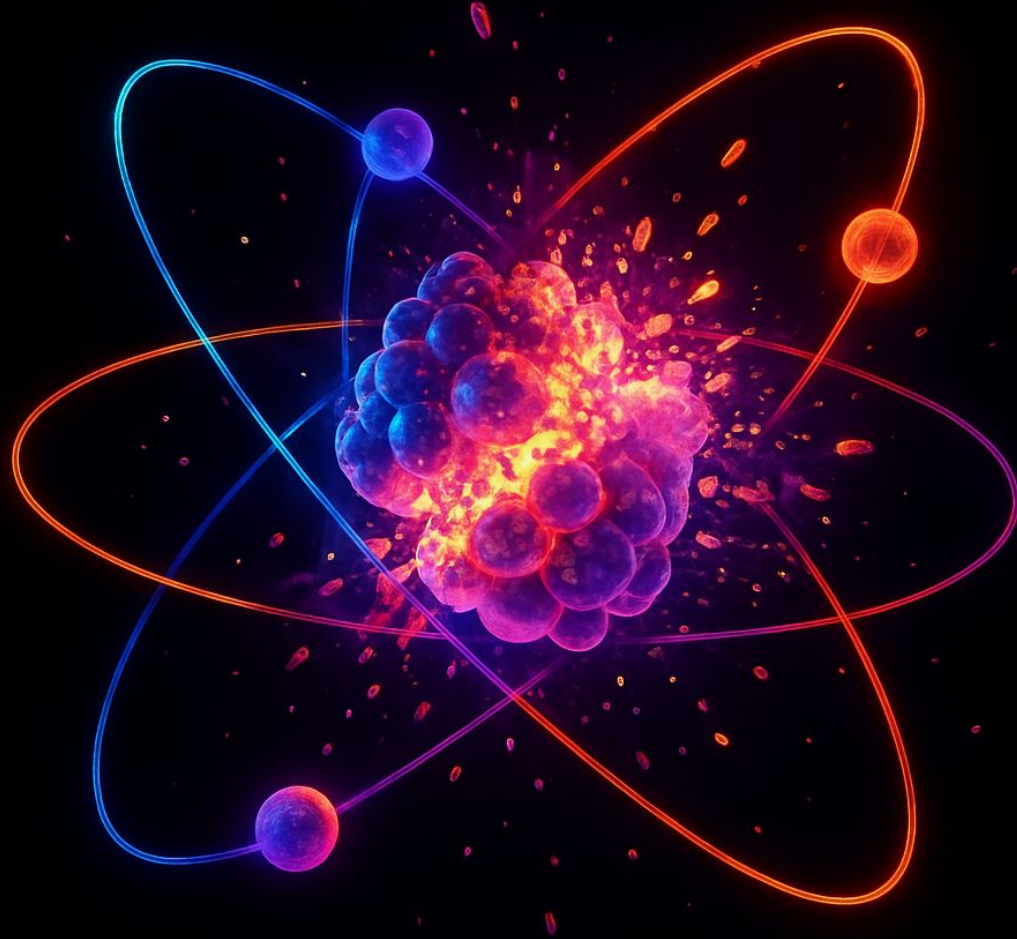
# Shift Left

with a Digital Roadmap

The Last Dab:  
**Apollo**  
Hot Sauce

2,500,000  
scoville heat units





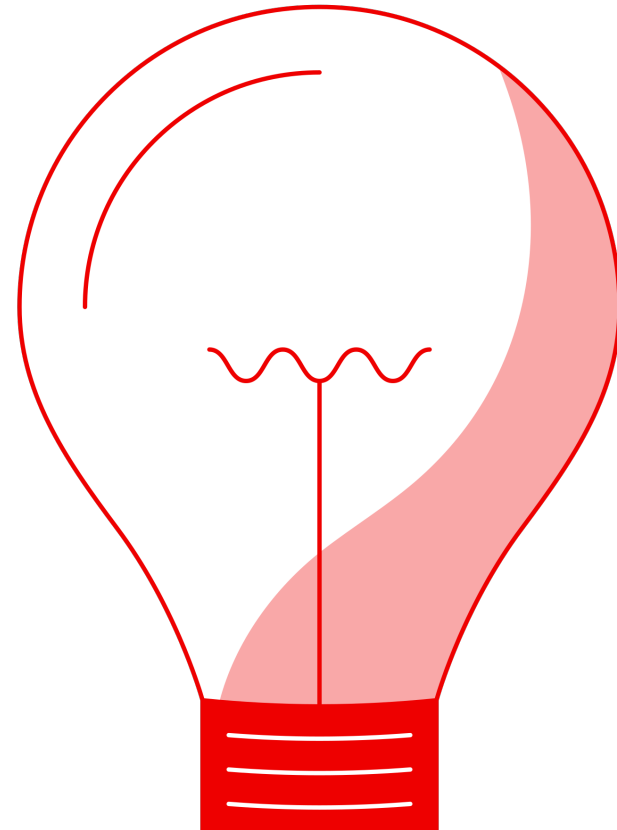
**What is the half life of your software stack?**

# Red Hat Insights Planning for RHEL

Plan ahead for RHEL and AppStream lifecycle updates, and gain insights into the RHEL roadmap

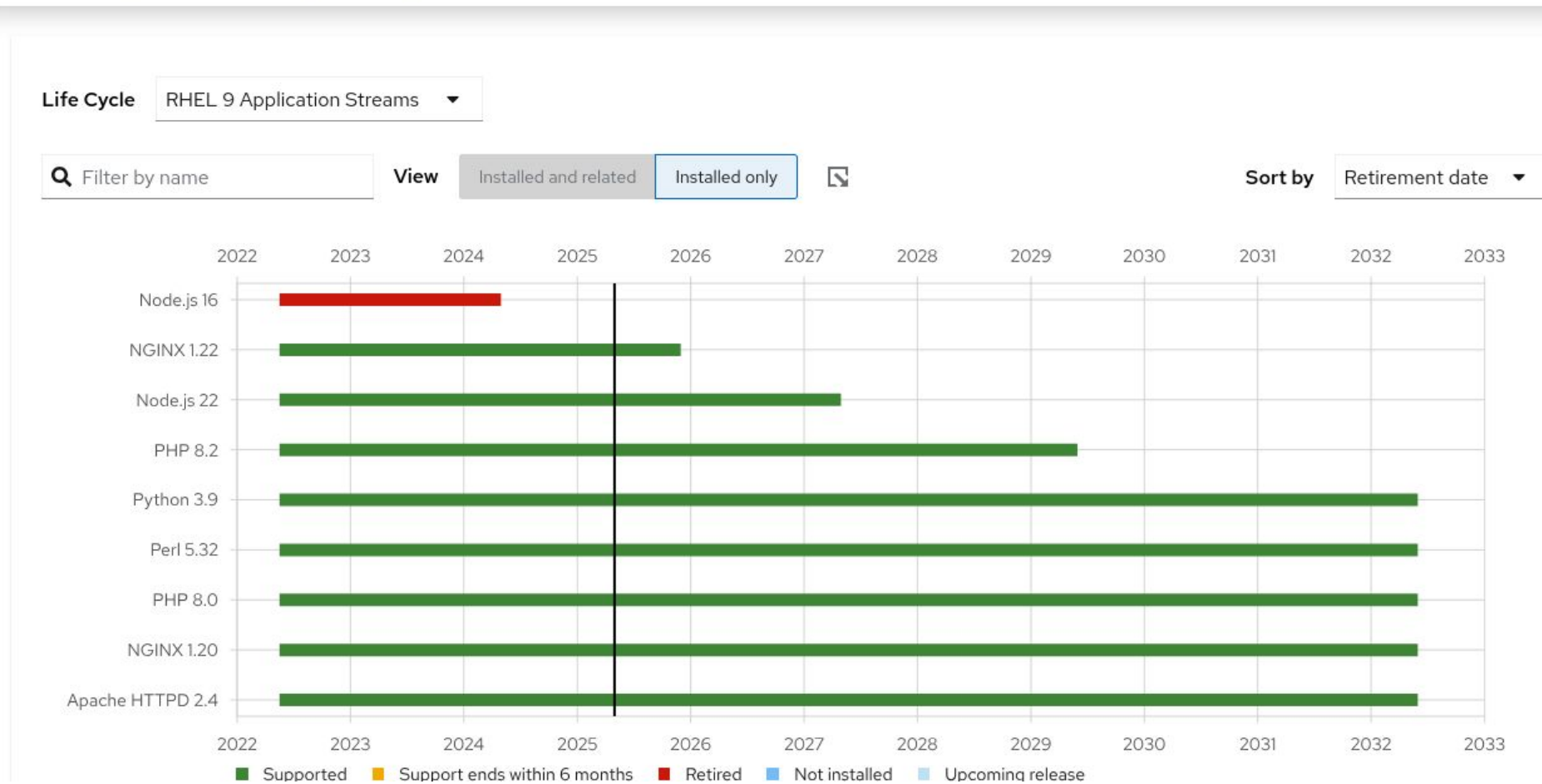
Gain access to lifecycle information,  
and plans for upcoming minor  
releases.

Centralizes roadmap and lifecycle details for AppStreams and RHEL minor releases - allowing administrators to proactively plan upgrades, maintain support, and anticipate the impact of upcoming feature releases and deprecations..



# RHEL and AppStream life cycle information

⚠ Dates are approximations and subject to change.





# AppStream life cycle information also available in Insights image builder

## Additional packages

Blueprints created with Images include all required packages.

Search for package groups

Search for package groups by starting your search with the '@' character. A single '@' as search input lists all available package groups.

Q nodejs

X

Available

Selected

1 - 10 of 22

Included repos

Other repos

Name	Application stream	Retirement date	Package repository
> <input type="checkbox"/> nodejs	18	<div></div> Apr 2025	Red Hat
> <input type="checkbox"/> nodejs	20	<div></div> Apr 2026	Red Hat
> <input type="checkbox"/> nodejs	22	<div></div> Apr 2027	Red Hat
> <input type="checkbox"/> nodejs-devel	18	<div></div> Apr 2025	Red Hat
> <input type="checkbox"/> nodejs-devel	20	<div></div> Apr 2026	Red Hat
> <input type="checkbox"/> nodejs-devel	22	<div></div> Apr 2027	Red Hat

Next


Back

Review and finish


Cancel



# Red Hat Enterprise Linux digital roadmap

 **Deprecations**

0 deprecations that could affect your systems

 **Changes**

2 changes that could affect your systems

 Name

 Filter by name

**View**

Relevant only All



# LIVE DEMO

## Learn More

Blog: Insights for Red Hat Enterprise Linux planning now generally available

▶ **What**

- Announcement Blog

▶ **Who**

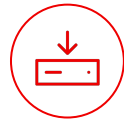
- [Brian Smith](#), Principal Product Manager, Red Hat

▶ **Description**

- Insights for RHEL planning introduces two new features:
  - Life cycle: provides a centralized life cycle view for Application Streams and RHEL minor releases, which enables you to plan for upgrades and monitor the status of your environment.
  - Roadmap: provides a view into the tentative roadmap for RHEL, enabling you to better plan ahead, and anticipate the impact of upcoming roadmap items.



# Conclusions



## **RHEL 10 Contents**

Look inside the box.



## **Leverage RHEL as a trusted AI foundation**

With **RHEL Extensions** and **Partner Validated Products**



## **Resist security attacks from hackers**

With **Post Quantum Cryptography** resistant algorithms



## **Address the Linux skills gap**

With **Lightspeed** including decades of Linux knowledge



## **Contain drift and accelerate delivery**

With **Image Mode**, using container practices with Linux itself



## **Make better decisions at build time**

With **Insights Planning** and **Digital Roadmap**

# The Red Hat Enterprise Linux team wants to hear from *you!*



Share feedback and help shape the roadmap for RHEL.  
*No sales pitches – just your feedback.*

Scan the QR code or go to:  
[red.ht/feedback\\_signup](https://red.ht/feedback_signup)

Have additional questions about image mode?  
[Visit us at the RHEL Booth](#)





AnsibleFest

# Thank you



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