Red Hat Summit

Connect

Cloud business with Red Hat and why RHEL is RHELevant

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Agenda

Long standing partnerships, converging on a hybrid cloud experience

▸ Red Hats Open hybrid Cloud Strategy

▸ Marketplace and buying programs

▸ RHEL in a hybrid cloud environment

▸ What is new in RHEL

▸ RHEL Image Mode

1500+
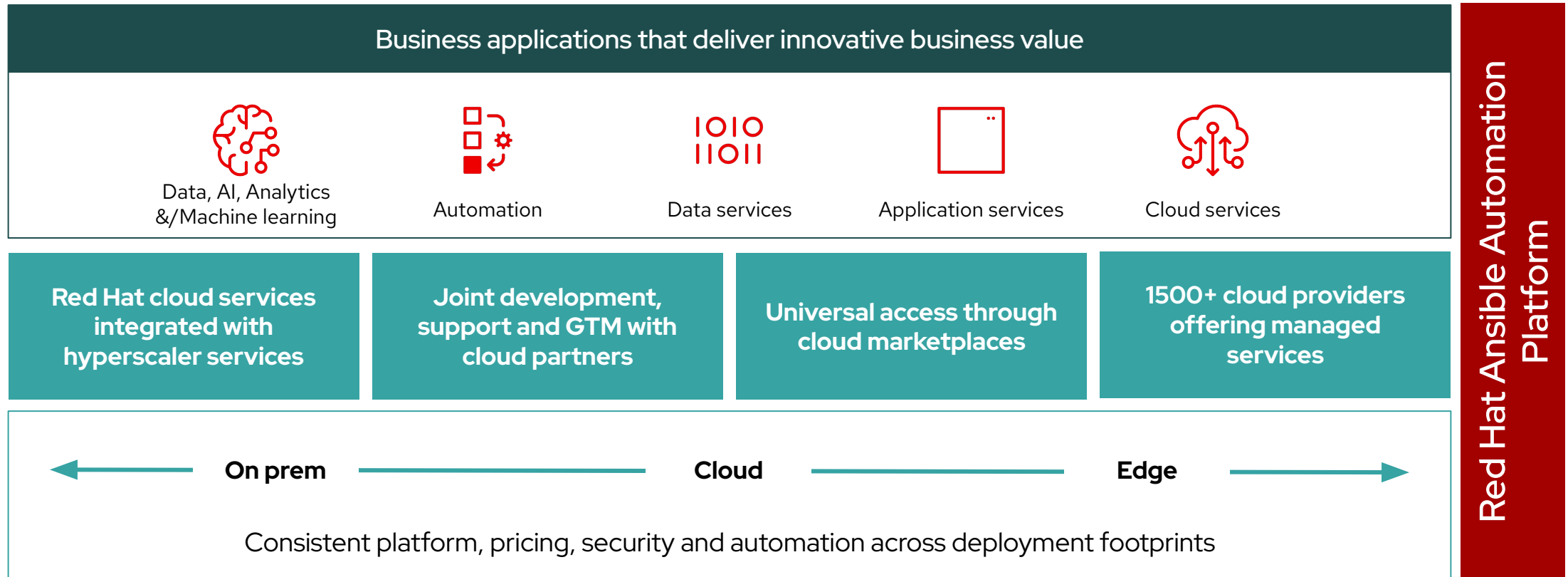CCSP partners

Open hybrid cloud customer experience

Business applications that deliver innovative business value					Red Hat Ansible Automation Platform

Data, AI, Analytics &/Machine learning

Automation

Data services

Application services

Cloud services

Red Hat cloud services integrated with hyperscaler services	**Joint development, support and GTM with cloud partners**	**Universal access through cloud marketplaces**	**1500+ cloud providers offering managed services**

← **On prem** ← → **Cloud** → **Edge** →

Consistent platform, pricing, security and automation across deployment footprints

aws

Google Cloud

IBM Cloud

Microsoft Azure

ORACLE CLOUD

Customer Data Center

Red Hat

Cloud marketplaces

55%

of organizations will use **cloud marketplaces** as their most important approaches to software sourcing by 2024[1]

≡IDC

>60%

of enterprise deals are through marketplace **private offers**...

techaisle

Ease of transactability and committed spend programs are encouraging customers to purchase through cloud marketplaces

Red Hat offerings through Console (1P– Sold by Partner)

	Microsoft Azure	aws	Google Cloud
Red Hat Enterprise Linux (RHEL)	✓	✓	✓
RHEL Workstation	N/A	✓	N/A
RHEL for SAP	✓	✓	✓
Microsoft SQL Server on RHEL	✓	✓	N/A
Red Hat OpenShift (self-managed)	✓	✓	✓
Red Hat OpenShift (managed)	Azure Red Hat Openshift (ARO)	Red Hat OpenShift Service on AWS (ROSA)	OpenShift Dedicated (OSD)
Ansible Automation Platform	✓	✓	✓
Red Hat JBoss Application Platform (EAP)	✓	✓	-

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Red Hat Solutions in the Cloud

Hyperscalers Marketplace Availability – (3P Sold by Red Hat)

	Microsoft Azure	aws	Google Cloud
Red Hat Enterprise Linux (RHEL)	✓	✓	✓
Red Hat Enterprise Linux for SAP	✓	✓	✓
Microsoft SQL Server on RHEL	✓	✓	–
Red Hat OpenShift *(self-managed)*	✓	✓	✓
Red Hat OpenShift *(managed)*	Azure Red Hat OpenShift (ARO)	Red Hat OpenShift Service on AWS (ROSA)	OpenShift Dedicated (OSD) via Customer Cloud Subscription
Ansible Automation Platform	✓	✓	✓
Red Hat JBoss Application Platform (EAP)	✓	✓	–

Available soon..
- Red Hat OpenShift Apache Kafka
- Red Hat Advanced Cluster Management
- Red Hat Advanced Cluster Security

Microsoft Azure Committed Contract (**MACC**)

Enterprise Discount Program (**EDP**)

Committed Use Discount (**CUD**)

Red Hat

OpenShift Cloud Services

500+%

YoY growth 2021 to 2022

1000+

Active customers

$1B+

Annual recurring revenue for OpenShift on-premise and cloud services

Available as cloud native services on leading cloud providers

aws	Red Hat OpenShift Service on AWS (ROSA)
Microsoft Azure	Azure Red Hat OpenShift (ARO)
IBM **Cloud**	Red Hat OpenShift on IBM Cloud
Google Cloud	OpenShift Dedicated (OSD)

Customer benefits

468%

Return on investment

6

Month payback

70%

Reduced average development time

Forrester: Total economic impact of Red Hat OpenShift Cloud Services, Jan 2022

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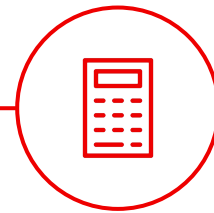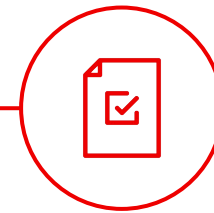# Red Hat Ansible Automation Platform on the public cloud
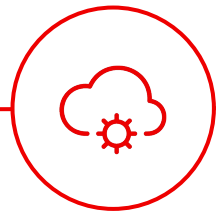
Runs in your public cloud
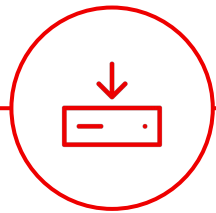
Fully installed and integrated
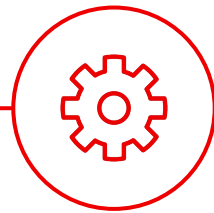
Fully supported by Red Hat

Integrated into public cloud billing

Counts toward spend agreements

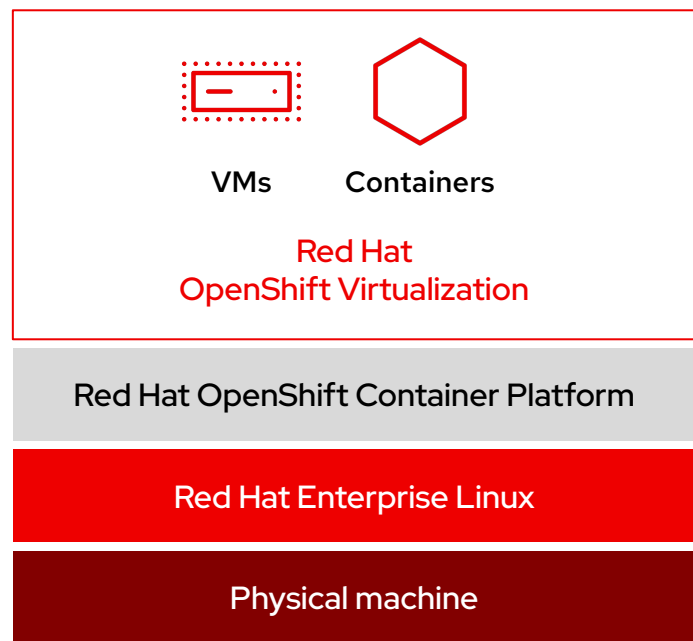**✦ New**   Available now in cloud marketplaces

Microsoft Azure
(Managed App)

aws

Google Cloud

Red Hat

✦ New

Red Hat OpenShift Virtualization

Modern virtualization option for general purpose virtualization customers

VMs   Containers

**Red Hat
OpenShift Virtualization**

Red Hat OpenShift Container Platform

Red Hat Enterprise Linux

Physical machine

▶ **Included capability**
of the Red Hat OpenShift application platform

▶ **Performance and stability**
The industry standard Kernel Virtual Machine (KVM) hypervisor

▶ **Built on KubeVirt**
Top 10 CNCF active project

▶ **Unified application platform**
Consistent management, tooling, diverse ecosystem

▶ **Supports Microsoft Windows guests**
Microsoft Server Virtualization Validation Program (SVVP)

▶ **Includes Red Hat Enterprise Linux**
guest entitlements

KubeVirt = kubernetes + KVM

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AI for the Open Hybrid Cloud

Enterprise-grade hybrid AI and MLOps foundation

Train, serve, monitor and manage the lifecycle of AI/ML models and applications, from experiments to production

**Red Hat
OpenShift**

**Red Hat
OpenShift AI**
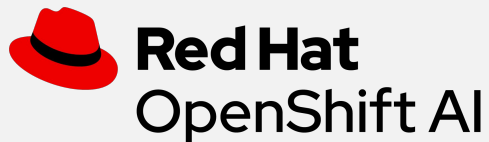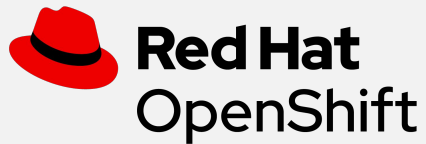
Now available as fully managed cloud service or traditional software product on-prem or in the cloud

Red Hat OpenShift AI

Red Hat OpenShift AI builds and expands upon the proven capabilities of Red Hat OpenShift and Red Hat OpenShift Data Science to:

▸ Provide a consistent foundation for IT operations leaders

▸ Bring a specialized partner ecosystem to data scientists and developers to capture innovation in AI, in a manner that can scale

▸ Scale to handle workload demands of foundation models (volume of data, duration of training run, size of model, acceleration required, and scalability).

▸ Deliver consistency, ease-of-use, and cloud-to-edge deployment options.

▸ Power end-to-end lifecycle for watsonx.ai and Ansible Lightspeed.

Red Hat Hybrid Committed Spend (HCS) Buying Program
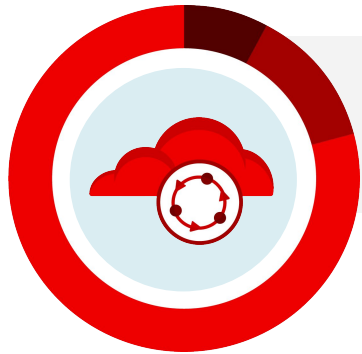
Hybrid Committed Spend allows customers to unlock additional benefits not available in our traditional subscription model in exchange for an upfront commitment

Hybrid Committed Spend

Is typically a 1 to 3 year agreement		
Based On	Annual	Commits
Year 1	Year 2	Year 3
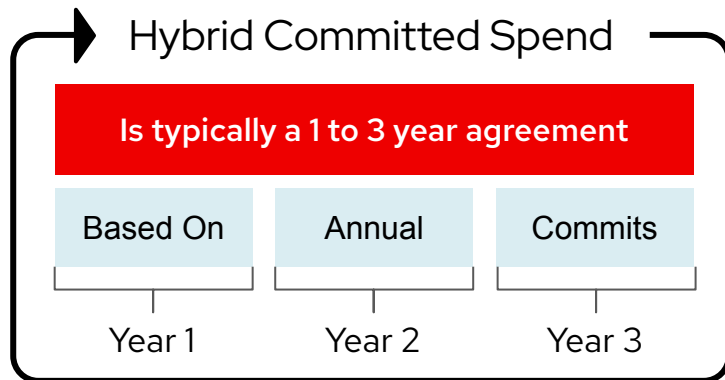
The additional benefits include deployment and product *flexibility*:

- *Flexibility* to purchase and deploy Red Hat products on-prem directly and indirectly, or in the cloud and receive volume discount considerations for total spend

- Product deployment *flexibility* across Red Hat's portfolio, allowing customers to shift from one product to another on a monthly (and in some cases an hourly) basis

- Maximum procurement and financing *flexibility* with option to merge traditional subscription (paid upfront) with on-demand subscriptions (billed monthly in arrears)

Key Messaging: Unlock greater **flexibility** with Hybrid Committed Spend

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RHEL is RHELevant in the Cloud

Infrastructure & organizational complexity
is still a problem...

Common challenges that involve the OS

- Different platforms require different tools, teams and expertise
- Testing and validation are time consuming
- Application support matrix
- No one budgets for maintenance and upgrades
- Negotiating between stakeholders
- Drift between images, instances, and runtime
- Immutable aspirations vs. mutable realities
- Image inventory, versioning, and pruning
- Let's not forget security!

Red Hat

Use cases for the hybrid cloud

Consistency across all runtime environments

Public cloud

Accelerate cloud workload migrations and reduce provisioning time with build and push capabilities to AWS, Azure, and Google Cloud Platform.

Private cloud

Standardize private cloud infrastructure with consistent, streamlined images specifically optimized for virtual environments.
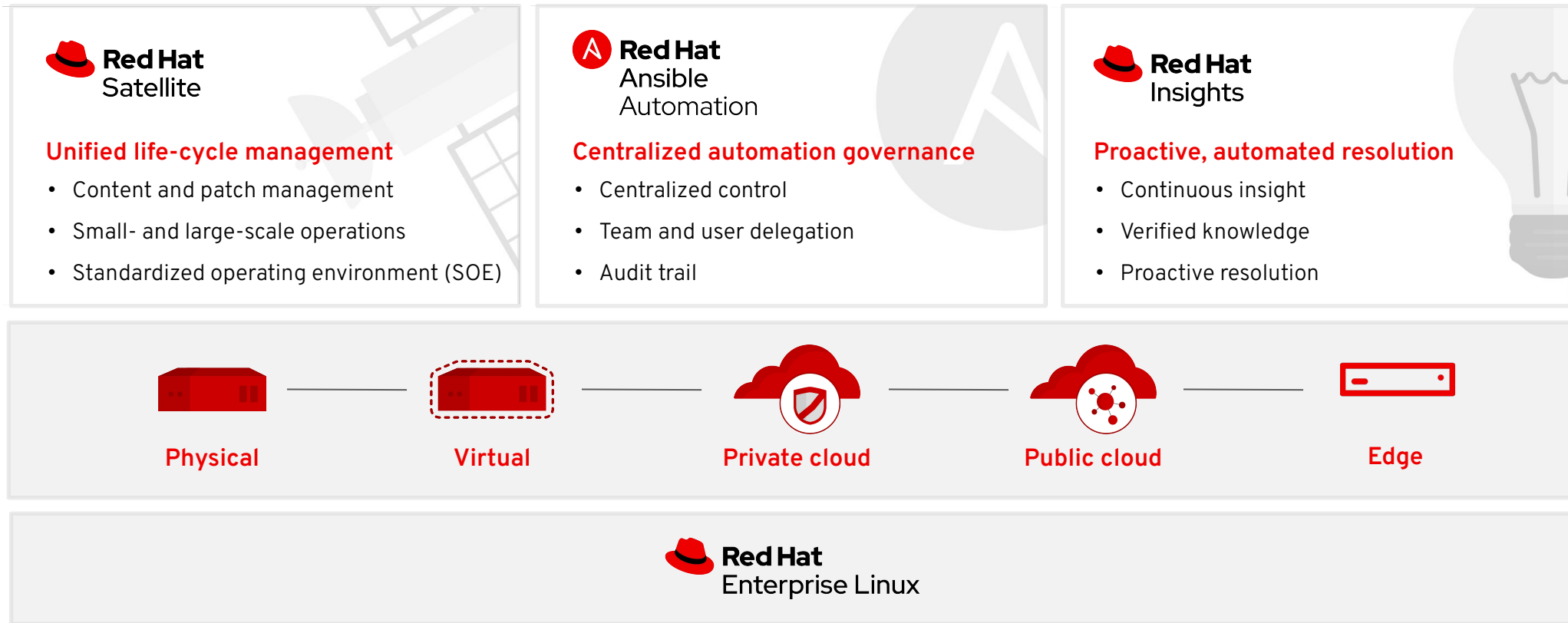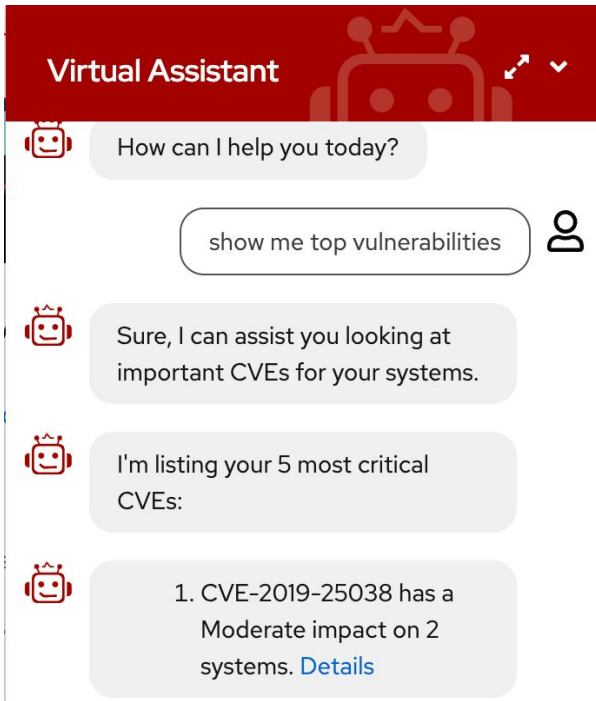
Physical & Edge

Save time and make the most of existing and future application investments by creating customized OS "Gold" images to deploy across physical systems.

Standard Operating Environment

Reduce complexity with Red Hat Enterprise Linux and its management ecosystem

Red Hat Satellite

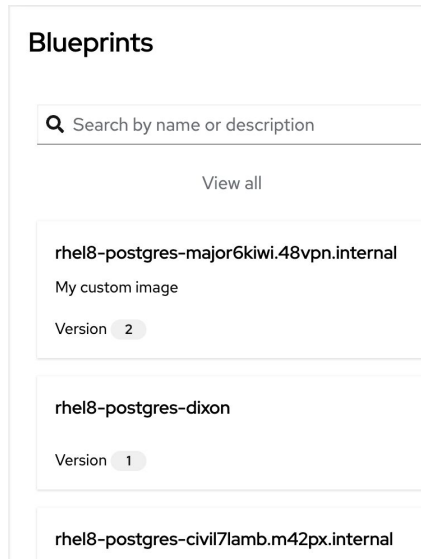**Unified life-cycle management**

- Content and patch management
- Small- and large-scale operations
- Standardized operating environment (SOE)

Red Hat Ansible Automation

Centralized automation governance

- Centralized control
- Team and user delegation
- Audit trail

Red Hat Insights

Proactive, automated resolution

- Continuous insight
- Verified knowledge
- Proactive resolution

Physical   **Virtual**   **Private cloud**   **Public cloud**   **Edge**

Red Hat Enterprise Linux

Red Hat Insights

Fedramp
▸ Fedramp High Authorization via Agency Authorization

Virtual Assistant
▸ AI Assistant to help with common issues

Image Blueprints
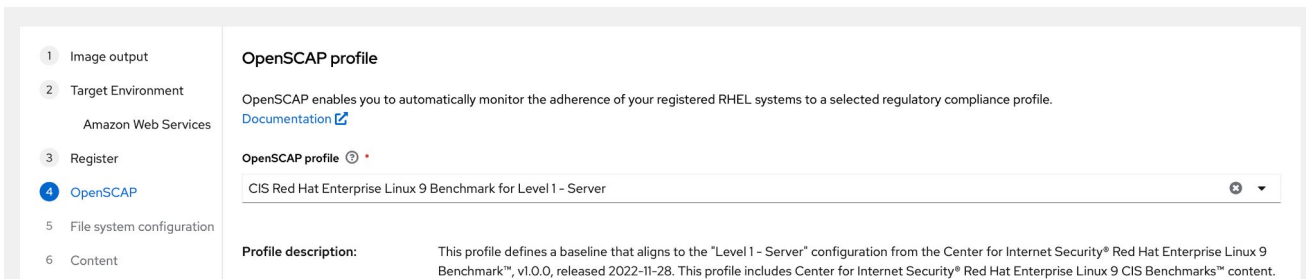▸ Create blueprints for easily repeatable images

Build Compliant images
▸ Build images compliant to regulatory policies

Update RHEL Image Mode hosts
▸ Task to initiate an update of image mode hosts

**Red Hat
Satellite**

Standard Operating Environment hosts are the same across your environment

Reliable and Resilient Using Red Hat Insights
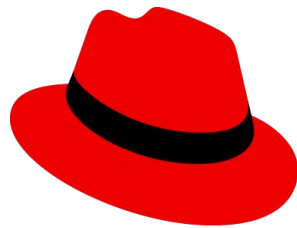
Secure your systems are patched, up to date, and compliant with security policies

Confidence in your subscription utilization

Red Hat Satellite 6.16

▶ RHEL 9

▶ Ruby 3 and Postgress 13

▶ Simple Content Access ONLY

▶ Webhooks improvements

▶ Integrated OpenSCAP remediation

▶ Online Backup

▶ Container Push

▶ Improved LEAPP and Convert2RHEL
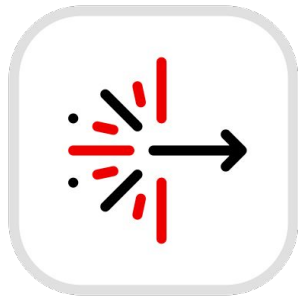
▶ Improved scalability and performance

The Route to RHEL 10

We continue to depend on our open source development model from Fedora to CentOS Stream to RHEL.

Upcoming:

- CentOS Stream 10

- RHEL 10 Beta

- RHEL 10 GA (Expected Mid-2025)

Red Hat

RHEL Lightspeed vision

Unlock Red Hat's expertise

Provide Red Hat's decades of Linux experience to help enable your workloads to be successful

Proactive guidance

Proactively provide relevant information and guidance to make life easier for customers
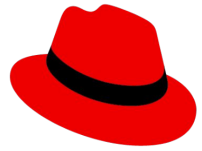
Level up skills

Makes RHEL easier to use, secure, tune, and troubleshoot – for both new and experience users

Digital roadmap

Get relevant info on the RHEL roadmap and what's coming next, focused on what's most important to you

Red Hat

Red Hat
Enterprise Linux AI

Foundation Model Platform

Seamlessly develop, test and run best of breed, open source Granite generative AI models to power your enterprise applications.

The model is the new platform.

Open Granite models

Highly performant, fully open source, collaboratively developed Granite language and code models from the community, fully supported & indemnified by Red Hat and IBM.

InstructLab model alignment

Scalable, cost-effective solution for enhancing LLM capabilities efficiently for a wide range of applications, making knowledge & skills contributions accessible to a wide range of users

Optimized bootable model runtime instances

Granite models & InstructLab tooling packaged as a bootable RHEL image, including Pytorch/runtime libraries, hardware optimized inference for Nvidia, Intel and AMD that can run anywhere and provides onramp to OpenShift AI for scale and lifecycle & watsonx for agent integration and governance.
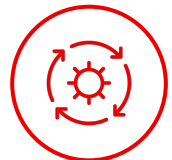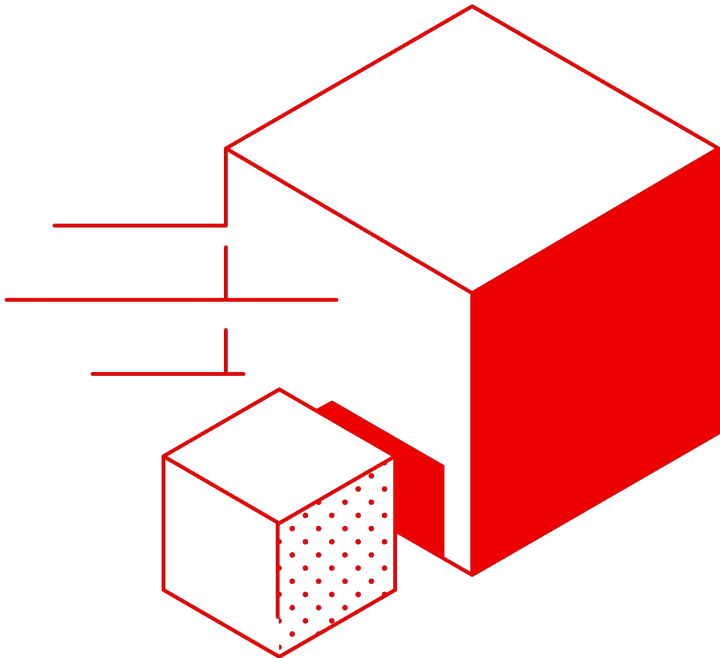
Enterprise support, lifecycle & indemnification

Trusted enterprise platform, 24x7 production support, extended model lifecycle and model IP indemnification

/Keep your options open   **Red Hat**

Image mode for Red Hat Enterprise Linux

Combining the power of RHEL with the benefits of containers

All RHEL users benefit from standardization
Simplify operating system (OS) portability across hybrid cloud environments

DevOps teams can reduce platform and application friction
Integrate the operating system into continuous integration and continuous delivery (CI/CD) and GitOps workflows

Security teams can make their jobs far less complex
Apply container security tools to the base elements of the operating system

Solution providers can more easily deliver offerings
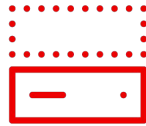Build, test, and distribute Red Hat Enterprise Linux-based applications more easily

Red Hat

Outcomes

What does image mode fix today?

Less risk

Reduce the risk associated with updates with atomic transactions and rollbacks

Better builds

Improve the composability and repeatability of standard builds through layering

Move faster

Increase the speed of experimentation

Streamline process

Simplify end to end management with a single process for OS and applications

Red Hat

Tech Preview

Introducing image mode for Red Hat Enterprise Linux

Combining the power of RHEL with the benefits of containers

App   App   RPM updates

Red Hat Enterprise Linux

App   App   image updates

Red Hat Enterprise Linux

App

UBI
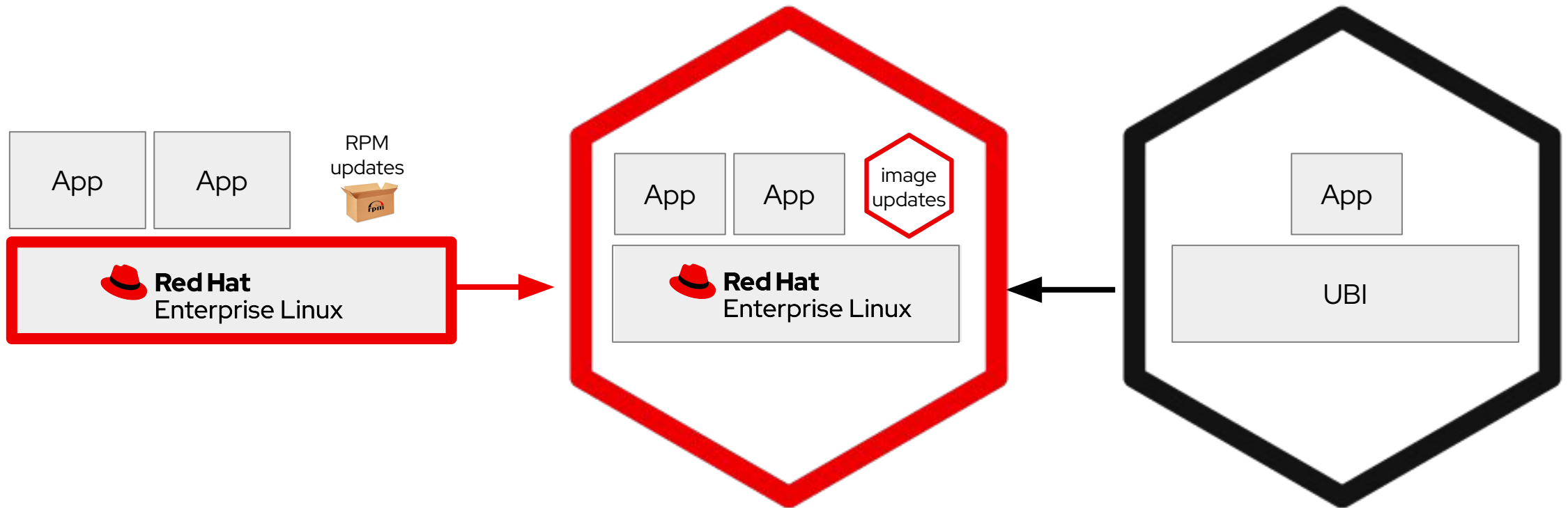
Package mode

Image mode

Application container

25

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Tech Preview

One RHEL, two modes

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

* On image mode roadmap

Red Hat

Image mode for Red Hat Enterprise Linux
Simple. Consistent. Anywhere.

Tech Preview

Build

Deploy

Manage

Containerfile

Container image

Container registry

Convert

Edge devices

Public clouds

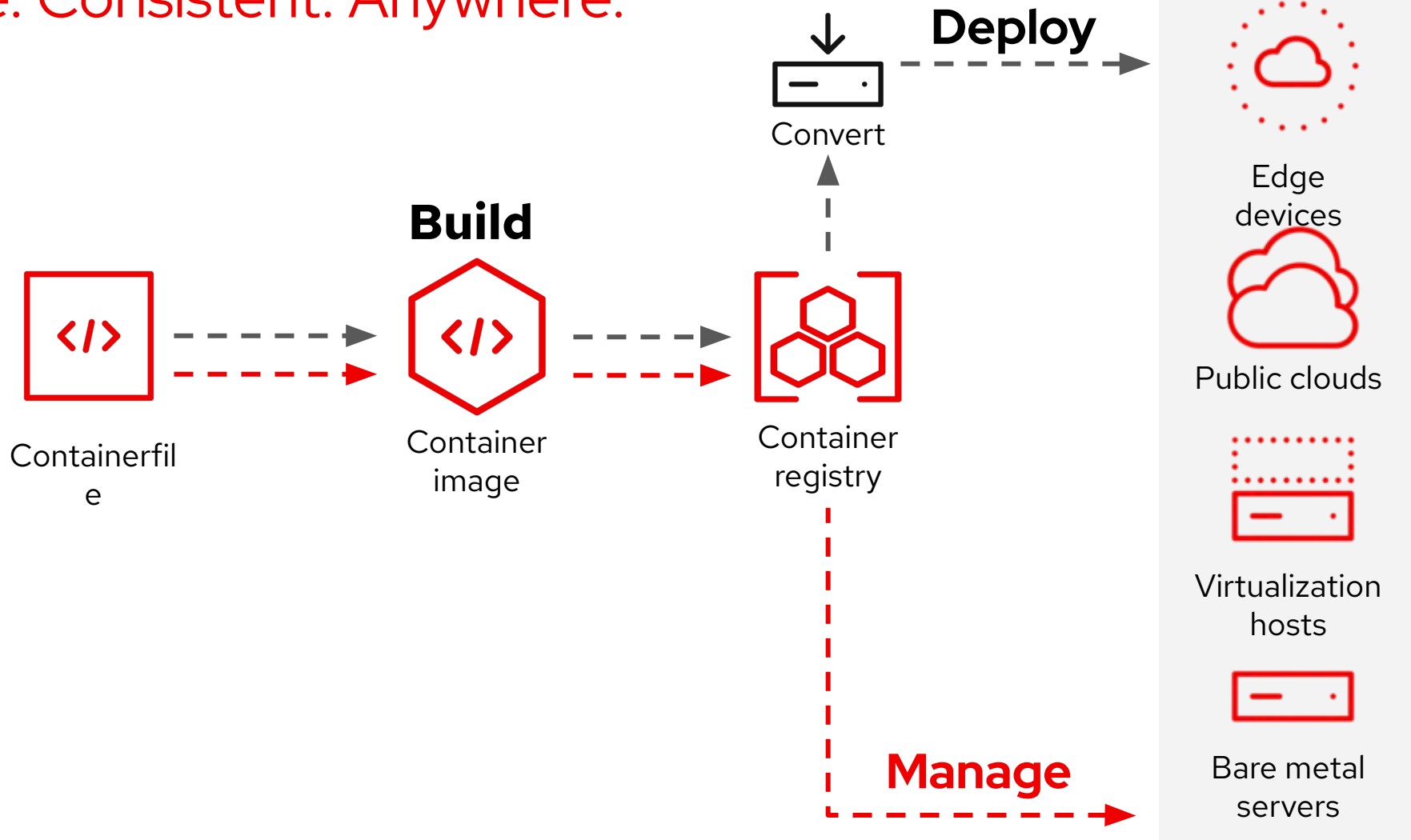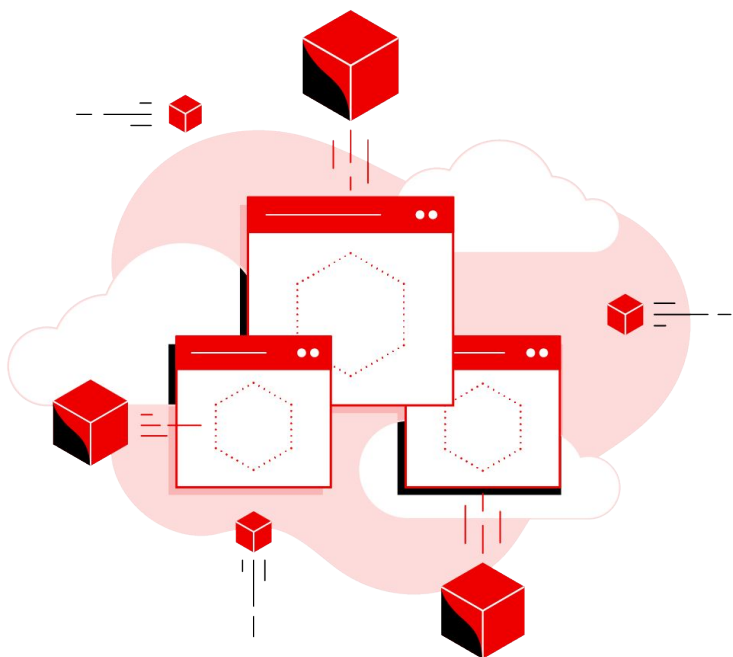Virtualization hosts

Bare metal servers

Image mode creates opportunities to think differently

- **All RHEL users** will benefit from standardization, simplicity and portability across all of their environments that span the hybrid clouds

- **DevOps teams** can easily plug RHEL into their CI/CD & GitOps workflows, easing the friction that exists between the platform and the application.

- **Security teams** can apply container security tools, from scanning and validation to cryptography and attestation to the base elements of the operating system, making their jobs far less complex.

- **Solution providers** will love how easy it is to build and distribute their offerings on the trusted RHEL platform

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 <u>and</u> 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

Try it yourself!

The whole demo shown in this session and other use cases are available in the following Github repository:

https://red.ht/rhel-image-mode-demo

Everybody is welcome to use it, fork and suggest improvements.

Red Hat

Useful resources

▸ <u>RHEL Image mode on Red Hat Developers</u>

  · https://developers.redhat.com/products/rhel-image-mode/overview

▸ <u>RHEL Image mode documentation</u>

  · https://docs.redhat.com/en/documentation/red_hat_enterprise_linux/9/html/usin
    g_image_mode_for_rhel_to_build_deploy_and_manage_operating_systems/index

▸ <u>RHEL Image mode quickstart on Red Hat Blog</u>

  · https://www.redhat.com/en/blog/image-mode-red-hat-enterprise-linux-quick-star
    t-guide

▸ <u>RHEL Image mode overview - YouTube</u>
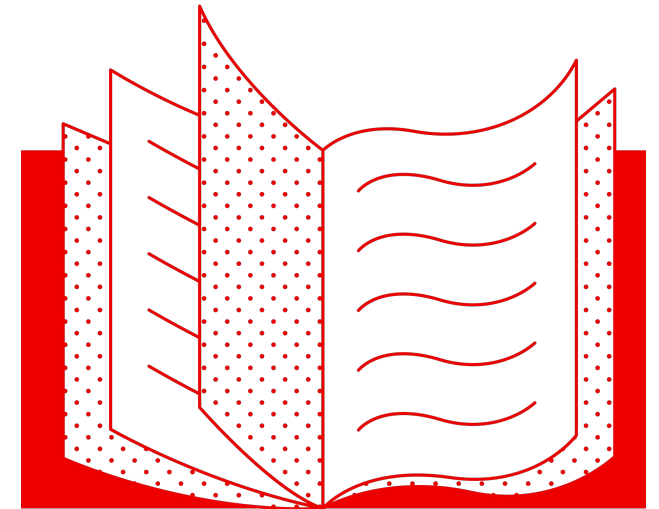
  · https://www.youtube.com/watch?v=QZDaTHyl1Sk

Cloud Marketplace Offering Availability & Future Releases

Offering	aws	Microsoft Azure *	Google Cloud	aws marketplace for the US Intelligence Community
RHEL	✔	✔	✔	✔ (1P only)
RHEL for Arm	✔	**Coming soon!**	–	✔ (1P only)
RHEL for SAP	✔	✔	**Q4'24**	–
RHEL for 3rd Party Linux Migrations	✔	✔	–	✔ (Subscription Private Offer)
RHEL 7 ELS	✔	✔	✔ (1P Offering)	✔ (Subscription Private Offer)
RHEL AI	**Q4'24**	**Q4'24**	**Q4'24**	–
OCP/OKE/OPP	✔	✔	✔	✔ (OCP only)
OCP/OKE/OPP for Arm	✔	**Q4'24**	–	–
Managed OpenShift (ROSA / ARO / OSD)	✔ (ROSA)	✔ (ARO)	✔ (OSD)	–
Ansible Automation Platform *(self-managed)*	✔ (Subscription only)	✔	✔	–
Ansible Automation Platform *(managed)*	**Q4'24**	✔ (No Azure for US Government)	–	–

'✔' = Available Today   '–' = TBD

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Cloud Marketplace Offering Availability & Roadmap

Offering	aws	Microsoft Azure *	Google Cloud	aws marketplace for the US Intelligence Community
OpenShift AI	✔	✔ (Subscription for ARO only)	–	–
RHACM	**Q4'24**	✔ (Subscription for ARO only)	–	–
RHACS	✔	✔ (Subscription for ARO only)	–	–
RHAF	✔ (Subscription only)	✔ (Subscription for ARO only)	–	–
Quay.io	✔	✘	✘	✘
OpenShift Developer Sandbox	✔	✔	✘	✘
JBoss EAP	✔	✔	–	–
RH Developer Hub	–	–	–	✘
RHLS	✔ (via Private Offer only)	✔ (Not transactable)	✘	–
RH Consulting: 3rd Party Linux Migration to RHEL Assessment	✔ (via Private Offer only)	✔ (Not transactable)	✘	–
RH Software Subscriptions	✔	✔ (RHEL, OpenShift, & OpenShift Add-ons on ARO only)	**Q4'24** (Ansible only)	**Q4'24**
RH Professional Services	✔ (via Private Offer only)	✘ (Not transactable)	✘	–

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* Private offers not supported for Microsoft Azure Government

Hyperscaler Committed Spend Programs & Drawdown

Hyperscaler	Name of Commitment Program	% Drawdown when buying Red Hat products directly from the hyperscaler	% Drawdown when buying Red Hat Software in the hyperscaler marketplace
aws	Enterprise Discount Program (**EDP**)	100%	100% (up to 25% of customer EDP) *(new contracts)* –or– 50% (with no EDP cap) *(legacy contracts)*
Microsoft Azure	Microsoft Azure Committed Contract (**MACC**)	100%	100%
Google Cloud	Committed Use Discount (**CUD**)	100%	100%