Red Hat

Solve business and IT challenges

with **Red Hat Enterprise Linux 10**

Contents

Introduction

Red Hat Enterprise Linux:
A journey through innovation

For more than 25 years, Red Hat® Enterprise Linux® has been a benchmark for enterprise innovation.

Early on, Red Hat Enterprise Linux smoothed the transition from Unix to Linux by providing a reliable, cost-effective alternative to traditional operating systems. This accelerated Linux adoption across industries as organizations moved away from proprietary platforms to open source solutions.

As cloud computing and virtualization transformed the IT landscape, Red Hat Enterprise Linux offered advanced support for dynamic, scalable workloads. With integrated cloud technologies and container solutions, Red Hat Enterprise Linux met the needs of modern applications and became a core technology for agile, cloud-native enterprises.

With the rapid expansion of artificial intelligence (AI), Red Hat Enterprise Linux provides a trusted, consistent foundation for innovative Red Hat AI solutions. Based on decades of expertise in system reliability, performance, and innovation, Red Hat Enterprise Linux continues to deliver robust infrastructure and advanced tools to help organizations remain competitive in fast-changing markets.

Now, new features and capabilities in Red Hat Enterprise Linux 10 can help you solve key business and IT challenges.

Read on to learn how Red Hat Enterprise Linux 10 can help you:

▸ **Address Linux skills gaps** with decades of knowledge and expertise from Red Hat.

▸ **Contain drift and accelerate delivery** with container tools and technologies.

▸ **Make better decisions at build time** when changes are easier and cost-effective.

▸ **Resist security attacks from hackers** as quantum computing evolves.

▸ **Deploy workloads in the cloud faster** with images preconfigured for performance

▸ **Put AI to work for your business, faster** with a trusted foundation and an extensive ecosystem of partners and tools.

Address Linux skills gaps

Linux remains a complex operating system.

As organizations increasingly rely on Linux for on-site infrastructure, public cloud resources, and edge deployments, the demand for skilled IT professionals continues to grow.

With widespread adoption of open source technologies, the need for in-depth Linux expertise is expanding beyond IT departments into areas like cybersecurity, cloud management, and DevOps, placing even greater pressure on the existing workforce.

However, due to an overall shortage of experienced professionals, hiring skilled system administrators and architects can be challenging for many organizations. The resulting competition for Linux skills and knowledge can make attracting and retaining experienced staff members difficult. Companies that depend on Linux for critical operations must offer highly competitive salaries and benefits, further intensifying recruitment challenges.
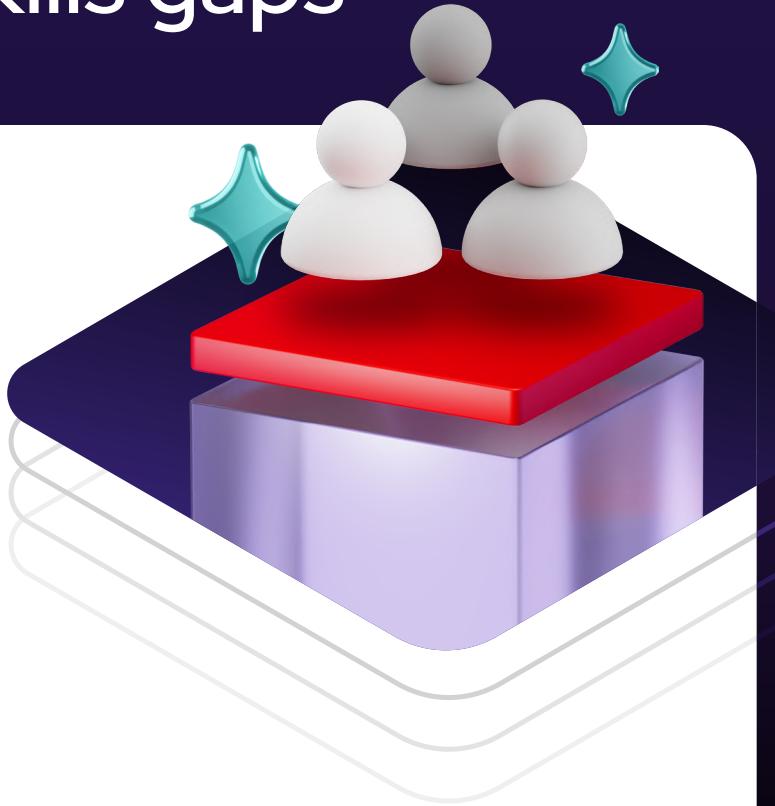
Additionally, many organizations struggle to allocate sufficient staff time and resources for training novice IT professionals. This often leads to higher workloads and potential burnout for existing experts, and hampers productivity and innovation. As Linux evolves to support modern applications and workloads, streamlined and rapid access to critical knowledge and information—including comprehensive documentation, user guides, and updates on **Common Vulnerabilities and Exposures (CVEs)**—is essential for maintaining efficient IT operations.
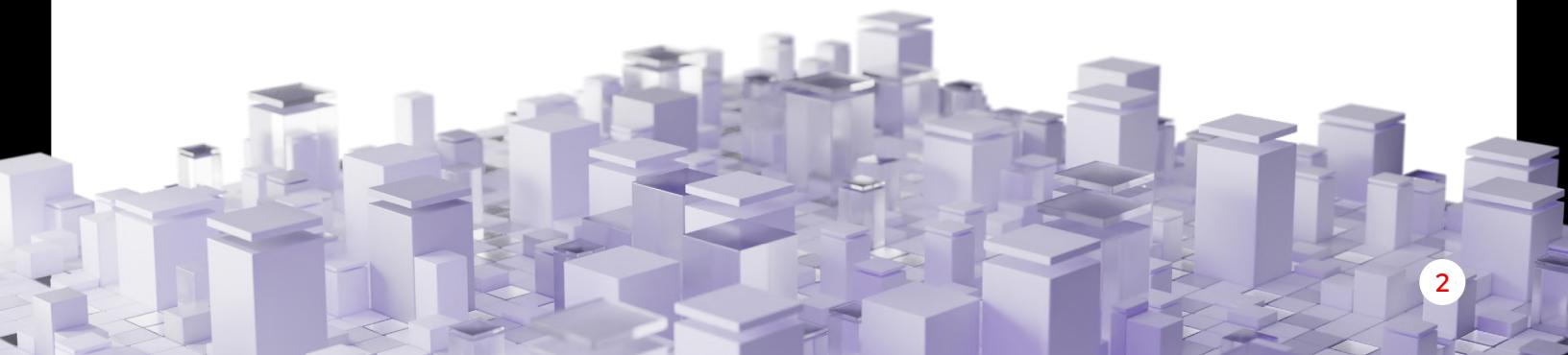
Access an improved user experience supported by AI

Red Hat Lightspeed incorporates decades of Red Hat's enterprise Linux expertise with generative AI (gen AI) technologies to inform both novice and experienced IT professionals and simplify how they build, deploy, and manage Red Hat Enterprise Linux across complex hybrid and multicloud environments. The new command line assistant in Red Hat Enterprise Linux 10 uses gen AI to rapidly deliver information—from resources like Red Hat Enterprise Linux documentation and knowledge base articles—directly to your terminal. You can interact with the command line assistant in plain language. Ask a question via the command line and

receive a natural language response. This user-friendly interaction helps you find critical information and solutions faster, so you can efficiently manage Red Hat Enterprise Linux across diverse environments. And with recommendations and actionable guidance from the command line assistant, you can troubleshoot issues in less time. As a result, novice team members can learn new Linux skills and be productive right away, while senior team members can deliver even more value in less time.

Learn more about the new command line assistant.

Check out the webpage

Contain drift and accelerate delivery

Operating system updates and patches are critical yet often difficult IT management tasks, requiring continuous attention and substantial resources.

For example, addressing CVEs is an extensive, reactive process that demands significant time from critical team members with no guarantee that a patch will resolve the issue without introducing new complications. Nevertheless, neglecting system updates and patches is not an option—doing so can leave systems vulnerable and exposed to potential threats.

Another challenge lies in balancing the conflicting priorities and risk tolerance of various stakeholders. Business leaders emphasize system stability and minimal disruption, while IT operations focus on security and compliance. At the same time, developers require a flexible environment—with support for the latest technologies—to build innovative applications. These competing priorities can further complicate IT management processes as organizations strive to deliver critical new services while maintaining operational continuity.

Inconsistent server configurations can hinder update processes, often requiring tailored approaches that contribute to technical debt and impede future management efforts. Rapid identification, remediation, and verification of vulnerabilities are crucial; any delay or inconsistency can expose critical operations to risk. Agile and straightforward update and patch management processes and technologies are essential for safeguarding system integrity and ensuring business continuity.
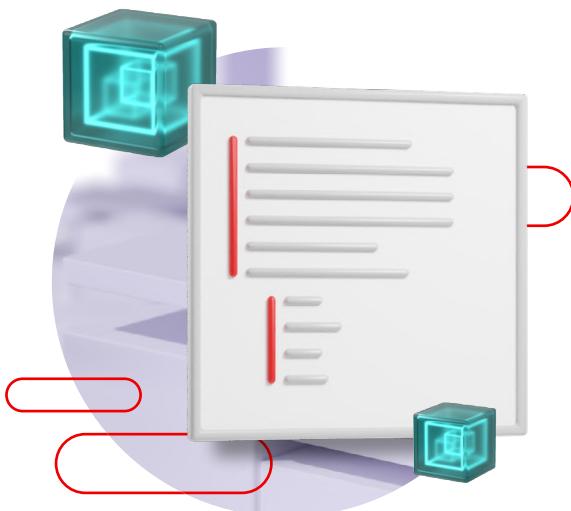
Build and manage consistent systems using a container-native approach

Image mode for Red Hat Enterprise Linux introduces a new, container-native way to build, deploy, and manage your operating system consistently and efficiently across hybrid cloud environments. With container-native technologies and approaches, you can encapsulate runtimes, drivers, and dependencies into a single, comprehensive image, and then deploy that image across your hybrid cloud environment. By delivering unified updates consistently across your IT infrastructure, you can reduce configuration drift and inconsistencies while increasing stability for your critical workloads.

When a CVE affects your systems, image mode for Red Hat Enterprise Linux can help you mitigate or resolve the issue across your entire environment in less time. After identifying a fix for the vulnerability, you can implement it in a new container image and share the image with key stakeholders—including development, quality assurance, and security teams—for review, testing, and validation. After verifying the fix, you can publish the container image to the registry for efficient, automated distribution to all of your systems.

Find out how image mode for Red Hat Enterprise Linux can help your organization contain drift and speed delivery.

Read the webpage

Try image mode yourself

Access the **Introduction to image mode for Red Hat Enterprise Linux lab** to get started.
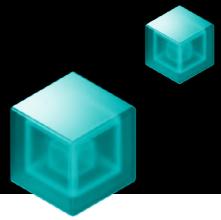
With image mode for Red Hat Enterprise Linux, development and operations teams work with a consistent set of tools, reducing the need for separate processes and toolsets to manage different environments. You can use container-native methodologies like **GitOps** and **continuous integration/ continuous delivery (CI/CD)** to manage Red Hat Enterprise Linux workloads. Automated updates, version control, rollbacks, and continuous improvement workflows can reduce manual intervention and the risk of errors, helping you focus on innovative projects rather than ongoing management tasks.

Make better decisions at build time

When building your software infrastructure, making informed decisions early in the process is critical.

The time and resources required to fix problems in production can be substantial, with consequences for both IT operations and business continuity.

The complexity of modern IT environments means that even small choices can have long-term consequences. Early, deliberate decisions can help you avoid high remediation expenses and operational disruptions caused by addressing issues after deployment.

However, comprehensive planning also requires extensive time and effort. IT professionals must analyze multiple sources

ogs—to
ctices.

This information is often fragmented across different platforms, so teams must find, interpret, and piece together relevant details.

Adding to this challenge, technology evolves rapidly, with new updates, security vulnerabilities, and compliance requirements emerging daily. Teams must continuously evaluate shifting technical landscapes while balancing competing priorities, including security, performance, and integration with existing systems.

With this large volume of data and the speed of change, it can be difficult to make fully informed choices before deployment. As a result, IT teams are often under pressure to make decisions with incomplete or outdated information, increasing the risk of costly rework in production.

Access key information and recommendations at the right stage in the process

You can now access proactive package recommendations with **image builder powered by Red Hat Lightspeed** (formerly Red Hat Insights). As you **build images** using **console.redhat.com**, this new capability proactively scans your package selections and provides relevant lifecycle information and package recommendations based on your selections. These recommendations can help you make more informed decisions at build time, when it is often easier and more cost-effective to make changes.

Planning for Red Hat Enterprise Linux, powered by Red Hat Lightspeed, provides visibility into future versions of Red Hat Enterprise Linux, allowing you to see upcoming changes—including new and deprecated features—well in advance. This tailored roadmap capability is customized to your specific Red Hat Enterprise Linux deployment, giving you a detailed view of how future updates will affect your environment. Architects and system administrators can generate reports to assess the effect on systems registered to Red Hat to support more informed planning and streamlined operations.

If you prefer to use image mode for Red Hat Enterprise Linux to build new systems, deploying prehardened images can significantly reduce the time required for many administration tasks. By implementing guardrails during the build phase, you can ensure that security and compliance measures are integrated from the start and deploy systems with greater confidence and efficiency.

Security-focused build systems and automatic generation of software bill of material (SBOM) artifacts can help you strengthen your supply chain processes. Producing runtime SBOMs can not only increase visibility into software components but also enhance security measures and ensure regulatory compliance. This integrated approach streamlines audits and reinforcing a pro s your softw

Discover how Red Hat Lightspeed can help you save IT management time, effort, and costs.

Read the webpage

Resist security attacks from hackers

Effective IT security demands innovative thinking and proactive strategies.

A prominent concern is the effect of quantum computing on current encryption methods.

As quantum technologies advance, these systems may be able to break widely used encryption schemes in seconds, rendering established cryptographic standards obsolete. This emerging threat raises questions about the long-term viability of many current technologies and the need for new **post-quantum cryptography** standards.

Government agencies and organizations relying on Linux-based applications face strict compliance demands. Achieving **Federal Information Processing Standards (FIPS)** compliance is a lengthy, resource-intensive process due to its stringent security criteria. As cyber threats evolve and regulatory requirements change, agencies must deliver security-focused, compliant systems without compromising operational efficiency.

The rapid expansion of artificial intelligence introduces further complexity to IT security. Many AI workloads access highly confidential data, making it more difficult to maintain privacy, security, and compliance during the entire AI application lifecycle. Organizations must develop strategies that safeguard AI-based applications and ensure data protection, as any security lapse could result in substantial financial and reputational damage.

Boost protection with security features that make the most of current innovations

Red Hat Enterprise Linux 10 includes a suite of advanced security features to address today's complex threat landscape while preparing for the future. New quantum-resistant algorithms will help protect your critical data and workloads.

To support more secure key exchange, encryption, and signing, Red Hat Enterprise Linux 10 includes the first installment of post-quantum cryptography algorithms:

▸ **OpenSSL**

▸ **FIPS 203:** Module-Lattice-Based Key-Encapsulation Mechanism (ML-KEM)

▸ **FIPS 204:** Module-Lattice-Based Digital Signature Standard (ML-DSA)

These algorithms can help you improve your security and meet future compliance mandates. With the release of these new capabilities, Red Hat begins a multiyear strategy to replace current cryptographic technologies with more secure, quantum-resistant alternatives.

Learn about our approach to post-quantum cryptography.

Read the webpage

An enhanced, approved FIPS module in Red Hat Enterprise Linux 10 streamlines the journey toward achieving FIPS compliance. This module simplifies the process of deploying FIPS-compliant applications across infrastructure—including containers, virtual machines, and physical servers. Government agencies and other regulated organizations can more rapidly and reliably increase application security to meet strict certification requirements. This new approach not only reduces the time and effort needed for certification but also ensures that certifications remain valid for longer periods, lowering the overall cost and complexity of compliance.

With expanded support for confidential computing, Red Hat Enterprise Linux 10 helps you use advanced AI models while protecting your sensitive data. You can run AI workloads in an environment that enforces a zero-trust model—safeguarding both the server infrastructure and the applications running on it. By ensuring that confidential information is accessed and processed in a security-focused manner, you can maintain data integrity and meet rigorous compliance standards while delivering innovative AI solutions.

Deploying workloads in the cloud faster

The promise of cloud is agility, scalability, and cost-optimization, yet it often feels like a struggle with complexity and inconsistency.

Migrating workloads to a cloud environment is often accompanied by an immense pressure to accelerate innovation, and every decision-maker matters. From deciding which cloud solution, and whether to migrate existing or purchase new images from the marketplace to configuring your workload, have a bearing on the end result.

With thousands of cloud service providers out there, the vast majority of cloud computing is done on a handful of the largest operators, referred to as the hyperscalers, each of which have their own unique way of handling configurations. Setting up new workloads requires adapting to the cloud provider's specific nuances. This means deciphering their unique command-line interfaces, learning distinct networking and storage configurations, extending your security and compliance policies, and figuring out how your current monitoring and management tools integrate, if at all.

Administrators can get mired in details, spending countless hours on repetitive, manual configurations, and time that could be spent moving the business forward. They need to account for the subtle differences in how each instance behaves on a specific cloud, and all of this can significantly slow down their ability to deliver new features or applications.

Choose a cloud-optimized Linux to move faster and operate more efficiently in any c

Pursuing cloud innovation is essential for modern enterprises that are pressed to improve performance with no additional resources. Red Hat Enterprise Linux simplifies the hybrid cloud journey with cloud-optimized offerings that combine a trusted and security-focused enterprise Linux OS with deep, built-in integrations for the top hyperscalers—Amazon Web Services (AWS), Microsoft Azure, and Google Cloud. These offerings provide a consistent, trusted, and safe foundation for your workloads, allowing you to focus on initiatives that move your business forward, rather than spending time on operational functions.

Red Hat Enterprise Linux cloud editions provide a ready-to-run image to simplify building applications in a cloud environment. The Red Hat Enterprise Linux image is well integrated with each cloud provider and comes preconfigured for performance, saving your team valuable time. Instead of spending hours on manual configuration, your team can

get straigh   ed Hat E..   ise Linux includes c   built-i   gement tools, like Cloud Command Line Interfaces (CLIs) that are preconfigured and ready to use, allowing you to speed operations and interact with cloud services directly from the Red Hat Enterprise Linux host.

Image mode for Red Hat Enterprise Linux extends this benefit by using its container-native way of building and managing your operating system. You can encapsulate runtimes and dependencies into a single, comprehensive image and then deploy that exact same image across your hybrid cloud environment. This consistency helps you minimize infrastructure drift and the technical debt that comes from managing inconsistent server configurations.

You can readily view your Red Hat Enterprise Linux assets the same way you view the other resources in your cloud environment. Red Hat Enterprise Linux is integrated with each cloud provider's native observability and monitoring services such as, Amazon CloudWatch, Azure Monitor, and Google Cloud Observability. The cloud-optimized platform comes with telemetry automatically deployed, requiring no additional setup. This simplifies management and monitoring to give you a unified view of your Red Hat Enterprise Linux instances alongside your other cloud resources and applications.

Move faster and operate more efficiently in the cloud.

Read the webpage
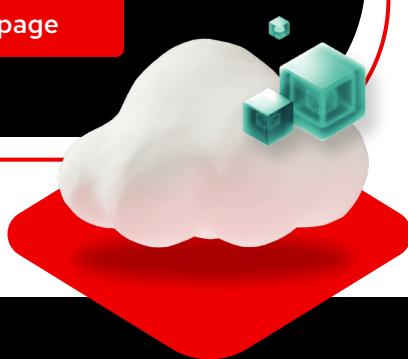
Put AI to work for your business, faster

AI is reshaping industries and transforming how businesses operate, make decisions, and deliver value.

In fact, half of organizations with 5,000+ employees believe that gen AI is already disrupting their business, and 80% of all organizations believe it will do so in the next 18 months.[1] However, successfully building, deploying, and managing AI workloads requires more than just advanced AI algorithms.

For many organizations, the journey to full-scale AI deployment comes with significant challenges. Efficient AI workload management requires substantial compute resources, including modern hardware acceleration, continuous monitoring capabilities, and comprehensive governance. Your chosen

model approach—whether fine-tuning foundation models or building new ones—impacts how effectively you can use your data to create innovative predictive and gen AI solutions. Plus, ensuring that AI training data and storage comply with security, regulatory, and industry standards is essential to avoid legal and operational risks.

Organizations need a reliable, scalable platform to speed application development while simplifying operations, regardless of whether they're running in private datacenters, public cloud environments, or edge deployments.

1   IDC eBook. "Are You Ready for AI Everywhere?" 2024.

12

Build your AI initiatives on the trusted foundation of Red Hat Enterprise Linux

Red Hat Enterprise Linux continues to be the trusted operating system for enterprise IT environments, with optimized performance, comprehensive security features, and integration with a wide range of hardware, tools, and models. With its reliability, scalability, and extensive ecosystem of partner products and services, Red Hat Enterprise Linux forms an ideal foundation for the Red Hat AI portfolio of solutions, including Red Hat Enterprise Linux AI and Red Hat OpenShift® AI.

Our new Partner Validation program further extends our ecosystem of hardware, software, and service partnerships to speed time to market for AI solutions. And a new extensions repository in Red Hat Enterprise Linux gives you access to the latest Red Hat-trusted, community-supported content. This content is supplied via our security-focused software supply chain to increase confidence and help you use innovation in a safer and more controlled manner.

Red Hat Enterprise Linux 10 also provides foundational capabilities to support current and future versions of the Red Hat AI portfolio:

▸ **Red Hat Enterprise Linux AI is purpose-built** using image mode for Red Hat Enterprise Linux for streamlined deployment and updates using optimized container images.

▸ **Support for integration with PostgreSQL** vector databases offers improved accuracy for future gen AI capabilities.

▸ **Confidential computing capabilities** help AI models use organizational data in more secure, isolated ways to maintain compliance and protect data in use.

Part of the Red Hat Enterprise Linux mission is to help IT administrators and developers spend more time on innovation and rewarding initiatives and less time on repetitive, error-prone tasks. AI will be a key technology in this new period of progress, and Red Hat Enterprise Linux will continue to be a stable, trusted, and security-focused foundation for AI innovation.

Learn how Red Hat AI speeds time to market and lowers cost of delivering AI across hybrid environments.

[Check out the portfolio]

Upgrade to
Red Hat Enterprise Linux 10

Deploy a trusted foundation for innovation.

Red Hat Enterprise Linux 10 delivers bold innovation and new ways of thinking to tackle today's toughest challenges. Not only does it help you bridge Linux skills gaps, improve build-time decisions, reduce drift, and defend against emerging threats from quantum computing, Red Hat Enterprise Linux 10 is also a trusted foundation for AI innovation, supported by an extensive ecosystem of proven partners and technologies.

Red Hat Enterprise Linux 10 is here.
Because innovation can't wait.

Learn more and upgrade