Red Hat
Enterprise Linux

Boost security, flexibility, and scale at the edge with Red Hat Enterprise Linux

See what's inside

Advance your business at the edge

Data is at the core of modern business operations. Organizations need to process and respond to large amounts of data to inform business decisions, boost efficiency, reduce costs, improve security, and increase customer satisfaction. To accomplish this, many businesses are moving beyond the bounds of their datacenters to decentralized computing at the edge. Edge deployments can provide faster insights for decision-making, increase data security, and reduce data transfer and collection costs.

What is edge computing?

Edge computing shifts compute processes from the datacenter to intelligent endpoints at remote locations, while continuing to centralize resources when possible. Computations are performed closer to the point of data generation to rapidly deliver actionable insights based on time-sensitive data.

Common edge deployment challenges and requirements

Scalability

Edge deployments require thousands of devices to be managed across locations with limited IT staff. Organizations require centralized tools and processes to efficiently manage all devices, servers, and clusters.

Interoperability

No single vendor can build an entire edge stack. Organizations need interoperable solution components that work across diverse hardware and software environments.

Consistency

Edge sites must be managed, updated, and secured just as datacenter assets are. Organizations require consistency across their entire environment to apply efficient, standardized platforms and processes.

Security

Edge deployments require both physical and digital security to protect your data and business. Organizations need a layered, defense-in-depth security approach that takes advantage of the capabilities of each layer in their environment, from physical hardware to applications, as well as the development and operations processes in between.

Edge deployments are growing

Organizations are deploying an increasing number of compute resources at the edge to support modern business requirements.

70%
of enterprises will run some amount of data processing at the edge by 2023.[1]

50%
of new enterprise IT infrastructure will be deployed at the edge by 2023.[1]

There will be an
800%
increase in the number of applications deployed at the edge by 2024.[1]

1 IDC. "Edge Definitions and Market Trends." DOC #US46759020. August 2020.

Extend your datacenter capabilities to the edge with confidence

The right operating system can help you overcome edge deployment challenges by delivering the stability, security, and flexibility to process large volumes of data at scale across environments and locations. The ideal operating system will provide a consistent operational layer on top of inconsistent hardware and software at the edge.

Red Hat® Enterprise Linux® is a consistent, flexible, and security-focused foundation that maximizes the performance, manageability, and stability of your edge deployment. It brings dependability to your edge deployments with an interoperable layer for varied edge devices, allowing you to optimize your existing edge investments and reduce operational risk.

Red Hat Enterprise Linux also helps you extend the scalability, reliability, and security of your datacenter to the edge. It delivers a unified platform across your entire environment, so you can use the same technology, processes, and skills in both your datacenter and at the edge. Update methods, ecosystem certifications, and product life cycles are all the same, simplifying your deployments, operations, and workload portability.

Build on a consistent foundation

Red Hat Enterprise Linux is the foundation of the Red Hat portfolio. Standardize from datacenter to edge using integrated, innovative technologies – including **container orchestration** and **registries**, **automation**, **management**, **middleware**, and **storage**. Customize your environment using **certified partner products**. Red Hat Enterprise Linux helps you optimize your entire IT infrastructure and adapt more easily to change.

Learn more

Optimize your edge investments with a long-term life cycle

Edge deployments often use physical devices with long life spans that may not align with the life cycles of the software they run. Choosing technologies that decouple your hardware and software life cycles can help you optimize the value of your edge investments. Red Hat Enterprise Linux lets you plan updates and upgrades more effectively with **predictable, long-term life cycles**.

Learn more

Maximize your value with a Red Hat subscription

Red Hat subscriptions deliver much more than **award-winning support**. They give you what you need to put technology to work in complex environments, including tested software, added security, and flexibility throughout your subscription. They also empower your business with access to resources and tools and advocacy for your needs in upstream communities and industry groups.

Learn more

Take advantage of edge-specific features

Red Hat Enterprise Linux delivers key features and benefits for edge deployments.

Rapid system image generation

Image builder, a tool included with Red Hat Enterprise Linux, includes everything needed to run edge workloads across varying systems. Using image builder, you can create edge-optimized operating system images that share a common foundation. As a result, you can keep your edge deployment more consistent, scalable, secure, and compliant.

Edge management

Red Hat Enteprise Linux's management capability helps you manage and scale deployments at the edge. Zero-touch provisioning, system health visibility, and quick security remediations are all controlled from a single interface. Preserve your edge system's integrity at every stage of its life.

Remote device update monitoring

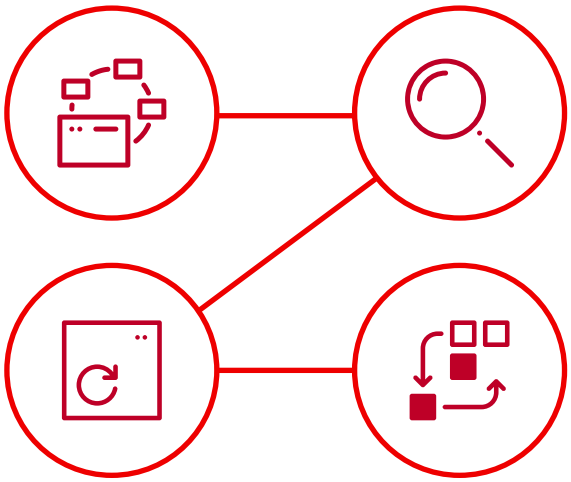
Red Hat Enterprise Linux stages operating system image updates for edge devices in the background. This remote device update mirroring installs updates either during scheduled downtime or when device owners choose to apply them. This approach scales effectively across thousands of edge devices and improves workload resiliency.

Efficient over-the-air (OTA) updates

Edge systems that use **Red Hat Enterprise Linux with rpm-ostree** can receive delta updates, data-reducing packages that include only updated information, rather than the entire operating system. This approach reserves network resources for applications and increases the reliability of edge systems with poor bandwidth and intermittent connectivity.

Intelligent rollbacks

Red Hat Enterprise Linux lets you create custom health checks using the greenboot framework that runs during startup. You can monitor applications, services, and programs to make sure they are running as expected across all edge devices. If a health check fails, the system automatically reverts to the previous state, improving resiliency and minimizing manual recovery efforts.



Use case examples

Edge delivers benefits across industries

Nearly every industry can benefit from edge deployment. Edge is particularly useful for situations involving compute-intensive workloads, data aggregation and storage, artificial intelligence and machine learning (AI/ML), cross-region operations, latency-sensitive calculations, and real-time monitoring.

Improve latency and response times.

Moving data processing to the edge can deliver faster outcomes for use cases that require real-time decisions based on data collected at the edge

Red Hat Enterprise Linux delivers performance and reliability for time-sensitive operations. Tuning profiles and real-time kernel options let you optimize device performance while operational stability minimizes on-site maintenance requirements.

Industry examples

- Automotive AI/ML deployment
- 5G communications
- Crime prevention

Modernize and connect analog and digital assets.

Deploying a modern, digital edge infrastructure can connect analog devices with software and applications to deliver comprehensive analysis and insight.

Red Hat Enterprise Linux provides long-term life-cycle options, so you can standardize on a major release for up to 10 years. Built-in security and compliance capabilities help protect your edge environment and data without hindering operations.

Industry examples

- Predictive industrial maintenance
- Oil rig diagnostics
- Manufacturing robotics diagnostics

Deploy real-time computer vision.

Computer vision collects, analyzes, and applies AI/ML models to photographic and video data. The results can be used to respond immediately to a variety of situations.

Red Hat Enterprise Linux can ingest real-time data and run AI/ML models at the edge. A broad ecosystem of data tools, databases, and storage technologies allows you to deploy an AI/ML framework from core to edge.

Industry examples

- Manufacturing worker safety
- Retail theft detection
- Manufacturing quality control

Unify and manage distributed Infrastructure.

Creating a consistent foundation across your entire environment unifies and simplifies operations and maintenance of remote resources and distributed IT infrastructure.

Red Hat Enterprise Linux delivers a consistent user experience from core to edge. This consistency lets you run both traditional and cloud-native applications where it makes the most sense now and move them across your environment as needs change.

Industry examples

- Retail store infrastructure
- Remote office locations
- Distributed command operations

Smart cities combine all of these use cases. Traffic management strategies can use low-latency processing and computer vision to optimize traffic patterns. Connected analog sensors can detect emergency response vehicles to improve routing. Distributed architecture can deliver real-time information about public transit, traffic, and critical news to residents via mobile and web applications.

Ready to get started with edge?

Edge computing can help you gain faster insights, increase data security, and reduce data transfer costs. Red Hat Enterprise Linux provides a consistent operational layer on top of inconsistent hardware and software, so you can extend your datacenter operations to the edge with confidence.

Learn how your business can benefit from edge computing:
red.ht/rhel-for-edge

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