# Red Hat Enterprise Linux

# Expand your HPC cluster with Red Hat and Microsoft

## Adopt a consistent foundation for HPC

Red Hat Enterprise Linux helps you create a more reliable, efficient HPC cluster across hybrid cloud environments with these key features:

▶ Management tools

▶ Built-in security features

▶ Image builder tool

▶ Certified ecosystem

▶ Production-grade lifecycle

Try Red Hat Enterprise Linux for HPC on Azure Marketplace.

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### Migrate your HPC cluster to a hybrid cloud environment

High-performance computing (HPC) uses parallel processing and advanced algorithms to handle demanding workloads and massive datasets in areas like AI, scientific research, and data analysis. Traditionally, HPC clusters relied upon on-site datacenters—often with specialized hardware and storage—to meet performance, reliability, and data throughput requirements. However, as the flexibility, scalability, and cost-effectiveness of public cloud infrastructure increases, many organizations are migrating their HPC clusters to hybrid cloud environments that use both on-site and public cloud resources.

Public cloud platforms offer almost limitless compute resources on demand. This lets organizations rapidly and efficiently scale infrastructure to adapt to workload-specific needs without incurring the capital and maintenance costs of physical infrastructure. And because data and systems are accessible from anywhere, hybrid cloud based HPC clusters help teams simplify collaboration across diverse locations.

Red Hat provides a trusted, consistent, security-focused foundation that delivers performance, scalability, and flexibility for HPC workloads across modern hybrid cloud environments.

### Deploy a consistent foundation across your HPC cluster

Red Hat® Enterprise Linux® helps you create a more reliable, efficient HPC cluster across on-site datacenters and Microsoft Azure cloud environments. Red Hat Enterprise Linux for HPC in the cloud includes content, scripts, tools, and automation—provided as Red Hat Enterprise Linux system roles—to help you efficiently deploy and manage HPC workloads on Azure infrastructure in less time. With a consistent HPC cluster across private and public resources, you can streamline operations, enhance workload portability, and simplify management of critical infrastructure.

Red Hat Enterprise Linux delivers key capabilities for hybrid cloud based HPC clusters. Advanced management tools help you optimize resource use and performance over a diverse set of hardware and software to provide a streamlined user experience from development through production. Built-in security features defend against threats and help you stay in compliance with regulatory requirements. With the image builder tool, you can create optimized operating system images to deploy workloads across hybrid cloud environments in a repeatable, consistent manner. A certified ecosystem lets you choose your preferred vendors, products, clouds, and open source projects knowing that they will run reliably and efficiently with Red Hat Enterprise Linux. And with a production-grade lifecycle that includes security updates, bug fixes, and feature enhancements, you can operate with confidence and ensure uptime.

Red Hat Enterprise Linux for HPC on Azure provides simplified build and deployment capabilities and streamlined purchasing. Developed in collaboration with Microsoft, the offering includes a Red Hat Enterprise Linux image with a preselected set of installed software, tools, and configurations that speeds deployment and performance optimization of HPC workloads running on Azure. This image also

features an embedded system role for installing additional HPC-specific libraries, drivers, and tools in an automated manner. Simplified purchasing through the Azure Marketplace lets you buy a single item, with a single price, in a self-service manner.

## Speed innovation with Red Hat Enterprise Linux for HPC in the cloud

Red Hat Enterprise Linux provides a reliable and adaptable platform for HPC workloads across diverse industries, supporting complex simulations, massive datasets, and advanced analytics.

Automotive companies use HPC to model vehicle dynamics, run crash simulations, and optimize fuel efficiency. Red Hat Enterprise Linux provides the stability, performance, and scalability to manage these simulations in hybrid cloud environments, allowing engineers to analyze vehicle designs, test safety features, and conduct virtual tests in less time and with lower development costs.

In semiconductor manufacturing, circuit simulations require significant compute resources to ensure accuracy and reliability. Red Hat Enterprise Linux allows engineers to test designs across millions of scenarios and optimize circuits for performance and power consumption. Teams can run simultaneous simulations to shorten design cycles and meet time-sensitive production timelines.

Defense organizations use HPC to process massive datasets, analyze real-time intelligence, and run simulations critical for mission planning and strategic decision making. Hybrid cloud based HPC clusters allow teams to scale their computational capabilities on demand and meet data processing requirements while maintaining stringent security standards.

Accurate weather prediction requires vast amounts of data and complex modeling. Red Hat Enterprise Linux allows meteorologists to process real-time data and enhance forecasting accuracy. With scalable cloud resources, weather agencies can improve model precision, forecast extreme weather events more effectively, and provide timely information that helps protect communities and industries alike.

## Learn more

Red Hat Enterprise Linux for HPC in the cloud provides a trusted, consistent, security-focused platform for meeting the high demands of modern HPC workloads across hybrid cloud environments.

Try this Red Hat partner cloud solution.

**About Red Hat**

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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