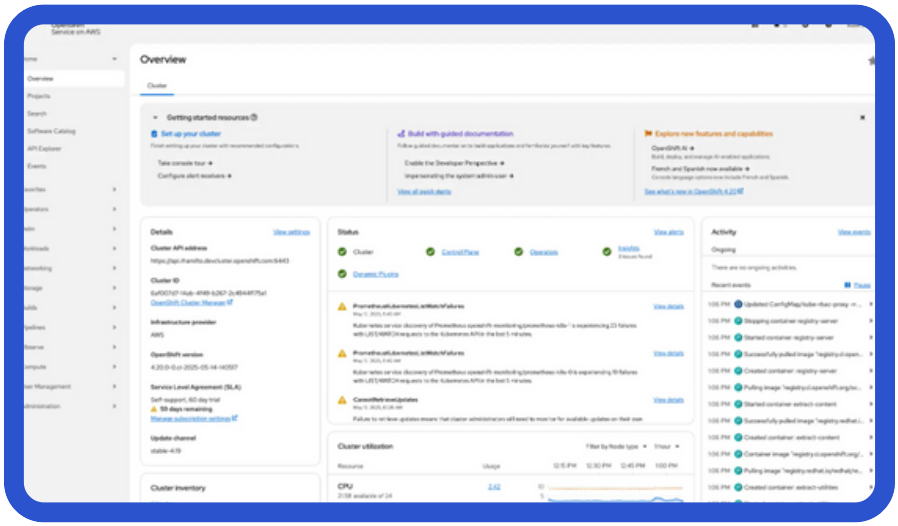
Red Hat OpenShift



Unified Application Platform: Standardize on a single platform for both traditional and cloud-native applications, including virtual machines and AI workloads, reducing complexity and costs.
Accelerated AI/ML Initiatives: Optimize resource utilization and streamline the MLOps pipeline with enhanced GPU management and intelligent job scheduling.
Enhanced Operational Efficiency: Automate Day 2 operations, simplify cluster management, and accelerate development cycles, freeing up valuable IT resources.
Robust Security & Compliance: Leverage enterprise-grade security features, comprehensive visibility, and simplified compliance for your entire application landscape.
Seamless Hybrid Cloud Experience: Deploy and manage applications consistently across on-premises, public clouds, and edge environments, ensuring portability and reducing vendor lock-in.

Red Hat OpenShift 4.19
Product Card

Turtini is focused on making Red Hat implementations successful for operators and decision makers

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Components

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Red Hat OpenShift 4.19 is a leading enterprise Kubernetes platform that integrates all the services needed to manage applications at scale. Built on the trusted foundation of Red Hat Enterprise Linux CoreOS (RHCOS) and Kubernetes 1.32, OpenShift provides a consistent platform for developers to innovate and for operations teams to maintain stability and security.

- **Kubernetes 1.32 & CRI-O 1.32**: The latest stable versions of core container orchestration and runtime for enhanced performance, stability, and new features.
- **Red Hat OpenShift Virtualization**: Run and manage traditional virtual machines alongside containers on the same Kubernetes platform, leveraging OpenShift's operational benefits for your existing VM estate. (Now available on more public clouds like Azure Red Hat OpenShift and OCI, with Storage Live Migration - Tech Preview).
- **OpenShift Service Mesh 3 (with Gateway API GA)**: Provides a robust way to control traffic, load balance, and manage TLS termination for modern microservices architectures, now with Generally Available support for the Kubernetes Gateway API.
- **OpenShift Lightspeed (Generative AI Assistant)**: An integrated, AI-powered virtual assistant in the OpenShift console and CLI that helps administrators and developers with context-aware troubleshooting, documentation, and operational insights.
- **Dynamic Accelerator Slicer (DAS - Technology Preview)**: Optimizes GPU utilization by dynamically slicing GPUs based on workload requirements, reducing waste and cost for AI/ML workloads.
- **Kueue Job Queueing**: A Kubernetes-native job queueing system that intelligently schedules and prioritizes AI and batch workloads, ensuring fair resource distribution and efficient utilization.
- **Operator Framework**: Automates the lifecycle management of complex applications and services on OpenShift, simplifying deployment, scaling, and updates.

Benefits for Developers & Operations Teams

Accelerated Development: Modern toolchains, self-service capabilities, and AI assistance streamline application creation and deployment.

Unified Operations: Manage containers and VMs from a single control plane, reducing operational overhead and complexity.

Simplified Troubleshooting: Self-healing capabilities, automated updates, and robust monitoring ensure application uptime. AI-powered assistance and improved observability tools make diagnosing and resolving issues faster.

Secure by Design: Built-in security features and compliance tooling.

Use Cases

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Modernizing Traditional Applications:

- **Use:** Containerize existing monolithic applications and run them on OpenShift. Utilize OpenShift Virtualization to run legacy VMs alongside new containerized apps for a phased modernization approach.
- **Benefit:** Extend the life of existing investments, improve agility for traditional apps, and simplify the path to cloud-native.

Accelerating AI/Machine Learning (MLOps):

- **Use:** Provide a scalable and efficient platform for building, training, and deploying AI/ML models. Leverage dynamic GPU slicing and Kueue for optimized resource allocation.
- **Benefit:** Faster iteration cycles for AI development, maximized utilization of expensive GPU resources, and streamlined model deployment.

Building Cloud-Native Applications:

- **Use:** Develop and deploy new microservices, serverless functions, and event-driven architectures with integrated tools for CI/CD, GitOps, and service mesh.
- **Benefit:** Rapid innovation, improved scalability, and resilient application architectures.

Hybrid & Multi-Cloud Deployments:

- **Use:** Deploy OpenShift clusters consistently across on-premises infrastructure, private clouds, and major public clouds (AWS, Azure, Google Cloud, IBM Cloud).
- **Benefit:** Workload portability, avoid vendor lock-in, and leverage best-of-breed services from multiple cloud providers.

Edge Computing:

- **Use:** Extend OpenShift's capabilities to edge locations with a smaller footprint and centralized management for distributed applications and IoT.
- **Benefit:** Localized processing, reduced latency, and consistent operations for edge deployments.

Enhanced Security & Compliance:

- **Use:** Enforce security policies, manage secrets, and conduct vulnerability scanning with integrated security features (e.g., Confidential Computing - in tech preview in 4.19, Advanced Cluster Security).
- **Benefit:** Proactive risk mitigation, simplified auditing, and a hardened environment for sensitive workloads.

Features

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OpenShift Lightspeed (Generative AI Assistant GA/Enhanced):

- **What:** Generally available AI-powered virtual assistant integrated into the OpenShift Console and CLI, offering natural language interaction for troubleshooting, command suggestions, and documentation lookups. Includes enhanced capabilities for cluster interaction and BYO knowledge (Tech Preview).
- **Why:** Significantly boosts developer and operator productivity, reduces time-to-resolution, and lowers the learning curve for OpenShift.

Kubernetes Gateway API (Generally Available with OpenShift Service Mesh 3):

- **What:** Offers a more flexible and expressive API for traffic routing, load balancing, and TLS termination within your cluster and for external ingress, providing greater control than traditional Ingress.
- **Why:** Modernized and more powerful ingress management, enabling complex routing scenarios and advanced traffic control.

OpenShift Virtualization Enhancements (Expanding Public Cloud Support & Live Migration TP):

- **What:** OpenShift Virtualization is now available as a preview on Microsoft Azure Red Hat OpenShift and Red Hat OpenShift Dedicated on Google Cloud/OCI. Introduces Storage Live Migration (Technology Preview) for non-disruptive VM storage reconfigurations.
- **Why:** Extends the benefits of OpenShift management to a broader range of virtualized workloads in public clouds, improving flexibility and operational efficiency for VMs.

Dynamic Accelerator Slicer (DAS - Technology Preview):

- **What:** Optimizes GPU utilization by dynamically allocating GPU slices based on specific workload demands, ensuring efficient resource use without reserving entire GPUs.
- **Why:** Reduces the cost of AI/ML infrastructure, maximizes the return on GPU investments, and improves resource efficiency for AI workloads.

OVN-Kubernetes BGP Support (General Availability in an early 4.19.z stream):

- **What:** Enhances OpenShift's networking capabilities with Border Gateway Protocol (BGP) support, allowing seamless integration with external networks and improved routing.
- **Why:** Better network integration for complex enterprise environments, enabling more robust and flexible network architectures.

Advantages & Resources

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Unified Hybrid Cloud: Provides a consistent, portable experience across on-premises, public cloud, and edge environments.

AI-Powered Productivity: Built-in AI assistance (OpenShift Lightspeed) and optimized infrastructure for AI/ML workloads accelerate your digital initiatives.

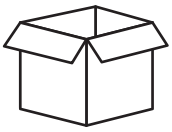
Comprehensive Security: Multi-layered security, from container host to application runtime, ensures robust protection and compliance.

Developer-Centric: Empowers developers with a rich set of tools, services, and self-service capabilities.

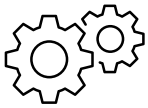
Virtualization & Containers on One Platform: Consolidate your compute environment and streamline operations for both VMs and containers.

- **For Decision-Makers**: Drive digital transformation, accelerate time-to-market for new applications, and achieve significant operational efficiencies with a secure, scalable, and intelligent platform.
- **For Procurement**: Invest in a high-value platform that consolidates tooling, reduces vendor complexity, and provides predictable costs with comprehensive support.
- **For End-Users/Operators**: Gain the power to build, deploy, and manage applications faster and more reliably, with intuitive tools and AI assistance that simplify complex tasks.

Lab Environment



Product Page



Documentation

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