

# 4 benefits of Kubernetes Operators

Red Hat Marketplace delivers software for Kubernetes automation

Extend the functionality of all Red Hat® OpenShift® platform components with Kubernetes Operators, a method of packaging, deploying, and managing Kubernetes-native applications. Almost like an extension of a software vendor's engineering team, a Kubernetes Operator monitors a Kubernetes environment and uses its current state to make real-time decisions, handle upgrades, and react to failures. From performing operations such as installing software updates to automating the life-cycle management of applications, Kubernetes Operators remove difficult and tedious manual application management tasks and make these processes scalable, repeatable, and standardized. Here are four top benefits of using Kubernetes Operators on Red Hat OpenShift.

## 1 Reduce complexity

Traditional application deployment is complex, time consuming, and repetitive. Installing, updating, securing, backing up, and restoring each individual application, infrastructure software, and workload takes tremendous effort. Kubernetes Operators can reduce operational complexity by simplifying and standardizing installation and upgrades of the full software stack—from operating system to application. The automation of Kubernetes Operators, combined with the capabilities of the cluster, provide powerful opportunities for users, who are able to scale widely and quickly.

- ▶ Kubernetes Operators convert high-level directives, such as updating infrastructure or automation application software, into low-level actions based on what its logic deems to be the best practice. As a result, users do not need to be experts in either containerized applications or infrastructure software to run Kubernetes Operators effectively.
- ▶ Kubernetes Operators allow for quick installation and frequent, wide-scale updates. They are able to run an entire platform in an autonomous manner, scaling clusters easily, consistently, and automatically.
- ▶ Kubernetes Operators let users manage applications using a Kubernetes application programming interface (API), exposing only the relevant options for the application.

## 2 Improve consistency

Because a Kubernetes Operator has the expertise of the developer who wrote the code embedded into the software, the reliance on and importance of institutional knowledge is removed from the equation. As such, regardless of infrastructure, Kubernetes Operators are able to deliver a consistent NoOps experience, meaning that maintenance and other tasks traditionally performed by an operations team are automated, removing the risk of human error and freeing up time for more valuable work. When it comes to improving consistency, Kubernetes Operators offer multiple benefits.

- ▶ Kubernetes Operators monitor the cluster once deployed, continuously scanning for anything out of place. If an error is detected, it is identified and corrected automatically. This approach reduces support burdens by identifying and correcting application problems on Kubernetes clusters.
- ▶ Kubernetes Operators codify and package best practices and business workflows in a uniform way across hybrid cloud platforms—across any cloud or environment.
- ▶ Kubernetes Operators reliably extend and orchestrate the Kubernetes environment to streamline and automate installation, updates, back-ups, and management of container-based services.

## 3 Automate at the level you need

The sophistication of the level of management logic built into a Kubernetes Operator can vary, which provides a wide range of choice for the user. To make the level of capabilities readily evident to the user, a Kubernetes Operator maturity model has defined the five phases of maturity for general operations.

- ▶ Level I: Basic install, which provides automated application provisioning and configuration management.
- ▶ Level II: Seamless upgrades, which support patch and minor version upgrades.
- ▶ Level III: Full life cycle, which encompasses both the app and storage life cycle—including backup and failure recovery.
- ▶ Level IV: Deep insights, which include metrics, alerts, log processing, and workload analysis.
- ▶ Level V: Auto pilot, which includes both horizontal and vertical scaling, auto configuration tuning, abnormal detection, and scheduling tuning.

## 4 Achieve compatibility

Eliminate uncertainty about interoperability and performance between Kubernetes Operators and the container platform by relying on Kubernetes Operators, certified by Red Hat. Certified Kubernetes Operators, available on [Red Hat Marketplace](#), are continuously tested on new releases of Red Hat OpenShift to identify upgrade issues. This approach greatly reduces the risk of incompatibility before users are ever impacted. There are numerous benefits to choosing a certified Kubernetes Operator from our broad ecosystem of partners within Red Hat Marketplace.

- ▶ Certified Kubernetes Operators provide an enhanced security state for Kubernetes-native applications. Red Hat continuously scans Operators for potential vulnerabilities.
- ▶ Certified Kubernetes Operators can help improve time to value. By relying on components that have been pretested on Red Hat OpenShift, users can expedite deployment and configuration of Kubernetes Operators. Plus, users can reduce configuration drift and support costs by adhering to best practices set by the software provider.
- ▶ Choosing a certified Kubernetes Operator means that the user receives collaborative support from Red Hat and technology partners, extending trust from the container platform to the application stack. Users do not need to worry about gaps in support coverage for components in the stack.

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Experience the benefits of Kubernetes Operators within your Red Hat OpenShift environment. Discover, try, buy, and manage certified Kubernetes Operator software on [Red Hat Marketplace](#). This portal offers interoperable and supported software to help optimize your environment.



### 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 integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

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