



Connect your hybrid
cloud environment
with IT automation

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with automation

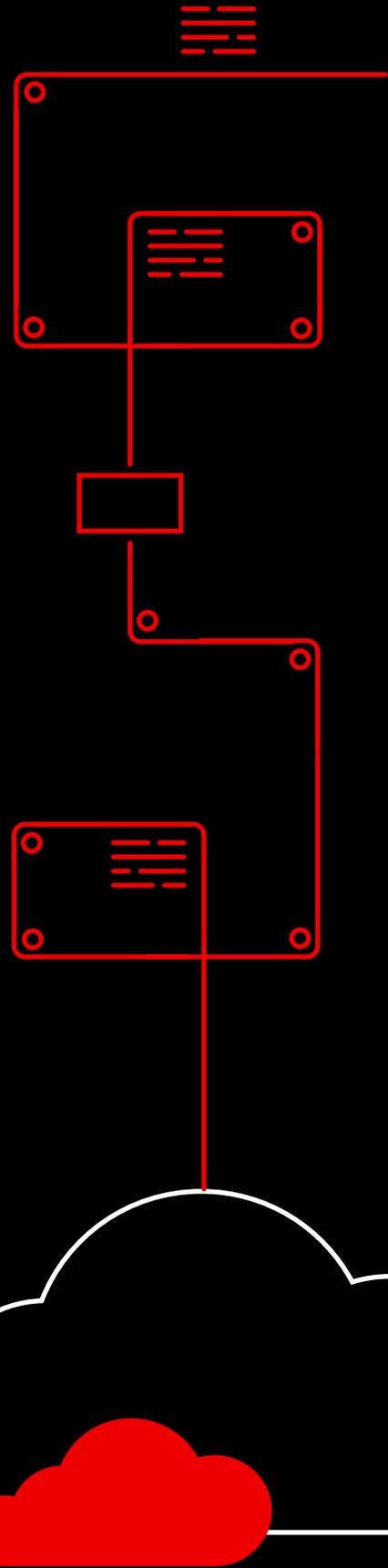
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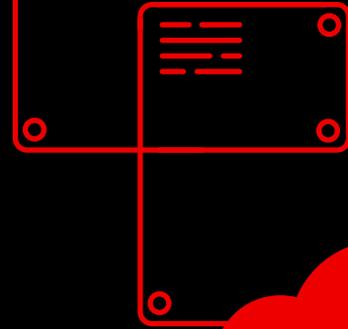
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Transform with automation



Across industries, organizations are digitally transforming to meet growing demands for new services and innovation. And recent world events have only accelerated the pace of change. 86% of organizations are now progressing with their digital transformation initiatives.¹

Speed and accuracy are critical for success in this new digital world. Your organization must develop, deliver, and manage security-focused applications and IT infrastructure faster than ever to remain competitive.

IT operations teams play a key role in supporting innovation. By streamlining service delivery processes and building the platforms and infrastructure needed for security-focused application development, testing, and deployment, IT operations teams can greatly influence the speed and success of digital transformation projects.

Many organizations adopt container-based environments to support cloud-native application development and deployment. Even so, these environments rely on external elements – like compute hardware, networking, storage systems, and external security and management tools – to operate.

IT automation can help you connect these traditional and cloud-native environments while delivering the operational speed and accuracy you need. No matter where you are in your digital transformation journey, IT automation can help you move forward with greater agility, efficiency, and confidence.

This e-book discusses the benefits of combining cloud-native application platforms with IT automation for digital transformation.

The growing importance of IT automation

80%

of business executives say adopting IT automation is “extremely important” or “very important” to the future success of their organization.²

68%

of business executives agree that in the past 12 months, IT automation at their organization has shifted from a “nice to have” to a “must have.”²

68%

of business executives say IT leaders should be developing and sharing a vision for how IT automation will benefit the organization and IT workers’ jobs.²

¹ Red Hat report. “2022 Global Tech Outlook,” November 2021.

² Harvard Business Review Pulse Report, sponsored by Red Hat. “Taking the Lead on IT Automation,” January 2022.

Build complete automation workflows for hybrid environments

Automation is a unifying force across people, processes, and technology.

IT automation brings together your platforms, operations, and organizational culture to support collaboration, innovation, and digital success.

▶ Technology and platforms

Connect traditional, existing, and cloud-native IT environments.

▶ Processes and policies

Increase operational speed, accuracy, and consistency across your organization. Automatically enforce policies to ensure compliance.

▶ People and teams

Use a single, human-readable automation language and platforms for collaboration and sharing. Reduce your teams' overall operational burden, increase user self-sufficiency, and allow staff to focus on more interesting tasks.

Learn about automating across your enterprise

Automation can bring your people, processes, and technologies together to increase business agility, innovation, and value.

Read **The automated enterprise e-book** to learn how you can adopt automation across your organization.

Red Hat gives you integrated platforms and tools to bridge the gap between traditional and cloud-native IT with flexible automation. The combination of Red Hat OpenShift®, Red Hat Ansible® Automation Platform, and Red Hat Advanced Cluster Management for Kubernetes lets you build and automate truly hybrid environments.

- ▶ **Red Hat OpenShift** provides a hybrid cloud platform for deploying containerized applications and microservices.
- ▶ **Red Hat Ansible Automation Platform** delivers consistent, user-friendly automation for your entire IT environment and organization.
- ▶ **Red Hat Advanced Cluster Management for Kubernetes** supplies life-management, policy-based governance, and health monitoring for Red Hat OpenShift clusters at scale.

Through integration, these platforms let you automate and efficiently manage your entire hybrid IT environment, from traditional infrastructure to cloud-native and containerized resources. As a result, you can adopt cloud-native technologies and approaches faster and more easily. This combination also lets you move at your own pace – you can migrate and modernize existing applications, deliver new security-focused cloud-native applications, and adapt your infrastructure and operations over time.

Start where you feel comfortable

You can begin your automation journey using the product you know best. If you're familiar with Red Hat OpenShift and cloud-native operations, you can start by automating with Red Hat Advanced Cluster Management, and if you're more comfortable with Red Hat Ansible Automation Platform, you can begin there.

Integration between Red Hat Ansible Automation Platform and Red Hat Advanced Cluster Management lets you accomplish many tasks with either tool, giving you more flexibility. You can choose to use Red Hat Ansible Automation Platform, Red Hat Advanced Cluster Management, or both to manage your Red Hat OpenShift deployment. Even so, each has specific capabilities and benefits.

Red Hat Advanced Cluster Management is designed specifically for managing multiple Red Hat OpenShift clusters at scale.

Red Hat Ansible Automation Platform delivers IT automation across infrastructure, applications, networks, and security and management tools. You can perform many cluster management tasks using Red Hat Ansible Automation Platform, though you must often write the automation to access Kubernetes application programming interfaces (APIs) yourself. And if you already automate with Red Hat Ansible Automation Platform, you may be able to reuse your existing automation content as you adopt Red Hat OpenShift and cloud-native technologies.

Red Hat Ansible Automation Platform

Red Hat Ansible Automation Platform is a foundation for building and operating automation across an organization. The platform includes all the tools needed to implement enterprise-wide automation in hybrid cloud environments.

Red Hat OpenShift

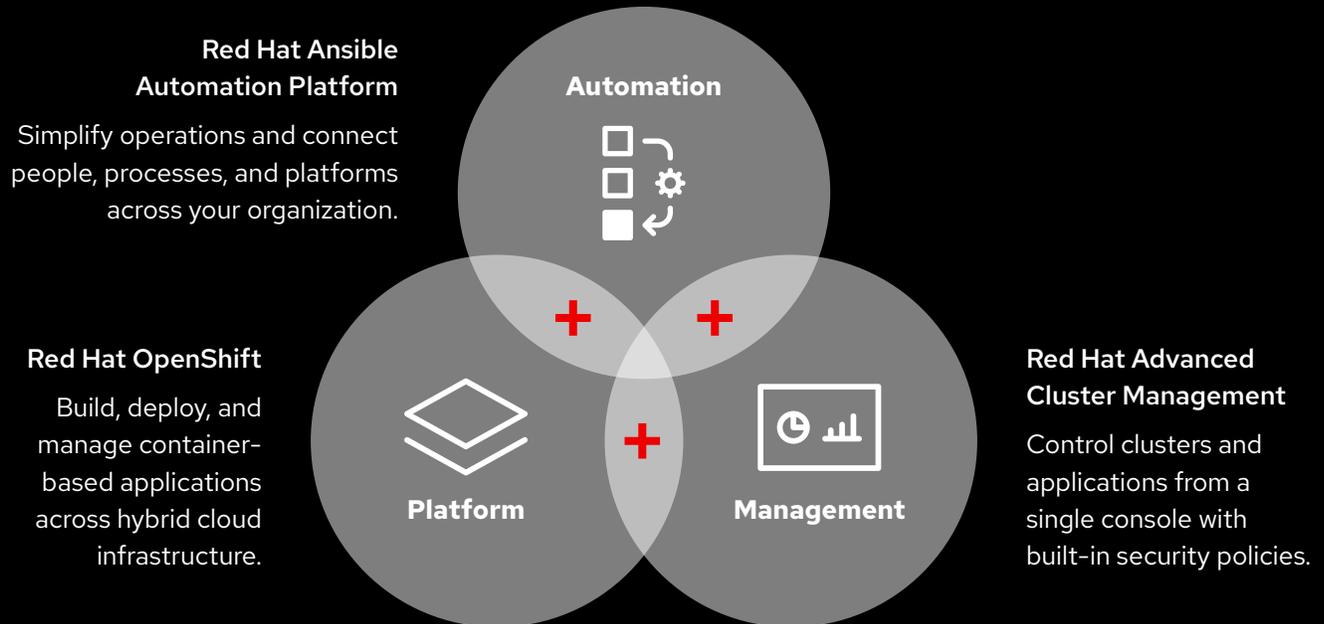
Red Hat OpenShift is an enterprise-ready Kubernetes container platform built for an open hybrid cloud strategy. It provides a consistent application platform to manage hybrid cloud, multicloud, and edge deployments.

Red Hat Advanced Cluster Management for Kubernetes

Red Hat Advanced Cluster Management for Kubernetes controls clusters and applications from a single console, with built-in security policies. It extends the value of Red Hat OpenShift by deploying applications, managing multiple clusters, and enforcing policies across clusters at scale. Red Hat Advanced Cluster Management is included with Red Hat OpenShift Platform Plus, a combined offering for security-focused application delivery and innovation.

Learn more about Red Hat OpenShift Platform Plus.

The combination of Red Hat OpenShift, Red Hat Ansible Automation Platform, and Red Hat Advanced Cluster Management delivers the maximum value and flexibility.



Connect your automation workflows

Integration between Red Hat Ansible Automation Platform and Red Hat Advanced Cluster Management lets you connect cloud-native and traditional IT environments with unified, end-to-end automation workflows. Red Hat Advanced Cluster Management can invoke Red Hat Ansible Automation Platform jobs to automate off-cluster resources, and Red Hat Ansible Automation Platform can call Kubernetes APIs and **Red Hat OpenShift operators** to perform on-cluster tasks. You can even **create your own Red Hat OpenShift operators** using your existing automation skills and Ansible's simple, easy-to-read language.

[Learn more about integration.](#)

Experience automation benefits across your organization

Automating your entire hybrid environment can help everyone in your organization succeed.

- ▶ Simplify and speed operations.
- ▶ Boost business agility and responsiveness.
- ▶ Raise productivity and efficiency.
- ▶ Improve security and compliance.
- ▶ Increase consistency and availability.
- ▶ Reduce errors and misconfigurations
- ▶ Focus on high-value, strategic initiatives.

Automation + cloud: Better together

Red Hat Ansible Automation Platform and Red Hat OpenShift can help you implement complete, end-to-end automation workflows that connect existing and cloud-native infrastructure.

Read the following sections to learn how you can combine these products to support your cloud-native journey.

In this chapter:

- 3.1 Connect on-cluster and off-cluster resources
- 3.2 Create complete cluster management workflows
- 3.3 Deploy and manage applications across infrastructures
- 3.4 Streamline disaster recovery and business continuity

Connect on-cluster and off-cluster resources

Most organizations have existing traditional infrastructure, tools, and resources that cannot be immediately decommissioned and removed. Red Hat Ansible Automation Platform lets you automate traditional, off-cluster, and on-cluster resources together to get the most from your existing investments and transform at your own pace.

Traditional and off-cluster resources include:

▶ **Network resources.**

Set up and configure resources like switches, wireless access points, domain name systems (DNS), load balancers, and firewalls.

▶ **Public and private cloud services.**

Provision and configure services – like hosted database services, hypervisors, and serverless functions – that you may want to use in your applications.

▶ **Software-as-a-Service.**

Interact with Software-as-a-Service (SaaS) tools like IT service management (ITSM) and ticketing systems, service catalogs, and other hosted applications.

▶ **Security tools.**

Integrate and automate security and compliance tools for audits, incident response, and remediation.

▶ **Physical infrastructure.**

Set up and configure out-of-band management and virtualization settings, firmware, baselines, and other basic features for bare-metal servers and storage arrays.

Automate beyond configuration management

Red Hat Ansible Automation Platform lets you build and perform IT automation at scale. Read these e-books to learn more about automating IT infrastructure, networking, and security operations:

- ▶ Automate infrastructure workflows
- ▶ Network automation for everyone
- ▶ Simplify your security operations center

Organizations that use Red Hat Ansible Automation Platform experience

30%

higher IT infrastructure management efficiency.³

³ IDC White Paper, sponsored by Red Hat. "The Business Value of Red Hat Ansible Automation Platform," October 2021. Document #US47989320.

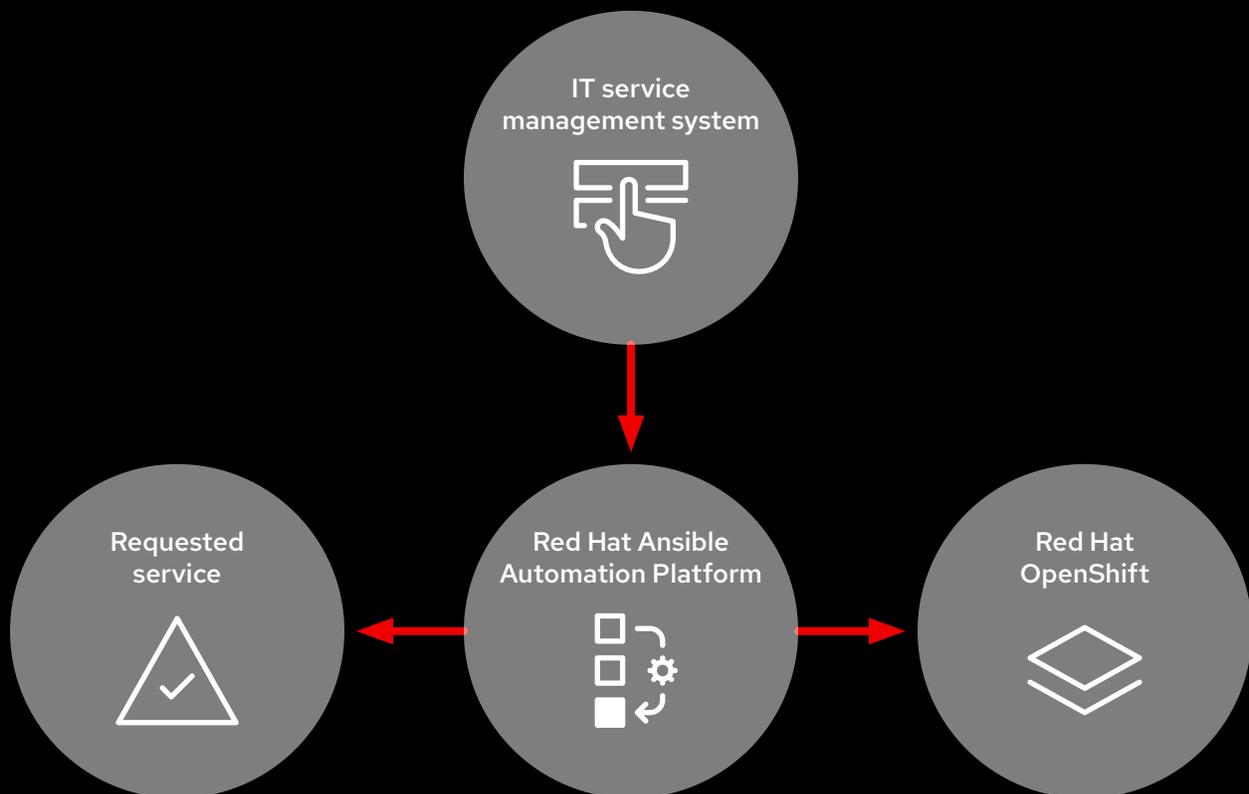
Create self-service workflows across your hybrid infrastructure

With automation that brings together existing and cloud-native tools and infrastructure, you can build simple, self-service actions for users, allowing them to become more self-sufficient and productive.

For example, you can integrate an ITSM system like ServiceNow into a workflow for deploying a new instance of a containerized application that uses a cloud-based database:

1. A user submits a request for the new instance to your ITSM system.
2. Once approved, your ITSM system sends a request to Red Hat Ansible Automation Platform to run an automation job.
3. Red Hat Ansible Automation Platform performs the requested tasks, including initializing the database with your cloud provider, deploying and configuring the containerized application within Red Hat OpenShift, creating a DNS entry, and others as defined in the automation job.
4. Red Hat Ansible Automation Platform updates the ticket in your ITSM system, alerts the user that the application instance is ready, and closes the ticket.

With this automation workflow, the user receives an application instance – configured according to IT policies – with no manual intervention required by IT.



Create complete cluster management workflows

When deploying or updating Red Hat OpenShift clusters, you must set up the underlying infrastructure before running the Red Hat OpenShift installer. After installation, you must also finish configuring your clusters to meet your organization's needs. Red Hat Ansible Automation Platform lets you create end-to-end cluster set-up and management workflows that can be activated with a single command.

1

Prepare your systems for Red Hat OpenShift installation.

System preparation includes updating and validating firmware versions, configuring bare-metal settings, installing integrated management tools, setting up power management, and installing operating systems and other basic software. You may also need to configure other infrastructure elements like cloud-native storage, static IP addresses, storage volumes, and network firewall rules.

2

Start the Red Hat OpenShift installer.

The Red Hat OpenShift installer creates your cluster.

3

Perform final configuration tasks.

Post-installation tasks include mounting storage volumes, adding certificates, and setting up authentication to make your clusters ready for use. Other final configuration targets include:

- ▶ Groups and namespaces.
- ▶ LDAP⁴ group synchronization and authentication.
- ▶ Image policies.
- ▶ Secrets and certificates.
- ▶ Alerts and monitoring.
- ▶ Logging.
- ▶ Red Hat OpenShift Data Foundation storage.
- ▶ Cluster management tools.
- ▶ Worker node time synchronization.
- ▶ Encryption settings.
- ▶ Subscriptions.

You may also need to update network components, configuration management databases (CMDB), and ITSM systems to reflect the cluster deployment status and enable flexible scaling. These items often rely upon the integration between Red Hat Ansible Automation Platform and Red Hat Advanced Cluster Management.

⁴ Lightweight Directory Access Protocol

You can create custom automated cluster management workflows like the previous example, or use any combination of Red Hat Ansible Automation Platform and Red Hat Advanced Cluster Management capabilities and installation practices.

Automation workflows make cluster creation tasks rapidly repeatable, so you can roll out new clusters and add nodes to existing clusters more quickly, easily, and consistently. With a complete cluster creation workflow, administrators do not need to log on to the cluster and perform manual customization – the cluster will be ready to use the first time someone logs on.

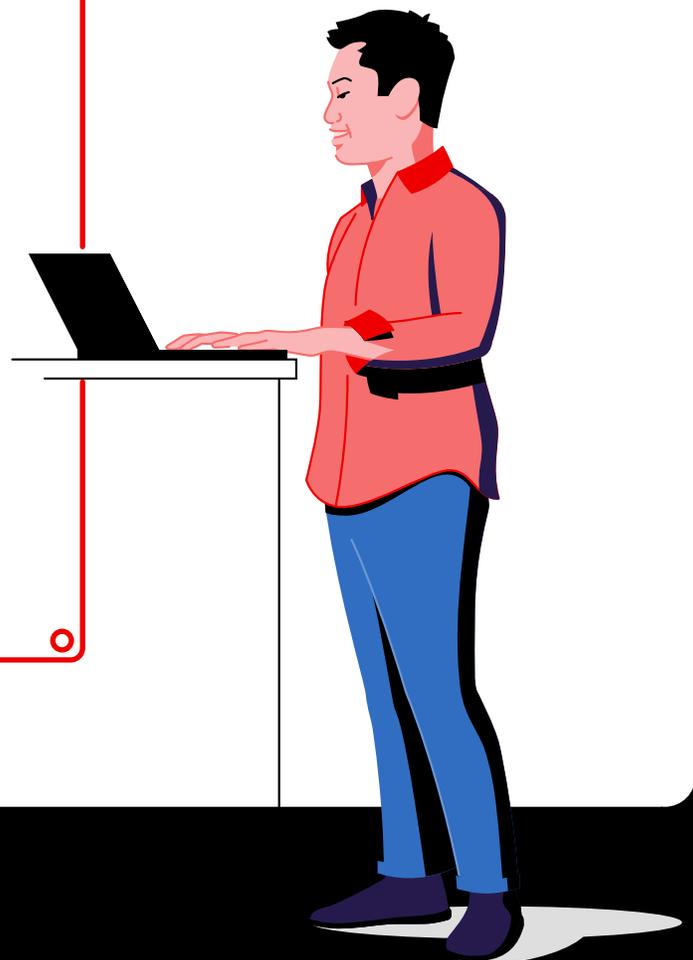
Once clusters and nodes are set up and added to your management pool, you can administer them directly from Red Hat Advanced Cluster Management. You can also use Red Hat Ansible playbooks for ongoing management tasks to automatically remediate issues and non-compliance conditions.

Automate cluster upgrades

You can also use Red Hat Ansible Automation Platform to create cluster upgrade workflows that perform prerequisite tasks like backing up your `etcd` state and incorporate Red Hat OpenShift operators to onboard and configure services and applications, all with a single command. Details about onboarding applications are included in the next section.

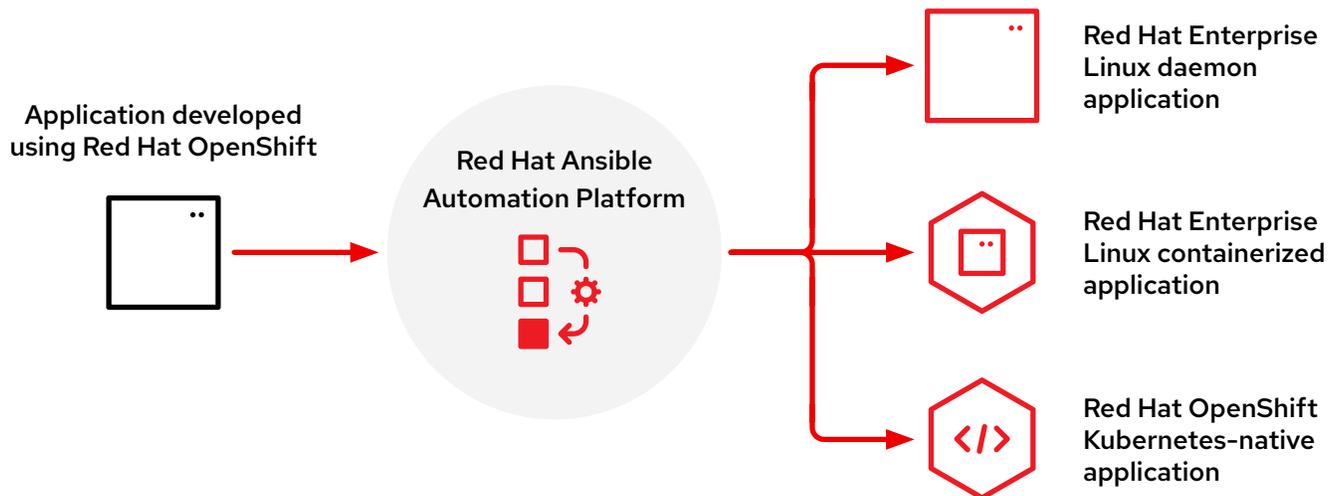
Automation tip

Because Red Hat Advanced Cluster Management runs in a Red Hat OpenShift cluster, you can use Red Hat Ansible Automation Platform to install and configure your Red Hat Advanced Cluster Management cluster.



Deploy and manage applications across infrastructures

Once you have created your Red Hat OpenShift clusters, you need to deploy applications and services on them. Red Hat Ansible Automation Platform can help you deploy security-focused applications consistently and rapidly across Red Hat OpenShift, other Kubernetes distributions, non-Kubernetes platforms, and edge environments. You can also deploy applications developed using Red Hat OpenShift to other platforms, including disconnected, intermittent, and latent environments, as well as systems running **Red Hat Enterprise Linux®** with Podman.



During the application deployment process, you can use Red Hat Ansible Automation Platform to **configure off-cluster resources** – like load balancers, databases, firewalls, and monitoring solutions – needed for application operation. You can also trigger an ITSM system change request or update deployment status in your ITSM system.

You can even integrate **Red Hat OpenShift operators** and **Helm charts** into larger application deployment workflows for fast, single-command activation. Automate operators via Kubernetes APIs and Helm charts through modules within Ansible Content Collections.

Automation tip

You can use Red Hat Advanced Cluster Management to view, monitor, and update all application resources deployed to Red Hat OpenShift via Red Hat Ansible Automation Platform.

Streamline disaster recovery and business continuity

While Red Hat OpenShift provides a resilient platform for application development and deployment, problems in the underlying infrastructure can cause clusters to fail. Effective, automated disaster recovery is critical to ensure business continuity for production applications and operations.

Red Hat Ansible Automation Platform, along with Red Hat Advanced Cluster Management, can help you automate your deployment, backup, and recovery processes to quickly and accurately re-create environments when you need them:

- ▶ Stand up disaster recovery sites, including hardware, software, clusters, and applications.
- ▶ Perform routine cluster snapshots and backups—including stateful core services like *etcd* and persistent storage volumes—for use in rebuilding, cloning, and disaster recovery workflows.
- ▶ Redistribute network traffic around failed clusters and sites to ensure business continuity.
- ▶ Rebuild and recover failed clusters and sites using end-to-end automation workflows for cluster creation and application deployment.
- ▶ Create hot spare nodes and clusters that are identical to your running nodes and clusters.

Organizations that use Red Hat Ansible Automation Platform experience

76%

less unplanned downtime.⁵



⁵ IDC White Paper, sponsored by Red Hat. "The Business Value of Red Hat Ansible Automation Platform," October 2021. Document #US47989320.

Success in action



Blue Cross and Blue Shield of North Carolina works to make health care better, simpler, and more affordable. To achieve this vision, it shifted to an in-house IT approach to create an automated, adaptable IT environment using Red Hat technologies.

The insurer's new environment is based on Red Hat OpenShift, running on Red Hat Enterprise Linux. Blue Cross NC also deployed Red Hat Ansible Automation Platform to enhance Red Hat OpenShift's automation capabilities with human-readable playbooks.

With guidance and training from Red Hat's technology experts, Blue Cross NC has improved its efficiency and provisioning-related costs. In just two years, the insurance provider has saved more than US\$850,000 and 70,000 work hours.

[Read the success story.](#)



By automating complex, repetitive tasks with Ansible Automation Platform, we're demonstrating how IT can create business value through cost-effective, consistent, and efficient work. In the first two years alone, we executed 200,000 Ansible playbooks and saved an estimated 70,000 hours of work."

Petar Bojovic
Director of Technology Infrastructure, Blue Cross NC

See benefits across industries

Organizations across industries are using Red Hat Ansible Automation Platform with Red Hat OpenShift to drive business success. Read these customer success stories to learn how.

Are you ready to automate?

IT automation can help you bridge the gap between traditional and cloud-native environments and operations.

No matter where you are in your digital transformation journey, Red Hat can help you build and automate truly hybrid environments. With Red Hat Ansible Automation Platform, Red Hat OpenShift, and Red Hat Advanced Cluster Management for Kubernetes, you can streamline operations, boost agility, and adopt cloud-native technologies and approaches faster and more easily.

Get started at redhat.com/ansible.



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