

# Streamline CI/CD with Red Hat Ansible Automation Platform



# 93%

is the current overall deployment rate of the 30 most common technologies for applications in 2024.<sup>1</sup>

# 85%

of organizations report using modern applications that run on microservices.<sup>1</sup>

# **94**%

of organizations say they face at least 1 multicloud challenge.<sup>1</sup>

# The digital world runs on applications and APIs

Modern business relies on applications deployed across varied environments. In fact, nearly 90% use deployment models across hybrid and multicloud environments.<sup>1</sup> Additionally, application programming interfaces (APIs) are on the rise, with APIs forming the core of application modernization in many organizations. According to F5, on average, companies with over US\$10 billion in annual revenue say they manage more than 1,000 apps and nearly 1,400 APIs.<sup>1</sup>

Fast and reliable application development across hybrid and multicloud environments is critical for success in a digital world. <u>Continuous integration and continuous deployment (CI/CD) approaches</u> using the right tools can help you rapidly build, test, and deliver IT infrastructure changes and high-quality applications in those diverse environments.

CI/CD applies automation throughout IT infrastructure and application lifecycles—from the integration and testing phases to delivery and deployment—to deliver tested, verified applications. It incorporates 2 different but related functions:

- Continuous integration (CI) helps IT engineers and developers rapidly verify functionality and merge their code changes back to a shared branch more frequently. Merged code changes are validated by automatically building the application or simulating an IT infrastructure change and running different levels of automated testing-typically unit and integration tests-to make sure the changes work. If testing discovers a conflict between new and existing code, CI makes it simpler to fix those bugs.
- Continuous deployment (CD) automates the process of releasing IT infrastructure changes or an application to production. There are few manual gates in the development pipeline stage just before production, so CD relies heavily on well-designed test automation. As a result, a developer's change to a cloud application could go live within minutes of writing it if it passes all automated tests. CD makes it more simple to continuously receive and incorporate user feedback.

Together, CI and CD practices allow you to release changes to IT infrastructure and your applications in smaller pieces, making application deployment more reliable. You can apply CI/CD to many components and assets within your organization, including applications, platforms, infrastructure, networking, and automation code.

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"2024 State of application services report," F5 Networks, accessed 25 Aug. 2024.





# Simplify automation

Ansible Automation Platform uses a desired-state engine to automate IT infrastructure. Simply define the desired state of the target using the humanreadable automation language and the platform takes care of the rest.



"Automation is missioncritical at Southwest. Ansible Automation Platform is crucial as we continue our automation journey."

# Carlos Tapia

Senior Systems Engineer, Southwest Airlines

Read the complete case study.<sup>3</sup>

### Automation is at the core of CI/CD pipelines

By definition, CI/CD pipelines require automation. While it is possible to manually execute each step in your deployment and development workflow, automation maximizes the value of your CI/CD pipeline. It checks consistency across development, test, and production environments and processes, allowing you to build more reliable pipelines.

Even so, the automation technology you choose can affect the effectiveness of your pipeline. Ideal automation technologies include these key features and capabilities:

- Unified automation platforms promote consistency and let you standardize automated processes and content across development, test, and production environments.
- Straightforward operations allow more team members to participate and contribute.
- Overall simplicity promotes greater adoption of automation throughout your organization. Ideally this simplicity is augmented with generative artificial intelligence (gen AI) tools that lower the barrier to entry for creating automation.
- Integration with other tools and products allows you to more efficiently automate a broader range of tasks and components.
- Platform scalability allows you to simply expand the capacity of your pipeline as adoption grows.

### Automate your CI/CD pipeline with Red Hat Ansible Automation Platform

<u>Red Hat® Ansible® Automation Platform</u> is a foundation for building and operating automation across an organization and is cited as the leading <u>enterprise automation solution</u> by Forrester.<sup>2</sup> The platform includes all the tools needed to implement enterprise-wide automation, including CI/CD pipelines, for application development and IT infrastructure configuration management.

It combines a user-friendly automation language with a trusted, composable execution environment and security-focused sharing and collaboration capabilities.

Ansible Automation Platform playbooks are created using <u>human-readable instructions</u> and augmented by Ansible Lightspeed, a gen AI service designed by and for anyone building automation. Ansible Lightspeed accepts natural-language prompts entered by a user and then interacts with IBM watsonx foundation models to produce code recommendations built on Ansible best practices.

An open foundation allows you to connect almost everything in your IT environment–from servers, networking, storage, and operating systems to applications, security processes, and management tools–into complete, automated workflows.

Using a common language and desired-state approach, you can use the same automation tools and content for both everyday operations as well as your CI/CD pipeline. And because Ansible Automation Platform works with nearly all aspects of your IT infrastructure, you can accelerate the deployment of consistent development, test, and production environments, increasing the reliability and resiliency of your applications.

Ansible Automation Platform subscriptions include access to certified Ansible Content Collections and Ansible automation hub for added value.

<sup>2</sup> Chhabra, Naveen. "The Forrester Wave": Infrastructure Automation, QI 2023," Forrester, 21 March 2023. (Payment required)
<sup>3</sup> Red Hat case study. "Southwest Airlines is expanding its automation use cases," 2 May 2024.





# Customer success highlight: NTT DOCOMO Inc.

Through adopting Ansible Automation Platform, NTT DOCOMO reduced total costs and automated over 10,000 devices using CiRCUS/MAPS.

"We adopted Red Hat Ansible Automation Platform to assist with individually optimized automation and improve integrated automation environments to minimize any significant human interventions needed for developmental and operational process responses."

#### Kazunori lida

Senior Manager, Service Design Department, NTT DOCOMO Inc.Read the press release.<sup>4</sup> <u>Ansible Content Collections</u> streamline the management, distribution, and consumption of automation content. They also provide tested, verified, supported automation code from Red Hat and Red Hat certified partners.

<u>Ansible automation hub</u> supplies a centralized repository for certified automation content, including Ansible Content Collections. It gives team members a portal with a strong security focus for Ansible Content Collections, as well as a private hub for internal and third-party automation content.

Additionally, Ansible validated content is a set of collections containing prebuilt YAML content (such as playbooks or roles) to address the most <u>common automation use cases</u>. You can use Ansible validated content out-of-the-box or as a learning opportunity to develop your skills. It is a trusted starting point to bootstrap your automation: use it, customize it, and learn from it.

#### Automated CI/CD use cases

You can use Ansible Automation Platform throughout your CI/CD pipeline and organization.

# Use case 1: Provisioning

<u>Infrastructure provisioning</u> is the initial step in automating the operational lifecycles of your applications. Ansible Automation Platform can provision resources on popular cloud platforms, hypervisors, network devices, and bare-metal servers. After provisioning, you can connect nodes to storage, add them to a load balancer, apply security patches, or perform many other operational tasks.

**Provisioning tip:** You can continue to use Ansible Automation Platform throughout the rest of the application lifecycle.

#### Use case 2: GitOps

GitOps workflows can increase development productivity and accelerate deployment by using Git as a centralized repository for declarative infrastructure and application deployments.

Ansible Automation Platform provides the desired-state engine needed for GitOps. It also integrates with Kubernetes to help you to manage applications in containers as well as on existing IT infrastructure, including networking and cloud services. Event-Driven Ansible provides the event-handling capability needed to receive events from your source control system and use them to automatically trigger automation. This eliminates the need for additional tools to monitor repositories and launch automation jobs when changes occur, simplifying your GitOps workflow and streamlining operations. Because Ansible Automation Platform works with a wide variety of development and deployment tools, you can tailor your GitOps workflow with your preferred tools and processes. GitOps can be implemented readily using webhooks on Ansible Automation Platform.

**GitOps tip:** Ansible Automation Platform lets you automate and orchestrate applications across both existing and new platforms, so you can transition to cloud-native and Kubernetes-based technologies using your current skills and tools.

<sup>4</sup> Red Hat press release. "NTT DOCOMO Inc. Introduces Red Hat Ansible Automation Platform to Automate Over 10,000 Devices in ISP Services," accessed 28 Aug. 2024.



# CD

# Customer success highlight: Ulta Beauty

To meet its goals for continued growth, Ulta Beauty placed Ansible Automation Platform at the core of its strategy, to help deploy technology faster without disrupting business as usual. In doing so, it cut deployment times from 3 weeks to less than a day.

Ulta Beauty uses automation as a catalyst for innovation and cultural change as part of a wider 3-phase transformation project.

"The built-in capabilities of Red Hat Ansible Automation Platform provide an accelerator in a box. It's the de facto standard that many of our vendors and partners also use to write scripts to install, configure, and maintain their technology."

> Jesse Amerson IT Director Ulta Beauty

Read the complete case study.5

### **Use case 3: Configuration management**

Configuration management is essential for maintaining consistency, efficiency, and a security focus within your environment. Ansible Automation Platform allows you to manage your infrastructure by defining sets of desired-state descriptions. No matter what state a system is in, Ansible Automation Platform understands how to transform it to the desired state, allowing you to reliably configure your IT infrastructure in a repeatable manner. Configuration management is implemented through Ansible Playbooks. Learn how here, or consider an interactive workshop.

**Configuration management tip:** Ansible Automation Platform helps simplify management of complex environments. Consistent, reliable, and with a focus on security, it provides an easy learning curve for administrators, developers, and IT managers, aided by gen AI capabilities powered by Ansible Lightspeed.

# **Use case 4: Application deployment**

Applications must be properly configured and <u>deployed</u> to be useful. Ansible Automation Platform allows you to deploy multitier applications reliably, consistently, and simply. Using 1 common system, you can configure needed application services and push application configurations. Ansible Automation Platform has direct integration with many system package managers such as <u>DNF</u>, <u>apt</u>, <u>Windows</u>, and <u>Chocolatey</u>.

**Application deployment tip:** Using Ansible's human-readable language and desired-state descriptions, enhanced with gen AI suggestions for automated code from Ansible Lightspeed, even new team members can understand and contribute to deployment automation.

# Use case 5: Continuous deployment

A subset of application deployment, <u>continuous deployment</u> pipelines help you release new software features and updates more frequently to support modern business demands. Ansible Automation Platform provides the multitier, multistep application orchestration needed for fast, reliable deployment of new features, bug fixes, and code changes, while reducing the need for human intervention throughout the release process. Ansible Automation Platform workflows allow you to configure a sequence of disparate job templates or workflow templates to create a CI/CD pipeline using automation.

**Continuous deployment tip:** Ansible Automation Platform lets you define and order automation that targets and assign tasks or roles to specific groups of hosts.

### Use case 6: Security automation

Protecting your organization is a critical-but often daunting-task. Ansible Automation Platform serves as an integration layer between your security teams, tools, and processes to <u>streamline security opera-</u><u>tions</u>, increase focus on security at scale, and mitigate the risks and costs of breaches. Using a supported set of <u>security-focused content collections</u>, you can automate and integrate different security solutions to investigate and respond to threats across your organization in a coordinated, unified way. Ansible has collections from security partners such as <u>Palo Alto</u>, <u>Checkpoint</u>, and <u>ASA</u>.

**Security automation tip:** A common framework and language lets security and IT teams share designs, processes, and ideas, both internally and across your organization.

<sup>5</sup> Red Hat case study. "Ulta Beauty standardizes on Red Hat for automation and service delivery transformation," accessed 26 Aug. 2024.

#### **Use case 7: Orchestration**

Complex, disparate environments can be difficult to effectively manage manually. Ansible Automation Platform allows you to efficiently, reliably, and repeatedly <u>orchestrate</u> all aspects of complicated IT environments, including clustered applications, geographically dispersed datacenters, network and edge devices, cloud resources, and databases. Using a clear syntax and task-based approach, you can define, arrange, and reuse automated orchestration workflows.

**Orchestration tip:** You can also coordinate other domain-specific orchestration tools using Ansible Automation Platform through Ansible Content Collections.

### Prepare your CI/CD pipeline for future change

Ansible Automation Platform prepares you to adapt to future technology advances and trends, including popular and emerging CI/CD tools. For example, many companies are adopting cloud-native Kuberne-tes environments to gain more flexibility, speed, and innovation. Ansible Automation Platform integrates with <u>Red Hat Advanced Cluster Management for Kubernetes</u> to allow you to orchestrate Kubernetes clusters within your CI/CD pipeline. You can also use the human-readable automation language to build and maintain <u>Red Hat OpenShift®</u> operators.

#### Learn more

Ansible Automation Platform gives you the tools and capabilities needed to build and integrate effective CI/CD pipelines and automate across your organization. With a user-friendly automation language, cross-component interoperability, and security-focused collaboration tools, you can accelerate application development and deployment.

# <u>Read more</u> use cases or try an <u>interactive lab</u> to learn more about Ansible Automation Platform.



#### 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. <u>A trusted adviser to the Fortune 500</u>, Red Hat provides <u>award-winning</u> 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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