



Automate your hybrid cloud at scale

Connect your clouds, teams, and workflows

Contents

1 Automation connects your cloud environments

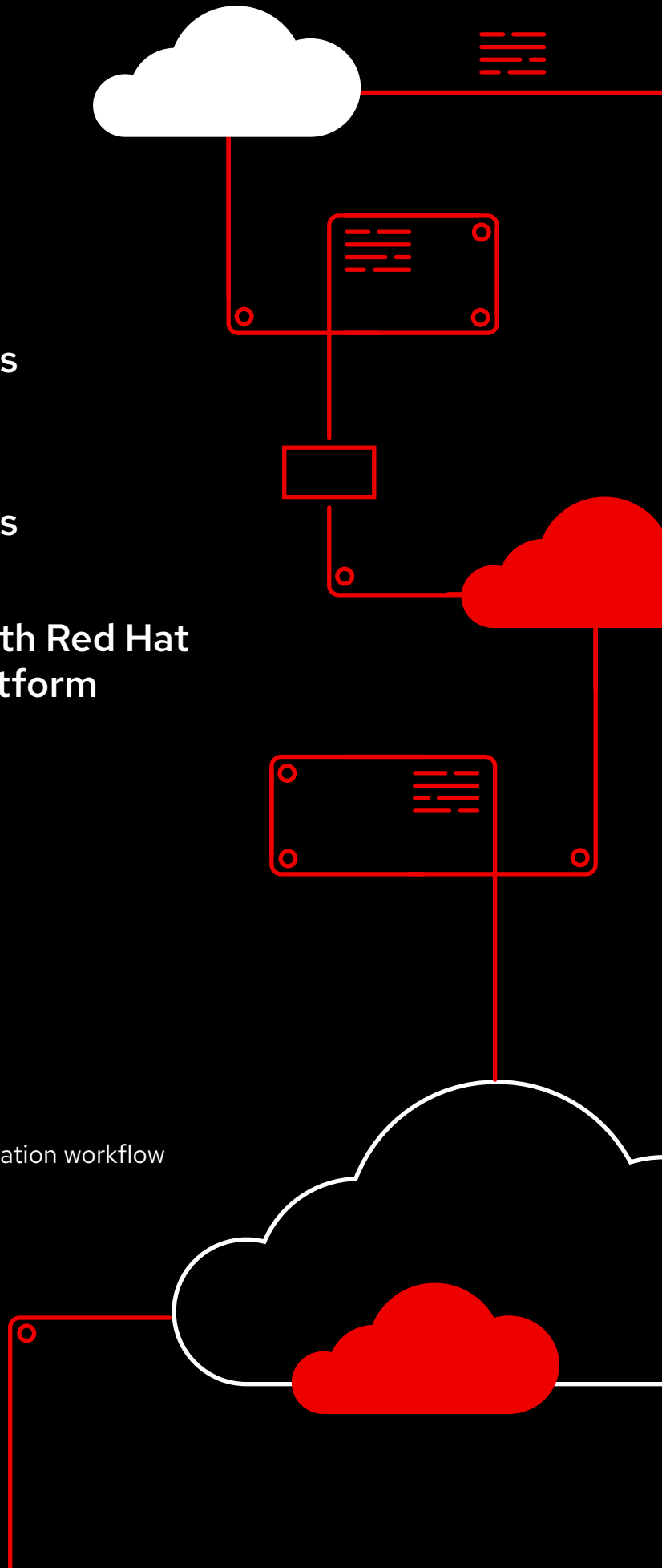
2 Maximize the value of your cloud environments

3 Automate your cloud with Red Hat Ansible Automation Platform

4 Start your cloud automation journey

- 4.1 Orchestrate cloud resources
- 4.2 Operationalize cloud processes
- 4.3 Govern cloud environments
- 4.4 Create a complete cloud automation workflow

5 Are you ready to automate?



Automation connects your cloud environments

Innovation and adaptability are critical for success in today's digital world. To become more agile and responsive, many organizations are adopting cloud technologies. In fact, 89% of organizations now have a multicloud strategy in place, and 80% have a hybrid cloud strategy.¹

Even so, cloud environments also bring new operational challenges. Most organizations use a variety of tools to administer their environments, often resulting in inconsistencies and redundancies. The scale of cloud environments—the number of resources in use—can be nearly infinite, making it difficult to manage and understand your organization's use and costs. Organizations often adopt container-based and cloud-native technologies with their cloud environments, requiring staff to attain new knowledge and skills. And, due to their distributed architecture, cloud environments necessitate new approaches to security, compliance, and governance.

IT automation can help you maximize the value of your cloud investments to support digital initiatives and innovation. Accordingly, 80% of business executives say adopting IT automation is "extremely important" or "very important" to the future success of their organization.²

Cloud automation—applying IT automation to cloud technologies—can help you overcome the operational challenges associated with moving to the cloud and managing these environments at scale. Cloud automation can encompass everything from resource provisioning and retirement to complete life cycle workflows that incorporate management, release engineering, and network and security operations.

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 Flexera. "Flexera 2022 State of the Cloud Report," March 2022.

² Harvard Business Review Pulse Report, sponsored by Red Hat. "Taking the lead on IT automation," January 2022.

Unite your cloud domains

Most organizations operate a mix of infrastructures and environments, including public cloud, private cloud, and cloud-native environments. Cloud automation can connect these domains and the teams that operate within them to promote collaboration and allow teams to be more self-sufficient when working across domains.



Public clouds

Cloud automation can help you handle the massive scale of these environments to improve consistency, visibility, and control across multiple clouds.



Private clouds

Cloud automation can help you deliver public cloud-like services with self-service capabilities via your on-site or self-hosted cloud infrastructure.



Cloud-native applications

Cloud automation can help you manage complete cloud-native application life cycles more efficiently across hybrid and multicloud environments.

Understanding cloud environments and technologies

Clouds are environments that abstract, pool, and share scalable resources across a network.

- ▶ **Private clouds** are cloud environments that are dedicated to a single end user group or organization. They are typically owned and managed by the organization and operated within its firewall.
- ▶ **Public clouds** are pools of virtual resources developed from hardware owned and managed by a third-party company like Amazon Web Services (AWS), Google Cloud, IBM, and Microsoft. These resources are automatically provisioned and allocated among multiple clients through self-service interfaces.
- ▶ **Hybrid cloud** is an IT architecture that incorporates some degree of workload portability, orchestration, and management across two or more environments, including private cloud, public cloud, virtualized, and bare-metal environments.
- ▶ **Multicloud** is a cloud approach made up of more than one cloud service, from more than one private or public cloud vendor.

Cloud environments are often associated with two other technologies:

- ▶ **Cloud-native architectures** use collections of small, independent, and loosely coupled services to deliver applications designed for cloud environments.
- ▶ **Linux[®] containers** allow you to package and isolate applications with their entire runtime environment—all of the files necessary to run.

Maximize the value of your cloud 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 teams' operational burden, boost self-sufficiency, and allow staff to focus on more interesting tasks.

Automate 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 about adopting automation across your organization.

Automation helps you operationalize entire hybrid and multicloud environments—from on-site datacenters to public cloud infrastructure—with streamlined orchestration and workflows. Using cloud automation, you can document, assess, and codify tasks so that they can be combined reliably and repeatedly into workflows to achieve predictable business outcomes. Cloud automation also helps you create a consistent operational framework across all IT and cloud domains.

Automating your entire cloud 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.

What you need to automate your cloud

Though they may seem very similar, automation platforms, automation tools, and Infrastructure-as-Code (IaC) tools have contrasting characteristics that can make the difference between efficient enterprise-wide adoption and unorganized, disparate automation efforts.



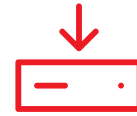
Automation platform

Automation platforms provide a unified foundation for orchestrating complete workflows at scale. They let you efficiently manage and share automation content and connect resources, infrastructure, environments, and teams across your organization.



Automation tools

Automation tools are effective only for individual and point automation. They do not provide the connection and management capabilities needed for enterprise-wide automation or workflow orchestration.



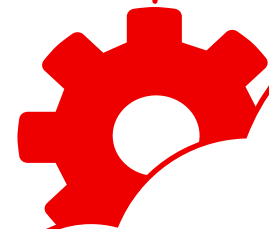
IaC and provisioning tools

IaC and cloud provisioning tools streamline the provisioning and retirement of specific resources, but cannot automate complete workflows or connect a wide variety of resources.

Task automation or workflow automation?

Effective cloud management requires you to automate both individual tasks and entire workflows.

- ▶ **Task automation** streamlines single functions performed by one person on one infrastructure resource. It speeds operations at the staff action level and reduces the time it takes to perform specific job functions.
- ▶ **Workflow automation** connects multiple tasks into a single progression. It speeds operations at the process level and moves automatically from one task to the next, reducing wait times due to handoffs between teams. Workflow automation also facilitates self-service operations while preserving IT control over resources.



Effective cloud automation requires workflow orchestration

A unified automation platform is central to effective cloud workflow orchestration. It supplies a consolidated foundation that lets everyone in your organization participate and automate consistently. A unified automation platform also provides ways to efficiently collaborate and share automation assets, best practices, and learnings across your organization. While each team can create automation for their own domain, all domains can be connected into larger automation workflows under a united strategy.

There are many automation solutions available, but not all include the capabilities your organization needs to create comprehensive, orchestrated cloud workflows. Look for automation platforms that offer:

- ▶ Complete, enterprise-wide support.
- ▶ Integrations with industry-leading partner products.
- ▶ Simple, streamlined adoption for all roles.
- ▶ Massive scalability across environments.
- ▶ Agentless deployment.

Red Hat® Ansible® Automation Platform delivers all of this and more, allowing you to implement effective cloud and enterprise-wide automation.



The what and the where of cloud automation

When talking about cloud automation, what you automate and where you run your automation platform are two different things. This e-book primarily discusses what you can automate in the cloud: resources, applications, tools, processes, and workflows.

Even so, where you host and run your automation platform also matters. You can choose to run your platform in your cloud environment or in your private datacenter, depending on your organization's needs.

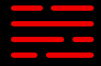
For example, if you already run many of your IT operations and applications in the cloud, you might choose to host your automation platform in the cloud to be closer to your targets and apply your existing cloud operations. You might also host your platform in the cloud if you're planning to automate a large number of physically dispersed resources and applications – your public cloud's regions may actually be closer to these endpoints than your own datacenter.

Alternatively, if you manage your IT infrastructure from a private datacenter, you might choose to deploy your automation platform on-site.

For most organizations, the choice comes down to what you currently have available and which is most convenient to get started.



Automate your cloud with Red Hat Ansible Automation Platform



A foundation for building and operating automation at scale, **Red Hat Ansible Automation Platform** delivers all the tools and features you need to create complete cloud automation workflows that support your business goals. It combines a simple, easy-to-read automation language with a trusted, composable execution environment and security-focused sharing and collaboration capabilities. Multiple domain teams can use Ansible Automation Platform, allowing you to build, scale, and deploy automation across your entire organization.

Ansible Automation Platform lets you automate and orchestrate all aspects of your hybrid cloud environment, from cloud resources and services to operating systems, applications, and security. It connects your existing automation, configuration, and cloud tools and processes with a common language. As a result, you can create a consistent operational framework across all cloud domains, processes, and roles, and locate your automation closer to target endpoints. Ansible Automation Platform is also agentless, so you can easily automate components without installing automation software on them. Finally, monitoring and logging capabilities help you understand and manage how automation is used across your organization.

Simplify management of your automation deployment

You can deploy Ansible Automation Platform directly from the Microsoft Azure and AWS marketplaces. These offerings are supported by Red Hat, integrate with native cloud services and certified cloud content, and count towards your cloud committed spend agreements.

Learn more:

- ▶ [Microsoft Azure offering](#)
- ▶ [AWS offering](#)

Jumpstart your cloud automation journey

Ansible hybrid cloud automation is a set of Certified Content Collections for streamlining and operationalizing cloud operations across multiple public clouds and services. It provides cloud administrators and application developers with an operational framework and tools for automating cloud operations, managing cloud resources as code, and supporting digital transformation by connecting teams across your IT organization.

Orchestration + automation = business outcomes

Ansible Automation Platform combines workflow orchestration with resource automation to deliver real business outcomes.

- ▶ Deliver predictable business results by orchestrating complete cloud workflows.
- ▶ Improve consistency and portability by connecting all of your infrastructures.
- ▶ Streamline processes by integrating all of your tools with automation orchestration.
- ▶ Operationalize larger cloud processes by assessing, codifying, combining tasks in different ways.
- ▶ Innovate across teams and domains through increased collaboration and sharing.
- ▶ Boost productivity with self-service automation that reduces manual handoffs.



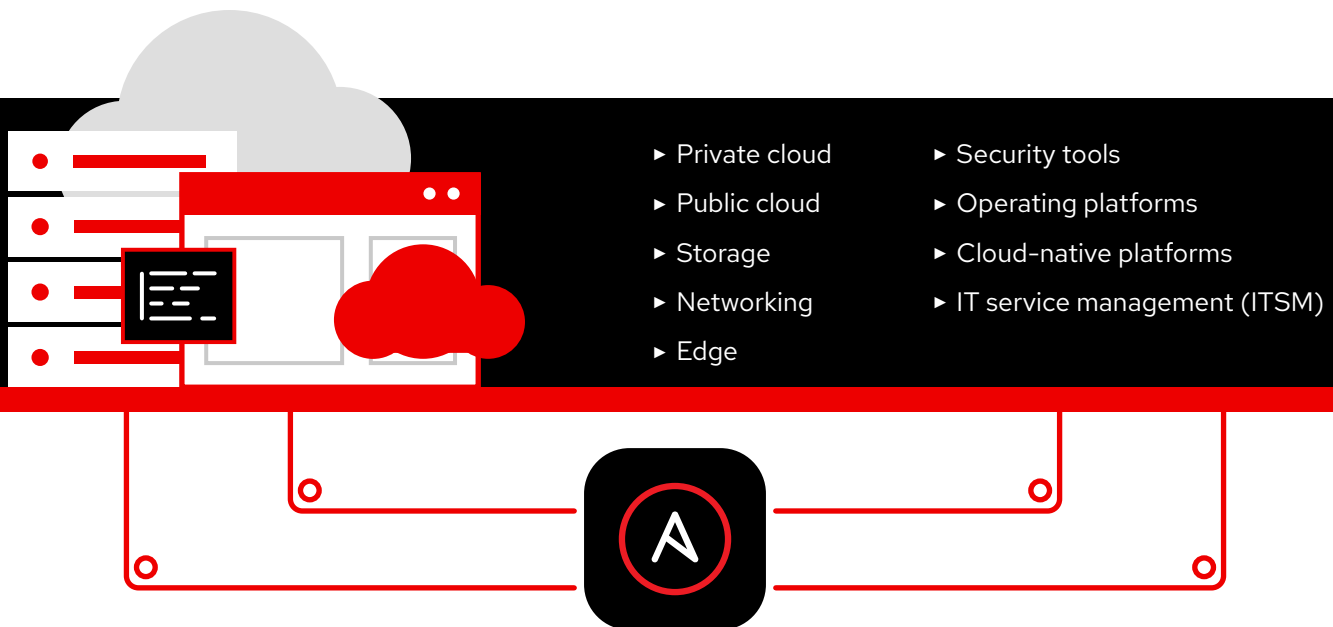
Automate beyond configuration management

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

- ▶ [Automate infrastructure workflows](#)
- ▶ [Network automation for everyone](#)
- ▶ [Simplify your security operations center](#)
- ▶ [Connect your hybrid cloud environment with IT automation](#)

Connect and orchestrate all of your clouds, platforms, and tools with Ansible Automation Platform

Ansible Automation Platform works across clouds, platforms, and tools, so you can orchestrate complete workflows that incorporate the components and technologies you use today as well as those you plan to adopt in the future. Some examples of popular components are shown below – click on a logo to learn more about **integrations** with Ansible Automation Platform.



Ansible Automation Platform

Start your cloud automation journey



Adopting cloud automation is a journey, not an all-or-nothing proposition. You can get started with a single use case and expand at a pace that works for your organization. Ansible Automation Platform lets you orchestrate, operationalize, and govern complete hybrid cloud workflows, from provisioning and deployment, to Day 2 operations and management, to disaster recovery and resource retirement.

This chapter gives an overview of common cloud automation use cases within the overall resource life cycle. We've divided these use cases into life cycle stages—orchestrate, operationalize, and govern—to show how automation can be used throughout the complete life cycle.

Even so, each of these use cases vary in the amount of time and effort required to automate. Successful automation adoption journeys often follow a progression: teams start small, show value, and expand the range and complexity of their efforts in an iterative manner. These efforts can be organized into three phases:

- ▶ **Opportunistic.** This phase focuses on simplifying tasks and creating quick, opportunistic victories for cloud teams. Use cases in this phase allow teams to show the impact Ansible Automation Platform can provide and gain broader support for automation throughout their organization.
- ▶ **Systematic.** This phase concentrates on centralizing processes and applying automation in a systematic and programmatic manner to efficiently manage your cloud resources at scale.
- ▶ **Embedded.** This phase involves creating and orchestrating complete workflows that support business outcomes by automating decision making, integrating infrastructures, and connecting teams across your organization.

Assessing automation efforts

To show the level of complexity involved in automating each of the use cases discussed in this chapter, we have marked each with a symbol denoting the associated phase in the automation journey:



Opportunistic

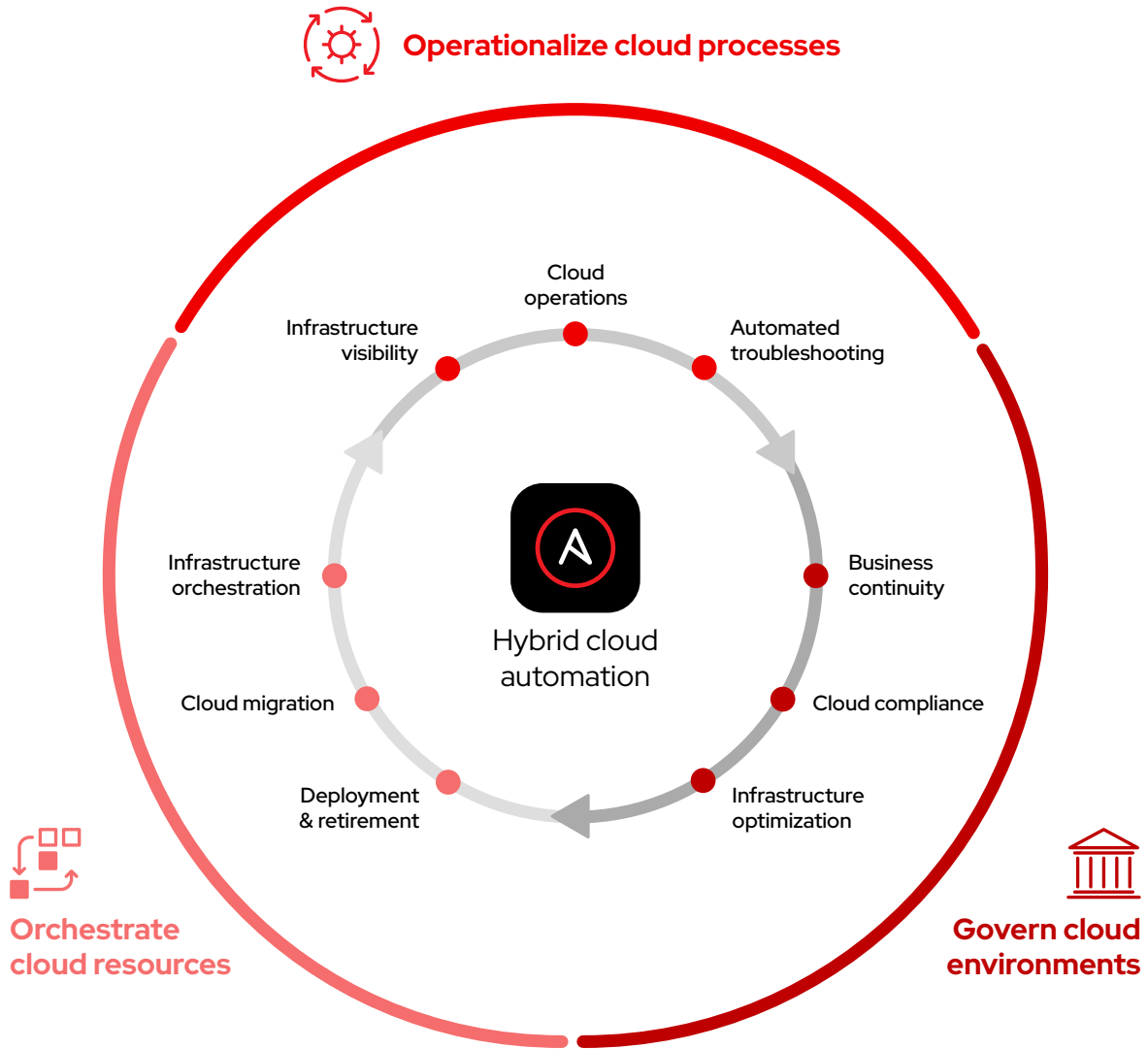


Systematic



Embedded

Common automation use cases across resource life cycles



In this chapter:

- 4.1 Orchestrate cloud resources
- 4.2 Operationalize cloud processes
- 4.3 Govern cloud environments
- 4.4 Create a complete cloud automation workflow

Orchestrate cloud resources

Orchestrating cloud resources is the first step in many cloud automation workflows. These use cases involve setting up the environments, systems, applications, networks, and storage that your business needs to operate.



Resource deployment and retirement

Provision, configure, and retire cloud instances.

- ▶ Quickly create ready-to-use cloud deployments.
- ▶ Build service catalogs that let users rapidly access preapproved resources.
- ▶ Govern instance creation and retirement with automatic policy enforcement.

Ansible Automation Platform integrates with popular cloud provisioning, IaC, and out-of-band provisioning tools, so you can configure, deploy, and retire resources throughout your environment, across multiple cloud providers.

74%

faster deployment of new server resources³



Cloud migration

Move your workloads to where you need them—from on-site to a public cloud, between public clouds, or from traditional compute architectures to cloud-native application platforms.

- ▶ Streamline cloud adoption within your organization.
- ▶ Ease the migration of workloads to cloud-native application platforms.
- ▶ Orchestrate your legacy and cloud-native applications using a single platform.

Ansible Automation Platform works with mutable and immutable infrastructure, including traditional, virtualized, containerized, and cloud-native infrastructure, so you can use the migration strategy that works best for your organization—classic back up and restore, scan and recreate, or IaC. And the workflow visualizer lets you efficiently orchestrate your migration.



Infrastructure orchestration

Connect and coordinate teams and infrastructure across your organization.

- ▶ Integrate on-cloud and off-cloud infrastructure under a unified framework.
- ▶ Orchestrate entire business workflows as well as isolated technology domains.
- ▶ Apply consistent compliance across all infrastructure.

Ansible Automation Platform integrates with a large partner ecosystem, so you can orchestrate nearly every aspect of your cloud environment. Many partners also provide certified and signed content via Automation Hub, allowing you to automate their products swiftly and more efficiently.

30%

more efficient IT infrastructure management³

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

Operationalize cloud processes

Day 1 and Day 2 operations are critical for supporting business outcomes over time. These use cases focus on ongoing processes to keep your cloud environments running smoothly.



Infrastructure visibility

Collect information about your cloud infrastructure and resources to understand what you have and what it's doing.

- ▶ Gather information on a read-only basis.
- ▶ Gain visibility into your cloud assets—including virtual instances, containers, storage, networking, firewalls, identity management, and more—with dynamic inventories and reports.
- ▶ Access gathered data from your choice of tools.
- ▶ Create an inventory for further automation efforts.

Ansible Automation Platform includes an intuitive web-based user interface that simplifies operations across on-site and cloud environments. You can create customized reports and schedule automation jobs to gain more visibility into all aspects of your environment.



Cloud operations

Streamline Day 1-2 activities across your cloud environment.

- ▶ Manage complete cloud resource and application life cycles from start to finish.
- ▶ Modify cloud resources, host operating systems, and applications.
- ▶ Programmatically access all of your cloud provider's capabilities in an automated fashion.
- ▶ Create reusable GitOps workflows and pipelines for ongoing maintenance of resources across all cloud environments.

Ansible Automation Platform gives you access to certified content for automating infrastructure, hybrid clouds, Windows, Linux, application deployment, security, and more. As a result, you can manage and automate your entire environment more readily.



Automated troubleshooting

Rapidly respond to incidents and problems.

- ▶ Promptly identify the location or domain of the problem to reduce mean time to innocence.
- ▶ Apply role-based access controls (RBAC) to set limits and policies
- ▶ Integrate automated troubleshooting processes into your ITSM solution.
- ▶ Initiate automated troubleshooting manually, via ITSM tickets, or via monitoring tools.

Ansible Automation Platform includes native integrations with service and resource management systems like ServiceNow, Github, and Gitlab, allowing you to orchestrate response actions between these tools. You can also integrate resources, tools, and systems via an application programming interface (API) to create complete response workflows.

Govern cloud environments

Governance is an integral part of cloud operations. Cloud environments can quickly scale well beyond manual control capabilities—automation helps you apply and enforce policies across resources at scale. These use cases focus on ensuring cloud environments run according to your expectations and business requirements.



Business continuity

Ensure your cloud environment is always available to support your business.

- ▶ Move and copy resources off-cloud to support disaster recovery operations.
- ▶ Create, manage, and enforce backup policies.
- ▶ Manage disruptions and failures via push-button and event-driven automation.
- ▶ Rapidly stand up complete disaster recovery sites.
- ▶ Perform routine snapshots and backups.

Ansible Automation Platform’s automation mesh component lets you orchestrate diverse environments at scale to support business continuity across public cloud providers.

76%

less unplanned downtime⁴



Compliance in the cloud

Ensure your cloud environment is in compliance at all times.

- ▶ Automatically enforce identity and access management (IAM) policies to improve security.
- ▶ Validate security groups and access control lists (ACLs).
- ▶ Synchronize with IT service management (ITSM) solutions to improve operational tracking.

Ansible Automation Platform works with mutable and immutable infrastructure to provide a common experience across public clouds. As a result, you can more easily create and enforce policies across multiple regions and clouds.

18%

higher compliance team productivity⁴



Infrastructure optimization

Automatically optimize your cloud environment to save time and money.

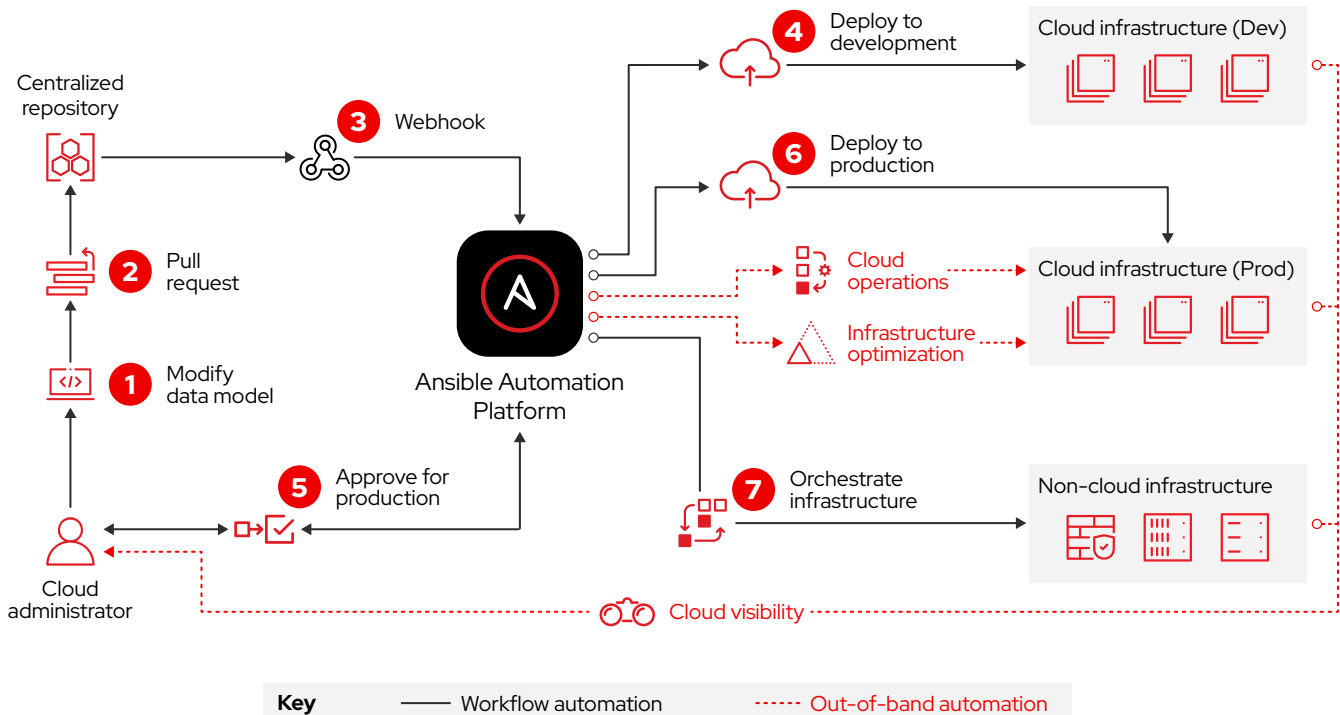
- ▶ Turn off unused resources according to policies.
- ▶ Rightsize cloud resources to balance cost, performance, and availability.
- ▶ Recover orphaned resources.
- ▶ More accurately understand your cloud use to better plan investments and budget.

Ansible Automation Platform lets you schedule workflows to continually audit your clouds and gain visibility into what you have. With this knowledge, you can create automation to optimize your infrastructure. You can also use custom workflow approvals to understand how changes may affect your cloud environment before they go into production.

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

Cloud automation workflow

This example of a complete cloud automation workflow shows how you can use Ansible Automation Platform to orchestrate cloud resource and application life cycles using a GitOps approach.



Workflow automation

1. A cloud administrator modifies a resource definition or playbook.
2. The cloud administrator commits the changed definition or playbook to a centralized repository.
3. Webhook integration in Ansible Automation Platform allows it to notice the change and start any necessary automation.
4. Ansible Automation Platform redeploys the cloud resources to a development environment.
5. The cloud administrator approves the automated production request.
6. Ansible Automation Platform deploys the cloud resources to the production environment.
7. Ansible Automation Platform sets up and orchestrates any other off-cloud resources needed for production deployment.

Out-of-band automation

- **Cloud operations:** Ansible Automation Platform performs Day 1 and Day 2 operations, including modifications and updates, as needed.
- **Infrastructure optimization:** Ansible Automation Platform optimizes infrastructure and resources as needed.
- **Cloud visibility:** Ansible Automation Platform takes snapshots of the infrastructure for visibility and insights as needed.

Are you ready to automate?

Automation can help you connect your cloud environments to streamline operations and create complete workflows.

By bringing together your people, processes, and technology, Red Hat Ansible Automation Platform can simplify your journey to the cloud. With a unified automation framework, you can orchestrate, operationalize, and govern your hybrid cloud to create complete workflows and deliver business outcomes across your environment, at scale.

Get started at ansible.com/use-cases/hybrid-cloud



Take advantage of Red Hat expertise

Red Hat can help you successfully deploy automation in less time. The Red Hat Services Program: Automation Adoption provides a framework for managing an organization-wide automation adoption journey.

[Learn more](#) about this program.



See what industry analysts say about hybrid cloud automation

Read the [IDC Spotlight](#) to learn how cloud automation delivers business value.