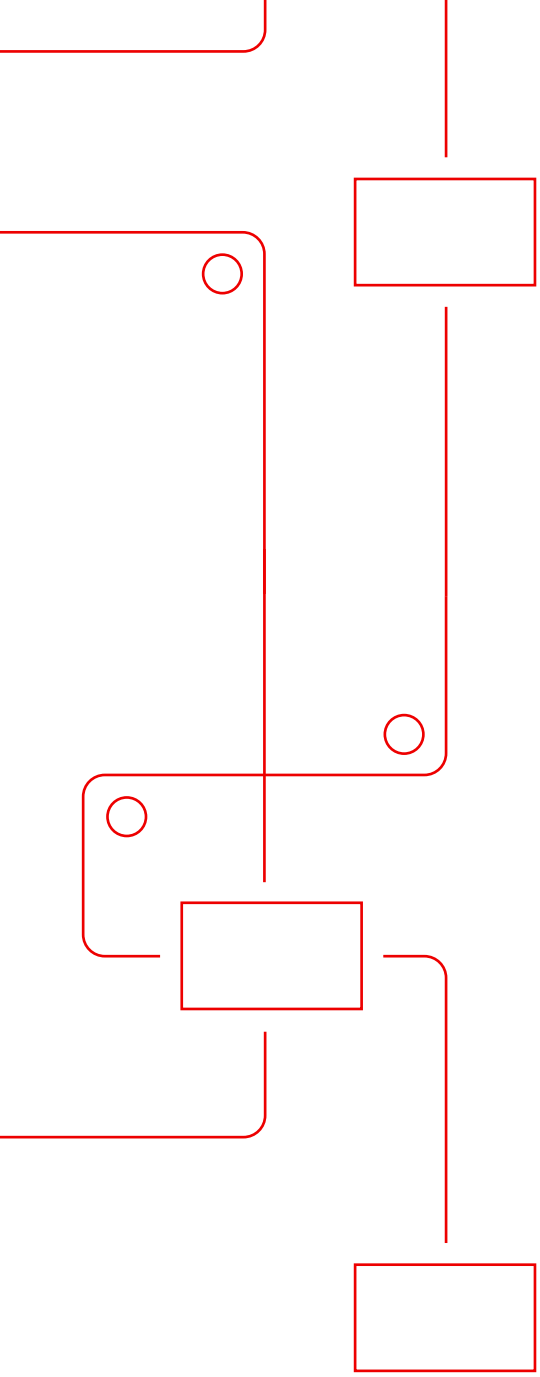
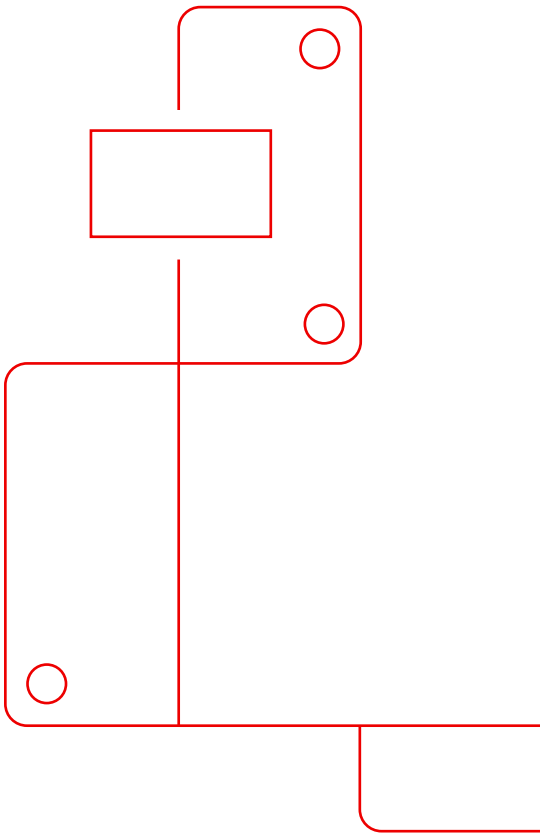
The automation architect's handbook:

A guide to leading your company's end-to-end automation journey





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Introduction

> Enter the automation architect, an emerging role that helps corporations build an automation-first mindset.

Automation is now at the core of many organizations' technology strategies. Propelled by the need to innovate faster, manage increasingly complex IT environments, accommodate new development approaches, and meet financial objectives, companies are making automation a priority. In fact, a recent survey found that three out of five decision makers report automation as one of their firms' top initiatives.[1]

Many organizations already have some task-centric automation in place, but automating at scale and working on higher-value automation that spans teams, geographies, platforms, and processes is becoming a primary focus.

Enter the automation architect, an emerging role that helps corporations build an automation-first mindset and achieve a range of business, financial, and transformation goals.

> "IT operations and DevOps teams require robust, consistent approaches to automation that allow integration, reuse and rapid time to value.[2]"

The automation architect is essential to helping organizations move to more comprehensive automation, such as end-to-end automation of IT processes, and ensuring good automation practices across the organization.

Automating a task is relatively simple, but the best results are achieved from a well-planned, end-to-end automation strategy. In this era of "digital everything," companies need to be faster, more innovative, and more agile than their competitors. Automation as a strategy can help businesses achieve goals that depend heavily on technology. There are challenges to overcome, however, including governance and policies, cultural transformation, skill-building, scalability management, identity management, security risk management, and the control and reuse of trusted automation content.

The role of the automation architect is essential to addressing these challenges, which can help an organization realize the full value of automation. In this piece, we map the steps required to lead an organization beyond task-centric automation, toward an enterprise-wide strategy.

[1] Forrester Consulting thought leadership paper commissioned by Red Hat. "Enterprise Open Source Automation Drives Innovation," Jul. 2020.

[2] IDC White Paper, sponsored by Red Hat, "Red Hat Ansible Automation Improves IT Agility and Time to Market.", Document #US45090419 , Jun. 2019.

Getting started

This Forrester report helps you assess current progress in your automation journey based on nine key dimensions.

Get the report

Think of holistic automation as a journey rather than an end state. The first step in this journey is to explore what your organization needs by considering more than just the tools currently in use across the organization.

Consider mapping your organization's automation maturity across six key competencies outlined in the Forrester report, "Gauge Your Infrastructure Automation Maturity."[3] The following is an example of how you may apply these competencies in your organization:

Strategy

Map existing automation across the organization. Identify activities that deliver value, as well as key initiatives to be furthered with automation, such as faster application deployments.

Process

Understand existing processes and identify gaps and inefficiencies. Document how a use case is achieved currently, correct inefficiencies, and break down complex processes into smaller chunks.

Prioritization

Evaluate, prioritize, and align to a consistent strategic roadmap. It is not uncommon to have multiple ongoing automation projects in an organization.

People

Identify opportunities for skill-building, foster a culture of automation, and find alignment with management. To adopt automation across the organization, many teams must be on board—including line of business, network, security, operations, development, and infrastructure.

Structure

Start small while thinking big. Start with small organizational units that focus on simple automation use cases to ensure efficiency, then grow from this point.

Operations

Redefine operations to include new process workflows. Share automation knowledge, best practices, and roadmaps across your organization.

Figure 1. Red Hat example of applying the Forrester "Gauge Your Infrastructure Automation Maturity" report's concepts as you create your own automation strategy

[3] Gardner, Chris, et al. "Gauge Your Infrastructure Automation Maturity," Forrester, Jul. 2020.

Key questions to assess your organization

Consider what might be slowing down your organization's ability to meet business objectives. Use the following questions to help understand your organization's current state of automation.

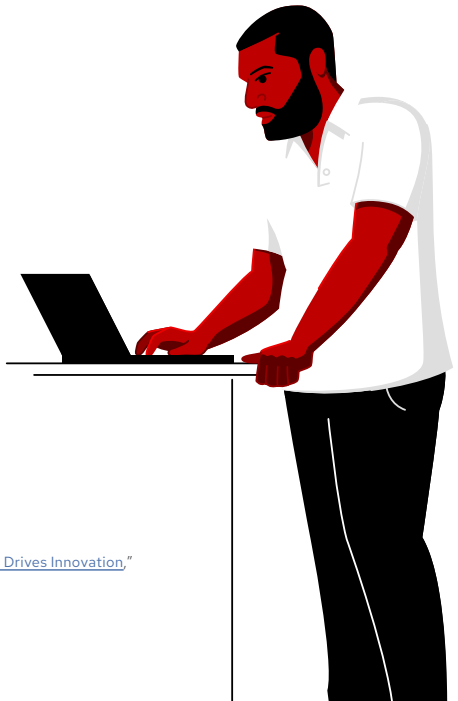
99% of decision makers report a variety of technology and business benefits from their firms' automation software investments.[4]

Understand your organization's current state of automation

- What processes can you automate to deliver more value?
- What simple but repetitive processes can be automated first to deliver and demonstrate results?
- Are there automation solutions in use currently that will be difficult to manage if a subject matter expert becomes unavailable or moves on?
- Are there competing automation solutions in use by different teams, or tool-specific automation capabilities that need to be stitched together to automate a process?
- Are there key executive initiatives that can be improved with automation?
- Can automation be used to relieve over-burdened teams or unite disparate functions?

Almost half of decision makers say the need to address time-consuming manual processes drove their decisions to purchase automation software.[4]

With a sound understanding of your organization's automation maturity, you are ready to develop automation goals and begin the transformation process.



[4] Forrester Consulting thought leadership paper commissioned by Red Hat. "Enterprise Open Source Automation Drives Innovation," Jul. 2020.

Set automation goals

Moving to more comprehensive enterprise automation is an iterative process with no single way to measure success. To be effective, alignment of goals is imperative.

Often, executives and implementers are misaligned on goals and use cases. For example, a Forrester Consulting study found that executives remain focused on automating security management and responding to threats, while implementers concentrate more on provisioning software delivery.[5]

Top automation priorities among leadership[6]

62%
Automate security management

62%
Automate/integrate different security solutions that investigate/respond to threats

60%
Automate provisioning

60%
Automate software delivery

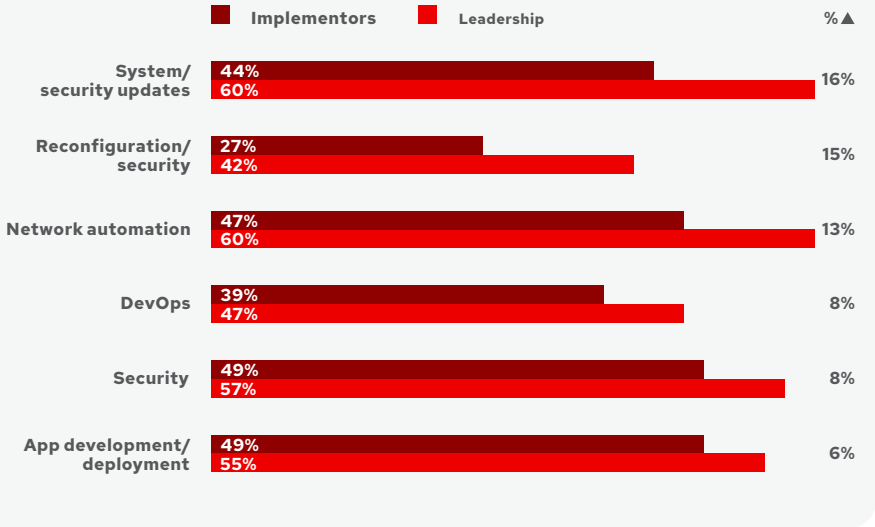
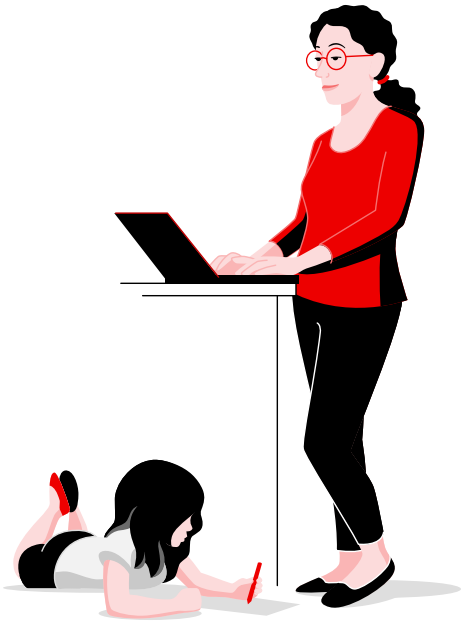


Figure 2. Participants in the Forrester Consulting "Enterprise Open Source Automation Drives Innovation" report, regarding what tasks they complete using open source infrastructure automation



[5] Gardner, Chris, et al. Forrester. "Gauge Your Infrastructure Automation Maturity," Forrester, Jul. 2020.

[6] Forrester Consulting thought leadership paper commissioned by Red Hat. "Enterprise Open Source Automation Drives Innovation," Jul. 2020.

Uniting viewpoints

In a 26-criterion evaluation of infrastructure automation platform providers, The Forrester Wave™: Infrastructure Automation Platforms, Q3 2020 report identifies top automation platforms.[7]

Learn more

The automation architect can bring together differing views by focusing on the following steps.

Align to business objectives

Connect automation efforts with business challenges and goals. This approach helps you identify where to automate and create top-down requirements for success. For example, you could automate patching to boost system security and stability and meet business needs for improved uptime with the same automation initiative. Automation should allow you to focus on outcomes instead of outputs.

Be the realist in the room

Set achievable goals. Cost savings and return on investment (ROI) are common priorities, but also consider goals to improve security risk management, increase accuracy, free time for innovation, and boost line of business stakeholder satisfaction.

Realistic goals should align with your organization's current skills while encouraging teams to learn and expand their abilities as they progress along the automation journey. In time, automation skills will improve, and your teams can increase the scope and complexity of their automation projects accordingly.

For example, a team may start by automating a single highly repetitive task, demonstrating cost and efficiency benefits from that project, then expanding it to other related repetitive tasks, full processes, or even global implementations of the project.

Optimize processes, then automate

As you are defining your automation projects, consider the processes you are automating. Are they efficient? Do they contain outdated or unnecessary steps? Determine if processes can be improved before you automate them to optimize efficiency. If you determine that a process is inefficient, address the inefficiency before automating the process.

[7] Forrester Research, Inc. "The Forrester Wave™: Infrastructure Automation Platforms Q3 2020." Aug. 2020.

Define and document automation success

There is no single way to measure automation success. Instead, start small, show value, expand conservatively, and repeat. Consider working across your organization to identify an automation opportunity that can be easily reported back to executive teams.

For example, if an increase in incident management tickets is due to incorrect firewall rules that are causing an additional increase in change requests, aim to reduce the number of tickets or change requests through automation.

Once the automation is implemented, you should see a reduction in incident management tickets and a drop in change requests too. These reductions can be mapped to cost savings and improved customer service.

Governance is also applied through this automation so that updates are made consistently and according to a defined process with auditability (see Figure 3). Share these metrics across the organization, with your executives, and your line of business stakeholders.

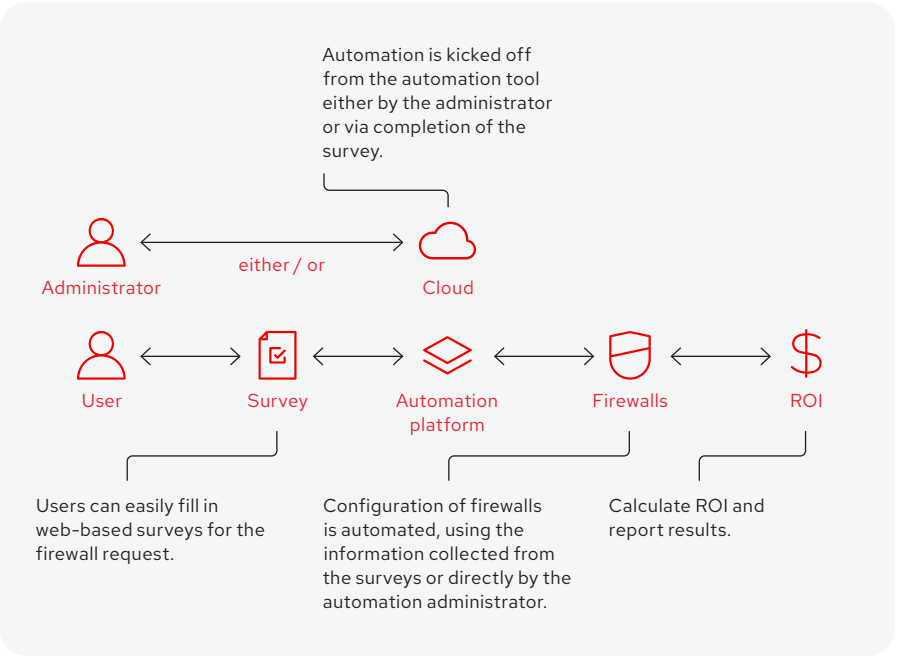


Figure 3. Firewall configuration example using automation

Once you can prove successful automation in a simple scenario and demonstrate how automation is relieving manual processes, you can increase the number and types of use cases and the scope of automation.

From troubleshooting, to identifying tasks most likely to fail, to governance and control, the right automation platform can centralize automation management.

Watch this video to see how

Share and build on successes

Work to accomplish incremental successes over short periods. Once you have promoted each win, ask your broader organization for ideas on how they too can realize value from automation. This approach establishes a base so others can build upon your experiences and deliver greater value.

Employ a "crawl, walk, run" approach

Organizations that jump to more complex automation projects from the outset often struggle with expanding automation beyond a single use case.

For example, within the network domain, if you were to implement a web server, there are numerous changes that need to happen from a configuration management standpoint. You might have to reserve a public Internet Protocol (IP) address, which means you need to interact with a system to get the address. Additionally, you will need to assign a Domain Name System (DNS) for that address, open firewall ports, configure a load balancer, and advertise that IP address through your edge routers, as well as implement required local networking changes.

Compared to the IP address example, the DNS example is much more complex and time consuming, and reporting success will be more difficult. Consider taking an iterative approach by automating the IP processes first, then adding other automation steps once your initial steps are working as expected.

Demonstrate automation value by reporting on job data and cost savings, and by identifying high-value automation tasks.

Watch this video to see how

Organizing automation assets and training staff

Try Red Hat® Ansible® Automation Platform and access its award-winning Customer Portal, including documentation, helpful videos, discussions, and more.[8]

Start your trial

Before you begin automating, prepare your organization for success using these steps:

- Identify existing automation inventory.
- Create a central repository of trusted content.
- Use training resources and a free product trial to help your staff become familiar with the content repository and the automation tool.

A central repository is an essential element for ensuring reuse of trusted automation content, whether you build it internally, use certified automation content, or rely on community-developed content.

Control and governance of automation from the start using this repository can yield big benefits as your organization progresses along its journey to holistic automation. Skill development is a gateway for you to begin building a community of practice, which is important for creating an automation-first culture and mindset.

Understand your inventory

How are your IT assets organized and managed? Identify which assets you have, how they are configured, and how you will keep track of them over time.

Define a source control repository

How will you track changes to your automation content? Create consistent, security-focused methods for recording and controlling changes to your assets.

Train your staff

Does your staff have the skills they need to automate successfully? Train staff on concepts like source control, testing protocols, and best practicies.

Figure 4. Steps to prepare for automation [8]

[8] Red Hat e-book. "The automated enterprise," 2020.

Advance a culture of automation

The secret to successful end-to-end automation is not just a technology change, but also a change in mindset across the organization. Communities of practice are a great way to transform how your organization thinks about automation.

Many automation resources are readily available, including training on concepts like source control, testing protocols, and best practices. But for those who are responsible for moving automation forward, your focus should begin with building trust across the organization.

Approaches at a glance

- Identify a champion or executives to talk about the value of automation, including staying competitive and innovating quickly.
- Share results and successes as a way to build trust and legitimacy.
- Highlight and reuse trusted content to save time.
- Find the best teams for automation opportunities and work with them to create content and implement automation.
- Show, rather than tell, by offering demos and use cases teams can relate to.
- Once the community of practice has momentum, develop standards boards and policies.

Train behaviors

To gain buy-in for a holistic approach, build trust by creating a shared understanding of how automation can work between teams.

Use demonstrations and brown bag lunches to show how the solution works and to build interest. Once the community of practice is engaged, offer more hands-on and in-depth sessions for interested teams. More formal training can follow.

Increase visibility

Look for ways to build interest in automation. For example, create a dashboard to share successes and offer a technical "code-a-thon" challenge that the broader team can help to solve, with recognition or a reward for the winner.

This approach gamifies the automation process, increases visibility across domains, and trains the behavior of frequent iteration.

Help the team get started

Work with teams to help examine their processes to find opportunities for automation. Look for repetitive tasks that cause delays and are not core to the team's role.

Perform technical due diligence and offer an automation solution that provides enterprise scalability. Look for solutions with low implementation barriers that make it easier to adopt new automation, examine ecosystem support, and automate across disparate automation tools. Many automation solutions require agents or software to be installed on remote systems, which can create a barrier to implementation. Also, look for solutions that offer easier content creation and certified content to help with adoption.

Empower employee-led automation

Empowering peers with automation training helps organizations use the skills of technical employees and crowdsourced ideas. In a bottom-up approach where employees can suggest automation through a central platform, high-value automation ideas fill the company pipeline while encouraging a culture of automation.

It's important not to force automation but rather take advantage of working with existing tools and content.

Manage up

To gain buy-in from your management team, understand processes by asking what's slowing down results. If, for example, provisioning the network is the bottleneck and it is impacting the business, start there. Then move on to the next area that executives view as a point of friction.

Successfully automating many smaller functions that make an impact will build trust faster than attempting to take on a complex automation task.

Discuss value instead of tools

When it comes to automation adoption with senior-level management and executive teams, the conversation should be about value, not software tools. Communicate the ability to deliver applications more seamlessly, securely, and reliably—and to iterate on them quickly. Focus early conversations on providing business value faster by automating manual tasks and freeing up resources to deliver higher-value tasks.

Consider enterprise and production environment needs

As automation expands across an organization, new needs emerge. Scalability, governance, and control become essential. In addition, access control, automation orchestration, and trusted content are important to meet corporate security and compliance mandates.

Consider your production environment requirements, and identify the tools you will need to meet those requirements. Subscription-based software may include management, additional hardening, simple installation, and life-cycle and technical support.

These considerations are all critical when automation is interacting with essential systems, and it must be able to scale with good management across the organization. Depending on your needs, compliance and governance may also be important, particularly for security automation, financial systems, healthcare, or government applications.

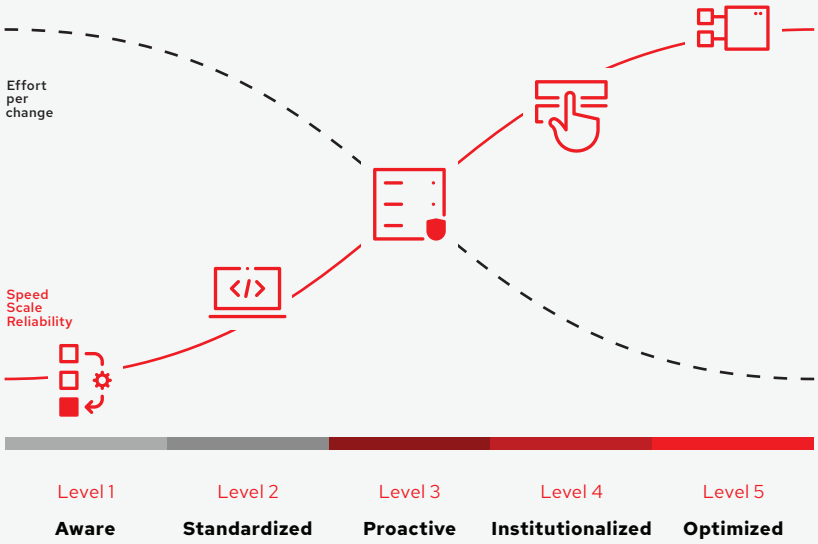


Figure 5. Business value increases with automation maturity

Management and governance

Automating end-to-end processes often means orchestrating work among people and tools and across multiple automation technologies. For automation to succeed and scale, organizations need a framework that enables automation to grow independently across the enterprise, while still providing management and governance.

Governance priorities for an automation architect:

- Provide access to the right people.
- Adhere to organizational policy and security standards.
- Establish clear lines of accountability.
- Address risk to realize business benefits and foster innovation.
- Choose solutions that provide auditability.

In the absence of controls, an error can become systemic to a process and put critical infrastructure and applications at risk.

For example, if you have a piece of automation that creates a virtual local network (VLAN) on a network device, you want to ensure that the right team is using that against the right devices. If someone who is not a network engineer gains access to the playbook and runs it against an incorrect network device or a device that is out of capacity, they could cause severe damage. Governance addresses this concern. Consider these key areas:

Develop a framework

Develop a clear governance framework from the start as you empower more people with automation. Even while getting started with targeted pilots, begin addressing company-wide governance that can grow as your automation projects expand.

Balance empowerment and control

How much autonomy do functions have over automation initiatives, and which areas are the domain of your IT organization? Getting to the optimal mix requires business leaders to model collaboration, demonstrate commitment, and continually communicate expectations.

Centralize automation content

Establish repositories so trusted automation content is easy to find and use. Leading automation platforms will allow you to create collections of trusted content, such as a private library, that remains available and usable for internal teams.

Prepare your CI/CD pipeline for the future

Prepare your team with access to enterprise training resources. Learn automation concepts in this no-charge course.

Inevitably, technology must evolve to address changing business needs and fit new workflows, including DevOps, DevSecOps, and GitOps. Choose a flexible platform that can adapt to future technology advancements and trends, including popular and emerging continuous integration/continuous delivery (CI/CD) tools like ServiceNow.

Many companies are adopting cloud-native Kubernetes environments as part of their hybrid cloud strategy to gain more flexibility, speed, and innovation. Look for an automation platform that integrates with your existing Kubernetes solution, as well as other platforms, to allow you to orchestrate Kubernetes clusters within your CI/CD pipeline—especially as you modernize applications.

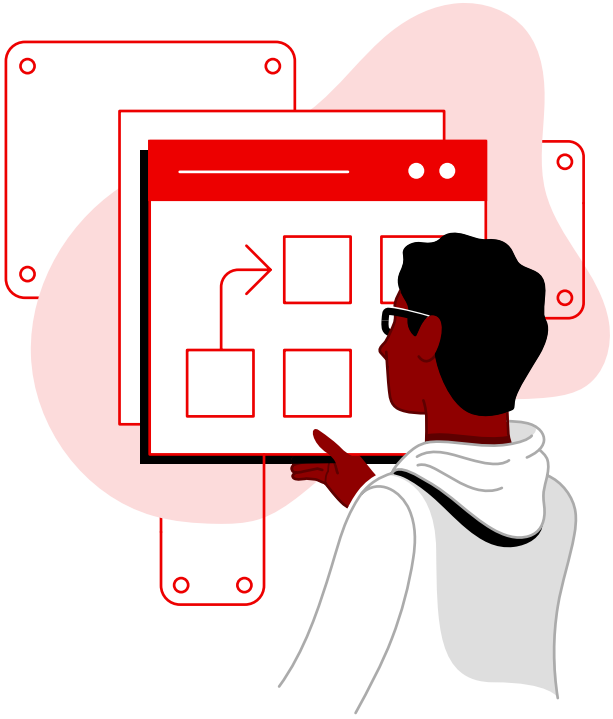
Lead your organization toward end-to-end automation

Red Hat Ansible Automation Platform prepares your organization to innovate faster, respond to future technology advances and trends, and manage increasingly complex IT environments. With an overarching view of the organization and an understanding of the value that can be delivered from automation, you are uniquely positioned to lead an enterprise-wide automation approach that can save time, increase quality, and reduce costs.

Learn more

Red Hat Ansible Automation Platform is the foundation for building and operating automation services at scale, providing enterprises with a composable, collaborative, and trusted execution environment. With an easy-to-read automation language, cross-component interoperability, management capabilities, and security-focused collaboration tools, organizations can implement automation quickly and consistently.

Learn more at redhat.com/ansible



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