Automate
Red Hat Enterprise Linux

Powered by Red Hat
Ansible Automation Platform
and Red Hat Satellite

Red Hat

Contents

Introduction
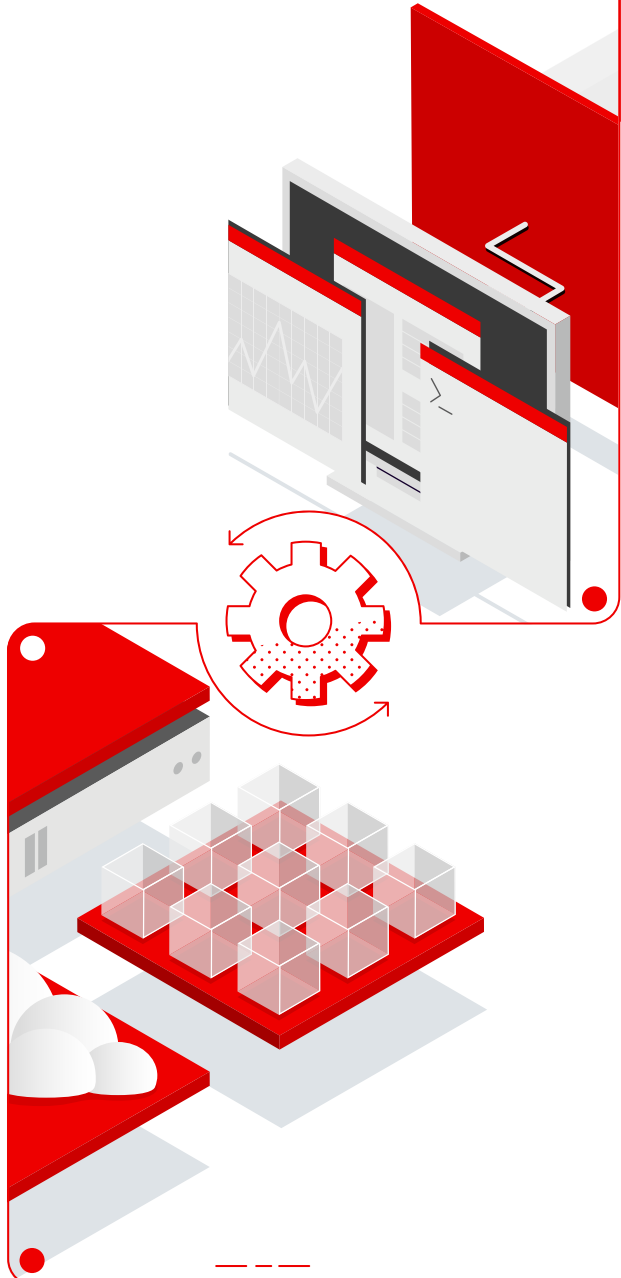
As an organization using Red Hat® Enterprise Linux®, you know choosing the right operating system is a huge part of success in the modern business environment.

However, that choice is just the first step in creating a foundation that can produce the business outcomes you want at scale.

Increasingly, manually managing diverse environments is time consuming, often resulting in errors and security risks when vulnerabilities aren't addressed in a timely manner. And with that, inconsistent configuration across users and applications creates longer-term maintenance issues. Additionally, there's a general skills gap when it comes to managing large, complicated infrastructure.

As your organization's footprint grows from your datacenter to a business that spans multiple clouds and extends to the edge of the network, managing that infrastructure consistently demands automation.

Without automation, IT budgets can balloon with the costs of manually managing applications and workloads. IT teams have to be in operation 24-hours-a-day, seven-days-a-week to manage and support systems across different environments.

It's simply not feasible for a modern organization.

However, if automation is applied piecemeal across various teams, it can create operational inefficiency and drain finite resources.

In this e-book we will show how Red Hat Ansible® Automation Platform and Red Hat Satellite can help simplify the deployment and management of Red Hat Enterprise Linux across IT environments, and which situations call for one tool or the other (or both).

Why use automation for Red Hat Enterprise Linux?

For scaling IT organizations, automation is no longer just a tool for achieving business outcomes and increasing innovation, but an essential part of competing while not being overwhelmed by increasingly complex systems.

In this section, we cover many of the reasons why automation is a key component of scaling your investment in Red Hat Enterprise Linux.
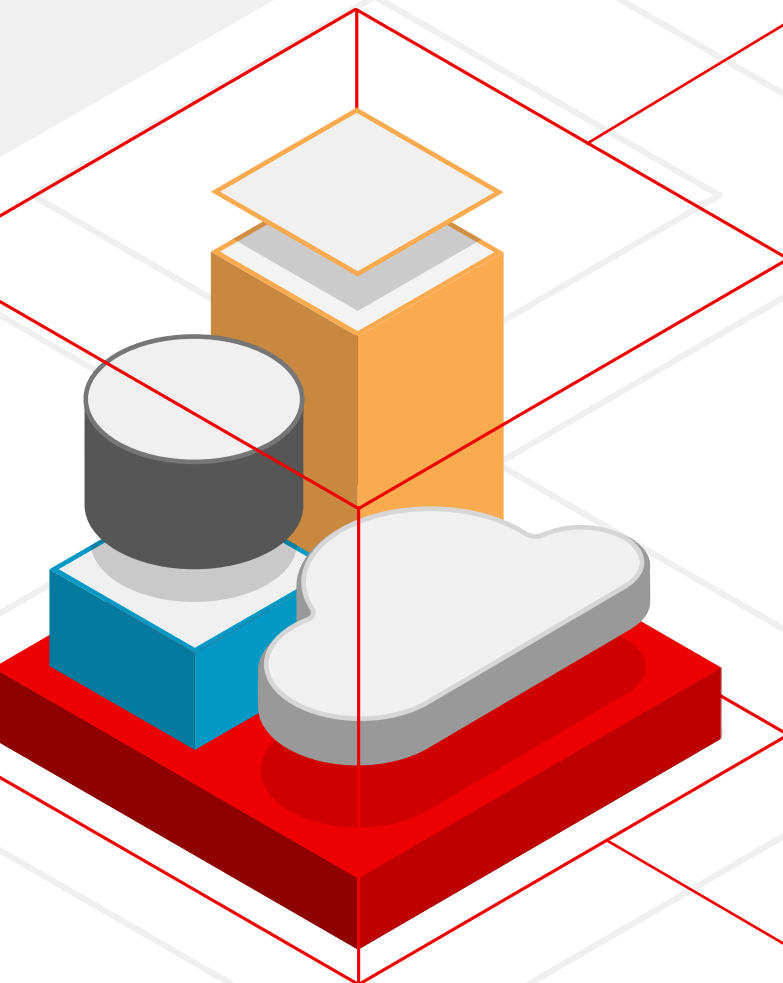
Ensure consistent configuration for increased infrastructure resiliency

Using automation, you can establish a common, stable, and predictable path for managing Red Hat Enterprise Linux across any environment. This is especially important as an IT organization scales from operating on-premise, or with a simple cloud configuration, to more complex hybrid cloud or multicloud environments.

Reduce security and compliance risks

Since automation establishes standardized workflows, provisioning and configuration happen the same way every time and eliminate "snowflake" systems that are unique and may require specific institutional knowledge to run. This reduces not only human error in the execution of operational tasks, but helps ensure they happen on a reliable schedule and are not vulnerable to fluctuations in human resource capacity.
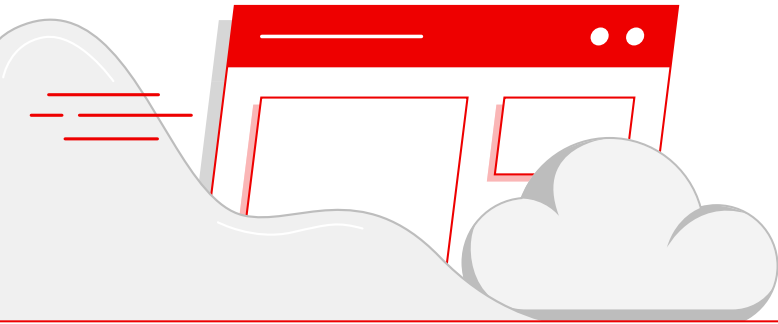
667%

The average 5-year ROI realized with Ansible Automation Platform.[1]
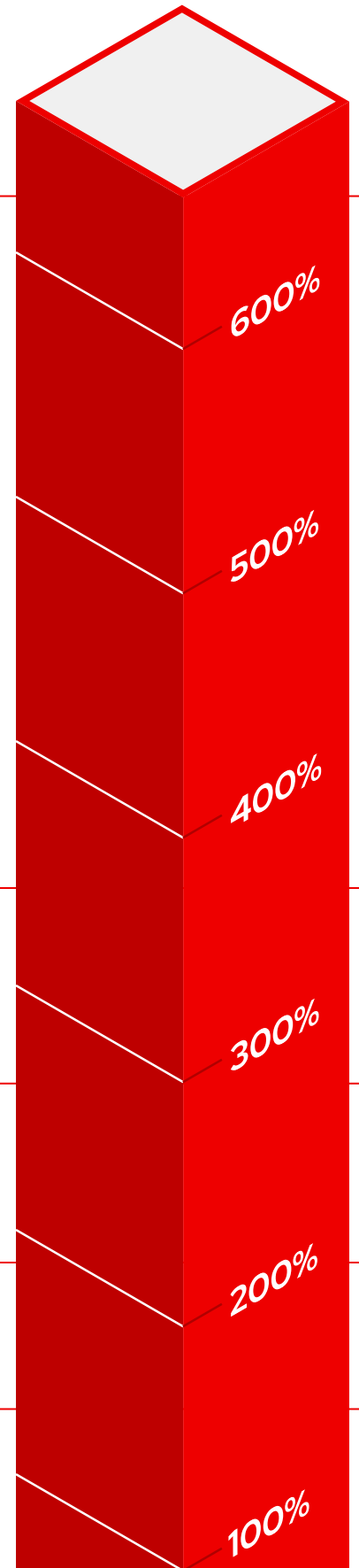
Boost time to market

By standardizing tasks, applications and services can be brought to market more quickly, accelerating time to value. This means an IT organization has fewer periods of burn (where resources are spent, but money isn't coming in) and helps establish a more predictable revenue stream for the business.

Increase IT team productivity

By allowing human resources to be applied to higher value tasks, IT organizations using automation are able to make sure those resources are used as productively as possible. With deployments at the edge of the network, low-automation environments sometimes need 24x7 human IT support. Using a well planned, organization-wide automation solution can reduce that need and shift your workforce to more regular working hours, lowering the burden on human resources and reducing the chance of burnout.

Free up time to focus on innovation and strategy

Since automation can reduce the need to apply IT teams on manual, repetitive, lower value tasks, the time they do have is freed up to focus on the innovation and strategic projects instead of plugging leaks and applying patches.

Attract and retain talent

Establishing an automation community of practice lets everyone share their best ideas and build on each other's work. In addition, as automation frees teams from repetitive, manual tasks, they can focus on strategic work that is closely tied to their organization's mission, giving them a sense of meaning and purpose.

600%

500%

400%

300%

200%

100%

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1   IDC White Paper, sponsored by Red Hat. "The Business value of Red Hat Ansible Automation Platform snapshot," Document #US47989320, Oct. 2021.
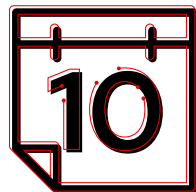
A look at Red Hat Ansible Automation Platform

Overview

Moving to automation isn't always easy. Creating a do-it-yourself automation solution may require a significant investment of resources just to build the tools you need to do the work yourself. Also, automation is much more than just a technology. Creating an automation practice means embracing and adapting to new ways of working with an emphasis on reskilling users, embracing change, and breaking down barriers between organizational divisions.

Ansible Automation Platform is Red Hat's enterprise-class automation solution. Designed to work directly with Red Hat Enterprise Linux, and other leading operating systems, it includes all of the tooling needed for building, deploying, and managing end-to-end automation at scale.

10 months to payback

on investment on average with Ansible Automation Platform.[2]

30%

more efficient IT infrastructure teams on average with Ansible Automation Platform.[2]

Ansible versus Ansible Automation Platform

Why use Ansible Automation Platform when the community version of Ansible is available at no cost? The answer is that "free" means you have to do more of the work yourself, which, in turn, will likely cost more time and money in the long run.

In addition, to match the functionality of Ansible Automation Platform, IT teams would need to integrate and maintain over 17 distinct open source components plus any applicable content to integrate automation into other platforms. Some organizations may start with the community version of Ansible when they're getting started with automation, but quickly find that testing, integrating, and managing a "DIY" solution becomes impossible as they scale and expand into more sophisticated automation use cases.

Finally, Ansible Automation Platform is fully supported by Red Hat, whereas the open source version is supported by the community. While active and vibrant, the Ansible community was not intended to support critical applications such as Red Hat Enterprise Linux where performance issues and downtime equate to a loss of productivity and revenue.

Imagine that building an automation solution for your IT organization is similar to building a house. Using Ansible Automation Platform is like having a set of purpose-built tools, a set of certified blueprints, and a team of experts to help you with the process. With community Ansible, all you have is an empty lot, and ultimately you'll have to figure out a way to find the right tools, design the plans, and build the structure yourself.

Red Hat Satellite: A more direct tool for infrastructure management

Red Hat Satellite is an infrastructure management product specifically designed to keep Red Hat Enterprise Linux environments and other Red Hat infrastructure easier to deploy, scale, and manage across physical, virtual, and cloud environments.

Red Hat Satellite is specifically designed for:

▸ **Content management** Red Hat Satellite helps ensure the systematic application of content, including patches, to deployed systems—on physical, virtual, or cloud infrastructures—in all stages.

▸ **Patching** Red Hat Satellite ensures a standard operating environment (SOE) by getting updates on security patches, updates, and enhancements.

▸ **Provisioning** Red Hat Satellite helps provision on bare metal, virtualized infrastructure, and on public or private cloud environments—all from a centralized console using one simple process.

▸ **Configuration** The Red Hat Satellite user interface allows you to analyze and automatically correct configuration drift and control, and enforce the desired host end state.

▸ **Subscription management** Red Hat Satellite helps you easily report and map your Red Hat products to registered systems for end-to-end subscription consumption visibility.

Where Ansible Automation Platform can be configured to automate a plethora of different types of tasks, including, but not limited to the tasks outlined above, Red Hat Satellite is purpose-built to complete those specific tasks and is ready-to-go to help you with them.
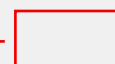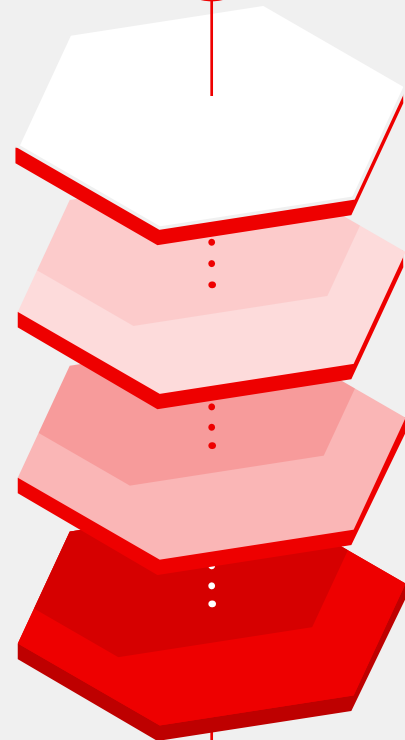
An example of automation in action:
Red Hat Enterprise Linux System Roles

An easy place to see the value of automation, and a good place to start automating Red Hat Enterprise Linux is with System Roles.

System administrators are often tasked with managing large fleets of Red Hat Enterprise Linux instances across many different environments while adhering to distinct policies and standards for configuring systems. Using Red Hat Enterprise Linux System Roles (which are powered by Ansible) simplifies the provisioning and management of these systems. In addition, System Roles provide a consistent configuration interface across major Red Hat Enterprise Linux versions, even when the underlying technologies change between versions. This makes management easier and saves time, especially in environments with a mixture of Red Hat Enterprise Linux 7.x, 8.x, and 9.x.

[View the full list of Red Hat Enterprise Linux System Roles.](#)

ALSTOM

Alstom uses Red Hat technologies to accelerate application modernization and management while delivering new business innovation

By implementing and standardizing on Red Hat Enterprise Linux as its host operating system on bare metal, Alstom was able to transform its railway Internet of Things (IoT) devices to a flexible and more modern solution for data acquisition and edge processing. This containerized architecture means Alstom is now able to more securely, reliably, and easily deploy edge applications. The addition of Ansible Automation Platform has allowed Alstom to reduce manual processes by automating the life cycle of edge devices—from management to patching to new application deployment—with updates delivered to fielded devices in real time or on demand.

[Read the full case study](#)
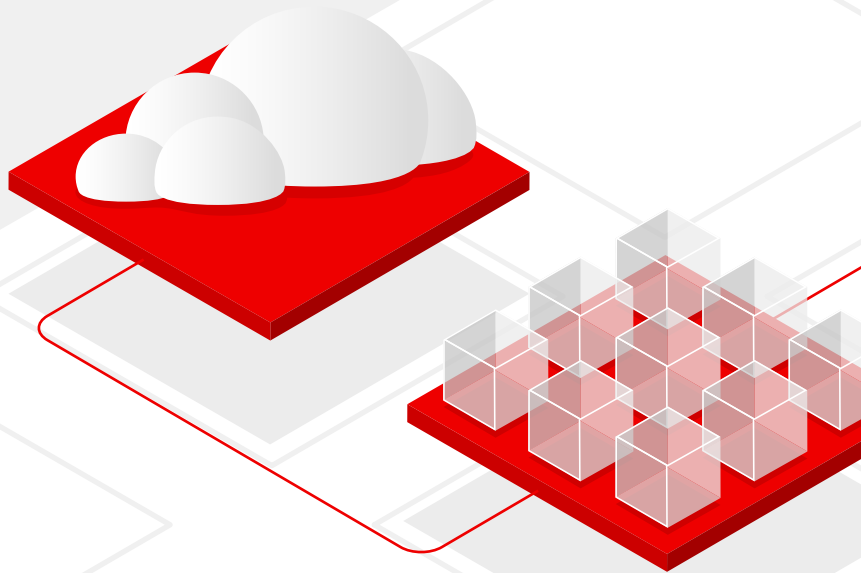
Red Hat Satellite and Ansible Automation Platform
An example of when to use them together with Red Hat Enterprise Linux

The Red Hat Enterprise Linux System Roles Content Collection is a certified collection of Ansible roles that support consistent configuration and workflows, eliminating manual effort and reducing errors along the way. You can ensure standardized, repeatable configuration of Red Hat Enterprise Linux using certified content.

System Roles can be applied to hosts from Satellite for fast and easy use. Or, they can be used with more complex workflows with Ansible Automation Platform.

For example, you can use System Roles within Satellite to quickly configure deployments, while using them in Ansible Automation Platform to integrate with tools from leading third-party vendors.
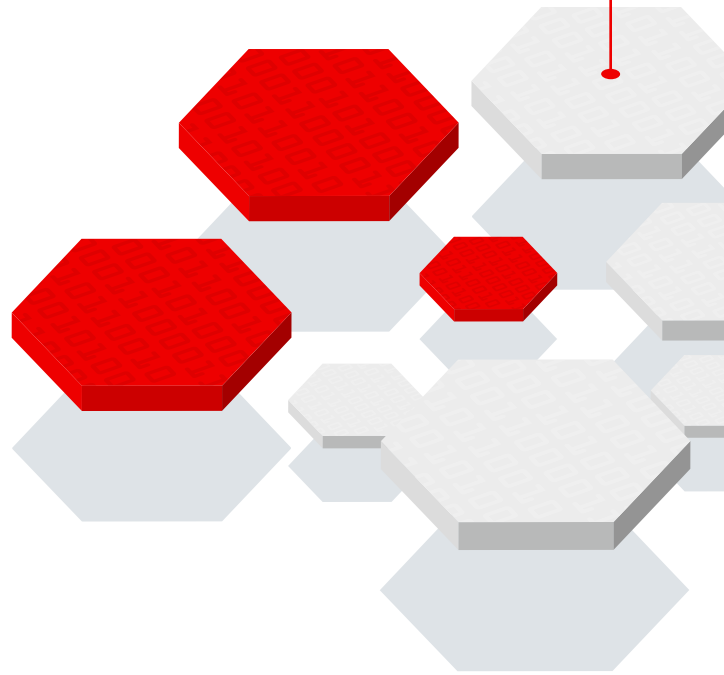
29%

more efficient network infrastructure management teams on average with Ansible Automation Platform.[4]

Using System Roles with Ansible Automation Platform, you can focus on innovation and strategic long-term projects as well as:

▸ Establish a common, stable, predictable path for managing Red Hat Enterprise Linux across any environment.

▸ Manage automation at scale, with the required level of consistency and governance.

▸ Reduce technical time and resources devoted to daily administration.

▸ Minimize manual tasks and execute them consistently across physical, virtual, private cloud, public cloud, and edge environments.

▸ Allow IT teams to expand their automation use cases with certified Ansible Content Collections from leading third-party vendors.

▸ Automate at the edge to speed up transactions, improve your customer experience, and gain a competitive edge.

▸ Deploy edge workloads to meet local compliance requirements and ensure continuous operations.

Automation from Day 0 to Day 2

When tracking the software life cycle, the application moves through different stages, which Red Hat refers to as Day 0, Day 1, and Day 2 operations.

0

Day 0 represents the design or planning phase of software development. This is when organizations using Red Hat Enterprise Linux determine what requirements are needed to get it up and running.

1

Day 1 represents the build phase when infrastructure is created for the software and rolled out. The actual installation, set up, and configuration of Red Hat Enterprise Linux happens at this stage, and this stage is when Red Hat Satellite comes into play.

2

Day 2 represents the software being brought into operation and customers beginning to use it. Day 2 represents ongoing repetitive tasks to keep the system running smoothly. Done manually, these tasks take up a lot of resources, but with the help of automation through Ansible Automation Platform, IT organizations can drastically reduce the resource strain.

SIEMENS

Siemens enhances communication security with Red Hat Ansible Automation Platform

To simplify and better automate its PKI environment, Siemens worked with Red Hat to replace its legacy automation solution with Ansible Automation Platform. Siemens worked closely with Red Hat consultants to learn how to use Infrastructure-as-Code (IaC) and continuous integration and continuous deployment (CI/CD) practices to write and test playbooks, with all hardening measures now scripted in Ansible.

[Read the full case study]

Day 2 dividends

Day 2 is where the automation investment begins to deliver tangible, long-term benefits. Ansible Automation Platform helps reduce the resource strain from Day 2 tasks such as operating system updates, backups and restoration, security configuration, and more.
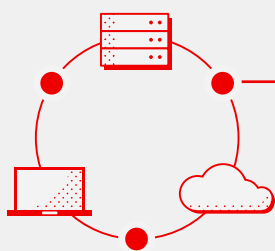
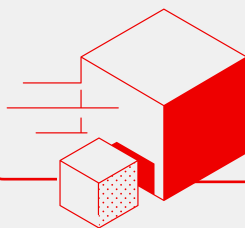# Automating Red Hat Enterprise Linux at the edge

Outside of the datacenter, at the edge of the network, infrastructure is distributed across multiple remote locations. Operating across these heterogeneous environments creates the following challenges: security, complexity, and management at scale.
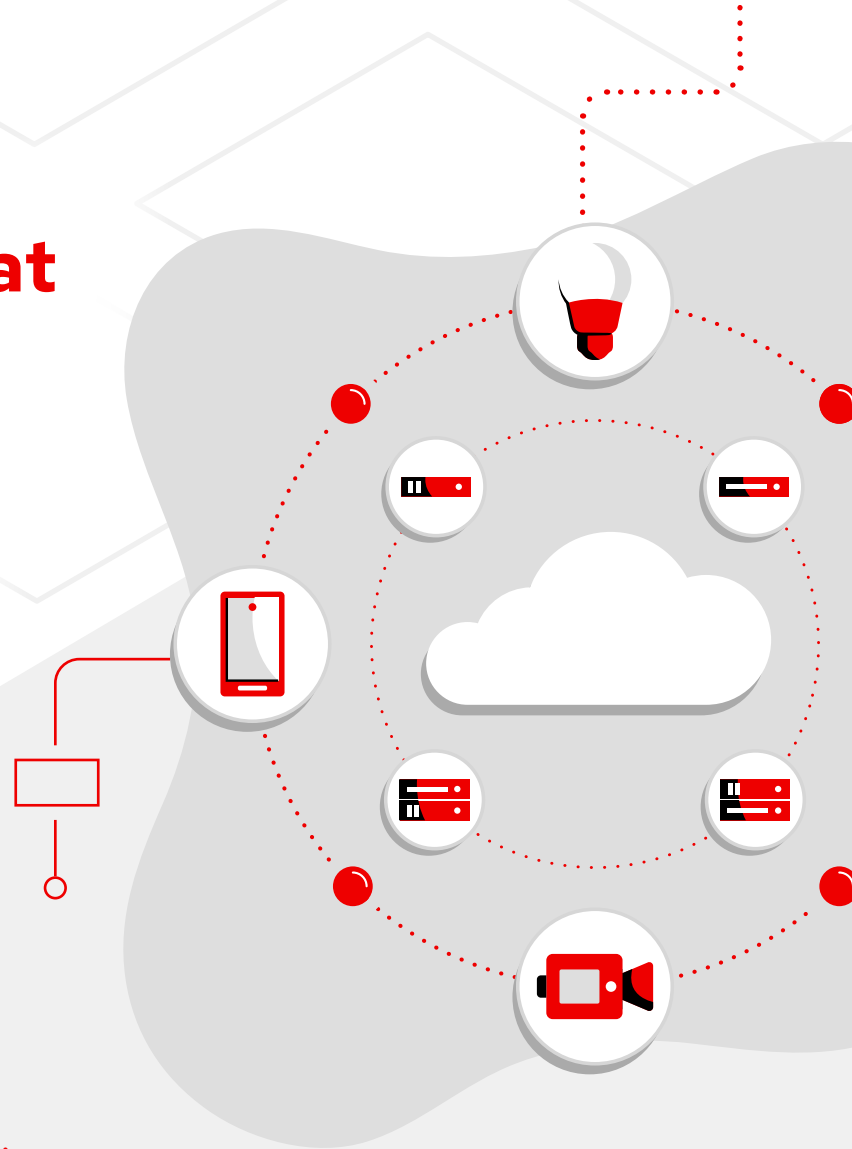
Automation helps with this in a few primary ways:

First, in edge environments, repeatability is critical. Remote locations without standardized deployments leave systems vulnerable when IT teams are unavailable to remediate issues in those locations. Automation helps ensure that all of the edge configurations are consistently configured and don't require specialized knowledge to maintain.

Second, automation is able to create regular routines to make sure edge deployments are in compliance. While installations of Red Hat Enterprise Linux on-premise or from a hyperscaler often have a single point of concern, edge deployments often have compliance issues spread across significantly more installations and physical locations. Automation makes sure that each of these edge instances is tracked on a regular schedule and gets updated proactively, not as a reaction when problems occur.

Third, when working at the edge, environments get increasingly complex as the layers of tools between the edge devices and the datacenters increase in number, and computing power becomes spread over many different physical locations. At this point, automation stops being a "nice-to-have" to manage this complexity at scale and becomes necessary to avoid requiring seven-day-a-week, 24-hour IT support to even keep them functioning.

Ansible Automation Platform at the edge

Ansible Automation Platform provides the flexibility to meet the often limited physical space and power requirements of distributed remote sites, while also managing datacenter and cloud environments. This allows organizations to not only manage today's most demanding workloads, but to proactively evolve, as business strategy changes, to meet tomorrow's needs.

75%

faster deployment of new storage resources on average with Ansible Automation Platform.[5]

HCA Healthcare

HCA Healthcare develops predictive analytics using Red Hat software

After evaluating different solutions, HCA Healthcare used Red Hat OpenShift® Container Platform and Red Hat Enterprise Linux to create a scalable, container-based Platform-as-a-Service (PaaS) foundation for its platform. Red Hat Ansible Automation Platform provides broad automation capabilities for data collection, analysis, and proactive notification processes that help save lives by speeding sepsis detection. Red Hat Satellite and Red Hat Insights provide management and analytics for HCA Healthcare's Red Hat environment.

"Our relationship with Red Hat is critical to ensuring service quality in the clinical environment," says Dr. Edmund Jackson, Chief Data Scientist, HCA Healthcare.

Read the full case study

Extending automation to succeed at the edge

Deployments at the edge of the network can be a complex mix of different tools and resources interacting with each other. Once you start managing distributed locations at the edge of the network, you will need to extend the security and configuration controls from the datacenter to the edge, including multivendor and multipurpose devices and services required for the remote Red Hat Enterprise Linux endpoints. As the IT landscape grows, automation is no longer optional to succeed.

Infrastructure edge/datacenter

ServiceNow
ITSM

GitHub Webhook

GitHub repo

Git Push

git

Developer local repo

Ansible Automation Platform

IP Address Management (IPAM)

Images Registry

Active Directory

SIEM/SOAR

Governance

Security

Public key infrastructure

Near edge

Network/Wifi

Hypervisors and out-of-band management

Ansible Automation Mesh

SIEM/SOAR

Active Directory

Images Registry

Firewalls

Cloud connectivity

Kubernetes

Windows/Linux VMs

Applications

Far edge

Cloud connectivity

SIEM/SOAR

Firewalls

Windows/Linux VMs

Ansible Automation Mesh

Images Registry

HMI Device

Edge nodes

Over-the-air update

IoT MQTT protocol

IoT HTTP protocol

Applications

Sensors

Are you ready to scale your automation?

Just because you know you need automation in order to scale doesn't mean that you can go from zero to having your entire IT environment automated in one massive project. In fact, that's an easy way for your automation efforts to fail to gain momentum.

Instead, automation is best taken into an organization in small, incremental steps. One option is to start with Red Hat Satellite to streamline deployments of Red Hat Enterprise Linux before moving to Ansible Automation Platform to expand automation to other workloads such as Microsoft Windows or ServiceNow ITSM. Once your teams have the foundational expertise, you can expand into networking, security, and beyond.

Learn more about getting started with automation for Red Hat Enterprise Linux

Additional resources

Learn:
Sapphire Health accelerates innovation with Red Hat

Read:
Announcing the Red Hat Enterprise Linux Certified Ansible Collection

Train:
Red Hat Enterprise Linux Automation with Ansible

Watch:
Automation at the edge