

## **Ansible:**

**Ansible** is a suite of software tools that enables infrastructure as code. It is open-source and the suite includes software provisioning, configuration management, and application deployment functionality.

Originally written by Michael DeHaan and acquired by Red Hat in 2015, Ansible is designed to configure both Unix-like systems and Microsoft Windows. Ansible is agentless, relying on temporary remote connections via SSH or Windows Remote Management which allows PowerShell execution. The Ansible control node runs on most Unix-like systems that are able to run Python, including Windows with Windows Subsystem for Linux installed. System configuration is defined in part by using its own declarative language.

Ansible is a tool written in Python, and it uses the declarative markup language YAML to describe the desired state of devices and configuration. In association with the idea of a "desired state," Ansible also uses the concept of idempotency.

## **Infrastructure as code (IaC):**

In the past, managing IT infrastructure was a hard job. System administrators had to manually manage and configure all of the hardware and software that was needed for the applications to run. However, in recent years, things have changed dramatically. Trends like cloud computing revolutionized—and improved—the way organizations design, develop, and maintain their IT infrastructure.

One of the critical components of this trend is called “infrastructure as code,” and it’s what we’re going to talk about today.

Infrastructure as code is the process of managing and provisioning computer data centres through machine-readable definition files, rather than physical hardware configuration or interactive configuration tools.

**Infrastructure as code (IaC) means to manage your IT infrastructure using configuration files.**

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**RHCSA** and **RHCE** are both certifications offered by Red Hat, a leading provider of open-source software solutions. These certifications are designed to validate the skills and knowledge of IT professionals in administering Red Hat Enterprise Linux systems.

**RHCSA (Red Hat Certified System Administrator)** is an entry-level certification that focuses on the fundamental skills and knowledge required to manage and configure Red Hat Enterprise Linux systems. This certification validates the skills needed to perform essential tasks such as system administration, file management, user and group management, security configuration, and networking.

**RHCE (Red Hat Certified Engineer)** is an advanced-level certification that builds upon the skills and knowledge of RHCSA. It is designed for experienced Linux system administrators and validates the skills needed to configure advanced networking services, manage system resources, implement security, and deploy and manage applications on a Red Hat Enterprise Linux system.

In summary, RHCSA focuses on the basics of Linux system administration, while RHCE is more advanced and covers complex networking, resource management, security, and application deployment. RHCSA is a prerequisite for RHCE, and candidates who pass both exams are certified as Red Hat Certified Architects (RHCA), which is the highest level of certification offered by Red Hat.

<b>RHCSA (EX200)</b>	<b>RHCE (EX294)</b>
Entry-level certification for Red Hat System Administration	Advanced-level certification for Red Hat System Administration
Covers basic Linux system administration tasks and commands	Covers advanced Linux system administration tasks and commands
Focuses on essential system administration skills, including file management, user and group management, network configuration, system security, package installation, and troubleshooting	Requires in-depth knowledge and hands-on experience in topics such as system security, network services, storage management, virtualization, cloud computing, and automation
Exam duration is 2.5 hours and consists of 10-15 performance-based tasks	Exam duration is 4 hours and consists of 12-15 performance-based tasks
Passing Score 70% (210/300)	Passing Score 70% (210/300)
Exam fee varies country to country (16500 + 18% GST for India)	Exam fee varies country to country (16500 + 18% GST for India)
Requires passing the EX200 exam to earn the certification	Requires passing the EX294 exam to earn the certification
Prerequisites include basic Linux knowledge and experience with command-line interface	Prerequisites include RHCSA certification or equivalent knowledge and experience
RHCSA certification expires after 3 years	RHCE certification expires after 3 years

**Note:** This table is based on the current version of the RHCSA and RHCE exams and may be subject to change.

## RHCE (EX 294) Exam Description:

The performance-based Red Hat Certified Engineer (RHCE) exam (EX294) tests your knowledge and skill in managing multiple systems using Red Hat® Ansible® Engine and executing common system administration tasks across a number of systems with Ansible. The skills tested in this exam are the foundation for system administration across many Red Hat products.

By passing this exam, you become a [Red Hat Certified Engineer](#). An RHCE® is a [Red Hat Certified System Administrator \(RHCSA\)](#) who is ready to use Ansible and scripting to automate Red Hat® Enterprise Linux® tasks, integrate Red Hat emerging technologies, and apply automation for efficiency and innovation. **Current RHCSA certification is required to earn RHCE certification.** If you choose to continue your learning journey beyond RHCE, the credential can also serve as a foundational step on your path toward our highest level of certification—[Red Hat Certified Architect](#).

Objectives listed for this exam are based on the most recent Red Hat product version available. Click “Get started” to view all versions of this exam available for purchase.

### Audience for this Exam:

- Experienced Red Hat Enterprise Linux system administrators seeking validation of their skills or require a certification either by their organization or based on a mandate (DoD 8570 directive)
- Students who have taken [Red Hat System Administration III: Linux Automation with Ansible \(RH294\)](#) and are on the path to becoming a [Red Hat Certified Engineer \(RHCE\)](#)
- Students who are on the path to becoming a [Red Hat Certified Architect \(RHCA\)](#)
- Systems administrators who want to demonstrate competency in managing multiple systems
- IT professionals who work in a DevOps environment and want to demonstrate competency in automating part of their workload
- Red Hat Certified Engineers who are noncurrent or who are about to become noncurrent and wish to recertify as RHCEs

## Prerequisites for this Exam:

- Earn the [Red Hat Certified System Administrator \(RHCSA\)](#) certification. This is required in order to earn the Red Hat Certified Engineer (RHCE) certification.
- Have either taken both [Red Hat System Administration I \(RH124\)](#) and [Red Hat System Administration II \(RH134\)](#) or [RHCSA Rapid Track Course \(RH199\)](#), or have comparable work experience as a system administrator on Red Hat Enterprise Linux
- Have taken [Red Hat System Administration III: Linux Automation with Ansible \(RH294\)](#) or have comparable work experience
- Review the [Red Hat Certified System Administrator \(RHCSA\) exam \(EX200\)](#) objectives
- Review the Red Hat Certified Engineer (RHCE) exam for Red Hat Enterprise Linux 8 (EX294) objectives
- [Take our free assessment](#) to find the course that best supports your preparation for this exam.

## Study points for the Exam:

As an RHCE exam candidate, you should be able to handle all responsibilities expected of a Red Hat Certified System Administrator, including these tasks:

### 1. Be able to perform all tasks expected of a Red Hat Certified System Administrator (RHCSA)

- Understand and use essential tools
- Operate running systems
- Configure local storage
- Create and configure file systems
- Deploy, configure, and maintain systems
- Manage users and groups
- Manage security

### 2. Understand core components of Ansible

- Inventories
- Modules
- Variables
- Facts
- Loops

- Conditional tasks
- Plays
- Handling task failure
- Playbooks
- Configuration files
- Roles
- Use provided documentation to look up specific information about Ansible modules and commands

### **3. Use roles and Ansible Content Collections**

- Create and work with roles
- Install roles and use them in playbooks
- Install Content Collections and use them in playbooks
- Obtain a set of related roles, supplementary modules, and other content from content collections, and use them in a playbook.

### **4. Install and configure an Ansible control node**

- Install required packages
- Create a static host inventory file
- Create a configuration file
- Create and use static inventories to define groups of hosts

### **5. Configure Ansible managed nodes**

- Create and distribute SSH keys to managed nodes
- Configure privilege escalation on managed nodes
- Deploy files to managed nodes
- Be able to analyse simple shell scripts and convert them to playbooks

### **6. Run playbooks with Automation content navigator**

- Know how to run playbooks with Automation content navigator
- Use Automation content navigator to find new modules in available Ansible Content Collections and use them
- Use Automation content navigator to create inventories and configure the Ansible environment

## **7. Create Ansible plays and playbooks**

- Know how to work with commonly used Ansible modules
- Use variables to retrieve the results of running a command
- Use conditionals to control play execution
- Configure error handling
- Create playbooks to configure systems to a specified state

## **8. Automate standard RHCSA tasks using Ansible modules that work with:**

- Software packages and repositories
- Services
- Firewall rules
- File systems
- Storage devices
- File content
- Archiving
- Task scheduling
- Security
- Users and groups

## **9. Manage content**

- Create and use templates to create customized configuration files
- Use Ansible Vault in playbooks to protect sensitive data

As with all Red Hat performance-based exams, configurations must persist after reboot without intervention.

### **Preparation:**

Red Hat encourages you to consider taking [Red Hat System Administration I \(RH124\)](#), [Red Hat System Administration II \(RH134\)](#), and [Red Hat System Administration III: Linux Automation with Ansible \(RH294\)](#) to help prepare. Attendance in these classes is not required; students can choose to take just the exam.

While attending Red Hat classes can be an important part of your preparation, attending class does not guarantee success on the exam. Previous experience, practice, and native aptitude are also important determinants of success.

Many books and other resources on system administration for Red Hat products are available. Red Hat does not endorse any of these materials as preparation guides for exams. Nevertheless, you may find additional reading helpful to deepen your understanding.

### **Exam Format:**

This hands-on, practical exam requires you to use Red Hat Ansible Engine to perform real-world tasks. You will be provided with multiple systems and will be required to install and configure Ansible Engine and then use it to perform standard system administration tasks similar to what you would do on the job.

You will be required to create Ansible Playbooks and use those playbooks to configure systems for specific roles and behaviors. Your work will be evaluated by applying the playbooks created during the exam against freshly installed systems and verifying that those systems and services work as specified.

During the exam, you will be provided a list of tasks to accomplish related to the exam objectives. In most cases, the tasks will be described in terms of a specific end state that you must achieve. Your exam will be evaluated on whether your systems meet the criteria specified.

Internet access is not provided during the exam, and you will not be permitted to bring any hard copy or electronic documentation into the exam. This prohibition includes notes, books, or any other materials. For most exams, the documentation that ships with the product is available during the exam.

This exam can also be taken virtually as part of our remote testing format. Find out [more about remote exams](#) to see if this is the right choice for you.

### **Scores and reporting:**

Official scores for exams come exclusively from [Red Hat Certification Central](#). Red Hat does not authorize examiners or training partners to report results to candidates directly. Scores on the exam are usually reported within 3 U.S. business days.

Exam results are reported as total scores. Red Hat does not report performance on individual items, nor will it provide additional information upon request.