Redhat Study Github doc

##### Introduction

Red Hat System Administration I

Red Hat System Administration I (RH124) is designed for IT professionals without previous Linux system administration experience. The course provides students with Linux administration "survival skills" by focusing on core administration tasks. Red Hat System Administration I also provides a foundation for students who plan to become full-time Linux system administrators by introducing key command-line concepts and enterprise-level tools. These concepts are further developed in the follow-on course, Red Hat System Administration II (RH134).

Course Objectives

Gain sufficient skill to perform core system administration tasks on Red Hat Enterprise Linux.

Build foundational skills that an RHCSA-certified Red Hat Enterprise Linux system administrator needs.

Audience IT professionals across a broad range of disciplines who need to perform essential Linux administration tasks, including installation, establishing network connectivity, managing physical storage, and basic security administration.

Prerequisites This course has no formal prerequisites; however, previous system administration experience on other operating systems is beneficial.

##### Orientation to the Classroom Environment

|  |
| --- |
|  |

Figure 0.1: Classroom environment

In this course, the main computer system for hands-on learning activities is workstation. Students also use two other machines for these activities: servera and serverb. All three systems are in the lab.example.com DNS domain.

All student computer systems have a standard user account, student, which has the password student. The root password on all student systems is redhat.

**Table 1. Classroom Machines**

| **Machine name** | **IP addresses** | **Role** |
| --- | --- | --- |
| bastion.lab.example.com | 172.25.250.254 | Gateway system to connect student private network to classroom server (must always be running) |
| workstation.lab.example.com | 172.25.250.9 | Graphical workstation for system administration |
| servera.lab.example.com | 172.25.250.10 | Managed server "A" |
| serverb.lab.example.com | 172.25.250.11 | Managed server "B" |

The primary function of bastion is to act as a router between the network that connects the student machines and the classroom network. If bastion is down, then other student machines can access only systems on the individual student network.

Several systems in the classroom provide supporting services. Two servers, content.example.com and materials.example.com, are sources for software and lab materials in hands-on activities. Information about how to use these servers is provided in the instructions for those activities. These activities are provided by the workstation virtual machine. Both classroom and bastion must always be running for proper use of the lab environment.

### NOTE

When logging on to servera or serverb, you might see a message about activating cockpit. You can ignore the message.

[student@workstation ~]$ **ssh student@serverb**

Warning: Permanently added 'serverb,172.25.250.11' (ECDSA) to the list of known hosts.

Activate the web console with: systemctl enable --now cockpit.socket

[student@serverb ~]$

### Controlling Your Systems

You are assigned remote computers in a Red Hat Online Learning (ROLE) classroom. Self-paced courses are accessed through a web application that is hosted at [rol.redhat.com](http://rol.redhat.com/). Log in to this site with your Red Hat Customer Portal user credentials.

### Controlling the Virtual Machines

The virtual machines in your classroom environment are controlled through web page interface controls. The state of each classroom virtual machine is displayed on the **Lab Environment** tab.

Graphical user interface

Description automatically generated

Figure 0.2: An example course Lab Environment management page

**Table 2. Machine States**

| **Virtual machine state** | **Description** |
| --- | --- |
| building | The virtual machine is being created. |
| active | The virtual machine is running and available. If it just started, it still might be starting services. |
| stopped | The virtual machine is completely shut down. On starting, the virtual machine boots into the same state it was in before shutdown. The disk state is preserved. |

**Table 3. Classroom Actions**

| **Button or action** | **Description** |
| --- | --- |
| **CREATE** | Create the ROLE classroom. Creates and starts all the virtual machines needed for this classroom. Creation can take several minutes to complete. |
| **CREATING** | The ROLE classroom virtual machines are being created. Creates and starts all the virtual machines that are needed for this classroom. Creation can take several minutes to complete. |
| **DELETE** | Delete the ROLE classroom. Destroys all virtual machines in the classroom. **All saved work on those systems' disks is lost.** |
| **START** | Start all virtual machines in the classroom. |
| **STARTING** | All virtual machines in the classroom are starting. |
| **STOP** | Stop all virtual machines in the classroom. |

**Table 4. Machine Actions**

| **Button or action** | **Description** |
| --- | --- |
| **OPEN CONSOLE** | Connect to the system console of the virtual machine in a new browser tab. You can log in directly to the virtual machine and run commands, when required. Normally, log in to the workstation virtual machine only, and from there, use ssh to connect to the other virtual machines. |
| **ACTION** → **Start** | Start (power on) the virtual machine. |
| **ACTION** → **Shutdown** | Gracefully shut down the virtual machine, preserving disk contents. |
| **ACTION** → **Power Off** | Forcefully shut down the virtual machine, while still preserving disk contents. This is equivalent to removing the power from a physical machine. |
| **ACTION** → **Reset** | Forcefully shut down the virtual machine and reset associated storage to its initial state. **All saved work on that system's disks is lost.** |

At the start of an exercise, if instructed to reset a single virtual machine node, click **ACTION** → **Reset** for only that specific virtual machine.

At the start of an exercise, if instructed to reset all virtual machines, click **ACTION** → **Reset** on every virtual machine in the list.

If you want to return the classroom environment to its original state at the start of the course, then click **DELETE** to remove the entire classroom environment. After the lab has been deleted, then click **CREATE** to provision a new set of classroom systems.

### WARNING

The **DELETE** operation cannot be undone. All completed work in the classroom environment is lost.

### The Auto-stop and Auto-destroy Timers

The Red Hat Online Learning enrollment entitles you to a set allotment of computer time. To help conserve your allotted time, the ROLE classroom uses timers, which shut down or delete the classroom environment when the appropriate timer expires.

To adjust the timers, locate the two **+** buttons at the bottom of the course management page. Click the auto-stop **+** button to add another hour to the auto-stop timer. Click the auto-destroy **+** button to add another day to the auto-destroy timer. Auto-stop has a maximum of 11 hours, and auto-destroy has a maximum of 14 days. Be careful to keep the timers set while you are working, so that your environment is not unexpectedly shut down. Be careful not to set the timers unnecessarily high, which could waste your subscription time allotment.

##### Performing Lab Exercises

You might see the following lab activity types in this course:

* A *guided exercise* is a hands-on practice exercise that follows a presentation section. It walks you through a procedure to perform, step by step.
* A *quiz* is typically used when checking knowledge-based learning, or when a hands-on activity is impractical for some other reason.
* An *end-of-chapter lab* is a gradable hands-on activity to help you to check your learning. You work through a set of high-level steps, based on the guided exercises in that chapter, but the steps do not walk you through every command. A solution is provided with a step-by-step walk-through.
* A *comprehensive review lab* is used at the end of the course. It is also a gradable hands-on activity, and might cover content from the entire course. You work through a specification of what to accomplish in the activity, without receiving the specific steps to do so. Again, a solution is provided with a step-by-step walk-through that meets the specification.

To prepare your lab environment at the start of each hands-on activity, run the lab start command with a specified activity name from the activity's instructions. Likewise, at the end of each hands-on activity, run the lab finish command with that same activity name to clean up after the activity. Each hands-on activity has a unique name within a course.

The syntax for running an exercise script is as follows:

[student@workstation ~]$ **lab *action* *exercise***

The *action* is a choice of start, grade, or finish. All exercises support start and finish. Only end-of-chapter labs and comprehensive review labs support grade.

**start**

The start action verifies the required resources to begin an exercise. It might include configuring settings, creating resources, checking prerequisite services, and verifying necessary outcomes from previous exercises. You can take an exercise at any time, even without taking preceding exercises.

**grade**

For gradable activities, the grade action directs the lab command to evaluate your work, and shows a list of grading criteria with a PASS or FAIL status for each. To achieve a PASS status for all criteria, fix the failures and rerun the grade action.

**finish**

The finish action cleans up resources that were configured during the exercise. You can take an exercise as many times as you want.

The lab command supports tab completion. For example, to list all exercises that you can start, enter lab start and then press the **Tab** key twice.

##### Chapter 1. Get Started with Red Hat Enterprise Linux

[**What Is Linux?**](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch01)

[**Quiz: Get Started with Red Hat Enterprise Linux**](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch01s02)

[**Summary**](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch01s03)

**Abstract**

|  |  |
| --- | --- |
| **Goal** | Describe and define open source, Linux, Linux distributions, and Red Hat Enterprise Linux. |
| **Objectives** | Define and explain the purpose of Linux, open source, Linux distributions, and Red Hat Enterprise Linux. |
| **Sections** | What Is Linux? (and Quiz) |

## What Is Linux?

### Objectives

Define and explain the purpose of Linux, open source, Linux distributions, and Red Hat Enterprise Linux.

### Why Should You Learn about Linux?

Linux is a critical technology for IT professionals to understand.

Linux is in widespread use, worldwide. Internet users interact with Linux application and web server systems daily, by browsing the World Wide Web and using e-commerce sites to buy and sell products.

Linux is in use for much more than the internet. Linux manages point-of-sale systems and the world's stock markets, powers smart TVs and in-flight entertainment systems, and runs most of the top 500 supercomputers in the world. Linux provides the core technologies that power the cloud revolution and the tools to build the latest generations of container-based microservices applications, software-based storage technologies, and big data solutions.

In the modern data center, Linux and Microsoft Windows are the predominant operating systems. Linux use continues to expand in enterprise, cloud, and device spaces. Due to its widespread adoption, you have many reasons to learn Linux:

* A Windows user needs to interoperate with Linux systems and applications.
* In application development, Linux commonly hosts the application and its runtime.
* In cloud computing, both private and public cloud instances use Linux as the operating system.
* Mobile applications and Internet of Things (IoT) devices commonly run on Linux.
* When looking for new IT career opportunities, Linux skills are in high demand.

### What Makes Linux Great?

If someone asks you "What makes Linux great?", then you have many answers to pick from:

* Linux is open source software.

Being open source means that you can see all of how a program or system works. You can also experiment with changes and share them freely for others to use. The open source model means that improvements are easier to make, enabling faster innovation.

* Linux provides a command-line interface (CLI) for easy access and powerful scripting.

Linux is built around a basic design philosophy that users can perform all administration tasks from the CLI. It enables easier automation, deployment, and provisioning, and simplifies both local and remote system administration. Unlike many other operating systems, these capabilities were in the architecture from the start, and result in ease of use and stability.

* Linux is a modular operating system that is designed to easily replace or remove components.

System components can be upgraded and updated when needed. A Linux system can be a general-purpose development workstation or a purposefully minimized software appliance.

### What Is Open Source Software?

Open source software is software with source code that anyone can use, study, modify, and share.

Source code is the set of human-readable instructions that are used to make a program. Code might be in interpretive form, such as a script, or compiled into a binary executable that the computer runs directly. Source code becomes copyrighted when created, and the copyright holder controls the terms under which the software can be copied, adapted, and distributed. Users can use the software according to its software license.

Some software uses "proprietary" or "closed source" source code that only the originating person, team, or organization can see, or change, or distribute. Proprietary licenses typically restrict the user to running the program, and provide limited or no access to the source.

Open source software is different. When a copyright holder provides software under an open source license, they grant the user the right to run the program and to view, modify, compile, and redistribute the source to others, royalty-free. Open source licensing promotes collaboration, sharing, transparency, and rapid innovation, because it encourages more people to modify and improve the software and to share enhancements more widely.

Open source software can still be provided for use for commercial purposes. Open source is a critical part of many organizations' commercial operations. Some open source licenses allow code to be reused in proprietary products. Anyone can sell open source code, but open source licensing generally allows the customer to redistribute the source code. Open source vendors such as Red Hat provide commercial support for deploying, managing, and building solutions that are based on open source products.

Open source has many benefits for the user:

* Control: See what the code does and improve it.
* Training: Learn from real-world code and develop more useful applications.
* Security: Inspect sensitive code, and fix it even without the original developers' help.
* Stability: Rely on code that can survive the loss of the original developer.

#### Types of Open Source Licenses

The developers of open source software can license their software in different ways. The software license terms control how the source can be combined with other code or reused. To be open source, licenses must allow users to freely use, view, change, compile, and distribute the code.

Two general classes of open source license are particularly important:

* Copyleft licenses are designed to encourage keeping the code open source.
* Permissive licenses are designed to maximize code reusability.

Copyleft, or "share-alike" licenses, require that anyone who distributes the source code, with or without changes, must pass along the freedom for others to also copy, change, and distribute the code. The advantage of copyleft licenses is that they help to keep existing code, and improvements to that code, open and increase the amount of available open source code. Common copyleft licenses include the GNU General Public License (GPL) and the Lesser GNU Public License (LGPL).

Permissive licenses maximize the reusability of source code. You can use the source for any purpose if the copyright and license statements are preserved, including reusing code under more restrictive or proprietary licenses. Although permissive licensing makes it easy to reuse code, it risks encouraging proprietary-only enhancements. Examples of permissive licenses include the MIT/X11 license, the Simplified BSD license, and the Apache Software License 2.0.

#### Who Develops Open Source Software?

Open source development today is overwhelmingly professional. Open source is no longer solely developed by an army of volunteers. Today, most open source developers work for organizations that pay them to participate with open source projects to construct and contribute the enhancements that the organization and their customers need.

Volunteers and the academic community still play a significant role and can make vital contributions, especially in emerging technology. The combination of formal and informal development provides a highly dynamic and productive environment.

### Who Is Red Hat?

Red Hat is the world's leading provider of open source software solutions, by using a community-powered approach to reliable and high-performance cloud, Linux, middleware, storage, and virtualization technologies. The mission of Red Hat mission is to be the catalyst in communities of customers, contributors, and partners to create better technology the open source way.

The role of Red Hat role is to help customers to connect with the open source community and their partners to effectively use open source software solutions. Red Hat actively participates in and supports the open source community. Many years of experience have convinced the company of the importance of open source to the future of the IT industry.

Red Hat is best known for its participation in the Linux community and the Red Hat Enterprise Linux distribution. However, Red Hat is also active in other open source communities, including middleware projects that are centered on the JBoss developer community, virtualization solutions, cloud technologies such as OpenStack and OpenShift, and the Ceph and Gluster software-based storage projects, plus others.

#### What Is a Linux Distribution?

A Linux distribution is an installable operating system that is constructed from a Linux kernel and that supports user programs and libraries. A complete Linux system is developed by multiple independent development communities that work cooperatively on individual components. A distribution provides an easy method to install and manage a working Linux system.

In 1991, graduate student Linus Torvalds developed a UNIX-like kernel that he named Linux, and licensed it as open source software under the GPL. The kernel is the core of the operating system and manages hardware, memory, and the scheduling of running programs. The Linux kernel is supplemented with other open source software, including utilities and programs from the GNU Project, a graphical interface from MIT's X Window System, and other open source components, such as the Sendmail mail server and the Apache HTTP web server, to become a complete open source UNIX-like operating system.

A major challenge for Linux users is to assemble all these software pieces from many sources. Early Linux developers provided a distribution of prebuilt and tested tools that users could download and install to quickly implement Linux systems.

Many Linux distributions exist, each with differing goals and support criteria. Generally, distributions have some common characteristics:

* Distributions consist of a Linux kernel and support user-space programs.
* Distributions can be small and single-purpose, or can include thousands of open source programs.
* Distributions provide a means to install and update the software and its components.
* The distribution provider supports the software, and ideally, participates in the development community.

### Red Hat Enterprise Linux Ecosystem

Red Hat Enterprise Linux (RHEL) is Red Hat's commercial production-grade Linux distribution. Red Hat develops and integrates open source software into RHEL through a multistage process.

* Red Hat participates in supporting individual open source projects. It contributes code, developer time, resources, and support, and often collaborates with developers from other Linux distributions, to improve the general quality of software for everyone.
* Red Hat sponsors and integrates open source projects into the community-driven Fedora distribution. Fedora provides a free working environment to serve as a development lab and proving ground for features to be incorporated into CentOS Stream and RHEL products.
* Red Hat stabilizes the CentOS Stream software to be ready for long-term support and standardization, and integrates it into RHEL, the production-ready distribution.

Diagram

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|  |

Figure 1.1: The Red Hat Enterprise Linux ecosystem

#### Fedora

Fedora is a community project that produces and releases a free, comprehensive Linux-based operating system. Red Hat sponsors and works with the Fedora community to integrate the latest upstream software into a fast-moving, secure distribution. The Fedora project contributes back to the open source world, and anyone can participate.

Fedora prioritizes innovation and excellence above long-term stability. Major updates occur every six months, and bring significant changes. Fedora supports releases for about a year, which means the latest two updates, making it less suited for supportable production use. Fedora remains the source of innovation for the entire Enterprise Linux ecosystem. In general, packages start out in Fedora and are included into CentOS Stream only when they are considered mature in stability, security, performance, and customer demand.

#### Extra Packages for Enterprise Linux

A Fedora project Special Interest Group (SIG) builds and maintains a community-supported package repository called Extra Packages for Enterprise Linux (EPEL). EPEL versions align with major RHEL releases, and enable RHEL customers to run workloads with software dependencies that are not supported in RHEL. EPEL packages are not included in Red Hat support, but are equivalent to Fedora's level of quality.

Typically, EPEL packages are built against RHEL releases. EPEL Next is an additional repository for package maintainers to build against CentOS Stream. This repository is useful when CentOS Stream contains an upcoming RHEL library rebase, or if an EPEL package has a minimum version build requirement that is already in CentOS Stream but not yet in RHEL.

#### CentOS Stream

CentOS Stream is the upstream project for RHEL. Development of the next RHEL version is transparent and open for community contributions that can directly influence the next release. Patches that are submitted to CentOS Stream are integrated faster to RHEL, to allow significant changes during the current RHEL version lifecycle. CentOS Stream is a continuous integration and delivery distribution, with tested and stable nightly builds.

The CentOS project welcomes contributors worldwide, to give RHEL derivatives the opportunity to contribute to CentOS Stream for their own benefit. The CentOS project also aims to promote sustainable open source software that responds faster to security exploits, emerging technologies, and changing customer requirements.

### NOTE

Before 2019, CentOS Linux was a free, unsupported distribution, community-built from Red Hat's source code after each major RHEL release. Although the CentOS community enjoyed having a free RHEL clone, this model had disadvantages. Commonly, developer contributions to CentOS Linux were not backported to Fedora or RHEL without considerable duplicate effort. Also, significant delays occurred between a RHEL release and its corresponding CentOS distribution build, with a similar delay for critical RHEL security, driver, and tuning fixes. Red Hat switched to the CentOS Stream model to address these issues.

A benefit of CentOS Stream is that, as the source for RHEL development, it is available in all the same architectures as RHEL, including Intel/AMD x86\_64, ARM64, IBM Power, and IBM Z.

Numerous innovative technology organizations have proven that CentOS Stream is a viable replacement for the original downstream CentOS Linux. CentOS Stream can be freely downloaded and installed for many use cases, including development and light production. For community users with use cases that are not suitable for a continuously delivered distribution with asynchronous patch releases, Red Hat provides free individual RHEL developer subscriptions for small-scale use, such as demos, prototyping, quality assurance, and limited production.

#### Red Hat Enterprise Linux

Red Hat Enterprise Linux (RHEL) is Red Hat's production-ready, commercially supported Linux distribution. In the computing industry, RHEL is acknowledged as the leading platform for open source computing, because it is extensively tested and has a worldwide ecosystem of support partners for hardware and software certifications, consulting services, training, and multi-year support and maintenance guarantees.

Red Hat builds RHEL major releases directly from the CentOS Stream continuous development project, which is sourced from Fedora. In contrast with the previous development model, where RHEL releases were constructed internally with less transparency, and the source was provided only for building as CentOS Linux after the RHEL release, the new CentOS Stream development model is open and available to all, for feedback and contribution, while the code is prepared to be the next major RHEL release.

RHEL uses a subscription-based support model, and does not charge license fees for open-source software. Red Hat support subscriptions provide product support, maintenance, updates, security patches, and access to the Customer Portal Knowledgebase, utilities, and downloadable releases of Red Hat products.

The following table lists some key differences between Fedora, CentOS Stream, and RHEL.

|  | **Fedora** | **CentOS Stream** | **RHEL** |
| --- | --- | --- | --- |
| Expected lifecycle | 12-18 months | 5 years | 10 years |
| Software vendor certified | No | Usually not | Yes |
| Documentation provided by | Community | Community | Red Hat |
| Expert support available | No | No | Yes |
| Product security team | No | No | Yes |
| Security certifications | No | No | Yes |
| No-cost options | Yes | Yes | Yes |
| Management tools | No | No | Yes |

#### RHEL for Edge

RHEL for Edge is an image-based variant of RHEL, with a different deployment mechanism. RHEL provides the ability to create purpose-built operating system images through a tool called Image Builder. With this mechanism, IT teams can build, deploy, and maintain these RHEL images in less time over the life of the system. Image-based deployments are optimized for various edge architectures, but are customizable for specific edge deployments.

The Edge features in RHEL include secure management and scaling capabilities, including zero-touch provisioning, system health visibility, and quick security remediations from within a single interface.

#### Red Hat CoreOS

RHEL CoreOS (RHCOS) is not a stand-alone operating system, but it is built from RHEL components, and is then released, upgraded, and managed as part of the Red Hat OpenShift Container Platform (RHOCP) for cloud-native applications. RHCOS is fundamentally an image-based RHEL container host, which uses the Container Runtime Interface (CRI-O)-compliant container engine that is integrated in RHOCP. To learn more about Red Hat CoreOS, begin by becoming familiar with OpenShift and containers.

#### Red Hat Universal Base Image

A Red Hat Universal Base Image (UBI) is essentially a freely redistributable derivative of RHEL. UBI is designed to be a foundation for cloud-native and web application use cases that are developed in containers. All UBI content is a subset of RHEL, with packages sourced from secure RHEL channels, and UBI is supported similar to RHEL when run on a Red Hat supported platforms such as OpenShift and RHEL hosts.

With UBI, developers can focus their efforts on their application in the container image. UBI is a set of base images, a set of application images (such as python, ruby, node.js, httpd, or nginx), and a set of RPM repositories from which you can update any UBI base image to include the package dependencies that your application requires.

#### Red Hat Enterprise Linux Continuous Development

In the Fedora upstream community, Fedora Rawhide is the continuous development environment for a regular cadence of public Fedora releases. The community tests and prepares new Linux kernel versions, device drivers, utilities, and applications for the next Fedora distribution. Major RHEL release development begins with selection of the latest Fedora release as the base for the current CentOS Stream continuous development distribution.

Before a package is formally introduced to CentOS Stream, it undergoes rigorous testing to meet the standards for packages to be included in RHEL. Updates posted to CentOS Stream are identical to those posted to the unreleased minor version of RHEL in development.

Diagram

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Figure 1.2: Red Hat Enterprise Linux continuous development

As shown in [Figure 1.2: Red Hat Enterprise Linux continuous development](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch01), Fedora 34 is the original code base for RHEL 9 and and for CentOS Stream 9. As packages are updated, they are then pushed into CentOS Stream and the nightly build of RHEL. The solid lines indicate distributions or builds that are available for public use.

Similar to the relationship between Fedora Rawhide and Fedora, CentOS Stream is the continuous development environment for preparing the next minor-version RHEL release. Red Hat performs extensive hardware, integration, dependency, and performance testing before releasing the next public RHEL distribution.

### Obtaining Red Hat Enterprise Linux

Red Hat Enterprise Linux is typically obtained with a paid support subscription, and Red Hat provides multiple ways to obtain RHEL and other RHEL ecosystem products, many without cost.

* Fedora Linux and derivatives are freely available from the Fedora project at <https://getfedora.org/>, including an emerging version of Fedora CoreOS.
* EPEL and EPEL Next packages are freely available from the EPEL project repositories. Learn how to use EPEL at <https://docs.fedoraproject.org/en-US/epel/>.
* CentOS Stream is freely available at <https://www.centos.org/centos-stream/>.

#### RHEL Evaluation Download

An evaluation copy of RHEL is available at <https://access.redhat.com/products/red-hat-enterprise-linux/evaluation>. You must have a (free) Customer Portal account for [https://access.redhat.com](https://access.redhat.com/) to access and download evaluation products. Product evaluations entitle you to receive updates and support for a limited period. Support ends when the evaluation period ends, but the evaluation software continues to operate. Additional information for many product evaluations is found on the Customer Portal evaluation pages.

#### Red Hat Developer Subscription

Red Hat provides a free subscription for many products through the Red Hat Developer Program at [https://developer.redhat.com](https://developer.redhat.com/). With a Developer subscription, developers can quickly create, prototype, test, and demonstrate their applications on the same Red Hat software as on production systems. Create a personal account at [https://access.redhat.com](https://access.redhat.com/), and then register for the Developer program. You can use an existing personal account, but do not use an account that is already associated with any organization's support subscription. The Developer subscription is self-supported, but provides ongoing product updates. Red Hat recommends that individuals who want to gain experience with RHEL and developer products should join the Developer Program.

#### Public Cloud Platforms

The major hyperscale public cloud providers, such as Amazon Web Services, Google Cloud Platform, and Microsoft Azure, offer official images for deploying Red Hat Enterprise Linux instances, with subscription management from the Red Hat Cloud Access service. Fully entitled subscriptions for RHEL and Red Hat products are available through the cloud provider, and are portable in hybrid and multi-vendor clouds.

#### Containers

You can use Red Hat Universal Base Images and associated content for development and deployment without a Red Hat subscription. For operational support and access to non-UBI tools, containers that are built on UBI must be deployed on a Red Hat-supported platform such as OpenShift or Red Hat Enterprise Linux. Access to non-UBI content requires a Red Hat subscription.

## Quiz: Get Started with Red Hat Enterprise Linux

Choose the correct answers to the following questions:

|  |  |  |
| --- | --- | --- |
|  | | |
| **1.** | Which two statements are benefits of open source software for the user? (Choose two.) |  |

Code can survive the loss of the original developer or distributor.

You can learn from real-world code and develop more effective applications.

|  |  |  |
| --- | --- | --- |
|  | | |
| **2.** | Which two statements are ways in which Red Hat develops products for the future and interacts with the community? (Choose two.) |  |

Sponsor and integrate open source projects into the community-driven Fedora project.

Participate in upstream projects.

|  |  |  |
| --- | --- | --- |
|  | | |
| 3. Which two statements describe the benefits of Linux? (Choose two.) |  |  |
|  |  |  |

Linux is modular and can be configured as a full graphical desktop or a small appliance.

Linux includes a powerful and scriptable command-line interface, which enables easier automation and provisioning.

## Summary

* Open source software has source code that anyone can freely use, study, modify, and share.
* A Linux distribution is an installable operating system that is constructed from a Linux kernel and that supports user programs and libraries.
* Red Hat participates in supporting and contributing code to open source projects, sponsors and integrates project software into community-driven distributions, and stabilizes the software to offer it as supported enterprise-ready products.
* Red Hat Enterprise Linux is the Red Hat open source, enterprise-ready, commercially supported Linux distribution.
* A free Red Hat Developer Subscription is a useful method for obtaining free resources and information, including a 16-node version of Red Hat Enterprise Linux.

## Quiz: Access the Command Line

Choose the correct answer to the following questions:

|  |  |  |
| --- | --- | --- |
|  | | |
| **1.** | Which term describes the interpreter that executes commands that are typed as strings? |  |

Shell

|  |  |  |
| --- | --- | --- |
|  | | |
| **2.** | Which term describes the visual cue that indicates that an interactive shell is waiting for the user to type a command? |  |

Prompt

|  |  |  |
| --- | --- | --- |
|  | | |
| **3.** | Which term describes the name of a program to run? |  |

Command

|  |  |  |
| --- | --- | --- |
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| **4.** | Which term describes the part of the command line that adjusts the behavior of a command?  Option |  |

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| **5.** | Which term describes the part of the command line that specifies the target that the command should operate on? |  |
|  | Argument |  |

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| **6.** | Which term describes the hardware display and keyboard to interact with a system?  Physical console |  |

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| **7.** | Which term describes one of multiple logical consoles that can each support an independent login session? |  |

Virtual console

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|  | | |
| **8.** | Which term describes an interface that provides a display for output and a keyboard for input to a shell session? |  |

Terminal

Updated Password: 55TurnK3y

## Quiz: Specify Files by Name

Choose the correct answers to the following questions:

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| **1.** | Which command is used to return to the current user's home directory, assuming that the current working directory is /tmp and their home directory is /home/user? |  |
| A |  | cd |
| B |  | cd .. |
| C |  | cd . |
| D |  | cd \* |
| E |  | cd /home |

1. CHECKRESETSHOW SOLUTION

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| **2.** | Which command displays the absolute path name of the current location? |  |
| A |  | cd |
| B |  | pwd |
| C |  | ls ~ |
| D |  | ls -d |

1. CHECKRESETSHOW SOLUTION

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| **3.** | Which command returns you to the working directory before the current working directory? |  |
| A |  | cd - |
| B |  | cd -p |
| C |  | cd ~ |
| D |  | cd .. |

1. CHECKRESETSHOW SOLUTION

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| **4.** | Which command changes the working directory up two levels from the current location? |  |
| A |  | cd ~/.. |
| B |  | cd ../ .. |
| C |  | cd ../.. |
| D |  | cd ~/ |

1. CHECKRESETSHOW SOLUTION

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| **5.** | Which command lists files in the current location, with a long format, and including hidden files? |  |
| A |  | llong ~ |
| B |  | ls -a |
| C |  | ls -l |
| D |  | ls -al |

1. CHECKRESETSHOW SOLUTION

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| **6.** | Which command creates an empty file called helloworld.py in the user home directory, assuming that your current directory is /home? |  |
| A |  | touch cd /home/user/helloworld.py |
| B |  | touch ~/helloworld.py |
| C |  | touch helloworld.py |
| D |  | touch ../helloworld.py |

1. CHECKRESETSHOW SOLUTION

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| **7.** | Which command changes the working directory to the parent of the current location? |  |
| A |  | cd ~ |
| B |  | cd .. |
| C |  | cd ../.. |
| D |  | cd -u1 |

1. CHECKRESETSHOW SOLUTION

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| **8.** | Which command changes the working directory to /tmp if the current working directory is /home/student? |  |
| A |  | cd tmp |
| B |  | cd .. |
| C |  | cd ../../tmp |
| D |  | cd ~tmp |

1. CHECKRESETSHOW SOLUTION

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[PREVIOUS](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch03s03)[NEXT](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch03s05)

## Quiz: Execute Commands with the Bash Shell

Choose the correct answers to the following questions:

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| **1.** | Which Bash command displays the last five lines of the /var/log/messages file? |  |
| A |  | head -n 10 /var/log/messages |
| B |  | tail 10 /var/log/messages |
| C |  | tail -n 5 /var/log/messages |
| D |  | tail -l 10 /var/log/messages |
| E |  | less /var/log/messages |

1. CHECKRESETSHOW SOLUTION

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| **2.** | Which Bash shortcut or command separates commands on the same line? |  |
| A |  | Pressing **Tab** |
| B |  | history |
| C |  | **;** |
| D |  | !*string* |
| E |  | Pressing **Esc**+**.** |

1. CHECKRESETSHOW SOLUTION

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| **3.** | Which Bash command is used to change a user's password? |  |
| A |  | password |
| B |  | pass |
| C |  | passwd |
| D |  | usermod |
| E |  | userpassword |

1. CHECKRESETSHOW SOLUTION

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| **4.** | Which Bash command is used to display the file type? |  |
| A |  | file |
| B |  | less |
| C |  | cat |
| D |  | history |
| E |  | view |

1. CHECKRESETSHOW SOLUTION

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| **5.** | Which Bash shortcut or command is used for completing commands, file names, and options? |  |
| A |  | **;** |
| B |  | !*number* |
| C |  | history |
| D |  | Pressing **Tab** |
| E |  | Pressing **Esc**+**.** |

1. CHECKRESETSHOW SOLUTION

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| **6.** | Which Bash shortcut or command re-executes a specific command in the history list? |  |
| A |  | Pressing **Tab** |
| B |  | !*number* |
| C |  | !*string* |
| D |  | history |
| E |  | Pressing **Esc**+**.** |

1. CHECKRESETSHOW SOLUTION

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| **7.** | Which Bash shortcut or command jumps to the beginning of the command line? |  |
| A |  | !*number* |
| B |  | !*string* |
| C |  | Pressing **Ctrl**+**LeftArrow** |
| D |  | Pressing **Ctrl**+**K** |
| E |  | Pressing **Ctrl**+**A** |

1. CHECKRESETSHOW SOLUTION

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| **8.** | Which Bash shortcut or command displays the list of previously executed commands? |  |
| A |  | Pressing **Tab** |
| B |  | !*string* |
| C |  | !*number* |
| D |  | history |
| E |  | Pressing **Esc**+**.** |

1. CHECKRESETSHOW SOLUTION

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| **9.** | Which Bash shortcut or command copies the last argument of previous commands? |  |
| A |  | Pressing **Ctrl**+**K** |
| B |  | Pressing **Ctrl**+**A** |
| C |  | !*number* |
| D |  | Pressing **Esc**+**.** |

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[PREVIOUS](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch02s05)[NEXT](https://rol.redhat.com/rol/app/courses/rh124-9.0/pages/ch02s07)

Quiz: Access the Command Line

Choose the correct answer to the following questions:

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|  | | |
| **1.** | Which term describes the interpreter that executes commands that are typed as strings? |  |
| A |  | Command |
| B |  | Console |
| C |  | Shell |
| D |  | Terminal |

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| **2.** | Which term describes the visual cue that indicates that an interactive shell is waiting for the user to type a command? |  |
| A |  | Argument |
| B |  | Command |
| C |  | Option |
| D |  | Prompt |

1. CHECKRESETSHOW SOLUTION

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| **3.** | Which term describes the name of a program to run? |  |
| A |  | Argument |
| B |  | Command |
| C |  | Option |
| D |  | Prompt |

1. CHECKRESETSHOW SOLUTION

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| **4.** | Which term describes the part of the command line that adjusts the behavior of a command? |  |
| A |  | Argument |
| B |  | Command |
| C |  | Option |
| D |  | Prompt |

1. CHECKRESETSHOW SOLUTION

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| **5.** | Which term describes the part of the command line that specifies the target that the command should operate on? |  |
| A |  | Argument |
| B |  | Command |
| C |  | Option |
| D |  | Prompt |

1. CHECKRESETSHOW SOLUTION

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| **6.** | Which term describes the hardware display and keyboard to interact with a system? |  |
| A |  | Physical Console |
| B |  | Virtual Console |
| C |  | Shell |
| D |  | Terminal |

1. CHECKRESETSHOW SOLUTION

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|  | | |
| **7.** | Which term describes one of multiple logical consoles that can each support an independent login session? |  |
| A |  | Physical Console |
| B |  | Virtual Console |
| C |  | Shell |
| D |  | Terminal |

1. CHECKRESETSHOW SOLUTION

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|  | | |
| **8.** | Which term describes an interface that provides a display for output and a keyboard for input to a shell session? |  |
| A |  | Console |
| B |  | Virtual Console |
| C |  | Shell |
| D |  | Terminal |

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