

# Staying RHELlevant In Your Home Lab.

• • •

Use The Free Developer Licence To Harness The Power Of The Enterprise.

# Who is this talk for?

# Who is this presentation for?

- **Beginners to Linux**
- **Someone who has started playing with**
  - **Fedora**
  - **CentOS**
  - **Rocky**
  - **Alma**
  - **Red Hat**
- **Those who want to get a Job as a RHEL Sys-Admin**



- A simple guide I've found to be the best way to get started!
- If you have been using linux for a while, this will be information you already know

Who's First SCaLE is this?

Who has been coming for 2-5 years?

Who has been coming for 6-10 years?

Who has been coming for 10+ years?

**ONE DOES NOT SIMPLY**



# Staying RHELlevant In Your Home Lab.

• • •

Use The Free Developer Licence To Harness The Power Of The Enterprise.

# Agenda

1. My Background
2. Steps For Success
3. Free RHEL Developers Licence
4. Download RHEL
5. Create a bootable linux thumb drive
6. First RHEL Install
7. Register RHEL
8. Update and Install software
9. Set up Virtual Machines
10. Current Hardware Suggestions
11. Resources

The Slides Will Be  
Posted ->





# Joshua Loscar

Jscar Hawk

[jscar-hawk.github.io](https://jscar-hawk.github.io)

- Senior Technical Account Manager for Red Hat
  - Hacker
  - Podcaster
  - Maker
  - 3D Printer
  - Hardware Geek
  - Open Source & Open Hardware Lover!
  - I am a Husband & Father of 3 Boys
  - I have a very loving and patient wife
-

# How Did I Get Here?

# How Did I Get Here?

- I Was Not A Linux Native
- Self Starter
- Give Back To The Community & Network
- I Had A Call To Action

# First Linux Job

1. No Documentation
2. No Network Diagrams
3. No Configuration Of The machines
4. No Consistency
5. No Internet Connection. (working in a disconnected network)

# Steps For Success

1. Document your Processes
2. Create your Network map
3. Version control your documentation
4. Automate your setup
5. Utilize resources
6. Share what you are working on
  
7. Logging all the things
8. Go from Reactive To Proactive IT

# Who has a home lab?

Who wants to build a home lab?

# Let's Get Started With Why

# Why Choose Red Hat?

Red Hat Subscriptions get you access to:

- Software Repositories (Repos)
- Security Patches
- Access To The Customer Portal
- Access To Red Hat Insights
- Hardening guides to help comply with compliance needs

## Red Hat Enterprise Linux

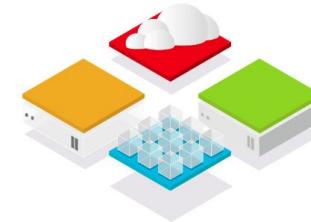
Easy access to a more secure OS, larger ecosystem, and a broader selection of languages and developer tools on which to build and deploy apps in the hybrid cloud.

[Download RHEL at no-cost](#)[More ways to try](#)[Overview](#)[Download/Sign Up](#)[Get started](#) Recommended

### No-cost RHEL for developers subscription

This subscription includes:

- Red Hat Enterprise Linux provided via this subscription is for individual developers only. For Corporate and Enterprise subscription options, [please see this](#).
- Red Hat Enterprise Linux Server (all currently supported releases)
- Additional development tools
- Numerous add-ons such as resilient storage, scalable file systems, and high-performance networking
- Access to the Red Hat Customer Portal for software updates and thousands of knowledge-based articles

[Activate your subscription](#)[Read the FAQ](#)

Ready to use RHEL in production?

- To learn more, [contact a sales rep](#).

- Explore subscription options in the [Red Hat store](#).

Red Hat Enterprise Linux user guides. [Click here for more details](#).

- Get Red Hat Enterprise Linux (RHEL)

# Sign Up



<https://developers.redhat.com/products/rhel/download>

## Article

## No-cost Red Hat Enterprise Linux Individual Developer Subscription: FAQs

February 5, 2021      Linux Red Hat Developer  
Guest Author

### Table of contents:

#### General

##### 1. What is the Red Hat Developer program's Red Hat Developer Subscription for Individuals?

The Red Hat Developer Subscription for Individuals is a no-cost offering of the [Red Hat Developer program](#) and includes access to [Red Hat Enterprise Linux](#) among other Red Hat products. It is a program and an offering designed for individual developers, available through the [Red Hat Developer program](#).

##### 2. What Red Hat Enterprise Linux developer subscription is made available at no cost?

The no-cost Red Hat Developer Subscription for Individuals is available and includes Red Hat Enterprise Linux along with numerous other Red Hat technologies. Users can access this no-cost subscription by joining the Red Hat Developer program at [developers.redhat.com/register](#). Joining the program is free.

##### 3. What Red Hat Enterprise Linux variant and components are included in the no-cost Red Hat Developer Subscription for Individuals?

The Red Hat Developer Subscription for Individuals includes the following Red Hat Enterprise Linux components:

- Red Hat Enterprise Linux Server (includes GUI)
- Red Hat Software Collections and Application Streams
- Red Hat Developer Toolset and Compilers
- Numerous Red Hat Enterprise Linux infrastructure add-ons

##### 4. Are the Red Hat Enterprise Linux binaries offered via the Red Hat Developer Subscription for

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[Our advice for configuring Knative Broker for Apache Kafka](#)

[Overhauling memory tuning in OpenJDK containers updates](#)

[6-step tutorial on installing Ansible 2.3 on RHEL 9.1](#)

[5 global environment variables provided by OpenShift GitOps](#)

[How RHEL image builder has improved security and function](#)

# Check Out FAQ's

<https://developers.redhat.com/articles/faqs-no-cost-red-hat-enterprise-linux>



All Red Hat Register

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Log in to your Red Hat account

Red Hat login or email

Next

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Log in or register to access product trials and purchase subscriptions. Your account, in combination with an active subscription, provides access to technical support knowledge and the ability to manage users, subscriptions, and certifications.



# Fill Out The Form

 Red Hat

## Create a Red Hat account

Sign up and use this Red Hat account to access all of Red Hat's applications, communities, support, and more.

Red Hat will collect your contact and account information to create your Red Hat account. We use your personal data to identify you and to provide you with information, support, and customer service. For more information, please see Red Hat's [privacy statement](#).

\* Required fields

Choose a Red Hat login \*

Your login is a user ID for accessing your account across all Red Hat sites. It must be at least 5 characters and **cannot be changed once created**.

Email address \*

First name \*      Last name \*

Job role \*

Choose a password \*

 You need to verify your email address to continue.



### Email address verification

An email with instructions to verify your email address has been sent to your address [opentechnowersity@protonmail.com](mailto:opentechnowersity@protonmail.com).  
Haven't received a verification code in your email? [Click here to resend the email.](#)

# Verify Your Email



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# Finish Verification

The screenshot shows the Proton Mail web interface. On the left, the inbox contains 30 unread messages. The top message is from "no-reply@redhat.com" with the subject "Verify email for Red Hat account". The message body contains a link to verify the email address. The right side of the screen displays a modal window titled "Verify email for Red Hat account". The modal shows the message details and the verification link.

Proton Mail

New message

Inbox 30

Drafts

Sent 20

Starred

MORE

FOLDERS +

LABELS +

Search messages

All Read Unread Newest first

no-reply@redhat.com Verify email for Red Hat account 2:59 AM

[2] New reply to a comment on "How to Stain Wood Like a PRO - 4 Simple Steps!" YouTube Feb 15, 2023

Biscuit Tree Woodworks loves your comment YouTube Feb 14, 2023

[3] New comment on "Framework Ethernet Module" YouTube Feb 2, 2023

New reply to a comment on "Enabling Xe Graphics on the Framework Laptop" YouTube Jan 27, 2023

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Thanks for your report to YouTube YouTube Jan 27, 2023

[3] New comment on "Framework Laptop Hinge Upgrade" YouTube Jan 26, 2023

Black Hills Information Security is live now: Future Red Team Rants: A breakdo... YouTube Jan 25, 2023

[2] New comment on "Steam Deck Skin" YouTube Jan 24, 2023

StackRox Community is live now: The Secure Cloud Cast (E5) | Compliance an... YouTube Jan 24, 2023

Verify email for Red Hat account

From no-reply@redhat.com To opentechniversity@protonmail.com

Link to e-mail address verification

This link will expire within 1 day.

If you didn't create this account, just ignore this message.

https://sso.redhat.com/auth/realm/redhat-external/login-actions/action-token?key=eyJhb...



## Update Your Account

You're attempting to access content that requires a Red Hat login with a complete profile. Please take a moment to complete your profile!

### \* Account Type

- Corporate** A corporate Red Hat account allows a set of users to centrally purchase or administer systems within a corporate organization (system administrators, purchasing agents, IT management, etc.)
- Personal** A personal Red Hat account is for purchasing or administering your own personal systems.

### Need access to an account?

If your company has an existing Red Hat account, your organization administrator can [grant you access](#). If you have questions, [contact customer service](#).

### Login Information

#### \* Create a Red Hat

Login: opentechknowversity

Your login is a user ID for accessing your account across all Red Hat sites. It must be at least five characters and cannot be changed once created.

\* Email Address:

\* Password:  Show

Your password must be at least 8 characters long. A strong password combines lower case letters, upper case letters, numbers, and symbols.

\* Confirm Password:  Show

Waiting for access.redhat.com...

# Set Up Your Profile



<https://access.redhat.com/>

# Set Up Your Profile

\* First name:

\* Last name:

\* Country or Region:

\* Address line 1:

Address line 2:

Address line 3:

\* Postal code:

\* City:

\* County:

\* State:

\* Phone number:

Fax number:

**SUBMIT**



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In order to gain access to or use a Red Hat program and/or product, you must review and agree to all of the agreement(s) below. If you, or the company you represent, have a negotiated and executed agreement that is currently in effect with Red Hat that covers the same program(s) and product(s) covered below, your acceptance of these agreement(s) will not override your existing negotiated agreement(s) with Red Hat.

### **Open Source Assurance Agreement (OSA) -United States (English)** [View](#) or [Download](#)

- ▶ Change agreement's location and language
- I have read and agree to the terms.
- I wish to decline the terms
- I wish to defer my decision

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- [Support Cases](#)
- [Customer Service](#)

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- [Log-in Assistance](#)
- [Awards and Recognition](#)

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- [Trust Red Hat](#)
- [Browser Support Policy](#)
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- [Awards and Recognition](#)

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Learn how to use the Customer Portal.

Get started

Red Hat Summit 2023 is back in Boston

Explore what's next at Red Hat Summit on May 23-25. Join us and find yourself at the forefront of new ideas and innovation in hybrid cloud technology. Sign up now to take advantage of early discounts.

Register today →

Red Hat Summit 2023

May 23-25, 2023

In the top left side click downloads



## Product Downloads

By Category

A-Z

## INFRASTRUCTURE MANAGEMENT

Product	Product Trial
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<a href="#">Red Hat Insights</a>	
<a href="#">Red Hat Virtualization</a>	
<a href="#">Red Hat Identity Management</a>	
<a href="#">Red Hat Directory Server</a>	
<a href="#">Red Hat Certificate System</a>	
<a href="#">Red Hat Satellite</a>	
<a href="#">Red Hat Update Infrastructure</a>	
<a href="#">Red Hat Software Collections</a>	
<a href="#">Red Hat Ansible Automation Platform</a>	<a href="#">Try It</a>
<a href="#">Red Hat Developer Tools</a>	

[Red Hat Enterprise Linux](#)[Try It](#)[Red Hat Insights](#)[Red Hat Virtualization](#)[Red Hat Identity Management](#)[Red Hat Directory Server](#)[Red Hat Certificate System](#)[Red Hat Satellite](#)[Red Hat Update Infrastructure](#)[Red Hat Software Collections](#)[Red Hat Ansible Automation Platform](#)[Red Hat Developer Tools](#)

## CLOUD COMPUTING

<https://access.redhat.com/downloads/content/479/>

## BEFORE YOU DOWNLOAD

You will need an active subscription or product trial before you download Red Hat products.

[Red Hat subscription FAQ](#)[Red Hat Product Trial FAQ](#)

## SOFTWARE COMPONENTS

- ▶ [RPM Package Search](#)
- ▶ [Errata for Red Hat Products](#)

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- ▶ [Red Hat Container Catalog](#)
- ▶ [Red Hat JBoss Middleware](#)

# Choose What Product You Want To Download



## Choose Red Hat Enterprise Linux



## Download Red Hat Enterprise Linux

Product Variant: ⓘ

Switch to Version 7 and below Version:

Architecture: ⓘ

Red Hat Enterprise Linux for x86\_64

9.1 (latest) x86\_64

## About Red Hat Enterprise Linux for x86\_64

Only Red Hat Enterprise Linux provides an intelligent OS that is the consistent foundation for the enterprise hybrid cloud. Delivering any application on any footprint at any time giving you Control. Confidence. Freedom.

## Product Resources

- › Get Started
- › Documentation
- › Red Hat Enterprise Linux Life Cycle

## Get Help

- › Contact Support
- › Create installation media

Product Software

Modules

Packages

Source

Errata

## Installers and Images for Red Hat Enterprise Linux for x86\_64 (v. 9.1 for x86\_64)

## Full installation image

Red Hat Enterprise Linux 9.1 Binary DVD Recommended

Run the installation program and complete installation without requiring any additional package repositories. Use this image if the system you are installing will not have network access, as it contains all of the required packages to complete an installation of Red Hat Enterprise Linux.

Last modified: 2022-10-31 SHA-256 Checksum: d9dcae2b6e760d0f9dcf4a5f7bdd227d5fa3f213a8323592f4a07a05aa542a Download Now

8.44 GB

## Additional installation images

Red Hat Enterprise Linux 9.1 Boot ISO

Initiate your network install with this minimal install image. To complete installation, you will need an active network

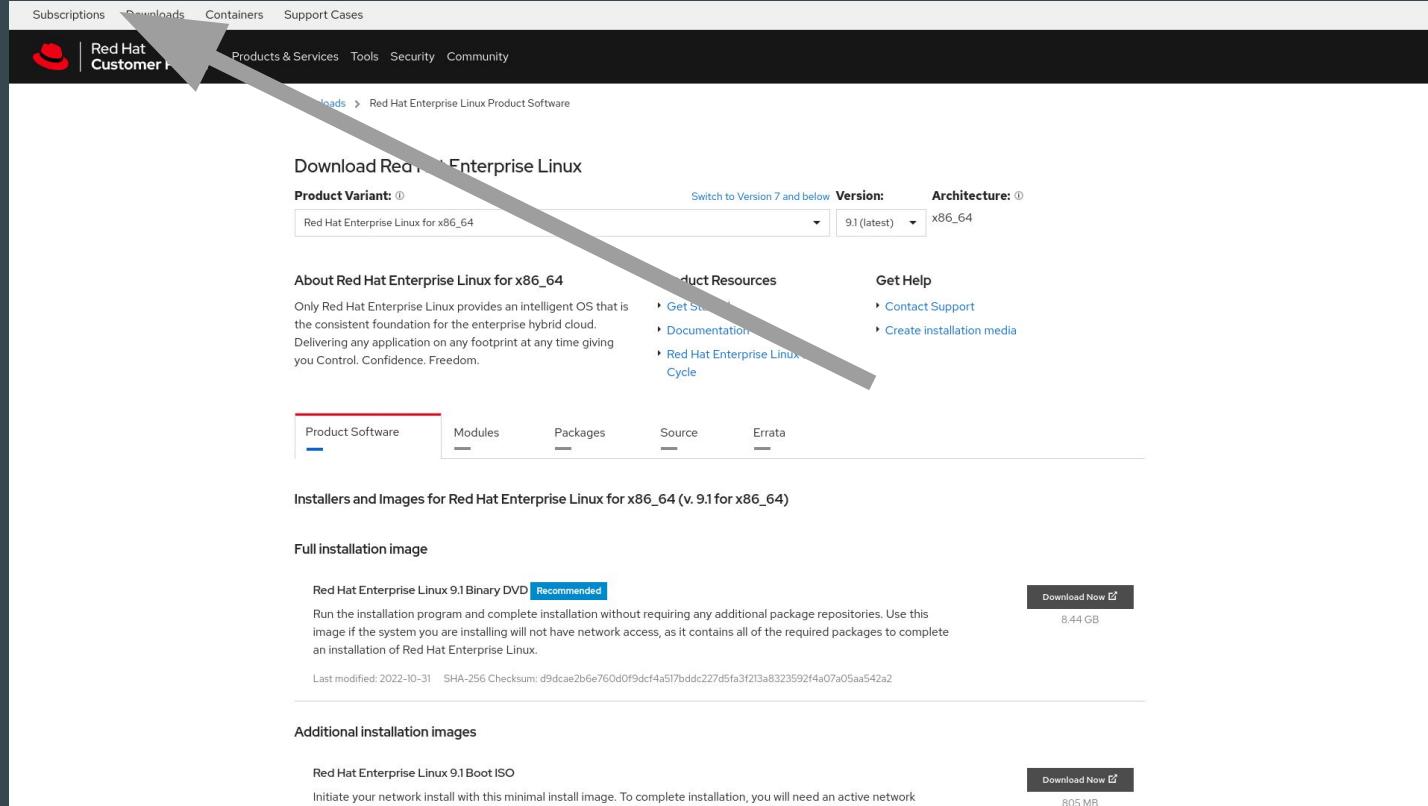
 Download Now

805 MB

# Download The Iso

## Click The Download Now Button

# Check Your Subscription



The screenshot shows the Red Hat Enterprise Linux download page. At the top, there's a navigation bar with links for Subscriptions, Downloads, Containers, and Support Cases. The 'Downloads' link is highlighted with a red arrow. Below the navigation is the Red Hat Customer Portal logo. The main content area has a title 'Download Red Hat Enterprise Linux'. It includes dropdown menus for 'Product Variant' (set to 'Red Hat Enterprise Linux for x86\_64'), 'Version' (set to '9.1 (latest)'), and 'Architecture' (set to 'x86\_64'). A large grey arrow points from the top left towards the 'Downloads' menu. Below these are sections for 'About Red Hat Enterprise Linux for x86\_64', 'Product Resources' (with links to Get Started, Documentation, and the Red Hat Enterprise Linux Cycle), and 'Get Help' (with links to Contact Support and Create installation media). A navigation bar at the bottom includes tabs for Product Software (which is selected and highlighted in red), Modules, Packages, Source, and Errata.

Downloads > Red Hat Enterprise Linux Product Software

## Download Red Hat Enterprise Linux

Product Variant: ⓘ

Switch to Version 7 and below Version: ⓘ

Architecture: ⓘ

9.1 (latest) x86\_64

### About Red Hat Enterprise Linux for x86\_64

Only Red Hat Enterprise Linux provides an intelligent OS that is the consistent foundation for the enterprise hybrid cloud. Delivering any application on any footprint at any time giving you Control. Confidence. Freedom.

### Product Resources

- Get Started
- Documentation
- Red Hat Enterprise Linux Cycle

### Get Help

- Contact Support
- Create installation media

Product Software Modules Packages Source Errata

#### Installers and Images for Red Hat Enterprise Linux for x86\_64 (v. 9.1 for x86\_64)

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Last modified: 2022-10-31 SHA-256 Checksum: d9dcae2b6e760d0f9dcf4a5f7bddc227d5fa3f213a8323592f4a07a05aa542a

Download Now  8.44 GB

##### Additional installation images

Red Hat Enterprise Linux 9.1 Boot ISO

Initiate your network install with this minimal install image. To complete installation, you will need an active network.

Download Now  805 MB

Click The Subscription Link

# Check Your Subscription

The screenshot shows the Red Hat Customer Portal interface. A large arrow points from the text "Click to Enable Simple content access for Red Hat Subscription Management" at the bottom to the "Simple content access for Red Hat Subscription Management" section in the center. This section includes a toggle switch labeled "Enabled" and a descriptive text about simplifying administrator workflows.

**Red Hat Subscription Management**

Summary of all active subscriptions and purchased products for account 11493192

**Subscriptions**

- 2 Active Subscriptions
- 0 Recently Expired
- 0 Ready to Renew

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**Systems**

- 1 Physical
- 0 Virtual
- 0 Hypervisors

[View all Systems](#)

**Errata**

- 0 Security Advisories
- 0 Bug Fixes
- 0 Product Enhancements

[View all Errata affecting your Systems](#)

**Purchased Products**

[CSV](#)

**RHEL**

View your Red Hat Enterprise Linux usage on [Subscription Watch](#) ⓘ

Product	Quantity	Entitlement Usage	Next Renewal
---------	----------	-------------------	--------------

Click to Enable  
Simple content access for Red Hat Subscription Management



More Products ▾ Resources ▾ Customers & Partners ▾ Pricing Contact

Login

Sign Up

# Download Balena Etcher

## ETCHER

# Flash. Flawless.

Flash OS images to SD cards & USB drives, safely and easily.



Select Image → Select drive → Flash!

[Download Etcher](#)

## RESOURCES

Docs About EtcherPro FAQs Forums

Why balenaEtcher?

Here at balena we have thousands of users working through our getting started guide. Create USB installation media from bootable ISOs

There are many tools that can be used

# Download Balena Etcher For Your OS

**Open Source**

Made with JS, HTML, node.js and Electron. Etcher is built on open source tools and is and always will be free and open source to use!

**Cross Platform**

Works for everyone whether you are on Windows, Linux or Mac with no complicated install instructions.

**Simultaneous Writing**

Using balena EtcherPro you can flash up to 16 drives at once. [Find out more here.](#)

**DOWNLOAD**

## Download Etcher

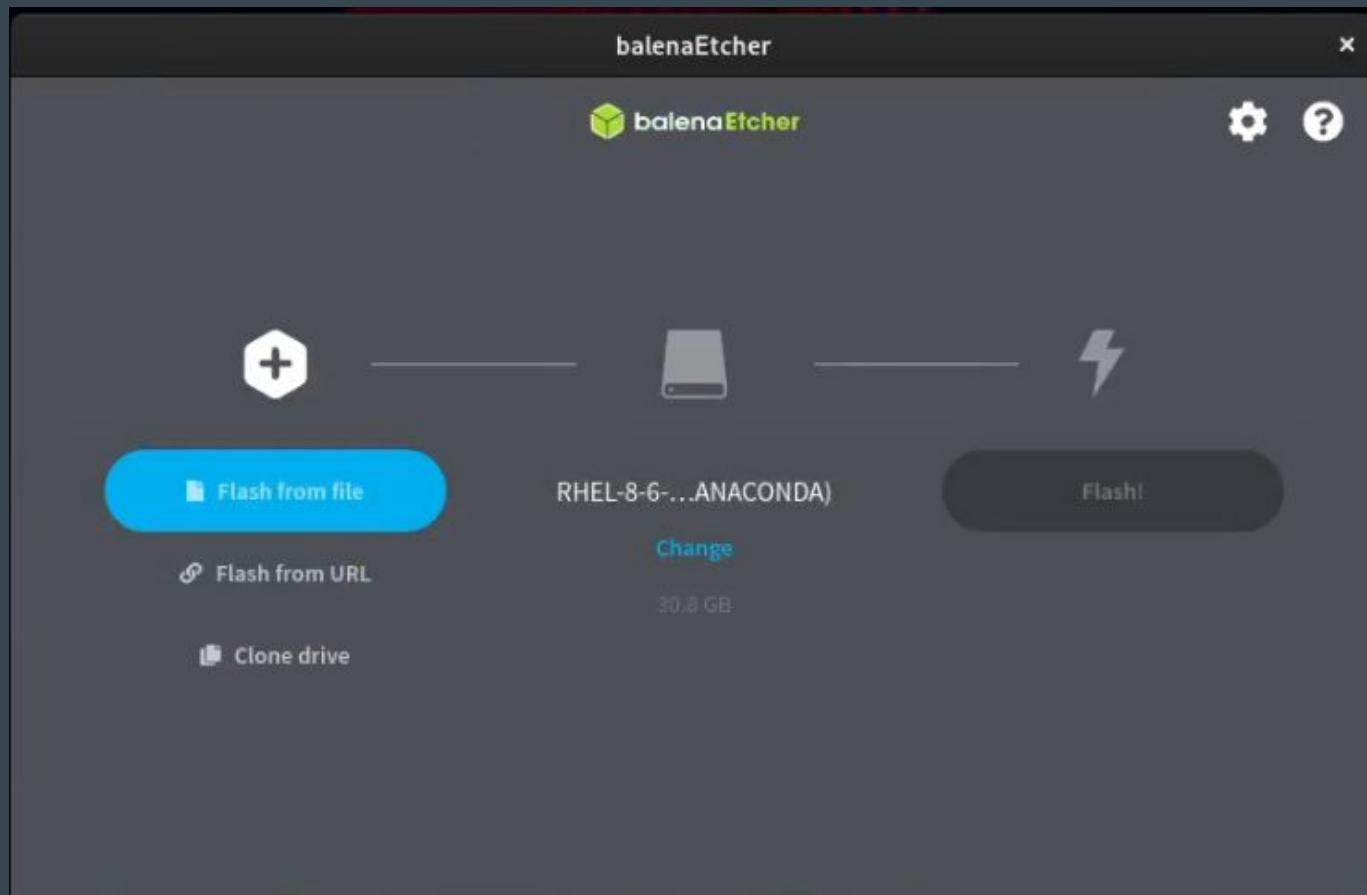
ASSET	OS	ARCH	
ETCHER FOR WINDOWS (X86 X64) (INSTALLER)	WINDOWS	X86 X64	<a href="#">Download</a>
ETCHER FOR WINDOWS (X86 X64) (PORTABLE)	WINDOWS	X86 X64	<a href="#">Download</a>
ETCHER FOR WINDOWS (LEGACY 32 BIT) (X86 X64) (PORTABLE)	WINDOWS	X86 X64	<a href="#">Download</a>
ETCHER FOR MACOS	MACOS	X64	<a href="#">Download</a>
ETCHER FOR LINUX X64 (64-BIT) (APPIMAGE)	LINUX	X64	<a href="#">Download</a>
ETCHER FOR LINUX (LEGACY 32 BIT) (APPIMAGE)	LINUX	X86	<a href="#">Download</a>

Looking for [Debian \(.deb\) packages](#) or [Red Hat \(.rpm\) packages](#)?

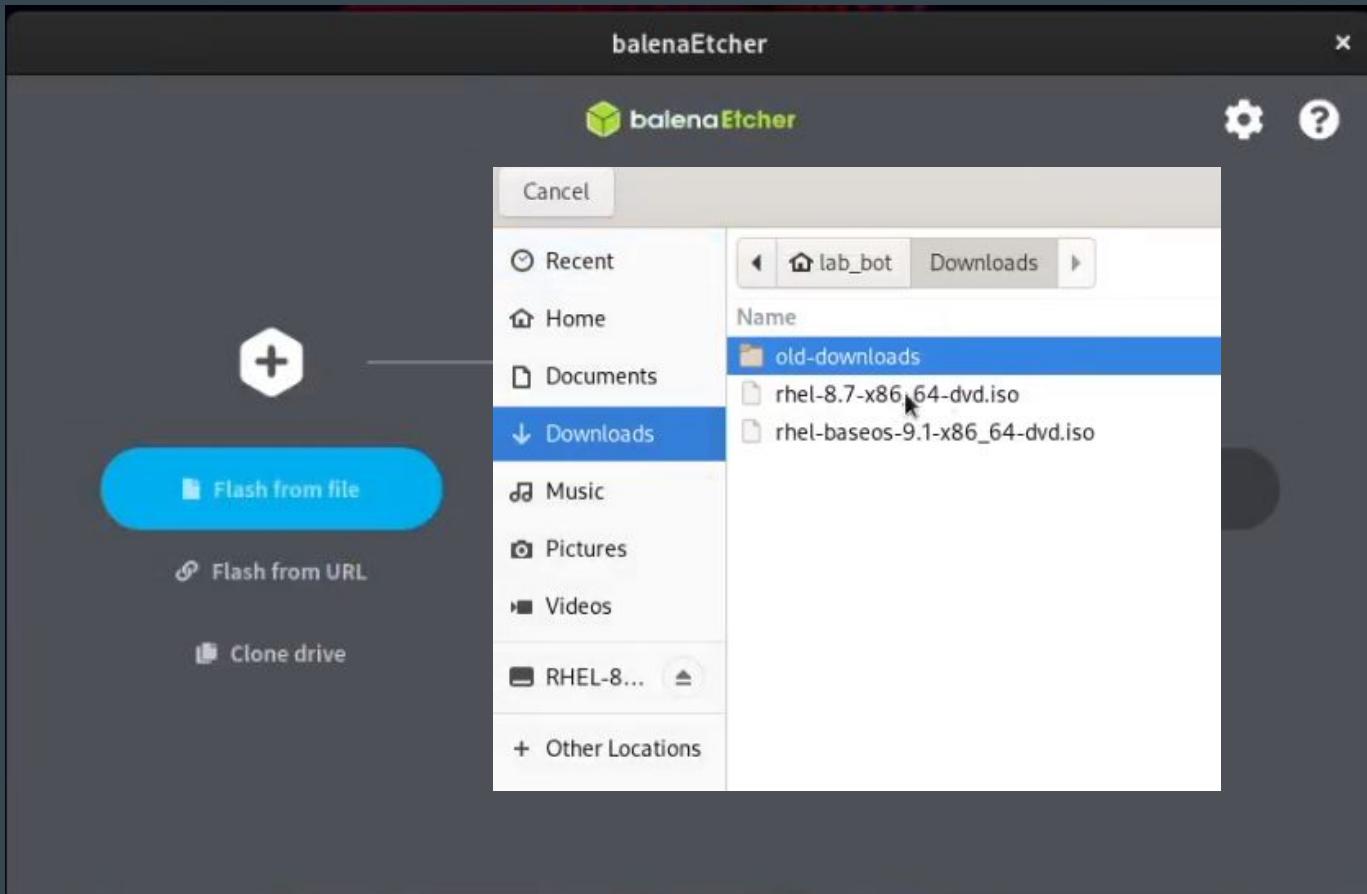
OSS hosting by [cloudsmith](#)

**COMMUNITY**

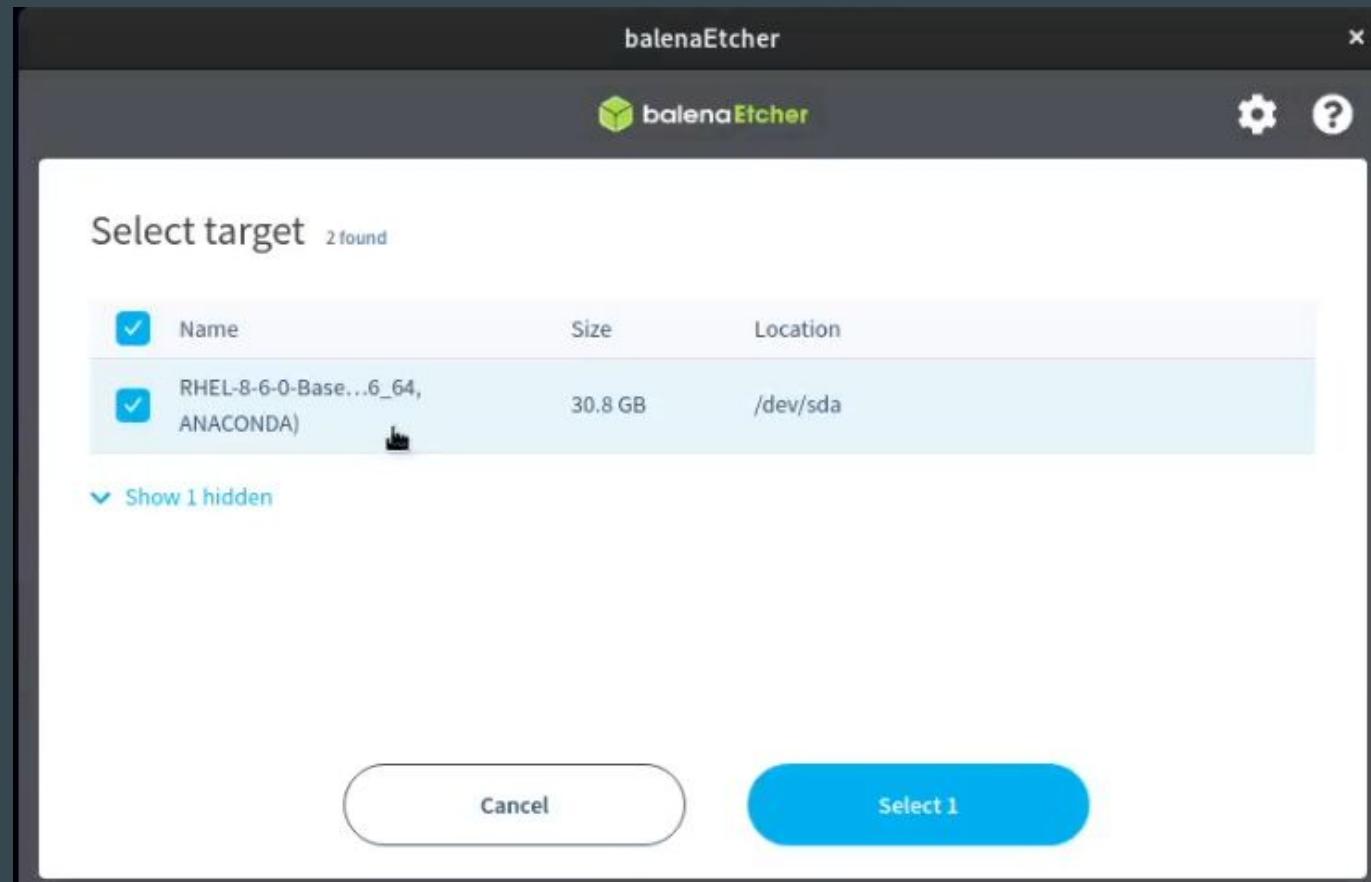
# Plug In Your Thumb Drive



# Choose The ISO



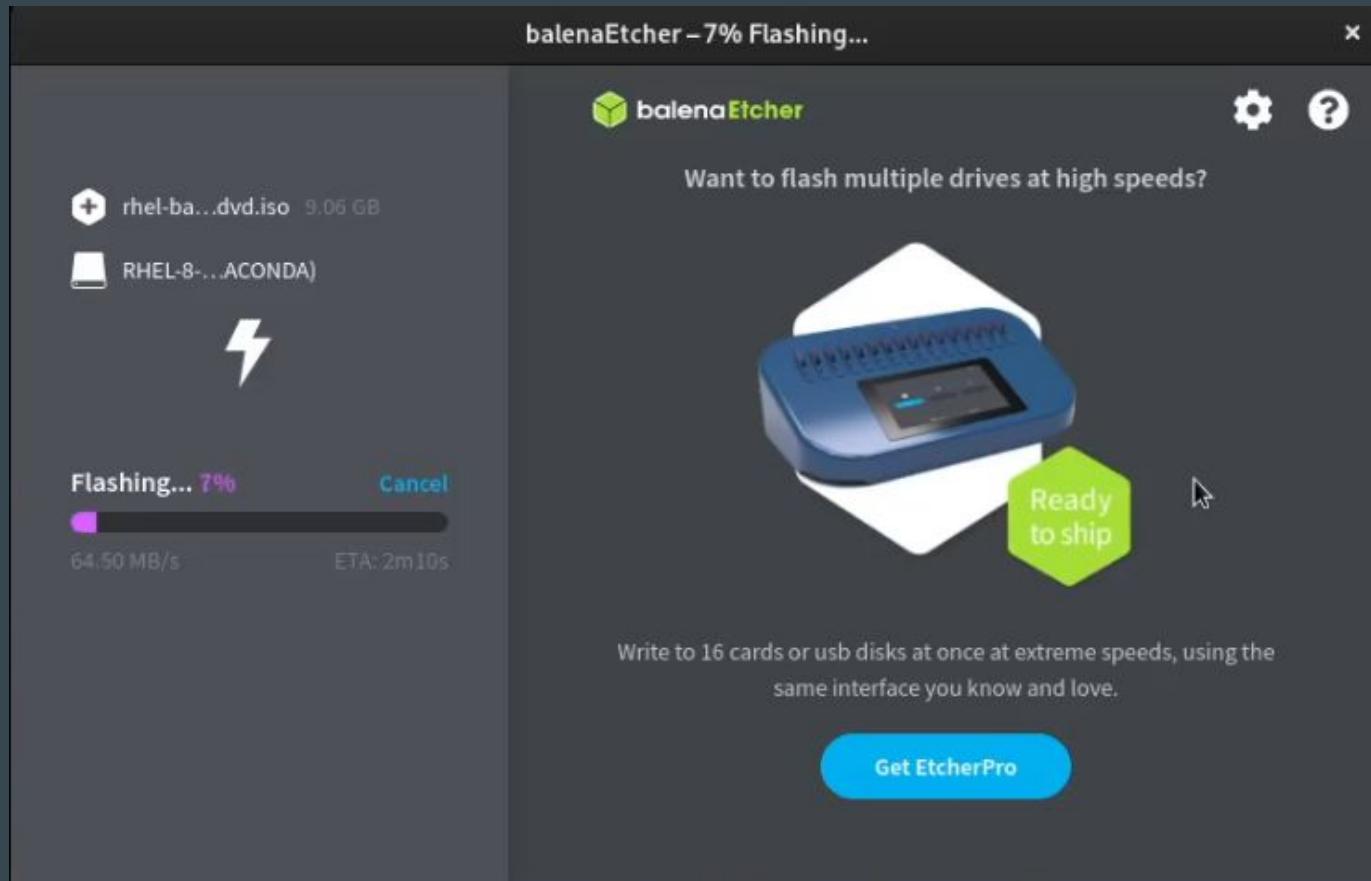
# Chose The Thumb Drive



# Flash the Iso



# Wait For It To Finish





rhel-ba...dvd.iso 9.06 GB

RHEL-8-...ACONDA)



Validating... 23%

[Skip](#)

136.80 MB/s

ETA: 0m50s

# Wait For It To Validate

Want to flash multiple drives at high speeds?



Ready  
to ship

Write to 16 cards or usb disks at once at extreme speeds, using the same interface you know and love.

[Get EtcherPro](#)

# You May Now Remove The Thumb Drive

balenaEtcher

×

balenaEtcher

⚙️ ?

 balenaEtcher

Task Solution

Flash device 

Update and manage devices 

Flash Completed!

1 Successful target  
Effective speed: 21.5 MB/s

[Flash another](#)

Etcher is just one tool in your kit  
We also build tools to deploy, manage, and remotely update fleets of small devices at any scale.  
Provision, deploy, manage, update and maintain with balena.

[Find out more](#)



# When it comes to hardware

- Reset your BIOS to Default
- Enable booting from USB
- Under your Performance/Processor settings
  - Hyper-Threading = Enable\*
  - Virtualization Technology = Enabled
- Under security/boot settings
  - Secure Boot = Disabled
  - UEFI Boot = Disabled
  - Legacy Boot = Enabled



## LEADERSHIP

Le leader est le chef d'un groupe de personnes qui œuvrent ensemble pour atteindre un objectif commun.

Le leader doit être capable de:

- Diriger et inspirer les autres

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File Home

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Mar 26 10:00

Log off

Red Hat Enterprise Linux



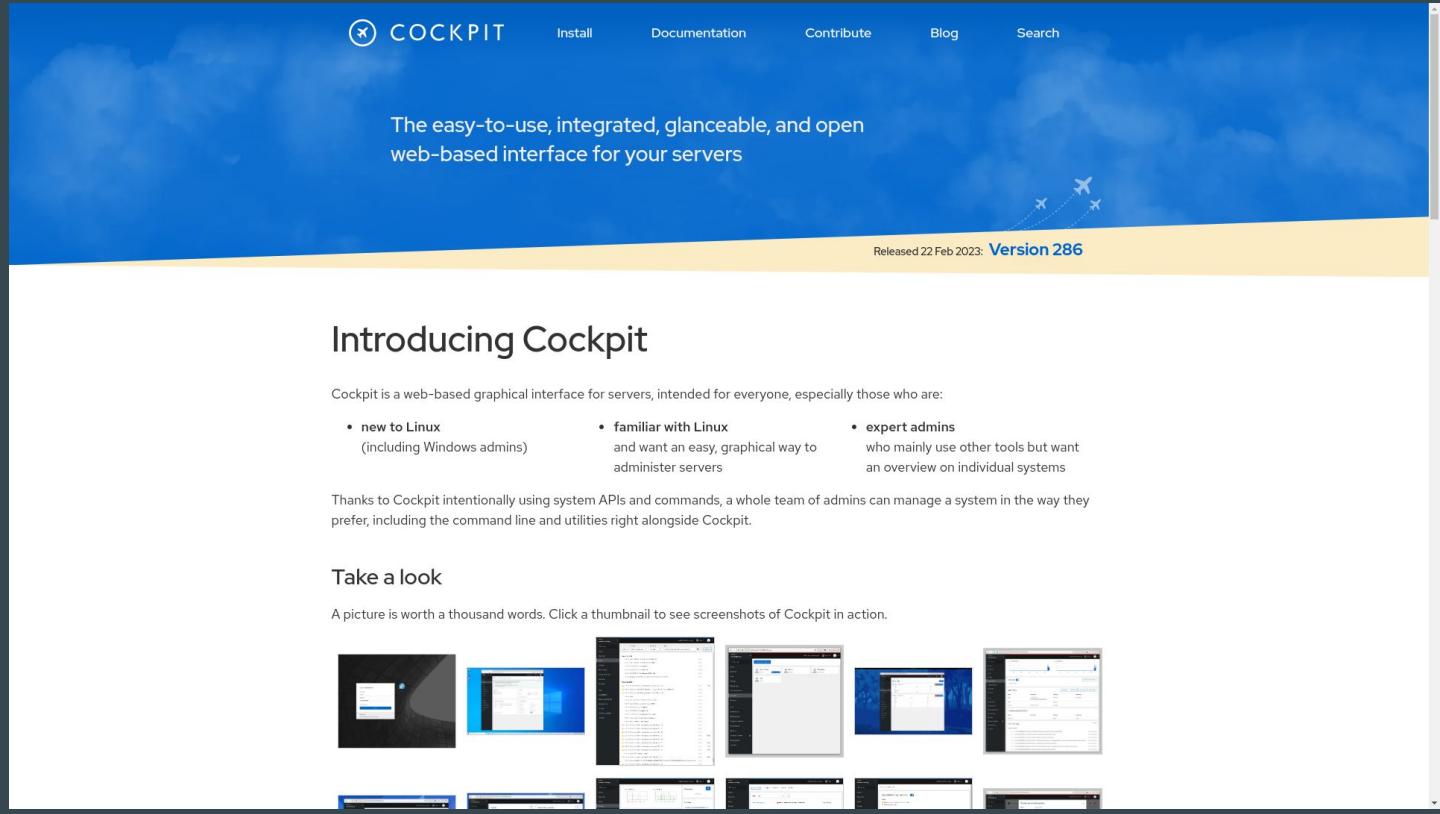
 Red Hat  
Enterprise Linux

# Who has heard about the Cockpit Project?

# Manage & Control from a Webpage



<https://cockpit-project.org/>



The image shows the official Cockpit Project website homepage. The header features the Cockpit logo (a stylized cockpit icon) and the word "COCKPIT" in a bold, sans-serif font. To the right of the logo are links for "Install", "Documentation", "Contribute", "Blog", and "Search". Below the header is a blue banner with white text that reads: "The easy-to-use, integrated, glanceable, and open web-based interface for your servers". To the right of the text is a graphic of three small airplane icons flying in a curved path against a blue sky with white clouds. At the bottom of the banner is a yellow bar with the text "Released 22 Feb 2023: Version 286". The main content area has a white background and features a section titled "Introducing Cockpit" with a subtext explaining it's a web-based graphical interface for servers. It lists three target audiences: "new to Linux (including Windows admins)", "familiar with Linux and want an easy, graphical way to administer servers", and "expert admins who mainly use other tools but want an overview on individual systems". Below this is a paragraph about Cockpit's design philosophy. A "Take a look" section follows, showing a grid of thumbnail screenshots demonstrating various Cockpit interface features like file management, system logs, and monitoring dashboards. The overall design is clean and professional, using a mix of blue, white, and grey colors.

It can be installed on  
most linux distros

## Installation & Setup

	Tested	Available	
 <b>fedora</b>	✓	✓	<a href="#">View instructions</a>
 <b>Red Hat Enterprise Linux</b>	✓	✓	<a href="#">View instructions</a>
 <b>fedora COREOS</b>	✓	✓	<a href="#">View instructions</a>
 <b>CentOS</b>	✓	✓	<a href="#">View instructions</a>
 <b>debian</b>	✓	✓	<a href="#">View instructions</a>
 <b>ubuntu</b>	✓	✓	<a href="#">View instructions</a>
 <b>Clear Linux</b>		✓	<a href="#">View instructions</a>
 <b>archlinux</b>		✓	<a href="#">View instructions</a>
 <b>Tumbleweed</b>		✓	<a href="#">View instructions</a>
 <b>SUSE Linux Enterprise Micro</b>		✓	<a href="#">View instructions</a>



"Tested" in this table means actively tested by the Cockpit team using automated integration testing with a specific virtual machine image. Distributions listed on this page likely do their own downstream testing in addition.

Choose your OS and follow the instructions

# Install Cockpit On RHEL

Cockpit is available in Red Hat Enterprise Linux 7 and later.

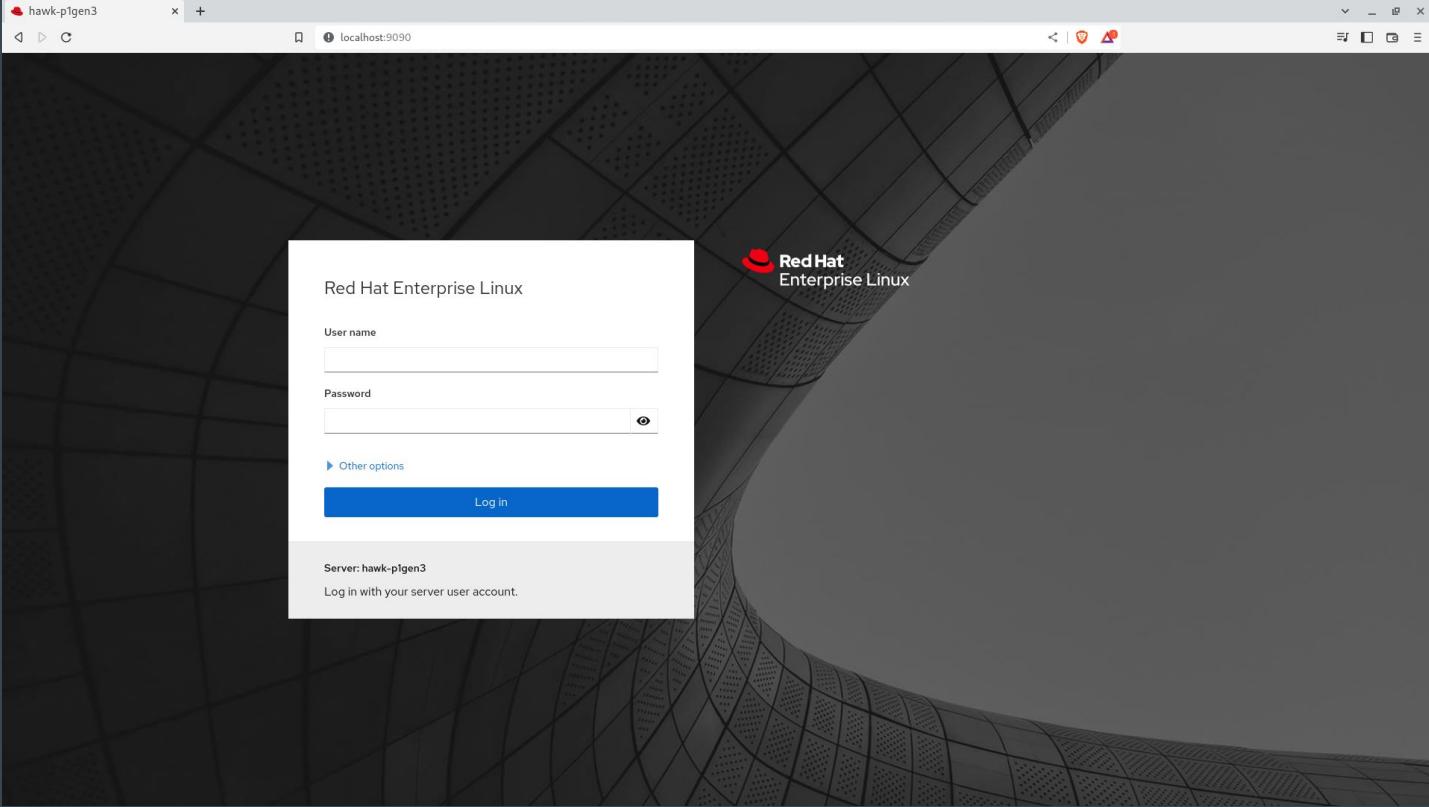
Install cockpit:

```
sudo yum install cockpit
```

Enable cockpit:

```
sudo systemctl enable --now cockpit.socket
```

# Log into Cockpit



Open A Web Browser  
Go to your ip address, localhost + Colon 9090  
I.E. localhost:9090

Use your same username and password to log into Cockpit for the first time.

# Cockpit: Overview

The screenshot shows the Cockpit web interface running in a browser. The top navigation bar includes a user icon, the session name "lab\_bot@hawk-p1gen3", and links for "Limited access", "Help", and "Session". A search bar is at the top left. The main content area has a header "hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)". On the left, a sidebar titled "System" lists various management options: Overview, Logs, Storage, Networking, Podman containers, Virtual machines, Accounts, Services, Tools, Applications, Diagnostic reports, Kernel dump, SELinux, Software updates, Subscriptions, and Terminal. The "Overview" tab is selected. The main content is divided into four panels: "Health" (green checkmark for up-to-date), "Usage" (CPU and Memory usage bars), "System information" (Model: LENOVO 20TJS5S400, Machine ID: 9fc17ec61bdf43a39b5e01cafbfecc5, Uptime: about 10 hours), and "Configuration" (Hostname: hawk-p1gen3, System time: Nov 16, 2022, 3:40 PM, Domain: Join domain, Performance profile: none, Crypto policy: Default, Secure shell keys: Show fingerprints). A banner at the top center says "Web console is running in limited access mode." with a link to "Turn on administrative access".

This is your default starter view

# Cockpit: User

The screenshot shows the Cockpit web interface running in limited access mode on a Red Hat Enterprise Linux 9.1 system. The top navigation bar includes 'Limited access', 'Help', and 'Session' options. The left sidebar, titled 'System', lists various management tools: Overview, Logs, Storage, Networking, Podman containers, Virtual machines, Accounts, Services, Tools, Applications, Diagnostic reports, Kernel dump, SELinux, Software updates, Subscriptions, and Terminal. The main content area displays four cards: 'Health' (System is up to date, Last successful login Nov 16, 07:59 AM on tty2), 'Usage' (CPU 5% of 12 CPUs, Memory 16 / 60 GiB), 'System information' (Model LENOVO 20TJS5S400, Machine ID 9fc17ec61bdf43a39b5e01cafbfecc5, Uptime about 10 hours), and 'Configuration' (Hostname hawk-p1gen3, System time Nov 16, 2022, 3:40 PM, Domain Join domain, Performance profile none, Crypto policy Default, Secure shell keys Show fingerprints). A large grey arrow points upwards from the bottom right towards the 'Limited access' button.

lab\_bot@  
hawk-p1gen3

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

Applications

Diagnostic reports

Kernel dump

SELinux

Software updates

Subscriptions

Terminal

Web console is running in limited access mode. Turn on administrative access

hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)

**Health**

- System is up to date
- Last successful login: Nov 16, 07:59 AM on tty2 [View login history](#)

**Usage**

CPU	5% of 12 CPUs
Memory	16 / 60 GiB

[View metrics and history](#)

**System information**

Model	LENOVO 20TJS5S400
Machine ID	9fc17ec61bdf43a39b5e01cafbfecc5
Uptime	about 10 hours

[View hardware details](#)

**Configuration**

Hostname	hawk-p1gen3
System time	Nov 16, 2022, 3:40 PM
Domain	Join domain
Performance profile	none
Crypto policy	Default
Secure shell keys	<a href="#">Show fingerprints</a>

By Default you are logged in as the user.

lab\_bot@hawk-p1gen3

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

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Kernel dump

SELinux

Software updates

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Web console is running in limited access mode. Turn on administrative access

hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)

**Health**

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**Usage**

CPU	5% of 12 CPUs
Memory	16 / 60 GiB

[View metrics and history](#)

**System information**

Model	LENOVO 20TJS5S400
Machine ID	9fc17ec61bdf43a39b5e01cafbfecc5
Uptime	about 10 hours

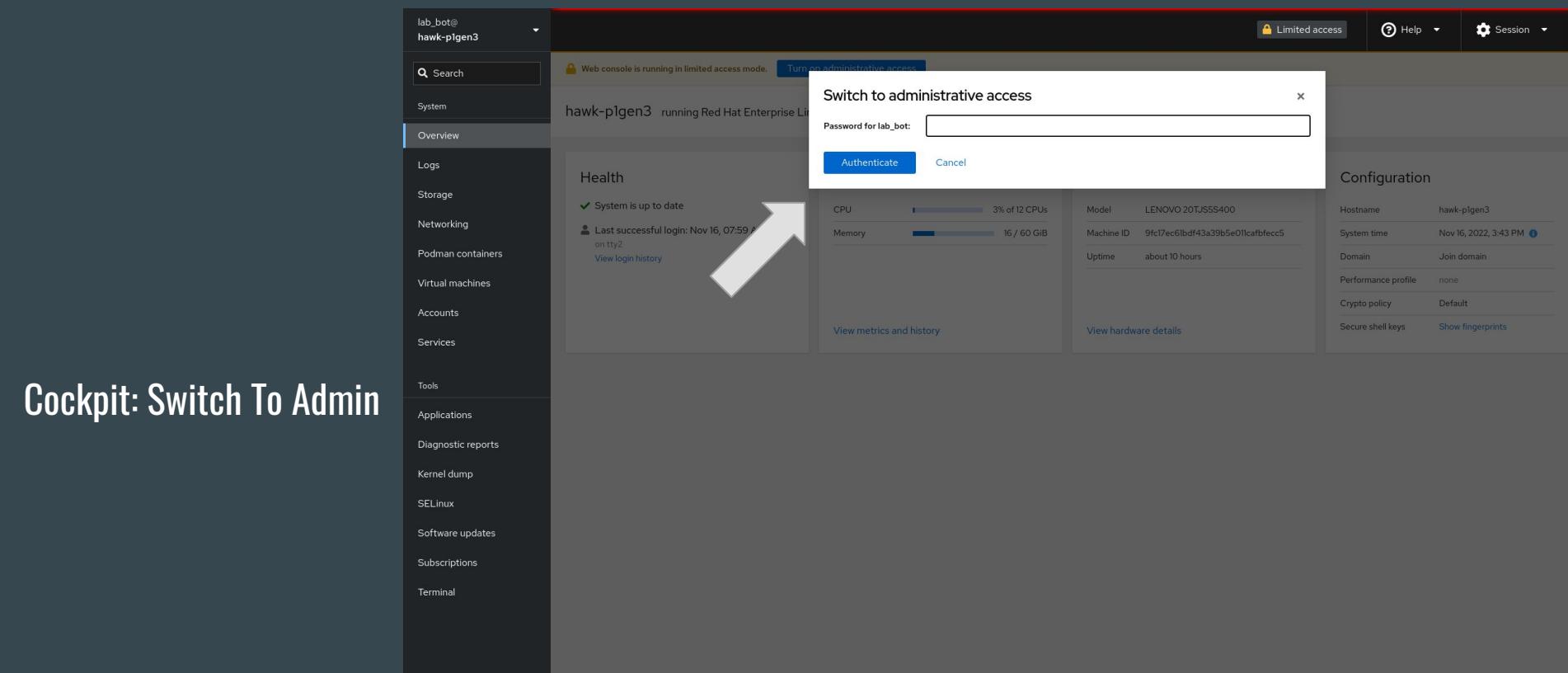
[View hardware details](#)

**Configuration**

Hostname	hawk-p1gen3
System time	Nov 16, 2022, 3:40 PM ⓘ
Domain	Join domain
Performance profile	none
Crypto policy	Default
Secure shell keys	<a href="#">Show fingerprints</a>

# Cockpit: Admin Access

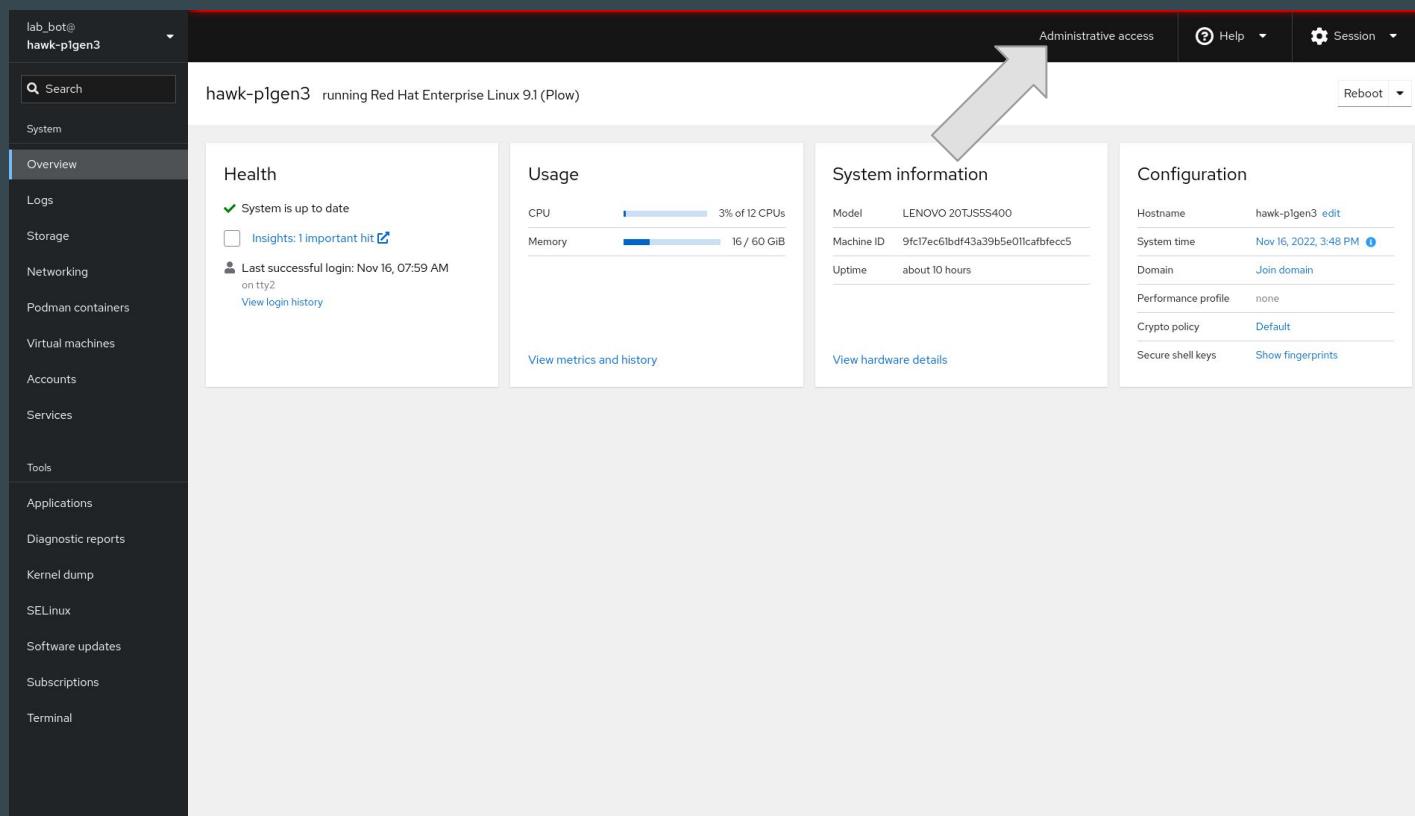
If you want to do tasks as an elevated user you will need to click the blue button in the top middle of the screen.



## Cockpit: Switch To Admin

Log in with your password and click Authenticate.

# Cockpit: Overview



The screenshot shows the Cockpit web interface with the title "hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)" at the top. On the left, a sidebar titled "System" lists various management options. The main area is divided into four sections: "Health" (green checkmark for up-to-date), "Usage" (CPU and Memory usage bars), "System information" (hardware details like Model, Machine ID, Uptime), and "Configuration" (Hostname, System time, Domain, Performance profile, Crypto policy, Secure shell keys). The "Administrative access" indicator is visible in the top right corner.

lab\_bot@hawk-p1gen3

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

Applications

Diagnostic reports

Kernel dump

SELinux

Software updates

Subscriptions

Terminal

hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)

Administrative access

Help

Session

Reboot

Health

- System is up to date
- Insights: 1 important hit [View](#)
- Last successful login: Nov 16, 07:59 AM on tty2 [View login history](#)

Usage

CPU	3% of 12 CPUs
Memory	16 / 60 GiB

[View metrics and history](#)

System information

Model	LENOVO 20TJ5S400
Machine ID	9fc17ec61bd43a39b5e011cafbfecc
Uptime	about 10 hours

[View hardware details](#)

Configuration

Hostname	hawk-p1gen3 <a href="#">edit</a>
System time	Nov 16, 2022, 3:48 PM <a href="#">Edit</a>
Domain	<a href="#">Join domain</a>
Performance profile	none
Crypto policy	Default
Secure shell keys	<a href="#">Show fingerprints</a>

Now you can see that you are logged in with Administrative Access.

lab\_bot@hawk-p1gen3

Administrative access Help Session

Reboot

hawk-p1gen3 running Red Hat Enterprise Linux 9.1 (Plow)

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

Applications

Diagnostic reports

Kernel dump

SELinux

Software updates

Subscriptions

Terminal

Health

System is up to date

Insights: 1 important hit

Last successful login: Nov 16, 07:59 AM on tty2

View login history

Usage

CPU: 2% of 12 CPUs

Memory: 16 / 60 GiB

View metrics and history

System information

Model: LENOVO 20TJ5S400

Machine ID: 9fc17ec61bd43a39b5e011cafbfecc

Uptime: about 10 hours

View hardware details

Configuration

Hostname: hawk-p1gen3 edit

System time: Nov 16, 2022, 3:55 PM

Domain: Join domain

Performance profile: none

Crypto policy: Default

Secure shell keys: Show fingerprints

# Cockpit: Applications

Next you want to click on Applications

# Cockpit: Applications

lab\_bot@hawk-pIgen3

Administrative access Help Session

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

**Applications**

Diagnostic reports

Kernel dump

SELinux

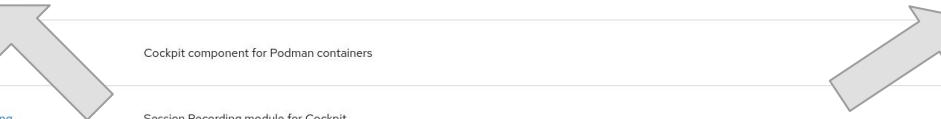
Software updates

Subscriptions

Terminal

## Applications

 Image Builder	Build customized operating system images	<button>Install</button>
 Machines	Manage your virtual machines	<button>Install</button>
 Podman	Cockpit component for Podman containers	<button>Remove</button>
 Session Recording	Session Recording module for Cockpit	<button>Install</button>
 Storage	Manage storage	<button>Remove</button>
 Subscription Manager	Subscription Manager in Cockpit	<button>Remove</button>



Find the Entry for Machines, and Click the Install Button

# Cockpit: Applications

lab\_bot@hawk-pIgen3

Administrative access

Help

Session

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

Applications

Diagnostic reports

Kernel dump

SELinux

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## Applications

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 Podman	Cockpit component for Podman containers	<button>Remove</button>
 Session Recording	Session Recording module for Cockpit	<button>Install</button>
 Storage	Manage storage	<button>Remove</button>
 Subscription Manager	Subscription Manager in Cockpit	<button>Remove</button>

You could also automate this by running the commands

*sudo yum install libvirt cockpit cockpit-machines -y*

*sudo systemctl enable libvirtd --now*

# Cockpit: Applications

lab\_bot@hawk-pIgen3

Administrative access Help Session

Search

System

Overview

Logs

Storage

Networking

Podman containers

Virtual machines

Accounts

Services

Tools

Applications

Diagnostic reports

Kernel dump

SELinux

Software updates

Subscriptions

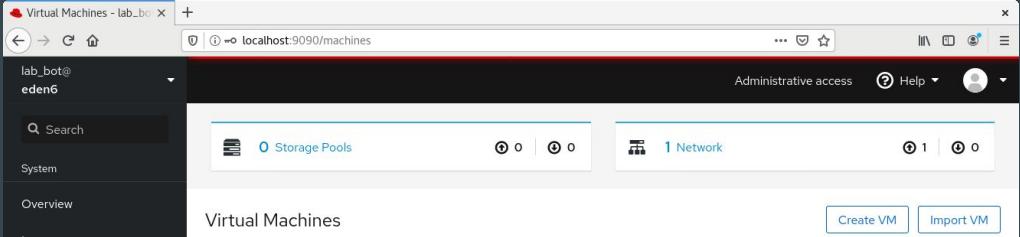
Terminal

## Applications

 Image Builder	Build customized operating system images	<button>Install</button>
 Machines	Manage your virtual machines	<button>Remove</button>
 Podman	Cockpit component for Podman containers	<button>Remove</button>
 Session Recording	Session Recording module for Cockpit	<button>Install</button>
 Storage	Manage storage	<button>Remove</button>
 Subscription Manager	Subscription Manager in Cockpit	<button>Remove</button>



Once It's installed we can move onto the next Tab



# Cockpit: Virtual Machines

Once you click on the "Virtual Machine" option, you will see the following screen.

At the top of the Page you will see "Storage Pools" and "Networks".

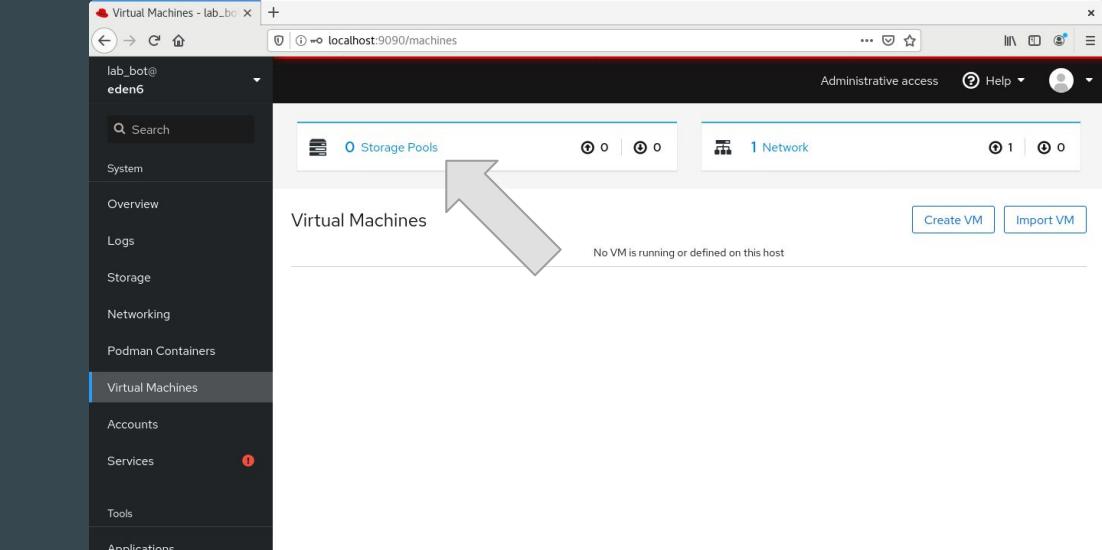
# Cockpit: Virtual Machines

Click on Storage Pools

Create a new one and call it “default”

Type: Filesystem Directory

Target Path: /var/lib/libvirt/



**Create storage pool**

System  User session

Name	default
Type	Filesystem directory
Target path	/var/lib/libvirt/
Startup	<input checked="" type="checkbox"/> Start pool when host boots

**Create** **Cancel**

# Cockpit: Networking

To Bridge or Not to Bridge

Next you will need to decide if you will want to touch the rest of your network or just have your virtual machines talk on this 1 host.

The screenshot shows the Cockpit web interface for networking. On the left is a sidebar with a dark theme containing the following items:

- lab\_bot@eden6
- Search input field
- System
- Overview
- Logs
- Storage
- Networking** (selected)
- Podman Containers
- Virtual Machines
- Accounts
- Services (with a red exclamation mark)
- Tools
- Applications
- Diagnostic Reports
- Kernel Dump
- SELinux
- Software Updates
- Subscriptions
- Terminal

The main content area has a light background. At the top, there are two line graphs: "Sending" and "Receiving" in Kbps, both showing minimal activity over time (from 10:58 to 11:02). A large grey arrow points from the text "2 Active Zones" below the graphs towards the graphs themselves.

**2 Active Zones**

**Interfaces**

Name	IP Address	Sending	Receiving
enp5s0	172.16.0.10/24	0 bps	0 bps
virbr0	192.168.122.1/24	No carrier	No carrier

**Unmanaged Interfaces**

Name	IP Address	Sending	Receiving
virbr0-nic			

**Networking Logs**

All logs

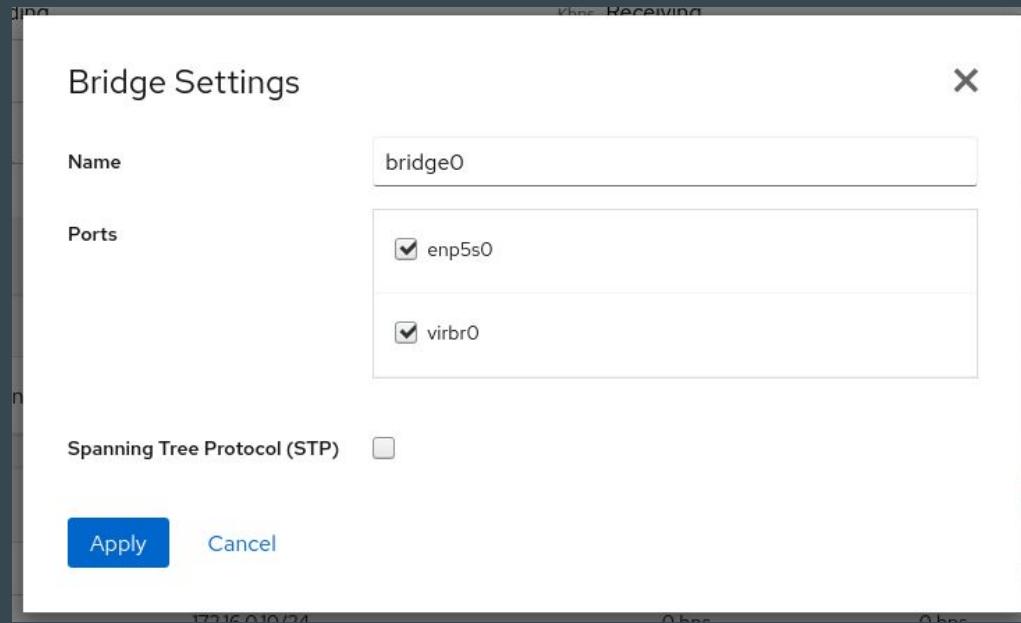
December 3, 2020

Time	Message	Source
10:59 AM	<info> [1607021973.8356] manager: (vnet0): new Tun device (/org/freedesktop/NetworkManager/...	NetworkManager
10:59 AM	<info> [1607021967.8812] device (vnet0): released from master device virbr0	NetworkManager
10:59 AM	<info> [1607021967.8806] device (vnet0): state change: activated -> unmanaged (reason 'unmanag...	NetworkManager
10:59 AM	<info> [1607021945.6195] manager: (vnet0): new Tun device (/org/freedesktop/NetworkManager/...	NetworkManager
10:58 AM	<info> [1607021927.7752] device (vnet0): released from master device virbr0	NetworkManager
10:58 AM	<info> [1607021927.7546] device (vnet0): state change: activated -> unmanaged (reason 'unmanag...	NetworkManager
10:53 AM	<info> [1607021589.8360] device (virbr0): carrier.link connected	NetworkManager
10:53 AM	<info> [1607021588.0667] device (vnet0): Activation: successful, device activated.	NetworkManager
10:53 AM	<info> [1607021588.0659] device (vnet0): state change: secondaries -> activated (reason 'none', sys...	NetworkManager
10:53 AM	<info> [1607021588.0657] device (vnet0): state change: ip-check -> secondaries (reason 'none', sys...	NetworkManager

# Cockpit: Network Bridge

If you are using the Ethernet, I'd suggest using the Bridge

The rest of your network will be accessible



# Cockpit: Network Bridge

With the 2 prerequisites out of the way let's spin up our first VM's

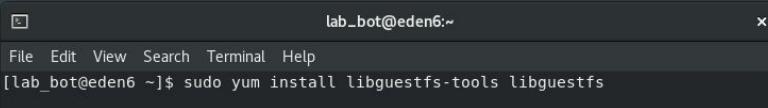
The screenshot shows the Cockpit web interface running at `localhost:9090/machines`. The left sidebar has a dark theme with white text and icons. The main area displays the "Virtual Machines" section. At the top, there are two summary boxes: "Storage Pool" (1 pool, 1 used, 0 free) and "Network" (1 network). Below is a table for "Virtual Machines".

Name	Connection	State	
RHEL_7.9	System	shut off	
	Overview Usage Disks Network Interfaces Consoles		
Type	Model type	MAC Address	IP Address
bridge	virtio	52:54:00:8b:b0:cb	Unknown
Source State			
bridge0 up			

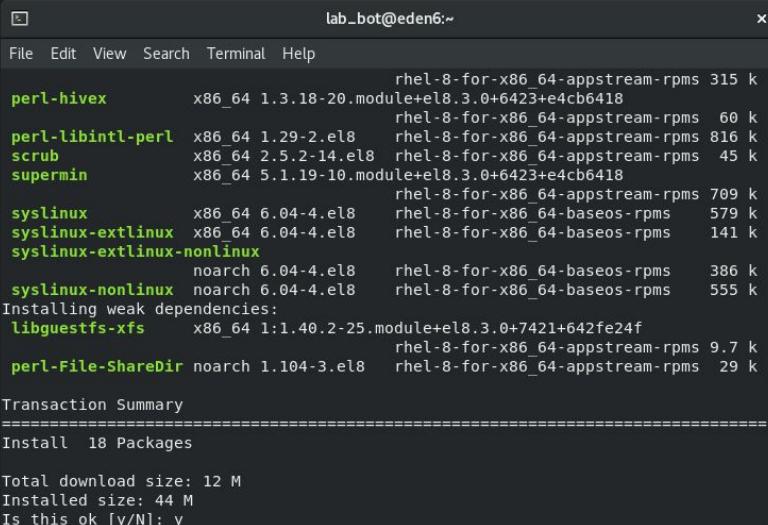
Below the table, another row is shown for "RHEL\_8.3" with similar details. On the right side of the interface, there are several buttons for managing the VMs: "Create VM", "Import VM", "Run", "Add Network Interface", "Unplug", "Edit", and "Delete".

# Install libguestfs

```
sudo yum install libguestfs-tools libguestfs
```



```
lab_bot@eden6:~$ sudo yum install libguestfs-tools libguestfs
```

```
File Edit View Search Terminal Help
[lab_bot@eden6 ~]$ sudo yum install libguestfs-tools libguestfs

File Edit View Search Terminal Help
perl-hivex           x86_64 1.3.18-20.module+el8.3.0+6423+e4cb6418      rhel-8-for-x86_64-appstream-rpms 315 k
perl-libintl-perl    x86_64 1.29-2.el8   rhel-8-for-x86_64-appstream-rpms 60 k
scrub                x86_64 2.5.2-14.el8  rhel-8-for-x86_64-appstream-rpms 816 k
supermin              x86_64 5.1.19-10.module+el8.3.0+6423+e4cb6418      rhel-8-for-x86_64-appstream-rpms 45 k
syslinux              x86_64 6.04-4.el8   rhel-8-for-x86_64-baseos-rpms 709 k
syslinux-extlinux     x86_64 6.04-4.el8   rhel-8-for-x86_64-baseos-rpms 579 k
syslinux-extlinux-nolinux noarch 6.04-4.el8   rhel-8-for-x86_64-baseos-rpms 141 k
syslinux-nolinux       noarch 6.04-4.el8   rhel-8-for-x86_64-baseos-rpms 386 k
syslinux-nonlinux      noarch 6.04-4.el8   rhel-8-for-x86_64-baseos-rpms 555 k
Installing weak dependencies:
libguestfs-xfs        x86_64 1:1.40.2-25.module+el8.3.0+7421+642fe24f      rhel-8-for-x86_64-appstream-rpms 9.7 k
perl-File-ShareDir     noarch 1.104-3.el8   rhel-8-for-x86_64-appstream-rpms 29 k

Transaction Summary
=====
Install 18 Packages

Total download size: 12 M
Installed size: 44 M
Is this ok [y/N]: y
```

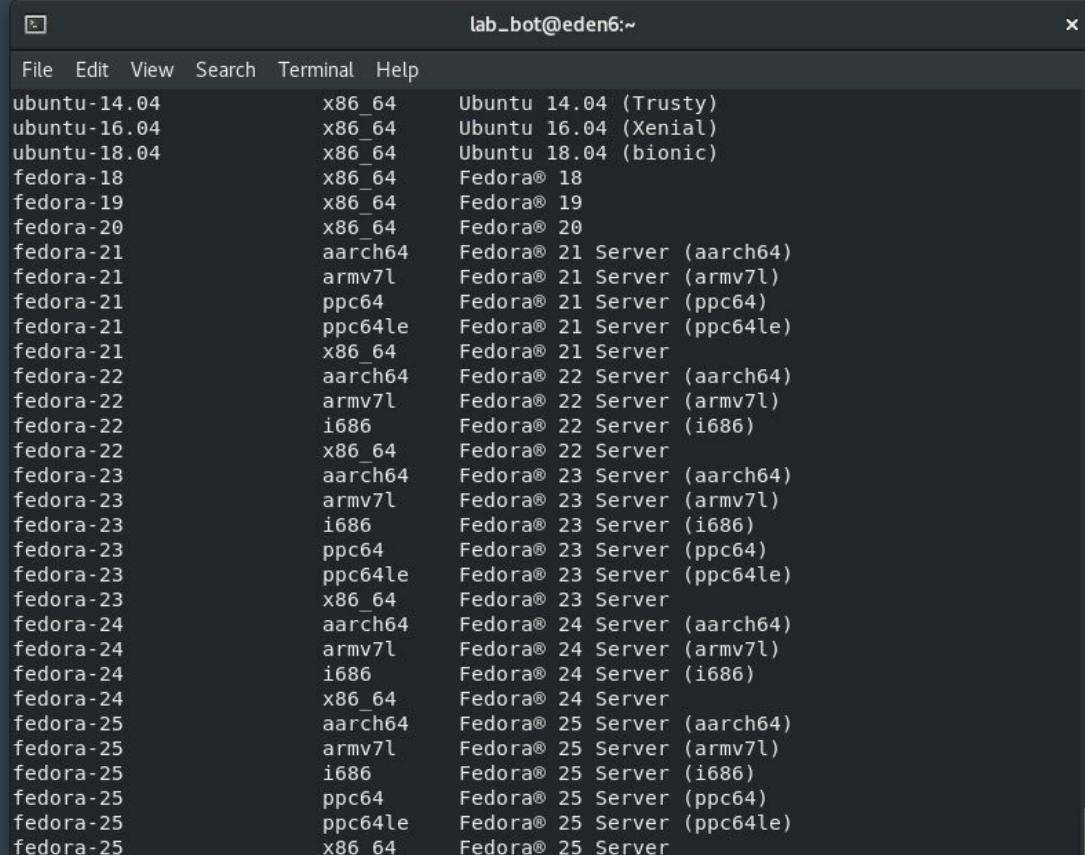
# Pre-built Images

This package lets us use preconfigured images

use this command to list them all

```
virt-builder --list
```

We are going to grab a centos 8 build

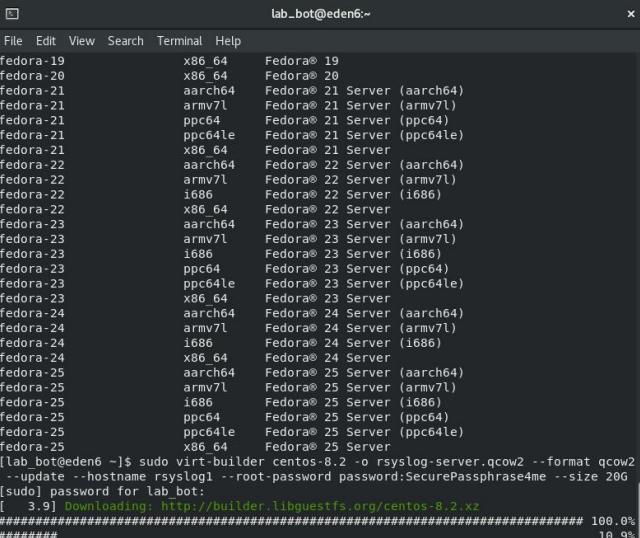


The screenshot shows a terminal window titled 'lab\_bot@eden6:~'. The window contains a list of pre-built virtual machine images. The list is organized into three columns: the image name, its architecture, and its description. The architectures listed are x86\_64, aarch64, armv7l, ppc64, ppc64le, i686, and x86\_64. The descriptions include various distributions and versions, such as Ubuntu 14.04 (Trusty), Fedora 18, and Fedora 25 Server. The list spans from fedora-18 to fedora-25.

Image Name	Architecture	Description
ubuntu-14.04	x86_64	Ubuntu 14.04 (Trusty)
ubuntu-16.04	x86_64	Ubuntu 16.04 (Xenial)
ubuntu-18.04	x86_64	Ubuntu 18.04 (bionic)
fedora-18	x86_64	Fedora® 18
fedora-19	x86_64	Fedora® 19
fedora-20	x86_64	Fedora® 20
fedora-21	aarch64	Fedora® 21 Server (aarch64)
fedora-21	armv7l	Fedora® 21 Server (armv7l)
fedora-21	ppc64	Fedora® 21 Server (ppc64)
fedora-21	ppc64le	Fedora® 21 Server (ppc64le)
fedora-21	x86_64	Fedora® 21 Server
fedora-22	aarch64	Fedora® 22 Server (aarch64)
fedora-22	armv7l	Fedora® 22 Server (armv7l)
fedora-22	i686	Fedora® 22 Server (i686)
fedora-22	x86_64	Fedora® 22 Server
fedora-23	aarch64	Fedora® 23 Server (aarch64)
fedora-23	armv7l	Fedora® 23 Server (armv7l)
fedora-23	i686	Fedora® 23 Server (i686)
fedora-23	ppc64	Fedora® 23 Server (ppc64)
fedora-23	ppc64le	Fedora® 23 Server (ppc64le)
fedora-23	x86_64	Fedora® 23 Server
fedora-24	aarch64	Fedora® 24 Server (aarch64)
fedora-24	armv7l	Fedora® 24 Server (armv7l)
fedora-24	i686	Fedora® 24 Server (i686)
fedora-24	x86_64	Fedora® 24 Server
fedora-25	aarch64	Fedora® 25 Server (aarch64)
fedora-25	armv7l	Fedora® 25 Server (armv7l)
fedora-25	i686	Fedora® 25 Server (i686)
fedora-25	ppc64	Fedora® 25 Server (ppc64)
fedora-25	ppc64le	Fedora® 25 Server (ppc64le)
fedora-25	x86_64	Fedora® 25 Server

# Pre-built Images

```
sudo virt-builder centos-8.2 -o rsyslog-server.qcow2 --format qcows2 --update  
--hostname rsyslog1 --root-password password:SecurePassphrase4me --size 20G
```



```
lab_bot@eden6:~$ sudo virt-builder centos-8.2 -o rsyslog-server.qcow2 --format qcows2  
--update --hostname rsyslog1 --root-password password:SecurePassphrase4me --size 20G  
[lab_bot@eden6 ~]$ [ 3.9] Downloading: http://builder.libguestfs.org/centos-8.x.z  
######[ 100.0%  
# ######[ 100.9%
```



# RHEL 9 KVM Images

Downloads > Red Hat Enterprise Linux Product Software

## Download Red Hat Enterprise Linux

Product Variant: ⓘ

Red Hat Enterprise Linux for x86\_64

Switch to Version 7 and below Version:

Architecture: ⓘ

9.1(latest)

x86\_64

### About Red Hat Enterprise Linux for x86\_64

Only Red Hat Enterprise Linux provides an intelligent OS that is the consistent foundation for the enterprise hybrid cloud. Delivering any application on any footprint at any time giving you Control. Confidence. Freedom.

### Product Resources

- [Get Started](#)
- [Documentation](#)
- [Red Hat Enterprise Linux Life Cycle](#)

### Get Help

- [Contact Support](#)
- [Create installation media](#)

Product Software

Modules

Packages

Source

Errata

### Installers and Images for Red Hat Enterprise Linux for x86\_64 (v. 9.1 for x86\_64)

#### Full installation image

Red Hat Enterprise Linux 9.1 Binary DVD Recommended

[Download Now](#)

8.44 GB

Run the installation program and complete installation without requiring any additional package repositories. Use this image if the system you are installing will not have network access, as it contains all of the required packages to complete an installation of Red Hat Enterprise Linux.

Last modified: 2022-10-31 SHA-256 Checksum: d9dcae2b6e760d0f9dcf4a5f7bddc227d5fa3f2l3a8323592f4a07a05aa54242

#### Additional installation images

Red Hat Enterprise Linux 9.1 Boot ISO

[Download Now](#)

805 MB

Run the installation program with a minimal boot image. To complete installation, you will need an active network connection and access to additional package repositories. With RHEL 8.3 and later, you can register the system during installation to get access to repositories provided by your subscriptions.

Last modified: 2022-10-31 SHA-256 Checksum: 7f020b8e86246b6626fcc4d5a13dd9ffdb031446c07c903591764c61a3be70

Red Hat Enterprise Linux 9.1 KVM Guest Image

[Download Now](#)

719 MB

Import this image to create a RHEL virtual machine on a KVM/QEMU hypervisor, such as Red Hat OpenStack, Red Hat Virtualization, or Red Hat OpenShift Virtualization.

Last modified: 2022-11-02 SHA-256 Checksum: 8a24976ed98ac43b165369353741bb3a4c72fac9adlcd7d564956ffe8a89c968

# RHEL 8 KVM Images

Red Hat Customer Portal

Products & Services    Tools    Security    Community

⚠ Red Hat has been made aware of an issue on systems upgrading to RHEL 8.3 with `fapolicyd` enabled. Reference [this solution](#) prior to upgrading to RHEL 8.3.

Downloads > Red Hat Enterprise Linux > Product Software

## Download Red Hat Enterprise Linux

Product Variant: ⓘ

Switch to Version 7 and Below

Version:

Architecture: ⓘ

Red Hat Enterprise Linux for x86\_64

8.3 (latest)

x86\_64

### About Red Hat Enterprise Linux for x86\_64

Only Red Hat Enterprise Linux provides an intelligent OS that is the consistent foundation for the enterprise hybrid cloud. Delivering any application on any footprint at any time giving you Control. Confidence. Freedom.

### Product Resources

- › [Get Started](#)
- › [Documentation](#)
- › [Red Hat Enterprise Linux Life Cycle](#)

### Get Help

- › [Contact Support](#)
- › [Create installation media](#)

Product Software

Modules

Packages

Source

Errata

### Installers and Images for Red Hat Enterprise Linux for x86\_64 (v. 8.3 for x86\_64)

#### Red Hat Enterprise Linux 8.3 Boot ISO

Last modified: 2020-10-14 SHA-256 Checksum: 1b73ebfebdff9424c806032168873b067259d82b29f4e9d39ae0e4009cce49b93

[Download Now](#)

682 MB

#### Red Hat Enterprise Linux 8.3 Binary DVD

Last modified: 2020-10-14 SHA-256 Checksum: 30fd8dff2d29a384bd97886fa826fa5be872213c81e853eae3f9d9674f720ad0

[Download Now](#)

8.82 GB

#### Red Hat Enterprise Linux 8.3 Update KVM Guest Image

Last modified: 2020-10-03 SHA-256 Checksum: 321c20a732419472ba584ea34cd2cab79db2ea1790abe467ea3c0e2ca521a6b7

[Download Now](#)

1.23 GB

#### RHEL 8.3 Supplementary Binary DVD

Last modified: 2020-10-27 SHA-256 Checksum: d36c75a91948254f767cdcc072f78a7339c3b7bcfe6274cf49628fc3f4lc6d0e

[Download Now](#)

145 MB

By downloading this software, you agree to the terms and conditions of the applicable License Agreement.

# Stage your RHEL images

Once you have downloaded the images

Move them to /var/lib/libvirt/images

Then set a root password or inject your ssh key into the image

```
sudo mv ~/Downloads/rhel9-base.qcow2 /var/lib/libvirt/images/
```

```
cd /var/lib/libvirt/images
```

```
virt-customize -a rhel9-base.qcow2 --root-password password:2023MakeGoodPasswords --uninstall cloud-init
```

# Import Images

The screenshot shows the virt-manager interface on a host named 'eden6'. The main window displays a 'Virtual Machines' section with a message: 'No VM is running or defined on this host'. In the top right corner, there are 'Create VM' and 'Import VM' buttons, with 'Import VM' being highlighted by a red box.

Two 'Import A Virtual Machine' dialogs are open:

- Top Dialog (RHEL\_8.3):**
  - Name: RHEL\_8.3
  - Connection: System (radio button selected)
  - Installation Source: /var/lib/libvirt/images/rhel-8.3-x86\_64.qcow2
  - Operating System: Red Hat Enterprise Linux 8.3 (Ootpa)
  - Memory: 2048 (slid to 2048)
  - Immediately Start VM
  - Buttons: Import (blue), Cancel
- Bottom Dialog (RHEL\_7.9):**
  - Name: RHEL\_7.9
  - Connection: System (radio button selected)
  - Installation Source: /var/lib/libvirt/images/rhel-server-7.9-x86\_64-kvm.qcow2
  - Operating System: Red Hat Enterprise Linux 7.9 (Maipo)
  - Memory: 2 (slid to 2)
  - Immediately Start VM
  - Buttons: Import (blue), Cancel

# VM Networking

By default there is a private network with your host machine only.

This may be fine for your use case, but in this example we want to be able to access our local network.

So we are going to change our network interfaces to use bridge

The screenshot shows the Cockpit web interface at `localhost:9090/machines`. The left sidebar menu includes: System, Overview, Logs, Storage, Networking, Podman Containers, Virtual Machines (selected), Accounts, Services, Tools, Applications, Diagnostic Reports, Kernel Dump, SELinux, Software Updates, Subscriptions, and Terminal. The main content area displays two virtual machines:

- RHEL\_7.9**: State: shut off. Connection: System. Hypervisor Details: Emulated Machine: pc-q35-rhel8.2.0, Firmware: BIOS. General settings include: Memory: 2 GiB, vCPUs: 1, CPU Type: custom (EPYC-IBPB), Boot Order: disk, Autostart:  Run when host boots.
- RHEL\_8.3**: State: running. Connection: System. Hypervisor Details: Emulated Machine: pc-q35-rhel8.2.0, Firmware: BIOS. General settings include: Memory: 2 GiB, vCPUs: 1, CPU Type: custom (EPYC-IBPB), Boot Order: disk, Autostart:  Run when host boots.

The RHEL\_8.3 console tab is active, showing a terminal session:

```
Red Hat Enterprise Linux 8.3 (Ootpa)
Kernel 4.18.0-240.1.1.el8.3.x86_64 on an x86_64
Activate the web console with: systemctl enable --now cockpit.socket
localhost login: -
```

# VM Networking

Click the Edit button

On the pop up window

Under the Interface type choose “Bridge to Lan”

Source “ Bridge0”

Model you can leave as default

Save and boot your machine up

The screenshot shows the virt-manager interface running in a browser window at `localhost:9090/machines`. On the left, a sidebar menu includes options like System, Overview, Logs, Storage, Networking, Podman Containers, Virtual Machines (which is selected), Accounts, Services, and Tools. The main area displays a list of "Virtual Machines" with one entry: "RHEL\_7.9". The "Network Interfaces" tab is selected in the sub-menu. A table shows details for the interface: Type (network), Model type (virtio), MAC Address (52:54:00:8b:b0:cb), IP Address (192.168.122.156/24), Source (default), and State (up). An "Edit" button is highlighted with a red box. Below this, a modal dialog titled "52:54:00:8b:b0:cb Virtual Network Interface Settings" is open, showing the same configuration with "Bridge to LAN" selected in the Interface Type dropdown. The "Source" dropdown is set to "bridge0". The "Model" dropdown is set to "virtio (Linux, perf)". The "MAC Address" field shows "52:54:00:8b:b0:cb". At the bottom of the dialog are "Save" and "Cancel" buttons.

# You are ready to go!

The screenshot shows the libvirt web interface at [localhost:9090/machines](http://localhost:9090/machines). The left sidebar menu includes: System, Overview, Logs, Storage, Networking, Podman Containers, Virtual Machines (selected), Accounts, Services (with a red notification dot), Tools, Applications, Diagnostic Reports, Kernel Dump, SELinux, Software Updates, Subscriptions, and Terminal.

The main content area displays the "Virtual Machines" section. It lists two entries:

- RHEL\_7.9**: Status: running. Connection: System. Options: Shut Down, Send key, Disconnect.
- RHEL\_8.3**: Status: shut off. Connection: System. Options: Run, ...

For the RHEL\_7.9 entry, the "Consoles" tab is selected. A terminal window shows the following session:

```
Red Hat Enterprise Linux Server 7.9 (Maipo)
Kernel 3.18.0-168.el7.x86_64 on x86_64

localhost login: root
Password:
root@localhost: ~ % ls /proc/1/fd/1
root@localhost: ~ % ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 172.16.0.2 netmask 255.255.255.0 broadcast 172.16.0.255
                inet6 fe80::1c22:1ff:fe00:1%eth0 brd fe80::f91c:1ff:fe00:1
                        link-layer
                        ether 02:54:00:1c:22:01 txqueuelen 10000 (Ethernet)
                        RX packets 68 bytes 7882 (7.6 KIB)
                        RX errors 0 dropped 6 overrun 0 frame 0
                        TX packets 39 bytes 4088 (3.9 KIB)
                        TX errors 0 dropped 0 overrun 0 carrier 0 collisions 0
root@localhost: ~ %
```

A message at the bottom of the RHEL\_7.9 section says: "Please start the virtual machine to access its console."

# Hardware suggestion

# 2022 System Requirements

## Platform / Virtualization

- 4 Cores
- 16 GB RAM
- 1 TB Storage

## Openshift SNO

- 8 vCPUs
- 16 GB RAM
- 120GB of Storage

If you want to do virtualization you need an additional resources PER additional VM

- + 4 vCPUs
- +512 Mb RAM

# What size server do you need?

...

# Small Form Factor



# Tower



# Rackable

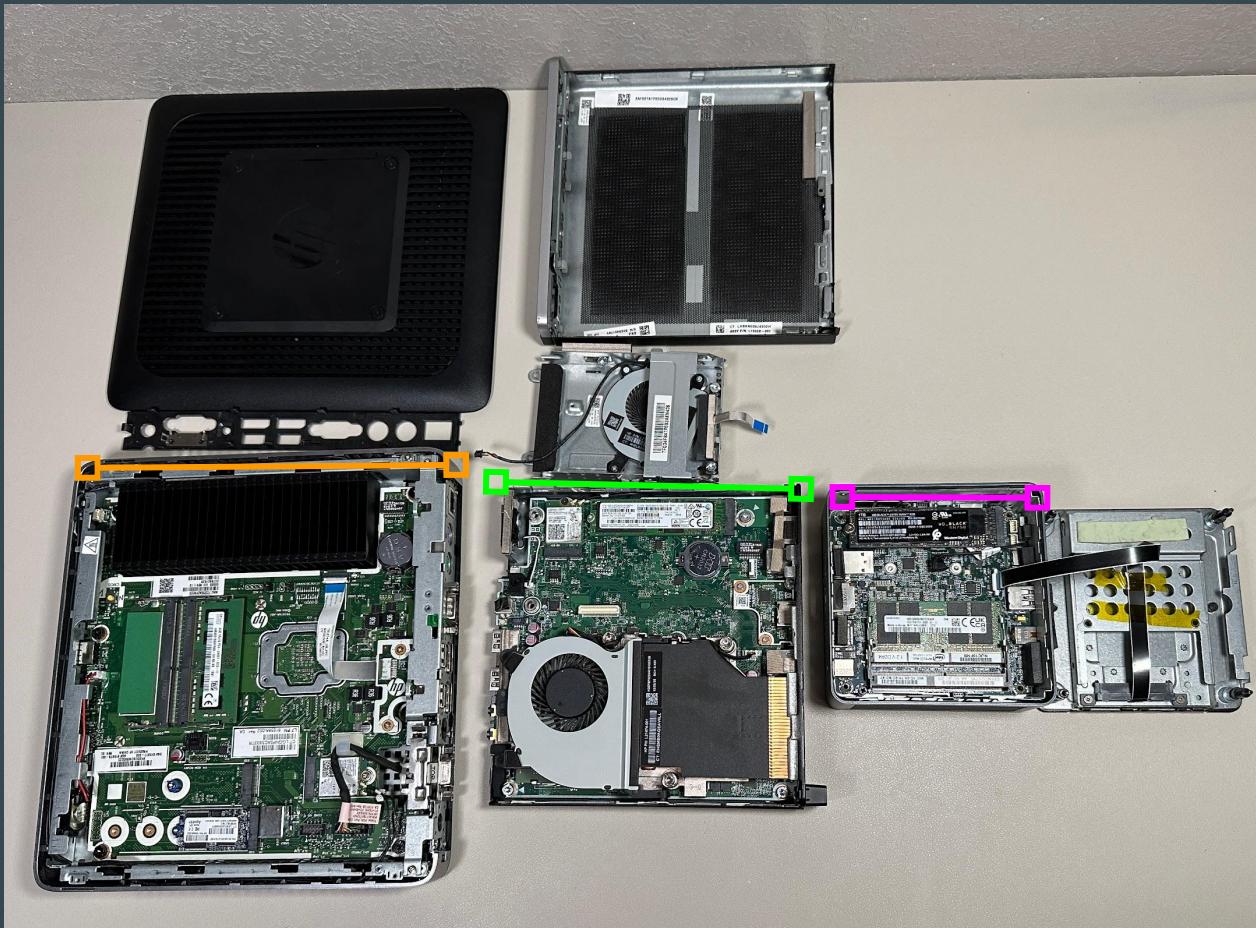


# Machine Size

HP T630 - 9  $\frac{1}{2}$  Inches

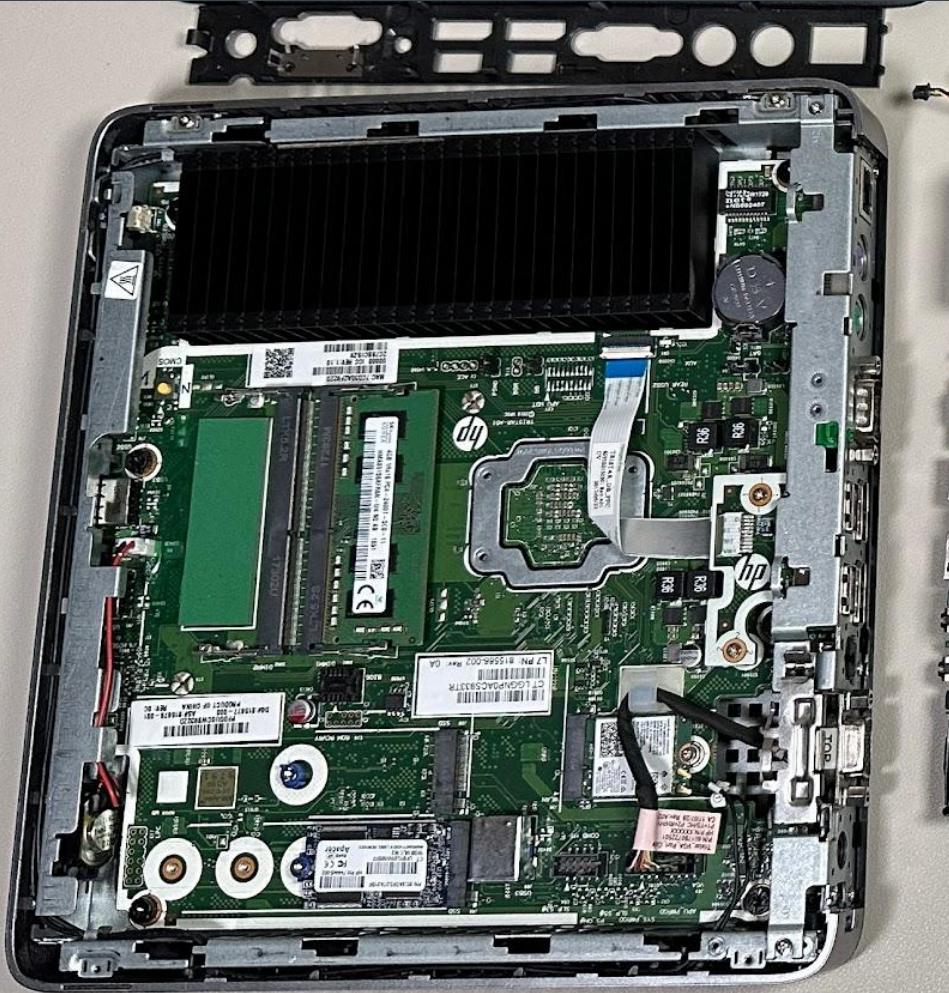
HP EliteDesk 705 G4 - 7 Inches

Intel Nuc 10th Gen - 4  $\frac{5}{8}$  Inches



# HP T630

- Used HP T630
- AMD Embedded G-Series  
GX-420GI Radeon R7E (4 cores)
- Radeon R5 Graphics
- 16 Gb Ram
- 1 Tb mSata
- \$35 used on Ebay

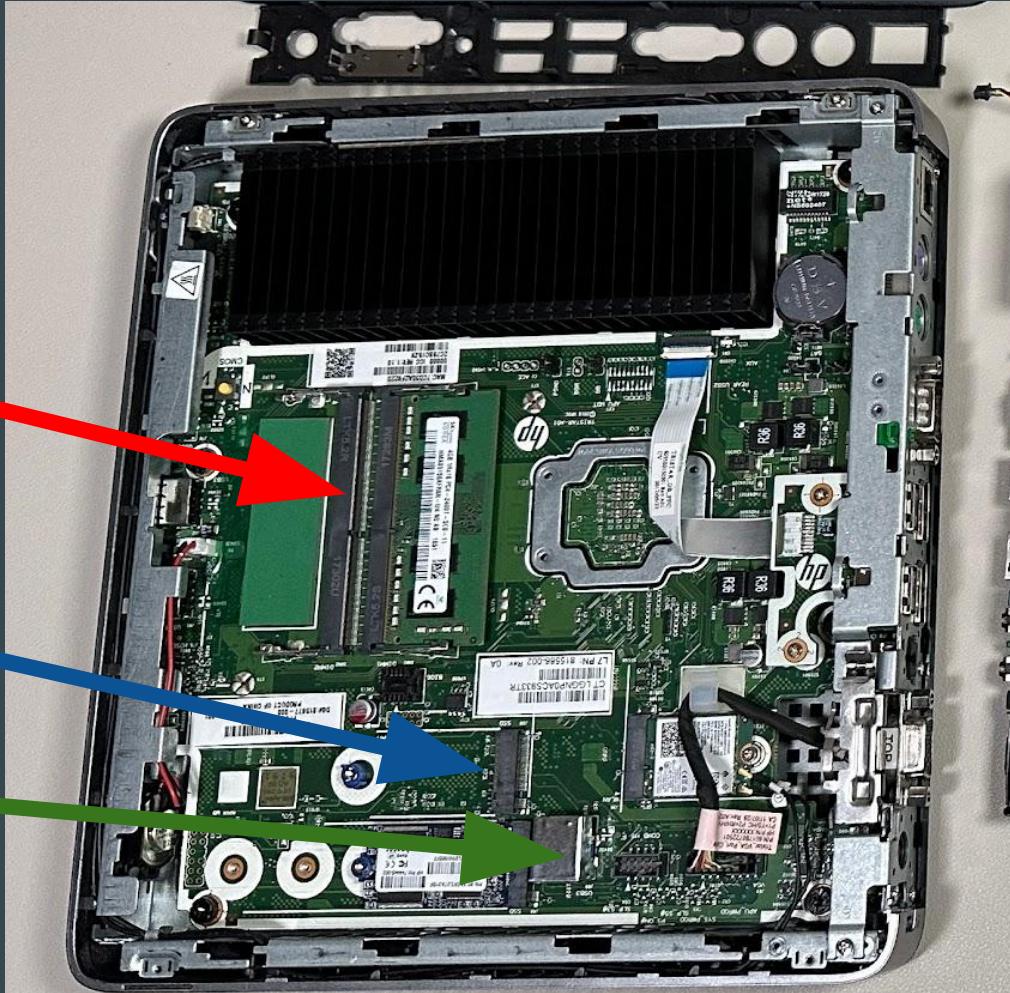


# HP T630

2 Slots for DDR3 RAM

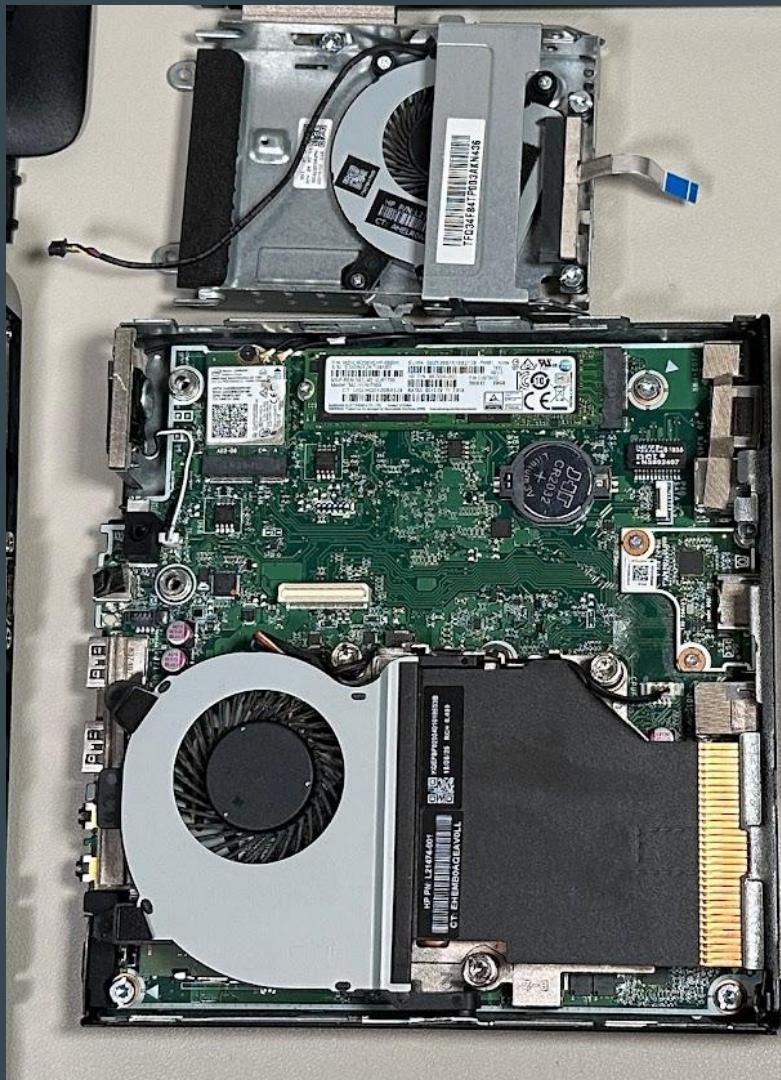
2 mSata Slots

Internal USB3 Slot



# HP EliteDesk 705 G4

- 16 GB Ram
- AMD® Ryzen 5 pro 2400g with radeon vega graphics 4 core / 8 thread (8vCPU)
- AMD® Radeon vega 11 graphics
- 1 TB NVMe
- \$200 Used on Amazon

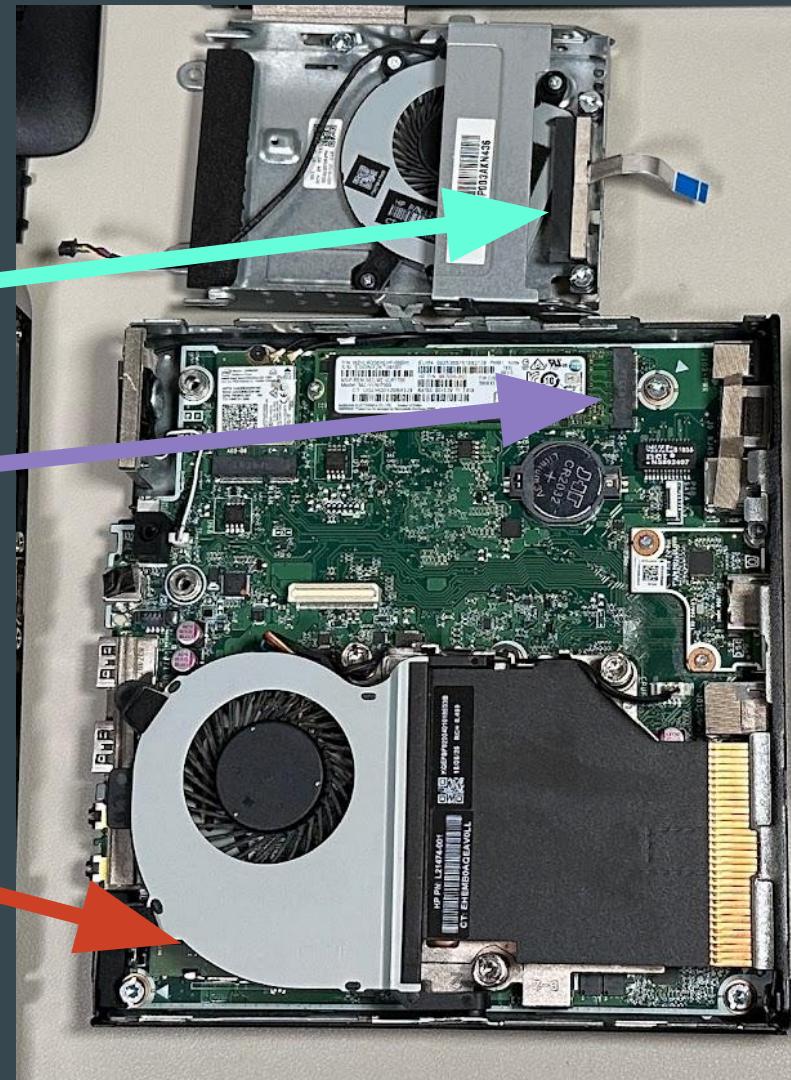


# HP EliteDesk 705 G4

2.5 Inch Drive Slot

NVMe

2 Slots for DDR4 RAM



# Intel Nuc 10th Gen

- Intel NUC BXNUC10I5FNH1
- Intel® Core™ i5-10210U CPU @ 1.60GHz
  - 4 Cores / 8 Threads (8vCPU)
- UHD Graphics
- 32 Gb Ram
- 1 Tb NVMe
- About \$650 cost

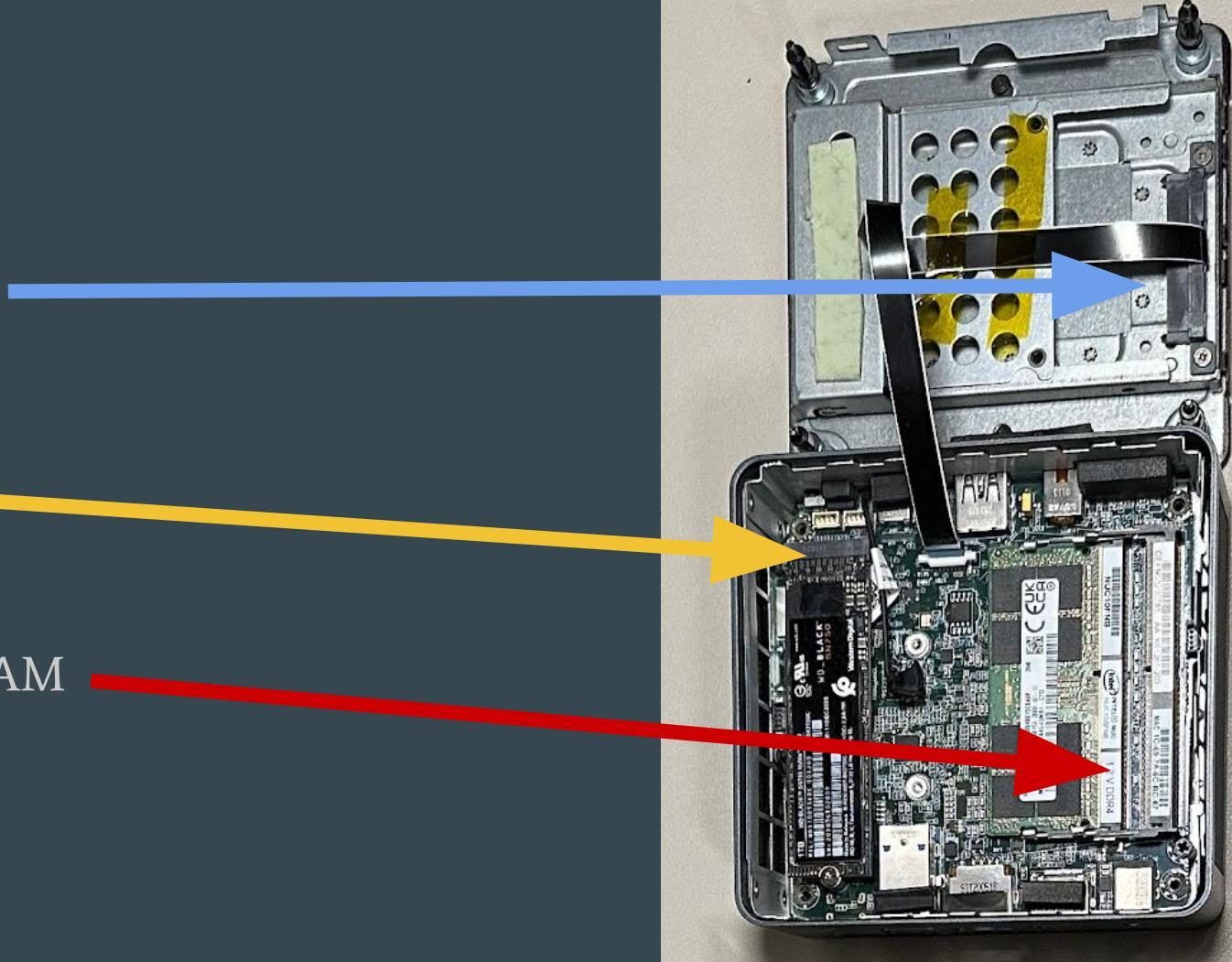


# Intel Nuc 10th Gen

2.5 Inch Drive Slot

NVMe

2 Slots for DDR4 RAM



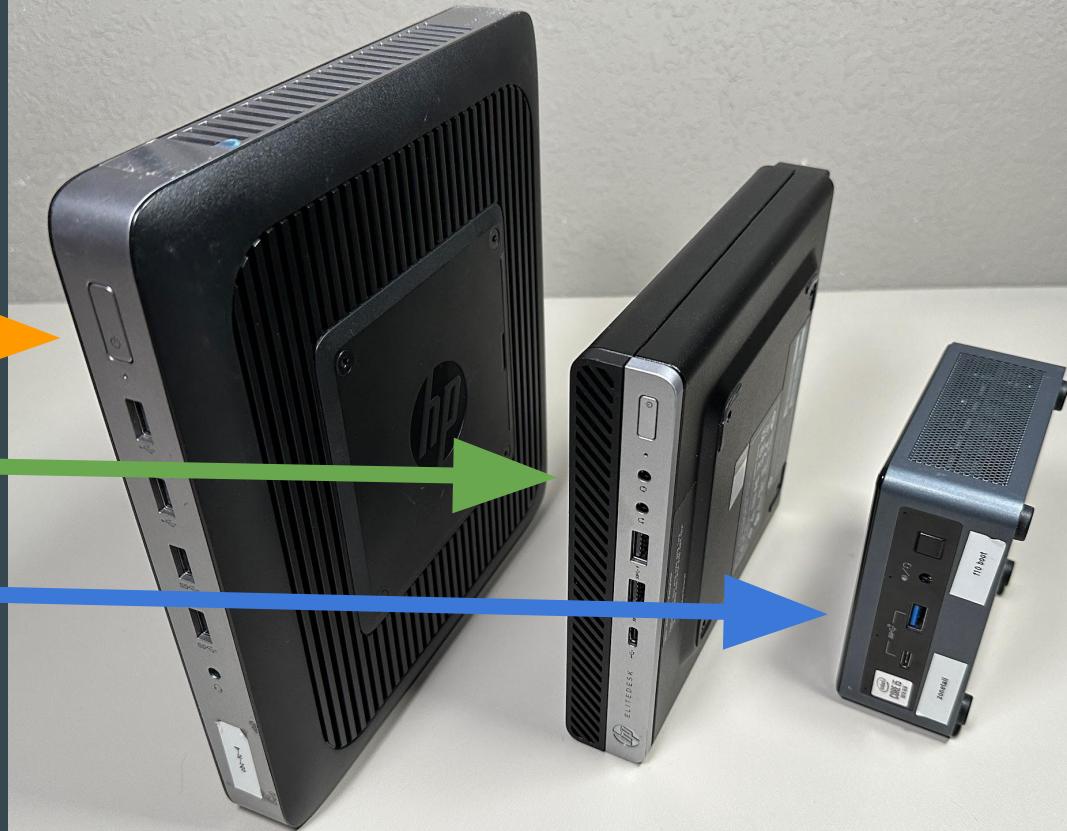
\$35 Used on Ebay



\$150 Used Amazon



\$600 New Newegg





# Tower

# Custom Tower

- Cooler Master MasterBox Q300L Micro-ATX Tower
- Gigabyte B450 AORUS M
- AMD Ryzen 5 2600 Six-Core Processor (12 Thread)
- GeForce GTX 1050 Ti
- 32 Gb Ram
- 1 TB NVMe
- \$572 (Not including Graphics card)



# Rackable Server

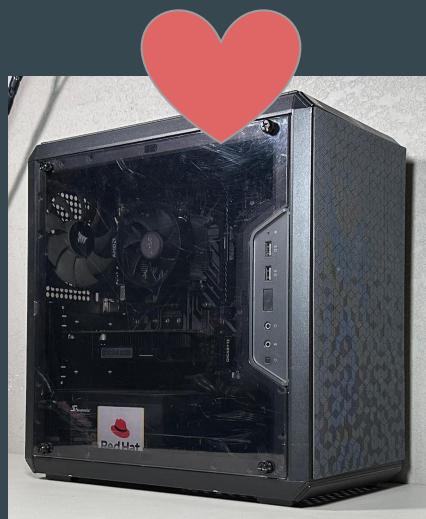
- 2U Box
- Dual Intel Xeon CPU's (8 cores)
- 16 Gb of ECC Ram
- 32 GB Thumb Drive for OS
- 1 TB HHD
- \$200 Used



# Small Form Factor



# Tower



# Rackable



# Resources

# Resources

If you are looking for linux hardware advice

LevelTechs

<https://www.youtube.com/c/LevelTechs>

Techno Tim

<https://www.youtube.com/@TechnoTim>

If you are looking for Raspberry Pi and Ansible

Jeff Geerling

<https://www.youtube.com/@JeffGeerling>

If you are looking for MSP open source Enterprise tools

Lawrence Systems

<https://www.youtube.com/@LAWRENCESYSTEMS>

# Resources

If you are looking for linux podcasts

Linux Game Cast

<https://www.youtube.com/@linuxgamecast>

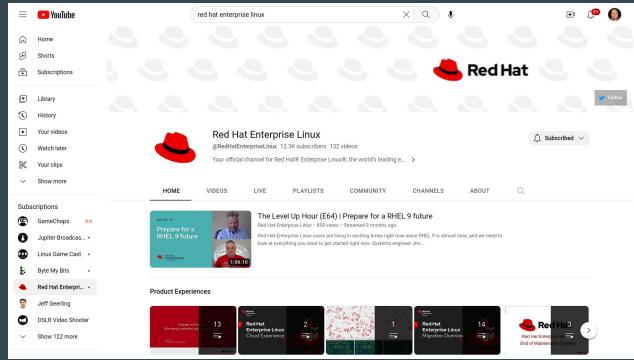
TuxDigital:Destination Linux

<https://www.youtube.com/@TuxDigitalNetwork>

LINUX Unplugged

<https://www.youtube.com/@JupiterBroadcasting>

# Resources



If you are looking for RHEL content

Red Hat Enterprise Linux

<https://www.youtube.com/@RedHatEnterpriseLinux>

A screenshot of the "Red Hat Accelerators" page in the Red Hat Customer Portal. The page features a header with "Red Hat Customer Portal" and navigation links for Subscriptions, Downloads, Customer Support, Products &amp; Services, Tools, Security, and Community. The main content area is titled "Red Hat Accelerators" and includes tabs for Overview, Benefits, and Terms. The "Benefits" tab is selected. It contains sections for "WHY BECOME AN ACCELERATOR?", "Peer-to-peer networking", "Speak to Red Hat", "Share your expertise", and "Why Red Hat wants YOU". Each section includes a brief description and an icon. At the bottom, there is a note about the portal being a secure environment for sharing knowledge and expertise.

If you are already working with Red Hat at your company

Red Hat Accelerators

<https://access.redhat.com/accelerators>

# Questions?



# Joshua Loscar

Jscar Hawk

[jscar-hawk.github.io](https://jscar-hawk.github.io)



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Grab the Slides

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