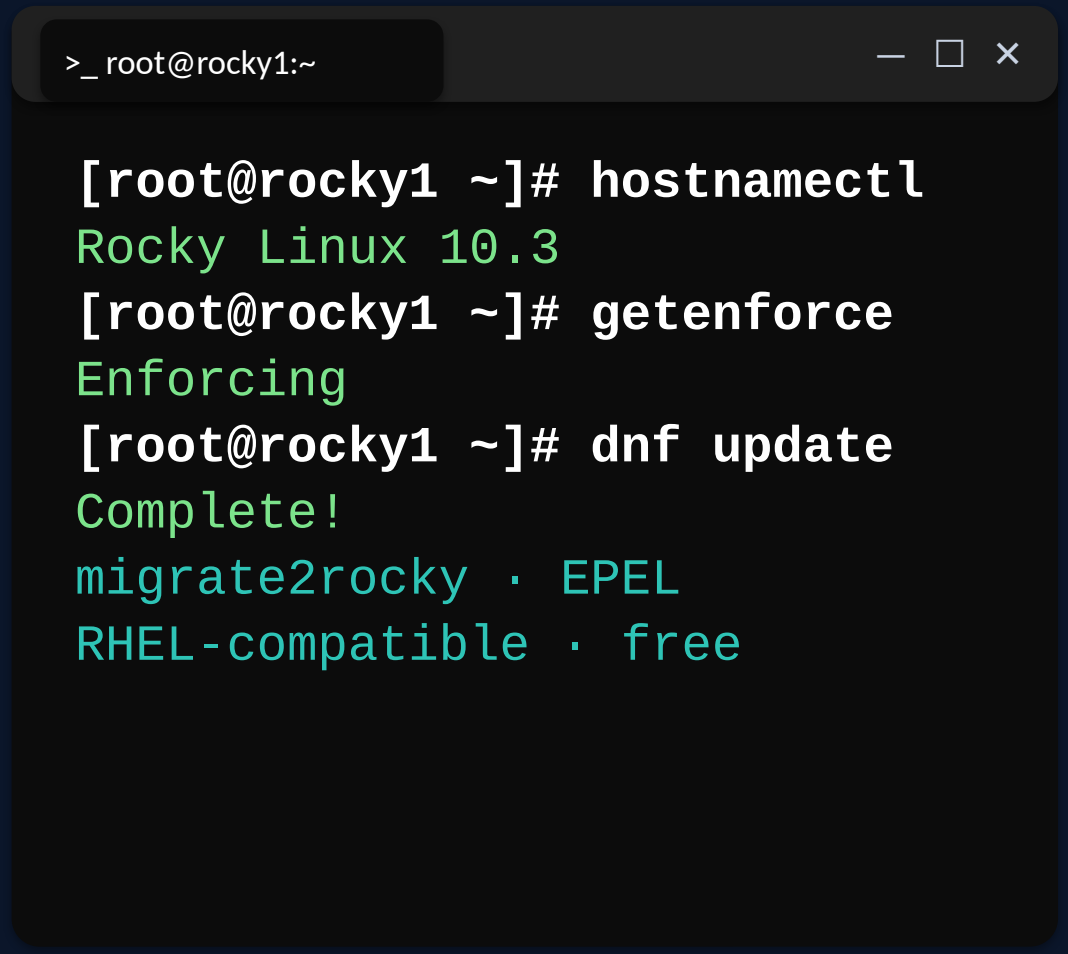


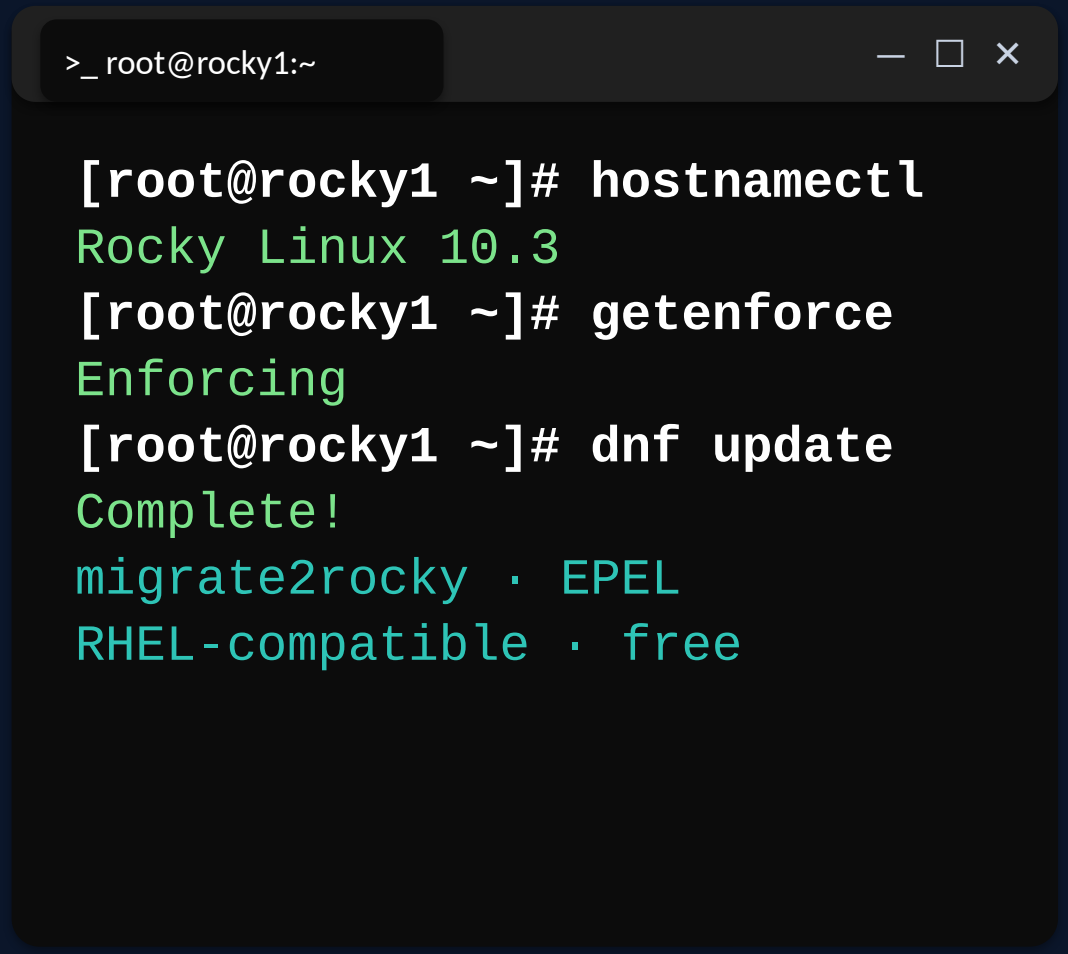
FULL COURSE · 12 LESSONS

Rocky Linux 9 & 10

Install · Migrate · Differences

Install, repos, security, migration, upgrades & cloud

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)



LESSON 1 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Rocky Linux: History, Versions, Lifecycle & the RHEL Family

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 1

- Why Rocky Linux exists: the CentOS story
- Who builds Rocky: RESF, community and sponsors
- Versions, release names and lifecycle
- Architectures and hardware requirements
- Where Rocky fits: Fedora, CentOS Stream, RHEL, AlmaLinux
- Our lab for this course
- How this course connects to the RHEL course

The CentOS Story

Year	What happened
2004	CentOS: a free rebuild of RHEL, used on millions of servers
2014	Red Hat takes over CentOS sponsorship
Dec 2020	Red Hat ends CentOS Linux 8 early; focus moves to CentOS Stream
2021	Gregory Kurtzer, a CentOS co-founder, starts Rocky Linux; 8.4 GA June 2021
2023	Red Hat limits public RHEL sources; Rocky keeps building from public sources
2025–2026	Rocky 10 (June 2025); Rocky 10.3 and 9.9 on Nov 16, 2026

Who Builds Rocky Linux?

Who	Role
RESF	Rocky Enterprise Software Foundation: owns and governs the project
Community	Volunteers build, test, document and support Rocky
CIQ	Founding sponsor; offers commercial support and services
Sponsors	Cloud and hardware companies donate infrastructure
OpenELA	Shared enterprise Linux sources with Oracle and SUSE (2023)
Cost	Free to download, use and share — servers, desktops, cloud

Versions and Lifecycle

Version	Latest	Active support	Security fixes until
Rocky 10 (Red Quartz)	10.3 (Nov 16, 2026)	to May 31, 2030	May 31, 2035
Rocky 9 (Blue Onyx)	9.9 (Nov 16, 2026)	to May 31, 2027	May 31, 2032
Rocky 8 (Green Obsidian)	8.10 (final)	ended	May 31, 2029
Minor releases	Follow RHEL, usually within days	—	—

Architectures and Hardware

Item	Rocky 10	Rocky 9
Intel / AMD	x86-64-v3 (about 2013+ CPUs)	x86-64-v2
ARM 64-bit	Yes (aarch64)	Yes
RISC-V	Yes (new in Rocky 10)	No
IBM Power / Z	POWER10+, z15+	Yes
Minimum RAM / disk	2 GB / 10 GB (no GUI)	2 GB / 10 GB
Older x86 CPU?	Use Rocky 9, or AlmaLinux's x86-64-v2 build	—

Where Rocky Fits

Distribution	Relationship to RHEL	Best for
Fedora	Upstream; new features first	Developers, desktops, the future
CentOS Stream	Just ahead of RHEL	Contributing to RHEL; previewing changes
RHEL	The product, with support	Paid support, certifications
Rocky Linux	Bug-for-bug compatible rebuild	Free production servers, HPC, labs
AlmaLinux	ABI-compatible rebuild	Free production servers; v2 builds
Oracle Linux	Compatible; Oracle's kernel option	Oracle workloads

Our Lab for This Course

Machine	OS	IP address	Purpose
rocky1	Rocky Linux 10.3	10.0.0.21/24	Main server; most lessons
rocky2	Rocky Linux 9.9	10.0.0.22/24	Upgrade planning, mirrors, Ansible target
legacy1	AlmaLinux 9 or CentOS Stream 9	10.0.0.23/24	We migrate it to Rocky in Lesson 7
Network	lab network	10.0.0.0/24	Gateway and DNS 10.0.0.1
User	student (wheel)	—	sudo for admin tasks

This Course and the RHEL Course

Topic	Where to learn it
Command line, users, permissions	RHEL course, Lessons 3–4 (identical on Rocky)
dnf, systemd, boot, logs	RHEL Lessons 5–6; Rocky repos in Lessons 3–4 here
Storage, networking, firewalld	RHEL Lessons 7–8; quick tour in Lesson 6 here
SELinux, Apache, NFS, Podman	RHEL Lessons 9–10 (identical on Rocky)
Rocky-only topics	Verify ISOs, repos, SIGs, migration, upgrades, cloud
Exam skills	RHCSA skills are the same on Rocky

Your First Look at Rocky

```
[student@rocky1 ~]$ cat /etc/rocky-release
Rocky Linux release 10.3 (Red Quartz)
[student@rocky1 ~]$ cat /etc/redhat-release       # same file name as RHEL, for compatibility
Rocky Linux release 10.3 (Red Quartz)
[student@rocky1 ~]$ grep -E '^(ID|ID_LIKE|VERSION_ID)=' /etc/os-release
ID="rocky"
ID_LIKE="rhel centos fedora"
VERSION_ID="10.3"
[student@rocky1 ~]$ uname -r ; rpm -q rocky-release
```

Summary and Homework

- Rocky Linux: free, community, bug-for-bug compatible with RHEL
- Created in 2021 after CentOS Linux 8 ended early; governed by RESF
- Rocky 10 to 2035, Rocky 9 to 2032, Rocky 8 to 2029
- Rocky 10 needs x86-64-v3; adds RISC-V
- Homework: read the release notes for Rocky 10.3 at docs.rockylinux.org
- Homework: create the rocky1, rocky2 and legacy1 VMs

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

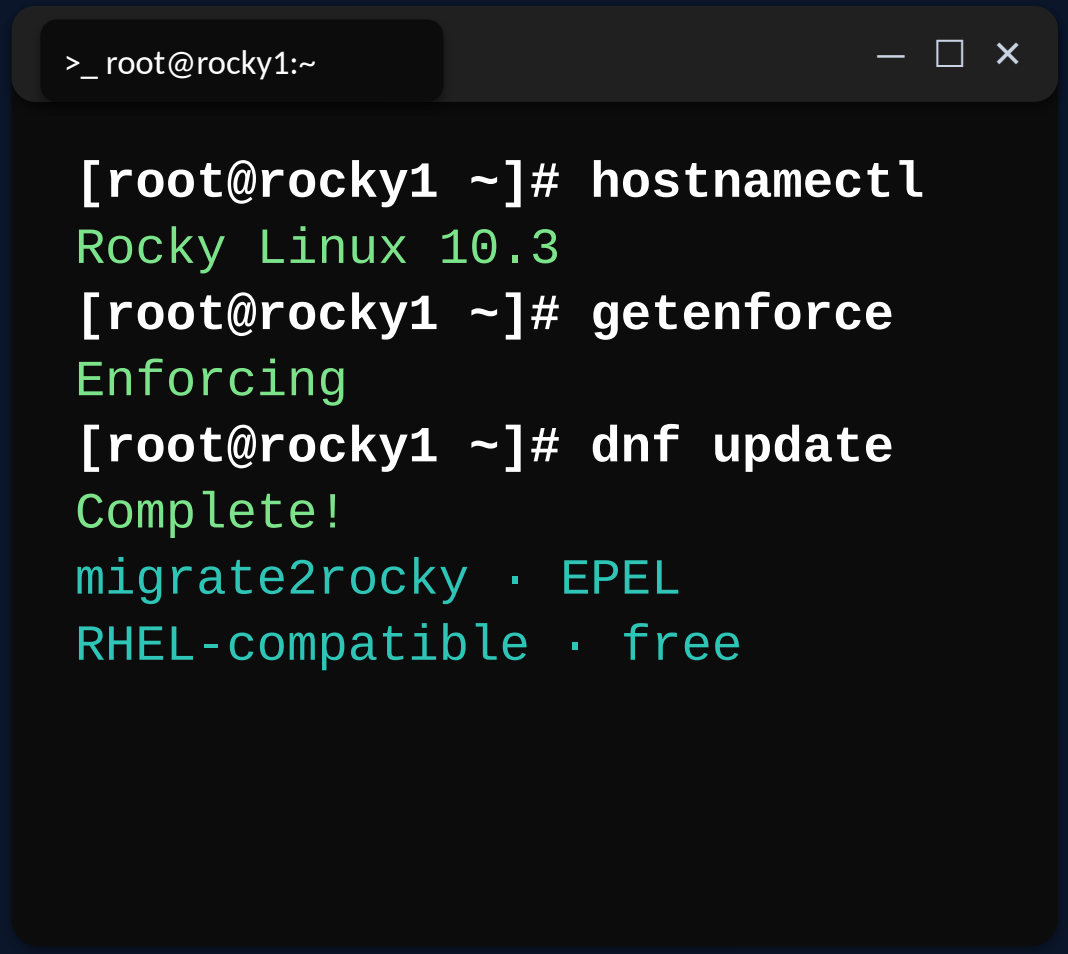
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 2 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Downloading, Verifying & Installing Rocky Linux

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 2

- Where to download: ISOs, mirrors and torrents
- DVD, Minimal and Boot ISOs
- Verifying downloads with SHA-256 checksums
- Installing Rocky with Anaconda
- First steps: updates, hostname, time, Cockpit
- Rocky on older hardware and on Raspberry Pi
- Kickstart for repeatable installs

Where to Download

Source	Details
rockylinux.org/download	Official page: pick version and architecture
download.rockylinux.org	/pub/rocky/10/isos/x86_64/ and /pub/rocky/9/...
Mirrors	Hundreds of mirrors worldwide; faster near you
Torrents	Good for slow or unreliable connections
Cloud images	AWS, Azure, Google Cloud, generic qcow2 (Lesson 10)
Containers	quay.io/rockylinux/rockylinux:10 (Lesson 10)

Which ISO?

ISO	Size	Use it when
Rocky-10.3-x86_64-dvd1.iso	about 8–12 GB	Offline installs; everything included
Rocky-10.3-x86_64-minimal.iso	about 1.5–2 GB	Small server installs; no GUI packages
Rocky-10.3-x86_64-boot.iso	about 1 GB	Network install from a mirror
CHECKSUM	tiny	SHA-256 hashes of every file — always download it
Rocky 9.9	same names with 9.9	Older x86-64-v2 hardware

Verify the Download

```
# Linux or macOS
$ curl -O https://download.rockylinux.org/pub/rocky/10/isos/x86_64/CHECKSUM
$ sha256sum -c CHECKSUM --ignore-missing
Rocky-10.3-x86_64-minimal.iso: OK
$ shasum -a 256 Rocky-10.3-x86_64-minimal.iso      # macOS alternative

# Windows PowerShell
PS C:\> Get-FileHash .\Rocky-10.3-x86_64-minimal.iso -Algorithm SHA256
# Compare the hash with the line in CHECKSUM — every character must match
```

Installing Rocky with Anaconda

Screen	What to choose
Language	English (United States), or your language
Installation destination	30 GB disk, automatic partitioning (LVM)
Network and host name	Turn on the NIC; rocky1.lab.local
Software selection	Server with GUI (rocky1) or Minimal Install (rocky2)
Root password	Lock root, or a strong password
User	student, Make this user administrator (wheel)
Not on Rocky	No 'Connect to Red Hat' screen — nothing to register

First Steps After Installation

```
[student@rocky1 ~]$ sudo dnf -y update ; sudo reboot
[student@rocky1 ~]$ sudo hostnamectl set-hostname rocky1.lab.local
[student@rocky1 ~]$ sudo timedatectl set-timezone America/Los_Angeles
[student@rocky1 ~]$ dnf repolist
repo id           repo name
appstream         Rocky Linux 10 - AppStream
baseos            Rocky Linux 10 - BaseOS
extras            Rocky Linux 10 - Extras
[student@rocky1 ~]$ sudo dnf install -y cockpit ; sudo systemctl enable --now cockpit.socket
[student@rocky1 ~]$ sudo firewall-cmd --permanent --add-service=cockpit ; sudo firewall-cmd --reload
```

Special Hardware

Hardware	What to use
CPU older than x86-64-v3	Rocky 9.9, supported to 2032
Check your CPU	ld.so --help | grep supported (any Linux live USB)
Raspberry Pi 4 / 5	Rocky ARM images for Raspberry Pi (aarch64)
RISC-V boards	Rocky 10 RISC-V images (new)
Laptops with Wi-Fi	Most work; check the hardware list and firmware packages
Servers	Hardware certified for RHEL works on Rocky

Kickstart for Repeatable Installs

```
# rocky-minimal.ks
url --url=https://download.rockylinux.org/pub/rocky/10/BaseOS/x86_64/os/
lang en_US.UTF-8
keyboard us
timezone America/Los_Angeles --utc
network --bootproto=static --ip=10.0.0.24 --hostname=rocky3.lab.local
rootpw --lock
user --name=student --groups=wheel --password=<hash> --iscrypted
autopart --type=lvm
%packages
@^minimal-environment
%end
# Boot the installer with:  inst.ks=http://10.0.0.21/rocky-minimal.ks
```

Summary and Homework

- Download from rockylinux.org or a mirror: DVD, Minimal or Boot ISO
- Always verify: sha256sum -c CHECKSUM --ignore-missing
- Same Anaconda installer as RHEL; no registration
- BaseOS, AppStream and extras enabled by default
- Rocky 9.9 for CPUs older than x86-64-v3
- Homework: verify and install Rocky 10.3 on rocky1 and Rocky 9.9 on rocky2

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

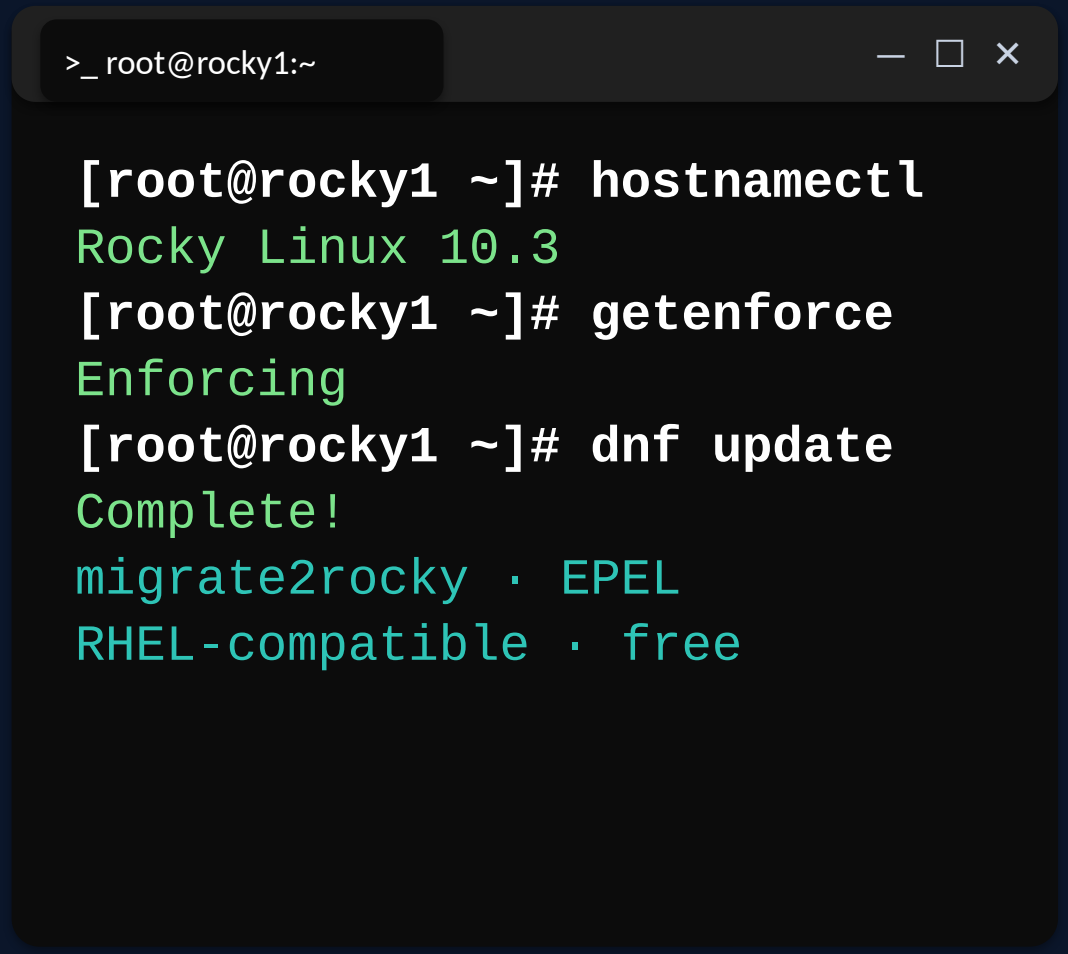
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 3 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Rocky Repositories, CRB, EPEL, Mirrors & SIGs

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 3

- The Rocky repositories and what each one holds
- Repository files in /etc/yum.repos.d
- Enabling CRB and installing EPEL
- Mirrors: mirrorlist, baseurl and choosing a fast one
- GPG keys: trusting Rocky packages
- Special Interest Groups (SIGs) and their repositories
- Third-party repositories safely

Rocky Repositories

Repo ID	Enabled	Contents
baseos	yes	Core operating system (same as RHEL BaseOS)
appstream	yes	Applications, languages, databases, tools
extras	yes	Rocky extras: epel-release, SIG release packages
crb	no	CodeReady Builder: developer libraries; needed by many EPEL packages
highavailability, resilientstorage	no	Pacemaker clusters, GFS2
rt, nfv, sap, saphana	no	Real-time kernel, telecom, SAP workloads
plus, devel	no	Extra packages; build-only packages (not for production)

Repository Files

```
[student@rocky1 ~]$ ls /etc/yum.repos.d/
rocky-addons.repo  rocky-devel.repo  rocky-extras.repo  rocky.repo
[student@rocky1 ~]$ grep -A8 '^\[baseos\]' /etc/yum.repos.d/rocky.repo
[baseos]
name=Rocky Linux $releasever - BaseOS
mirrorlist=https://mirrors.rockylinux.org/mirrorlist?arch=$basearch&repo=BaseOS-$releasever$rltype
#baseurl=http://dl.rockylinux.org/$contentdir/$releasever/BaseOS/$basearch/os/
gpgcheck=1
enabled=1
countme=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10
[student@rocky1 ~]$ dnf repolist --all
```

Enable CRB and Install EPEL

```
[student@rocky1 ~]$ sudo dnf config-manager --set-enabled crb
[student@rocky1 ~]$ sudo dnf install -y epel-release          # from the extras repo
[student@rocky1 ~]$ dnf repolist
repo id     repo name
appstream   Rocky Linux 10 - AppStream
baseos      Rocky Linux 10 - BaseOS
crb         Rocky Linux 10 - CRB
epel        Extra Packages for Enterprise Linux 10 - x86_64
extras      Rocky Linux 10 - Extras
[student@rocky1 ~]$ sudo dnf install -y htop btop ncdu fail2ban
# Same on Rocky 9: crb + epel-release  (on Rocky 8 the repo is called powertools)
```

Mirrors

Topic	Details
mirrorlist (default)	Rocky picks good mirrors for your location automatically
baseurl	Pin one mirror or your own server (comment out mirrorlist)
fastestmirror=True	In /etc/dnf/dnf.conf: test mirror speed
Mirror status	mirrors.rockylinux.org shows every public mirror
Vault	dl.rockylinux.org/vault: old releases, e.g. 9.6, for reproducibility
Local mirror	reposync to your own server (Lesson 11)

GPG Keys: Trust Your Packages

```
[student@rocky1 ~]$ ls /etc/pki/rpm-gpg/
RPM-GPG-KEY-Rocky-10  RPM-GPG-KEY-Rocky-10-Testing  RPM-GPG-KEY-EPEL-10 ...
[student@rocky1 ~]$ rpm -qa gpg-pubkey* --qf '%{NAME}-%{VERSION} %{SUMMARY}\n'
gpg-pubkey-<key-id> Rocky Enterprise Software Foundation - Release key ...
[student@rocky1 ~]$ rpm -K htop-*.rpm              # check a downloaded package
htop-<version>.el10.x86_64.rpm: digests signatures OK
[student@rocky1 ~]$ rpm -qi bash | grep -E 'Signature|Vendor'
Vendor      : Rocky Enterprise Software Foundation
# Compare key fingerprints with rockylinux.org/keys before trusting
```

Special Interest Groups (SIGs)

SIG	What it provides
Cloud	Cloud and container images, cloud-ready kernels and tools
Kernel	Mainline (newer) kernels for new hardware — test carefully
AltArch	Raspberry Pi, RISC-V and other architectures
Security	Hardening tools and extra security packages
HPC	High-performance computing: schedulers, MPI, tools
How to enable	dnf install rocky-release-<sig> (from extras); see sig.rockylinux.org

Third-Party Repositories Safely

Do	Why
Prefer Rocky, EPEL, then vendor repos	Fewer conflicts, better tested
Use the vendor's official .repo or release RPM	Docker CE, PostgreSQL PGDG, NVIDIA, Microsoft
Keep gpgcheck=1	Proves packages come from the vendor
Limit with includepkgs= or excludepkgs=	Stops a repo replacing system packages
Check with dnf repoquery --repo <id>	See exactly what a repo offers
Remember upgrades	Third-party repos often block major upgrades

Summary and Homework

- baseos, appstream, extras on by default; crb and others on demand
- Repo files in /etc/yum.repos.d; mirrorlist or baseurl
- dnf config-manager --set-enabled crb ; dnf install epel-release
- GPG keys in /etc/pki/rpm-gpg; rpm -K; never disable gpgcheck
- SIGs: rocky-release-<sig> packages from extras
- Homework: enable CRB and EPEL on rocky1 and rocky2; install htop; list every enabled repo

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

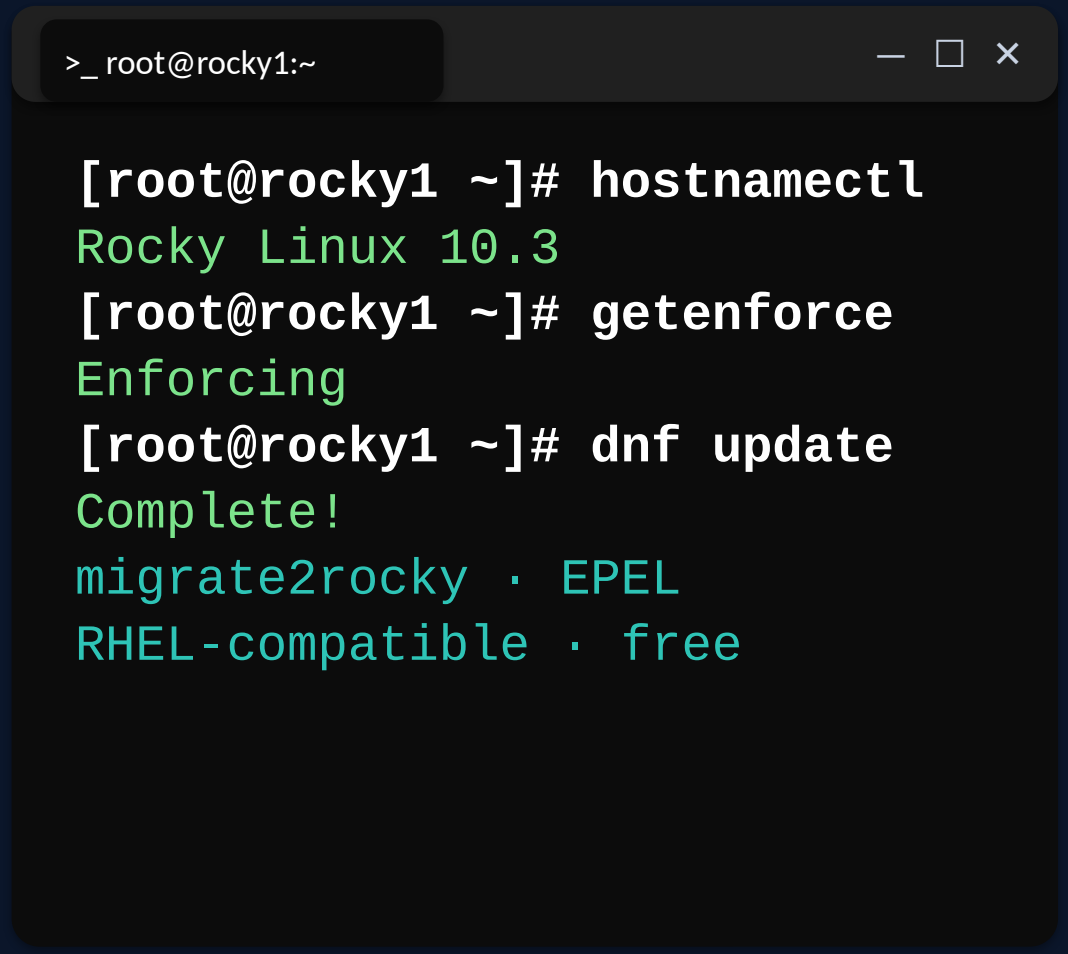
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 4 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Updates, Errata & Security on Rocky Linux

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 4

- How security fixes flow: RHEL → Rocky
- Rocky errata (RLSA, RLBA, RLEA) and dnf updateinfo
- Checking a CVE on your system
- Automatic updates with dnf-automatic
- Kernel updates, reboots and rollback
- Hardening Rocky: SELinux, firewalld, crypto policies, OpenSCAP
- Watching your servers without a subscription

How Security Fixes Reach Rocky

Step	What happens
1	A vulnerability (CVE) is found and fixed upstream
2	Red Hat releases an advisory (RHSA) and updated RHEL packages
3	The fixed sources appear publicly (CentOS Stream and other public sources)
4	Rocky rebuilds, tests and signs the packages
5	Rocky publishes an advisory (RLSA) and the packages reach mirrors
Typical delay	Usually hours to a few days; urgent fixes are prioritized

Rocky Errata

Type	Meaning	Example
RLSA	Rocky Linux Security Advisory	RLSA-2026:xxxx openssl
RLBA	Bug fix advisory	RLBA-2026:xxxx systemd
RLEA	Enhancement advisory	RLEA-2026:xxxx podman
Severity	Critical, Important, Moderate, Low	Patch Critical and Important first
Where	errata.rockylinux.org; also inside dnf	Search by CVE or package

Errata with dnf updateinfo

```
[student@rocky1 ~]$ dnf updateinfo summary
Updates Information Summary: available
    3 Security notice(s)
        1 Important Security notice(s)
        2 Moderate Security notice(s)
    5 Bugfix notice(s)
[student@rocky1 ~]$ dnf updateinfo list --security
[student@rocky1 ~]$ dnf updateinfo info RLSA-2026:xxxx
[student@rocky1 ~]$ sudo dnf upgrade --security                # security fixes only
[student@rocky1 ~]$ sudo dnf upgrade --advisory=RLSA-2026:xxxx # one advisory
[student@rocky1 ~]$ sudo dnf upgrade --sec-severity=Critical
```

Is This CVE Fixed on My Server?

```
[student@rocky1 ~]$ dnf updateinfo list --cve CVE-2026-xxxxx      # waiting?
[student@rocky1 ~]$ dnf updateinfo list --installed --cve CVE-2026-xxxxx   # already fixed?
[student@rocky1 ~]$ rpm -q --changelog openssl | grep -i CVE-2026 | head
[student@rocky1 ~]$ rpm -q openssl kernel
[student@rocky1 ~]$ uname -r                # the RUNNING kernel may be older!
[student@rocky1 ~]$ sudo dnf needs-restarting -r
Core libraries or services have been updated since boot-up:
  * kernel
Reboot is required to fully utilize these updates.
```

Automatic Updates with dnf-automatic

```
[student@rocky1 ~]$ sudo dnf install -y dnf-automatic
[student@rocky1 ~]$ sudo vim /etc/dnf/automatic.conf
[commands]
upgrade_type = security          # or default (all updates)
apply_updates = yes
reboot = when-needed             # check: man dnf-automatic
[emitters]
emit_via = motd                  # or email, command_email
[student@rocky1 ~]$ sudo systemctl enable --now dnf-automatic.timer
[student@rocky1 ~]$ systemctl list-timers dnf-automatic*
```

Kernel Updates, Reboots and Rollback

Task	How
Keep old kernels	installonly_limit=3 in /etc/dnf/dnf.conf (default)
Boot an older kernel	Choose it in the GRUB menu if the new one fails
Make it the default	sudo grubby --set-default /boot/vmlinuz-<version>
See kernels	sudo grubby --info=ALL | grep ^kernel
Live patching	Not provided by Rocky; commercial options exist (e.g. from CIQ)
Undo packages	dnf history undo <id>; snapshots before big changes

Hardening Rocky with Free Tools

```
[student@rocky1 ~]$ getenforce                          # Enforcing — keep it!
[student@rocky1 ~]$ sudo firewall-cmd --list-all
[student@rocky1 ~]$ update-crypto-policies --show       # DEFAULT
[student@rocky1 ~]$ sudo dnf install -y openscap-scanner scap-security-guide
[student@rocky1 ~]$ ls /usr/share/xml/scap/ssg/content/ | grep -i -E 'rl|rocky|rhel'
[student@rocky1 ~]$ sudo oscap xccdf eval --profile cis --report /tmp/cis.html \
      /usr/share/xml/scap/ssg/content/<datastream-for-your-version>.xml
[student@rocky1 ~]$ sudo dnf install -y fail2ban aide ; sudo systemctl enable --now fail2ban
```

Watching Servers Without a Subscription

Need	Free option
Updates waiting	dnf updateinfo summary via Ansible or a cron report
Health and metrics	Cockpit, PCP, Prometheus node_exporter + Grafana
Logs	Central rsyslog or journald remote; Loki or OpenSearch
Vulnerability scanning	OpenSCAP; open source scanners such as Trivy for images
Inventory and patching	Foreman/Katello (Lesson 11), Ansible
Commercial	CIQ and others offer support and management for Rocky

Summary and Homework

- Fixes flow RHEL → public sources → Rocky rebuild → RLSA
- dnf updateinfo summary / list --security / --cve
- dnf upgrade --security; dnf-automatic for automation
- Reboot for kernel fixes: needs-restarting -r; grubby for rollback
- Free hardening: SELinux, firewalld, crypto policies, OpenSCAP, fail2ban
- Homework: report waiting security advisories on rocky1; enable dnf-automatic for security updates

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

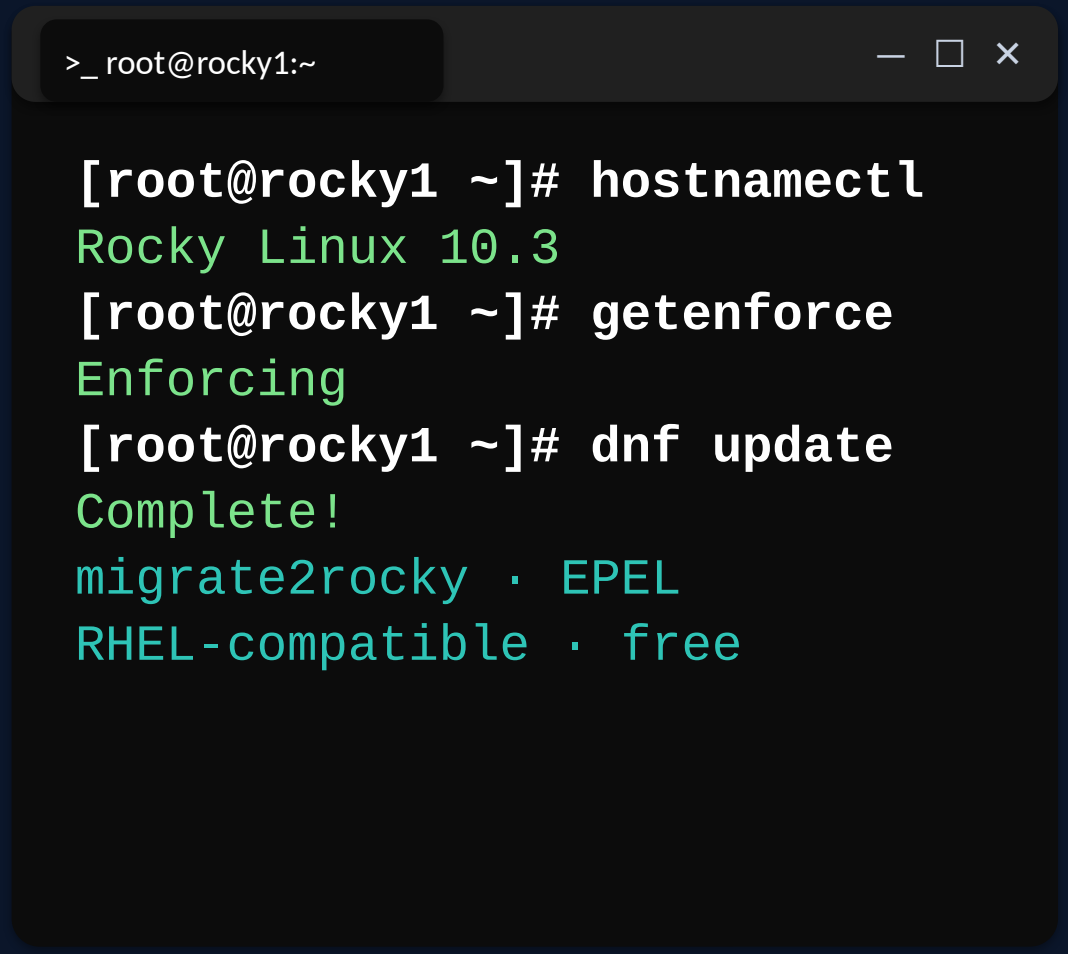
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 5 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Rocky vs RHEL vs AlmaLinux: What Is the Same, What Is Different

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 5

- What 'bug-for-bug compatible' means
- Identical: kernel, packages, tools, file locations
- Different: branding, repositories, release files
- Missing on Rocky: subscription tools, Lightspeed, Satellite, Leapp
- Rocky vs AlmaLinux: the real differences
- Software and hardware certification
- Telling them apart in scripts

Compatibility Goals

Distribution	Goal	What it means
Rocky Linux	Bug-for-bug compatible	Same packages and versions as RHEL, even the same bugs
AlmaLinux	ABI compatible	Apps run the same; may add fixes, features or older-CPU builds
Oracle Linux	Compatible	Plus Oracle's own Unbreakable Enterprise Kernel option
CentOS Stream	Upstream of RHEL	Next RHEL minor release; changes arrive earlier
Why it matters	Certification and predictability	Software tested on RHEL behaves the same

Identical on Rocky and RHEL

Area	Examples
Kernel	Same version and patches: 6.12 on 10.x, 5.14 on 9.x
Packages	Same names and versions: httpd, openssh, podman, python3, postgresql
Administration	dnf, systemd, firewalld, SELinux policy, NetworkManager, LVM, Stratis
Files and paths	/etc/redhat-release, /etc/os-release layout, el10 in package names
Installer	Anaconda, Kickstart, Cockpit, image builder
Skills	RHCSA and RHCE objectives practice the same on both

Different on Purpose

Area	RHEL	Rocky
Branding	Red Hat logos, names	Rocky logos, wallpapers, names
Release package	redhat-release	rocky-release, rocky-repos, rocky-gpg-keys
Repositories	rhel-10-for-x86_64-baseos-rpms …	baseos, appstream, crb, extras …
Signing keys	Red Hat GPG keys	RESF GPG keys
Vendor field	Red Hat, Inc.	Rocky Enterprise Software Foundation
Extras	—	extras repo, SIGs, RISC-V, Raspberry Pi images

Not Included in Rocky

RHEL feature	Rocky alternative
subscription-manager, rhc	Not needed: repositories are open
Red Hat Lightspeed (Insights)	Monitoring, OpenSCAP, Ansible reports (Lesson 4)
Red Hat Satellite	Foreman + Katello (Lesson 11)
Leapp in-place major upgrades	Not supported for Rocky (Lesson 8)
Red Hat support and kpatch	Community support; commercial support from CIQ and others
RHEL AI tools, MCP server	Use upstream open source tools where available

Rocky vs AlmaLinux

Topic	Rocky Linux	AlmaLinux
Governance	RESF (public benefit corporation)	AlmaLinux OS Foundation (non-profit)
Compatibility	Bug-for-bug with RHEL	ABI compatible; sometimes adds patches
Older x86 CPUs on 10	No (x86-64-v3 only)	Yes, separate x86-64-v2 build
Major upgrades	Not supported	ELevate (Leapp-based) supported
Extras	SIGs, RISC-V	Kitten (preview), extra features, SIGs
Both	Free, 10-year lifecycle, same RHEL skills	Free, 10-year lifecycle, same RHEL skills

Certification

Type	Situation on Rocky
Hardware	RHEL-certified servers work; vendors may support Rocky directly
Software (ISVs)	Many vendors certify Rocky; others support 'RHEL and compatibles'
Cloud	Rocky images in AWS, Azure and Google Cloud marketplaces
Compliance (FIPS etc.)	Same crypto code; formal validation is a separate, commercial matter
People	RHCSA/RHCE are Red Hat exams — practice on Rocky, test on RHEL
Rule	Check your vendor's support statement before production

Telling Them Apart in Scripts

```
#!/bin/bash
. /etc/os-release
echo "ID=$ID  VERSION_ID=$VERSION_ID  ID_LIKE=$ID_LIKE"
case "$ID" in
  rocky)      echo 'Rocky Linux' ;;
  almalinux)  echo 'AlmaLinux' ;;
  rhel)       echo 'Red Hat Enterprise Linux' ;;
  centos)     echo 'CentOS Stream' ;;
esac
[[ " $ID $ID_LIKE " == *" rhel "* ]] && echo 'RHEL family: use dnf'
major=${VERSION_ID%%.*}
(( major >= 10 )) && echo 'EL10: x86-64-v3, no modules'
```

Summary and Homework

- Rocky = bug-for-bug RHEL; AlmaLinux = ABI compatible
- Identical: kernel, packages, tools, paths, skills
- Different: branding, release packages, repo names, keys
- Missing: subscription tools, Lightspeed, Satellite, Leapp, Red Hat support
- Use /etc/os-release (ID, ID_LIKE, VERSION_ID) in scripts
- Homework: compare rpm -qa on rocky1 with a RHEL 10 system; write the os-release script

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

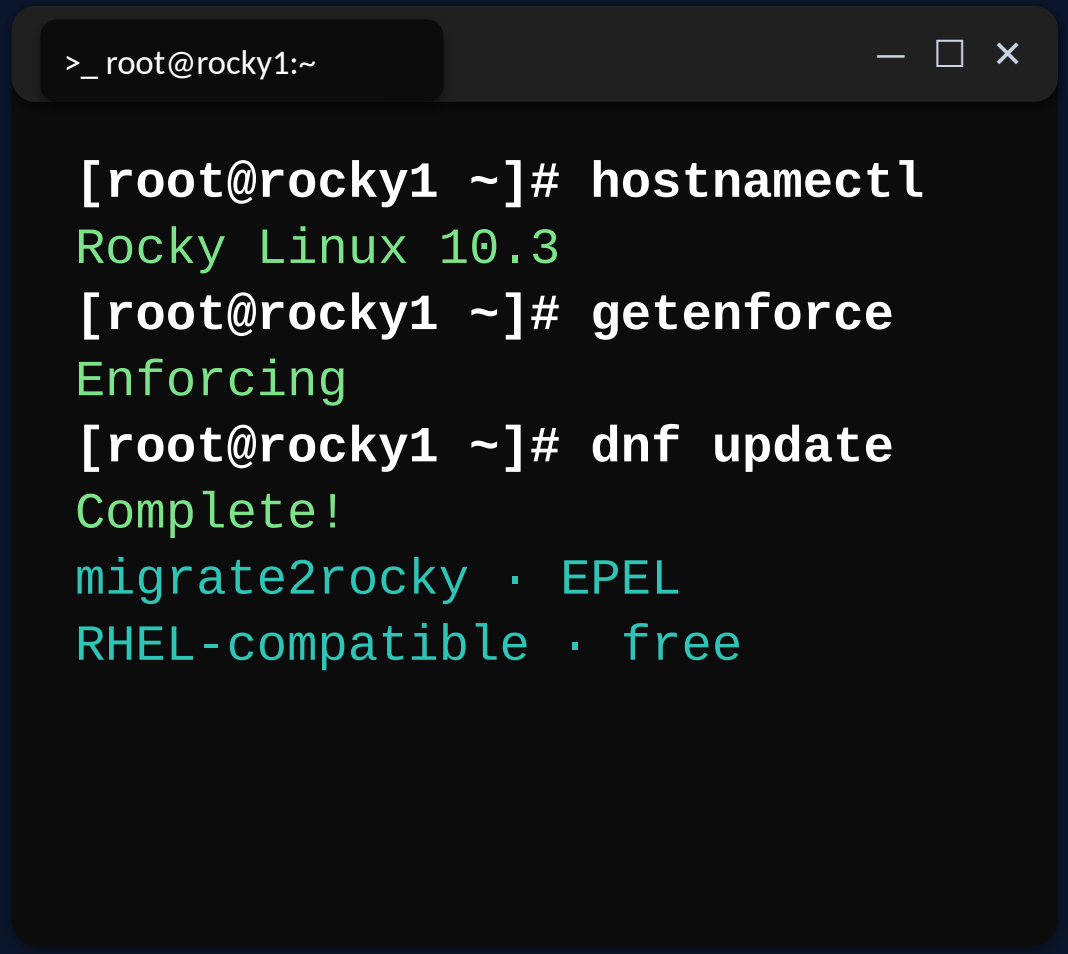
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 6 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Admin Skills Tour: Your RHEL Skills on Rocky

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Do in Lesson 6

- Users, groups and sudo (RHEL Lesson 4)
- Software and services (RHEL Lessons 5–6)
- Storage with LVM (RHEL Lesson 7)
- Networking, firewalld and SSH keys (RHEL Lesson 8)
- SELinux for a custom web root (RHEL Lesson 9)
- A Podman container as a service (RHEL Lesson 10)
- A checklist you can reuse on every new Rocky server

Users, Groups and sudo

```
[student@rocky1 ~]$ sudo groupadd webteam
[student@rocky1 ~]$ sudo useradd -G webteam -c 'Farid Noori' farid ; sudo passwd farid
[student@rocky1 ~]$ sudo chage -d 0 farid                # change password at first login
[student@rocky1 ~]$ echo '%webteam ALL=(root) /usr/bin/systemctl restart httpd' | \
      sudo tee /etc/sudoers.d/webteam ; sudo visudo -c
[student@rocky1 ~]$ sudo mkdir -p /srv/web ; sudo chgrp webteam /srv/web
[student@rocky1 ~]$ sudo chmod 2775 /srv/web             # setgid team folder
[student@rocky1 ~]$ id farid ; ls -ld /srv/web
```

Software and Services

```
[student@rocky1 ~]$ sudo dnf install -y httpd mod_ssl vim-enhanced bash-completion
[student@rocky1 ~]$ sudo systemctl enable --now httpd
[student@rocky1 ~]$ systemctl status httpd --no-pager | head -3
[student@rocky1 ~]$ sudo systemctl edit httpd       # Restart=on-failure
[student@rocky1 ~]$ journalctl -u httpd --since today --no-pager | tail
[student@rocky1 ~]$ sudo mkdir -p /var/log/journal  # keep logs across reboots
[student@rocky1 ~]$ sudo tuned-adm profile virtual-guest
[student@rocky1 ~]$ dnf history | head -3
```

Storage with LVM

```
[student@rocky1 ~]$ lsblk
[student@rocky1 ~]$ sudo pvcreate /dev/vdb ; sudo vgcreate vgweb /dev/vdb
[student@rocky1 ~]$ sudo lvcreate -n lvsite -L 2G vgweb
[student@rocky1 ~]$ sudo mkfs.xfs /dev/vgweb/lvsite
[student@rocky1 ~]$ echo '/dev/vgweb/lvsite /srv/web xfs defaults 0 0' | sudo tee -a /etc/fstab
[student@rocky1 ~]$ sudo systemctl daemon-reload ; sudo mount -a ; df -h /srv/web
[student@rocky1 ~]$ sudo chgrp webteam /srv/web ; sudo chmod 2775 /srv/web   # new FS: set again
[student@rocky1 ~]$ sudo lvextend -r -L +1G /dev/vgweb/lvsite                # grow online later
```

Network, Firewall and SSH Keys

```
[student@rocky1 ~]$ sudo nmcli con mod enp1s0 ipv4.method manual ipv4.addresses 10.0.0.21/24 \
      ipv4.gateway 10.0.0.1 ipv4.dns 10.0.0.1 ; sudo nmcli con up enp1s0
[student@rocky1 ~]$ echo '10.0.0.22 rocky2.lab.local rocky2' | sudo tee -a /etc/hosts
[student@rocky1 ~]$ sudo firewall-cmd --permanent --add-service={http,https}
[student@rocky1 ~]$ sudo firewall-cmd --reload ; sudo firewall-cmd --list-services
[student@rocky1 ~]$ ssh-keygen -t ed25519 ; ssh-copy-id rocky2
[student@rocky1 ~]$ echo 'PermitRootLogin no' | sudo tee /etc/ssh/sshd_config.d/50-local.conf
[student@rocky1 ~]$ sudo sshd -t && sudo systemctl reload sshd
```

SELinux for a Custom Web Root

```
[student@rocky1 ~]$ sudo sed -i 's#/var/www/html#/srv/web#g' /etc/httpd/conf/httpd.conf
[student@rocky1 ~]$ echo 'Hello from Rocky Linux' | sudo tee /srv/web/index.html
[student@rocky1 ~]$ curl -s localhost | head -2          # 403 Forbidden — why?
[student@rocky1 ~]$ sudo ausearch -m AVC -ts recent | tail -2
... scontext=system_u:system_r:httpd_t:s0 tcontext=...:unlabeled_t / default_t ...
[student@rocky1 ~]$ sudo semanage fcontext -a -t httpd_sys_content_t '/srv/web(/.*)?'
[student@rocky1 ~]$ sudo restorecon -Rv /srv/web
[student@rocky1 ~]$ sudo systemctl restart httpd ; curl -s localhost
Hello from Rocky Linux
```

A Container as a Service

```
[student@rocky1 ~]$ sudo dnf install -y container-tools
[student@rocky1 ~]$ podman run --rm quay.io/rockylinux/rockylinux:10 cat /etc/rocky-release
Rocky Linux release 10.3 (Red Quartz)
[student@rocky1 ~]$ mkdir -p ~/.config/containers/systemd
[student@rocky1 ~]$ cat > ~/.config/containers/systemd/nginx.container <<'EOF'
[Container]
Image=docker.io/library/nginx:stable
PublishPort=8080:80
[Install]
WantedBy=default.target
EOF
[student@rocky1 ~]$ systemctl --user daemon-reload ; systemctl --user start nginx
[student@rocky1 ~]$ sudo loginctl enable-linger student ; curl -sI localhost:8080 | head -1
HTTP/1.1 200 OK
```

New Rocky Server Checklist

#	Task
1	Verify ISO, install, update, reboot; set hostname and time zone
2	Admin user in wheel; lock root; SSH keys; PermitRootLogin no
3	Enable CRB and EPEL if needed; dnf-automatic for security updates
4	Static IP or DHCP reservation; /etc/hosts or DNS
5	firewalld: only needed services; SELinux Enforcing
6	Persistent journal; monitoring; backups tested
7	Document it — better: write it as an Ansible playbook (Lesson 11)

Summary and Homework

- Every admin command from the RHEL course works unchanged on Rocky
- Users + sudo, dnf + systemd, LVM, nmcli + firewalld + SSH
- SELinux: semanage fcontext + restorecon for custom paths
- Podman + Quadlet for containers as services
- Use the checklist on every new server
- Homework: repeat this whole lesson on rocky2 (Rocky 9.9) — note any difference

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

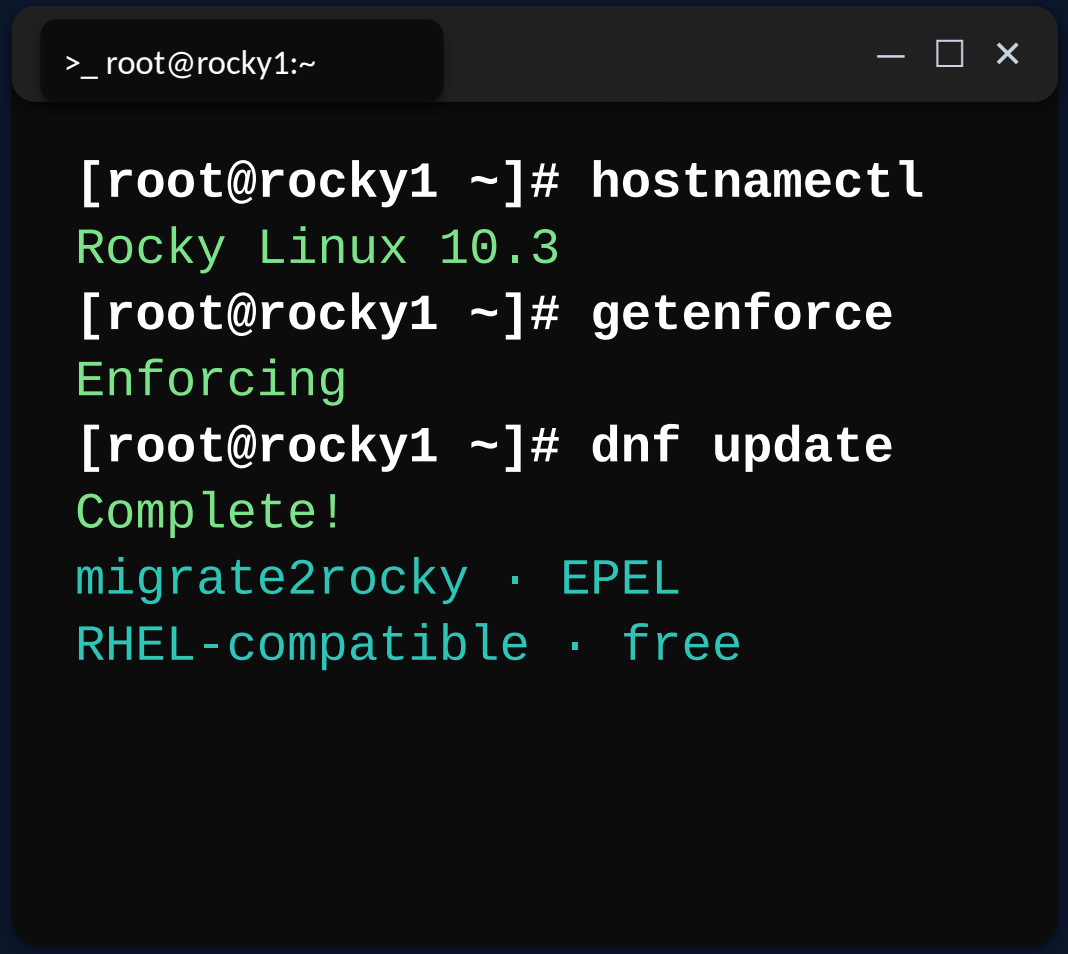
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 7 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Migrating to Rocky: CentOS, AlmaLinux, Oracle & RHEL with migrate2rocky

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 7

- Migration vs upgrade: an important difference
- Supported migration paths
- Planning: inventory, backups, maintenance window
- Pre-checks that prevent failures
- Running migrate2rocky9 step by step
- Verifying the migrated system
- CentOS 7 and CentOS 8 servers: what to do

Migration vs Upgrade

	Migration (conversion)	Major upgrade
Changes	The distribution (vendor)	The major version
Example	AlmaLinux 9.9 → Rocky 9.9	Rocky 9 → Rocky 10
Version	Same major version	Next major version
Risk	Low to medium: same package versions	High: new kernel, new packages, removed features
Rocky tool	migrate2rocky / migrate2rocky9	None supported (Lesson 8)

Supported Migration Paths

From	To	Tool
CentOS Linux 8, CentOS Stream 8, AlmaLinux 8, Oracle Linux 8, RHEL 8	Rocky 8	migrate2rocky
CentOS Stream 9, AlmaLinux 9, Oracle Linux 9, RHEL 9	Rocky 9	migrate2rocky9
EL 10 systems	Rocky 10	Check the rocky-tools README for current support
Fedora, Ubuntu, others	—	Not supported: reinstall
Upgrades (8 → 9, 9 → 10)	—	Not supported by migrate2rocky

Plan Before You Migrate

Step	Why
Inventory: dnf repolist, rpm -qa, services	Know what runs and where packages come from
Full backup or VM snapshot	The only real rollback
Test on a clone first	Find problems before production
Maintenance window and console access	The server reboots; SSH may drop
Update fully, then reboot	Start from the newest minor release
Note third-party repos and vendor software	Licenses may check the OS name
Plan the 'after' checks	Services, apps, monitoring, backups

Pre-Checks on legacy1

```
[student@legacy1 ~]$ cat /etc/os-release | head -2
NAME="AlmaLinux"
VERSION="9.9 (...)"
[student@legacy1 ~]$ sudo dnf -y update && sudo reboot
[student@legacy1 ~]$ dnf repolist                    # note non-distribution repos
[student@legacy1 ~]$ df -h / /boot /var              # free space: several GB
[student@legacy1 ~]$ sudo dnf check ; sudo rpm -Va --nofiles --nodigest | head
[student@legacy1 ~]$ systemctl list-units --type=service --state=running > ~/services-before.txt
[student@legacy1 ~]$ rpm -qa | sort > ~/packages-before.txt
[student@legacy1 ~]$ getenforce
```

Run migrate2rocky9

```
[student@legacy1 ~]$ curl -O \
      https://raw.githubusercontent.com/rocky-linux/rocky-tools/main/migrate2rocky/migrate2rocky9.sh
[student@legacy1 ~]$ less migrate2rocky9.sh              # read before you run it as root
[student@legacy1 ~]$ chmod u+x migrate2rocky9.sh
[student@legacy1 ~]$ sudo ./migrate2rocky9.sh -h
[student@legacy1 ~]$ sudo ./migrate2rocky9.sh -r         # -r: convert to Rocky
...
Preparing to migrate AlmaLinux 9 to Rocky Linux 9 ...
Running dnf update/distro-sync ...
Done, please reboot your system.
A log of this installation can be found at /var/log/migrate2rocky.log
[student@legacy1 ~]$ sudo reboot
```

Verify the Result

```
[student@legacy1 ~]$ cat /etc/rocky-release
Rocky Linux release 9.9 (Blue Onyx)
[student@legacy1 ~]$ dnf repolist                          # baseos, appstream, extras
[student@legacy1 ~]$ rpm -qa --qf '%{VENDOR}\n' | sort | uniq -c | sort -rn
    690 Rocky Enterprise Software Foundation
      4 Fedora Project                                  # EPEL packages — expected
[student@legacy1 ~]$ uname -r ; getenforce
[student@legacy1 ~]$ systemctl --failed
[student@legacy1 ~]$ systemctl list-units --type=service --state=running > ~/services-after.txt
[student@legacy1 ~]$ diff ~/services-before.txt ~/services-after.txt
[student@legacy1 ~]$ sudo hostnamectl set-hostname rocky3.lab.local     # optional
```

Common Problems and Fixes

Problem	Fix
Script stops on a third-party repo	Disable it (enabled=0), migrate, then re-enable
Conflicting or duplicate packages	dnf distro-sync; remove leftovers; read the log
Still booting the old kernel	Check grubby --default-kernel; reboot again
Some packages still from the old vendor	dnf reinstall <pkg> or dnf distro-sync
Katello / Satellite client installed	Read the README: remove or re-register first
Something broke badly	Restore the snapshot — that is why you took it

Old CentOS 7 and 8 Servers

Starting point	Recommended path
CentOS 7 (EOL June 30, 2024)	Best: build new Rocky 9 or 10 servers and move the workload
CentOS 7, must keep the server	Community route: ELevate to AlmaLinux 8, then migrate2rocky to Rocky 8 — test well
CentOS Linux 8 (EOL Dec 31, 2021)	migrate2rocky to Rocky 8 (update repos to the vault first)
Rocky 8 (security fixes to 2029)	Plan the move to Rocky 9 or 10 now (Lesson 8)
Rule	An unsupported OS on the internet is a serious risk

Summary and Homework

- Migration changes the vendor, not the major version
- migrate2rocky (EL8) and migrate2rocky9 (EL9); no upgrades
- Plan: inventory, snapshot, test clone, window, console
- Run with -r, reboot, check /var/log/migrate2rocky.log
- Verify: rocky-release, repos, vendor count, services, apps
- Homework: migrate legacy1 to Rocky 9.9; compare packages and services before and after

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

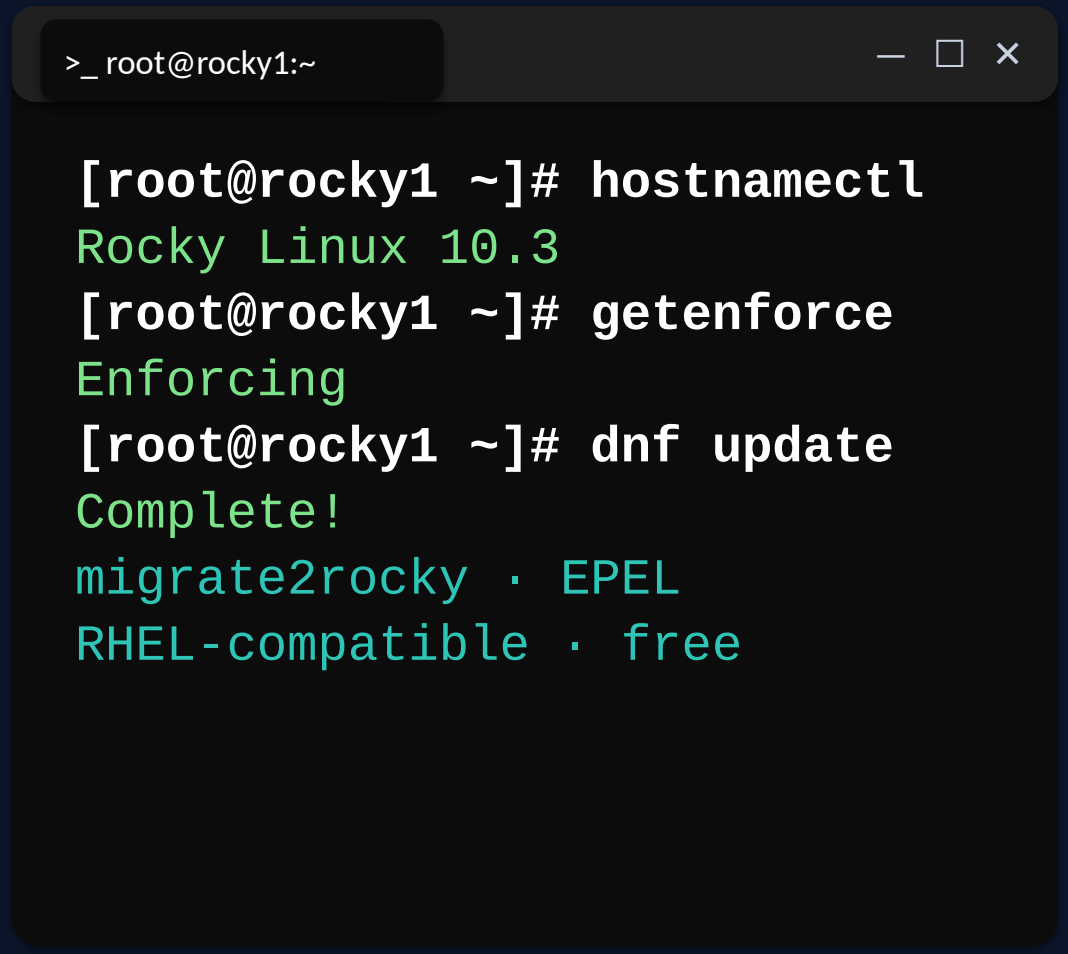
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 8 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Moving Between Major Versions: Rocky 8 → 9 → 10

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 8

- Why Rocky does not support in-place major upgrades
- When you must move: support dates
- What changes from 8 to 9 and from 9 to 10
- Strategy 1: rebuild and migrate data
- Strategy 2: blue-green with automation
- Community options and their risks
- A step-by-step plan for rocky2 (9.9 → 10.3)

Why No In-Place Upgrade?

Fact	Details
RHEL uses Leapp	Red Hat's Leapp needs upgrade data written for RHEL
Rocky's position	Leapp for Rocky is not supported; Rocky recommends reinstalling
ELevate (AlmaLinux)	Community Leapp project; Rocky support ended Nov 3, 2025 (data not maintained)
Major versions change a lot	Kernel, libraries, Python, defaults, removed packages
Clean installs	Remove years of drift; a chance to fix old decisions
Result	Plan major moves as projects, not as a single command

When You Must Move

Version	Active support	Security fixes end	Action
Rocky 8	ended	May 31, 2029	Plan the move now
Rocky 9	to May 31, 2027	May 31, 2032	Plan for 2027–2031
Rocky 10	to May 31, 2030	May 31, 2035	New servers today
Hardware	Rocky 10 needs x86-64-v3	—	Old servers: replace or stay on 9

What Changes Between Versions

Area	8 → 9	9 → 10
Kernel	4.18 → 5.14	5.14 → 6.12
CPU (x86)	v1/v2 → x86-64-v2	v2 → x86-64-v3
Python	3.6 default → 3.9	3.9 → 3.12
Packaging	Modules continue	Modules removed; versioned packages
Network config	ifcfg deprecated → keyfiles	ifcfg not supported
Crypto / SSH	SHA-1 disabled by default	Post-quantum; stricter defaults
Desktop	Xorg and Wayland	Wayland only; VNC → RDP

Strategy 1: Rebuild and Migrate

Step	What you do
1	Inventory the old server: apps, configs, users, cron, firewall, SELinux changes
2	Build a new Rocky 10 server (Kickstart or a cloud image)
3	Install the apps; copy configs carefully — review, don't blindly copy
4	Sync data with rsync; repeat until the final cut-over
5	Test: functions, performance, backups, monitoring
6	Cut over: final rsync, switch DNS or IP; keep the old server off but ready

Inventory Commands for the Old Server

```
[student@rocky2 ~]$ dnf repolist ; rpm -qa --qf '%{NAME}\n' | sort > pkgs.txt
[student@rocky2 ~]$ dnf history userinstalled > user-installed.txt
[student@rocky2 ~]$ systemctl list-unit-files --state=enabled > enabled-units.txt
[student@rocky2 ~]$ sudo firewall-cmd --list-all-zones > firewall.txt
[student@rocky2 ~]$ sudo semanage export > selinux-local.txt       # all local SELinux changes
[student@rocky2 ~]$ sudo crontab -l ; ls /etc/cron.d /var/spool/cron
[student@rocky2 ~]$ getent passwd | awk -F: '$3>=1000' > users.txt
[student@rocky2 ~]$ sudo rpm -Va --nofiles 2>/dev/null | grep '^..5' | grep ' c ' > changed-
configs.txt
[student@rocky2 ~]$ ss -tlnp > listening.txt ; df -h > disks.txt
```

Strategy 2: Blue-Green with Automation

Idea	How
Describe servers as code	Ansible playbooks (or Kickstart + scripts) build the server
Green = new version	Run the same playbook against a Rocky 10 host
Test green	Automated checks; a few users; monitoring
Switch traffic	Load balancer, DNS or IP — seconds, not hours
Blue = rollback	Keep the old server until green is proven
Bonus	Next upgrade (10 → 11) becomes routine

Community Options and Their Risks

Option	What it is	Risk
Migrate to AlmaLinux, then ELevate	almalinux-deploy (Rocky 8/9/10 → Alma), then Alma 9 → 10	You end on AlmaLinux
Convert to RHEL, then Leapp	Red Hat conversion tools; Leapp 9.9 → 10.3	Needs RHEL subscriptions
Manual distro-sync with Rocky 10 repos	Swapping repos and forcing dnf	Very high: unsupported, often breaks
Containers	Move apps into containers on a new host	Effort; but simplifies future moves
Rule	Never try an unsupported upgrade without a tested restore	—

Plan: rocky2 from 9.9 to 10.3

Week	Task
1	Check CPU (x86-64-v3); inventory rocky2; read the Rocky 10 release notes
1	List apps and their EL10 support (vendors, EPEL, Python 3.12, modules)
2	Build rocky2-new on Rocky 10.3 with Kickstart; apply semanage import, firewall
2	Install apps; review configs; first rsync of data
3	Test functions, backups, monitoring; fix differences; document
3	Cut-over window: final rsync, switch IP/DNS, verify; old rocky2 off for 2 weeks

Summary and Homework

- Rocky: no supported in-place major upgrade — plan a project
- Rocky 8 security ends 2029; Rocky 9 in 2032; Rocky 10 needs x86-64-v3
- Rebuild and migrate: inventory, new server, rsync, test, cut over
- Blue-green with Ansible makes future upgrades routine
- Community routes change vendor or need subscriptions
- Homework: run the inventory commands on rocky2 and write its 3-week upgrade plan

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

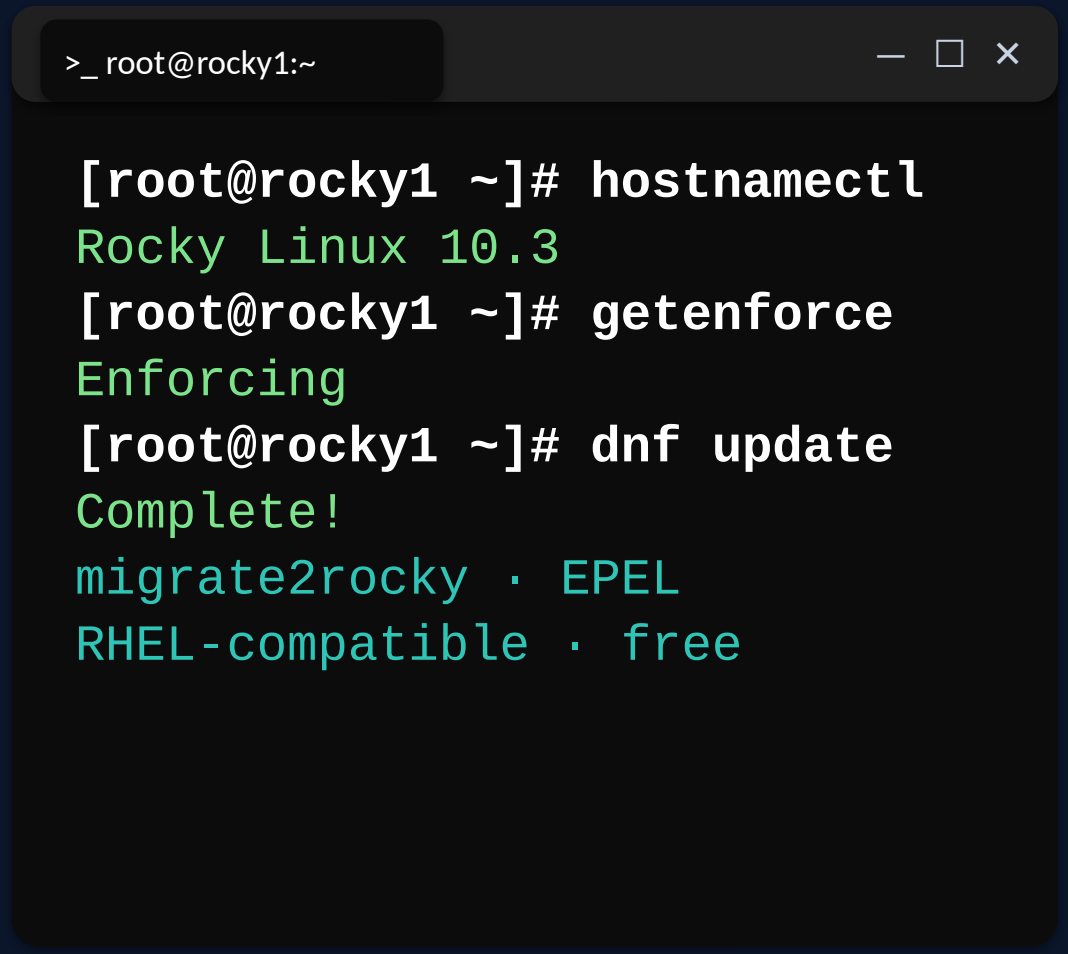
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 9 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Converting Rocky to RHEL or AlmaLinux, and Back

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 9

- Why convert: support, certification, hardware, upgrades
- The conversion map: who converts to whom
- Rocky → RHEL with Red Hat's conversion tools
- Rocky → AlmaLinux with almalinux-deploy
- AlmaLinux, Oracle, RHEL → Rocky (review)
- Licensing and support considerations
- A safe conversion checklist

Why Convert?

Reason	Typical direction
A vendor requires RHEL for support	Rocky → RHEL
Need Red Hat support, Lightspeed, Satellite, Leapp	Rocky → RHEL
Older x86-64-v2 CPU but want EL10	Rocky → AlmaLinux (x86-64-v2 build)
Want community in-place upgrades (ELevate)	Rocky → AlmaLinux
Leaving a paid subscription; standardizing on Rocky	RHEL / AlmaLinux / Oracle → Rocky
Mergers: two companies, two distributions	Either way — pick one standard

The Conversion Map

From → To	Tool	Notes
Rocky 8/9 → RHEL 8/9	convert2rhel (Red Hat)	Supported by Red Hat with a subscription
Rocky 9 → RHEL 10	Red Hat conversion + upgrade path	Check Red Hat's current docs (RHEL 10.2+)
Rocky 8/9/10 → AlmaLinux	almalinux-deploy.sh	Maintained by the AlmaLinux project
EL 8/9 → Rocky 8/9	migrate2rocky / migrate2rocky9	Lesson 7
Rocky → Oracle Linux	Oracle's centos2ol tool	Check Oracle's supported sources
Anything → Fedora/Ubuntu	—	Not a conversion: reinstall

Rocky → RHEL with convert2rhel

```
# On rocky2 (Rocky 9.9). You need a Red Hat account with RHEL subscriptions.
[student@rocky2 ~]$ sudo curl -o /etc/yum.repos.d/convert2rhel.repo \
      https://cdn-public.redhat.com/content/public/repofiles/convert2rhel-for-rhel-9-x86_64.repo
[student@rocky2 ~]$ sudo dnf install -y convert2rhel
[student@rocky2 ~]$ sudo convert2rhel analyze --org <org-id> --activationkey <key>
[student@rocky2 ~]$ sudo less /var/log/convert2rhel/convert2rhel-pre-conversion.txt
[student@rocky2 ~]$ sudo convert2rhel --org <org-id> --activationkey <key>
[student@rocky2 ~]$ sudo reboot
[student@rocky2 ~]$ cat /etc/redhat-release ; sudo subscription-manager status
```

Rocky → AlmaLinux with almalinux-deploy

```
# On a test clone of a Rocky server
[student@rocky3 ~]$ sudo dnf -y update && sudo reboot
[student@rocky3 ~]$ curl -O \
      https://raw.githubusercontent.com/AlmaLinux/almalinux-deploy/master/almalinux-deploy.sh
[student@rocky3 ~]$ less almalinux-deploy.sh            # read it first
[student@rocky3 ~]$ sudo bash almalinux-deploy.sh
...
Migration to AlmaLinux is completed
[student@rocky3 ~]$ sudo reboot
[student@rocky3 ~]$ cat /etc/almalinux-release
[student@rocky3 ~]$ rpm -qa --qf '%{VENDOR}\n' | sort | uniq -c
```

After Any Conversion

Check	Command or action
Release and kernel	cat /etc/os-release ; uname -r
Repositories	dnf repolist ; dnf check-update
Vendor of packages	rpm -qa --qf '%{VENDOR}\n' | sort | uniq -c
Leftovers	dnf distro-sync ; dnf list extras
Services and apps	systemctl --failed ; test the application
SELinux and boot	getenforce ; grubby --default-kernel
Monitoring, backup, inventory	Update the OS name in your tools and documentation

Licensing and Support

Topic	What to know
RHEL	Each converted system needs a valid RHEL subscription
Rocky and AlmaLinux	Free; no subscription; community or commercial support
Vendor support	Ask the vendor which distribution and version they support
Support during conversion	Red Hat supports convert2rhel for subscribers; community tools are best-effort
Trademarks	Do not ship 'RHEL' branding on Rocky systems, or the reverse
Not legal advice	Check contracts and licenses with your organization

Safe Conversion Checklist

#	Step
1	Decide why; confirm the target is supported by your vendors
2	Inventory: repos, third-party kernel modules (NVIDIA, storage, security agents)
3	Snapshot or full backup; console access; maintenance window
4	Update fully and reboot; run the tool's analysis or dry run if available
5	Convert a test clone first; then production
6	Verify: release, kernel, vendor count, services, apps, SELinux
7	Update monitoring, CMDB and documentation; keep the snapshot a few days

Summary and Homework

- Same packages make conversions possible without reinstalling
- Rocky → RHEL: convert2rhel analyze, then convert (subscription needed)
- Rocky → AlmaLinux: almalinux-deploy.sh
- Back to Rocky: migrate2rocky / migrate2rocky9
- Always: snapshot, analyze, test clone, verify, update records
- Homework: clone rocky2; run convert2rhel analyze (free developer account) and read the report

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

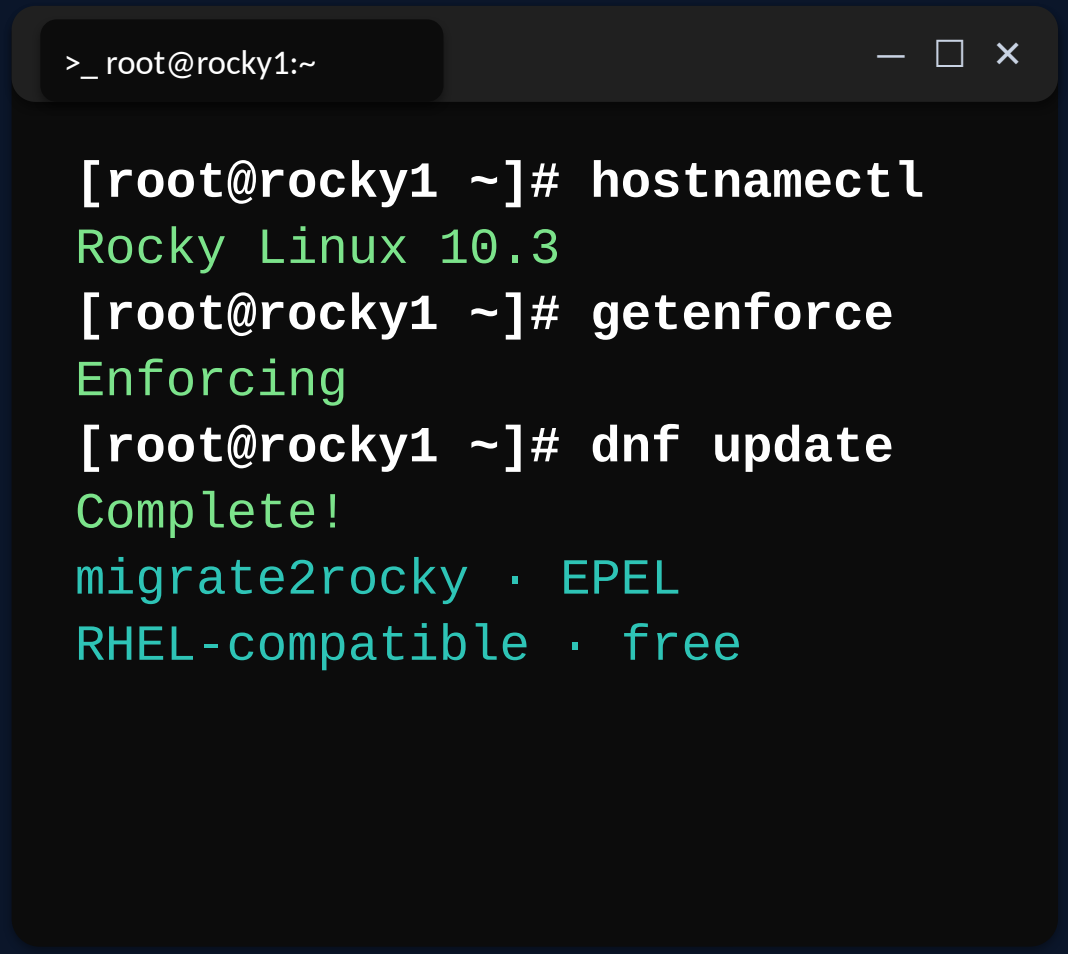
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 10 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Rocky in Containers, the Cloud, WSL & Custom Images

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 10

- Rocky container images: base, minimal, init
- Building your own images on Rocky
- Rocky in AWS, Azure and Google Cloud
- cloud-init: configuring instances at first boot
- Rocky on Windows with WSL
- Local test labs with Vagrant and qcow2 images
- Custom images with image builder

Rocky Container Images

Image	Use it for
quay.io/rockylinux/rockylinux:10	General base image with dnf
quay.io/rockylinux/rockylinux:10-minimal	Smaller; uses microdnf
quay.io/rockylinux/rockylinux:10-ubi-init	Runs systemd inside the container
docker.io/rockylinux/rockylinux:10	Same images on Docker Hub
Tags	:10, :10.3, :9, :9.9 — pin a minor version for reproducible builds
Free to redistribute	Ship images built on Rocky to anyone

Build Your Own Image on Rocky

```
# Containerfile
FROM quay.io/rockylinux/rockylinux:10-minimal
RUN microdnf -y install python3 python3-pip && microdnf clean all
WORKDIR /app
COPY app.py requirements.txt ./
RUN pip3 install --no-cache-dir -r requirements.txt
USER 1001
EXPOSE 8000
CMD ["python3", "app.py"]

[student@rocky1 ~]$ podman build -t myapp:1.0 .
[student@rocky1 ~]$ podman run -d -p 8000:8000 --name myapp myapp:1.0
[student@rocky1 ~]$ podman image inspect myapp:1.0 --format '{{.Size}}'
```

Rocky in the Public Cloud

Cloud	How to find official images
AWS	Marketplace: 'Rocky Linux' published by the Rocky Enterprise Software Foundation
Azure	Marketplace: Rocky Linux images from RESF; also via az vm image list
Google Cloud	Public images: project rocky-linux-cloud (gcloud compute images list)
Others	Oracle Cloud, DigitalOcean, Linode, Vultr, Hetzner and more
Default user	Usually 'rocky' with your SSH key; root login disabled
Tip	Check the publisher — use official RESF images only

Launch Rocky in the Cloud

```
# Google Cloud
$ gcloud compute images list --project rocky-linux-cloud --no-standard-images
$ gcloud compute instances create web1 --zone us-west1-b \
    --image-project rocky-linux-cloud --image-family <rocky-linux-10-family-from-list>

# Azure
$ az vm image list --publisher resf --all --output table

# AWS: find the AMI ID for your region in the Marketplace listing, then:
$ aws ec2 run-instances --image-id <rocky-10-ami-id> --instance-type t3.small --key-name mykey
$ ssh rocky@<public-ip>
```

cloud-init: Configure at First Boot

```
#cloud-config
hostname: web1
users:
  - name: student
    groups: wheel
    sudo: ALL=(ALL) NOPASSWD:ALL
    ssh_authorized_keys: ["ssh-ed25519 AAAA... student@laptop"]
package_upgrade: true
packages: [httpd, firewalld]
runcmd:
  - systemctl enable --now httpd firewalld
  - firewall-cmd --permanent --add-service=http && firewall-cmd --reload
  - echo 'Hello from cloud-init on Rocky' > /var/www/html/index.html
```

Rocky on Windows with WSL

```
# 1. Download the Rocky WSL image from rockylinux.org/download (Containers / WSL)
PS C:\> wsl --import Rocky10 C:\WSL\Rocky10 .\<Rocky-10-WSL-image-file>
PS C:\> wsl -d Rocky10
[root@PC ~]# dnf -y update ; dnf -y install sudo passwd vim
[root@PC ~]# useradd -G wheel student ; passwd student
[root@PC ~]# printf '[user]\ndefault=student\n' > /etc/wsl.conf
PS C:\> wsl --terminate Rocky10 ; wsl -d Rocky10      # now you are student
PS C:\> wsl -l -v
```

Local Labs: Vagrant and Cloud Images

Tool	How
Vagrant	vagrant init rockylinux/9 ; vagrant up ; vagrant ssh (check boxes for 10)
Generic cloud qcow2	Download Rocky-10-GenericCloud from the download page
KVM + cloud-init	virt-install --import --cloud-init user-data=web.yaml …
Cockpit Machines	Create VMs from the Rocky ISO or qcow2 in the browser
Why	Create, test and destroy servers in minutes
Tip	Snapshot before each lesson; restore to practice again

Custom Images with image builder

```
[student@rocky1 ~]$ sudo dnf install -y image-builder          # CLI, generally available in 10.3
[student@rocky1 ~]$ cat web.toml
name = "rocky-web"
version = "1.0.0"
[[packages]]
name = "httpd"
[customizations.services]
enabled = ["httpd"]
[[customizations.user]]
name = "student"
groups = ["wheel"]
[student@rocky1 ~]$ image-builder list | grep rocky        # distributions and image types
[student@rocky1 ~]$ sudo image-builder build qcow2 --blueprint web.toml
```

Summary and Homework

- Official images: quay.io/rockylinux/rockylinux:10 (also -minimal, -ubi-init)
- Clouds: official RESF images in AWS, Azure, Google Cloud and more
- cloud-init user data turns a plain image into a ready server
- WSL: wsl --import a Rocky image on Windows for learning
- Vagrant, qcow2 + KVM, and image builder for labs and golden images
- Homework: build myapp on Rocky minimal; boot a GenericCloud qcow2 with your cloud-init file

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

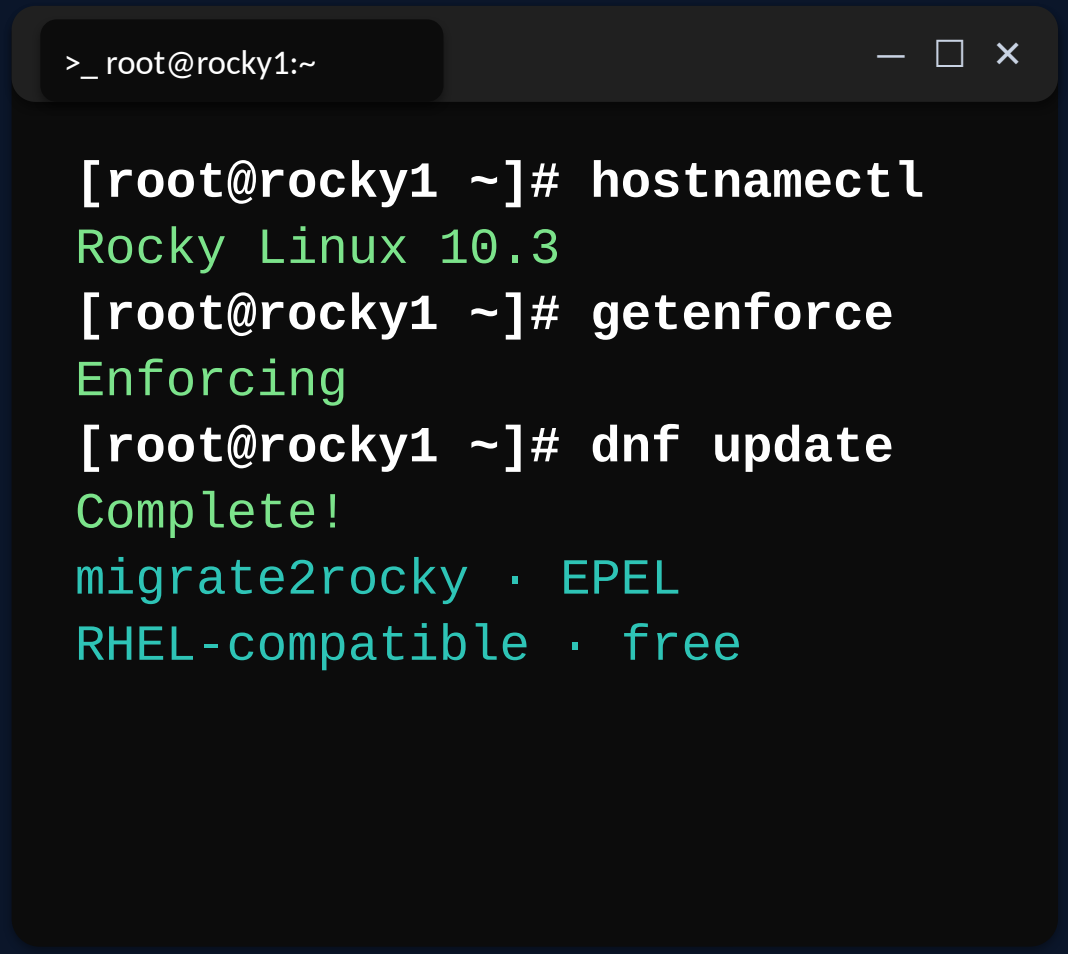
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 11 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Running Rocky at Scale: Mirrors, Foreman, Ansible & Monitoring

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 11

- Why a local mirror, and building one with reposync
- Update stages: dev → test → production
- Foreman and Katello: the free Satellite upstream
- Ansible for configuration and patching
- Monitoring: Cockpit, PCP, Prometheus and Grafana
- Central logging and backups
- An operations checklist for a Rocky fleet

Why a Local Mirror?

Benefit	Details
Speed	Updates come from your LAN, not the internet
Bandwidth	Download once, install on hundreds of servers
Control	Servers see only the updates you approved
Reproducible	Snapshots: every server gets the same versions
Offline / air-gapped	Copy the mirror to networks without internet
Cost	Free: a Rocky VM, disk space and a web server

Build a Mirror with reposync

```
[student@rocky2 ~]$ sudo dnf install -y dnf-plugins-core httpd
[student@rocky2 ~]$ sudo mkdir -p /srv/repo/rocky/10
[student@rocky2 ~]$ sudo dnf reposync --repoid=baseos --repoid=appstream --repoid=extras \
      --releasever=10 --download-metadata --newest-only \
      --download-path=/srv/repo/rocky/10
[student@rocky2 ~]$ du -sh /srv/repo/rocky/10/*
[student@rocky2 ~]$ sudo ln -s /srv/repo /var/www/html/repo
[student@rocky2 ~]$ sudo semanage fcontext -a -t httpd_sys_content_t '/srv/repo(/.*)?'
[student@rocky2 ~]$ sudo restorecon -Rv /srv/repo ; sudo systemctl enable --now httpd
[student@rocky2 ~]$ sudo firewall-cmd --permanent --add-service=http ; sudo firewall-cmd --reload
```

Point Clients to Your Mirror

```
# /etc/yum.repos.d/local-rocky.repo  (on every client)
[local-baseos]
name=Local Rocky $releasever BaseOS
baseurl=http://rocky2.lab.local/repo/rocky/$releasever/baseos/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10
[local-appstream]
name=Local Rocky $releasever AppStream
baseurl=http://rocky2.lab.local/repo/rocky/$releasever/appstream/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-Rocky-10
[student@rocky1 ~]$ sudo dnf config-manager --set-disabled baseos appstream
[student@rocky1 ~]$ sudo dnf clean all ; dnf repolist
```

Update Stages: dev → test → production

Stage	What happens
Sync	Nightly reposync into /srv/repo/rocky/10/latest
Snapshot	Weekly: copy latest → snapshots/2026-11-20 (hard links save space)
dev	Dev servers point at the newest snapshot
test	After a week without problems, test servers move to it
production	After testing, production moves to the same snapshot
Rollback	Point back to the previous snapshot; dnf history undo

Foreman and Katello

Feature	What it gives you
What	Free, open source lifecycle management; upstream of Red Hat Satellite
Content (Katello)	Sync Rocky repos, content views, lifecycle environments
Provisioning	PXE and Kickstart; templates for new Rocky servers
Inventory and errata	Which hosts need which RLSA advisories
Remote execution	Run commands and Ansible roles on many hosts
When to use	Dozens to thousands of servers; one web console

Ansible for a Rocky Fleet

```
# inventory: [web] rocky1   [infra] rocky2
# baseline.yml — apply to every Rocky server
- hosts: all
  become: true
  tasks:
    - name: Local repo file
      ansible.builtin.copy: { src: local-rocky.repo, dest: /etc/yum.repos.d/ }
    - name: Security updates
      ansible.builtin.dnf: { name: '*', state: latest, security: true }
    - name: Reboot if needed
      ansible.builtin.reboot:
      when: ansible_facts['distribution'] == 'Rocky'
    - name: SELinux enforcing
      ansible.posix.selinux: { policy: targeted, state: enforcing }
[student@rocky1 ~]$ ansible-playbook -i inventory baseline.yml --limit web
```

Monitoring and Logs

Need	Free tool on Rocky
One server, quick look	Cockpit (Lesson 2); top, vmstat, sar (sysstat)
Performance history	PCP (Performance Co-Pilot) + Cockpit metrics
Fleet metrics and alerts	Prometheus node_exporter + Grafana + Alertmanager
Central logs	rsyslog forwarding or systemd-journal-remote; Loki/OpenSearch
Uptime and services	Uptime Kuma, Zabbix, Checkmk (community editions)
Security events	auditd + central logs; Wazuh (open source)

Operations Checklist for a Rocky Fleet

Area	Practice
Build	One Kickstart or image builder blueprint; servers are cattle, not pets
Configure	Ansible baseline for every host; changes go through Git
Patch	Local mirror + snapshots; dev → test → prod; monthly and emergency windows
Watch	Metrics, logs and alerts for every host
Protect	SELinux, firewalld, SSH keys, OpenSCAP reports
Recover	Backups tested quarterly; documented rebuild
Plan	Track EOL dates: Rocky 8 (2029), 9 (2032), 10 (2035)

Summary and Homework

- Local mirror: dnf reposync + Apache + SELinux label + timer
- Clients: local .repo files with gpgcheck=1
- Snapshots give dev → test → prod update stages
- Foreman + Katello: free lifecycle management (Satellite upstream)
- Ansible baseline, monitoring, central logs, tested backups
- Homework: build the Rocky 10 mirror on rocky2 and point rocky1 at it with Ansible

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

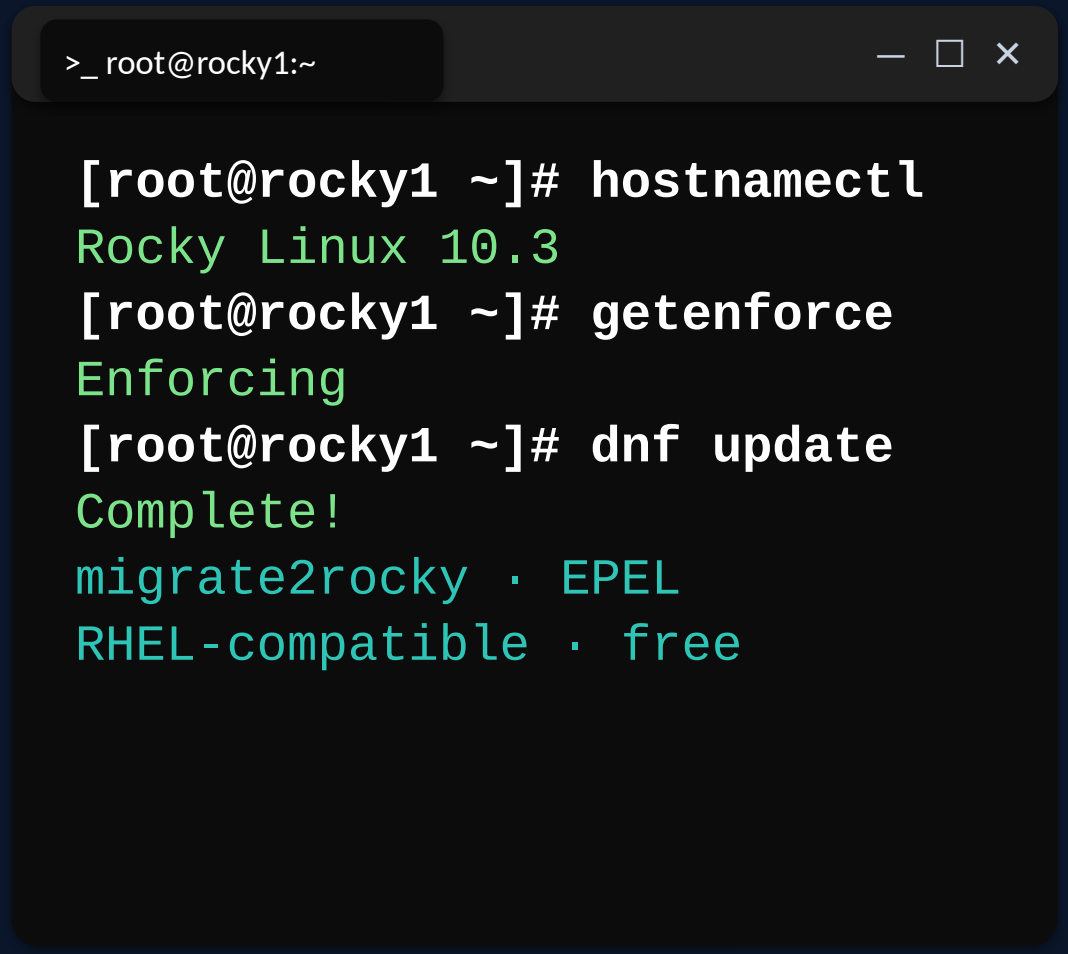
Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.



LESSON 12 OF 12

Rocky Linux 9 & 10

Install · Migrate · Differences

Support, Community, Choosing a Distribution & Next Steps

Full Course · Rocky Linux 10.3 & 9.9 (Nov 2026)

What You Will Learn in Lesson 12

- Official documentation and where to look first
- Community help: forums, chat and bug tracker
- How to ask a question that gets answered
- Commercial support options
- Contributing: testing, docs, translation, SIGs
- Choosing a distribution: a decision guide
- Course summary, final project and next steps

Documentation First

Source	What you find
docs.rockylinux.org	Guides, release notes, migration and installation docs
Rocky release notes	What changed in each version; known issues
man pages and /usr/share/doc	On every system, works offline
RHEL documentation	docs.redhat.com: free, detailed, applies to Rocky
errata.rockylinux.org	Security and bug fix advisories
Our RHEL course	Lessons 3–12 apply to Rocky as well

Community Help

Channel	Best for
forums.rockylinux.org	Questions and answers; searchable history
chat.rockylinux.org (Mattermost)	Live chat with users and developers
bugs.rockylinux.org	Reporting real bugs in Rocky packages
Reddit r/RockyLinux	Community discussion
SIG channels	Questions about cloud, kernel, AltArch, HPC
Upstream projects	Bugs in an application itself (e.g. Apache, Podman)

Ask a Question That Gets Answered

Include	Example
Version	cat /etc/rocky-release ; uname -r
What you want	"I want Apache to serve /srv/web on port 8888"
What you did	The exact commands and config, copied as text
What happened	Exact error message; journalctl -u httpd; ausearch -m AVC
What you tried	"restorecon -Rv /srv/web did not help"
Be kind	Volunteers answer; say thank you; post the solution

Commercial Support

Option	What it offers
CIQ	Support, services and hardened/compliance-focused Rocky offerings
Cloud providers	Support plans that cover the VMs you run
Hardware vendors	Some server vendors support Rocky on their systems
Consultancies	Local Linux companies support Rocky deployments
When to buy	Regulated industries, 24×7 systems, contractual SLAs
Alternative	Convert to RHEL (Lesson 9) if Red Hat support is required

Contributing Back

Way to help	How to start
Testing	Try beta releases; report what breaks
Documentation	Fix or write guides on docs.rockylinux.org (Git, Markdown)
Translation	Translate docs and guides into your language — including Dari
Answering	Help newer users in the forums and chat
SIGs	Join a special interest group that matches your skills
Mirrors and donations	Host a mirror; sponsor the foundation

Choosing a Distribution

If you need…	Choose
Vendor certification or Red Hat support, Lightspeed, Satellite	RHEL
Free, RHEL bug-for-bug compatibility, RISC-V, SIGs	Rocky Linux
Free, older x86-64-v2 CPUs on EL10, in-place upgrades (ELevate)	AlmaLinux
The newest features; desktops; developers	Fedora
To help shape the next RHEL	CentOS Stream
Debian/Ubuntu ecosystem or tooling	Ubuntu LTS or Debian (our next course)

Course Summary

Lessons	You learned
1–2	History, lifecycle, downloading, verifying and installing Rocky
3–4	Repositories, CRB, EPEL, SIGs; errata, updates and hardening
5–6	Differences from RHEL and AlmaLinux; admin skills tour
7–9	migrate2rocky, major version strategies, converting to RHEL/AlmaLinux
10–11	Containers, cloud, WSL, image builder; mirrors, Foreman, Ansible, monitoring
12	Support, community, contributing and choosing a distribution

Final Project and Next Steps

Task	Details
1. Migrate	Migrate an AlmaLinux 9 VM to Rocky 9 with migrate2rocky9
2. Plan	Write a rebuild plan to move it to Rocky 10.3
3. Automate	Build the new server with Kickstart + an Ansible baseline
4. Operate	Point it at your local mirror; add monitoring and backups
5. Share	Write a short guide of what you learned — help someone else
Next courses	Fedora family; Debian/Ubuntu; Arch & Kali at MyWebUniversity

Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

Slides for this lesson: MyWebUniversity.com/presentations

YouTube: @MyWebUniversity · @MyWebUniversity-Dari

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

Learn it, then pass it on.