Migrating from CentOS 7 & Mythbusting Linux on Microsoft Azure

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Azure Linux team
hi, I’m benny

- Many years as a sysadmin
- Many years as a community builder
- Many years around open source
- Many years as a lover of Star Wars
- Many years as a lover of Sci-Fi

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hi, I’m Claus

- I’m a dinosaur, 30+ years in IT, 29 years at Microsoft
- Involved in Open Source for the last decade
- CrossFitter / coach ... did you know CF is Open Source?
- Recovering Fallout addict
- South Park fan!

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In the beginning, there was dog...
Linux is the #1 operating system in Azure today

Linux-based images comprise

> 60% of Azure Marketplace offerings

> 60% of VM cores in Azure run Linux

Microsoft works closely with all major distro vendors & communities

- Red Hat
- KALI
- Canonical
- SUSE
- AlmaLinux
- Fedora
- Arch Linux
- CentOS
- Rocky Linux
- Oracle Linux
- FreeBSD
Open source is an integral part of Microsoft & Azure

60K+
Unique open-source components

30K+
Microsoft employees have GitHub accounts associated with Microsoft identity

7.6K
GitHub repositories across Microsoft and Azure orgs
Microsoft is active in a broad range of open source projects and communities

<table>
<thead>
<tr>
<th>Linux</th>
<th>Cloud Native</th>
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| • Linux Kernel  
  • Linux Integration Services  
  • IPE  
  • LISA testing framework  
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  • SONiC  
  • SMB3/CIFS & NFS  
  • Systemd  
  • Rysnc  
  • Garnet  
  • Confidential Containers | • Moby & Kubernetes  
  • Dapr & OAM  
  • Akri  
  • Helm & CNAB  
  • Cilium  
  • Istio  
  • KEDA  
  • Flatcar  
  • Inspektor Gadget  
  • Headlamp | • Spark & YARN  
  • PostgreSQL  
  • Pandas  
  • TensorFlow  
  • ONNX | • VS Code  
  • Terminal  
  • Git/Github  
  • Node.js  
  • Python  
  • Rust  
  • Go  
  • PHP  
  • Java (OpenJDK) | • TypeScript  
  • Webpack  
  • Babel  
  • Vue.js  
  • Bootstrap  
  • Svelte |
CentOS end-of-life (EOL) Overview

What is CentOS?
CentOS (Community Enterprise Operating System) is a free and open-source community supported operating system based on Red Hat Enterprise Linux (RHEL). CentOS is one of the most widely used Linux distributions.

What is the CentOS end-of-life (EOL)?

In September 2019 Red Hat announced its intent to sunset CentOS and replace it with CentOS Stream, a new, upstream platform for the CentOS community. CentOS 7 and 8 are the final releases of CentOS Linux. The end-of-life dates for CentOS 7 and 8 are:

- CentOS 8 – December 31st, 2021
- CentOS 7 – June 30th, 2024

What does this mean for customers running CentOS?

Customers running CentOS will have to migrate to a new operating system to continue receiving security updates, patches, and new features. After the EOL date, CentOS will no longer receive security updates, bug fixes, or other updates, which means that any vulnerabilities or issues that are discovered will not be patched. This can leave workloads open to security threats and other problems.
Migration considerations

Retaining compatibility with CentOS

Do you want to continue using a Linux distribution that is compatible with CentOS?

Community vs commercial distribution

Do you want to continue using a community supported (unpaid) distribution or move to a commercial (paid) distribution?

Migration path

Do you want to convert in place, redeploy to new VMs, or modernize with PaaS?
### Migration options for CentOS customers

<table>
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<th>On-Premises</th>
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<td>Lift and shift workload to VM in Azure and then convert to new Linux distro</td>
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<td>Redeploy workload to new VMs with new Linux distro</td>
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<td>Modernize in Azure with PaaS solutions</td>
</tr>
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</tbody>
</table>
Get started on Azure: https://aka.ms/almalinux

CentOS EOL guidance: https://aka.ms/centoseol
AlmaLinux’s history
[CentOS-announce] Release for CentOS Linux 8 and CentOS Streams

Karanbir Singh

kbsingh at centos.org

Tue Sep 24 16:38:36 UTC 2019

- Previous message: [CentOS-announce] CESA-2019:2729 Critical CentOS 7 firefox Security Update
- Next message: [CentOS-announce] CEBA-2019:2871 CentOS 7 tzdata BugFix Update
- Messages sorted by: [date] [thread] [subject] [author]

We would like to announce the general availability of CentOS Linux 8 and the new CentOS Stream, on all architectures.

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CentOS Linux 8

This is the first release for CentOS Linux 8 and is version marked as 8.0-1005, derived from sources published by Red Hat, delivered via git.centos.org

First, please read through the release notes at: http://wiki.centos.org/Manuals/ReleaseNotes/CentOSLinux8 – these notes contain important information about the release and details about some of the content inside the release from the CentOS QA team. These notes are updated constantly to include issues and incorporate feedback from the users and should be the first port of call for anyone looking to use CentOS Linux 8.

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CentOS Stream

When the CentOS Project announced it was joining forces with Red Hat in January 2014, we put an emphasis on how the new relationship would "(drive) forward development and adoption of next-generation open source红"
The future of the CentOS Project is CentOS Stream, and over the next year we'll be shifting focus from CentOS Linux, the rebuild of Red Hat Enterprise Linux (RHEL), to CentOS Stream, which tracks just ahead of a current RHEL release. CentOS Linux 8, as a rebuild of RHEL 8, will end at the end of 2021. CentOS Stream continues after that date, serving as the upstream (development) branch of Red Hat Enterprise Linux.

Meanwhile, we understand many of you are deeply invested in CentOS Linux 7, and we'll continue to produce that version through the remainder of the RHEL 7 life cycle.

CentOS Stream will also be the centerpiece of a major shift in collaboration among the CentOS Special Interest Groups (SIGs). This ensures SIGs are developing and testing against what becomes the next version of RHEL. This also
AlmaLinux is born!!

AlmaLinux Is Born!
Powerful And Free CentOS Alternative

Alma means “soul” in many Latin languages, including Spanish and Italian. The word comes from the Latin word almus, which means “nourishing, kind”.

A soulful community

No tech community is as soulful and as passionate as the Linux community. It is a caring, collaborative, nourishing community that turned the efforts of an individual into software that powers the world.

The story of Linux starts with the personal story of Linus Torvalds who, in 1991, announced that he was developing a free UNIX-like kernel for x86 machines – a kernel he called Linux. A kernel for the community.

Developers quickly saw the potential of a free, open-source UNIX kernel. Step by step, members of an incredibly passionate developer community grew Linux into a powerful, flexible kernel that underlies countless popular operating systems... from
Mar 2021 - Jun 2023
Supported Architectures

- x86_64
- aarch64
- ppc64le
- s390x
June ‘23: no more sources

For a more detailed explanation of these changes, please read Mike McGrath’s follow-on post at https://www.redhat.com/en/blog/red-hats-commitment-open-source-response...

More than two years ago, Red Hat introduced CentOS Stream as the focal point for collaboration around Red Hat Enterprise Linux (RHEL). CentOS Stream shortens the feedback window between Red Hat engineers and partners, customers, and communities while at the same time providing even greater visibility into the next innovations in RHEL. We’ve seen great success in the Special Interest Group (SIG) community to help integrate and bring new technologies together faster than ever.
Pre-CentOS Stream (2004 - 2019)

After June 2023

original by @carluwgeorge@fosstodon.org; adapted for AlmaLinux
Welcome new repositories for AlmaLinux OS: Testing and Synergy

Hello, Community! Since AlmaLinux OS has shifted its direction to RHEL compatibility, we can now provide additional content for our community. For that reason, two additional repositories have been added - Testing and Synergy. Today, we are announcing that both repositories are available for AlmaLinux OS 8 and AlmaLinux OS 9.

**Testing Repository**

As we mentioned last week, the Testing repository contains security updates that AlmaLinux OS is now able to release without waiting for the patches to be released upstream. As these packages require additional testing before being released, we invite the community to help test them and provide feedback.

RHEL compatibility = freedom for AlmaLinux
Patching critical flaws outside of upstream

AlmaLinux OS - CVE-2024-1086 and XZ

Update, April 3rd, 2024

The patches for CVE-2024-1086 are now available in production repos.

For AlmaLinux 8, you are looking for kernel 4.18.8-313.18.2.e18_9 or higher.

```
-host: [3] rpm --querystate kernel
Kernel: 4.18.8-313.18.2.e18_9.x86_64  [MOD]
```

For AlmaLinux 9, you are looking for kernel 5.14.8-362.24.2.e19_3 or higher.

```
-host: [3] rpm --querystate kernel
Kernel: 5.14.8-362.24.2.e19_3.x86_64  [MOD]
```

Thank you to everyone who tested these patches!

CVE-2024-1086 - call for testing

In January of this year, a kernel flaw was disclosed and named CVE-2024-1086. This flaw is trivially exploitable on most RHEL-equivalent systems. There are many proof-of-concept posts available now, including one from our infrastructure team lead, Jonathan Knight (Twitter: cve-2024-1086). In multi-user scenarios, this flaw is especially problematic.

RHEL compatibility = freedom for AlmaLinux

Renewing support for upstream deprecated hardware

- **aacraid** - Dell PERC2, 2/Si, 3/Si, 3/Di, Adaptec Advanced Raid Products, HP NetRAID-4M, IBM ServeRAID & ICP SCSI
- **be2iscsi** - Emulex OneConnectOpen-iSCSI for BladeEngine 2 and 3 adapters
- **hpsa** - HP Smart Array Controller
- **lpfc** - Emulex LightPulse Fibre Channel SCSI
- **megaraid_sas** - Broadcom MegaRAID SAS
- **mpt3sas** - LSI MPT Fusion SAS 3.0
- **mptsas** - Fusion MPT SAS Host
- **qla2xxx** - QLogic Fibre Channel HBA
- **qla4xxx** - QLogic iSCSI HBA

Provide feedback on this list:
https://almalinux.discourse.group/t/re-adding-support-for-older-hardware/3851/2
The Community
The first mirrors
AlmaLinux Systems: CPU architecture weekly checkins

- Other (gray)
- Aarch64 (dark blue)
- x86_64 (light blue)

Chart shows a steady increase in weekly checkins from January 2022 to April 2024.
fransschreuder • 20d ago
I work for a large project at CERN / ATLAS, where we use Alma 9 for everything now. So it is driver and software development, but also production.

FELIX, the readout system for both of them and basically the whole ATLAS detector

OtisSned • 21d ago
I'm running a self-hosted personal website used to host family photos, a couple of which are from the late 1800s. I have over 19k scanned slides and prints, and many documents from my dad's WW2 records, plus stuff from the shipyard that he and I used to work for. I also have my in-laws decades of slides, plus family friends of theirs (who belonged to the same church we did) and also more family photos from two cousins. This helps with doing family history in Ancestry.

I started this over 19 years ago, with NT4, Fedora 27, then CentOS 4, 5, 7. I use jAlbum to build the interface, using Apache for the web server.

I rebuilt the server with all 'new' hardware (Intel version 8xxx family from FleaBay) just last year.

abotelho-cbn • 21d ago
Thousands of VMs. A few dozen gateways/routers. Over a hundred hypervisor nodes.

Dizzybro • 20d ago
Slowly migrating everything from CentOS7 to Alma9.

Once done it will be roughly 200-300 machines
BART runs on AlmaLinux

5:44 PM · Mar 1, 2024 · 1,512 Views

Dr Owain Kenway
@owainkenway

Thanks to my amazing team and help from @IBM, we are now live - yes, we have @AlmaLinux 9.3 for #LinuxOne running on Vindicator:
Getting to AlmaLinux
Migrating to AlmaLinux

AlmaLinux Deploy
Getting to AlmaLinux: Migrating

- CentOS 8
- CentOS Stream 8, 9
- Oracle Linux 8, 9
- RHEL 8, 9
- Rocky Linux 8, 9
- Virtuozzo Linux (VZLinux) 8, 9

AlmaLinux Deploy

[github.com/AlmaLinux/almalinux-deploy](https://github.com/AlmaLinux/almalinux-deploy)
Migrating: AlmaLinux Deploy

$ curl -L -O https://lnx.rocks/almalinuxdeploy
$ sudo bash almalinux-deploy.sh
  <insert waiting>
$ sudo reboot
Upgrade WITHOUT migrating

Project ELevate
Two options

- CentOS 8
- CentOS Stream 8, 9
- Oracle Linux 8, 9
- RHEL 8, 9
- Rocky Linux 8, 9
- Virtuozzo Linux (VZLinux) 8, 9

- CentOS 6
- CentOS 7
- Between major versions

AlmaLinux Deploy
github.com/AlmaLinux/almalinux-deploy

Project ELevate
almalinux.org/elevate/
Upgrading: Project ELevate

CentOS Linux 6 → CentOS Linux 7

AlmaLinux

8 → 9

Diagram showing Upgrade paths from CentOS 6 to CentOS 7.
Upgrading: Project ELevate

1. Update your system and reboot
2. Install the `elevate-release` package
3. Install the package and meta data for the OS you want to end up on
4. Run the pre-upgrade check
   a. Fix any problems
   b. Known problems: [wiki.almalinux.org/elevate/ELevate-frequent-issues.html](wiki.almalinux.org/elevate/ELevate-frequent-issues.html)
5. Run the upgrade
6. Reboot

See a full demo: [youtube.com/watch?v=Vzl9QxG5mvo](https://youtube.com/watch?v=Vzl9QxG5mvo)

[wiki.almalinux.org/elevate/ELevate-quickstart-guide.html](wiki.almalinux.org/elevate/ELevate-quickstart-guide.html)
Upgrading: Project EL elevate

Most common question:

But will it really work?!
Upgrading: Project ELevate

Most common question:

But will it really work?! 

YES!

wiki.almalinux.org/elevate/ELevate-quickstart-guide.html
Welcome to the cPanel ELavate Project!

Read more from the Elevate website.

Goal

The cPanel ELavate Project provides a script to upgrade an existing cPanel & WHM CentOS 7 server installation to AlmaLinux 8 or Rocky Linux 8.

Disclaimer

We do not guarantee the functionality of software in this repository. You assume all risk for use of any software that you install from this repository. Installation of this software could cause significant functionality failures, even for experienced administrators.

That said, cPanel Technical Support is ready to help! Please contact cPanel Technical Support if you encounter problems.
Expanding ELevaluate support: CentOS 6 to CentOS 7 migrations

We're very excited to share that ELevaluate has been expanded to include upgrading in place from CentOS 6 to CentOS 7.

Awesome. For the couple of VM's we didn't get around to replace yet we will try this.

Awesome! Definitely let us know how it goes!

It works great! I upgraded the first Centos 6 server running DirectAdmin. It took some cleaning up afterwards but nothing unexpected.

Then I decided to try to upgrade it from Centos 7 to AlmaLinux 8 and that too worked great!

It might be not as great as a "clean" server but it is definitely a great option to have.
Upgrading: Project ELevate

- Used by major corporations to upgrade 100,000+ devices
- Consistently tested and improved by the greater community
- Easy to test and customize to meet your needs
Getting to AlmaLinux: Two options

- CentOS 8
- CentOS Stream 8, 9
- Oracle Linux 8, 9
- RHEL 8, 9
- Rocky Linux 8, 9
- Virtuozzo Linux (VZLinux) 8, 9

AlmaLinux Deploy
github.com/AlmaLinux/almalinux-deploy

- CentOS 6
- CentOS 7
- Between major versions

Project ELEvate
almalinux.org/elevate/

Get help!
chat.almalinux.org/almalinux/channels/migration
almalinux.discourse.group/
Questions?

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Claus Wieser
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