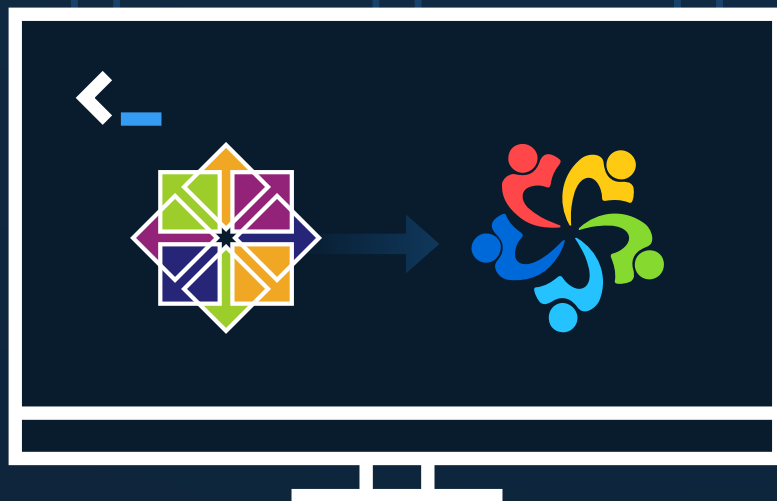




GUIDE

CentOS Migration Guide: A Seamless Shift to AlmaLinux



Introduction





With CentOS 7 nearing the end of its security support lifecycle and CentOS 8 already in its end-of-life phase, this guide explains how you can migrate your CentOS workloads to AlmaLinux – a forever-free, community-driven Linux distribution that's Application Binary Interface compatible with Red Hat Enterprise Linux (RHEL) and serves as a perfect replacement for CentOS.

However, there are many organizations who may find themselves needing to continue using CentOS 7 after the end-of-life date. Before jumping into the migration process, the following section in this guide explains how organizations can get extended support for CentOS 7 that provides ongoing vulnerability patches for years after it goes end of life.

Not Quite Ready to Migrate? Get Extended Support for CentOS 7

Buy yourself some additional years of security with services like TuxCare's Extended Lifecycle Support (ELS), enabling you to properly plan, test, and deploy a migration strategy to a more recent Linux distribution – at your own pace!

TuxCare's Extended Lifecycle Support (ELS) for CentOS 7

 Up to 5 years of extended security patching after end of life	 Expert Technical Support and Migration Guidance	 14-day SLA to patch all new High and Critical CVEs	 Two pricing levels that offer the exact amount of support you need
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CentOS 7 ELS **Early Access**

Did you know that there are numerous instances of critical and high-risk CentOS 7 vulnerabilities that your vendor hasn't patched?

Mitigate the Risk from Unpatched Vulnerabilities Now with Early Access

Get immediate patches for 70+ unfixed CentOS 7 vulnerabilities, including flaws in critical system packages, and ensure you continue to seamlessly receive security patches when the end-of-life date arrives.

Choose Your Level of ELS Coverage

ELS for CentOS 7 users only pay for the exact amount of coverage they need (and nothing they don't) with two pricing options:

CentOS 7 ELS **Standard**

Up to 5 years of extended security patching past EOL

Fixes for 70+ currently unpatched CVEs (CVSS 7+)

CentOS 7 ELS **Complete**

Get everything included in ELS Standard, plus:

14-day SLA security patches for all High and Critical CVEs

Expert Technical Support and Migration Guidance

✓ Direct access to Level 3 technical support experts

✓ Support for a comprehensive set of packages

✓ Migration advice and recommendations

✓ Guidance on the best CentOS alternatives

✓ Configuration assistance

✓ Feature and functionality insights

✓ Design and architecture review

✓ Upgrades, patch deployment and CVE risk evaluation

✓ Integration, performance support and scalability guidance

✓ Container-based deployment guidance

✓ Backup and disaster recovery assistance

✓ Logging and debugging

Now,
let's get to the migration instructions...





For Organizations Using CentOS 7

STAGE 1:

CentOS 7 to AlmaLinux 8

There are major differences between CentOS 7 and CentOS 8, and by implication also massive differences between CentOS 7 and AlmaLinux 8 – because both CentOS 8 and AlmaLinux 8 are based on RHEL 8.

But, thanks to the ELevate project from AlmaLinux, it's pretty simple to migrate from CentOS 7 to AlmaLinux 8 (before migrating to AlmaLinux 9 in Stage 2).

Here are the steps:

First, update your CentOS 7 instance to the latest version, followed by a reboot:

```
sudo yum update -y
sudo reboot
```

You then need to install the elevate-release package that contains the project repo:

```
sudo yum install -y
http://repo.almaLinux.org/elevate/elevate-release-latest-el7.noarch.rpm
```

Next, install the leapp packages and migration data for AlmaLinux:

```
sudo yum install -y leapp-upgrade leapp-data-almaLinux
```



Then, do a pre-upgrade check using this command:

```
sudo leapp preupgrade
```

The results will be posted in this file: – /var/log/leapp/leapp. Due to differences in deployed applications and specific system settings, it is common for the first pass to fail the check, and you'll get some recommended solutions.

There are common issues migrating from CentOS 7. You can address these common issues by running the following set of commands:

Module pata_acpi inhibits upgrade, run this command to fix it:

```
sudo rmmmod pata_acpi
```

Lack of root login access (can break post-upgrade remote system access). Run this command to enable it. It can be disabled again after upgrading.

```
echo PermitRootLogin yes | sudo tee -a /etc/ssh/sshd_config
```

Unsupported pam module, run this command to fix it:

```
sudo leapp answer --section  
remove_pam_pkcs11_module_check.confirm=True
```

Another common issue is timeout during package download, which can be fixed by simply retrying the command. Yum, used during the upgrade process, caches already downloaded packages, so your system will only retry the missing packages.

Your next step is to start the upgrade and trigger a reboot. Please wait a few moments if the operation appears to stall after deploying the updated packages. It will finish eventually.

```
sudo leapp upgrade
```

This is what you want to see after the tool runs successfully (with different package numbers):

```
Debug output written to /var/log/leapp/leapp-preupgrade.log

=====
                          REPORT
=====

A report has been generated at /var/log/leapp/leapp-report.json
A report has been generated at /var/log/leapp/leapp-report.txt

=====
                          END OF REPORT
=====

Answerfile has been generated at /var/log/leapp/answerfile
[root@centos8 ~]# |
```

```
sudo reboot
```

Once the reboot is executed, you'll see a new entry in GRUB: ELevate-Upgrade-Initramfs. Press Enter or allow the system to boot into it automatically and wait for the upgrade process to finish.

You'll then boot into AlmaLinux. After the reboot, you can verify that you're now running AlmaLinux 8:

```
cat /etc/redhat-release
```

You should see AlmaLinux alongside the current version number.



STAGE 2:

AlmaLinux 8 to AlmaLinux 9

Now that you've switched from CentOS 7 to AlmaLinux 8, you can easily upgrade to the latest version of AlmaLinux, which you'll do with ELevate.

Start by downloading the elevate-testing repo:

```
sudo curl
https://repo.almaLinux.org/elevate/testing/elevate-testing.repo -o
/etc/yum.repos.d/elevate-testing.repo
```

Next, import the ELevate GPG key:

```
sudo rpm --import https://repo.almaLinux.org/elevate/RPM-GPG-KEY-ELevate
```

Then, install the Leapp packages that enable you to upgrade from AlmaLinux 8 to AlmaLinux 9:

```
$ sudo yum install -y leapp-upgrade leapp-data-almaLinux
```

You should see confirmation that the packages were installed. Next, as with the previous stage, you need to first run a pre-upgrade check using the following command:

```
sudo leapp preupgrade
```

As before, you can view the results in `/var/log/leapp/leapp-report.txt`

Common problems you'll find are around SELinux and FirewallD Configuration AllowZoneDrifting.

You can fix these issue as follows:

To disable SELinux:

```
$ sudo vim /etc/sysconfig/selinux
##Change selinux mode to Disabled.
SELINUX=disabled
```

You then need to reboot:

```
sudo reboot
```

After the upgrade is complete, you can re-enable Selinux by resetting the option in this file to “enforcing” (or whatever configuration option you choose) and rebooting to allow for proper relabelling of all the files.

You may also need to set AllowZoneDrifting to **no**

```
$ sudo vim /etc/firewalld/firewalld.conf  
AllowZoneDrifting=no
```

Another blocker is that you need to be running the latest installed kernel version, so ensure that is the case and reboot into the latest version if you’re not yet doing that. This can happen in situations where you downloaded updates with yum/dnf and have not yet rebooted into the new kernel version. The ELevate tool will detect this situation and consider it a blocker.

It’s worth re-running the pre-upgrade command to check that you’re good to go.

This is the message that you want to see at the end of this process:

```
Debug output written to /var/log/leapp/leapp-preupgrade.log  
  
===== REPORT =====  
  
A report has been generated at /var/log/leapp/leapp-report.json  
A report has been generated at /var/log/leapp/leapp-report.txt  
  
===== END OF REPORT =====  
  
Answerfile has been generated at /var/log/leapp/answerfile  
[root@centos8 ~]# |
```



The text in green is the indication that all went well and the system is ready to upgrade. A message in red means that there are still some upgrade blockers that demand attention. As mentioned previously, you can find all of the information in the log files and it will usually include some instructions on how to solve each of those blockers.

You can then trigger the upgrade:

```
sudo leapp upgrade
```

After a period of time, you'll need to reboot your system, so:

```
sudo reboot
```

A new entry in GRUB called ELevate-Upgrade-Initramfs will appear and your system will automatically boot into it.

You can confirm that you're now running AlmaLinux 9 using the following command line:

```
$ cat /etc/os-release
```

And You're Done!

Follow the steps above and you've gained plenty of additional years of security support for your Linux-based environment that will enable you to keep running safely and securely until 2032 – and even longer if you opt to add TuxCare's Enterprise Support for AlmaLinux.

And if you're worried about being able to successfully complete all the necessary steps to migrate to **AlmaLinux**, **subscribing to TuxCare's Enterprise Support for AlmaLinux also gives you access to TuxCare Linux security experts who will help you through the entire process.**



For Organizations Using CentOS 8

STAGE 1:

CentOS 8 to AlmaLinux 8

Your first step is to convert your CentOS 8 system into an AlmaLinux 8 system using a conversion script. To start, check which version of CentOS 8 you're running:

```
$ cat /etc/redhat-release
```

If the reported OS version is lower than 8.5, you need to change the paths to repositories:

```
sed -i -r 's|^(mirrorlist.+)$|#\1|g;  
s|^#baseurl=http://mirror.centos.org/\$co
```

Then, apply pending updates to your CentOS 8 instance, followed by a reboot:

```
sudo yum update -y  
sudo reboot
```

Next, install the migration script `almalinux-deploy.sh`

```
curl -O https://raw.githubusercontent.com/AlmaLinux/almalinux-deploy/  
master/almalinux-deploy.sh
```



Then, run the migration script:

```
sudo bash almalinux-deploy.sh
```

This will take some time. You should see a confirmation screen with the following text:

```
Migration to AlmaLinux is completed
```

You might find that the script fails. The script run may fail with an error like:

```
Verify almalinux-release-latest.rpm package
```

```
=====
                          ERROR
=====
```

```
/root/.alma.X46iDx/almalinux-release-latest.rpm: digests
```

```
=====
                          SIGNATURES NOT OK
=====
```

If that's the case, you should first import the GPG key of the AlmaLinux repository and then run the script again:

```
sudo rpm --import
https://repo.almalinux.org/almalinux/RPM-GPG-KEY-AlmaLinux &&
sudo bash almalinux-deploy.sh
```

Your next step is to check that the conversion succeeded.

```
cat /etc/redhat-release
```

You should see:

```
AlmaLinux release 8.7 (Stone Smilodon)
```

Now, reboot:

```
sudo reboot
```

STAGE 2:

AlmaLinux 8 to AlmaLinux 9

Now that you've switched from CentOS 8 to AlmaLinux 8, you can easily upgrade to the latest version of AlmaLinux, which you'll do through ELevate.

Start by downloading the elevate-testing repo:

```
sudo curl
https://repo.almaLinux.org/elevate/testing/elevate-testing.repo -o
/etc/yum.repos.d/elevate-testing.repo
```

Next, import the ELevate GPG key:

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sudo rpm --import https://repo.almaLinux.org/elevate/RPM-GPG-KEY-ELevate
```

Then, install the Leapp packages that enable you to upgrade from AlmaLinux 8 to AlmaLinux 9:

```
$ sudo yum install -y leapp-upgrade leapp-data-almaLinux
```

You should see confirmation that the packages were installed. Next, as with the previous stage, you need to first run a pre-upgrade check using the following command:

```
sudo leapp preupgrade
```

As before, you can view the results in `/var/log/leapp/leapp-report.txt`

Common problems you'll find are around SELinux and Firewall Configuration `AllowZoneDrifting`.

You can fix these issue as follows:

To disable SELinux:

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$ sudo vim /etc/sysconfig/selinux
##Change selinux mode to Disabled.
SELINUX=disabled
```

You then need to reboot:

```
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```

After the upgrade is complete, you can re-enable Selinux by resetting the option in this file to "enforcing" (or whatever configuration option you choose) and rebooting to allow for proper relabelling of all the files.

You may also need to set `AllowZoneDrifting` to **no**

```
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```

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It's worth re-running the pre-upgrade command to check that you're good to go.

This is the message that you want to see at the end of this process:

```
Debug output written to /var/log/leapp/leapp-preupgrade.log
```

```
=====
                        REPORT
=====
```

```
A report has been generated at /var/log/leapp/leapp-report.json
```

```
A report has been generated at /var/log/leapp/leapp-report.txt
```

```
=====  
END OF REPORT  
=====
```

```
Answerfile has been generated at /var/log/leapp/answerfile  
[root@centos8 ~]# |
```

The text in green is the indication that all went well and the system is ready to upgrade. A message in red means that there are still some upgrade blockers that demand attention. As mentioned previously, you can find all of the information in the log files and it will usually include some instructions on how to solve each of those blockers.

You can then trigger the upgrade:

```
sudo leapp upgrade
```

After a period of time, you'll need to reboot your system, so:

```
sudo reboot
```

A new entry in GRUB called ELevate-Upgrade-Initramfs will appear and your system will automatically boot into it.

You can confirm that you're now running AlmaLinux 9 using the following command line:

```
$ cat /etc/os-release
```

That's It!

Your CentOS 8 workloads are now running AlmaLinux 9. With this decision to migrate, you can keep running your machines safely and securely until 2032 – and even longer if you opt to add TuxCare's Enterprise Support for AlmaLinux.



A Final Note on the Migration Process...

In a Linux distribution family that has been historically known to frown upon upgrades between versions, this type of upgrade process is something that system administrators and operations teams likely aren't familiar with.

For many years, the official "option" available when you wanted to upgrade to a more recent version of CentOS was to reinstall from scratch and deploy the workload anew.

The ELevate tool makes the process much less time consuming and much simpler to navigate, even for large fleets of servers.



We've mentioned throughout this guide that you can extend your AlmaLinux 9 security support even further with the addition of Enterprise Support for AlmaLinux from TuxCare - which offers a 16-year security support lifecycle compared to the 10 years of support that come standard with AlmaLinux 9.

Plus, the TuxCare team will help you along your migration journey!

So, what's included in Enterprise Support for AlmaLinux?





Enterprise Support for AlmaLinux

Minimize your vulnerability exposure while ensuring compliance and business continuity – so you can leverage this stable, reliable, community-driven Linux distribution for as long as you need.



Enjoy a stable and predictable computing environment with an industry-leading 16-year lifecycle length



Minimize your vulnerability window, maintain 100% uptime and compliance with automated and rebootless security patching



Run your systems on FIPS-certified cryptography and benefit from the latest security fixes that do not affect the validated code



Avoid costly upfront support package fees with TuxCare's simplified pay-as-you-go hourly support pricing

Build Your Enterprise Support



Enterprise Support for AlmaLinux from TuxCare



Essential Support

Get a TuxCare-vetted repository of AlmaLinux updates with guaranteed uptime, expedited break-and-fix support and up to 16 years of support coverage



Extended Security Updates

Ensure a stable environment for an extended period of up to 5 years with ongoing security updates and FIPS-compliant security patches for your AlmaLinux minor releases



Live Patching

Automatically apply the latest security patches for the kernel and critical userspace libraries (OpenSSL and glibc) as soon as they become available with zero downtime



Enhanced Support

Get all the help you need with an enterprise-grade personalized technical support covering a range of open-source software running on AlmaLinux



For more information on TuxCare's Enterprise Support Services for AlmaLinux, visit

www.tuxcare.com/alma-linux-enterprise-support

