

# Oracle Linux 7

## Release Notes for Oracle Linux 7.8



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# Preface



## **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

[Oracle Linux 7: Release Notes for Oracle Linux 7.8](#) provides a summary of the new features and known issues in Oracle Linux 7.8. This document may be updated after it is released.

## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <https://www.oracle.com/corporate/accessibility/>.

## Access to Oracle Support for Accessibility

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <https://www.oracle.com/corporate/accessibility/learning-support.html#support-tab>.

## Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.



# 1

## System Requirements and Limitations



### WARNING:

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

You can install Oracle Linux 7.8 on x86\_64 systems that have up to 2048 logical CPUs and 64 TB of memory. The theoretical upper limit is 5120 logical CPUs and 64 TB of memory; however, Oracle has not tested this configuration. A minimum of 2 logical CPUs and 1 GB of memory per logical CPU is recommended. Although the minimum disk space that is required for installation is 1GB, a minimum of 5 GB is recommended.

## File System, Storage, and Address Space Limitations

The following table describes the maximum file size and maximum file system size for the `btrfs`, `ext4`, and `xfs` file systems in Oracle Linux 7.8. File system limitations are affected by kernel versions and features, as well as the architecture of the system on which Oracle Linux is installed. The values that are depicted here are estimates that are based on known variables that might affect the maximum theoretical value that can be achieved. Note that the theoretical values might be higher than those depicted here, and the actual achievable values might be lower than these values, depending on the hardware and the kernel version that is used.

File System Type	Maximum File Size	Maximum File System Size
<code>btrfs</code>	8 EiB	8 EiB
<code>ext4</code>	16 TiB	1 EiB
<code>xfs</code>	8 EiB	8 EiB

The limits for the `ext4` file system described here are higher than recommended limits and might prove unstable. If you are working with systems on which you intend to work towards using higher file system sizes or file sizes, it is recommended that you use either the `Btrfs` or `XFS` file system.

The maximum supported size for a bootable logical unit number (LUN) is 50 TB. GPT and UEFI support are required for LUNs that are larger than 2 TB.

The maximum size of the address space that is available to each process is 128 TB.

# 2

## Supported Architectures



### **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

The Oracle Linux 7.8 release is supported on the following platforms:

- Intel 64-bit (x86\_64)
- AMD 64-bit (x86\_64)
- 64-bit Arm (aarch64)

The Arm platform is only available with supported Unbreakable Enterprise Kernel (UEK) releases, as documented in these release notes. For more details, see [Release-Specific Information for Oracle Linux 7.8 \(aarch64\)](#).

# 3

## Shipped Kernels



### **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

Oracle Linux 7.8 for the x86\_64 platform ships with the following kernel packages:

**kernel-3.10.0-1127.el7**

Red Hat Compatible Kernel (RHCK).

**kernel-uek-4.14.35-1902.300.11.el7uek**

Unbreakable Enterprise Kernel Release 5 Update 3 (UEK R5U3), which is the default kernel.

Oracle Linux 7.8 is tested as a bundle, as shipped on the installation media image. When installed from the installation media image, the minimum kernel version that is supported is the kernel that is included in the image. Downgrading kernel packages is not supported, unless otherwise recommended by Oracle Support.



### **Note:**

Although the Unbreakable Enterprise Kernel Release 6 (UEK R6) is not included on the installation media image, you can install it from the Oracle Linux yum server or the Unbreakable Linux Network (ULN). For more information about UEK R6, see [Unbreakable Enterprise Kernel Release 6: Release Notes \(5.4.17-2011\)](#).

Previous UEK releases, such as UEK R4, can also be installed from the Oracle Linux yum server or ULN.

The kernel source code for the shipped kernel is available after the initial release through a public git source code repository at <https://github.com/oracle/linux-uek>.

# 4

## New Features and Changes

### **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

The following features and changes are included in Oracle Linux 7.8. These features generally apply to the x86\_64 and Arm (aarch64) platforms. For information about features and changes that apply specifically to the Arm platform, see [Release-Specific Information for Oracle Linux 7.8 \(aarch64\)](#).

For details of the new features and changes in the initial release of Oracle Linux 7, see [Oracle Linux 7: Release Notes for Oracle Linux 7](#).

## Important Installation Information for Oracle Linux 7.8

Before installing Oracle Linux 7.8 on the x86\_64 platform, review the following important information:

### **Important:**

Any system that is installed by using any Oracle Linux 7.8 ISO that is subsequently registered with the Unbreakable Linux Network (ULN), is automatically subscribed to the `ol7_x86_64_latest` and `ol7_x86_64_UEKR5` channels and is configured to download the latest Unbreakable Enterprise Kernel Release 5 (UEK R5) release upon the next system update. When you run `yum update` after registering with ULN initially, the system is upgraded to the Oracle Linux 7.8 release and the default kernel is automatically changed to UEK R5. If you prefer to continue to use an alternate kernel, such as UEK R4, you must manually change the subscriptions for the system in ULN before performing the system update.

Systems that are not registered with ULN retain any existing yum configuration and continue to use the kernel that is installed with Oracle Linux 7.8. If you are not registered with ULN and want to upgrade your system to use UEK R5, you must enable the `ol7_UEKR5` repository in your yum configuration.

## BTRFS Depreciated in RHCK

Starting with Oracle Linux 7.4, the BTRFS file system type is deprecated in RHCK. Note that BTRFS is fully supported with UEK R4 and later UEK releases.

## rsyslog Improvement

An improvement has been made to the `rsyslog` service in Oracle Linux 7.8. A new option has been added for managing letter-case preservation by using the `FROMHOST` property for the `imudp` and `imtcp` modules. Note that you must explicitly set the `preserve-case` value to `on` to enable handling of the `FROMHOST` property in a case-sensitive manner. To avoid breaking any existing configurations, the default `preserve-case` value is set to `on` for the `imtcp` module and `off` for the `imudp` module.

## Pacemaker Default Settings

In Oracle Linux 7.8, the Pacemaker `concurrent-fencing` cluster property defaults to `true`. Also, Pacemaker now executes fencing simultaneously for multiple nodes that use different configured fence devices that require fencing at the same time. Previously, this type of fencing was serialized. Note that this enhancement speeds up recovery in a large cluster where multiple nodes are fenced.

## Security

The following security features, bug fixes, and enhancements are included in this release.

### SCAP Security Guide Improvements

In this update, the `scap-security-guide` packages have been updated to version 0.1.46. Also, the Protection Profile for the General Purpose Operating Systems (OSPP) profile with the `ospp` ID in the `scap-security-guide` packages is updated to the OSPP 4.2.1 baseline.

Another change in this update is the introduction of the NCP (NIST National Checklist Program Security Guide) profile with the `ncp` ID. The NCP profile conforms to OSPP 4.2.1 and implements configuration requirements for additional policies; in particular, CNSSI 1253, NIST 800-171, NIST 800-53, USGCB, and OS SRG.

Note that the `ospp42` ID has been removed. Administrators are advised to switch systems that are currently using the `ospp42` profile to `ospp`, which is a valid ID.

This update also includes the following other notable features and enhancements for the SCAP Security Guide:

- **SCAP Security Guide supports ACSC Essential Eight**

The `scap-security-guide` packages now provide the Australian Cyber Security Centre (ACSC) Essential Eight compliance profile. You can also now use the OpenSCAP suite to check security compliance and remediation by using this specification of minimum security controls, as defined by ACSC.

- **SCAP Security Guide correctly disables services**

The SCAP Security Guide (SSG) profiles now correctly disable and mask services that should not be started, which ensures that disabled services are not started inadvertently as a dependency of another service. Previously, SSG profiles only disabled the service; as a result, services that were disabled by an SSG profile could not be started unless you first unmasked them.

- **Support for scanning Oracle Linux 8 systems from Oracle Linux 7**

In this update, the `scap-security-guide` package includes SCAP content and Ansible playbooks for Oracle Linux 8, which provides capability for scanning Oracle Linux 8 systems from the Oracle Linux 7 environment.

## SELinux Improvements

The following SELinux features and changes are introduced in this release:

- **selinux-policy packages updated to enable tomcat\_t domain access to redis\_port\_t labeled ports**

New in Oracle Linux 7.8, the `selinux-policy` packages now enable the `tomcat_t` domain to connect to ports that are labeled `redis_port_t` when the `tomcat_can_network_connect_db` SELinux boolean is enabled. This boolean provides `tomcat_t` with access to several databases.

- **SELinux policy updated to enable sysadm\_u users to log in to graphical sessions**

In this update, the SELinux policy now allows `sysadm_u` users login access to graphical sessions, while still conforming to DISA STIG requirements. In addition, enabling the `xdm_sysadm_login` boolean allows the `sysadm_u` user to successfully log in to an X Window System session from the GNOME Display Manager (GDM).

## Technology Preview

For RHCK, the following features are currently under technology preview.



### Note:

Features that are currently under technology preview in UEK R5 are described in the release notes for the UEK R5 release that you are running, which is part of the [Unbreakable Enterprise Kernel documentation](#) library.

- **Systemd:** Importd features for container image imports and exports.
- **File Systems:**
  - Block and object storage layouts for parallel NFS (pNFS).
  - DAX (Direct Access) for direct persistent memory mapping from an application. This feature is under technical preview for the ext4 and XFS file systems.
  - OverlayFS remains in technical preview.
- **Kernel:**
  - Extended Berkeley Packet Filter tool (eBPF) system call for tracing.
  - Heterogeneous memory management (HMM).
  - `kexec` and `kexec` fast reboot system calls for loading and booting into another kernel from the currently running kernel.
  - No-IOMMU mode virtual I/O feature.
- **Networking:**
  - Cisco VIC InfiniBand kernel driver, which provides similar functionality to RDMA on proprietary Cisco architectures.

- Single-Root I/O virtualization (SR-IOV) in the `qlenic` driver.
- Cisco proprietary User Space Network Interface Controller in UCM servers provided in the `libusnic_verbs` driver.
- The `flower` classifier with off-loading support.
- Trusted Network Connect included.
- **Storage:**
  - Multi-queue I/O scheduling for SCSI (`scsi-mq`). This functionality is disabled by default.
  - NVMe over Fibre Channel (NVMe/FC) transport type available in Qlogic adapters using the `qla2xxx` driver.
  - Plug-in for the `libStorageMgmt` API used for storage array management. The `libStorageMgmt` API is now supported, but the plug-in is under technology preview.

## Compatibility

Oracle Linux maintains user-space compatibility with Red Hat Enterprise Linux (RHEL), independent of the kernel version that underlies the operating system. Existing applications in userspace continue to run unmodified on Unbreakable Enterprise Kernel Release 5 (UEK R5) and no re-certifications are needed for RHEL certified applications.

To minimize impact on interoperability during releases, the Oracle Linux team works closely with third-party vendors whose hardware and software have dependencies on kernel modules. The kernel ABI for UEK R5 will remain unchanged in all subsequent updates to the initial release. UEK R5 contains changes to the kernel ABI relative to UEK R4 that require recompilation of third-party kernel modules on the system. Before installing UEK R5, verify its support status with your application vendor.

# 5

## Known Issues



### **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

This chapter describes known issues in Oracle Linux 7.8. Some issues may apply to both the x86\_64 and Arm (aarch64) platforms. For known issues that impact the Arm platform only, see [Known Issues \(aarch64\)](#).

For any additional issues that are specific to the UEK kernel you are using, refer to the release notes for your UEK release in the [Unbreakable Enterprise Kernel documentation](#) library.

## Installation, Upgrade, and Boot Issues

The following issues might be encountered during an Oracle Linux 7.8 installation or upgrade.

### Upgrade from ULN fails if the openscap-containers package is installed

Upgrading from Oracle Linux 7.7 to Oracle Linux 7.8 by installing packages from ULN fails if the `openscap-containers` package is already installed on the system that you are upgrading.

You can prevent this issue from occurring by removing the `openscap-containers` package prior to upgrading to Oracle Linux 7.8:

```
sudo yum -y remove openscap-containers
```

(Bug ID 30686371)

### Graphical installer allows users to edit kickstart settings



### **Note:**

The following issue applies to both x86\_64 and 64-bit Arm platforms.

When performing a graphical installation, where some installation options are already set by using a kickstart configuration file, it is still possible to modify these settings by clicking the various fields during the installation and then editing the predefined content. These types of edits during the installation process require you to intentionally attempt to modify the setting, which effectively enables an interactive installation, where options that are set in the kickstart configuration are not secured by any policy.



Note that this type of change is not possible when performing a text installation. During a text installation, you can only modify fields that have not already been defined in the kickstart configuration file.

(Bug ID 28642357)

## Graphical installer does not produce error when unacceptable Kdump value is entered

A minor upstream usability error applies to the graphical installer when configuring Kdump settings. In the case where you attempt to configure a manual kdump memory reservation, and you set the memory reservation value to an unacceptable value, the installer allows you to click `Done` and return to the `Installation Summary` screen without producing a warning or error message.

When you select an unacceptable value, the installer resets the value to the last known acceptable value that was entered or to the default minimum value of 512 MB. Note that this information is not displayed in the `Installation Summary` screen. Because an incorrect value cannot be stored for this parameter, the installation succeeds even when incorrect information is entered.

This issue does not occur with the text-based installer, which returns an error if you enter an unacceptable value and then prevents you from continuing until an acceptable value is entered.

(Bug IDs 31133351, 31182708)

## Graphical installer does not display the reserved memory that is manually set for Kdump

A minor usability error applies to the graphical installer when configuring Kdump settings. If you manually change the default memory size that is reserved for Kdump, the new setting is not displayed when the screen is refreshed. Instead, only the values for the total system memory and usable system memory are displayed. Consequently, the limits for the parameter "Memory to be reserved (Mb)" become unknown for future Kdump configuration.

### Note:

The default settings for Kdump memory reservation of `auto` is adequate as the kernel will determine what size to use when it boots

(Bug IDs 31133287 and 31182699)

## FCoE boot fails on HPE servers with HPE FlexFabric adapters

This issue is caused by a known limitation that the `bnx2x` and `bnx2fc` drivers have with the Option Card Black Box - Active Health (OCBB) feature when the input-output memory management unit (IOMMU) is enabled. The issue occurs because the network adapter firmware attempts to access a memory area that is not assigned network devices when bringing the interface up/down, or when loading/unloading the driver. When this issue occurs, you must reboot the system.

As a workaround, you must specify `intel_iommu=off` in the kernel boot parameters.

(Bug ID 30102871)

## Installation on an iSCSI disk

When installing on an iSCSI disk, you must add `rd.iscsi.ibft=1` to the boot command line and then specify at least one MBR or GPT-formatted disk as an installation target. Otherwise, the installation fails with the the following error message: No valid boot loader target device found.



### Note:

Any prior instruction to use the `ip=ibft` is no longer valid, as this option is now fully deprecated.

(Bug ID 22076589 and 30155659)

## Information about installation on an HPE 3PAR TPVV

If you have not applied a Thin Persistence license to an HPE 3PAR storage array, the installation fails to create a file system on a thin provisioned virtual volume (TPVV). This license is required to support the low-level SCSI UNMAP command for storage reclamation. If you do not have a suitable license, the workaround is to use a fully provisioned virtual volume (FPVV) instead of a TPVV.

(Bug ID 22140852)

## Installation fails on Aura7 NVMe device

Installation fails if the target device is an Aura7 NVMe add-in card with two block devices. Although the card has two independent NVMe controllers and devices, they are assigned identical WWIDs. The multipath device mapper maps the two block devices to the same WWID, resulting in a bogus multipath configuration, which prevents installation.

To work around this issue, disable multipath for the installation at boot time by using the installer boot argument `nompath`. After the installation completes, blacklist the NVMe block devices for the multipath configuration on the system by editing the `/etc/multipath.conf` file. Or, you can disable device mapper multipath altogether. See [Oracle Linux 7: Administrator's Guide](#) for more information about configuring multipath.

(Bug ID 27638939)

## Upgrade fails if open files limit is too low and rpm-plugin-systemd-inhibit is installed



### Note:

The following issue applies to both `x86_64` and 64-bit Arm platforms.

An upgrade from Oracle Linux 7.6 can fail if the log-in session open files limit is set too low and the system that is being upgraded includes multiple packages from many channels or repositories. This issue can be triggered if the `rpm-plugin-systemd-inhibit` package is installed and the session is configured for a maximum open file limit that is lower than 4096. The issue typically results in the `yum` command failing to update and produces error messages similar to the following:

```
Verifying : glib2-static-2.56.1-1.el7.i686
glib2-static-2.56.1-1.el7.i686 was supposed to be installed but is not!
```

To resolve this issue, set the open file limit to 4096 before running the `yum update` command, for example:

```
sudo ulimit -n 4096
sudo yum update -y
```

(Bug ID 28720235)

## 32-bit RDMA packages are installed when upgrading a system that has `rdma-core` installed

For upgrades prior to Oracle Linux 7.4, where the `rdma-core.noarch` package is installed, 32-bit versions of the packages, as well as many dependencies are also installed unnecessarily. This problem occurs because the original version of the package is obsoleted. Thus, during upgrade, the package is replaced with both the `rdma-core.i686` and `rdma-core.x86_64` versions of the package, along with any dependencies for those packages.

To work around the issue, run the `yum update` command with the `--exclude=*.i686` option, for example:

```
sudo yum update --exclude=*.i686
```

(Bug ID 28217831)

## Package Conflict: PackageKit.i686 and PackageKit.x86\_64

The `PackageKit.i686` package in the `ol7_x86_64_optional_latest` ULN channel conflicts with the `PackageKit.x86_64` package in the `ol7_x86_64_u6_base` channel. Attempting to install both packages results in a transaction check error similar to the following:

```
Transaction check error:
  file /usr/lib/python2.7/site-packages/packagekit/__init__.pyc from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/__init__.pyo from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/backend.pyc from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/backend.pyo from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/enums.pyc from install of
PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/enums.pyo from install of
PackageKit-version.el7.i686 conflicts with file from package
```

```

PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/filter.pyc from install of
PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/filter.pyo from install of
PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/misc.pyc from install of
PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/misc.pyo from install of
PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/package.pyc from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/package.pyo from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/progress.pyc from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64
  file /usr/lib/python2.7/site-packages/packagekit/progress.pyo from install
of PackageKit-version.el7.i686 conflicts with file from package
PackageKit-version.el7.x86_64

```

You may only install one of these packages on the same system at the same time. To avoid this conflict, exclude the `PackageKit.i686` package in your yum configuration. For more information about how to exclude packages during an installation, see [Oracle Linux: Unbreakable Linux Network User's Guide for Oracle Linux 6 and Oracle Linux 7](#).

(Bug ID 24963661)

## Database installation and operation fails if RemoveIPC=yes is configured for systemd

If the `RemoveIPC=yes` setting is configured for systemd, interprocess communication (IPC) is terminated for a non-system user's processes when that user logs out. This setting, which is intended for use on laptop systems, can cause software problems on servers. For example, if the user is a database software owner such as `oracle` for Oracle Database, this configuration can cause a database installation to fail or database services to crash.

By default, Oracle Linux 7.8 configures `RemoveIPC=no` in the `/etc/systemd/logind.conf` file to prevent systemd from terminating IPC. However, if you have touched this file before updating your system to Oracle Linux 7.8, the update installs the new version of the file as `/etc/systemd/logind.conf.rpmnew` and does not set `RemoveIPC=no` in the `/etc/systemd/logind.conf` file. To avoid database crashes, set `RemoveIPC=no` in the `/etc/systemd/logind.conf` file and then run the `systemctl reboot` command to reboot the system.

(Bug ID 22224874)

# Automatic Bug Reporting Tool

**Note:**

The following information pertains to both x86\_64 and 64-bit Arm platforms.

The automated reporting daemons and features provided by the Red Hat Automatic Bug Reporting Tool (ABRT) are not supported with Oracle Linux

ABRT packages and associated files, such as `libreport`, are included in the distribution to satisfy package dependencies and can be used to generate local bug reports but the features to automatically upload these reports are not supported. For technical assistance, contact Oracle Support by using the My Oracle Support portal or by telephone.

## File Systems Issues

The following file systems issues are encountered when running Oracle Linux 7.8.

### XFS: No support for reflink feature in RHCK

If an XFS file system is created with support for the `reflink` feature with the UEK R5 kernel, you cannot mount the XFS file system with the RHCK kernel. The file system can only be mounted as read-only.

(Bug ID 30119906)

### XFS: No support for real-time devices in RHCK

If an XFS file system is created with support for `real-time` devices with the UEK R5 kernel, you cannot mount the XFS file system with the RHCK kernel.

(Bug ID 30115269)

## grubby fatal error during kernel upgrade when /boot is on a BTRFS subvolume

**Note:**

The following issue applies to both x86\_64 and 64-bit Arm platforms.

If `/boot` is hosted on a Btrfs subvolume, GRUB 2 is unable to correctly process the `initramfs` and `vmlinuz` path names. This problem occurs when you update or install a new kernel and then `grubby` attempts to update the GRUB 2 configuration. In the case where you are running a fresh installation of Oracle Linux 7.8, and you upgrade the RHCK or UEK kernel, the following error is displayed:

```
grubby fatal error: unable to find a suitable template
```

After the kernel update, when the system is rebooted, it boots the old kernel.

The workaround for this problem is to use `grub2-mkconfig` to regenerate the `/etc/grub2/grub.cfg` file, or `/etc/grub2-efi.cfg` file on a UEFI booted system, immediately after the kernel has been installed or upgraded, for example:

```
sudo grub2-mkconfig -o /boot/grub2/grub.cfg
```

Obtain a listing of the kernel menu entries in the generated configuration as follows:

```
grep -P "submenu|^menuentry" /boot/grub2/grub.cfg | cut -d '"' -f2
```

From the listing, select the kernel entry that you want to run as the default kernel and set this entry as the default by using the following command:

```
sudo grub2-set-default "menu entry title"
```

In the previous command, *menu entry title* is the title of the kernel entry that you identified in the listing.

You can use the `grub2-editenv list` command to check that the `saved_entry` has been updated with the selected kernel menu title.

Reboot the system and use `uname -a` to check that the correct kernel is now running.

(Bug ID 22750169)

## Hebrew LaTeX fonts



### Note:

The following information applies to both x86\_64 and 64-bit Arm platforms.

Installing the `tex-fonts-hebrew` package fails unless you first install all of the `texlive*` packages.

(Bug ID 19059949)

## Kdump might fail on some AMD hardware

Kdump might fail on some AMD hardware that is running the current Oracle Linux release. Impacted hardware includes the AMD EPYC CPUs (codename Naples, Rome, and newer) servers.

To work around this issue, modify the `/etc/sysconfig/kdump` configuration file, remove the `"iommu=off"` command-line option from `KDUMP_COMMANDLINE_APPEND`, then restart the `kdump` service for the changes to take effect.

(Bug ID 31127379)

## InfiniBand Issues

The following are issues that you might encounter when using InfiniBand devices.

## Kdump might fail due to an incorrect InfiniBand Adapter M3 Firmware version

Kdump might fail on Oracle Linux 7.8 if the Oracle Dual Port QDR InfiniBand Adapter M3 Firmware version 2.31.5350 is installed.

To prevent this issue from occurring, update the Oracle Dual Port QDR InfiniBand Adapter M3 Firmware version to at least 2.31.5350.

(Bug ID 26351183)

## Disabling an InfiniBand CA port generates warnings

You might see the following warning messages if you use the `ibportstate disable` command to disable an InfiniBand CA or router port:

```
ibwarn: [2696] _do_madrpc: recv failed: Connection timed out
ibwarn: [2696] mad_rpc: _do_madrpc failed; dport (Lid 38)
ibportstate: iberror: failed: smp set portinfo failed
```

You can safely ignore these warnings.

(Bug ID 16248314)

## Snapshots of KVM guests that use UEFI fail and are unsupported



### Note:

The following issue applies to both x86\_64 and 64-bit Arm platforms.

You cannot create snapshots of KVM guests if they use UEFI. In older versions of QEMU and libvirt, the tools might allow you to create the snapshot without an error or warning, but the snapshot could be corrupted. More recent versions of these tools prevent snapshot creation by producing an error similar to the following:

```
virsh # snapshot-create-as OL7-seboot
```

```
error: Operation not supported: internal snapshots of a VM with pflash based
firmware are not supported
```

(Bug ID 26826800)

## KVM guests with LSI MegaRAID SAS ISCSI controller limited to 7 virtual disks

An Oracle Linux 7.8 KVM guest that is using the LSI MegaRAID SAS ISCSI controller is limited to 7 virtual disks. Although KVM guests can have up to 8 ISCSI virtual disks, the LSI

MegaRAID SAS controller uses the first slot for the iSCSI Initiator, leaving just the 7 slots remaining for virtual disks.

The workaround for this issue is to use the `megasas` controller instead of the `lsi` controller when creating iSCSI virtual disks. For example, change `-device lsi` to `-device megasas`, as shown in following examples:

```
sudo /usr/bin/qemu-system-x86_64 -machine accel=kvm -m 8192 -smp 8 \
-drive file=/path/OracleLinux-7.6-x86_64.qcow2,format=qcow2,if=none,id=disk \
-device ide-hd,bus=ide.0,unit=0,drive=disk,bootindex=0 -device lsi,id=lsi0 \
-drive file=/path/disk1.img,format=raw,if=none,id=drive_image1 \
-device scsi-hd,id=image1,drive=drive_image1,bus=lsi0.0 \
...

sudo /usr/bin/qemu-system-x86_64 -machine accel=kvm -m 8192 -smp 8 \
-drive file=/path/OracleLinux-7.6-x86_64.qcow2,format=qcow2,if=none,id=disk \
-device ide-hd,bus=ide.0,unit=0,drive=disk,bootindex=0 -device megasas,id=lsi0 \
-drive file=/path/disk1.img,format=raw,if=none,id=drive_image1 \
-device scsi-hd,id=image1,drive=drive_image1,bus=lsi0.0 \
...
```

(Bug 27681238)

## Uninstalling libpcap can result in the removal of a large number of libvirt packages



### Note:

The following issue applies to both x86\_64 and 64-bit Arm platforms.

The `libpcap` package is updated to enable functionality for future technologies. If you install this package and then attempt to uninstall it, a large number of `libvirt` packages might also be uninstalled due to dependency relationships. The `libvirt` package has a dependency on the `libvirt-daemon-driver-nwfilter` package and this package has a dependency on `libpcap`. Removing the `libpcap` package removes the entire `libvirt` family of packages.

(Bug ID 28582266)

## Unable to create Oracle Linux 7 LXC containers on NFS



### Note:

The following issue applies to both x86\_64 and 64-bit Arm platforms.

Creating Oracle Linux 7 containers fails when the root file system (`/container`) is hosted on an NFS share. This problem occurs because the `iputils` package in Oracle Linux 7 is built to use the Linux file-extended attributes, `[xattr(7)] security capabilities(7)`. Because NFS does not support these file capabilities, the `iputils` package might not be installed into an



NFS files system. For example, when attempting to create an Oracle Linux 7 container, the installation fails while installing the `iputils` package, producing the following error:

```
Error unpacking rpm package iputils-20121221-7.el7.x86_64
error: unpacking of archive failed on file /usr/bin/ping: cpio: cap_set_file
error: iputils-20121221-7.el7.x86_64: install failed
```

Similar issues are seen when attempting to install the `initscripts` and `systemd` packages while creating an Oracle Linux 7 container.

This issue occurs on both NFSv3 and NFSv4. Note that Oracle Linux 6 containers are not affected.

(Bug ID 25024258)

## Support for Oracle Linux 7 guests on Oracle VM and Xen

Oracle Linux 7 guests are supported for both hardware virtualization (HVM) and hardware virtualization, with paravirtual drivers (PVHVM) on Oracle VM Release 3. Oracle Linux 7 guests in a paravirtualized domain (PVM) on Oracle VM or other Xen-based hypervisors are not supported.

Oracle Linux 7 guests of any type are not supported on Oracle VM Release 2.

(Bug IDs 18712168, 18667813, 18266964)

## Network Issues

The following issues are related to network features and configuration.

### Geneve network driver support not available in UEK releases prior to UEK R5

The `ip` and `iproute` commands that are included in Oracle Linux 7.8 provide support for Geneve-capable devices. The module for this driver is included with the RHCK, but it is not included in UEK R5.



#### Note:

The commands that you use to set, add, or view Geneve devices are only functional when used with RHCK or UEK R5.

(Bug ID 24652835)

### NetworkManager fails to respond to IPv6 addresses on low priority networks with DHCP on UEK R4

When running UEK R4 on Oracle Linux 7.8, `NetworkManager` fails to send a response to low priority networks with DHCP on UEK R4. Networks with a higher priority (link-local, IPv6 `fe80::/64` routes) take priority over lower priority networks. This behavior might result in the

DHCPv6 server failing to send a response to a DHCP client on a lower priority network, even if the network has another output device.

The issue is not encountered if you are running UEK R5, which is the default kernel that is shipped with Oracle Linux 7.8.

(Bug ID 27714775)

## Network connection icon reports incorrect state for interfaces

The network connection icon might report that an active network interface is disconnected. This behavior is seen for the `root` user but not for other users. Command-line utilities such as `ip link` and `ifconfig` report the correct state.

(Bug ID 19060089)

## Power button defaults to ACPI Suspend

By default, Oracle Linux 7.8 in graphical (GUI) console mode treats the hardware power button as equivalent to the ACPI "Sleep" button, which puts the system into low-power sleep mode. This behavior is specific to GNOME desktop environment.

In previous Oracle Linux releases, the hardware power button initiated a system shutdown. To make Oracle Linux 7.8 behave the same way, create a file named `/etc/dconf/db/local.d/01-shutdown-button` with the following content:

```
[org/gnome/settings-daemon/plugins/power]
button-power='shutdown'
```

Then, run the following command:

```
sudo dconf update
```

You must log out of the desktop environment and then log back in for the new setting to take effect. (Bug ID 25597898)

## sosreport command issues warnings in Oracle Linux 7.8

Running the `sosreport` command in this release issues warnings similar to the following:

```
[plugin:networking] skipped command 'ip -s macsec show': required kernel
modules or services not present (kmods=[macsec] services=[]). Use
'--allow-system-changes' to enable collection.
[plugin:networking] skipped command 'ss -peaconmi': required kernel modules or
services not present
(kmods=[tcp_diag,udp_diag,inet_diag,unix_diag,netlink_diag,af_packet_diag]
services=[]). Use '--allow-system-changes' to enable collection.
```

These warnings are expected and are due to a change in the `sos` package version in Oracle Linux 7.8, which now includes the `--allow-system-changes` option. The warning is advising you to specify this option whenever you run the `sosreport` command to ensure that all data is collected correctly and that no system information is omitted from the resulting `sosreport`.

**Note:**

When the `--allow-system-changes` option is specified, it runs all subcommands, even those subcommands that are capable of changing the system, for example, load kernel modules, etc.

(Bug ID 30650012)

## Unable to customize guest name during installation with Virtual Machine Manager

**Note:**

The following issue applies both x86\_64 and 64-bit platforms. Note that on the x86\_64 platform, this issue only occurs when UEFI firmware is selected for the guest. BIOS-based installations are unaffected.

During an installation with `virt-manager`, if you select a customized configuration and then edit the `Name` field to customize the virtual machine (VM) name, an error occurs when you attempt to apply the changes.

The error is similar to the following:

```
Error apply changes: 'NoneType' object has no attribute 'rfind'
```

```
Traceback (most recent call last):
```

```
File "/usr/share/virt-manager/virtManager/details.py", line 1887, in
config_apply
```

```
    ret = self.config_overview_apply()
```

```
File "/usr/share/virt-manager/virtManager/details.py", line 1979, in
config_overview_apply
```

```
    self.vm.rename_domain(self.widget("overview-name").get_text())
```

```
File "/usr/share/virt-manager/virtManager/domain.py", line 596, in
rename_domain
```

```
    new_nvram, old_nvram = self._copy_nvram_file(new_name)
```

```
File "/usr/share/virt-manager/virtManager/domain.py", line 571, in
_copy_nvram_file
```

```
    nvram_dir = os.path.dirname(old_nvram.path)
```

```
File "/usr/lib64/python2.7/posixpath.py", line 129, in dirname
    i = p.rfind('/') + 1
```

```
AttributeError: 'NoneType' object has no attribute 'rfind'
```

This issue is only encountered when attempting to customize the `Name` field. If you apply any other customizations prior to the installation, such as the `Title` or `Description` fields, the installation proceeds normally. If desired, you can edit the `Name` field after the installation completes without encountering any issues.

(Bug ID 29954660)

# 6

## Installation and Availability



### WARNING:

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

You can download the full Oracle Linux 7.8 installation media image from the Oracle Software Delivery Cloud at <https://edelivery.oracle.com/>. A smaller boot ISO is also available to perform a network based installation.

For convenience, the three most recent Oracle Linux installation media images, for each release, are also available from the Oracle Linux yum server at <https://yum.oracle.com/oracle-linux-isos.html>.

You can also install a full Oracle Linux 7.8 media image for the x86\_64 platform on a compute instance on Oracle Cloud Infrastructure. To access the image, you must first obtain an Oracle Cloud Infrastructure account. For more information, visit <https://www.oracle.com/index.html>.

In addition, the latest Oracle Linux 7.8 packages are available on the Unbreakable Linux Network (ULN) and the Oracle Linux yum server.

- To obtain the latest Oracle Linux 7.8 packages from ULN and install additional software for Oracle Linux 7.8, subscribe to the different channels on ULN, log in to <https://linux.oracle.com> and then view the Channels option.
- To install additional software for Oracle Linux 7.8 from the Oracle Linux yum server, enable the required repositories within your yum configuration. To view the Oracle Linux yum repositories that are available for Oracle Linux 7.8, visit <https://yum.oracle.com/>.



### Note:

The Oracle Linux yum server does not provide equivalent repositories for some of the channels that are available on ULN. These channels provide non-open source packages.

Oracle also makes the Oracle Linux 7.8 release available for 64-bit Arm (aarch64) platforms. See [Release-Specific Information for Oracle Linux 7.8 \(aarch64\)](#) for more information.

For developers who are making use of the Raspberry Pi hardware platform, Oracle provides an unsupported developer release image that includes the necessary firmware to boot this platform. You can download the image from the Oracle Technology Network. For more information about making use of the Raspberry Pi hardware platform, see [Install Oracle Linux on a Raspberry Pi](#).

If you are installing an update on a system for which you have previously installed the Oracle-supported OFED packages, see [Upgrading a system with an existing UEK R4 installation to continue to use UEK R4](#) for instructions on how to update these packages during an upgrade.

UEK R5U3 is the default boot kernel for fresh installations of Oracle Linux 7.8.

For systems that are running UEK R3 or UEK R4 and are subscribed to the `ol7_x86_64_UEKR3` or `ol7_x86_64_UEKR4` channel on ULN, or the `ol7_x86_64_UEKR3` or `ol7_x86_64_UEKR4` repository on the Oracle Linux yum server, you can upgrade to the latest UEK release as follows:

1. Upgrade all of the packages on the system, including the kernel packages.

```
sudo yum update
```

By default, the boot manager automatically enables the most recent kernel version so you do not need to change your GRUB configuration.

2. Reboot the system.

```
sudo systemctl reboot
```

### Important:

Oracle Linux 7.8 updates many major subsystems. To ensure that your updated systems function correctly, reboot them after updating.

## Upgrading from Oracle Linux 6

It is possible to upgrade an Oracle Linux 6 system to Oracle Linux 7.8 under the following conditions:

- The system meets the minimum installation requirements for Oracle Linux 7, as described in [System Requirements and Limitations](#).
- The Oracle Linux 6 system has been completely updated from the `ol6_x86_64_latest` channel or `ol6_latest` repository.
- UEK R3 or UEK R4 is installed on the system that is to be upgraded and is the default boot kernel.
- No Oracle product stack is present on the system.

Note that the upgrade process installs on the system the UEK R5 release that is provided with Oracle Linux 7.8.

Note that upgrading from UEK R2 is not supported.

### Note:

Upgrades are supported only for systems that are installed with the Minimal Install base environment. If additional packages are installed from an alternative repository or channel, upgrade might fail or the resulting upgrade might not function as expected.

For general instructions on performing an upgrade, see [Oracle Linux 7: Installation Guide](#).

The following steps are specific to the update for this release:

1. Ensure that your system is completely up to date by using the `yum update` command to update to the latest Oracle Linux 6 release.

Note that the system must be subscribed to the `ol6_x86_64_latest` and `ol6_x86_64_addons` channels or `ol6_latest` and `ol6_addons` repositories prior to updating the system.

2. Install the latest versions of the required upgrade packages:

```
sudo yum install openscap redhat-upgrade-tool preupgrade-assistant \
preupgrade-assistant-el6toel7 preupgrade-assistant-el6toel7-data-0 \
preupgrade-assistant-tools preupgrade-assistant-ui
```

Obtain the latest versions of these packages from ULN (in the `ol6_x86_64_addons` channel), or from the Oracle Linux yum server (in the `ol6_addons` repository).

3. If the system is registered with ULN, delete the system from ULN and disable yum plugins.
4. Run the `preupg` command to perform an upgrade assessment:

```
sudo preupg
```

Examine the results in the `/root/preupgrade/result.html` file to ensure that there are no failed items or any items that require attention.

5. Perform the upgrade by running the `redhat-upgrade-tool-cli` command:

```
sudo redhat-upgrade-tool-cli --network=7.8 --instrepo=OL7_repo_url \
--debuglog=/tmp/upgrade.log --cleanup-post
```

In the previous command, `OL7_repo_url` is the URL of the repository in which the Oracle Linux 7.8 ISO is hosted.

6. Reboot the system to start the upgrade process.

#### Note:

When upgrading from Oracle Linux 6 to Oracle Linux 7.8, the previous UEK R4 version is removed from the system during the upgrade and the system is updated to use the UEK R5 release that is provided on the installation media image as the default boot kernel.

## Oracle-Supported RDMA Packages

Oracle Linux 7.8 provides UEK R5 as the default kernel. The Oracle-supported RDMA packages that are shipped with UEK R5 replace the previous OFED packages and use an updated package and channel-naming scheme. Oracle recommends using UEK R5 with Oracle Linux 7.8.

If you intend to install RDMA packages, see the release notes for the UEK R5 release that you are running in the [Unbreakable Enterprise Kernel documentation](#) library.

## Upgrading a system with an existing UEK R5 installation

If you are upgrading your system from a release that is prior to Oracle Linux 7.8, and you are already using UEK R5, with the Oracle-supported RDMA packages, these packages are updated automatically during the upgrade process.

If your system is registered with ULN, ensure that it is subscribed to the `ol7_x86_64_UEKR5_RDMA`, `ol7_x86_64_UEKR5`, and `ol7_x86_64_latest` channels before the upgrade.

If your system uses the Oracle Linux yum server, ensure that the `ol7_UEKR5_RDMA`, `ol7_UEKR5`, and `ol7_latest` repositories are enabled before upgrading.

## Upgrading a system with an existing UEK R4 installation to use UEK R5

If you are upgrading your system from a release that is prior to Oracle Linux 7.8, and you are using UEK R4 with the Oracle-supported OFED packages, it is recommended that you upgrade to UEK R5 and switch to the corresponding Oracle-supported UEK R5 RDMA packages before upgrading your system.

Note that if the system is newly registered on ULN, the `ol7_x86_64_UEKR5` and `ol7_x86_64_latest` channels are subscribed to by default. However, you will need to explicitly subscribe to the `ol7_x86_64_UEKR5_RDMA` channel.

Starting with Oracle Linux 7.6, if your system uses the Oracle Linux yum server, the `ol7_UEKR5`, and `ol7_latest` repositories are enabled by default. However, ensure that the `ol7_UEKR5_RDMA` repository is enabled before upgrading.

Upgrading requires that you remove existing OFED packages prior to installing the compatible packages for UEK R5.

For instructions, see the release notes for the UEK R5 release that you are running in the [Unbreakable Enterprise Kernel documentation](#) library.

## Upgrading a system with an existing UEK R4 installation to continue to use UEK R4

If you are upgrading your system from a release prior to Oracle Linux 7.8, and you are using UEK R4 with the Oracle-supported OFED packages, *and* you intend to continue to use UEK R4, you must ensure that your system is subscribed to the correct channels or that the correct yum repositories are enabled before upgrading.

If you are using ULN, check that your system is registered before upgrading and then subscribe the system to the `ol7_x86_64_UEKR4_OFED` and `ol7_x86_64_UEKR4` channels.

### NOT\_SUPPORTED:

By default, the `ol7_x86_64_UEKR5` and `ol7_x86_64_latest` channels are enabled when you register an Oracle Linux 7.8 system with ULN. Note that if the `ol7_x86_64_UEKR5` channel is enabled, you must disable it to continue if you plan to continue to use UEK R4 with the Oracle-supported OFED packages.

If you are using the Oracle Linux yum server, check that the `ol7_UEKR4` and `ol7_UEKR4_OFED` repositories are enabled and make sure that the `ol7_UEKR5` and `ol7_UEKR5_RDMA` repositories are disabled.

Use the `yum update` command to upgrade to Oracle Linux 7.8 with the UEK R4 compatible OFED packages.

If you do not have any of the OFED packages installed, you can install the packages, per the installation instructions in the [Unbreakable Enterprise Kernel: Release Notes for Unbreakable Enterprise Kernel Release 4 Update 7 \(4.1.12-124\)](#).



# Release-Specific Information for Oracle Linux 7.8 (aarch64)



## **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

The following information pertains to the Oracle Linux 7.8 (aarch64) release.

Note that some information in this chapter may also apply generally to the x86\_64 platform. For general information that may apply to both the x86\_64 and Arm platforms, as well as information that is specific to the x86\_64 platform, refer to the previous chapters of this document.

## System Requirements and Limitations (aarch64)

System requirements and limitations for 64-bit Arm architecture are under review. You can check whether your hardware is supported on Oracle Linux 7.8 (aarch64) by checking the Hardware Certification List at <https://linux.oracle.com/hardware-certifications>. Hardware is listed as it becomes available and is validated.

## File System, Storage, and Address Space Limitations

The following table describes the maximum file size and maximum file system size for the BTRFS, ext4, and XFS file systems. File system limitations are affected by kernel versions and features, and by the architecture of the system on which Oracle Linux is installed. The values depicted here are estimates based on the known variables that might affect the maximum theoretical value that can be achieved. The theoretical values might be higher than those depicted here, and the actual achievable values might be lower than the values shown, depending on the hardware and the kernel version that is used.

File System Type	Maximum File Size	Maximum File System Size
btrfs	8 EiB	8 EiB
ext4	16 TiB	1 EiB
xfs	8 EiB	8 EiB

The limits for the ext4 file system that are described here are higher than those recommended and might prove unstable. If you plan to work with systems where you are intend to work towards using higher file system sizes or file sizes, it is recommended that you use either the BTRFS or XFS file system.

The maximum supported size for a bootable logical unit number (LUN) is 50 TB. GPT and UEFI support are required for LUNs that are larger than 2 TB.

The maximum size of the address space that is available to each process is 128 TB.

## Shipped Kernel (aarch64)

Oracle Linux 7.8 (aarch64) ships with the following kernel package:

**kernel-uek-4.14.35-1902.300.11.el7uek**

Unbreakable Enterprise Kernel Release 5 Update 3 (UEK R5U3), which is the default kernel.

Besides the Unbreakable Enterprise Kernel Release 5 (UEK R5) kernel, the Unbreakable Enterprise Kernel Release 6 (UEK R6) kernel is also supported on the 64-bit Arm platform. You can download the UEK R6 packages from ULN or the Oracle Linux yum server. For information about features and known issues in UEK R6, see [Unbreakable Enterprise Kernel Release 6: Release Notes \(5.4.17-2011\)](#).

The Oracle Linux release is tested as a bundle, as shipped on the installation media image. When installed from the installation media image, the minimum kernel version that is supported is the kernel that is included in the image. Downgrading kernel packages is not supported, unless recommended by Oracle Support.

The kernel source code for the shipped kernel is available after the initial release through a public git source code repository at <https://github.com/oracle/linux-uek>.

## New Features (aarch64)

The following features are specific to the 64-bit Arm (aarch64) platform<sup>only</sup>. See [New Features and Changes](#) for information about new features in Oracle Linux 7.8, many of which also are supported on the 64-bit Arm (aarch64) architecture.

## Oracle Arm Toolset 1

This release includes the Oracle Arm Toolset 1, which provides the following developer tools:

- **gcc v7.3**  
Supports the 2011 revision of the ISO C standard
- **g++ v7.3.0**  
Supports the 2014 ISO C++ standard
- **gfortran v7.3.0**  
Supports Fortran 2008
- **go v1.10.1**  
Go Programming Language
- **gdb v8.0.1**  
GNU debugger
- **binutils v2.30**  
Binary utilities

Note that the versions of the tools that are listed are more recent than the base system versions. The base versions are intentionally kept stable for several years to ensure compatibility for device drivers and other components that might be closely tied to a specific compiler version. However, you might choose to use more modern language features for your own applications.

Refer to the [Oracle Linux 7 Software Collections yum Repository](#) for a complete list of the software packages that are included in Oracle Arm Toolset 1.

To use the Oracle Arm Toolset 1, do the following:

1. Download the aarch64 version of the Oracle Linux `.repo` file.

```
sudo cd /etc/yum.repos.d
sudo wget https://yum.oracle.com/aarch64/public-yum-ol7.repo
```

2. Enable the Software Collection by editing the `.repo` file and setting `enable=1` for the `ol7_software_collections` repository.

Note that the `.repo` file has many other repositories that can also be enabled, along with the `ol7_software_collections` repository.

3. Install the `oracle-armtoolset-1` package.

```
sudo yum install 'oracle-armtoolset-1*'
```

4. Start a new shell for the software collection, which is the `bash` shell in the following example:

```
sudo scl enable oracle-armtoolset-1 bash
```

You can optionally specify another shell in the command.

5. Run the following commands to check that the `gcc` command starts the correct copy and also that the paths are as correct:

```
which gcc
echo $PATH
echo $MANPATH
echo $INFOPATH
echo $LD_LIBRARY_PATH
```

where the output of the `which` command should return the following:

```
/opt/oracle/oracle-armtoolset-1/root/usr/bin/gcc
```

The output of the four `echo` commands should begin with the following:

```
/opt/oracle/oracle-armtoolset-1/
```

For more details and troubleshooting information, see the blog post at <https://blogs.oracle.com/linux/getting-started-with-oracle-arm-toolset-1>.

## Known Issues (aarch64)

The following are known issues for Oracle Linux 7.8 (aarch64). Some issues might also apply to the `x86_64` platform. See [Known Issues](#) for information about issues that apply to both the `x86_64` and Arm platforms.

Note that additional issues that are specific to the kernel that you are using might also exist. For issues that are specific to the kernel, see the release notes for the UEK R5 release that you are running in the [Unbreakable Enterprise Kernel documentation](#) library.

## Support Limited to Text-Mode Environments and Server Software

Oracle Linux 7.8 (aarch64) is engineered and tested for server-related usage *only*. Although packages for desktop and productivity features are built and provided, testing of these packages is limited and support for graphical mode packages is not provided in this update. You can install any of these packages on your platform, but some of these applications might not work or could have issues that are not documented here.

Oracle does not provide support for these packages and any assistance is community-based. If you choose to run a desktop environment or any desktop applications, direct your questions to the Oracle Linux for Arm community forum at <https://community.oracle.com/tech/apps-infra/categories/oracle-linux-for-arm>.

## Installation Issues

The following issues might be encountered during an Oracle Linux 7.8 (aarch64) installation.

### Alternate installation options during text-based installations

During a text-based installation, when the installer detects the video controller, it offers a graphical installation option on the system video console by default. The boot menu also may not offer options to perform text-based or VNC-based installation.

To perform a text-based installation, you must specify the `inst.text` option on the boot command line. If you intend to perform a remote graphical installation over VNC, you must use the `inst.vnc` option, as well as specify boot options to configure the network. Typically `ip=dhcp` is used for this purpose.

For more information about boot options, see [Oracle Linux 7: Installation Guide](#).

(Bug ID 27581120)

### Installing the oracle-armtoolset-8 package sometimes fails

Running the `yum install oracle-armtoolset-8` command sometimes fails to install the package. This failure occurs at the following stage of the installation:

```
Installing : oracle-armtoolset-8-runtime-8.0-1.el7_6.aarch64 16/69
Error unpacking rpm package oracle-armtoolset-8-runtime-8.0-1.el7_6.aarch64
error: unpacking of archive failed on file
/opt/oracle/oracle-armtoolset-8/root/lib64: cpio: rename
Installing : oracle-armtoolset-8-libgo-8.2.0-6.el7_6.aarch64 17/69
error: oracle-armtoolset-8-runtime-8.0-1.el7_6.aarch64: install failed
Installing : oracle-armtoolset-8-libasan-8.2.0-6.el7_6.aarch64 18/69
```

Subsequent attempts to install the individual package also fail:

```
Failed:
oracle-armtoolset-8-runtime.aarch64 0:8.0-1.el7_6
```

If you encounter this issue, run the following commands to remove and then reinstall the `oracle-armtoolset-8` package:

```
sudo yum remove 'oracle-armtoolset-8*'
sudo yum remove policycoreutils-python
sudo rm -Rf /opt/oracle/oracle-armtoolset-8/
```

```
sudo yum install policycoreutils-python  
sudo yum install 'oracle-armtoolset-8*'
```

(Bug ID 29672241)

## Kernel panic for QLogic cnic module on ThunderX2 during installation

The QLogic `cnic` driver module is unsupported on 64-bit Arm platforms. The Cavium ThunderX2 servers include hardware that can cause the `cnic` driver module to load, thus triggering a kernel panic.

To work around this issue, blacklist the `cnic` module at boot by using the `module_blacklist=cnic` boot option in the kernel command line for the installer. To prevent the module from installing or loading in the future, create the file `/etc/modprobe.d/cnic.conf` file and add the following lines:

```
blacklist cnic  
install cnic /bin/true
```

(Bug IDs 27011806, 28109733)

## btrfs-convert operation results in a file system that cannot be mounted

You can use the `btrfs-convert` tool to convert an `ext4` file system to `btrfs`. However, if the tool attempts to convert a file system that has not been created with a sector block size that matches the system default page size (which is set to 64 KB for the aarch64 platform) the resulting file system cannot be mounted. This issue can occur if the original `ext4` file system is not created by using the `-b 65536` option to specify a 64 KB block size.

(Bug ID 28200561)

## Manual execution of shim first-stage boot loader may fail in the UEFI shell

Manually loading shim binaries from the UEFI shell may fail in some scenarios. The following cases are known to fail:

- `FS0:\EFI\redhat\shimaa64.efi`
- `FS0:\EFI\redhat\> shimaa64.efi`

`FS0:\> \EFI\redhat\shimaa64.efi` is known to work correctly.

A standard installation is unaffected by this bug. The problem is limited to the manual execution of `shim` in the UEFI shell.

(Bug ID 27962691)

## Kdump tools fail to create a vmcore-dmesg.txt on systems with multiple CPUs

On systems with multiple CPUs, the crash dump tools that are included with Kdump fail to create a `vmcore-dmesg.txt` file, which is created with the `vmcore` file. This issue may result in the following segmentation fault:

```
...  
kdump: saving to /sysroot//var/crash/127.0.0.1-2018-05-22-12:34:45/  
kdump: saving vmcore-dmesg.txt
```

```
/lib/kdump-lib-initramfs.sh: line 118: 459 Segmentation fault
$_dmesg_collector /proc/vmcore > ${_path}/vmcore-dmesg-incomplete.txt
kdump: saving vmcore-dmesg.txt failed
kdump: saving vmcore
Copying data : [100.0 %] \
eta: 0s
kdump: saving vmcore complete
```

This issue occurs because the log buffer that is dynamically allocated by the kernel. `vmcore-dmesg` does not know how to access memory that allocated in this way. The issue is typically triggered on systems with 64 or more CPUs, but has also been observed on a 32-core Ampere X-Gene 3 system.

The `dmesg` output can be retrieved manually by the running `crash` command against `vmcore` and then by using the `dmesg` command when in the crash shell.

(Bug ID 28064675, 28670960)

## Segmentation fault when running `bluedevil-wizard`

The `bluedevil-wizard`, which is available in the `bluedevil` package, is unable to connect or locate Bluetooth devices and fails with a segmentation fault when it is run.

(Bug ID 27101618)

## `dsktune` command fails with an unsupported error message

The `dsktune` command, which is included with the 389 Directory Server base package (389-ds-base) fails with the following error message:

```
ERROR: This system does not support CMPXCHG16B instruction (cpuflag cx16).
nsslapd-enable-nunc-stans must be set to "off" on this system.
In a future release of Directory Server this platform will NOT be
supported.
```

```
ERROR : The above errors MUST be corrected before proceeding.
```

The message is notifying you that the system does not have support for `cx16`, which is a feature commonly available on `x86_64` platforms.

The `dsktune` command checks that a system meets requirements and can provide helpful information pertaining to configuration; however, it is not required to run the 389 Directory Server.

(Bug ID 26861135)

## Installation and Availability (aarch64)

The following installation and availability information applies specifically to the 64-bit Arm platform for the Oracle Linux 7.8 (aarch64) release. For general installation and availability information, as well as information that applies specifically to the `x86_64` platform, see [Installation and Availability](#).

You can also obtain the latest packages for Oracle Linux 7.8 (aarch64) from the Unbreakable Linux Network (ULN) and the Oracle Linux yum server. To install additional software for Oracle Linux 7.8 (aarch64), subscribe to the different channels on ULN or by enable the required repositories within your yum configuration. To explore the channels that are available on ULN, log in to <https://uln.oracle.com/> and view the Channels option. To view the Oracle Linux yum

repositories that are available for Oracle Linux 7.8 (aarch64), visit <https://yum.oracle.com/oracle-linux-7.html>.

**Note:**

The Oracle Linux yum server does not provide equivalent repositories for some channels that are available on ULN. These channels provide non-open source packages.

UEK R5 is the default boot kernel for fresh installations of Oracle Linux 7.8 (aarch64). For more information, see the releases notes for the UEK R5 release that you are running in the [Unbreakable Enterprise Kernel documentation](#) library.

Besides the Unbreakable Enterprise Kernel Release 5 (UEK R5) kernel, the Unbreakable Enterprise Kernel Release 6 (UEK R6) kernel is also supported on the 64-bit Arm platform. You can download the UEK R6 packages from ULN or the Oracle Linux yum server. For information about features and known issues in UEK R6, see [Unbreakable Enterprise Kernel Release 6: Release Notes \(5.4.17-2011\)](#).

## Installing the ISO

The installation process for Oracle Linux 7.8 (aarch64) does not differ substantially from the installation process on the x86\_64 platform. The same instructions and information that are provided in [Oracle Linux 7: Installation Guide](#) also apply to the Arm platform.

The following is the recommended installation process:

1. Obtain the ISO image from the Oracle Technology Network (<https://www.oracle.com/linux/>).
2. Configure a network installation server to perform the installation.
3. Create a kickstart file to automate your installation.
4. Connect your target Arm hardware to the network and then configure the firmware to boot from the network or by performing a PXE boot.

Refer to your hardware documentation for instructions.

5. Boot the target hardware and wait for the installation to complete.

For more information about configuring a network installation server and using a kickstart file to boot the installer, see [Oracle Linux 7: Installation Guide](#).

The following exceptions and additional information might be required to complete the installation:

## Graphical network-based installation

If you are performing a manual installation over the network and intend to use the remote graphical installer over VNC by setting the `inst.vnc` boot option, you must also set boot options to configure the network. Otherwise, the graphical installer fails to load and the installation reverts to text mode.

To ensure that the VNC server starts at boot, append the appropriate `ip` option to your kernel boot command. Typically, for a DHCP configuration, this may look similar to the following:

```
ip=eth0:dhcp.
```

## Software Selection Groups

Note that the available Software Selection Groups in the installer may differ slightly from the groups that are available in the x86\_64 installer.

## Software Sources

Note that unlike the x86\_64 installer, there are no alternate Software Source repositories provided on this ISO.



# 8

## Package Changes from the Upstream Release



### **WARNING:**

Oracle Linux 7 is now in Extended Support. See [Oracle Linux Extended Support](#) and [Oracle Open Source Support Policies](#) for more information.

Migrate applications and data to Oracle Linux 8 or Oracle Linux 9 as soon as possible.

The following sections list the changes to binary and source packages from the upstream release.

### Changes to Binary Packages

This section contains information about the removed, modified, and new **binary** packages in this release. For information about the **source** package changes, see [Changes to Source Packages](#).

#### Added Binary Packages for x86\_64 by Oracle

The following x86\_64 binary packages have been added by Oracle:

- dtrace-utils
- dtrace-utils-testsuite
- kernel-uek
- kernel-uek-debug
- kernel-uek-debug-devel
- kernel-uek-devel
- kernel-uek-doc
- libdtrace-ctf
- libdtrace-ctf-devel
- lxc
- lxc-devel
- lxc-libs
- ocfs2-tools
- ocfs2-tools-devel
- oracleasm-support
- oracle-database-preinstall-19c

- oraclelinux-release
- oracle-logos
- reflink
- yum-plugin-ulninfo

## Modified Binary Packages for x86\_64

The following x86\_64 binary packages from the upstream release have been modified:

- abrt
- abrt-addon-ccpp
- abrt-addon-kerneloops
- abrt-addon-pstoreoops
- abrt-addon-python
- abrt-addon-vmcore
- abrt-addon-xorg
- abrt-cli
- abrt-console-notification
- abrt-dbus
- abrt-desktop
- abrt-gui
- abrt-gui-libs
- abrt-java-connector
- abrt-libs
- abrt-python
- abrt-tui
- aide
- akonadi
- akonadi-mysql
- anaconda
- anaconda-core
- anaconda-gui
- anaconda-tui
- anaconda-user-help
- anaconda-widgets
- apr-util
- apr-util-devel
- autofs

- basesystem
- binutils
- binutils-devel
- blivet3-data
- bpftool
- btrfs-progs
- chrony
- cloud-init
- clufter-bin
- clufter-cli
- clufter-common
- clufter-lib-ccs
- clufter-lib-general
- clufter-lib-pcs
- cmirror
- cockpit
- cockpit-bridge
- cockpit-system
- cockpit-ws
- coreutils
- cpp
- crash
- cups-filters
- cups-filters-libs
- curl
- daxio
- dbus
- dbus-devel
- dbus-libs
- dbus-x11
- device-mapper
- device-mapper-event
- device-mapper-event-libs
- device-mapper-libs
- device-mapper-multipath
- device-mapper-multipath-libs

- `dhclient`
- `dhcp`
- `dhcp-common`
- `dhcp-lib`
- `dracut`
- `dracut-config-generic`
- `dracut-config-rescue`
- `dracut-fips`
- `dracut-fips-aesni`
- `dracut-network`
- `efibootmgr`
- `firefox`
- `fuse`
- `fuse-devel`
- `fuse-lib`
- `fwupdate`
- `fwupdate-efi`
- `fwupdate-lib`
- `gcc`
- `gcc-c++`
- `gcc-gfortran`
- `gcc-gnat`
- `gcc-objc`
- `gcc-objc++`
- `gdb`
- `gdb-gdbserver`
- `glibc`
- `glibc-common`
- `glibc-devel`
- `glibc-headers`
- `glibc-utils`
- `gnome-system-log`
- `gperftools-lib`
- `grub2`
- `grub2-common`
- `grub2-efi-ia32`

- grub2-efi-ia32-modules
- grub2-efi-x64
- grub2-efi-x64-modules
- grub2-pc
- grub2-pc-modules
- grub2-tools
- grub2-tools-extra
- grub2-tools-minimal
- grubby
- gstreamer
- gstreamer-tools
- httpd
- httpd-devel
- httpd-manual
- httpd-tools
- initial-setup
- initial-setup-gui
- initscripts
- ipa-client
- ipa-client-common
- ipa-common
- ipa-python-compat
- ipa-server
- ipa-server-common
- ipa-server-dns
- ipa-server-trust-ad
- iscsi-initiator-utils
- iscsi-initiator-utils-iscsiuio
- iwl1000-firmware
- iwl100-firmware
- iwl105-firmware
- iwl135-firmware
- iwl2000-firmware
- iwl2030-firmware
- iwl3160-firmware
- iwl3945-firmware

- iwl4965-firmware
- iwl5000-firmware
- iwl5150-firmware
- iwl6000-firmware
- iwl6000g2a-firmware
- iwl6000g2b-firmware
- iwl6050-firmware
- iwl7260-firmware
- java-11-openjdk
- java-11-openjdk-devel
- java-11-openjdk-headless
- java-1.7.0-openjdk
- java-1.7.0-openjdk-devel
- java-1.7.0-openjdk-headless
- kabi-yum-plugins
- kdepimlibs
- kdepimlibs-akonadi
- kdepimlibs-devel
- kdepimlibs-kxmlrpcclient
- kde-settings
- kde-settings-ksplash
- kde-settings-plasma
- kde-settings-pulseaudio
- kernel
- kernel-abi-whitelists
- kernel-debug
- kernel-debug-devel
- kernel-devel
- kernel-doc
- kernel-headers
- kernel-tools
- kernel-tools-libs
- kexec-tools
- kmod
- kmod-kvdo
- kmod-libs

- `kmod-oracleasm`
- `kpartx`
- `ksc`
- `ksh`
- `libatomic`
- `libatomic-static`
- `libcurl`
- `libcurl-devel`
- `libdbi-dbd-mysql`
- `libdbi-dbd-pgsql`
- `libdbi-drivers`
- `libgcc`
- `libgfortran`
- `libgnat`
- `libgnat-devel`
- `libgomp`
- `libgudev1`
- `libgudev1-devel`
- `libguestfs`
- `libguestfs-inspect-icons`
- `libguestfs-java`
- `libguestfs-tools`
- `libguestfs-tools-c`
- `libguestfs-xfs`
- `libipa_hbac`
- `libitm`
- `libitm-devel`
- `libobjc`
- `libpmem`
- `libpmemblk`
- `libpmemlog`
- `libpmemobj`
- `libpmempool`
- `libquadmath`
- `libquadmath-devel`
- `libreport`

- `libreport-anaconda`
- `libreport-cli`
- `libreport-filesystem`
- `libreport-gtk`
- `libreport-plugin-bugzilla`
- `libreport-plugin-mailx`
- `libreport-plugin-reportuploader`
- `libreport-plugin-ureport`
- `libreport-python`
- `libreport-rhel-anaconda-bugzilla`
- `libreport-web`
- `libreswan`
- `librpmem`
- `libssh2`
- `libsss_autofs`
- `libsss_certmap`
- `libsss_idmap`
- `libsss_nss_idmap`
- `libsss_simpleifp`
- `libsss_sudo`
- `libstdc++`
- `libstdc++-devel`
- `libstdc++-docs`
- `libvirt`
- `libvirt-bash-completion`
- `libvirt-client`
- `libvirt-daemon`
- `libvirt-daemon-config-network`
- `libvirt-daemon-config-nwfilter`
- `libvirt-daemon-driver-interface`
- `libvirt-daemon-driver-lxc`
- `libvirt-daemon-driver-network`
- `libvirt-daemon-driver-nodedev`
- `libvirt-daemon-driver-nwfilter`
- `libvirt-daemon-driver-qemu`
- `libvirt-daemon-driver-secret`



- libvirt-daemon-driver-storage
- libvirt-daemon-driver-storage-core
- libvirt-daemon-driver-storage-disk
- libvirt-daemon-driver-storage-gluster
- libvirt-daemon-driver-storage-iscsi
- libvirt-daemon-driver-storage-logical
- libvirt-daemon-driver-storage-mpath
- libvirt-daemon-driver-storage-rbd
- libvirt-daemon-driver-storage-scsi
- libvirt-daemon-kvm
- libvirt-devel
- libvirt-docs
- libvirt-libs
- libvmem
- libvmmalloc
- libxml2
- libxml2-devel
- libxml2-python
- libxslt
- libxslt-devel
- linux-firmware
- lorax
- lvm2
- lvm2-cluster
- lvm2-libs
- lvm2-python-boom
- lvm2-python-libs
- lz4
- mdadm
- microcode\_ctl
- mkbootdisk
- mod\_session
- mod\_ssl
- mokutil
- mozjs52
- nfs-utils

- nscd
- nss-softokn
- nss-softokn-devel
- nss-softokn-freebl
- nss-softokn-freebl-devel
- ntp
- ntpdate
- opa-address-resolution
- opa-basic-tools
- opa-fastfabric
- opa-fm
- opa-libopamgt
- OpenIPMI
- OpenIPMI-libs
- OpenIPMI-modalias
- OpenIPMI-perl
- openscap
- openscap-containers
- openscap-python
- openscap-scanner
- openscap-utils
- openssh
- openssh-askpass
- openssh-cavs
- openssh-clients
- openssh-debuginfo
- openssh-keycat
- openssh-ldap
- openssh-server
- openssh-server-sysvinit
- openssl
- openssl-devel
- openssl-libs
- open-vm-tools
- open-vm-tools-desktop
- oscap-anaconda-addon

- `osinfo-db`
- `os-prober`
- `PackageKit`
- `PackageKit-command-not-found`
- `PackageKit-glib`
- `PackageKit-gstreamer-plugin`
- `PackageKit-gtk3-module`
- `PackageKit-yum`
- `pam_ssh_agent_auth`
- `parted`
- `pcs`
- `pcs-snmp`
- `perf`
- `perl-DBD-MySQL`
- `perl-Sys-Guestfs`
- `perl-XML-Parser`
- `plymouth`
- `plymouth-core-libs`
- `plymouth-graphics-libs`
- `plymouth-plugin-label`
- `plymouth-plugin-two-step`
- `plymouth-scripts`
- `plymouth-system-theme`
- `plymouth-theme-charge`
- `pmempool`
- `policycoreutils`
- `policycoreutils-devel`
- `policycoreutils-gui`
- `policycoreutils-newrole`
- `policycoreutils-python`
- `policycoreutils-sandbox`
- `polkit`
- `polkit-devel`
- `polkit-docs`
- `ppp`
- `pykickstart`

- python
- python2-blivet3
- python2-ipaclient
- python2-ipalib
- python2-ipaserver
- python3
- python3-libs
- python-blivet
- python-clufter
- python-configshell
- python-devel
- python-jwt
- python-libguestfs
- python-libipa\_hbac
- python-libs
- python-libsss\_nss\_idmap
- python-msrestazure
- python-perf
- python-rtslib
- python-s3transfer
- python-sss
- python-sssdconfig
- python-sss-murmur
- qt3
- qt3-devel
- qt3-MySQL
- qt3-ODBC
- qt3-PostgreSQL
- qt-settings
- rear
- redhat-bookmarks
- redhat-indexhtml
- redhat-lsb
- redhat-lsb-core
- redhat-lsb-cxx
- redhat-lsb-desktop

- `redhat-lsb-languages`
- `redhat-lsb-printing`
- `redhat-lsb-submod-multimedia`
- `redhat-lsb-submod-security`
- `redhat-release-server`
- `redhat-rpm-config`
- `redhat-upgrade-dracut`
- `redhat-upgrade-dracut-plymouth`
- `redhat-upgrade-tool`
- `redland`
- `redland-virtuoso`
- `rhn-check`
- `rhn-client-tools`
- `rhnlib`
- `rhnsd`
- `rhn-setup`
- `rhn-setup-gnome`
- `rpmdevtools`
- `rpmemd`
- `scap-security-guide`
- `scap-security-guide-doc`
- `scap-workbench`
- `seabios-bin`
- `seavgabios-bin`
- `selinux-policy`
- `selinux-policy-devel`
- `selinux-policy-minimum`
- `selinux-policy-mls`
- `selinux-policy-targeted`
- `setroubleshoot`
- `setroubleshoot-plugins`
- `setroubleshoot-server`
- `sg3_utils`
- `sg3_utils-libs`
- `shim-ia32`
- `shim-unsigned-ia32`

- shim-unsigned-x64
- shim-x64
- sos
- sos-collector
- spice-streaming-agent
- sssd
- sssd-ad
- sssd-client
- sssd-common
- sssd-common-pac
- sssd-dbus
- sssd-ipa
- sssd-kcm
- sssd-krb5
- sssd-krb5-common
- sssd-ldap
- sssd-libwbclient
- sssd-polkit-rules
- sssd-proxy
- sssd-tools
- sssd-winbind-idmap
- system-config-date
- system-config-kickstart
- systemd
- systemd-devel
- systemd-libs
- systemd-python
- systemd-sysv
- tcpdump
- tigervnc
- tigervnc-icons
- tigervnc-license
- tigervnc-server
- tigervnc-server-minimal
- tog-pegasus
- tog-pegasus-libs

- unixODBC
- unixODBC-devel
- uom-lib
- vim
- vim-common
- vim-enhanced
- vim-filesystem
- vim-minimal
- vim-X11
- virt-install
- virt-manager
- virt-manager-common
- virt-p2v-maker
- virt-v2v
- wireshark
- wireshark-gnome
- xfsprogs
- xsane-common
- xsane-gimp
- xulrunner
- yum
- yum-plugin-aliases
- yum-plugin-changelog
- yum-plugin-ovl
- yum-plugin-tmprepo
- yum-plugin-verify
- yum-plugin-versionlock
- yum-rhn-plugin
- yum-utils

## Modified Optional Binary Packages for x86\_64

The following optional x86\_64 binary packages have been modified:

- libipa\_hbac-devel
- libsss\_certmap-devel
- libsss\_idmap-devel
- libsss\_nss\_idmap-devel

- libsss\_simpleifp-devel
- sg3\_utils-devel
- sssd-libwbclient-devel
- thunderbird
- tigervnc-server-applet
- tigervnc-server-module

## New Binary Packages for x86\_64

The following x86\_64 binary packages are new for Update 8, relative to Update 7 of Oracle Linux 7:

- adobe-mappings-cmap
- adobe-mappings-pdf
- chrome-gnome-shell
- compat-exiv2-026
- geoipupdate
- geolite2
- libmaxminddb
- libpaper
- openjpeg2
- pmdk-convert
- po4a
- python3
- python3-setuptools
- python-blivet3
- python-pip
- python-rpm-generators
- python-rpm-macros
- python-wheel
- redfish-finder
- sassist
- ucx
- urw-base35-fonts
- xorriso

## Removed Binary Packages for x86\_64

The following x86\_64 binary packages from the upstream release have been removed:



- insights-client
- kpatch
- python-rhsm
- redhat-access-gui
- redhat-access-plugin-ipa
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-as-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-bn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-de-DE
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-en-US
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-es-ES
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-fr-FR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-gu-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-hi-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-it-IT
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ja-JP
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-kn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ko-KR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ml-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-mr-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-or-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pa-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pt-BR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ru-RU
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ta-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-te-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-CN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-TW
- redhat-logos
- redhat-release-eula
- redhat-support-lib-python
- redhat-support-tool
- subscription-manager
- subscription-manager-migration-data
- virt-who

## Added Binary Packages by Oracle for aarch64

The following aarch64 binary packages have been added by Oracle:

- AAVMF
- dtrace-utils
- dtrace-utils-devel
- dtrace-utils-testsuite
- inotify-tools
- isl
- isl-devel
- ivshmem-tools
- kernel-uek
- kernel-uek-debug
- kernel-uek-debug-devel
- kernel-uek-devel
- kernel-uek-headers
- kernel-uek-tools
- kernel-uek-tools-libs
- kernel-uek-tools-libs-devel
- libdtrace-ctf
- libdtrace-ctf-devel
- libzstd
- libzstd-devel
- lxc
- lxc-devel
- lxc-libs
- ocfs2-tools
- ocfs2-tools-devel
- oracle-armtoolset-1
- oracle-armtoolset-1-binutils
- oracle-armtoolset-1-binutils-devel
- oracle-armtoolset-1-build
- oracle-armtoolset-1-cpp
- oracle-armtoolset-1-gcc
- oracle-armtoolset-1-gcc-c++
- oracle-armtoolset-1-gcc-gdb-plugin

- `oracle-armtoolset-1-gcc-gfortran`
- `oracle-armtoolset-1-gcc-gnat`
- `oracle-armtoolset-1-gcc-go`
- `oracle-armtoolset-1-gcc-objc`
- `oracle-armtoolset-1-gcc-objc++`
- `oracle-armtoolset-1-gcc-plugin-devel`
- `oracle-armtoolset-1-gdb`
- `oracle-armtoolset-1-gdb-doc`
- `oracle-armtoolset-1-gdb-gdbserver`
- `oracle-armtoolset-1-golang`
- `oracle-armtoolset-1-golang-bin`
- `oracle-armtoolset-1-golang-docs`
- `oracle-armtoolset-1-golang-misc`
- `oracle-armtoolset-1-golang-src`
- `oracle-armtoolset-1-golang-tests`
- `oracle-armtoolset-1-libasan`
- `oracle-armtoolset-1-libasan-static`
- `oracle-armtoolset-1-libatomic`
- `oracle-armtoolset-1-libatomic-static`
- `oracle-armtoolset-1-libgcc`
- `oracle-armtoolset-1-libgccjit`
- `oracle-armtoolset-1-libgccjit-devel`
- `oracle-armtoolset-1-libgfortran`
- `oracle-armtoolset-1-libgfortran-static`
- `oracle-armtoolset-1-libgnat`
- `oracle-armtoolset-1-libgnat-devel`
- `oracle-armtoolset-1-libgnat-static`
- `oracle-armtoolset-1-libgo`
- `oracle-armtoolset-1-libgo-devel`
- `oracle-armtoolset-1-libgomp`
- `oracle-armtoolset-1-libgo-static`
- `oracle-armtoolset-1-libitm`
- `oracle-armtoolset-1-libitm-devel`
- `oracle-armtoolset-1-libitm-static`
- `oracle-armtoolset-1-liblsan`
- `oracle-armtoolset-1-liblsan-static`

- `oracle-armtoolset-1-libobjc`
- `oracle-armtoolset-1-libstdc++`
- `oracle-armtoolset-1-libstdc++-devel`
- `oracle-armtoolset-1-libstdc++-static`
- `oracle-armtoolset-1-libtsan`
- `oracle-armtoolset-1-libtsan-static`
- `oracle-armtoolset-1-libubsan`
- `oracle-armtoolset-1-libubsan-static`
- `oracle-armtoolset-1-runtime`
- `oracle-armtoolset-1-toolchain`
- `oracle-logos`
- `perf`
- `python-perf`
- `qemu`
- `qemu-block-gluster`
- `qemu-block-iscsi`
- `qemu-block-rbd`
- `qemu-common`
- `qemu-img`
- `qemu-kvm`
- `qemu-kvm-core`
- `qemu-system-aarch64`
- `qemu-system-aarch64-core`
- `reflink`
- `uname26`
- `yum-plugin-ulninfo`
- `zstd`

## Modified Binary Packages

The following aarch64 binary packages from the upstream release have been modified:

- `abrt`
- `abrt-addon-ccpp`
- `abrt-addon-kerneloops`
- `abrt-addon-pstoreoops`
- `abrt-addon-python`
- `abrt-addon-vmcore`

- abrt-addon-xorg
- abrt-cli
- abrt-console-notification
- abrt-dbus
- abrt-desktop
- abrt-gui
- abrt-gui-libs
- abrt-java-connector
- abrt-libs
- abrt-python
- abrt-tui
- aide
- akonadi
- akonadi-mysql
- anaconda
- anaconda-core
- anaconda-gui
- anaconda-tui
- anaconda-widgets
- apr-util
- apr-util-devel
- autofs
- basesystem
- binutils
- binutils-devel
- bpftool
- btrfs-progs
- chrony
- cloud-init
- clufter-bin
- clufter-cli
- clufter-common
- clufter-lib-ccs
- clufter-lib-general
- clufter-lib-pcs
- cmirror

- cockpit
- cockpit-bridge
- cockpit-system
- cockpit-ws
- coreutils
- cpp
- crash
- cups-filters
- cups-filters-libs
- curl
- dbus
- dbus-devel
- dbus-libs
- dbus-x11
- device-mapper
- device-mapper-event
- device-mapper-event-libs
- device-mapper-libs
- device-mapper-multipath
- device-mapper-multipath-libs
- dhclient
- dhcp
- dhcp-common
- dhcp-libs
- dracut
- dracut-config-generic
- dracut-config-rescue
- dracut-fips
- dracut-fips-aesni
- dracut-network
- dtc
- efibootmgr
- firefox
- fuse
- fuse-devel
- fuse-libs

- fwupdate
- fwupdate-efi
- fwupdate-libs
- gcc
- gcc-c++
- gcc-gfortran
- gcc-gnat
- gcc-objc
- gcc-objc++
- gdb
- gdb-gdbserver
- glibc
- glibc-common
- glibc-devel
- glibc-headers
- glibc-utils
- gnome-system-log
- gperftools-libs
- grub2
- grub2-common
- grub2-efi-aa64
- grub2-efi-aa64-cdboot
- grub2-efi-aa64-modules
- grub2-tools
- grub2-tools-extra
- grub2-tools-minimal
- grubby
- gstreamer
- gstreamer-tools
- httpd
- httpd-devel
- httpd-manual
- httpd-tools
- initial-setup
- initial-setup-gui
- initscripts

- ipa-client
- ipa-client-common
- ipa-common
- ipa-python-compat
- ipa-server
- ipa-server-common
- ipa-server-dns
- ipa-server-trust-ad
- iscsi-initiator-utils
- iscsi-initiator-utils-iscsiuio
- iwl1000-firmware
- iwl100-firmware
- iwl105-firmware
- iwl135-firmware
- iwl2000-firmware
- iwl2030-firmware
- iwl3160-firmware
- iwl3945-firmware
- iwl4965-firmware
- iwl5000-firmware
- iwl5150-firmware
- iwl6000-firmware
- iwl6000g2a-firmware
- iwl6000g2b-firmware
- iwl6050-firmware
- iwl7260-firmware
- java-11-openjdk
- java-11-openjdk-devel
- java-11-openjdk-headless
- java-1.7.0-openjdk
- java-1.7.0-openjdk-devel
- java-1.7.0-openjdk-headless
- kdeimlibs
- kdeimlibs-akonadi
- kdeimlibs-devel
- kdeimlibs-kxmlrpcclient



- kde-settings
- kde-settings-ksplash
- kde-settings-plasma
- kde-settings-pulseaudio
- kernel
- kernel-abi-whitelists
- kernel-debug
- kernel-debug-devel
- kernel-devel
- kernel-doc
- kernel-headers
- kernel-tools
- kernel-tools-libs
- kexec-tools
- kmod
- kmod-kvdo
- kmod-libs
- kpartx
- ksc
- ksh
- libcurl
- libcurl-devel
- libdbi-dbd-mysql
- libdbi-dbd-pgsql
- libdbi-drivers
- libfdt
- libfdt-devel
- libgcc
- libgfortran
- libgnat
- libgnat-devel
- libgomp
- libgudev1
- libgudev1-devel
- libguestfs
- libguestfs-inspect-icons

- libguestfs-java
- libguestfs-tools
- libguestfs-tools-c
- libguestfs-xfs
- libipa\_hbac
- libitm
- libitm-devel
- libobjc
- libreport
- libreport-anaconda
- libreport-cli
- libreport-filesystem
- libreport-gtk
- libreport-plugin-bugzilla
- libreport-plugin-mailx
- libreport-plugin-reportuploader
- libreport-plugin-ureport
- libreport-python
- libreport-rhel-anaconda-bugzilla
- libreport-web
- libreswan
- libssh2
- libsss\_autofs
- libsss\_certmap
- libsss\_idmap
- libsss\_nss\_idmap
- libsss\_simpleifp
- libsss\_sudo
- libstdc++
- libstdc++-devel
- libstdc++-docs
- libvirt
- libvirt-bash-completion
- libvirt-client
- libvirt-daemon
- libvirt-daemon-config-network

- libvirt-daemon-config-nwfilter
- libvirt-daemon-driver-interface
- libvirt-daemon-driver-lxc
- libvirt-daemon-driver-network
- libvirt-daemon-driver-nodedev
- libvirt-daemon-driver-nwfilter
- libvirt-daemon-driver-qemu
- libvirt-daemon-driver-secret
- libvirt-daemon-driver-storage
- libvirt-daemon-driver-storage-core
- libvirt-daemon-driver-storage-disk
- libvirt-daemon-driver-storage-gluster
- libvirt-daemon-driver-storage-iscsi
- libvirt-daemon-driver-storage-logical
- libvirt-daemon-driver-storage-mpath
- libvirt-daemon-driver-storage-rbd
- libvirt-daemon-driver-storage-scsi
- libvirt-daemon-kvm
- libvirt-daemon-qemu
- libvirt-devel
- libvirt-docs
- libvirt-libs
- libxml2
- libxml2-devel
- libxml2-python
- libxslt
- libxslt-devel
- linux-firmware
- lorax
- lvm2
- lvm2-cluster
- lvm2-libs
- lvm2-python-boom
- lvm2-python-libs
- lz4
- mod\_session

- mod\_ssl
- mokutil
- mozjs52
- nfs-utils
- nscd
- nss-sofotkn
- nss-sofotkn-devel
- nss-sofotkn-freebl
- nss-sofotkn-freebl-devel
- ntp
- ntpdate
- OpenIPMI
- OpenIPMI-libs
- OpenIPMI-modalias
- OpenIPMI-perl
- openscap
- openscap-containers
- openscap-python
- openscap-scanner
- openscap-utils
- openssh
- openssh-askpass
- openssh-cavs
- openssh-clients
- openssh-debuginfo
- openssh-keycat
- openssh-ldap
- openssh-server
- openssh-server-sysvinit
- openssl
- openssl-devel
- openssl-libs
- oscap-anaconda-addon
- osinfo-db
- os-prober
- PackageKit

- PackageKit-command-not-found
- PackageKit-glib
- PackageKit-gstreamer-plugin
- PackageKit-gtk3-module
- PackageKit-yum
- pam\_ssh\_agent\_auth
- parted
- pcs
- pcs-snmp
- perf
- perl-DBD-MySQL
- perl-Sys-Guestfs
- perl-XML-Parser
- plymouth
- plymouth-core-libs
- plymouth-graphics-libs
- plymouth-plugin-label
- plymouth-plugin-two-step
- plymouth-scripts
- plymouth-system-theme
- plymouth-theme-charge
- policycoreutils
- policycoreutils-devel
- policycoreutils-gui
- policycoreutils-newrole
- policycoreutils-python
- policycoreutils-sandbox
- polkit
- polkit-devel
- polkit-docs
- ppp
- pykickstart
- python
- python2-ipaclient
- python2-ipalib
- python2-ipaserver

- python3
- python3-libs
- python-blivet
- python-clufter
- python-configshell
- python-devel
- python-jwt
- python-libguestfs
- python-libipa\_hbac
- python-libs
- python-libsss\_nss\_idmap
- python-msrestazure
- python-perf
- python-rtslib
- python-s3transfer
- python-sss
- python-sssdconfig
- python-sss-murmur
- qt3
- qt3-devel
- qt3-MySQL
- qt3-ODBC
- qt3-PostgreSQL
- qt-settings
- rear
- redhat-bookmarks
- redhat-indexhtml
- redhat-lsb
- redhat-lsb-core
- redhat-lsb-cxx
- redhat-lsb-desktop
- redhat-lsb-languages
- redhat-lsb-printing
- redhat-lsb-submod-multimedia
- redhat-lsb-submod-security
- redhat-release-server

- redhat-rpm-config
- redhat-upgrade-dracut
- redhat-upgrade-dracut-plymouth
- redhat-upgrade-tool
- redland
- redland-virtuoso
- rhn-check
- rhn-client-tools
- rhnlib
- rhnsd
- rhn-setup
- rhn-setup-gnome
- rpmdevtools
- scap-security-guide
- scap-security-guide-doc
- scap-workbench
- selinux-policy
- selinux-policy-devel
- selinux-policy-minimum
- selinux-policy-mls
- selinux-policy-targeted
- setroubleshoot
- setroubleshoot-plugins
- setroubleshoot-server
- sg3\_utils
- sg3\_utils-libs
- shim-aa64
- shim-unsigned-aa64
- sos
- sos-collector
- spice-streaming-agent
- sssd
- sssd-ad
- sssd-client
- sssd-common
- sssd-common-pac

- sssd-dbus
- sssd-ipa
- sssd-kcm
- sssd-krb5
- sssd-krb5-common
- sssd-ldap
- sssd-libwbclient
- sssd-polkit-rules
- sssd-proxy
- sssd-tools
- sssd-winbind-idmap
- system-config-date
- system-config-kickstart
- systemd
- systemd-devel
- systemd-libs
- systemd-python
- systemd-sysv
- tcpdump
- tigervnc
- tigervnc-icons
- tigervnc-license
- tigervnc-server
- tigervnc-server-minimal
- tog-pegasus
- tog-pegasus-libs
- unixODBC
- unixODBC-devel
- uom-lib
- vim
- vim-common
- vim-enhanced
- vim-filessystem
- vim-minimal
- vim-X11
- virt-install



- virt-manager
- virt-manager-common
- virt-p2v-maker
- virt-v2v
- wireshark
- wireshark-gnome
- xfsprogs
- xsane-common
- xsane-gimp
- xulrunner
- yum
- yum-plugin-aliases
- yum-plugin-changelog
- yum-plugin-ovl
- yum-plugin-tmprepo
- yum-plugin-verify
- yum-plugin-versionlock
- yum-rhn-plugin
- yum-utils

## Modified Optional Binary Packages for aarch64

The following optional aarch64 binary packages have been modified:

- libipa\_hbac-devel
- libsss\_certmap-devel
- libsss\_idmap-devel
- libsss\_nss\_idmap-devel
- libsss\_simpleifp-devel
- sg3\_utils-devel
- sssd-libwbclient-devel
- thunderbird
- tigervnc-server-applet
- tigervnc-server-module

## New Binary Packages for aarch64

The following aarch64 binary packages are new for Update 8, relative to Update 7 of Oracle Linux 7:

- `adobe-mappings-cmap`
- `adobe-mappings-pdf`
- `biosdevname`
- `chrome-gnome-shell`
- `geoipupdate`
- `geolite2`
- `kernel`
- `kmod-kvdo`
- `ksc`
- `libmaxminddb`
- `libpaper`
- `nbdkit`
- `openjpeg2`
- `pmdk-convert`
- `po4a`
- `python3`
- `python3-setuptools`
- `python-blivet3`
- `python-pip`
- `python-rpm-generators`
- `python-rpm-macros`
- `python-wheel`
- `redfish-finder`
- `sassist`
- `ucx`
- `urw-base35-fonts`
- `xorriso`

## Removed Binary Packages for aarch64

The following aarch64 binary packages from the upstream release have been removed:

- `anaconda-user-help`
- `compat-dapl`
- `compat-exiv2-023`
- `compat-exiv2-026`
- `compat-gcc-34`
- `compat-gcc-44`

- `compat-glibc`
- `compat-libgfortran-41`
- `cpuid`
- `crash-ptdump-command`
- `hyperv-daemons`
- `infinipath-psm`
- `insights-client`
- `intel-cmt-cat`
- `ixpdimm_sw`
- `java-1.6.0-openjdk`
- `kabi-yum-plugins`
- `kpatch`
- `libinvm-cim`
- `libinvm-cli`
- `libinvm-i18n`
- `libpsm2`
- `libsmbios`
- `mcelog`
- `memkind`
- `memtest86+`
- `microcode_ctl`
- `mkbootdisk`
- `nvml`
- `opa-ff`
- `opa-fm`
- `openssl098e`
- `open-vm-tools`
- `oracleasm`
- `ovmf`
- `prelink`
- `python-rhsm`
- `qemu-kvm`
- `redhat-access-gui`
- `redhat-access-plugin-ipa`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-as-IN`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-bn-IN`

- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-de-DE
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-en-US
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-es-ES
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-fr-FR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-gu-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-hi-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-it-IT
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ja-JP
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-kn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ko-KR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ml-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-mr-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-or-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pa-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pt-BR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ru-RU
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ta-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-te-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-CN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-TW
- redhat-logos
- redhat-release-eula
- redhat-support-lib-python
- redhat-support-tool
- seabios
- sgabios
- subscription-manager
- subscription-manager-migration-data
- syslinux
- tboot
- vdo
- virt-who
- x86info
- xorg-x11-drv-intel
- xorg-x11-drv-openchrome
- xorg-x11-drv-vesa

- `xorg-x11-drv-vmmouse`
- `xorg-x11-drv-vmware`

## Changes to Source Packages

This section contains information about the removed, modified, and new **source** packages in this release. For information about the **binary** package changes, see [Changes to Binary Packages](#).

### Added Source Packages for x86\_64 by Oracle

The following x86\_64 source packages have been added by Oracle:

- `compat-gcc-32`
- `dtrace-utils`
- `inotify-tools`
- `kernel-uek`
- `libdtrace-ctf`
- `lxc`
- `ocfs2-tools`
- `oracleasm-support`
- `oracle-database-preinstall-19c`
- `oraclelinux-release`
- `oracle-logos`
- `reflink`
- `uname26`
- `yum-plugin-ulninfo`

### Modified Source Packages for x86\_64

The following x86\_64 source packages from the upstream release have been modified:

- `aide`
- `abrt`
- `abrt-java-connector`
- `akonadi`
- `anaconda`
- `anaconda-user-help`
- `apr-util`
- `autofs`
- `babel`
- `basesystem`

- bcc
- binutils
- brltty
- btrfs-progs
- caribou
- ceph-common
- chrony
- cloud-init
- clufter
- cockpit
- coreutils
- crash
- cups-filters
- curl
- custodia
- dbus
- dbus-glib
- dbusmenu-qt
- dbus-python
- deltarpm
- device-mapper-multipath
- device-mapper-persistent-data
- dhcp
- dracut
- efibootmgr
- file
- firefox
- firewalld
- fuse
- fuseiso
- fwupdate
- gcc
- gcc-libraries
- gdb
- gdbm
- glibc

- `gnome-system-log`
- `gperftools`
- `grub2`
- `grubby`
- `gststreamer`
- `gststreamer1`
- `gststreamer1-plugins-bad-free`
- `gststreamer1-plugins-base`
- `gststreamer1-plugins-good`
- `gststreamer1-plugins-ugly-free`
- `gststreamer-plugins-bad-free`
- `gststreamer-plugins-base`
- `gststreamer-plugins-good`
- `hawkey`
- `httpd`
- `initial-setup`
- `initscripts`
- `ipa`
- `iscsi-initiator-utils`
- `java-11-openjdk`
- `java-1.7.0-openjdk`
- `javapackages-tools`
- `kabi-yum-plugins`
- `kdepimlibs`
- `kde-settings`
- `kernel`
- `kernel-uek`
- `kexec-tools`
- `keycloak-httpd-client-install`
- `kmod`
- `kmod-kvdo`
- `ksc`
- `kscreen`
- `ksh`
- `libblockdev`
- `libbytesize`

- libdbi-drivers
- libguestfs
- libguestfs-winsupport
- libpwquality
- libreport
- libreswan
- libssh2
- libtdb
- libtevent
- libvirt
- libvirt-cim
- libvirt-glib
- libvirt-java
- libvirt-python
- libvirt-snmpp
- libxml2
- libxslt
- linux-firmware
- lorax
- lvm2
- lz4
- microcode\_ctl
- mkbootdisk
- mozjs52
- nfs-utils
- nss-sofotkn
- ntp
- nvml
- opa-ff
- opa-fm
- OpenIPMI
- openscap
- openssh
- openssl
- openssl098e
- open-vm-tools



- `oracleasm`
- `oscap-anaconda-addon`
- `osinfo-db`
- `osinfo-db-tools`
- `os-prober`
- `PackageKit`
- `parted`
- `pcp`
- `pcs`
- `pcsc-lite`
- `pcsc-lite-ccid`
- `perftest`
- `perl-DBD-MySQL`
- `perl-XML-Parser`
- `plymouth`
- `polycoreutils`
- `polkit`
- `polkit-kde`
- `polkit-pkla-compat`
- `polkit-qt`
- `ppp`
- `pyatspi`
- `pygobject3`
- `pykickstart`
- `python`
- `python3`
- `python3-setuptools`
- `python-adal`
- `python-augeas`
- `python-azure-sdk`
- `python-backports`
- `python-backports-ssl_match_hostname`
- `python-beaker`
- `python-blivet`
- `python-blivet3`
- `python-boto3`

- `python-cffi`
- `python-chardet`
- `python-cherrypy`
- `python-configobj`
- `python-configshell`
- `python-coverage`
- `python-cpio`
- `python-cryptography`
- `python-cups`
- `python-dateutil`
- `python-decorator`
- `python-di`
- `python-dmidecode`
- `python-dns`
- `python-docs`
- `python-docutils`
- `python-enum34`
- `python-ethtool`
- `python-futures`
- `python-gssapi`
- `python-gudev`
- `python-hwdata`
- `python-idna`
- `python-iniparse`
- `python-inotify`
- `python-ipaddr`
- `python-ipaddress`
- `python-IPy`
- `python-isodate`
- `python-jinja2`
- `python-jsonpatch`
- `python-jsonpointer`
- `python-jwcrypto`
- `python-jwt`
- `python-kdcproxy`
- `python-kerberos`

- `python-kitchen`
- `python-kmod`
- `python-krbV`
- `python-ldap`
- `python-linux-procfs`
- `python-lxml`
- `python-mako`
- `python-markupsafe`
- `python-matplotlib`
- `python-meh`
- `python-memcached`
- `python-msrest`
- `python-msrestazure`
- `python-netaddr`
- `python-netifaces`
- `python-nose`
- `python-nss`
- `python-ntplib`
- `python-oauthlib`
- `python-paramiko`
- `python-paste`
- `python-pillow`
- `python-pip`
- `python-ply`
- `python-prettytable`
- `python-psycpg2`
- `python-pyasnl`
- `python-pyblock`
- `python-pycparser`
- `python-pycurl`
- `python-pyudev`
- `python-qrcode`
- `python-reportlab`
- `python-requests`
- `python-requests-oauthlib`
- `python-rpm-generators`

- python-rpm-macros
- python-rtslib
- python-s3transfer
- python-schedutils
- python-setproctitle
- python-setuptools
- python-six
- python-slip
- python-smbc
- python-sqlalchemy
- python-subprocess32
- python-suds
- python-tempita
- python-urlgrabber
- python-urllib3
- python-urwid
- python-virtualenv
- python-wheel
- python-yubico
- qt3
- rear
- redhat-bookmarks
- redhat-indexhtml
- redhat-lsb
- redhat-release-server
- redhat-rpm-config
- redhat-upgrade-dracut
- redhat-upgrade-tool
- redland
- rhn-client-tools
- rhnlib
- rhnsd
- rpmdevtools
- scap-security-guide
- scap-workbench
- seabios

- selinux-policy
- setroubleshoot
- setroubleshoot-plugins
- sg3\_utils
- shim
- shim-signed
- sos
- sos-collector
- spice-streaming-agent
- sssd
- system-config-date
- system-config-date-docs
- system-config-kickstart
- systemd
- tcpdump
- tigervnc
- tog-pegasus
- unixODBC
- uom-lib
- vim
- virt-manager
- volume\_key
- wireshark
- xfsprogs
- xsane
- xulrunner
- yum
- yum-langpacks
- yum-metadata-parser
- yum-plugin-ulninfo
- yum-rhn-plugin
- yum-utils

## Modified Optional Source Packages for x86\_64

The following optional x86\_64 source packages have been modified:

- gnu-efi

- jetty-artifact-remote-resources
- jetty-parent
- jetty-toolchain
- kmod-redhat-ixgbe
- libreoffice
- pesign
- publican
- sanlock
- thunderbird

## New Source Packages for x86\_64

The following x86\_64 source packages are new for Update 8, relative to Update 7 of Oracle Linux 7:

- adobe-mappings-cmap
- adobe-mappings-pdf
- chrome-gnome-shell
- compat-exiv2-026
- geoipupdate
- geolite2
- libmaxminddb
- libpaper
- openjpeg2
- pmdk-convert
- python3
- python3-setuptools
- python-blivet3
- python-pip
- python-rpm-generators
- python-rpm-macros
- python-wheel
- redfish-finder
- sassist
- ucx
- urw-base35-fonts
- xorriso

## Removed Source Packages for x86\_64

The following x86\_64 source packages from the upstream release have been removed:

- `dtc`
- `insights-client`
- `kpatch`
- `libcxl`
- `libehca`
- `libica`
- `libocxl`
- `librtas`
- `libservicelog`
- `libvdp`
- `libzfcphbaapi`
- `lsvpd`
- `opal-prd`
- `openssl-ibmca`
- `paflib`
- `powerpc-utils`
- `powerpc-utils-python`
- `ppc64-diag`
- `ppc64-utils`
- `python-rhsm`
- `qclib`
- `qemu-kvm-ma`
- `redhat-access-gui`
- `redhat-access-plugin-ipa`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-as-IN`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-bn-IN`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-de-DE`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-en-US`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-es-ES`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-fr-FR`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-gu-IN`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-hi-IN`
- `Red_Hat_Enterprise_Linux-Release_Notes-7-it-IT`

- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ja-JP
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-kn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ko-KR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ml-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-mr-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-or-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pa-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pt-BR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ru-RU
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ta-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-te-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-CN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-TW
- redhat-logos
- redhat-release-eula
- redhat-support-lib-python
- redhat-support-tool
- s390utils
- servicelog
- SLOF
- subscription-manager
- subscription-manager-migration-data
- virt-who
- yaboot

## Added Source Packages for aarch64 by Oracle

The following aarch64 source packages have been added by Oracle:

- dtrace-utils
- edk2
- inotify-tools
- isl
- kernel-uek
- libdtrace-ctf
- lxc
- ocfs2-tools
- oracle-armtoolset-1



- oracle-armtoolset-1-binutils
- oracle-armtoolset-1-gcc
- oracle-armtoolset-1-gdb
- oracle-armtoolset-1-golang
- oraclelinux-release
- oracle-logos
- qemu
- reflink
- uname26
- yum-plugin-ulninfo
- zstd

## Modified Source Packages for aarch64

The following aarch64 source packages from the upstream release have been modified:

- aide
- abrt
- abrt-java-connector
- akonadi
- anaconda
- apr-util
- autofs
- babel
- basesystem
- bcc
- binutils
- brltty
- btrfs-progs
- caribou
- ceph-common
- chrony
- cloud-init
- clufter
- cockpit
- coreutils
- crash
- cups-filters

- curl
- custodia
- dbus
- dbus-glib
- dbusmenu-qt
- dbus-python
- deltarpm
- device-mapper-multipath
- device-mapper-persistent-data
- dhcp
- dracut
- dtc
- efibootmgr
- file
- firefox
- firewalld
- fuse
- fuseiso
- fwupdate
- gcc
- gcc-libraries
- gdb
- gdbm
- glibc
- gnome-system-log
- gperftools
- grub2
- grubby
- gstreamer
- gstreamer1
- gstreamer1-plugins-bad-free
- gstreamer1-plugins-base
- gstreamer1-plugins-good
- gstreamer1-plugins-ugly-free
- gstreamer-plugins-bad-free
- gstreamer-plugins-base

- gstreamer-plugins-good
- hawkey
- httpd
- initial-setup
- initscripts
- ipa
- iscsi-initiator-utils
- java-11-openjdk
- java-1.7.0-openjdk
- javapackages-tools
- kdeplibs
- kde-settings
- kernel
- kernel-uek
- kexec-tools
- keycloak-httpd-client-install
- kmod
- kmod-kvdo
- ksc
- kscreen
- ksh
- libblockdev
- libbytesize
- libdbi-drivers
- libguestfs
- libguestfs-winsupport
- libpwquality
- libreport
- libreswan
- libssh2
- libtdb
- libtevent
- libvirt
- libvirt-cim
- libvirt-glib
- libvirt-java

- libvirt-python
- libvirt-snmp
- libxml2
- libxslt
- linux-firmware
- lorax
- lvm2
- lz4
- mozjs52
- nfs-utils
- nss-sofotkn
- ntp
- OpenIPMI
- openscap
- openssh
- openssl
- oscap-anaconda-addon
- osinfo-db
- osinfo-db-tools
- os-prober
- PackageKit
- parted
- pcp
- pcs
- pcsc-lite
- pcsc-lite-ccid
- perftest
- perl-DBD-MySQL
- perl-XML-Parser
- plymouth
- policycoreutils
- polkit
- polkit-kde
- polkit-pkla-compatible
- polkit-qt
- ppp

- `pyatspi`
- `pygobject3`
- `pykickstart`
- `python`
- `python3`
- `python3-setuptools`
- `python-adal`
- `python-augeas`
- `python-azure-sdk`
- `python-backports`
- `python-backports-ssl_match_hostname`
- `python-beaker`
- `python-blivet`
- `python-blivet3`
- `python-boto3`
- `python-cffi`
- `python-chardet`
- `python-cherrypy`
- `python-configobj`
- `python-configshell`
- `python-coverage`
- `python-cpio`
- `python-cryptography`
- `python-cups`
- `python-dateutil`
- `python-decorator`
- `python-di`
- `python-dmidecode`
- `python-dns`
- `python-docs`
- `python-docutils`
- `python-enum34`
- `python-ethtool`
- `python-futures`
- `python-gssapi`
- `python-gudev`

- `python-hwdata`
- `python-idna`
- `python-iniparse`
- `python-inotify`
- `python-ipaddr`
- `python-ipaddress`
- `python-IPy`
- `python-isodate`
- `python-jinja2`
- `python-jsonpatch`
- `python-jsonpointer`
- `python-jwcrypto`
- `python-jwt`
- `python-kdcproxy`
- `python-kerberos`
- `python-kitchen`
- `python-kmod`
- `python-krbV`
- `python-ldap`
- `python-linux-procfs`
- `python-lxml`
- `python-mako`
- `python-markupsafe`
- `python-matplotlib`
- `python-meh`
- `python-memcached`
- `python-msrest`
- `python-msrestazure`
- `python-netaddr`
- `python-netifaces`
- `python-nose`
- `python-nss`
- `python-ntplib`
- `python-oauthlib`
- `python-paramiko`
- `python-paste`

- `python-pillow`
- `python-pip`
- `python-ply`
- `python-prettytable`
- `python-psycpg2`
- `python-pyasnl`
- `python-pyblock`
- `python-pycparser`
- `python-pycurl`
- `python-pyudev`
- `python-qrcode`
- `python-reportlab`
- `python-requests`
- `python-requests-oauthlib`
- `python-rpm-generators`
- `python-rpm-macros`
- `python-rtslib`
- `python-s3transfer`
- `python-schedutils`
- `python-setproctitle`
- `python-setuptools`
- `python-six`
- `python-slip`
- `python-smbc`
- `python-sqlalchemy`
- `python-subprocess32`
- `python-suds`
- `python-tempita`
- `python-urlgrabber`
- `python-urllib3`
- `python-urwid`
- `python-virtualenv`
- `python-wheel`
- `python-yubico`
- `qt3`
- `rear`

- redhat-bookmarks
- redhat-indexhtml
- redhat-lsb
- redhat-release-server
- redhat-rpm-config
- redhat-upgrade-dracut
- redhat-upgrade-tool
- redland
- rhn-client-tools
- rhnlib
- rhnsd
- rpmdevtools
- scap-security-guide
- scap-workbench
- selinux-policy
- setroubleshoot
- setroubleshoot-plugins
- sg3\_utils
- shim
- shim-signed
- sos
- sos-collector
- spice-streaming-agent
- sssd
- system-config-date
- system-config-date-docs
- system-config-kickstart
- systemd
- tcpdump
- tigervnc
- tog-pegasus
- unixODBC
- uom-lib
- vim
- virt-manager
- volume\_key



- wireshark
- xfsprogs
- xsane
- xulrunner
- yum
- yum-langpacks
- yum-metadata-parser
- yum-plugin-ulninfo
- yum-rhn-plugin
- yum-utils

## Modified Optional Source Packages for aarch64

The following optional aarch64 source packages have been modified:

- gnu-efi
- jetty-artifact-remote-resources
- jetty-parent
- jetty-toolchain
- kmod-redhat-ixgbe
- libreoffice
- pesign
- publican
- sanlock
- thunderbird

## New Source Packages for aarch64

The following aarch64 source packages are new for Update 8, relative to Update 7 of Oracle Linux 7:

- adobe-mappings-cmap
- adobe-mappings-pdf
- chrome-gnome-shell
- compat-exiv2-026
- geoipupdate
- geolite2
- libmaxminddb
- libpaper
- openjpeg2

- pmdk-convert
- python3
- python3-setuptools
- python-blivet3
- python-pip
- python-rpm-generators
- python-rpm-macros
- python-wheel
- redfish-finder
- sassist
- ucx
- urw-base35-fonts
- xorriso

## Removed Source Packages for aarch64

The following aarch64 source packages from the upstream release have been removed:

- anaconda-user-help
- biosdevname
- compat-dapl
- compat-exiv2-023
- compat-exiv2-026
- compat-gcc-34
- compat-gcc-44
- compat-glibc
- compat-libgfortran-41
- cpuid
- crash-ptdump-command
- genwqe-tools
- hyperv-daemons
- infinipath-psm
- insights-client
- intel-cmt-cat
- ixpdimm\_sw
- java-1.6.0-openjdk
- kabi-yum-plugins
- kernel

- kmod-kvdo
- kpatch
- ksc
- libcxl
- libehca
- libica
- libinv-m-cim
- libinv-m-cli
- libinv-m-i18n
- libocxl
- libpsm2
- librtas
- libservicelog
- libsmbios
- libvpd
- libzfcphbaapi
- lsvpd
- mcelog
- memkind
- memtest86+
- microcode\_ctl
- mkbootdisk
- nbdkit
- nvml
- opa-ff
- opa-fm
- opal-prd
- openssl098e
- openssl-ibmca
- open-vm-tools
- oracleasm
- ovmf
- paflib
- pmdk-convert
- powerpc-utils
- powerpc-utils-python

- ppc64-diag
- ppc64-utils
- prelink
- python-rhsm
- qclib
- qemu-kvm
- qemu-kvm-ma
- redhat-access-gui
- redhat-access-plugin-ipa
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-as-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-bn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-de-DE
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-en-US
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-es-ES
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-fr-FR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-gu-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-hi-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-it-IT
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ja-JP
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-kn-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ko-KR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ml-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-mr-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-or-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pa-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-pt-BR
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ru-RU
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-ta-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-te-IN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-CN
- Red\_Hat\_Enterprise\_Linux-Release\_Notes-7-zh-TW
- redhat-logos
- redhat-release-eula
- redhat-support-lib-python
- redhat-support-tool
- s390utils

- seabios
- servicelog
- sgabios
- SLOF
- subscription-manager
- subscription-manager-migration-data
- syslinux
- tboot
- tss2
- vdo
- virt-who
- x86info
- xorg-x11-drv-intel
- xorg-x11-drv-openchrome
- xorg-x11-drv-vesa
- xorg-x11-drv-vmmouse
- xorg-x11-drv-vmware
- yaboot