Red Hat Enterprise Linux 10

Considerations in adopting RHEL 10

Key differences between RHEL 9 and RHEL 10

Last Updated: 2026-03-03

Red Hat Enterprise Linux 10 Considerations in adopting RHEL 10

Key differences between RHEL 9 and RHEL 10

Legal Notice

Abstract

This document provides an overview of changes in RHEL 10 since RHEL 9 to help you evaluate an upgrade to RHEL 10.

Table of Contents

PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

We are committed to providing high-quality documentation and value your feedback. To help us improve, you can submit suggestions or report errors through the Red Hat Jira tracking system.

Procedure

1. Log in to the Jira website.
   If you do not have an account, select the option to create one.

2. Click **Create** in the top navigation bar.

3. Enter a descriptive title in the **Summary** field.

4. Enter your suggestion for improvement in the **Description** field. Include links to the relevant parts of the documentation.

5. Click **Create** at the bottom of the dialogue.

CHAPTER 1. KEY RESOURCES FOR EVALUATING AN UPGRADE TO RHEL 10

Review the documentation resources available to assist with your upgrade to Red Hat Enterprise Linux 10. These resources help you assess system compatibility and plan a successful migration strategy.

The Considerations in adopting RHEL document provides an overview of differences between two major versions of Red Hat Enterprise Linux: RHEL 9 and RHEL 10. It provides a list of changes relevant for evaluating an upgrade to RHEL 10 rather than an exhaustive list of all alterations. Review the following documents when considering the upgrade to RHEL 10:

- For details regarding RHEL 10 usage, see the RHEL 10 product documentation .

- For guidance regarding an in-place upgrade from RHEL 9 to RHEL 10, see Upgrading from RHEL 9 to RHEL 10.

- For guidance on how to install RHEL 10, see Installing RHEL .

- For information about major differences between RHEL 8 and RHEL 9, see Considerations in adopting RHEL 9.

- For information about capabilities and limits of Red Hat Enterprise Linux 10 as compared to other versions of the system, see the Red Hat Enterprise Linux technology capabilities and limits Knowledgebase article.

- For information regarding the Red Hat Enterprise Linux life cycle, see Red Hat Enterprise Linux Life Cycle.

- For information about a package listing for RHEL 10, including licenses and application compatibility levels, see Package manifest.

- For information about application compatibility levels, see Red Hat Enterprise Linux 10: Application Compatibility Guide.

CHAPTER 2. ARCHITECTURES

Review the supported hardware architectures for Red Hat Enterprise Linux (RHEL) 10 to ensure your infrastructure is compatible before you install or upgrade.

Red Hat Enterprise Linux 10 is distributed with the kernel version 6.12.0, which provides support for the following architectures at the minimum required version (stated in parentheses):

- AMD and Intel 64-bit architectures (x86-64-v3)

- The 64-bit ARM architecture (ARMv8.0-A)

- IBM Power Systems, Little Endian (POWER9)

- 64-bit IBM Z (z14)

CHAPTER 3. REPOSITORIES

Red Hat Enterprise Linux (RHEL) 10 repositories provide the specific software, operating system functionality, and various system components you need for a stable and supported environment.

Red Hat Enterprise Linux distributes content through different repositories, for example, BaseOS, AppStream, CodeReady Linux Builder, and Supplementary. In addition, specific content is available in the Red Hat Enterprise Linux Add-on repositories, such as High Availability.

The main repositories that RHEL uses to distribute its content include the following repositories:

BaseOS

Content in the BaseOS repository consists of the core set of the underlying operating system functionality that provides the foundation for all installations. This content is available in the RPM format and is subject to support terms similar to those in earlier releases of RHEL.

AppStream

Content in the AppStream repository includes additional user-space applications, runtime languages, and databases in support of the varied workloads and use cases.

> **IMPORTANT**
>
> Both the BaseOS and AppStream content sets are required by RHEL and are available in all RHEL subscriptions.

CodeReady Linux Builder

The CodeReady Linux Builder repository is available with all RHEL subscriptions. It provides additional packages for use by developers. Red Hat does not support packages included in the CodeReady Linux Builder repository.

Additional resources

- [Package manifest](#)

CHAPTER 4. APPLICATION STREAMS

Multiple versions of user-space components are delivered as Application Streams and updated more frequently than the core operating system packages. This provides greater flexibility to customize RHEL without impacting the underlying stability of the platform or specific deployments.

Application Streams are available in the following formats:

- RPM format

- Software Collections

- Flatpaks

> **NOTE**
>
> In previous RHEL major versions, some Application Streams were available as modules as an extension to the RPM format. In RHEL 10, Red Hat does not intend to provide any Application Streams that use modularity as the packaging technology and, therefore, no modular content is being distributed with RHEL 10.

Each Application Stream component has a given life cycle, either the same as RHEL 10 or shorter. For RHEL life cycle information, see Red Hat Enterprise Linux Life Cycle and Red Hat Enterprise Linux Application Streams Life Cycle.

RHEL 10 provides initial Application Stream versions that can be installed as RPM packages by using the **dnf install** command.
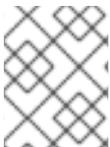
> **NOTE**
>
> Certain initial Application Streams in the RPM format have a shorter life cycle than Red Hat Enterprise Linux 10.

Always determine what version of an Application Stream you want to install and make sure to review the Red Hat Enterprise Linux Application Stream Lifecycle first.

Content that needs rapid updating, such as alternate compilers and container tools, is available in rolling streams that will not provide alternative versions in parallel.

For information about Application Streams available in RHEL 10 and their application compatibility level, see the Package manifest. Application compatibility levels are explained in the Red Hat Enterprise Linux 10: Application Compatibility Guide document.

Additional resources

- Red Hat Enterprise Linux Life Cycle

- Red Hat Enterprise Linux Application Stream Lifecycle

- Red Hat Enterprise Linux 10: Application Compatibility Guide

- Managing software with the DNF tool

- Package manifest

CHAPTER 5. CONTAINERS

Review the most notable changes to containers between RHEL 9 and RHEL 10.

The system connections and farm information stored in the containers.conf file are now read-only

The system connections and farm information stored in the **containers.conf** file are now read-only. The system connections and farm information will now be stored in the **podman.connections.json** file, managed only by Podman. Podman continues to support the old configuration options such as **[engine.service_destinations]** and the **[farms]** section. You can still add connections or farms manually if needed; however, it is not possible to delete a connection from the **containers.conf** file with the **podman system connection rm** command.

The slirp4netns network mode is deprecated

The **slirp4netns** network mode is deprecated and will be removed in a future major release of RHEL. The **pasta** network mode is the default network mode for rootless containers.

The cgroups v1 for rootless containers is deprecated

The cgroups v1 for rootless containers is deprecated and will be removed in a future major release of RHEL. The cgroups v2 is used by default instead of cgroups v1.

The containernetworking-plugins package and the CNI network stack are no longer supported

The **containernetworking-plugins** package is removed, and the CNI network stack is no longer supported.

- If you upgrade from the previous RHEL versions to RHEL 10.0 or if you have a fresh installation of RHEL 10.0, the CNI network backend is no longer available. Existing containers that use CNI for networking will no longer function and will need to be removed and recreated. Newly created containers will use the default **netavark** network backend.

- If present, the **cni** value in the containers.conf file for the **network_backend** option must be changed to **netavark** or can be unset.

The runc container runtime has been removed

The **runc** container runtime is removed. The default container runtime is **crun**. If you upgrade from the previous RHEL versions to RHEL 10.0, you have to run the **podman system migrate --new-runtime=crun** command to set a new OCI runtime for all containers.

tzdata package is no longer installed by default in the minimal container images

The **tzdata** package is no longer installed in the **registry.access.redhat.com/ubi10-minimal** container image. As a consequence, if you migrate your minimal container builds from a previous RHEL release to RHEL 10.0, and you enter the **microdnf reinstall tzdata** command to reinstall the **tzdata** package, you get an error message because the **tzdata** package is no longer installed by default. In this case, enter the **microdnf install tzdata** command to install **tzdata**. Without the **tzdata** package, only the **UTC** timezone will be available.

composefs filesystem is available as a Technology Preview

The key technologies **composefs** uses are:

- OverlayFS as the kernel interface

- Enhanced Read-Only File System (EROFS) for a mountable metadata tree

- The **fs-verity** feature (optional) from the lower filesystem

Key advantages of **composefs**:

- Separation between metadata and data. **composefs** does not store any persistent data. The underlying metadata and data files are stored in a valid lower Linux filesystem such as **ext4**, **xfs**, and so on.

- Mounting multiple **composefs** with a shared storage.

- Data files are shared in the page cache to enable multiple container images to share their memory.

- Support **fs-verity** validation of the content files.

Running RHEL 7 containers on a RHEL 10 host is not supported

Running RHEL 7 containers on a RHEL 10 host is not supported. For more information, see Red Hat Enterprise Linux Container Compatibility Matrix.

Changed location of the **storage.conf** file

Beginning with RHEL 10.0, the **storage.conf** configuration file is located in the /**usr**/**share**/**containers** directory instead of /**etc**/**containers**.

CHAPTER 6. COMPILERS AND DEVELOPMENT TOOLS

Review the most notable changes to compilers and development tools between RHEL 9 and RHEL 10.

Initial versions available in RHEL 10.0

The following system toolchain components are available with RHEL 10.0:

- **GCC 14.2**

- **glibc 2.39**

- **Annobin 12.92**

- **binutils 2.41**

The following performance tools and debuggers are available with RHEL 10.0:

- **GDB 14.2**

- **Valgrind 3.24.0**

- **SystemTap 5.2**

- **Dyninst 12.3.0**

- **elfutils 0.192**

- **libabigail 2.6**

The following performance monitoring tools are available with RHEL 10.0:

- **PCP 6.3.7**

- **Grafana 10.2.6**

The following compiler toolsets are available with RHEL 10.0:

- **LLVM Toolset 19.1.7**

- **Rust Toolset 1.84.1**

- **Go Toolset 1.23.2**

RHEL 10 provides cmake in version 3.30.5

RHEL 10 is distributed with **cmake** version 3.30.5. For notable changes, see the upstream release notes.

RHEL 10 provides Rust Toolset in version 1.84.0

RHEL 10 is distributed with Rust Toolset in version 1.84.0. Notable enhancements since the previously available version 1.79.0 include:

- The new **LazyCell** and **LazyLock** types delay the initialization until the first use. These extend the earlier **OnceCell** and **OnceLock** types with the initialization function included in each instance.

- The new sort implementations in the standard library improve the runtime performance and compile times. They also try to detect cases where a comparator is not producing a total order, making that panic instead of returning unsorted data.

- Precise capturing for opaque return types have been added. The new **use<..>** syntax specifies the generic parameters and lifetimes used in an **impl Trait** return type.

- Many new features for **const** code have been added, for example:

  - Floating point support

  - **const** immediates for inline assembly

  - References to statics

  - Mutable reference and pointers

- Many new features for **unsafe** code have been added, for example:

  - Strict provenance APIs

  - **&raw** pointer syntax

  - Safely addressing statics

  - Declaring safe items in unsafe **extern** blocks

- The Cargo dependency resolver is now version aware. If a dependency crate specifies its minimum supported Rust version, Cargo uses this information when it resolves the dependency graph instead of using the latest **semver**-compatible crate version.

Compatibility notes:

- The WebAssembly System Interface (WASI) target is changed from **rust-std-static-wasm32-wasi** to **rust-std-static-wasm32-wasip1**. You can select the WASI target also by using the **--target wasm32-wasip1** parameter on the command line. For more information, see the Changes to Rust's WASI targets upstream blog post.

- The split panic hook and panic handler arguments **core::panic::PanicInfo** and **std::panic::PanicInfo** are now different types.

- An abort on uncaught panics now requires to use the **extern "C-unwind"** instruction instead of **extern "C"** to allow unwinding across ABI boundaries.

Rust Toolset is a rolling Application Stream, and Red Hat only supports the latest version. For more information, see the Red Hat Enterprise Linux Application Streams Life Cycle document.

LLVM Toolset provided to 19.1.7

LLVM Toolset is provided inversion 19.1.7.
Notable changes of the LLVM compiler:

- LLVM now uses debug records, a more efficient representation for debug information.

Notable updates of the Clang:

- C++14 sized deallocation is now enabled by default.

- C++17 support has been completed.

- Improvements to C++20 support, especially around modules, concepts, and Class Template Argument Deduction (CTAD) have been added.

- Improvements to C23, C2c, C23, and C2y support have been added.

For more information, see the LLVM release notes and Clang release notes.

Go Toolset provided in version 1.23

RHEL 10.0 provides Go Toolset in version 1.23. Notable enhancements include:

- The **for-range** loop accepts iterator functions of the following types:

  - **func(func() bool)**

  - **func(func(K) bool)**

  - **func(func(K, V) bool)**

  Calls of the iterator argument function create the iteration values for the **for-range** loop. For reference links, see the upstream release notes.

- The Go Toolchain can collect usage and breakage statistics to help the Go team to understand how the Go Toolchain is used and working. By default, Go Telemetry does not upload telemetry data and stores it only locally. For further information, see the upstream Go Telemetry documentation.

- The **go vet** sub-command includes the **stdversion** analyzer which flags references to symbols that are too new for the version of Go you use in the referring file.

- The **cmd** and **cgo** features support the **-ldflags** option to pass flags to the C linker. The **go** command uses this flag automatically to avoid **argument list too long** errors when you use a very large **CGO_LDFLAGS** environment variable.

- The **trace** utility tolerates partially broken traces and attempts to recover the trace data. This is especially useful in case of crashes, because you can get the trace leading up to the crash.

- The traceback printed by the runtime after an unhandled panic or other fatal error carries indentation to distinguish the stack trace of the **goroutine** from the first **goroutine**.

- The compiler build time overhead of using profile-guided optimization was reduced to single-digit percentage.

- The new **-bindnow** linker flag enables immediate function binding when building a dynamically-linked ELF binary.

- The //**go:linkname** linker directive no longer refer to internal symbols in the standard library and the runtime that are not marked with //**go:linkname** on their definition.

- If a program no longer refers to a **Timer** or **Ticker**, garbage collection cleans them up immediately even if their **Stop** method has not been called. The timer channel associated with a **Timer** or **Ticker** is now unbuffered with capacity 0. This ensures that, every time a **Reset** or **Stop** method is called, no stale values are not sent or received after the call.

- The new **unique** package provides facilities for canonicalizing values, such as **interning** or **hash-consing**.

- The new **iter** package provides the basic definitions to work with user-defined iterators.

- The **slices** and **maps** packages introduce several new functions that work with iterators.

- The new **structs** package provides types for struct fields that modify properties of the containing struct type, such as memory layout.

- Minor changes are made in the following packages:

  - **archive/tar**

  - **crypto/tls**

  - **crypto/x509**

  - **database/sql**

  - **debug/elf**

  - **encoding/binary**

  - **go/ast**

  - **go/types**

  - **math/rand/v2**

  - **net**

  - **net/http**

  - **net/http/httptest**

  - **net/netips**

  - **path/filepath**

  - **reflect**

  - **runtime/debug**

  - **runtime/pprof**

  - **runtime/trace**

  - **slices**

  - **sync**

  - **sync/atomic**

  - **syscall**

- **testing/fstest**

- **text/template**

- **time**

- **unicode/utf16**

For more information, see the upstream release notes.

Go Toolset is a rolling Application Stream, and Red Hat supports only the latest version. For more information, see the Red Hat Enterprise Linux Application Streams Life Cycle document. LLVM Toolset is a rolling Application Stream, and only the latest version is supported. For more information, see the Red Hat Enterprise Linux Application Streams Life Cycle document.

GCC 14 defaults to x86-64-v3

GCC 14 in RHEL 10 defaults to the x86-64-v3 microarchitecture level. This level enables certain capabilities by default, such as the AVX and AVX2 instruction sets and the fused multiply-add (FMA) instruction set. See the related article for more details.

Warnings changed to errors impacting C code compilation in GCC 14

Starting with GCC 14, several C warnings have been elevated to errors, such as implicit **int** types, implicit function declarations, and using pointers as integers. This update can disrupt application builds in cases where developers have been ignoring these warnings. Developers now must address these issues for successful compilation. For more information, see Porting to GCC 14.

GCC defaults to using the **IEEE128** floating point format on IBM Power Systems

In RHEL10, GCC uses the **IEEE128** floating point format by default for all long double floating point numbers on IBM Power Systems instead of the earlier software-only **IBM-DOUBLE-DOUBLE** code. As a result, you can notice performance improvements in C or C++ code that performs computations by using long double floating point numbers.
Note that this 128-bit long double floating point ABI is incompatible with the floating point ABI used in RHEL 8 and earlier versions. Support for hardware instructions to perform **IEEE128** operations is available since IBM POWER9.

nscd replaced by **systemd-resolved** and **sssd**

The **nscd** caching daemon has been removed from RHEL 10. The GNU C Library (**glibc**) continues to work with the available replacements:

- If you need DNS caching, install and enable the **systemd-resolved** service.

- If you need caching for any other name services, install and configure the **sssd** service.

Grafana, PCP, and **grafana-pcp** now use **Valkey** to store data

In RHEL 10, the **Valkey** key-value store replaces **Redis**. As a result, **Grafana**, PCP, and the **grafana-pcp** plug-in now use **Valkey** to store data instead of **Redis**. The **PCP Redis** data source in the **grafana-pcp** plug-in is now named **PCP Valkey**.

The new version of TBB is incompatible

RHEL 10 includes the Threading Building Blocks (TBB) library version 2021.11.0, which is incompatible with the versions distributed with previous releases of RHEL. You must rebuild applications that use TBB to make them run on RHEL 10.

Significant performance improvements in **zlib-ng**

The **zlib-ng** library provides substantial performance improvements and, therefore, RHEL 10 replaces the traditional **zlib** implementation with **zlib-ng**.
Result of benchmarks with **zlib-ng** 2.2.3 :

- Decompression is 378% faster than with **zlib**.

- Compression is 423% faster than with **zlib**.

Red Hat build of OpenJDK 21 is the default Java implementation in RHEL 10

The default RHEL 10 Java implementation is OpenJDK 21. Use the **java-21-openjdk** packages, which provide the OpenJDK 21 Java Runtime Environment and the OpenJDK 21 Java Software Development Kit. For more information, see the OpenJDK documentation.

32-bit ARM and MIPS backends are removed from **llvm** in RHEL 10.1

The **llvm** package in RHEL 10.1 removed the 32-bit ARM and MIPS backends. This change reduces build time and maintenance effort for the toolchain. If you require these backends, you should use alternative build targets or earlier package versions.

CHAPTER 7. DESKTOP

Review the most notable changes to desktop between RHEL 9 and RHEL 10.

power-profiles-daemon is replaced with **tuned** in **gnome-control-center**

> **gnome-control-center** replaced **power-profiles-daemon** with **tuned** for its power profiles, such as Power Saver, Balanced, and Performance. You can customize the **tuned** profiles used by GNOME Settings to control the system's power consumption. **Tuned** dynamically adjusts system parameters such as CPU frequency, display brightness, and USB auto-suspend based on the workload for effective power management and performance tuning.

Other Location functionality is enhanced from Files app

> In RHEL 9, the **Files** application offered an **Other Location** option to access remote file systems and network shares without relying on locally mounted drives.
> In RHEL 10, the **Files** application is updated. You can now access network shares from the **Network** option, and mass storage devices from the **Devices** section in the sidebar.

CHAPTER 8. DYNAMIC PROGRAMMING LANGUAGES, WEB SERVERS, DATABASE SERVERS

Review the most notable changes to dynamic programming languages, web servers, and database servers between RHEL 9 and RHEL 10.

Initial versions available in RHEL 10

RHEL 10.0 provides the following dynamic programming languages:

- **Python 3.12**
- **Ruby 3.3**
- **Node.js 22**
- **Perl 5.40**
- **PHP 8.3**

RHEL 10.0 includes the following version control systems:

- **Git 2.47**
- **Subversion 1.14**

The following web servers are distributed with RHEL 10.0:

- **Apache HTTP Server 2.4.63**
- **nginx 1.26**

The following proxy caching servers are available:

- **Varnish Cache 7.6**
- **Squid 6.10**

RHEL 10.0 offers the following database servers:

- **MariaDB 10.11**
- **MySQL 8.4**
- **PostgreSQL 16**
- **Valkey 8.0**

RHEL 10 provides the MariaDB, MySQL, and PostgreSQL services as RPM packages instead of modules

In previous RHEL versions, Red Hat used module streams to provide multiple versions of MariaDB, MySQL, and PostgreSQL in parallel. RHEL 10 provides the MariaDB, MySQL, and PostgreSQL services as RPM and alternative streams will also be provided as RPM packages instead of modules. The new concept incorporates the stream version into the package name, for example **postgresql16**. If Red Hat adds a new stream of MariaDB, MySQL, or PostgreSQL in a future RHEL version, you can then also install them also by using the package name.
For further details, see The new era of packaging parallel database streams in RHEL 10 .

libdb has been removed

RHEL 8 and RHEL 9 provide Berkeley DB (**libdb**) version 5.3.28, which is distributed under the LGPLv2 license. The upstream Berkeley DB version 6 is available under the AGPLv3 license, which is more restrictive. Therefore, the **libdb** package is not available in RHEL 10. Users of **libdb** are advised to migrate to a different key-value database. For more information, see the following Red Hat Knowledgebase articles:

- How to migrate from libdb to a different key-value database

- Available replacements for the deprecated Berkeley DB (libdb) in RHEL

Therefore, the **libdb** package is not available in RHEL 10. Users of **libdb** are advised to migrate to a different key-value database. For more information, see the Knowledgebase article Available replacements for the deprecated Berkeley DB (libdb) in RHEL.

Session extension is now available in SQLite

RHEL 10 enables session extension in SQLite. With this feature, you can now work in sets of changes that can later be applied to different databases. Additionally, you can revert all changes in the set at once.

CHAPTER 9. RHEL FOR EDGE

Review the most notable changes to RHEL for Edge between RHEL 9 and RHEL 10.

RHEL for Edge now uses image mode for RHEL to create edge artifacts

Starting from RHEL 10, RHEL for Edge supports using image mode to build images, instead of using RHEL image builder.

You can now deploy image mode for RHEL systems by using FDO

Support for deploying an image mode for RHEL systems by using FDO the FIDO Device Onboarding (FDO) process to deliver the configuration to this system is now available.

The Ignition is no longer fully supported for RHEL for Edge images created with image mode for RHEL

The Ignition tool, used to inject the user configuration into the Simplified Installer, AMI, and VMDK RHEL for Edge images types at the early stage of the boot process, has been removed and has no replacement.

Migrating RHEL for Edge 9 systems image mode in RHEL 10 requires rebuilding the initramfs directories

RHEL for Edge systems using RHEL 9 that were installed by using a **simplified-installer** or a **raw** disk image have their root disk encrypted with LUKS that uses a null cipher. When migrating these systems to using image mode in RHEL 10, you must include specific **clevis** packages in the container image and regenerate the **initramfs** directories as part of the container image build process.

CHAPTER 10. FILE SYSTEMS AND STORAGE

Review the most notable changes to file systems and storage between RHEL 9 and RHEL 10.

Support for GFS2 file systems has been removed

The Red Hat Enterprise Linux (RHEL) Resilient Storage Add-On will no longer be supported starting with Red Hat Enterprise Linux 10. This includes the GFS2 file system, which is also no longer supported. The RHEL Resilient Storage Add-On will continue to be supported with earlier versions of RHEL (7, 8, 9) and throughout their respective maintenance support lifecycles.

The **dm-vdo** module has been added to the kernel

With this update, the **kmod-kvdo** module has been replaced with the **dm-vdo** module in the RHEL 10 kernel. In addition, the Virtual Data Optimizer (VDO) **sysfs** parameters have been removed.

The VDO **sysfs** parameters have been removed

The Virtual Data Optimizer (VDO) **sysfs** parameters have been removed. Except for **log_level**, all module-level **sysfs** parameters for the **kvdo** module are removed. For individual **dm-vdo** targets, all **sysfs** parameters specific to VDO are also removed. There is no change for the parameters that are common to all DM targets. Configuration values for **dm-vdo** targets that are currently set by updating the removed module-level parameters, can no longer be changed.
Statistics and configuration values for **dm-vdo** targets are no longer be accessible through **sysfs**. But these values are still accessible by using **dmsetup message stats**, **dmsetup status**, and **dmsetup table** dmsetup commands.

The **md-faulty** and **md-multipath** modules have been removed

In RHEL 10, the **md-faulty** and **md-multipath** MD RAID kernel modules are no longer available.

The **nvme_core.multipath** parameter has been removed

In RHEL 10, the use of DM multipath with NVMe devices over RDMA and FC is no longer supported. As a consequence, the **nvme_core.multipath** parameter has been removed, the native NVMe multipath is enabled by default, and it can no longer be disabled. Bug fixes and support for using DM multipath with NVMe devices over RDMA and FC are provided only through the end of the RHEL 9 lifecycle. Note that DM multipath was never supported with NVMe over TCP in any version of RHEL.

Support for the deprecated XFS V4 on-disk format is removed

Support for the XFS V4 on-disk format has been removed in RHEL 10 due to lack of Y2038 timestamp support, security weaknesses, and upstream deprecation and planned removal. The newer V5 on-disk format has been **mkfs.xfs** by default since early RHEL 7.3.
XFS file systems created before this version cannot be mounted on RHEL 10 systems. To continue using data stored on older V4 format XFS file systems, back up the data on the old file system, use **mkfs.xfs** to create a new V5 file system, and restore the backed up data.

CHAPTER 11. HARDWARE ENABLEMENT

Review the most notable changes to hardware enablement between RHEL 9 and RHEL 10.

11.1. UNMAINTAINED HARDWARE SUPPORT

The following devices (drivers, adapters) are available but are no longer tested or updated on a routine basis in RHEL 10. Red Hat might fix serious bugs, including security bugs, at its discretion. These devices should no longer be used in production, and it is possible they will be disabled in the next major release.

PCI device IDs are in the format of *vendor:device:subvendor:subdevice*. If no device ID is listed, all devices associated with the corresponding driver are unmaintained. To check the PCI IDs of the hardware on your system, run the **lspci -nn** command.

Table 11.1. Unmaintained hardware support

Device ID	Driver	Device description
	aacraid	Dell PERC2, 2/Si, 3/Si, 3/Di, Adaptec Advanced Raid Products, HP NetRAID-4M, IBM ServeRAID & ICP SCSI driver
	af_key	PF_KEY sockets
	ahci_seattle	Seattle AHCI SATA platform driver
	ahci_xgene	APM X-Gene AHCI SATA driver
	arp_tables	ARP tables support
0x10df:0xe220	be2net	Emulex Corporation: OneConnect NIC (Lancer)
	bnx2	
	bnx2fc	QLogic FCoE Driver
	bnx2i	QLogic NetXtreme II BCM5706/5708/5709/57710/57711/57712/57800/57810/57840 iSCSI Driver
	bnx2x	QLogic BCM57710/57711/57711E/57712/57712_MF/57800/57800_MF/57810/57810_MF/57840/57840_MF Driver
	cnic	QLogic cnic Driver
	dl2k	
	ebtables	Ethernet Bridge tables (ebtables) support

Device ID	Driver	Device description
	e1000	Intel® PRO/1000 Network Driver
	hdlc_fr	
	hisi_sas_main	HISILICON SAS controller driver
	hpsa	Driver for HP Smart Array Controller
	ip_set	IP set support
	ip_tables	IP tables support (required for filtering/masq/NAT)
	ip6_tables	IP6 tables support (required for filtering)
0x10df:0x0724	lpfc	Emulex Corporation: OneConnect FCoE Initiator (Skyhawk)
0x10df:0xe200	lpfc	Emulex Corporation: LPe15000/LPe16000 Series 8Gb/16Gb Fibre Channel Adapter
0x10df:0xf011	lpfc	Emulex Corporation: Saturn: LightPulse Fibre Channel Host Adapter
0x10df:0xf015	lpfc	Emulex Corporation: Saturn: LightPulse Fibre Channel Host Adapter
0x10df:0xf100	lpfc	Emulex Corporation: LPe12000 Series 8Gb Fibre Channel Adapter
0x10df:0xfc40	lpfc	Emulex Corporation: Saturn-X: LightPulse Fibre Channel Host Adapter
0x1000:0x005b	megaraid_sas	Broadcom / LSI: MegaRAID SAS 2208 [Thunderbolt]
0x1000:0x0071	megaraid_sas	Broadcom / LSI: MR SAS HBA 2004
0x1000:0x0073	megaraid_sas	Broadcom / LSI: MegaRAID SAS 2008 [Falcon]
0x1000:0x0079	megaraid_sas	Broadcom / LSI: MegaRAID SAS 2108 [Liberator]
	mptbase	Fusion MPT base driver
	mptsas	
0x1000:0x006E	mpt3sas	Broadcom / LSI: SAS2308 PCI-Express Fusion-MPT SAS-2

Device ID	Driver	Device description
0x1000:0x0080	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0081	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0082	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0083	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0084	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0085	mpt3sas	Broadcom / LSI: SAS2208 PCI-Express Fusion-MPT SAS-2
0x1000:0x0086	mpt3sas	Broadcom / LSI: SAS2308 PCI-Express Fusion-MPT SAS-2
0x1000:0x0087	mpt3sas	Broadcom / LSI: SAS2308 PCI-Express Fusion-MPT SAS-2
	mptscsih	Fusion MPT SCSI Host driver
	mptspi	Fusion MPT SPI Host driver
	myri10ge	Myricom 10G driver (10GbE)
	netxen_nic	QLogic/NetXen (1/10) GbE Intelligent Ethernet Driver
	nft_compat	Netfilter x_tables over nf_tables module
	nicpf	
	nicvf	
	nvmet_fc	
	nvmet_tcp	
0x1077:0x2031	qla2xxx	QLogic Corp.: ISP8324-based 16Gb Fibre Channel to PCI Express Adapter
0x1077:0x2532	qla2xxx	QLogic Corp.: ISP2532-based 8Gb Fibre Channel to PCI Express HBA
0x1077:0x8031	qla2xxx	QLogic Corp.: 8300 Series 10GbE Converged Network Adapter (FCoE)
0x1924:0x0803	sfc	Solarflare Communications: SFC9020 10G Ethernet Controller

Device ID	Driver	Device description
0x1924:0x0813	sfc	Solarflare Communications: SFL9021 10GBASE-T Ethernet Controller
	team	Ethernet team driver support

11.2. REMOVED HARDWARE SUPPORT

The following devices (drivers, adapters) have been removed from RHEL 10.

PCI device IDs are in the format of *vendor:device:subvendor:subdevice*. If no device ID is listed, all devices associated with the corresponding driver are unmaintained. To check the PCI IDs of the hardware on your system, run the **lspci -nn** command.

Table 11.2. Removed hardware support

Device ID	Driver	Device description
	firewire_core	
	mlx4	
	nfp	Netronome NFP driver
	qla3xxx	QLogic ISP3XXX Network Driver
	qla4xxx	QLogic ISP4XXX and ISP82XX iSCSI Host Adapter
	rdma_rxe	
	usnic_verbs	Cisco VIC (usNIC) Verbs Driver

CHAPTER 12. HIGH AVAILABILITY AND CLUSTERS

Review the most notable changes to high availability and clusters between RHEL 9 and RHEL 10.

Support for the RHEL Resilient Storage Add-On has been removed

The Red Hat Enterprise Linux (RHEL) Resilient Storage Add-On will no longer be supported starting with Red Hat Enterprise Linux 10 and any subsequent releases after RHEL 10. The RHEL Resilient Storage Add-On will continue to be supported with earlier versions of RHEL (7, 8, 9) and throughout their respective maintenance support lifecycles.

pcsd Web UI no longer available as a standalone user interface

The **pcsd** Web UI is now available as the HA Cluster Management RHEL web console add-on when the **cockpit-ha-cluster** package is installed. It is no longer operated as a standalone interface.

Removed functionality for the Red Hat High Availability Add-On

The following Red Hat High Availability Add-On features are no longer supported in RHEL 10.

- RKT containers in bundles. Docker and Podman containers are still supported.

- The **upstart** and **nagios** resource classes.

- Location constraints with multiple top-level rules. Only one rule per constraint is allowed. The **pcs constraint rule add**, **pcs constraint rule delete** and the **pcs constraint rule remove** commands have been removed. If you have configured constraints with multiple rules, run the **pcs cluster cib-upgrade** command to update to the latest CIB schema. During the update, Pacemaker creates a constraint for each rule, so that there will be only one rule in each constraint.

- The **monthdays**, **moon**, **weekdays**, **weekyears**, and **yearsdays** duration options for Pacemaker rules.

- Using spaces in dates in location constraint rules.

- Delimiting stonith devices with a comma in **pcs stonith level add | clear | delete | remove** commands.

- Ambiguous syntax of the **pcs stonith level clear | delete | remove** command. The commnd has been clarified to distinguish a target from a stonith device.

- The legacy role names of **master** and **slave** are no longer accepted by the **pcs** command-line interface. Use **Promoted**, **Unpromoted**, --promoted, **promotable**, and **promoted-max** instead.

- Using stonith resources in **pcs resource** commands and resources in **pcs stonith** commands, as well as **--brief**, **--no-strict,--safe** and **--simulate** flags of the **pcs stonith disable** command

- Ability to create a stonith resource in a group with the **pcs stonith create** command

- The **stonith.create_in_group** command from API v1 and v2

- The **pcs cluster pcsd-status** command. Use the **pcs status pcsd** or **pcs pcsd status** command.

- The **pcs cluster certkey** command. Use the **pcs pcsd certkey** command.

- The **pcs resource | stonith [op] defaults <name>=<value>…** command. Use the **pcs resource | stonith [op] defaults update** command.

- The **pcs acl show** command. Use the **pcs acl config** command.

- The **pcs alert show** command. Use the **pcs alert config** command.

- The **pcs constraint [location | colocation | order | ticket] show | list** commands. Use the **pcs constraint [location | colocation | order | ticket] config** command.

- The **pcs property show** and the **pcs property list** commands. Use the **pcs property config** command.

- The **pcs tag list** command. Use the **pcs tag config** command.

- The **--autodelete** flag of the **pcs resource move** command.

Removed and updated Pacemaker CIB elements

The following configuration components of the Pacemaker CIB have been removed or modified in RHEL 10. When you upgrade to RHEL 10, these components are automatically removed, modified, or replaced as described. Before you upgrade, ensure that the Pacemaker CIB has a supported value for the **validate-with** attribute. Although you should not edit the cluster configuration file directly, you can view the raw cluster configuration with the **pcs cluster cib** command.
An upgrade modifies the following CIB components:

- The **validate-with** attribute of the **cib** element, which is set to **pacemaker-4.0**

- The **stonith-action** cluster property, which is set to **off** if it was previously set to **poweroff**

- Legacy promotable clone (master) resources, which are changed to standard promotable clones by changing the **master** xml element to the **clone** xml element and by setting the **promotable** meta attribute

- Location constraints with more than one top-level rule, which are converted to separate location constraints for each top-level rule

An upgrade renames the following components:

- The **crmd-finalization-timeout** cluster property, which is renamed to **join-finalization-timeout**

- The **crmd-integration-timeout** cluster property, which is renamed to **join-integration-timeout**

- The **crmd-transition-delay** cluster property, which is renamed to **transition-delay**

An upgrade removes the following components from the CIB:

- **nagios-class** and **upstart-class** resources

- **bundle** resources based on an **rkt** container.

- The **restart-type** resource meta-attribute

- The **can_fail** operation meta-attribute

- The **role_after_failure** operation **meta-attribute**

- **moon** attributes in **date_spec** elements of rules

- The **remove-after-stop** cluster property.

- Ping nodes, which are changed to cluster member nodes with all resources banned and probes disabled

- NVpairs without a value attribute

- Duplicate NVpairs with a given name within an NVset, for which only the first NVpair is kept

An upgrade changes the following default values:

- An action configured as a fence device parameter is now ignored rather than treated as a default fencing action.

- The **concurrent-fencing** cluster option now defaults to **true** and is deprecated.

- The **globally-unique** clone option now defaults to **true** when **clone-node-max** is greater than 1.

An upgrade removes **lifetime** elements, and modifies the CIB as follows:

- **lifetime** elements in a location constraint are removed.

  - If the **lifetime** element in a location constraint has no top-level rules, the **lifetime**-based rule becomes the constraint's top-level rule.

  - If the **lifetime** element in a location constraint has multiple top-level rules, they are nested inside a single **or** rule.

  - If the **lifetime** element in a location constraint has a single top-level rule, a new and top-level constraint rule is added that contains the existing top-level constraint rule and the **lifetime**-based rule.

- **lifetime** elements in a colocation or order constraint are removed. If any rules contained in the colocation or order constraint are referenced elsewhere, they are put in a new location constraint that does not apply to any resources. They are put in a location constraint since a rule in a **lifetime** element may contain a node attribute expression, which is now allowed only within a location constraint rule.

- Following an upgrade, invalid fencing levels display a warning when the CIB is loaded.

CHAPTER 13. IDENTITY MANAGEMENT

Review the most notable changes to Identity Management (IdM) between RHEL 9 and RHEL 10.

DNS over TLS (DoT) in IdM deployments is available as a Technology Preview

Encrypted DNS using DNS over TLS (DoT) is available as a Technology Preview in Identity Management (IdM) deployments in RHEL 10. You can encrypt all DNS queries and responses between DNS clients and IdM DNS servers.
To start using this functionality, install the **ipa-server-encrypted-dns** package on IdM servers and replicas, and the **ipa-client-encrypted-dns** package on IdM clients. Administrators can enable DoT during the installation using the **--dns-over-tls** option.

IdM configures Unbound as a local caching resolver and BIND to receive DoT requests. This functionality is available through the command-line interface (CLI) and non-interactive installations of IdM.

The following options were added to installation utilities for IdM servers, replicas, clients, and the integrated DNS service:

- **--dot-forwarder** to specify an upstream DoT-enabled DNS server.

- **--dns-over-tls-key** and **--dns-over-tls-cert** to configure DoT certificates.

- **--dns-policy** to set a DNS security policy to either allow fallback to unencrypted DNS or enforce strict DoT usage.

By default, IdM uses the **relaxed** DNS policy, which allows fallback to unencrypted DNS. You can enforce encrypted-only communication by using the new **--dns-policy** option with the **enforced** setting.

You can also enable DoT on an existing IdM deployment by reconfiguring the integrated DNS service using **ipa-dns-install** with the new DoT options.

Encrypted DNS with DoT is available in ansible-freeipa installations of IdM as a Technology Preview

You can use Ansible to ensure that all DNS queries and responses between DNS clients and Identity Management (IdM) DNS servers are encrypted. Encrypted DNS using DNS over TLS (DoT) has been available as a Technology Preview in IdM deployments since RHEL 10. In RHEL 10.1, the functionality is available as a Technology Preview in the **freeipa.ansible_freeipa** collection.
To enable DoT during a deployment of IdM by using **ansible-freeipa** use the following options:

- **ipaserver_dns_over_tls** with the **freeipa.ansible_freeipa.ipaserver** role for a new server.

- **ipareplica_dns_over_tls** with the **freeipa.ansible_freeipa.ipareplica** role for a replica.

- **dot_forwarder** to specify an upstream DoT-enabled DNS server.

- **dns_over_tls_key** and **dns_over_tls_cert** to configure DoT certificates.

Additionally, you can set the **dns_policy** variable to enforce DoT-only communication, overriding the default behavior that allows fallback to unencrypted DNS.

Compatibility between the ansible-freeipa RPM and RH AAH collections

Starting with RHEL 10.1, the **freeipa.ansible_freeipa** collection that the **ansible-freeipa** RPM

package provides is now compatible with the namespace and name of the **redhat.rhel_idm** collection provided by Red Hat Ansible Automation Hub (RH AAH). If you have installed the RPM package, you can now run playbooks that reference the AAH roles and modules. Note that internally, the namespace and names from the RPM package are used.

Support for dynamic DoT updates in SSSD

SSSD now supports performing all dynamic DNS (dyndns) queries using DNS-over-TLS (DoT). You can securely update DNS records when IP addresses change, such as Identity Management (IdM) and Active Directory servers. To enable this functionality, you must install the **nsupdate** tool from the **bind9.18-utils** package.

You can use the following new options in the **sssd.conf** file to enable DoT and configure custom certificates for secure DNS updates:

- dyndns_dns_over_tls

- dyndns_tls_ca_cert

- dyndns_tls_cert

- dyndns_tls_key

For more details about these options, see the **sssd-ad(5)** and **sssd-ad(5)** man pages on your system.

IdM-to-IdM migration is fully supported in IdM

IdM-to-IdM migration, previously available as a Technology Preview, is fully supported in RHEL 10.1. You can use the **ipa-migrate** command to migrate all IdM-specific data, such as SUDO rules, HBAC, DNA ranges, hosts, services, and more, from one IdM server to another. This can be useful, for example, when moving IdM from a development or staging environment into a production environment.

ansible-freeipa now uses the Ansible collection format

In RHEL 10, the **ansible-freeipa** rpm installs the **freeipa.ansible_freeipa** collection only.

To use the new collection, add the **freeipa.ansible_freeipa** prefix to the names of roles and modules. Use the fully-qualified names to follow Ansible recommendations. For example, to refer to the **ipahbacrule** module, use **freeipa.ansible_freeipa.ipahbacrule**.

You can simplify the use of modules that are part of the **freeipa.ansible_freeipa** collection by applying **module_defaults**.

HSM is now fully supported in IdM

Hardware Security Modules (HSM) are now fully supported in Identity Management (IdM). You can store your key pairs and certificates for your IdM Cerificate Authority (CA) and Key Recovery Authority (KRA) on an HSM. This adds physical security to the private key material.

IdM relies on the networking features of the HSM to share the keys between machines to create replicas. The HSM provides additional security without visibly affecting most IPA operations. When using low-level tooling the certificates and keys are handled differently but this is seamless for most users.

> **NOTE**
>
> Migration of an existing CA or KRA to an HSM-based setup is not supported. You need to reinstall the CA or KRA with keys on the HSM.

You need the following:

- A supported HSM

- The HSM Public-Key Cryptography Standard (PKCS) #11 library

- An available slot, token, and the token password

To install a CA or KRA with keys stored on an HSM, you must specify the token name and the path to the PKCS#11 library. For example:

```
ipa-server-install -r EXAMPLE.TEST -U --setup-dns --allow-zone-overlap --no-forwarders -N --auto-reverse --random-serial-numbers --token-name=HSM-TOKEN --token-library-path=/opt/nfast/toolkits/pkcs11/libcknfast.so --setup-kra
```

Automated removal of expired certificates is enabled by default

In RHEL 10, automated removal of expired certificates is now enabled by default in IdM on new replicas. A prerequisite for this is the generation of random serial numbers for certificates using RSNv3, which is now also enabled by default.

As a result, certificates are now created with random serial numbers and are removed automatically when expired, after a default retention period of 30 days after expiry.

The **pam_console** module has been removed

The **pam_console** module has been removed from RHEL 10. The **pam_console** module granted file permissions and authentication capabilities to users logged in at the physical console or terminals, and adjusted these privileges based on console login status and user presence. As an alternative to **pam_console**, you can use the **systemd-logind** system service instead. For configuration details, see the **logind.conf(5)** man page.

The **libsss_simpleifp** subpackage has been removed

The **libsss_simpleifp** subpackage that provided the **libsss_simpleifp.so** library was deprecated in RHEL 9. The **libsss_simpleifp** subpackage has been removed in RHEL 10.

The **enumeration** feature has been removed for AD and IdM providers

Support for the **enumeration** feature, which enabled you to list all users or groups using **getent passwd/group** for AD and IdM providers, was deprecated in Red Hat Enterprise Linux (RHEL) 9. The **enumeration** feature has been removed in RHEL 10.

The NIS server emulator has been removed

RHEL IdM does not provide the NIS functionality anymore.

The RSA PKINIT method has been removed

The private key-based RSA method is no longer supported in the MIT Kerberos. It has been removed for security reasons, especially for its vulnerability to the Marvin attack. As a result, the **-X flag_RSA_PROTOCOL** parameter of the **kinit** commands has no effect anymore. The Diffie-Hellman key agreement method is used as the default PKINIT mechanism.

The **389-ds-base** package now creates only LMDB instances

Previously, Directory Server created instances with Berkeley Database (BDB). However, the **libdb** library that implements the BDB version used by **389-ds-base** is no longer available in RHEL 10. Starting with RHEL 10, the **389-ds-base** package uses the Lightning Memory-Mapped Database (LMDB) as the database type by default. This change impacts the following areas:

- The migration procedure

- The database configuration parameters

- The database tuning

- Monitoring and log files

LMDB introduces the following configuration parameters that are stored under the new **cn=mdb,cn=config,cn=ldbm database,cn=plugins,cn=config** configuration entry:

- **nsslapd-mdb-max-size** sets the database maximum size in bytes.

> **IMPORTANT**
>
> Make sure that **nsslapd-mdb-max-size** is high enough to store all intended data. However, the parameter size must not be too high to impact the performance because the database file is memory-mapped.

- **nsslapd-mdb-max-readers** sets the maximum number of read operations that can be opened at the same time. Directory Server autotunes this setting.

- **nsslapd-mdb-max-dbs** sets the maximum number of named database instances that can be included within the memory-mapped database file.

Along with the new LMDB settings, you can still use the **nsslapd-db-home-directory** database configuration parameter.

The BDB instances are no longer supported in Directory Server. Therefore, migrate all instances to LMDB.

nsslapd-subtree-rename-switch is removed from 389-ds-base

Before this update, you could configure Directory Server to prevent moving entries between sub-trees in a database. Because of the stability issues, this feature is removed. Consequently, the **nsslapd-subtree-rename-switch** parameter no longer exists.

As a result, you can no longer deactivate moving the entries between sub-trees. As an alternative, you can deactivate moving the entries by creating an access control instruction (ACI).

authselect is now required by PAM and cannot be uninstalled

In RHEL 10, **authselect-libs** package now owns **/etc/nsswitch.conf** and selected PAM configuration, including **system-auth**, **password-auth**, **smartcard-auth**, **fingerprint-auth**, and **postlogin** in **/etc/pam.d/**. Ownership of these files has been transferred to **authselect-libs** package, with **/etc/nsswitch.conf** previously owned by the **glibc** package and the PAM configuration files previously owned by the **pam** package. Since **authselect** is required by the **pam** package, it cannot be uninstalled.

For system upgrades from previous RHEL versions:

- If an **authselect** configuration already exists, **authselect apply-changes** automatically updates the configuration to the latest version. If there was no previous **authselect** configuration on your system, no changes are made.

- On systems managed by **authselect**, any non-authselect configurations are now forcefully overwritten without a prompt during the next **authselect** call. The **--force** option is no longer required.

If you require a special configuration, create a custom **authselect** profile. Note that you must manually update custom profiles to keep them up to date with your system.

You can opt-out from using **authselect**:

```
# authselect opt-out
```

The SSSD files provider has been removed

The SSSD files provider has been removed from RHEL 10.0. Previously, the SSSD files provider was responsible for smart card authentication and session recording for local users. As a replacement, you can configure the SSSD proxy provider.

Local profile is the new default **authselect** profile

Due to the removal of the SSSD files provider in RHEL 10.0, a new **authselect local** profile has been introduced to handle local user management without relying on SSSD. The **local** profile replaces the previous **minimal** profile and becomes the default **authselect** profile for new installations instead of the **sssd** profile.

During upgrades, the **authselect** utility automatically migrates existing configurations from **minimal** to **local** profile.

Additionally, the **sssd authselect** profile has been updated to remove the **with-files-domain** and **with-files-access-provider** options and it no longer handles local user accounts directly via these options. If you relied on these options, you must update your SSSD configuration to use **proxy provider** instead of **files provider**.

The **sssd** profile now supports the **--with-tlog** option, which enables session recording for users managed by SSSD.

The **dnssec-enable: no;** option has been removed

The **dnssec-enable: no;** option in the **/etc/named/ipa-options-ext.conf** file has been removed in RHEL 10.0. DNS Security Extensions (DNSSEC) are enabled by default and cannot be disabled. The **dnssec-validation: no;** option still continues to be available.

The reconnection_retries option has been removed

The **reconnection_retries** option has been removed from the **sssd.conf** file in SSSD in RHEL 10.0. Because SSSD switched to a new architecture using internal IPC between SSSD processes and responders no longer connect to the backend, the **reconnection_retries** option is no longer used.

The new SSSD option **ldap_read_rootdse** to control RootDSE reads

As of RHEL 10.1, SSSD provides a new option, **ldap_read_rootdse**, to control how SSSD reads Root Directory Service Entry (RootDSE) from the LDAP server. By default, SSSD attempts to read the RootDSE anonymously before the user authenticates. However, this default behavior might conflict with strict security policies that typically restrict all anonymous binds to the LDAP server.

To manage this behavior, you can configure the **ldap_read_rootdse** option to **authenticated** to instruct SSSD to read the RootDSE only after a successful user authentication, or set it to **never** to completely prevent SSSD from attempting the read.

Improved smart card authentication for environments with multiple PKCS#11 tokens

In RHEL 10.1, SSSD smart card authentication has been enhanced to handle authentication in environments that have multiple PKCS#11 tokens inserted simultaneously. This improves authentication, especially in STIG compliant environments that require multiple user accounts, each with distinct privileges and often tied to a separate PKI token.

Previously, SSSD might fail to authenticate if the first checked token did not contain a matching

certificate, because SSSD did not continue searching for the appropriate certificate on other available tokens. With this update, SSSD scans all inserted PKCS#11 tokens for a matching authentication certificate, so that users can authenticate successfully.

Adding a RHEL 10 replica in FIPS mode to an IdM deployment with a SHA-1 master key fails

The default Red Hat Enterprise Linux (RHEL) 10 FIPS cryptographic policy, which complies with FIPS 140-3, does not allow the use of the AES HMAC-SHA1 encryption type's key derivation function. This constraint prevents adding a RHEL 10 Identity Management (IdM) replica in FIPS mode to an existing IdM environment that uses a SHA-1-based Kerberos master key. While RHEL 9 and RHEL 10 both use AES HMAC-SHA2 by default, an IdM deployment might still use a SHA-1 master key if it was originally initialized on RHEL 8.6 or earlier.

> **NOTE**
>
> There is ongoing work to provide a procedure to upgrade an existing IdM Kerberos master key from SHA-1 to SHA-2. This will enable FIPS 140-3 compliance for deployments currently using SHA-1.

Limited support for FreeRADIUS

In RHEL 10, the following external authentication modules are not supported as part of the FreeRADIUS offering:

- The MySQL, PostgreSQL, SQlite, and unixODBC database connectors

- The **Perl** language module

- The REST API module

> **NOTE**
>
> The PAM authentication module and the other authentication modules in the base package remain available and fully supported.

You can find replacements for the removed modules in community-supported packages, for example in the Fedora project.

In addition, support for the **freeradius** package is now limited to the following use cases:

- Using FreeRADIUS as an authentication provider with Identity Management (IdM) as the backend authentication source. The authentication is performed using the **krb5** or LDAP modules, or through the PAM module integrated into the main FreeRADIUS package.

- Using FreeRADIUS as a source of truth for authentication in IdM, through the **Python 3** authentication package.

In contrast to these removals, Red Hat is enhancing its support for the following external authentication modules with FreeRADIUS:

- Authentication based on **krb5** and LDAP

- **Python 3** authentication

The focus on these integration options is in close alignment with the strategic direction of Red Hat IdM.

CHAPTER 14. INFRASTRUCTURE SERVICES

Review the most notable changes to infrastructure services between RHEL 9 and RHEL 10.

The Kea DHCP server replaces ISC DHCP

Kea is a new Dynamic Host Configuration Protocol (DHCP) server solution in RHEL. Kea DHCP is an implementation from Internet Systems Consortium (ISC) that includes fully functional DHCPv4, DHCPv6, and Dynamic DNS servers. The Kea DHCP server has the following advantages:

- It is an extensible server solution with module hooks.

- It allows re-configuration through the REST API.

- It has a design that allows separation of data (leases) and execution environment.

tuned-ppd, Valkey, libcpuid and dnsconfd packages are now available

The following packages are included in Red Hat Enterprise Linux:

- **tuned-ppd** : The **tune-ppd** is a replacement of **drop-in power-profiles-daemon** which uses TuneD as a backend.

- **Valkey** : This package replaces redis and provides the same features as it.

- **libcpuid** : This package has been added for accurate CPU model identification in TuneD.

- **dnsconfd** : **dnsconfd** is a local DNS cache configuration daemon. The newly configured daemon provides an easy way to set up DNS caching, split DNS, DNS over TLS, and other DNS features.

Significant changes in the package set for infrastructure services

The following packages are no longer included in Red Hat Enterprise Linux:

- **sendmail** : Red Hat recommends migrating to the postfix mail daemon, which is supported.

- **redis** : Red Hat recommends migrating to the **valkey** package.

- **dhcp** : Red Hat recommends migrating to available alternatives such as **dhcpcd** and **ISC Kea**.

- **mod_security**: The **mod_security** directive is now available in the EPEL repository .

- **spamassassin** : The Spamassassin mail filter is now available in EPEL repository instead of standard RHEL repository as it depends on **libdb** (Berkeley DB) library which is not available due to licensing issues.

- **xsane** : The API is not yet ported to **Gtk3**.

The following packages have been renamed:

- **gpsd** : It was previously included as **gpsd-minimal**.

Changes in the httpd package

In RHEL 10.0, the **httpd** package includes the following changes that affect the **httpd** daemon usage and deployment:

- The **mod_authnz_fcgi** package is now loaded by default. You can use this module with **FastCGI-based** authorizer applications to authenticate. For more information, see FastCGI authorizer applications.

- The **httpd.service** unit file now applies a number of security hardening settings by default. For example, the **ProtectHome=read-only** setting is now applied by default. It mounts the **/home** filesystem read-only for the **httpd** service. For the full list of hardening settings , see the **/usr/lib/systemd/system/httpd.service** file.

- The support for OpenSSL **ENGINE** has been removed. You must no longer use the **SSLCryptoDevice** configuration directive.

> **NOTE**
>
> **PKCS#11** URIs are still supported via the OpenSSL **pkcs11-provider** package.

- Support for the Berkeley DB databases has been removed since Red Hat Enterprise Linux 9. Modules, such as **mod_authz_dbm**, now use the LMDB database type by default. As an alternative, you can also use the SDBM database type.

Changes in the **nginx** package image mode

By default, the **/usr/share/nginx/html** is the configured **document root** directory for the **nginx** daemon. **/usr/share/nginx/html** does not have **write** access in RHEL image mode. You can configure an alternative **document root** directory by adding a drop-in configuration file in the **/etc/nginx/default.d** directory while building image mode containers .

The BDB backend is no longer available in Postfix

RHEL 10 no longer provides the Berkeley DB (BDB) libraries and, therefore, the new default backend in Postfix is the Lightning Memory-Mapped Database (LMDB).

If you use BDB in Postfix on RHEL 9 and plan to upgrade to RHEL 10, you must convert the databases. For details, see Postfix fails with unsupported dictionary type: hash after upgrading to RHEL 10.

CHAPTER 15. INSTALLER AND IMAGE CREATION

Review the most notable changes to installer and image creation between RHEL 9 and RHEL 10.

15.1. GRAPHICAL USER INTERFACE

Review the most notable changes to the graphical user interface (GUI) between RHEL 9 and RHEL 10.

Redesigned the Time & Date spoke in the Installer GUI

The **Time and Date** spoke of the installer UI is now completely redesigned and does not have a map to select the timezone. For more information, see the installation documentation.

The initial-setup package now has been removed

The initial-setup package has been removed in Red Hat Enterprise Linux 10. As a replacement, use **gnome-initial-setup** for the graphical user interface.

For new storage devices, the LUKS2 version is used by default

By default, all the new storage devices are now encrypted with the LUKS2 version. No changes are made to the existing devices' LUKS version. You can use the Kickstart method to select different LUKS versions.

Adding additional repositories from GUI is now removed

Previously, when configuring the installation source, you were able to configure the additional repositories for the package installation. Starting RHEL 10, this support has been removed. However, you can use the Kickstart installation method or the **inst.addrepo** boot option if you want to specify additional repositories.

Anaconda built-in help has been removed

The built-in documentation from spokes and hubs of all Anaconda user interfaces, which was available during Anaconda installation, has been removed. For more information, see the official RHEL documentation.

New users created in Anaconda are administrators by default

Previously, while creating new users from the installer, the **Make this user administrator** option in graphical installation was deselected. Starting RHEL 10, this option is selected by default. As a result, the newly created users will have administrative privileges by default. You can deselect this option to remove the administrative privileges of the new users, if required.

Removed automatic bug reporting system from Anaconda

The installer no longer supports reporting problems to the Red Hat issue tracking system automatically. You can collect the installation logs and report problems manually, as described in the troubleshooting section.

Capturing screenshots from the Anaconda GUI with a global hot key is removed

Previously, you could capture screenshots of the Anaconda GUI by using a global hot key. This meant that users could extract the screenshots manually from the installation environment for any further usage. This functionality has been removed.

Remote Desktop Protocol (RDP) replaces VNC for graphical remote access

The protocol for graphical remote access has been changed from VNC to remote desktop protocol (RDP). RDP offers a reliable and encrypted connection, overcoming the limitations of VNC, which lacked encryption support and enforced password length restrictions. As part of this change, the following new kernel options have been introduced:

- **inst.rdp**

- **inst.rdp.password**

- **inst.rdp.username**

Removed NVDIMM reconfiguration support during the installation process

The support for reconfiguring NVDIMM devices during the Kickstart and GUI installation has been removed in RHEL 10. However, you can still use the NVDIMM devices in the sector mode in the installation program.

Removed **inst.nompath**, **dmraid** and **nodmraid** boot options

The **inst.nompath**, **dmraid** and **nodmraid** boot options have been removed now and are no longer available for use.

The **inst.gpt** boot option is now deprecated

The **inst.gpt** boot option is now deprecated and will be removed in the future major RHEL release. To specify a preferred disk label type, use the **inst.disklabel** boot option. To create GPT or MBR disk labels, specify **gpt** or **mbr** option respectively.

The **inst.xdriver** and **inst.usefbx** options have been removed

The graphical system for the installation image switched from the Xorg server to a Wayland compositor. As a consequence, the **inst.xdriver** boot option has been removed. Wayland operates without relying on X drivers, making it incompatible with loading any such drivers. As a result, the **inst.xdriver** option is no longer applicable.

Additionally, the **inst.usefbx** boot option, previously used to load a generic framebuffer X driver, has also been removed.

Logical volume devices in **/etc/fstab** use UUID in the **fs_spec** field

After installation, the system writes logical volume (LV) devices in the **/etc/fstab** file by using UUID in the **fs_spec** field. This change provides the following benefits:

- Ensures consistency across all device entries in **/etc/fstab**.

- Supports LV or volume group (VG) renaming without changes in **/etc/fstab**.

- Keeps **/etc/fstab** valid after re-encrypting devices with LUKS.

- Preserves correct mapping of the root (/) and other mounts across re-provisioning, even if device-mapper paths change.

- Offers predictable and portable configs as UUIDs are globally unique identifiers stored in the file system superblock.

15.2. KICKSTART CHANGES

Review the most notable changes to Kickstart between RHEL 9 and RHEL 10.

Added Kickstart support for CA certificates to enable encrypted DNS configuration during installation

Support for the **%certificate** in the Kickstart file is added to enable the installation of CA certificates into the installer environment and the installed system. This simplifies the setup process and ensures that the encrypted DNS is operational after installation, reducing manual configuration and security gaps. The certificates are inlined in the Base64 ASCII format and imported through the **--dir** and **--filename** options. This enhancement facilitates encrypted DNS configuration as part of Zero Trust

Architecture requirements. The encrypted DNS set up during installation ensures secure DNS resolution from the start, improving security and compliance in automated deployments. For more information, see Kickstart certificates section.

pwpolicy and **%anaconda** Kickstart commands have been removed

The support for the **pwpolicy** and **%anaconda** Kickstart commands has been removed in Red Hat Enterprise Linux 10.

The **--level** parameter of the logging Kickstart command is removed

The **--level** parameter of the logging kickstart command has been removed. It is no longer possible to set the level of logging of the installation process.

Removed a few options of the **timezone** Kickstart command

The following options of the **timezone** Kickstart command has been removed in Red Hat Enterprise Linux 10:

- **--isUtc** – instead use the **--utc** option.

- **--ntpservers** – instead use the **--ntp-server** option of the **timesource** kickstart command instead.

- **--nontp** - instead use the **--ntp-disable** option of the **timesource** kickstart command.

The module kickstart command has been deprecated

Anaconda has deprecated its support for DNF modularity, and as a consequence the **module** kickstart command has been deprecated. This might impact you if you are using modules in the %packages section of your kickstart files or the module kickstart command. This change is implemented for simplifying the installation process and ensuring a more consistent experience moving forward.

auth or **authconfig** commands are removed

The **auth** or **authconfig** Kickstart commands are removed now. As a replacement, use the **authselect** kickstart command.

The **--excludeWeakdeps** and **--instLangs** options from **%packages** have been removed

The **--excludeWeakdeps** and **--instLangs** options used in the **%packages** section have been removed. To maintain similar functionality, use the updated **--exclude-weakdeps** and **--inst-langs** options instead. These replacements ensure compatibility and provide the same dependency and language control within package management.

Removed teaming options from the **network** kickstart command

The **--teamslaves** and **--teamconfig** options used for configuring team devices in the **network** kickstart command have been removed. To configure similar network settings, use the **--bondslaves** and **--bondopts** options to set up a Bond device.

The **%addon com_redhat_oscap** Kickstart command has been removed

The support for the **%addon com_redhat_oscap** Kickstart command has been removed in Red Hat Enterprise Linux 10. With RHEL 10, you can use more flexible and customizable approach to hardening systems by using Anaconda and Kickstart, in addition to the already existing Image Builder option. For more information, see Performing a hardened installation of RHEL with Kickstart .

15.3. IMAGE CREATION

Review the most notable changes to image creation between RHEL 9 and RHEL 10.

A new CLI experience for RHEL image builder is available (Technology Preview)

With this Technology Preview feature, you can install and use the new **image-builder-cli** package to build an image with just one command.

WSL2 image generation support in RHEL image builder

You can use RHEL image builder to create images for Windows Subsystem for Linux version 2 (WSL2). Image builder generates the images in the **wsl** format. You can deploy the images by double-clicking the image file to install it in your WSL2 environment.

A new plugin available for RHEL image builder

RHEL image builder **cockpit-composer** package has been deprecated and replaced with the new **cockpit-image-builder** package.

RHEL image builder supports creating disk images with advanced partitioning

You can customize partitioning in your blueprints, including custom mount options, LVM-based partitions and LVM-based SWAP, and create disk images with advanced partitioning layout.

You can inject your Kickstart files when creating ISO images

You can use the **[customization.installer]** blueprint customization field to inject your own Kickstart file when building ISO image. The customization enables you to choose an attended, partial, or fully unattended installation.

The openstack image type is dropped from on premise in RHEL 10

RHEL image builder no longer supports the Openstack image type. You can use the **qcow2** image type to build Openstack images.

RHEL 10 Public disk images now have predictable network interface names

The **net.ifnames=0 kernel** parameter was removed from kernel arguments, causing all systems to use predictable network interface names.

RHEL 10 disk images no longer have the/boot partition from prebuilt disk images

Disk images, such as AWS or KVM, do not have a separate /**boot** partition, which provides the following enhancements:

- Prevents errors such as insufficient space on the /**boot** partition.

- Disk images with / on an LVM retain a /**boot** partition.

- In RHEL images, this change targets confidential computing.

- Prevents the /**boot** partition from running off disk space, which was often the case when /**boot** was on a separate partition. As a consequence, there are smaller chances for operational failures.

The squashfs package has been deprecated

The **squashfs** package has been deprecated and will be removed in a future major RHEL release. As an alternative, the **dracut** package now has support for mounting **erofs**.

Updates on RHEL image builder support to build the RHEL for Edge image types

RHEL image builder will continue to support building Edge images for RHEL 9, but not for RHEL 10. You can use RHEL image mode to build RHEL for Edge images. See Using image mode for RHEL to build, deploy, and manage operating systems.

gdisk has been deprecated from boot.iso

The **gdisk** program has been deprecated from the **boot.iso** image type. You can still use **gdisk** in your Kickstarts. However, for the **boot.iso** image type, other tools are available for handling GPT disks, for example, the **parted** utility.

CHAPTER 16. KERNEL

Review the most notable changes to kernel and boot loader between RHEL 9 and RHEL 10.

16.1. NOTABLE CHANGES TO KERNEL

Review the most notable changes to kernel between RHEL 9 and RHEL 10.

sched_ext scheduler for creating a custom scheduler

In RHEL 10, with **sched_ext** you can create custom process scheduling code in extended Berkeley Packet Filter (eBPF) at runtime. The **sched_ext** scheduler allows you to replace the standard kernel scheduler with your own scheduling logic to control process prioritization, resource allocation, and execution behavior.
Please note that Red Hat does not provide support for a custom scheduler.

CFS is replaced with the EEVDF scheduler

The Completely Fair Scheduler (CFS) is replaced with a new scheduler, Enhanced Earliest Deadline First (EEVDF). This includes the following changes:

- **sched_min_granularity** is now **sched_base_slice**, and it uses the same unit.
  sched_base_slice defines the minimum time that a task can be deferred from running.

- **sched_wakeup_granularity** sets the baseline priority (as a fraction of a CPU) for all tasks on the CPU. **sched_wakeup_granularity** is unused in EEVDF and therefore, it is removed.

CFS and EEVDF deliver similar workload results in most cases. However, minor variations in performance might be observed because the logic of each task selection is different.

16.2. NOTABLE CHANGES TO BOOT LOADER

Review the most notable changes to boot loader between RHEL 9 and RHEL 10.

Secure Boot shim signing for RHEL 10 on x86_64 and aarch64

Red Hat Enterprise Linux (RHEL) 10 requires a signed shim binary to support Secure Boot on x86_64 and aarch64 architectures. The shim functions as the initial boot loader, verifying and loading subsequent boot components if you enabled Secure Boot. If a signed and trusted shim is not available, RHEL 10 cannot boot on systems with Secure Boot enforced. This limitation might affect deployments in enterprise and cloud environments.

CHAPTER 17. THE COMMAND-LINE ASSISTANT POWERED BY RHEL LIGHTSPEED

Review the most notable changes to the command-line assistant powered by RHEL Lightspeed between RHEL 9 and RHEL 10.

The optional AI tool command-line assistant powered by RHEL Lightspeed is now available in RHEL

You can install it and use the AI tool to interact with workflows to solve issues, to have access to knowledge from several Red Hat resources, implement new RHEL features, find information, and more.

The command-line assistant powered by Red Hat Lightspeed available in a containerized version

You can run the command-line assistant in a completely disconnected, offline, or air-gapped environment, as it does not require any external network connectivity to operate locally on your workstation or on an individual RHEL system.

The command-line assistant powered by RHEL Lightspeed supports image mode for RHEL

You can customize your Containerfile to include the command-line-assistant package, create a disk image from a container image, and boot a system with that image. The system image has the command-line assistant preinstalled, and you can use it after you register your system with subscription-manager.

CHAPTER 18. NETWORKING

Review the most notable changes to networking between RHEL 9 and RHEL 10.

Network team driver was removed

The **teamd** service and the **libteam** library were removed in Red Hat Enterprise Linux 10. As a replacement, configure a bond instead of a network team.
Red Hat focuses its efforts on kernel-based bonding to avoid maintaining two features, bonds and teams, that have similar functions. The bonding code has a high customer adoption, is robust, and has an active community development. As a result, the bonding code receives enhancements and updates.

If you use RHEL 9 with a network team and plan to upgrade to RHEL 10, migrate the network team configuration to network bond before you upgrade.

Removed support for network configuration files in the ifcfg format

Starting with RHEL 9.0, RHEL stored newly created network configurations in a key file format in the **/etc/NetworkManager/system-connections/** directory. The connections, for which the configurations had already been stored from previous times in the **/etc/sysconfig/network-scripts/** directory in the old ifcfg format still worked uninterrupted. However, with the RHEL 10 release, the support for the ifcfg format based network configuration files was removed.

The dhclient utility was removed

The **dhclient** utility is a client program used to obtain IP addresses, network configuration, and other information from a DHCP server. Since **dhclient** is no longer developed as of early 2022, the utility was removed in Red Hat Enterprise Linux 10. As a consequence of the removal, you can no longer set **dhcp=dhclient** in **/etc/NetworkManager.conf**. As a replacement, use the **dhcp=internal** (default) in your NetworkManager configuration.

Removed NIC device drivers related to iPXE

Internet Preboot eXecution Environment (iPXE) firmware provides a range of boot options over a network often used in environments, where machines need to boot remotely. Among others, it contains a large number of device drivers. With the RHEL 10 release, the following will be removed:

- The complete **ipxe-roms** sub-RPM package

- Binary files containing device drivers from **ipxe-bootimgs-x86** sub-RPM package:

    - **/usr/share/ipxe/ipxe-i386.efi**

    - **/usr/share/ipxe/ipxe-x86_64.efi**

    - **/usr/share/ipxe/ipxe.dsk**

    - **/usr/share/ipxe/ipxe.iso**

    - **/usr/share/ipxe/ipxe.lkrn**

    - **/usr/share/ipxe/ipxe.usb**

Instead, iPXE now depends on the platform firmware to provide a NIC driver for the network boot. The **/usr/share/ipxe/ipxe-snponly-x86_64.efi** and **/usr/share/ipxe/undionly.kpxe** iPXE binary files are the part of the **ipxe-bootimgs** package and use the NIC driver provided by the platform firmware.

NetworkManager-initscripts-updown is not available

The **NetworkManager-initscripts-updown** sub-package is removed in RHEL 10 because the related **network-scripts** package had already been removed in RHEL 9.

Moving some kernel modules tokernel-modules-extra

All kernel modules related to the following utilities have been moved to the **kernel-modules-extra** package:

- **iptables**

- **ip6tables**

- **ipset**

- **ebtables**

- **arptables**

ATM encapsulation has been removed

Asynchronous Transfer Mode (ATM) encapsulation enables Layer-2 (Point-to-Point Protocol, Ethernet) or Layer-3 (IP) connectivity for the ATM Adaptation Layer 5 (AAL-5). In RHEL 9, the ATM implementation was unsupported and deprecated. In RHEL 10, the kernel feature has been disabled in the kernel, and ATM is no longer available.

The PF_KEYv2 kernel API has been removed

In earlier RHEL versions, applications could configure the kernel's IPsec implementation by using the deprecated **PV_KEYv2** and the newer **netlink** API. **PV_KEYv2** has not been actively maintained upstream and is missing important security features, such as modern ciphers, offload, and extended sequence number support. As a result, the **PV_KEYv2** API has been removed in RHEL 10. If you used this kernel API in applications, migrate your applications to use the modern **netlink** API as an alternative.

The firewalld lockdown feature has been removed

The **firewalld** lockdown feature could not prevent processes that are running as **root** from adding themselves to the allow list. In RHEL 10, this feature has been removed.

CHAPTER 19. PERFORMANCE

Review the most notable changes to performance between RHEL 9 and RHEL 10.

RHEL is equipped with dyninst version 13.0.0

The **dyninst** framework is rebased to upstream version 13.0.0 This version offers the following list of enhancements:

- Improved support for AMD GPU binaries

- Improved parsing of x86 instructions and C++ DWARF constructs
  For more information, see the upstream documentation.

RHEL is equipped with SystemTap version 5.3

SystemTap is rebased to version 5.3, and its multithreaded parsing capability improves startup performance by reducing initialization time by several seconds.

CHAPTER 20. SECURITY

Review the most notable changes to security between RHEL 9 and RHEL 10.

20.1. SECURITY COMPLIANCE CHANGES

Review the most notable changes to security compliance between RHEL 9 and RHEL 10.

Installation hardening with OSCAP Anaconda Addon removed

The **oscap-anaconda-addon** package has been removed. As a consequence, the RHEL 10 installer no longer provides the Security Policy spoke and installation hardening. RHEL 10 introduces a more flexible and customizable approach to hardening systems by using Anaconda and Kickstart in addition to the already existing Image Builder option. For more information, see Creating pre-hardened images with RHEL image builder OpenSCAP integration.

OpenSCAP

The new version 1.4.x of the OpenSCAP scanner is provided in RHEL 10. The most important changes are the following:

- The **openscap** package no longer provides the **openscap-devel** subpackage for the **libopenscap** library, which is now an internal library without public API and any guarantee for backward compatibility. The **openscap** package is provided with no guarantee of ABI and API compatibility.

- The following **ds** submodules that provide data stream composing functions have been removed from the **oscap** tool:

    - **sds-compose**

    - **sds-add**

    - **sds-split**

    - **rds-create**

    - **rds-split**

- The following incomplete modules have been removed:

    - **cve**

    - **cvss**

    - **cvrf**

- The following deprecated command-line options have been removed:

    - **--template**

    - **--oval-template**

    - **--sce-template**

    - **--skip-valid** is removed and is replaced by **--skip-validation**

- New Kickstart remediation type was added.

- The **autotailor** tool now can produce XCCDF tailoring files based on JSON Tailoring.

SCAP Workbench

The **scap-workbench** package with the SCAP Workbench GUI utility has been removed. As alternatives, you can use the **oscap** and **autotailor** command-line tools or Red Hat Lightspeed for both tailoring and scanning. For more information, see Managing SCAP security policies in the Red Hat Lightspeed compliance service.

SCAP Security Guide

The **scap-security-guide** package does not contain the following profiles:

- Protection Profile for General Purpose Operating Systems (OSPP)

- Centro Criptológico Nacional (CCN) – Basic

- Centro Criptológico Nacional (CCN) – Intermediate

For the complete list of profiles supported in RHEL 10, see SCAP security profiles supported in RHEL 10.

20.2. CHANGES TO CRYPTOGRAPHIC COMPONENTS

Review the most notable changes to cryptographic components between RHEL 9 and RHEL 10.

ca-certificates truststore moved

The **/etc/pki/tls/certs** truststore is converted to a different format better optimized for OpenSSL. As a consequence, if you use the files in **/etc/pki/tls/certs** directly, switch to the **/etc/pki/ca-trust/extracted** directory, where the same data is stored. For example, software that accesses the trust bundle at **/etc/pki/tls/certs/ca-bundle.crt** should switch to using **/etc/pki/ca-trust/extracted/pem/tls-ca-bundle.pem** instead.

fips-mode-setup is removed

The **fips-mode-setup** command is removed from RHEL. To enable the cryptographic module self-checks mandated by the Federal Information Processing Standard (FIPS) 140, enable FIPS mode during the system installation. See the Switching RHEL to FIPS mode chapter in the *Security hardening* document for more information.

/etc/system-fips removed

Support for indicating FIPS mode through the **/etc/system-fips** file has been removed from RHEL. To install RHEL in FIPS mode, add the **fips=1** parameter to the kernel command line during the system installation. You can check whether RHEL operates in FIPS mode by displaying the **/proc/sys/crypto/fips_enabled** file.

compat-openssl11 is removed

The compatibility library for OpenSSL 1.1, **compat-openssl11**, has been removed from RHEL 10. OpenSSL 1.1 is no longer maintained upstream and applications that use the OpenSSL TLS toolkit should be migrated to version 3.x.

pkcs11-provider replaces openssl-pkcs11

As a part of the migration from OpenSSL engines to the Providers API, the **pkcs11-provider** package replaces the **openssl-pkcs11** package (**engine_pkcs11**). The **openssl-pkcs11** package is removed from RHEL 10.

DEFAULT cryptographic policy rejects TLS ciphers with RSA key exchange

TLS ciphers that use the RSA key exchange are no longer accepted in the **DEFAULT** system-wide cryptographic policy in RHEL 10. These ciphers do not provide perfect forward secrecy and are not considered as secure as ciphers that use other key exchanges, for example, the Elliptic-curve Diffie-Hellman (ECDH) key exchange.
This change also reduces the exposure to side-channel attacks because the RSA key exchange uses PKCS #1 v1.5 encryption padding, which can cause vulnerability to timing side-channel attacks.

If you need the RSA key exchange for interoperability with legacy systems, you can re-enable it by using the LEGACY system-wide cryptographic policy or by applying a custom subpolicy.

The LEGACY cryptographic policy disallows SHA-1 signatures in TLS

The **LEGACY** system-wide cryptographic policy in RHEL 10 no longer allows creating or verifying signatures that use SHA-1 in TLS contexts. Therefore, libraries other than OpenSSL might no longer accept or create any signatures that use SHA-1 regardless of use case. OpenSSL continues to accept signatures that use SHA-1 when not used for TLS if the system is in **LEGACY** or this functionality is re-enabled with a custom subpolicy.

SHA1 subpolicy removed

The **SHA1** subpolicy that allowed to use the SHA-1 algorithm for creating and verifying signatures in the **DEFAULT** system-wide cryptographic policy after entering the **update-crypto-policies --set DEFAULT:SHA1** command is no longer available in RHEL 10.

OpenSSL no longer permits SHA-1 at SECLEVEL=2 in TLS

OpenSSL does not accept the SHA-1 algorithm at **SECLEVEL=2** in TLS in RHEL 10. If your scenario requires using TLS 1.0 or 1.1, you must explicitly set **SECLEVEL=0** and switch to the LEGACY system-wide cryptographic policy. In the LEGACY policy, applications that use SHA-1 in signatures outside of TLS will continue to work.

OpenSSL cipher suites no longer enable cipher suites with disabled hashes or MACs

Previously, applying custom cryptographic policies could leave certain TLS 1.3 cipher suites enabled even if their hashes or MACs were disabled, because the OpenSSL TLS 1.3-specific **Ciphersuites** option values were controlled only by the **ciphers** option of the cryptographic policy. With this update, **crypto-policies** takes more algorithms into account when deciding whether to enable a cipher suite. As a result, OpenSSL on systems with custom cryptographic policies might refuse to negotiate some of the previously enabled TLS 1.3 cipher suites in better accordance with the system configuration.

OpenSSL FIPS indicators are subject to change during the RHEL 10 lifetime

Because RHEL introduced OpenSSL FIPS indicators before the OpenSSL upstream did, and both designs differ, the indicators may change in a future minor version of RHEL 10. After the potential adoption of the upstream API, the RHEL 10.0 indicators might return an error message "unsupported" instead of a result. See the OpenSSL FIPS Indicators GitHub document for details.

OpenSSL 3.5 uses standard format for ML-KEM and ML-DSA

In RHEL 10.0, the **oqsprovider** library used a pre-standard format for the Module-Lattice-Based Key-Encapsulation Mechanism (ML-KEM) and the Module-Lattice-Based Digital Signature Algorithm (ML-DSA) private keys. With the rebase to OpenSSL 3.5, you must convert the ML-KEM and ML-DSA keys to the standard format by using the following command:

```
# openssl pkcs8 -in <old_private_key> -nocrypt -topk8 -out <standard_private_key>
```

Replace **<old_private_key>** with the path to the non-standard private key, and **<standard_private_key>** with the path where the standard key will be saved.

Switching to LEGACY policy does not enable support for SHA-1 in TLS connections

You can control support for SHA-1 signatures either by the **@SECLEVEL** setting specified in the default cipher string or the **rh-allow-sha1-signatures** property. Support for SHA-1 in the TLS context is enabled by setting **@SECLEVEL=0**. However, this setting also allows other insecure algorithms.

You can override the **SECLEVEL** setting by specifying the **rh-allow-sha1-signatures** property in the **evp_properties** section. By default and when unspecified in the configuration file, **evp_properties** is set to **no**. The system-wide cryptographic policies set the property to **yes** after you switch to the **LEGACY** policy.

Therefore, to enable support for SHA-1 in contexts outside TLS, you can switch the system to the **LEGACY** cryptographic policy. To enable SHA-1 in TLS, you must switch the system to **LEGACY** and use a cipher string that sets **@SECLEVEL=0** either by defining a custom cryptographic policy or setting this for your application in OpenSSL.

Stricter SSH host key permissions have been restored

The necessary host key permissions have been changed from the previous less strict value of **0640** to **0600**, which is also the value used upstream. The **ssh_keys** group, which previously owned all SSH keys, has also been removed. Therefore, the **ssh-keysign** utility uses the SUID bit instead of the SGID bit.

crypto-policies now set **allow-rsa-pkcs1-encrypt = false** for GnuTLS

In RHEL 10, the GnuTLS library blocks encryption and decryption with the RSA PKCS #1 v1.5 padding by default. Except for the LEGACY policy, the **allow-rsa-pkcs1-encrypt = false** option is specified in all system-wide cryptographic policies (DEFAULT, FUTURE, and FIPS).

20.3. CHANGES TO SELINUX

Review the most notable changes to SELinux between RHEL 9 and RHEL 10.

SELinux policy modules related to EPEL packages moved to **-extra** subpackages in the CRB repository

In RHEL 10.0, the SELinux policy modules related only to packages contained in the Extra Packages for Enterprise Linux (EPEL) repository and not to any RHEL package were moved from the **selinux-policy** package to the **selinux-policy-epel** package. This reduced the size of **selinux-policy**, allowing the system to perform operations such as rebuilding and loading the SELinux policy faster. In RHEL 10.1, the modules from **selinux-policy-epel** are moved to the following **-extra** subpackages in the RHEL CodeReady Linux Builder (CRB) repository:

- **selinux-policy-targeted-extra**

- **selinux-policy-mls-extra**

This change enables the automatic installation of **-extra** SELinux policy modules when users enable the EPEL repository.

rpm -ql returns incorrect location of the **selinux-policy** packages on RHEL in image mode

The **rpm -ql** command lists non-existent locations of the **selinux-policy** and **selinux-policy-targeted** when used on RHEL in image mode. The policy modules are installed in the **/etc/selinux/targeted** instead of **/var/lib/selinux/targeted** directory, as misleadingly reported by **rpm**. This discrepancy is expected because most file systems in image mode are read-only, and the RPM tool doesn't have the actual location of installed packages.

CHAPTER 21. SHELLS AND COMMAND-LINE TOOLS

Review the most notable changes to shells and command-line tools between RHEL 9 and RHEL 10.

21.1. NOTABLE CHANGES TO SYSTEM MANAGEMENT

Review the most notable changes to system management between RHEL 9 and RHEL 10.

The perl(Mail::Sender) module has been removed

The **perl(Mail::Sender)** module is removed from RHEL 10 without any replacement. As a consequence, the **checkbandwidth** script from **net-snmp-perl** package does not support email alerts when bandwidth high/low levels for a host or interface are reached.

21.2. NOTABLE CHANGES TO COMMAND LINE TOOLS

Review the most notable changes to command line tools between RHEL 9 and RHEL 10.

cgroupsv1 is a removed functionality in RHEL 10

cgroups is a kernel subsystem used for process tracking, system resource allocation, and partitioning. In previous versions, **systemd** service manager supported booting in the **cgroups v1** and in **cgroups v2** mode (with v1 as the default in rhel8 and v2 as the default in rhel9). In Red Hat Enterprise Linux 10, **systemd** will no longer support booting in the **cgroups v1** mode; only **cgroups v2** mode will be available.

RHEL 10 provides ReaR in version 2.9

The ReaR utility has been upgraded to version 2.9. The notable changes include:

- On IBM Z, the **IPL** output method is now deprecated. The **RAMDISK** output method is provided as an alternative. The **OUTPUT=RAMDISK** functionality is identical on all the supported hardware architectures, unlike the deprecated **OUTPUT=IPL** functionality, which is specific to IBM System Z.
  Note that the names of the recovery ramdisk image and the kernel that are generated by ReaR are different with **OUTPUT=RAMDISK**. The kernel is named **kernel-$RAMDISK_SUFFIX** and the ramdisk image is named **initramfs-$RAMDISK_SUFFIX.img**. The **RAMDISK_SUFFIX** is a configuration variable that you can set in **/etc/rear/local.conf**. If the variable is not set, it defaults to the host name of the system. If you used the **OUTPUT=IPL** setting with previous ReaR versions, change it to **OUTPUT=RAMDISK** and adjust any automation that uses the resulting kernel and ramdisk image files according to the new naming convention described above to be compatible with future ReaR versions when the **IPL** output method is removed.

- The default value of the **ISO_VOLID** configuration variable, which specifies the label of the resulting ISO image when using the **OUTPUT=ISO** setting, was changed to **REAR-ISO**. The default in previous ReaR versions was **RELAXRECOVER**. If you need to mount the resulting ISO 9660 file system by label, adjust the **mount** command for the label change. Alternatively, you can set the **ISO_VOLID** variable in **/etc/rear/local.conf** to **RELAXRECOVER** to restore the former behavior.

CHAPTER 22. SOFTWARE MANAGEMENT

Review the most notable changes to software management between RHEL 9 and RHEL 10.

22.1. NOTABLE CHANGES TO DNF

Review the most notable changes to DNF between RHEL 9 and RHEL 10.

Modularity is deprecated

In RHEL 10, the modularity functionality is deprecated and will be removed in a future major release. Therefore, the DNF **module** command displays a deprecation warning.

> **NOTE**
>
> In previous RHEL major versions, some Application Streams were available as modules as an extension to the RPM format. In RHEL 10, Red Hat does not intend to provide any Application Streams that use modularity as the packaging technology. Therefore, no modular content is being distributed with RHEL 10.

The repository metadata is not downloaded by default

Previously, when you downloaded a repository's metadata, the filelists metadata was downloaded by default. The filelists metadata is large and is typically not needed. With this update, this metadata is not downloaded by default, which improves responsiveness and saves disk space. The filelists metadata is also no longer downloaded or updated from repositories and is not loaded into the DNF transaction when you run a **dnf** command. If the **dnf** command requires the filelists metadata or includes a file-related argument, the metadata is loaded automatically.

> **NOTE**
>
> When a package has a filepath dependency that requires filelists metadata to be resolved, the transaction fails with a dependency resolution error and the following hint:
>
> > (try to add '--skip-broken' to skip uninstallable packages or '--setopt=optional_metadata_types=filelists' to load additional filelists metadata)

> **NOTE**
>
> If you want to re-enable the default filelist metadata downloading, you can add the **filelists** value to the **optional_metadata_types** option in the **/etc/dnf/dnf.conf** configuration file.

The DNF **debug** plugin is removed

The DNF **debug** plugin, which included the **dnf debug-dump** and **dnf debug-restore** commands, is removed from the **dnf-plugins-core** package. Depending on your scenario, you can use the following commands instead:

- **dnf list --installed** or **dnf repoquery --installed** to list packages installed on your system.

- **dnf repolist -v** to list repositories enabled on your system.

- **dnf install $(</tmp/list)** to replicate packages installed on a source system to the target system. For example:

    1. Save a list of packages installed on a source system into the **/tmp/list** file:

       ```
       $ dnf repoquery --installed >/tmp/list
       ```

    2. Copy the **/tmp/list** file to the target system.

    3. Replicate packages on the target system:

       ```
       $ dnf install $(</tmp/list)"
       ```

The support for the libreport library is removed

The support for the **libreport** library is removed from DNF. If you want to attach DNF logs to your bug reports, you need to do it manually or by using a different mechanism.

dnf-plugins-core rebased to version 4.7.0

The **dnf-plugins-core** package has been rebased to version 4.7.0 that provides a new **python3-dnf-plugin-pre-transaction-actions** package. This package includes a new **pre-transaction-actions** DNF plugin that allows you to execute a command upon starting an RPM transaction. For more information, see the **dnf-pre-transaction-actions(8)** manual page on your system.

22.2. NOTABLE CHANGES TO CREATEREPO_C

Review the most notable changes to **createrepo_c** between RHEL 9 and RHEL 10.

Default createrepo_c compression has changed from gzip to Zstandard

The **createrepo_c** command now compresses non-database metadata with the **Zstandard** (**zstd**) compression algorithm instead of **gzip**. Note that the database metadata still defaults to the **bzip2** format. You can override the compression format by using the **--general-compress-type** option.

SQLite databases are now not generated by default

To save disk space, the **createrepo_c** command no longer creates SQLite databases next to XML files. You can explicitly create the databases by using the **--database** option.

> **NOTE**
>
> Support for creating the SQLite databases with the **createrepo --databases** command is deprecated and will be removed in future RHEL major versions.

22.3. NOTABLE CHANGES TO RPM

Red Hat Enterprise Linux 10 is distributed with RPM version 4.19. This version introduces many enhancements over its previous versions.

22.3.1. Improved user experience and security

Review the improvements to user experience and security between RHEL 9 and RHEL 10.

A new OpenPGP backend based on Sequoia

RPM now uses Sequoia PGP for the verification of package signatures, which replaces the legacy OpenPGP parser. Sequoia PGP is a modern, Rust-based implementation of the OpenPGP standard that focuses on safety and robustness.

Major updates to cryptography

RHEL 10.1 introduces the following updates to RPM cryptography, which provide major security enhancements to signing and verifying RPM packages:

- Support for multiple signatures in a package

- Support for the new OpenPGP (RFC-9580) standard

- Support for post-quantum cryptography (PQC) in RPM packages. PQC is a set of algorithms that should withstand the attacks of quantum computers, enhancing software security. To sign a package with PQC algorithms, you can use Sequoia PGP software.

For more information, see Signing RPM packages with Sequoia PGP by using PQC .

rpmsign --addsign no longer replaces existing signatures in an RPM package

Before this update the **rpmsign --addsign** command replaced any existing signatures in an RPM package. Starting from RHEL 10.1, **rpmsign --addsign** only adds new signatures and never deletes any. If an identical signature is already present in a package, RPM prints an error message and keeps the existing signature untouched.
For more information, see Signing RPM packages with Sequoia PGP by using PQC .

A new rpmlua command-line tool

This tool runs the RPM Lua interpreter in a standalone way that you can use for the development and testing of Lua scriptlets and macros. For more information, see the **rpmlua(8)** man page on your system.

A new rpmsort command-line tool

This tool allows you to sort RPM versions passed on standard input, similar to **sort(1)** but with the awareness of RPM versioning scheme. For more information, see the **rpmsort(8)** man page on your system.

A new dbus-announce plugin

This plugin writes basic information about RPM transactions to the system D-Bus, for example, when packages are installed or removed. Other programs can subscribe to these signals to be notified of such events.

Downgrade support in --freshen mode

Previously, you could use the **--freshen** option only to upgrade packages that were already installed and skip packages that were not installed. With this enhancement, you can also use this operation to downgrade such packages. To do this, combine the **--freshen** (**F**) option with the **--oldpackage** option.

22.3.2. Improved packaging experience

Review the improvements to the packaging experience between RHEL 9 and RHEL 10.

Support for dynamic spec generation

You can now add subpackages during the build process by placing files containing **spec** parts into a predefined location. For more information, see Dynamic Spec Generation .

A new --shell option in the rpmspec command-line tool

This option runs an interactive RPM macro interpreter that you can use for the development and testing of RPM macros, either in or outside of the context of a **spec** file. For more information, see the **rpmspec(8)** man page on your system.

Support for applying individual patches in %autopatch

You can now list specific patch numbers as positional arguments, for example, **%autopatch 1 4 6** to apply patch numbers 1, 4 and 6.

Proper shell-like globbing and escaping in the %files section

Wildcard patterns and escaping characters, such as backslashes and quotes, in filenames are now interpreted in a more conventional way, mirroring the behavior of shell interpreters such as Bash. Previously, undocumented limitations and exceptions to these rules could have unexpected results and could prevent the use of more complex patterns in the **%files** section of a **spec** file.

A new tag in source RPM packages containing the parsed and expanded contents of the spec file

To help with analyzing packaging issues, a new **RPMTAG_SPEC** tag is now added to source RPM packages. This tag includes the contents of the expanded **spec** file in the form used during the build. You can view this tag by executing the **rpm --qf '%{spec}' -q** **/path/to/my/src.rpm** command.

Build parallelism now considers system resources

RPM now considers the available physical memory and address space when estimating the number of parallel processes and threads to use when building packages. This helps to prevent performance issues or build failures on systems with constrained resources, such as systems with a large number of CPUs but a limited amount of memory.
You can adjust these estimates by specifying the amount of memory a single process or thread is assumed to require for your build by defining the **%_smp_tasksize_proc** and **%_smp_tasksize_thread** macros, respectively. Both macros have the default value of 512 MB. For example, if your system has performance issues, you can increase these values for RPM to allocate fewer CPUs for the build. Likewise, if your system is underutilized, you can decrease these values for RPM to allocate more CPUs.

For more information, see Macros for controlling build parallelism .

Payload compression with zstd now supports multi-threading

The **zstdio** compression method now accepts an optional **T** parameter that specifies the number of threads to use when compressing payload during the build. This can help reduce the build time of large packages. To enable this feature, set the **%_binary_payload** and **%_source_payload** macros accordingly. For more information, see the associated comment block in the **/usr/lib/rpm/macros** file and the expected format table .

A new optional %conf spec file section

You can use this section to configure the unpacked sources for building instead of configuring them in the **%prep** or **%build** sections of a **spec** file.

Lua-native macro integration

The embedded Lua interpreter has been updated to include the following enhancements:

- Easy access to options and arguments through Lua tables
  Previously, you had to use the **rpm.expand()** function to access the options and arguments of parametric Lua macros. With this enhancement, these macros receive their options and arguments as the **opt** and **arg** local tables, respectively.

- Simplified access to macros
  Macros can now be accessed through the **macros** table in the global Lua environment. This table can also be used to call parametric macros, including all built-in macros.

- New bindings for RPM version objects and I/O streams
  You can now create objects from RPM version strings by using the new **rpm.ver()** function. You can use these objects to perform the following actions:

  - Obtain the individual pre-parsed EVR components through the **e**, **v**, and **r** fields, respectively.

  - Compare RPM version strings to each other.

  You can also use the new **rpm.open()** function to open file streams that use RPM's I/O features, such as transparent compression and decompression.

For more information, see Lua in RPM .

New macros for convenient string operations implemented in Lua

You can now perform basic string operations, such as extracting a substring or obtaining the length, directly by using RPM macros, without having to execute shell subprocesses. For more information, see String operations .

Unified calling conventions for built-in and user-defined macros

The **%foo arg**, **%{foo arg}**, and **%{foo:arg}** notations used for calling macros are now equivalent. Note, however, that there might still be minor exceptions and differences.

Multiple new built-in macros

Multiple new built-in macros are now available, most notably:

- **%{rpmversion}** for obtaining the version of RPM installed on the system.

- **%{exists:...}** for testing a file's existence.

- **%{shescape:...}** for encompassing a string in single quotes (**"**) for use in a shell command that expects a single argument.

New **%preuntrans** and **%postuntrans** scriptlets

The **%preuntrans** and **%postuntrans** uninstall-time scriptlets complement the existing install-time **%pretrans** and **%posttrans** scriptlets:

- **%preuntrans** scriptlets are executed before a transaction for packages that this transaction will remove.

- **%postuntrans** scriptlets are executed after a transaction for packages that this transaction removed.

Support for signing packages with Sequoia PGP is available as a Technology Preview

The **macros.rpmsign-sequoia** macro file that configures RPM to use Sequoia PGP instead of GnuPG for signing packages is now available as a Technology Preview. To enable its usage, perform the following steps:

1. Install the following packages:

   ```
   # dnf install rpm-sign sequoia-sq
   ```

2. Copy the **macros.rpmsign-sequoia** file to the **/etc/rpm/** directory:

```
$ cp /usr/share/doc/rpm/macros.rpmsign-sequoia /etc/rpm/
```

22.3.3. Other notable changes

Review the following notable changes to RPM between RHEL 9 and RHEL 10.

User and group name resolution is now strictly local

When installing packages, RPM now obtains the information about users and groups from the **passwd(5)** and **group(5)** files on the local system, respectively, as opposed to using the Name Service Switch (NSS).
When building packages, the **%defattr** directive now interprets the dash (**-**) placeholder for the user and group attributes as **root**, instead of obtaining the information about the actual ownership from disk. Similarly, files in source RPM packages, such as **spec** files, source archives, or patch files, are now always owned by the root user and group, regardless of their ownership on disk.

The build tree (%_builddir) is now removed by default after a successful build

Previously, **rpmbuild(8)** only cleaned up the build directory in the **--rebuild** mode, not in the more commonly used modes, such as **-bb**. Consequently, multiple packages being built caused the unnecessary accumulation of files over time. With this enhancement, if you prefer to always keep the build tree, for example, to investigate a non-fatal build issue, you can use the **--noclean** option.

The %patch directive must now explicitly specify the patch numbers to apply

You can specify the patch number either of the following ways:

- By using the **-P** option, for example, **%patch -P1 -P2** to apply patch numbers 1 and 2.

- By passing the patch numbers as positional arguments, for example, **%patch 1 2** to apply patch numbers 1 and 2.
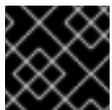
> **IMPORTANT**
>
> The **%patchN** syntax, where **N** is the patch number to apply, is now deprecated.

> **NOTE**
>
> If no explicit patch number is specified with the **%patch** directive, the build terminates with an error.

> **NOTE**
>
> It is recommended that you use the **%autosetup** macro whenever possible, instead of applying the individual patches manually with the **%patch** directive. When you use **%autosetup**, patches are applied automatically in the order identified by their patch numbers. As a result, the **spec** file is easier to read and maintain. For more information, see Automating patch application.

CHAPTER 23. SYSTEM ROLES

Review the most notable changes to system roles between RHEL 9 and RHEL 10.

RHEL 10 control nodes can only manage RHEL 9 and RHEL 10 nodes

RHEL 10 contains **ansible-core** 2.16. This Ansible version supports managing RHEL 9 and RHEL 10 nodes.

RHEL 10 control nodes can temporarily configure SQL Server only on RHEL 7, 8 and 9 managed nodes

The **microsoft.sql.server** system role contained in the **ansible-collection-microsoft-sql** package will not support configuring SQL Server on RHEL 10 managed nodes until Microsoft provides support. For that time period, you can use the **microsoft.sql.server** on RHEL 10 control nodes to configure SQL Server on RHEL 7, 8, and 9 managed nodes.

CHAPTER 24. VIRTUALIZATION

Review the most notable changes to virtualization between RHEL 9 and RHEL 10.

The i440fx-rhel7.6 machine type has been removed

In RHEL 10, the **i440fx-rhel7.6** machine type for virtual machines (VMs) has been replaced by **i440fx-rhel10.0**. As a consequence, VMs that use **i440fx-rhel7.6** cannot boot after upgrading your host to RHEL 10. Similarly, live-migrating a VM that uses **i440fx-rhel7.6** to a RHEL 10 host causes the VM to stop working.
To verify the machine type of a VM, use the following command:

```
# virsh dumpxml <vm-name> | grep "machine="

<type arch='x86_64' machine='pc-i440fx-rhel7.6'>hvm</type>
```

To ensure that a VM with the **i440fx-rhel7.6** machine type can run on your RHEL 10 host, do the following:

1. Open the XML configuration of the VM:

   ```
   # virsh edit <vm-name>
   ```

2. On the **<type>** line, change the **machine** parameter to **pc-i440fx-rhel10.0**.

3. Save and exit the VM configuration.

Note that the **i440fx** machine type has also become deprecated in RHEL 10, and will be removed comletely in a future major version of RHEL.

virt-v2v removes support for certain Red Hat products

In RHEL 10, the **virt-v2v** tool can no longer convert virtual machines from a RHEL 5 Xen host to KVM. In addition, **virt-v2v** no longer supports exporting virtual machines to Red Hat Virtualization (RHV). As a consequence, the following options are no longer available in **virt-v2v**:

- **-o rhv-upload**

- **-o rhv**

- **-o vdsm**

virt-p2v conversion is not available

The **virt-p2v** tool cannot be used to convert a physical machine into a KVM virtual machine for a RHEL 10 host. For instructions on using **virt-p2v** for RHEL 7, RHEL 8, and RHEL 9, see the Red Hat KnowledgeBase.

RDMA-based migration has become unsupported

In RHEL 10, migrating virtual machines (VMs) by using Remote Direct Memory Access (RDMA) is no longer supported. Therefore, Red Hat highly discourages using the **rdma** URI for VM migration.

Legacy CPU models are now removed

A significant number of CPU models that were deprecated in RHEL 9 have become become unsupported, and can no longer be used in virtual machines (VMs) in RHEL 10. The removed models are as follows:

- For Intel: models before Intel Xeon 55xx and 75xx Processor families (also known as Nehalem)

- For AMD: models before AMD Opteron G4

- For IBM Z: models before IBM z14

Note that several other CPU models, including Nehalem and Opteron G4, have become deprecated in RHEL 10, and will become unsupported in a future major release of RHEL. For a complete list of the deprecated CPU models, use the following command:

```
/usr/libexec/qemu-kvm -cpu help | grep depre | grep -v - -v
```

To check whether your VM is using a deprecated CPU model, use the **virsh dominfo** utility, and look for a line similar to the following in the **Messages** section:

```
tainted: use of deprecated configuration settings
deprecated configuration: CPU model 'Nehalem'
```

CHAPTER 25. THE WEB CONSOLE

Review the most notable changes to the web console between RHEL 9 and RHEL 10.

The host switcher in the RHEL web console is deprecated

The host switcher that provides connections to multiple machines through SSH from a single RHEL web console session is deprecated and disabled by default. Due to the web technology limitations, this feature cannot be secure.

In the short term, you can enable the host switcher after assessing the risks in your scenario with the **AllowMultiHost** option in the **cockpit.conf** file:

```
[WebService]
AllowMultiHost=yes
```

As more secure alternatives, you can use:

- the web console login page (with the secure limit of one host in a web browser session)

- the Cockpit Client flatpack

APPENDIX A. CHANGES TO PACKAGES

Review changes to packages between RHEL 9 and RHEL 10, as well as changes between minor releases of RHEL 10.

A.1. NEW PACKAGES

Review packages newly added to Red Hat Enterprise Linux (RHEL) 10.

Package	Repository	New in
389-ds-base-bdb	rhel10-CRB	RHEL 10.0
alsa-ucm-utils	rhel10-AppStream	RHEL 10.0
amd-gpu-firmware	rhel10-AppStream	RHEL 10.0
amd-ucode-firmware	rhel10-BaseOS	RHEL 10.0
annobin-docs	rhel10-AppStream	RHEL 10.0
annobin-libannocheck	rhel10-AppStream	RHEL 10.0
annobin-plugin-clang	rhel10-AppStream	RHEL 10.0
annobin-plugin-gcc	rhel10-AppStream	RHEL 10.0
annobin-plugin-llvm	rhel10-AppStream	RHEL 10.0
ant-imageio	rhel10-CRB	RHEL 10.0
ant-jakartamail	rhel10-AppStream	RHEL 10.0
ant-javadoc	rhel10-CRB	RHEL 10.0
ant-manual	rhel10-CRB	RHEL 10.0
antlr-javadoc	rhel10-CRB	RHEL 10.0
antlr-manual	rhel10-CRB	RHEL 10.0
aopalliance	rhel10-AppStream	RHEL 10.0
aopalliance-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-beanutils-javadoc	rhel10-CRB	RHEL 10.0

Package	Repository	New in
apache-commons-cli-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-codec-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-collections-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-collections-testframework	rhel10-CRB	RHEL 10.0
apache-commons-compress-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-exec	rhel10-CRB	RHEL 10.0
apache-commons-exec-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-io-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-jxpath	rhel10-CRB	RHEL 10.0
apache-commons-jxpath-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-lang3-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-logging-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-net-javadoc	rhel10-CRB	RHEL 10.0
apache-commons-parent	rhel10-CRB	RHEL 10.0
apache-parent	rhel10-CRB	RHEL 10.0
apache-resource-bundles	rhel10-CRB	RHEL 10.0
apiguardian	rhel10-CRB	RHEL 10.0
apiguardian-javadoc	rhel10-CRB	RHEL 10.0
apr-util-lmdb	rhel10-AppStream	RHEL 10.0
aqute-bnd-javadoc	rhel10-CRB	RHEL 10.0
aspnetcore-runtime-10.0	rhel10-AppStream	RHEL 10.1
aspnetcore-runtime-dbg-10.0	rhel10-AppStream	RHEL 10.1

Package	Repository	New in
aspnetcore-targeting-pack-10.0	rhel10-AppStream	RHEL 10.1
assertj-core-javadoc	rhel10-CRB	RHEL 10.0
atheros-firmware	rhel10-BaseOS	RHEL 10.0
atinject-javadoc	rhel10-CRB	RHEL 10.0
audit-rules	rhel10-BaseOS	RHEL 10.0
azure-vm-utils	rhel10-AppStream	RHEL 10.1
bash-color-prompt	rhel10-AppStream	RHEL 10.0
bcel-javadoc	rhel10-CRB	RHEL 10.0
beust-jcommander-javadoc	rhel10-CRB	RHEL 10.0
bindgen-cli	rhel10-CRB	RHEL 10.1
brcmfmac-firmware	rhel10-BaseOS	RHEL 10.0
bsf-javadoc	rhel10-CRB	RHEL 10.0
build-helper-maven-plugin	rhel10-CRB	RHEL 10.0
build-helper-maven-plugin-javadoc	rhel10-CRB	RHEL 10.0
byaccj	rhel10-CRB	RHEL 10.0
byte-buddy-javadoc	rhel10-CRB	RHEL 10.0
byte-buddy-maven-plugin	rhel10-CRB	RHEL 10.0
cairo-tools	rhel10-CRB	RHEL 10.0
cairomm1.16	rhel10-AppStream	RHEL 10.0
cairomm1.16-devel	rhel10-CRB	RHEL 10.0
cairomm1.16-doc	rhel10-CRB	RHEL 10.0
cbindgen	rhel10-CRB	RHEL 10.1

Package	Repository	New in
cdi-api-javadoc	rhel10-CRB	RHEL 10.0
cglib-javadoc	rhel10-CRB	RHEL 10.0
check-static	rhel10-AppStream	RHEL 10.0
cirrus-audio-firmware	rhel10-BaseOS	RHEL 10.0
classloader-leak-test-framework	rhel10-CRB	RHEL 10.0
classloader-leak-test-framework-javadoc	rhel10-CRB	RHEL 10.0
cockpit-ha-cluster	rhel10-HighAvailability	RHEL 10.0
cockpit-image-builder	rhel10-AppStream	RHEL 10.0
cockpit-ws-selinux	rhel10-BaseOS	RHEL 10.1
colord-gtk4	rhel10-AppStream	RHEL 10.0
container-tools	rhel10-AppStream	RHEL 10.1
containers-common-extra	rhel10-AppStream	RHEL 10.0
crypto-policies-pq-preview	rhel10-AppStream	RHEL 10.0
cups-browsed	rhel10-AppStream	RHEL 10.0
cups-filters-driverless	rhel10-AppStream	RHEL 10.0
dbus-doc	rhel10-CRB	RHEL 10.0
default-fonts	rhel10-AppStream	RHEL 10.0
default-fonts-am	rhel10-AppStream	RHEL 10.0
default-fonts-ar	rhel10-AppStream	RHEL 10.0
default-fonts-as	rhel10-AppStream	RHEL 10.0
default-fonts-ast	rhel10-AppStream	RHEL 10.0
default-fonts-be	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
default-fonts-bg	rhel10-AppStream	RHEL 10.0
default-fonts-bn	rhel10-AppStream	RHEL 10.0
default-fonts-bo	rhel10-AppStream	RHEL 10.0
default-fonts-br	rhel10-AppStream	RHEL 10.0
default-fonts-chr	rhel10-AppStream	RHEL 10.0
default-fonts-cjk	rhel10-AppStream	RHEL 10.0
default-fonts-cjk-mono	rhel10-AppStream	RHEL 10.0
default-fonts-cjk-sans	rhel10-AppStream	RHEL 10.0
default-fonts-cjk-serif	rhel10-AppStream	RHEL 10.0
default-fonts-core	rhel10-AppStream	RHEL 10.0
default-fonts-core-emoji	rhel10-AppStream	RHEL 10.0
default-fonts-core-math	rhel10-AppStream	RHEL 10.0
default-fonts-core-mono	rhel10-BaseOS	RHEL 10.0
default-fonts-core-sans	rhel10-BaseOS	RHEL 10.0
default-fonts-core-serif	rhel10-BaseOS	RHEL 10.0
default-fonts-dv	rhel10-AppStream	RHEL 10.0
default-fonts-dz	rhel10-AppStream	RHEL 10.0
default-fonts-el	rhel10-AppStream	RHEL 10.0
default-fonts-eo	rhel10-AppStream	RHEL 10.0
default-fonts-eu	rhel10-AppStream	RHEL 10.0
default-fonts-fa	rhel10-AppStream	RHEL 10.0
default-fonts-gu	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
default-fonts-he	rhel10-AppStream	RHEL 10.0
default-fonts-hi	rhel10-AppStream	RHEL 10.0
default-fonts-hy	rhel10-AppStream	RHEL 10.0
default-fonts-ia	rhel10-AppStream	RHEL 10.0
default-fonts-iu	rhel10-AppStream	RHEL 10.0
default-fonts-ka	rhel10-AppStream	RHEL 10.0
default-fonts-km	rhel10-AppStream	RHEL 10.0
default-fonts-kn	rhel10-AppStream	RHEL 10.0
default-fonts-ku	rhel10-AppStream	RHEL 10.0
default-fonts-lo	rhel10-AppStream	RHEL 10.0
default-fonts-mai	rhel10-AppStream	RHEL 10.0
default-fonts-ml	rhel10-AppStream	RHEL 10.0
default-fonts-mni	rhel10-AppStream	RHEL 10.0
default-fonts-mr	rhel10-AppStream	RHEL 10.0
default-fonts-my	rhel10-AppStream	RHEL 10.0
default-fonts-nb	rhel10-AppStream	RHEL 10.0
default-fonts-ne	rhel10-AppStream	RHEL 10.0
default-fonts-nn	rhel10-AppStream	RHEL 10.0
default-fonts-nr	rhel10-AppStream	RHEL 10.0
default-fonts-nso	rhel10-AppStream	RHEL 10.0
default-fonts-or	rhel10-AppStream	RHEL 10.0
default-fonts-other	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
default-fonts-other-mono	rhel10-AppStream	RHEL 10.0
default-fonts-other-sans	rhel10-AppStream	RHEL 10.0
default-fonts-other-serif	rhel10-AppStream	RHEL 10.0
default-fonts-pa	rhel10-AppStream	RHEL 10.0
default-fonts-ru	rhel10-AppStream	RHEL 10.0
default-fonts-sat	rhel10-AppStream	RHEL 10.0
default-fonts-si	rhel10-AppStream	RHEL 10.0
default-fonts-ss	rhel10-AppStream	RHEL 10.0
default-fonts-ta	rhel10-AppStream	RHEL 10.0
default-fonts-te	rhel10-AppStream	RHEL 10.0
default-fonts-th	rhel10-AppStream	RHEL 10.0
default-fonts-tn	rhel10-AppStream	RHEL 10.0
default-fonts-ts	rhel10-AppStream	RHEL 10.0
default-fonts-uk	rhel10-AppStream	RHEL 10.0
default-fonts-ur	rhel10-AppStream	RHEL 10.0
default-fonts-ve	rhel10-AppStream	RHEL 10.0
default-fonts-vi	rhel10-AppStream	RHEL 10.0
default-fonts-xh	rhel10-AppStream	RHEL 10.0
default-fonts-yi	rhel10-AppStream	RHEL 10.0
default-fonts-zu	rhel10-AppStream	RHEL 10.0
dhcpcd	rhel10-BaseOS	RHEL 10.0
disruptor-javadoc	rhel10-CRB	RHEL 10.0

Package	Repository	New in
dnsconfd	rhel10-AppStream	RHEL 10.0
dnsconfd-selinux	rhel10-AppStream	RHEL 10.0
dnsconfd-unbound	rhel10-AppStream	RHEL 10.0
dotnet-apphost-pack-10.0	rhel10-AppStream	RHEL 10.1
dotnet-hostfxr-10.0	rhel10-AppStream	RHEL 10.1
dotnet-runtime-10.0	rhel10-AppStream	RHEL 10.1
dotnet-runtime-dbg-10.0	rhel10-AppStream	RHEL 10.1
dotnet-sdk-10.0	rhel10-AppStream	RHEL 10.1
dotnet-sdk-10.0-source-built-artifacts	rhel10-CRB	RHEL 10.1
dotnet-sdk-aot-10.0	rhel10-AppStream	RHEL 10.1
dotnet-sdk-dbg-10.0	rhel10-AppStream	RHEL 10.1
dotnet-targeting-pack-10.0	rhel10-AppStream	RHEL 10.1
dotnet-templates-10.0	rhel10-AppStream	RHEL 10.1
duktape	rhel10-BaseOS	RHEL 10.0
dvb-firmware	rhel10-BaseOS	RHEL 10.0
easymock-javadoc	rhel10-CRB	RHEL 10.0
editorconfig	rhel10-CRB	RHEL 10.0
editorconfig-devel	rhel10-CRB	RHEL 10.0
editorconfig-libs	rhel10-AppStream	RHEL 10.0
emacs-nw	rhel10-AppStream	RHEL 10.0
enchant2-voikko	rhel10-AppStream	RHEL 10.0
erofs-fuse	rhel10-BaseOS	RHEL 10.0

Package	Repository	New in
erofs-utils	rhel10-BaseOS	RHEL 10.0
exec-maven-plugin	rhel10-CRB	RHEL 10.0
exec-maven-plugin-javadoc	rhel10-CRB	RHEL 10.0
extra-enforcer-rules	rhel10-CRB	RHEL 10.0
extra-enforcer-rules-javadoc	rhel10-CRB	RHEL 10.0
felix-parent	rhel10-CRB	RHEL 10.0
felix-utils-javadoc	rhel10-CRB	RHEL 10.0
fips-provider-next	rhel10-AppStream	RHEL 10.1
flatpak-rpm-macros	rhel10-CRB	RHEL 10.0
flatpak-runtime-config	rhel10-CRB	RHEL 10.0
fontawesome4-fonts	rhel10-AppStream	RHEL 10.0
fontawesome4-fonts-web	rhel10-CRB	RHEL 10.0
forge-srpm-macros	rhel10-AppStream	RHEL 10.0
freerdp-server	rhel10-CRB	RHEL 10.0
freetype-demos	rhel10-CRB	RHEL 10.0
fusesource-pom	rhel10-CRB	RHEL 10.0
fwupd-efi	rhel10-BaseOS	RHEL 10.0
gcc-offload-amdgcn	rhel10-AppStream	RHEL 10.0
gcc-toolset-15	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-binutils	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-binutils-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-binutils-gold	rhel10-AppStream	RHEL 10.1

Package	Repository	New in
gcc-toolset-15-binutils-gprofng	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-gcc	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-gcc-c++	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-gcc-gfortran	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-gcc-plugin-annobin	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-gcc-plugin-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libasan-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libatomic-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libgccjit	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libgccjit-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libitm-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-liblsan-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libquadmath-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libstdc++-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libstdc++-docs	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libtsan-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-libubsan-devel	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-offload-nvptx	rhel10-AppStream	RHEL 10.1
gcc-toolset-15-runtime	rhel10-AppStream	RHEL 10.1
gcr-libs	rhel10-AppStream	RHEL 10.0
gcr3	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
gcr3-base	rhel10-AppStream	RHEL 10.0
gcr3-devel	rhel10-CRB	RHEL 10.0
gdal	rhel10-AppStream	RHEL 10.1
gdal-devel	rhel10-CRB	RHEL 10.1
gdal-libs	rhel10-AppStream	RHEL 10.1
geos	rhel10-AppStream	RHEL 10.1
geos-devel	rhel10-CRB	RHEL 10.1
gettext-envsubst	rhel10-BaseOS	RHEL 10.0
gettext-runtime	rhel10-BaseOS	RHEL 10.0
glibc-langpack-gbm	rhel10-BaseOS	RHEL 10.0
glibc-langpack-kv	rhel10-BaseOS	RHEL 10.0
glibc-langpack-rif	rhel10-BaseOS	RHEL 10.0
glibc-langpack-ssy	rhel10-BaseOS	RHEL 10.0
glibc-langpack-su	rhel10-BaseOS	RHEL 10.0
glibc-langpack-syr	rhel10-BaseOS	RHEL 10.0
glibc-langpack-tok	rhel10-BaseOS	RHEL 10.0
glibc-langpack-zgh	rhel10-BaseOS	RHEL 10.0
glibmm2.68	rhel10-AppStream	RHEL 10.0
glibmm2.68-devel	rhel10-CRB	RHEL 10.0
glibmm2.68-doc	rhel10-CRB	RHEL 10.0
glycin-loaders	rhel10-AppStream	RHEL 10.0
gnome-autoar-devel	rhel10-CRB	RHEL 10.0
gnome-browser-connector	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
gnome-calculator-devel	rhel10-CRB	RHEL 10.0
gnome-clocks	rhel10-AppStream	RHEL 10.0
gnome-desktop-testing	rhel10-CRB	RHEL 10.0
gnome-desktop4	rhel10-AppStream	RHEL 10.0
gnome-desktop4-devel	rhel10-CRB	RHEL 10.0
gnome-ponytail-daemon	rhel10-AppStream	RHEL 10.0
gnome-settings-daemon-server-defaults	rhel10-AppStream	RHEL 10.0
gnome-shell-extension-light-style	rhel10-AppStream	RHEL 10.0
gnome-shell-extension-no-overview	rhel10-CRB	RHEL 10.0
gnome-shell-extension-status-icons	rhel10-AppStream	RHEL 10.0
gnome-shell-extension-system-monitor	rhel10-AppStream	RHEL 10.0
gnome-software-fedora-langpacks	rhel10-AppStream	RHEL 10.0
gnome-text-editor	rhel10-AppStream	RHEL 10.0
gnutls-fips	rhel10-AppStream	RHEL 10.0
golang-race	rhel10-AppStream	RHEL 10.1
google-guice-javadoc	rhel10-CRB	RHEL 10.0
google-noto-color-emoji-fonts	rhel10-AppStream	RHEL 10.0
google-noto-fangsong-kss-rotated-fonts	rhel10-AppStream	RHEL 10.0
google-noto-fangsong-kss-vertical-fonts	rhel10-AppStream	RHEL 10.0
google-noto-fonts-all	rhel10-AppStream	RHEL 10.0
google-noto-nastaliq-urdu-vf-fonts	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
google-noto-sans-chorasmian-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-cjk-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-cjk-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-cypro-minoan-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-gujarati-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-gunjala-gondi-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-javanese-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-kawi-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-kawi-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-meetei-mayek-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-mono-cjk-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-nag-mundari-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-nag-mundari-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-nandinagari-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-nko-unjoined-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-nko-unjoined-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-oriya-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-phagspa-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-symbols-2-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-syriac-eastern-fonts	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
google-noto-sans-syriac-eastern-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-syriac-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-syriac-western-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-syriac-western-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-tangsa-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-tangsa-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-vithkuqi-fonts	rhel10-AppStream	RHEL 10.0
google-noto-sans-vithkuqi-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-cjk-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-dives-akuru-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-khitan-small-script-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-makasar-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-np-hmong-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-np-hmong-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-old-uyghur-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-oriya-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-oriya-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-ottoman-siyaq-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-toto-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-toto-vf-fonts	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
google-noto-serif-vithkuqi-fonts	rhel10-AppStream	RHEL 10.0
google-noto-serif-vithkuqi-vf-fonts	rhel10-AppStream	RHEL 10.0
google-noto-traditional-nushu-vf-fonts	rhel10-AppStream	RHEL 10.0
gpsd	rhel10-AppStream	RHEL 10.0
gpsd-clients	rhel10-AppStream	RHEL 10.0
gstreamer1-plugins-bad-free-libs	rhel10-AppStream	RHEL 10.0
gtk3-immodules	rhel10-AppStream	RHEL 10.0
gtk4-devel-docs	rhel10-CRB	RHEL 10.0
gtk4-devel-tools	rhel10-CRB	RHEL 10.0
gtkmm4.0	rhel10-AppStream	RHEL 10.0
gtkmm4.0-devel	rhel10-CRB	RHEL 10.0
gtkmm4.0-doc	rhel10-CRB	RHEL 10.0
gtksourceview5	rhel10-AppStream	RHEL 10.0
gtksourceview5-devel	rhel10-CRB	RHEL 10.0
guava-javadoc	rhel10-CRB	RHEL 10.0
guava-testlib	rhel10-CRB	RHEL 10.0
guice-assistedinject	rhel10-CRB	RHEL 10.0
guice-bom	rhel10-CRB	RHEL 10.0
guice-extensions	rhel10-CRB	RHEL 10.0
guice-grapher	rhel10-CRB	RHEL 10.0
guice-jmx	rhel10-CRB	RHEL 10.0
guice-jndi	rhel10-CRB	RHEL 10.0

Package	Repository	New in
guice-parent	rhel10-CRB	RHEL 10.0
guice-servlet	rhel10-CRB	RHEL 10.0
guice-throwingproviders	rhel10-CRB	RHEL 10.0
gvisor-tap-vsock-gvforwarder	rhel10-AppStream	RHEL 10.0
gvncpulse	rhel10-AppStream	RHEL 10.0
hamcrest-javadoc	rhel10-CRB	RHEL 10.0
harfbuzz-cairo	rhel10-AppStream	RHEL 10.0
httpcomponents-client-javadoc	rhel10-CRB	RHEL 10.0
httpcomponents-core-javadoc	rhel10-CRB	RHEL 10.0
httpcomponents-project	rhel10-CRB	RHEL 10.0
hunspell-es-GQ	rhel10-AppStream	RHEL 10.0
hunspell-ka	rhel10-AppStream	RHEL 10.1
hunspell-pt-BR	rhel10-AppStream	RHEL 10.0
hunspell-tr	rhel10-AppStream	RHEL 10.0
hyphen-fo	rhel10-AppStream	RHEL 10.0
hyphen-grc	rhel10-AppStream	RHEL 10.0
hyphen-hsb	rhel10-AppStream	RHEL 10.0
hyphen-ia	rhel10-AppStream	RHEL 10.0
hyphen-is	rhel10-AppStream	RHEL 10.0
hyphen-ku	rhel10-AppStream	RHEL 10.0
hyphen-mi	rhel10-AppStream	RHEL 10.0
hyphen-mn	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
hyphen-pt-BR	rhel10-AppStream	RHEL 10.0
hyphen-sa	rhel10-AppStream	RHEL 10.0
hyphen-tk	rhel10-AppStream	RHEL 10.0
ibus-panel	rhel10-CRB	RHEL 10.0
ignition-grub	rhel10-AppStream	RHEL 10.1
image-builder	rhel10-AppStream	RHEL 10.1
inih-cpp	rhel10-AppStream	RHEL 10.0
iniparser	rhel10-BaseOS	RHEL 10.0
iniparser-devel	rhel10-CRB	RHEL 10.1
intel-audio-firmware	rhel10-BaseOS	RHEL 10.0
intel-gpu-firmware	rhel10-AppStream	RHEL 10.0
intel-vsc-firmware	rhel10-BaseOS	RHEL 10.0
iotop-c	rhel10-BaseOS	RHEL 10.0
ipp-usb	rhel10-AppStream	RHEL 10.0
iptables-legacy-devel	rhel10-AppStream	RHEL 10.0
iptables-legacy-libs	rhel10-AppStream	RHEL 10.0
iptables-services	rhel10-AppStream	RHEL 10.0
iwlegacy-firmware	rhel10-BaseOS	RHEL 10.0
iwlwifi-dvm-firmware	rhel10-BaseOS	RHEL 10.0
iwlwifi-mvm-firmware	rhel10-BaseOS	RHEL 10.0
jakarta-activation-javadoc	rhel10-CRB	RHEL 10.0
jakarta-annotations-javadoc	rhel10-CRB	RHEL 10.0

Package	Repository	New in
jakarta-mail-javadoc	rhel10-CRB	RHEL 10.0
jakarta-oro-javadoc	rhel10-CRB	RHEL 10.0
jakarta-servlet-javadoc	rhel10-CRB	RHEL 10.0
jansi-javadoc	rhel10-CRB	RHEL 10.0
java-25-openjdk	rhel10-AppStream	RHEL 10.1
java-25-openjdk-demo	rhel10-AppStream	RHEL 10.1
java-25-openjdk-demo-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-demo-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-devel	rhel10-AppStream	RHEL 10.1
java-25-openjdk-devel-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-devel-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-headless	rhel10-AppStream	RHEL 10.1
java-25-openjdk-headless-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-headless-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-javadoc	rhel10-AppStream	RHEL 10.1
java-25-openjdk-javadoc-zip	rhel10-AppStream	RHEL 10.1
java-25-openjdk-jmods	rhel10-AppStream	RHEL 10.1
java-25-openjdk-jmods-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-jmods-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-src	rhel10-AppStream	RHEL 10.1
java-25-openjdk-src-fastdebug	rhel10-CRB	RHEL 10.1

Package	Repository	New in
java-25-openjdk-src-slowdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-static-libs	rhel10-AppStream	RHEL 10.1
java-25-openjdk-static-libs-fastdebug	rhel10-CRB	RHEL 10.1
java-25-openjdk-static-libs-slowdebug	rhel10-CRB	RHEL 10.1
java_cup	rhel10-CRB	RHEL 10.0
java_cup-javadoc	rhel10-CRB	RHEL 10.0
java_cup-manual	rhel10-CRB	RHEL 10.0
javacc	rhel10-CRB	RHEL 10.0
javacc-demo	rhel10-CRB	RHEL 10.0
javacc-javadoc	rhel10-CRB	RHEL 10.0
javacc-manual	rhel10-CRB	RHEL 10.0
javacc-maven-plugin	rhel10-CRB	RHEL 10.0
javacc-maven-plugin-javadoc	rhel10-CRB	RHEL 10.0
javapackages-common	rhel10-CRB	RHEL 10.0
javapackages-compat	rhel10-CRB	RHEL 10.0
javaparser	rhel10-CRB	RHEL 10.0
javaparser-javadoc	rhel10-CRB	RHEL 10.0
jaxb-api-javadoc	rhel10-CRB	RHEL 10.0
jaxb-codemodel-annotation-compiler	rhel10-CRB	RHEL 10.0
jaxb-dtd-parser-javadoc	rhel10-CRB	RHEL 10.0
jaxb-fi	rhel10-CRB	RHEL 10.0
jaxb-fi-javadoc	rhel10-CRB	RHEL 10.0
jaxb-fi-tests	rhel10-CRB	RHEL 10.0

Package	Repository	New in
jaxb-istack-commons-maven-plugin	rhel10-CRB	RHEL 10.0
jaxb-istack-commons-test	rhel10-CRB	RHEL 10.0
jaxb-stax-ex	rhel10-CRB	RHEL 10.0
jaxb-stax-ex-javadoc	rhel10-CRB	RHEL 10.0
jaxb-txwc2	rhel10-CRB	RHEL 10.0
jctools-javadoc	rhel10-CRB	RHEL 10.0
jdepend-javadoc	rhel10-CRB	RHEL 10.0
jdom	rhel10-CRB	RHEL 10.0
jdom-demo	rhel10-CRB	RHEL 10.0
jdom-javadoc	rhel10-CRB	RHEL 10.0
jdom2	rhel10-CRB	RHEL 10.0
jdom2-javadoc	rhel10-CRB	RHEL 10.0
jflex	rhel10-CRB	RHEL 10.0
jflex-javadoc	rhel10-CRB	RHEL 10.0
jsch-javadoc	rhel10-CRB	RHEL 10.0
jsoncpp	rhel10-AppStream	RHEL 10.0
jsoncpp-devel	rhel10-CRB	RHEL 10.0
jsoup-javadoc	rhel10-CRB	RHEL 10.0
jsr-305-javadoc	rhel10-CRB	RHEL 10.0
jul-to-slf4j	rhel10-CRB	RHEL 10.0
junit-javadoc	rhel10-CRB	RHEL 10.0
junit-manual	rhel10-CRB	RHEL 10.0
junit5-guide	rhel10-CRB	RHEL 10.0

Package	Repository	New in
junit5-javadoc	rhel10-CRB	RHEL 10.0
jurand	rhel10-CRB	RHEL 10.0
jzlib-demo	rhel10-CRB	RHEL 10.0
jzlib-javadoc	rhel10-CRB	RHEL 10.0
kdump-utils	rhel10-BaseOS	RHEL 10.0
kea	rhel10-BaseOS	RHEL 10.0
kea-doc	rhel10-AppStream	RHEL 10.0
kea-hooks	rhel10-AppStream	RHEL 10.0
kea-keama	rhel10-CRB	RHEL 10.0
kea-libs	rhel10-BaseOS	RHEL 10.0
kernel-modules-extra-matched	rhel10-BaseOS	RHEL 10.1
keylime-tools	rhel10-AppStream	RHEL 10.0
kyotocabinet-libs	rhel10-AppStream	RHEL 10.0
langpacks-chr	rhel10-AppStream	RHEL 10.0
langpacks-core-chr	rhel10-AppStream	RHEL 10.0
langpacks-core-dv	rhel10-AppStream	RHEL 10.0
langpacks-core-hy	rhel10-AppStream	RHEL 10.0
langpacks-core-iu	rhel10-AppStream	RHEL 10.0
langpacks-core-lo	rhel10-AppStream	RHEL 10.0
langpacks-core-mni	rhel10-AppStream	RHEL 10.0
langpacks-core-sat	rhel10-AppStream	RHEL 10.0
langpacks-dv	rhel10-AppStream	RHEL 10.0
langpacks-fonts-af	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
langpacks-fonts-am	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ar	rhel10-AppStream	RHEL 10.0
langpacks-fonts-as	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ast	rhel10-AppStream	RHEL 10.0
langpacks-fonts-be	rhel10-AppStream	RHEL 10.0
langpacks-fonts-bg	rhel10-AppStream	RHEL 10.0
langpacks-fonts-bn	rhel10-AppStream	RHEL 10.0
langpacks-fonts-bo	rhel10-AppStream	RHEL 10.0
langpacks-fonts-br	rhel10-AppStream	RHEL 10.0
langpacks-fonts-bs	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ca	rhel10-AppStream	RHEL 10.0
langpacks-fonts-chr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-cs	rhel10-AppStream	RHEL 10.0
langpacks-fonts-cy	rhel10-AppStream	RHEL 10.0
langpacks-fonts-da	rhel10-AppStream	RHEL 10.0
langpacks-fonts-de	rhel10-AppStream	RHEL 10.0
langpacks-fonts-dv	rhel10-AppStream	RHEL 10.0
langpacks-fonts-dz	rhel10-AppStream	RHEL 10.0
langpacks-fonts-el	rhel10-AppStream	RHEL 10.0
langpacks-fonts-en	rhel10-AppStream	RHEL 10.0
langpacks-fonts-eo	rhel10-AppStream	RHEL 10.0
langpacks-fonts-es	rhel10-AppStream	RHEL 10.0
langpacks-fonts-et	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
langpacks-fonts-eu	rhel10-AppStream	RHEL 10.0
langpacks-fonts-fa	rhel10-AppStream	RHEL 10.0
langpacks-fonts-fi	rhel10-AppStream	RHEL 10.0
langpacks-fonts-fr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ga	rhel10-AppStream	RHEL 10.0
langpacks-fonts-gl	rhel10-AppStream	RHEL 10.0
langpacks-fonts-gu	rhel10-AppStream	RHEL 10.0
langpacks-fonts-he	rhel10-AppStream	RHEL 10.0
langpacks-fonts-hi	rhel10-AppStream	RHEL 10.0
langpacks-fonts-hr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-hu	rhel10-AppStream	RHEL 10.0
langpacks-fonts-hy	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ia	rhel10-AppStream	RHEL 10.0
langpacks-fonts-id	rhel10-AppStream	RHEL 10.0
langpacks-fonts-is	rhel10-AppStream	RHEL 10.0
langpacks-fonts-it	rhel10-AppStream	RHEL 10.0
langpacks-fonts-iu	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ja	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ka	rhel10-AppStream	RHEL 10.0
langpacks-fonts-kk	rhel10-AppStream	RHEL 10.0
langpacks-fonts-km	rhel10-AppStream	RHEL 10.0
langpacks-fonts-kn	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ko	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
langpacks-fonts-ku	rhel10-AppStream	RHEL 10.0
langpacks-fonts-lo	rhel10-AppStream	RHEL 10.0
langpacks-fonts-lt	rhel10-AppStream	RHEL 10.0
langpacks-fonts-lv	rhel10-AppStream	RHEL 10.0
langpacks-fonts-mai	rhel10-AppStream	RHEL 10.0
langpacks-fonts-mk	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ml	rhel10-AppStream	RHEL 10.0
langpacks-fonts-mni	rhel10-AppStream	RHEL 10.0
langpacks-fonts-mr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ms	rhel10-AppStream	RHEL 10.0
langpacks-fonts-my	rhel10-AppStream	RHEL 10.0
langpacks-fonts-nb	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ne	rhel10-AppStream	RHEL 10.0
langpacks-fonts-nl	rhel10-AppStream	RHEL 10.0
langpacks-fonts-nn	rhel10-AppStream	RHEL 10.0
langpacks-fonts-nr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-nso	rhel10-AppStream	RHEL 10.0
langpacks-fonts-or	rhel10-AppStream	RHEL 10.0
langpacks-fonts-pa	rhel10-AppStream	RHEL 10.0
langpacks-fonts-pl	rhel10-AppStream	RHEL 10.0
langpacks-fonts-pt	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ro	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ru	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
langpacks-fonts-sat	rhel10-AppStream	RHEL 10.0
langpacks-fonts-si	rhel10-AppStream	RHEL 10.0
langpacks-fonts-sk	rhel10-AppStream	RHEL 10.0
langpacks-fonts-sl	rhel10-AppStream	RHEL 10.0
langpacks-fonts-sq	rhel10-AppStream	RHEL 10.0
langpacks-fonts-sr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ss	rhel10-AppStream	RHEL 10.0
langpacks-fonts-sv	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ta	rhel10-AppStream	RHEL 10.0
langpacks-fonts-te	rhel10-AppStream	RHEL 10.0
langpacks-fonts-th	rhel10-AppStream	RHEL 10.0
langpacks-fonts-tn	rhel10-AppStream	RHEL 10.0
langpacks-fonts-tr	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ts	rhel10-AppStream	RHEL 10.0
langpacks-fonts-uk	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ur	rhel10-AppStream	RHEL 10.0
langpacks-fonts-ve	rhel10-AppStream	RHEL 10.0
langpacks-fonts-vi	rhel10-AppStream	RHEL 10.0
langpacks-fonts-xh	rhel10-AppStream	RHEL 10.0
langpacks-fonts-yi	rhel10-AppStream	RHEL 10.0
langpacks-fonts-zh_CN	rhel10-AppStream	RHEL 10.0
langpacks-fonts-zh_HK	rhel10-AppStream	RHEL 10.0
langpacks-fonts-zh_TW	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
langpacks-fonts-zu	rhel10-AppStream	RHEL 10.0
langpacks-hy	rhel10-AppStream	RHEL 10.0
langpacks-iu	rhel10-AppStream	RHEL 10.0
langpacks-lo	rhel10-AppStream	RHEL 10.0
langpacks-mni	rhel10-AppStream	RHEL 10.0
langpacks-sat	rhel10-AppStream	RHEL 10.0
legacy-printer-app	rhel10-AppStream	RHEL 10.0
libadwaita-doc	rhel10-CRB	RHEL 10.0
libblockdev-smart	rhel10-AppStream	RHEL 10.0
libblockdev-smartmontools	rhel10-AppStream	RHEL 10.0
libcamera	rhel10-AppStream	RHEL 10.0
libcamera-devel	rhel10-AppStream	RHEL 10.0
libcamera-doc	rhel10-AppStream	RHEL 10.0
libcamera-gstreamer	rhel10-AppStream	RHEL 10.0
libcamera-ipa	rhel10-AppStream	RHEL 10.0
libcamera-qcam	rhel10-AppStream	RHEL 10.0
libcamera-tools	rhel10-AppStream	RHEL 10.0
libcamera-v4l2	rhel10-AppStream	RHEL 10.0
libcpuid	rhel10-BaseOS	RHEL 10.0
libcpuid-devel	rhel10-CRB	RHEL 10.0
libcupsfilters	rhel10-AppStream	RHEL 10.0
libdbusmenu	rhel10-CRB	RHEL 10.0
libdbusmenu-devel	rhel10-CRB	RHEL 10.0

Package	Repository	New in
libdbusmenu-gtk3	rhel10-CRB	RHEL 10.0
libdbusmenu-gtk3-devel	rhel10-CRB	RHEL 10.0
libdex	rhel10-AppStream	RHEL 10.0
libdex-devel	rhel10-CRB	RHEL 10.0
libdisplay-info	rhel10-AppStream	RHEL 10.0
libdisplay-info-devel	rhel10-CRB	RHEL 10.0
libei	rhel10-AppStream	RHEL 10.0
libei-devel	rhel10-CRB	RHEL 10.0
libeis	rhel10-AppStream	RHEL 10.0
libeis-devel	rhel10-CRB	RHEL 10.0
libertas-firmware	rhel10-BaseOS	RHEL 10.0
libexif-doc	rhel10-CRB	RHEL 10.0
libgomp-offload-amdgcn	rhel10-AppStream	RHEL 10.0
libgweather-doc	rhel10-CRB	RHEL 10.0
libgxps-tools	rhel10-CRB	RHEL 10.0
libhandy-devel	rhel10-CRB	RHEL 10.0
libhwasan	rhel10-AppStream	RHEL 10.0
libical-glib-doc	rhel10-CRB	RHEL 10.0
libkcapi-hasher	rhel10-BaseOS	RHEL 10.0
liblc3	rhel10-AppStream	RHEL 10.0
liblc3-devel	rhel10-CRB	RHEL 10.1
liblerc	rhel10-AppStream	RHEL 10.0
liblerc-devel	rhel10-CRB	RHEL 10.0

Package	Repository	New in
liblouis-devel	rhel10-CRB	RHEL 10.0
liblouis-doc	rhel10-CRB	RHEL 10.0
liblouis-tables	rhel10-AppStream	RHEL 10.0
liblouis-utils	rhel10-CRB	RHEL 10.0
libmtp-examples	rhel10-CRB	RHEL 10.0
libnma-gtk4	rhel10-AppStream	RHEL 10.0
libnma-gtk4-devel	rhel10-CRB	RHEL 10.0
liboeffis	rhel10-AppStream	RHEL 10.0
liboeffis-devel	rhel10-CRB	RHEL 10.0
liboqs	rhel10-AppStream	RHEL 10.0
liboqs-devel	rhel10-AppStream	RHEL 10.0
libpanel	rhel10-AppStream	RHEL 10.0
libpeas1	rhel10-BaseOS	RHEL 10.0
libpeas1-devel	rhel10-CRB	RHEL 10.0
libpeas1-gtk	rhel10-AppStream	RHEL 10.0
libpeas1-loader-python3	rhel10-AppStream	RHEL 10.0
libportal	rhel10-AppStream	RHEL 10.0
libportal-devel	rhel10-CRB	RHEL 10.0
libportal-devel-doc	rhel10-CRB	RHEL 10.0
libportal-gtk3	rhel10-AppStream	RHEL 10.0
libportal-gtk3-devel	rhel10-CRB	RHEL 10.0
libportal-gtk4	rhel10-AppStream	RHEL 10.0
libportal-gtk4-devel	rhel10-CRB	RHEL 10.0

Package	Repository	New in
libportal-qt6	rhel10-AppStream	RHEL 10.0
libportal-qt6-devel	rhel10-CRB	RHEL 10.0
libppd	rhel10-AppStream	RHEL 10.0
libsecret-mock-service	rhel10-CRB	RHEL 10.1
libsigc++30	rhel10-AppStream	RHEL 10.0
libsigc++30-devel	rhel10-CRB	RHEL 10.0
libsigc++30-doc	rhel10-CRB	RHEL 10.0
libsolv-tools-base	rhel10-CRB	RHEL 10.0
libsoup3	rhel10-AppStream	RHEL 10.0
libsoup3-devel	rhel10-AppStream	RHEL 10.0
libsoup3-doc	rhel10-CRB	RHEL 10.0
libspelling	rhel10-AppStream	RHEL 10.0
libspelling-devel	rhel10-CRB	RHEL 10.0
libsysprof	rhel10-AppStream	RHEL 10.0
libtree-sitter	rhel10-AppStream	RHEL 10.0
libtree-sitter-devel	rhel10-CRB	RHEL 10.0
libusb1	rhel10-BaseOS	RHEL 10.0
libusb1-devel	rhel10-AppStream	RHEL 10.0
libuv-static	rhel10-AppStream	RHEL 10.0
libxml2-static	rhel10-CRB	RHEL 10.0
linuxptp-selinux	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
llhttp	rhel10-AppStream	RHEL 10.0
llhttp-devel	rhel10-CRB	RHEL 10.0
llvm-filesystem	rhel10-AppStream	RHEL 10.1
log4cplus	rhel10-BaseOS	RHEL 10.0
log4j-bom	rhel10-CRB	RHEL 10.0
log4j-javadoc	rhel10-CRB	RHEL 10.0
log4j-over-slf4j	rhel10-CRB	RHEL 10.0
log4j-web	rhel10-CRB	RHEL 10.0
loupe	rhel10-AppStream	RHEL 10.0
lprint	rhel10-AppStream	RHEL 10.0
lujavrite	rhel10-CRB	RHEL 10.0
makedumpfile	rhel10-BaseOS	RHEL 10.0
mariadb-client-utils	rhel10-AppStream	RHEL 10.0
maven-antrun-plugin	rhel10-CRB	RHEL 10.0
maven-antrun-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-archiver-javadoc	rhel10-CRB	RHEL 10.0
maven-artifact-transfer-javadoc	rhel10-CRB	RHEL 10.0
maven-assembly-plugin	rhel10-CRB	RHEL 10.0
maven-assembly-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-bundle-plugin	rhel10-CRB	RHEL 10.0
maven-bundle-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-common-artifact-filters-javadoc	rhel10-CRB	RHEL 10.0

Package	Repository	New in
maven-compiler-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-dependency-analyzer	rhel10-CRB	RHEL 10.0
maven-dependency-analyzer-javadoc	rhel10-CRB	RHEL 10.0
maven-dependency-plugin	rhel10-CRB	RHEL 10.0
maven-dependency-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-dependency-tree-javadoc	rhel10-CRB	RHEL 10.0
maven-enforcer	rhel10-CRB	RHEL 10.0
maven-enforcer-extension	rhel10-CRB	RHEL 10.0
maven-enforcer-javadoc	rhel10-CRB	RHEL 10.0
maven-failsafe-plugin	rhel10-CRB	RHEL 10.0
maven-file-management-javadoc	rhel10-CRB	RHEL 10.0
maven-filtering-javadoc	rhel10-CRB	RHEL 10.0
maven-jar-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-javadoc	rhel10-CRB	RHEL 10.0
maven-local-openjdk21	rhel10-CRB	RHEL 10.0
maven-parent	rhel10-CRB	RHEL 10.0
maven-plugin-testing	rhel10-CRB	RHEL 10.0
maven-plugin-testing-javadoc	rhel10-CRB	RHEL 10.0
maven-plugin-tools	rhel10-CRB	RHEL 10.0
maven-plugin-tools-javadoc	rhel10-CRB	RHEL 10.0
maven-remote-resources-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-resolver-javadoc	rhel10-CRB	RHEL 10.0

Package	Repository	New in
maven-resources-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-shared-incremental-javadoc	rhel10-CRB	RHEL 10.0
maven-shared-io-javadoc	rhel10-CRB	RHEL 10.0
maven-shared-utils-javadoc	rhel10-CRB	RHEL 10.0
maven-source-plugin-javadoc	rhel10-CRB	RHEL 10.0
maven-surefire-javadoc	rhel10-CRB	RHEL 10.0
maven-verifier-javadoc	rhel10-CRB	RHEL 10.0
maven-wagon-javadoc	rhel10-CRB	RHEL 10.0
micropipenv+toml	rhel10-CRB	RHEL 10.0
mingw-srvany-redistributable	rhel10-AppStream	RHEL 10.0
mlxsw_spectrum-firmware	rhel10-BaseOS	RHEL 10.0
mm-common	rhel10-CRB	RHEL 10.0
mm-common-docs	rhel10-CRB	RHEL 10.0
mockito-javadoc	rhel10-CRB	RHEL 10.0
mockito-junit-jupiter	rhel10-CRB	RHEL 10.0
modello	rhel10-CRB	RHEL 10.0
modello-javadoc	rhel10-CRB	RHEL 10.0
moditect	rhel10-CRB	RHEL 10.0
moditect-javadoc	rhel10-CRB	RHEL 10.0
modulemaker-maven-plugin	rhel10-CRB	RHEL 10.0
modulemaker-maven-plugin-javadoc	rhel10-CRB	RHEL 10.0
mojo-parent	rhel10-CRB	RHEL 10.0

Package	Repository	New in
mrtg-selinux	rhel10-AppStream	RHEL 10.0
mrvlprestera-firmware	rhel10-BaseOS	RHEL 10.0
msv-javadoc	rhel10-CRB	RHEL 10.0
msv-xsdlib	rhel10-CRB	RHEL 10.0
mt7xxx-firmware	rhel10-BaseOS	RHEL 10.0
mutter-common	rhel10-AppStream	RHEL 10.0
mysql-test-data	rhel10-CRB	RHEL 10.0
mysql8.4	rhel10-AppStream	RHEL 10.0
mysql8.4-common	rhel10-AppStream	RHEL 10.0
mysql8.4-devel	rhel10-CRB	RHEL 10.0
mysql8.4-errmsg	rhel10-AppStream	RHEL 10.0
mysql8.4-libs	rhel10-AppStream	RHEL 10.0
mysql8.4-server	rhel10-AppStream	RHEL 10.0
mysql8.4-test	rhel10-CRB	RHEL 10.0
mysql8.4-test-data	rhel10-CRB	RHEL 10.0
net-snmp-perl-module	rhel10-AppStream	RHEL 10.0
nodejs-npm	rhel10-AppStream	RHEL 10.0
nodejs24	rhel10-AppStream	RHEL 10.1
nodejs24-devel	rhel10-AppStream	RHEL 10.1
nodejs24-docs	rhel10-AppStream	RHEL 10.1
nodejs24-full-i18n	rhel10-AppStream	RHEL 10.1
nodejs24-libs	rhel10-AppStream	RHEL 10.1
nodejs24-npm	rhel10-AppStream	RHEL 10.1

Package	Repository	New in
nvidia-gpu-firmware	rhel10-AppStream	RHEL 10.0
nxpwireless-firmware	rhel10-BaseOS	RHEL 10.0
objectweb-asm-javadoc	rhel10-CRB	RHEL 10.0
objenesis-javadoc	rhel10-CRB	RHEL 10.0
ocaml-rpm-macros	rhel10-CRB	RHEL 10.0
ongres-stringprep	rhel10-AppStream	RHEL 10.0
opensc-libs	rhel10-BaseOS	RHEL 10.0
openssh-keysign	rhel10-AppStream	RHEL 10.0
opentest4j-javadoc	rhel10-CRB	RHEL 10.0
openwsman-selinux	rhel10-AppStream	RHEL 10.0
oqsprovider	rhel10-AppStream	RHEL 10.0
osgi-annotation-javadoc	rhel10-CRB	RHEL 10.0
osgi-compendium-javadoc	rhel10-CRB	RHEL 10.0
osgi-core-javadoc	rhel10-CRB	RHEL 10.0
package-notes-srpm-macros	rhel10-AppStream	RHEL 10.0
pam-libs	rhel10-BaseOS	RHEL 10.0
pangomm2.48	rhel10-AppStream	RHEL 10.0
pangomm2.48-devel	rhel10-CRB	RHEL 10.0
pangomm2.48-doc	rhel10-CRB	RHEL 10.0
papers	rhel10-AppStream	RHEL 10.0
papers-devel	rhel10-CRB	RHEL 10.0
papers-libs	rhel10-AppStream	RHEL 10.0
papers-nautilus	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
papers-previewer	rhel10-AppStream	RHEL 10.0
papers-thumbnailer	rhel10-AppStream	RHEL 10.0
pappl	rhel10-AppStream	RHEL 10.0
pappl-retrofit	rhel10-AppStream	RHEL 10.0
pcp-pmda-amdgpu	rhel10-AppStream	RHEL 10.0
pcre2-static	rhel10-CRB	RHEL 10.0
perl-Crypt-DES	rhel10-AppStream	RHEL 10.0
perl-Net-SNMP	rhel10-AppStream	RHEL 10.0
perl-Syntax-Keyword-Try	rhel10-CRB	RHEL 10.0
perl-XS-Parse-Keyword	rhel10-CRB	RHEL 10.0
perl-XS-Parse-Keyword-Builder	rhel10-CRB	RHEL 10.1
pipewire-plugin-libcamera	rhel10-AppStream	RHEL 10.0
pkcs11-provider	rhel10-BaseOS	RHEL 10.0
plexus-archiver-javadoc	rhel10-CRB	RHEL 10.0
plexus-build-api0	rhel10-CRB	RHEL 10.0
plexus-build-api0-javadoc	rhel10-CRB	RHEL 10.0
plexus-cipher-javadoc	rhel10-CRB	RHEL 10.0
plexus-classworlds-javadoc	rhel10-CRB	RHEL 10.0
plexus-compiler-extras	rhel10-CRB	RHEL 10.0
plexus-compiler-javadoc	rhel10-CRB	RHEL 10.0
plexus-compiler-pom	rhel10-CRB	RHEL 10.0
plexus-containers-component-metadata	rhel10-CRB	RHEL 10.0

Package	Repository	New in
plexus-containers-javadoc	rhel10-CRB	RHEL 10.0
plexus-interpolation-javadoc	rhel10-CRB	RHEL 10.0
plexus-io-javadoc	rhel10-CRB	RHEL 10.0
plexus-languages-javadoc	rhel10-CRB	RHEL 10.0
plexus-pom	rhel10-CRB	RHEL 10.0
plexus-resources-javadoc	rhel10-CRB	RHEL 10.0
plexus-sec-dispatcher-javadoc	rhel10-CRB	RHEL 10.0
plexus-testing	rhel10-CRB	RHEL 10.0
plexus-testing-javadoc	rhel10-CRB	RHEL 10.0
plexus-utils-javadoc	rhel10-CRB	RHEL 10.0
plexus-xml	rhel10-CRB	RHEL 10.0
plexus-xml-javadoc	rhel10-CRB	RHEL 10.0
plocate	rhel10-BaseOS	RHEL 10.0
plymouth-devel	rhel10-AppStream	RHEL 10.0
podman-sequoia	rhel10-AppStream	RHEL 10.1
poppler-qt6	rhel10-AppStream	RHEL 10.0
poppler-qt6-devel	rhel10-CRB	RHEL 10.0
postgis	rhel10-AppStream	RHEL 10.1
postgis-client	rhel10-AppStream	RHEL 10.1
postgis-docs	rhel10-AppStream	RHEL 10.1
postgis-upgrade	rhel10-AppStream	RHEL 10.1
postgis-utils	rhel10-AppStream	RHEL 10.1

Package	Repository	New in
potrace-devel	rhel10-CRB	RHEL 10.0
proj	rhel10-AppStream	RHEL 10.1
proj-data	rhel10-AppStream	RHEL 10.1
proj-devel	rhel10-CRB	RHEL 10.1
prrte	rhel10-AppStream	RHEL 10.0
prrte-libs	rhel10-AppStream	RHEL 10.0
ptyxis	rhel10-AppStream	RHEL 10.0
PyQt-builder	rhel10-CRB	RHEL 10.0
python-pyqt6-doc	rhel10-CRB	RHEL 10.0
python-pyqt6-rpm-macros	rhel10-AppStream	RHEL 10.0
python-testpath-doc	rhel10-CRB	RHEL 10.0
python3-asn1crypto	rhel10-AppStream	RHEL 10.0
python3-charset-normalizer	rhel10-BaseOS	RHEL 10.0
python3-clang	rhel10-AppStream	RHEL 10.1
python3-cython	rhel10-CRB	RHEL 10.0
python3-dnf-plugin-pre-transaction-actions	rhel10-BaseOS	RHEL 10.0
python3-gnome-ponytail-daemon	rhel10-AppStream	RHEL 10.0
python3-gpsd	rhel10-AppStream	RHEL 10.0
python3-hatchling	rhel10-CRB	RHEL 10.0
python3-ifaddr	rhel10-AppStream	RHEL 10.0
python3-installer	rhel10-CRB	RHEL 10.0
python3-iso639	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
python3-jinja2+i18n	rhel10-CRB	RHEL 10.0
python3-jsonschema-specifications	rhel10-BaseOS	RHEL 10.0
python3-lark	rhel10-AppStream	RHEL 10.0
python3-libcpuid	rhel10-BaseOS	RHEL 10.0
python3-pam	rhel10-AppStream	RHEL 10.0
python3-pathspec	rhel10-CRB	RHEL 10.0
python3-pycdio	rhel10-AppStream	RHEL 10.0
python3-PyMySQL+rsa	rhel10-CRB	RHEL 10.0
python3-pyproject-hooks	rhel10-CRB	RHEL 10.0
python3-pyqt6	rhel10-AppStream	RHEL 10.0
python3-pyqt6-base	rhel10-AppStream	RHEL 10.0
python3-pyqt6-devel	rhel10-AppStream	RHEL 10.0
python3-pyqt6-sip	rhel10-AppStream	RHEL 10.0
python3-qrcode	rhel10-AppStream	RHEL 10.0
python3-referencing	rhel10-BaseOS	RHEL 10.0
python3-rpds-py	rhel10-BaseOS	RHEL 10.0
python3-semantic_version	rhel10-CRB	RHEL 10.0
python3-sphinxcontrib-jquery	rhel10-CRB	RHEL 10.0
python3-testpath	rhel10-CRB	RHEL 10.0
python3-tpm2-pytss	rhel10-AppStream	RHEL 10.0
python3-trove-classifiers	rhel10-CRB	RHEL 10.0
python3-typing-extensions	rhel10-BaseOS	RHEL 10.0
python3-xkbregistry	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
python3-zstd	rhel10-AppStream	RHEL 10.0
qcom-firmware	rhel10-BaseOS	RHEL 10.0
qdox-javadoc	rhel10-CRB	RHEL 10.0
qgpgme-common-devel	rhel10-CRB	RHEL 10.0
qgpgme-qt6	rhel10-CRB	RHEL 10.0
qgpgme-qt6-devel	rhel10-CRB	RHEL 10.0
qt6-assistant	rhel10-AppStream	RHEL 10.0
qt6-designer	rhel10-AppStream	RHEL 10.0
qt6-doctools	rhel10-AppStream	RHEL 10.0
qt6-filesystem	rhel10-AppStream	RHEL 10.0
qt6-linguist	rhel10-AppStream	RHEL 10.0
qt6-qdbusviewer	rhel10-AppStream	RHEL 10.0
qt6-qt3d	rhel10-AppStream	RHEL 10.0
qt6-qt3d-devel	rhel10-AppStream	RHEL 10.0
qt6-qt3d-examples	rhel10-CRB	RHEL 10.0
qt6-qt5compat	rhel10-AppStream	RHEL 10.0
qt6-qt5compat-devel	rhel10-AppStream	RHEL 10.0
qt6-qt5compat-examples	rhel10-CRB	RHEL 10.0
qt6-qtbase	rhel10-AppStream	RHEL 10.0
qt6-qtbase-common	rhel10-AppStream	RHEL 10.0
qt6-qtbase-devel	rhel10-AppStream	RHEL 10.0
qt6-qtbase-examples	rhel10-CRB	RHEL 10.0
qt6-qtbase-gui	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
qt6-qtbase-mysql	rhel10-AppStream	RHEL 10.0
qt6-qtbase-odbc	rhel10-AppStream	RHEL 10.0
qt6-qtbase-postgresql	rhel10-AppStream	RHEL 10.0
qt6-qtbase-private-devel	rhel10-CRB	RHEL 10.0
qt6-qtbase-static	rhel10-CRB	RHEL 10.0
qt6-qtcharts	rhel10-AppStream	RHEL 10.0
qt6-qtcharts-devel	rhel10-AppStream	RHEL 10.0
qt6-qtcharts-examples	rhel10-CRB	RHEL 10.0
qt6-qtconnectivity	rhel10-AppStream	RHEL 10.0
qt6-qtconnectivity-devel	rhel10-AppStream	RHEL 10.0
qt6-qtconnectivity-examples	rhel10-CRB	RHEL 10.0
qt6-qtdatavis3d	rhel10-AppStream	RHEL 10.0
qt6-qtdatavis3d-devel	rhel10-AppStream	RHEL 10.0
qt6-qtdatavis3d-examples	rhel10-CRB	RHEL 10.0
qt6-qtdeclarative	rhel10-AppStream	RHEL 10.0
qt6-qtdeclarative-devel	rhel10-AppStream	RHEL 10.0
qt6-qtdeclarative-examples	rhel10-CRB	RHEL 10.0
qt6-qtdeclarative-static	rhel10-CRB	RHEL 10.0
qt6-qtimageformats	rhel10-AppStream	RHEL 10.0
qt6-qtlanguageserver	rhel10-AppStream	RHEL 10.0
qt6-qtlanguageserver-devel	rhel10-AppStream	RHEL 10.0
qt6-qtlocation	rhel10-AppStream	RHEL 10.0
qt6-qtlocation-devel	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
qt6-qtlocation-examples	rhel10-CRB	RHEL 10.0
qt6-qtlottie	rhel10-AppStream	RHEL 10.0
qt6-qtlottie-devel	rhel10-AppStream	RHEL 10.0
qt6-qtmultimedia	rhel10-AppStream	RHEL 10.0
qt6-qtmultimedia-devel	rhel10-AppStream	RHEL 10.0
qt6-qtmultimedia-examples	rhel10-CRB	RHEL 10.0
qt6-qtnetworkauth	rhel10-AppStream	RHEL 10.0
qt6-qtnetworkauth-devel	rhel10-AppStream	RHEL 10.0
qt6-qtnetworkauth-examples	rhel10-CRB	RHEL 10.0
qt6-qtpositioning	rhel10-AppStream	RHEL 10.0
qt6-qtpositioning-devel	rhel10-AppStream	RHEL 10.0
qt6-qtpositioning-examples	rhel10-CRB	RHEL 10.0
qt6-qtquick3d	rhel10-AppStream	RHEL 10.0
qt6-qtquick3d-devel	rhel10-AppStream	RHEL 10.0
qt6-qtquick3d-examples	rhel10-CRB	RHEL 10.0
qt6-qtquicktimeline	rhel10-AppStream	RHEL 10.0
qt6-qtquicktimeline-devel	rhel10-AppStream	RHEL 10.0
qt6-qtremoteobjects	rhel10-AppStream	RHEL 10.0
qt6-qtremoteobjects-devel	rhel10-AppStream	RHEL 10.0
qt6-qtremoteobjects-examples	rhel10-CRB	RHEL 10.0
qt6-qtscxml	rhel10-AppStream	RHEL 10.0
qt6-qtscxml-devel	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
qt6-qtscxml-examples	rhel10-CRB	RHEL 10.0
qt6-qtsensors	rhel10-AppStream	RHEL 10.0
qt6-qtsensors-devel	rhel10-AppStream	RHEL 10.0
qt6-qtsensors-examples	rhel10-CRB	RHEL 10.0
qt6-qtserialbus	rhel10-AppStream	RHEL 10.0
qt6-qtserialbus-devel	rhel10-AppStream	RHEL 10.0
qt6-qtserialbus-examples	rhel10-CRB	RHEL 10.0
qt6-qtserialport	rhel10-AppStream	RHEL 10.0
qt6-qtserialport-devel	rhel10-AppStream	RHEL 10.0
qt6-qtserialport-examples	rhel10-CRB	RHEL 10.0
qt6-qtshadertools	rhel10-AppStream	RHEL 10.0
qt6-qtshadertools-devel	rhel10-AppStream	RHEL 10.0
qt6-qtspeech	rhel10-AppStream	RHEL 10.0
qt6-qtspeech-devel	rhel10-AppStream	RHEL 10.0
qt6-qtspeech-examples	rhel10-CRB	RHEL 10.0
qt6-qtspeech-speechd	rhel10-AppStream	RHEL 10.0
qt6-qtsvg	rhel10-AppStream	RHEL 10.0
qt6-qtsvg-devel	rhel10-AppStream	RHEL 10.0
qt6-qtsvg-examples	rhel10-CRB	RHEL 10.0
qt6-qttools	rhel10-AppStream	RHEL 10.0
qt6-qttools-common	rhel10-AppStream	RHEL 10.0
qt6-qttools-devel	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
qt6-qttools-examples	rhel10-CRB	RHEL 10.0
qt6-qttools-libs-designer	rhel10-AppStream	RHEL 10.0
qt6-qttools-libs-designercomponents	rhel10-AppStream	RHEL 10.0
qt6-qttools-libs-help	rhel10-AppStream	RHEL 10.0
qt6-qttools-static	rhel10-CRB	RHEL 10.0
qt6-qttranslations	rhel10-AppStream	RHEL 10.0
qt6-qtvirtualkeyboard	rhel10-AppStream	RHEL 10.0
qt6-qtvirtualkeyboard-devel	rhel10-AppStream	RHEL 10.0
qt6-qtvirtualkeyboard-examples	rhel10-CRB	RHEL 10.0
qt6-qtwayland	rhel10-AppStream	RHEL 10.0
qt6-qtwayland-devel	rhel10-AppStream	RHEL 10.0
qt6-qtwayland-examples	rhel10-CRB	RHEL 10.0
qt6-qtwebchannel	rhel10-AppStream	RHEL 10.0
qt6-qtwebchannel-devel	rhel10-AppStream	RHEL 10.0
qt6-qtwebchannel-examples	rhel10-CRB	RHEL 10.0
qt6-qtwebsockets	rhel10-AppStream	RHEL 10.0
qt6-qtwebsockets-devel	rhel10-AppStream	RHEL 10.0
qt6-qtwebsockets-examples	rhel10-CRB	RHEL 10.0
qt6-rpm-macros	rhel10-AppStream	RHEL 10.0
qt6-srpm-macros	rhel10-AppStream	RHEL 10.0
realtek-firmware	rhel10-BaseOS	RHEL 10.0
redhat-display-vf-fonts	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
redhat-flatpak-preinstall-firefox	rhel10-AppStream	RHEL 10.0
redhat-flatpak-preinstall-thunderbird	rhel10-AppStream	RHEL 10.0
redhat-flatpak-repo	rhel10-AppStream	RHEL 10.0
redhat-mono-vf-fonts	rhel10-BaseOS	RHEL 10.0
redhat-text-vf-fonts	rhel10-BaseOS	RHEL 10.0
regexp-javadoc	rhel10-CRB	RHEL 10.0
relaxng-datatype-java	rhel10-CRB	RHEL 10.0
relaxng-datatype-java-javadoc	rhel10-CRB	RHEL 10.0
replacer	rhel10-CRB	RHEL 10.0
replacer-javadoc	rhel10-CRB	RHEL 10.0
rest-devel	rhel10-CRB	RHEL 10.0
rhel-drivers	rhel10-AppStream	RHEL 10.1
rit-meera-new-fonts	rhel10-AppStream	RHEL 10.0
rit-rachana-fonts	rhel10-AppStream	RHEL 10.0
rpm-plugin-dbus-announce	rhel10-AppStream	RHEL 10.1
rpm-sequoia	rhel10-BaseOS	RHEL 10.0
rpm-sequoia-devel	rhel10-CRB	RHEL 10.1
rsvg-pixbuf-loader	rhel10-AppStream	RHEL 10.0
rust-std-static-x86_64-unknown-none	rhel10-CRB	RHEL 10.0
rust-toolset-srpm-macros	rhel10-AppStream	RHEL 10.0
sap-hana-ha	rhel10-SAPHANA	RHEL 10.0
sdl2-compat	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
SDL3	rhel10-AppStream	RHEL 10.0
selinux-policy-extra	rhel10-CRB	RHEL 10.1
selinux-policy-mls-extra	rhel10-CRB	RHEL 10.1
selinux-policy-targeted-extra	rhel10-CRB	RHEL 10.1
sequoia-sq	rhel10-AppStream	RHEL 10.0
sequoia-sqv	rhel10-AppStream	RHEL 10.0
sgx-common	rhel10-AppStream	RHEL 10.1
sgx-enclave-prebuilt-common	rhel10-AppStream	RHEL 10.1
sgx-enclave-prebuilt-ide-signed	rhel10-AppStream	RHEL 10.1
sgx-enclave-prebuilt-pce-signed	rhel10-AppStream	RHEL 10.1
sgx-enclave-prebuilt-tdqe-signed	rhel10-AppStream	RHEL 10.1
sgx-libs	rhel10-AppStream	RHEL 10.1
sgx-mpa	rhel10-AppStream	RHEL 10.1
sgx-pckid-tool	rhel10-AppStream	RHEL 10.1
sgx-rpm-macros	rhel10-CRB	RHEL 10.1
shim-unsigned-x64	rhel10-CRB	RHEL 10.1
sisu-javadoc	rhel10-CRB	RHEL 10.0
sisu-mojos	rhel10-CRB	RHEL 10.0
sisu-mojos-javadoc	rhel10-CRB	RHEL 10.0
slf4j-javadoc	rhel10-CRB	RHEL 10.0
slf4j-jcl	rhel10-CRB	RHEL 10.0
slf4j-manual	rhel10-CRB	RHEL 10.0

Package	Repository	New in
slf4j-migrator	rhel10-CRB	RHEL 10.0
slf4j-sources	rhel10-CRB	RHEL 10.0
smartmontools-selinux	rhel10-BaseOS	RHEL 10.0
snapshot	rhel10-AppStream	RHEL 10.0
speech-dispatcher-libs	rhel10-AppStream	RHEL 10.0
speech-dispatcher-utils	rhel10-AppStream	RHEL 10.0
swtpm-selinux	rhel10-AppStream	RHEL 10.0
sysprof	rhel10-AppStream	RHEL 10.0
sysprof-agent	rhel10-AppStream	RHEL 10.0
sysprof-cli	rhel10-AppStream	RHEL 10.0
sysprof-devel	rhel10-CRB	RHEL 10.0
tbb-bind	rhel10-AppStream	RHEL 10.0
tdx-qgs	rhel10-AppStream	RHEL 10.1
tecla	rhel10-AppStream	RHEL 10.0
tecla-devel	rhel10-CRB	RHEL 10.0
tesseract-equ	rhel10-AppStream	RHEL 10.1
tesseract-osd	rhel10-AppStream	RHEL 10.1
testng	rhel10-CRB	RHEL 10.0
testng-javadoc	rhel10-CRB	RHEL 10.0
texlive-acronym	rhel10-AppStream	RHEL 10.0
texlive-count1to	rhel10-AppStream	RHEL 10.0
texlive-everysel	rhel10-AppStream	RHEL 10.0
texlive-everyshi	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
texlive-firstaid	rhel10-AppStream	RHEL 10.0
texlive-hopatch	rhel10-AppStream	RHEL 10.0
texlive-hypcap	rhel10-AppStream	RHEL 10.0
texlive-hypdoc	rhel10-AppStream	RHEL 10.0
texlive-lua-uni-algos	rhel10-AppStream	RHEL 10.0
texlive-multitoc	rhel10-AppStream	RHEL 10.0
texlive-pdfcol	rhel10-AppStream	RHEL 10.0
texlive-pdfcolfoot	rhel10-AppStream	RHEL 10.0
texlive-pdfmanagement-testphase	rhel10-AppStream	RHEL 10.0
texlive-relsize	rhel10-AppStream	RHEL 10.0
texlive-sfmath	rhel10-AppStream	RHEL 10.0
texlive-xfrac	rhel10-AppStream	RHEL 10.0
texlive-xpatch	rhel10-AppStream	RHEL 10.0
tiwilink-firmware	rhel10-BaseOS	RHEL 10.0
tomcat-el-5.0-api	rhel10-AppStream	RHEL 10.0
tomcat-jakartaee-migration	rhel10-AppStream	RHEL 10.0
tomcat-jsp-3.1-api	rhel10-AppStream	RHEL 10.0
tomcat-servlet-6.0-api	rhel10-AppStream	RHEL 10.0
tomcat9	rhel10-AppStream	RHEL 10.0
tomcat9-admin-webapps	rhel10-AppStream	RHEL 10.0
tomcat9-docs-webapp	rhel10-AppStream	RHEL 10.0
tomcat9-el-3.0-api	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
tomcat9-jsp-2.3-api	rhel10-AppStream	RHEL 10.0
tomcat9-lib	rhel10-AppStream	RHEL 10.0
tomcat9-servlet-4.0-api	rhel10-AppStream	RHEL 10.0
tomcat9-webapps	rhel10-AppStream	RHEL 10.0
torque-libs	rhel10-AppStream	RHEL 10.0
tpm2-openssl	rhel10-AppStream	RHEL 10.0
tpm2-tss-fapi	rhel10-BaseOS	RHEL 10.0
tracker-doc	rhel10-CRB	RHEL 10.0
udev-hid-bpf	rhel10-AppStream	RHEL 10.0
udev-hid-bpf-stable	rhel10-AppStream	RHEL 10.0
unbound-anchor	rhel10-AppStream	RHEL 10.0
univocity-parsers-javadoc	rhel10-CRB	RHEL 10.0
upower-libs	rhel10-AppStream	RHEL 10.0
usbredir-tools	rhel10-AppStream	RHEL 10.0
vala-doc	rhel10-CRB	RHEL 10.0
valadoc	rhel10-CRB	RHEL 10.0
valadoc-devel	rhel10-CRB	RHEL 10.0
valgrind-docs	rhel10-AppStream	RHEL 10.1
valgrind-gdb	rhel10-AppStream	RHEL 10.1
valgrind-scripts	rhel10-AppStream	RHEL 10.1
valkey	rhel10-AppStream	RHEL 10.0
valkey-devel	rhel10-AppStream	RHEL 10.0
vazirmatn-vf-fonts	rhel10-AppStream	RHEL 10.0

Package	Repository	New in
velocity-javadoc	rhel10-CRB	RHEL 10.0
vim-data	rhel10-BaseOS	RHEL 10.0
virt-sb-certs	rhel10-AppStream	RHEL 10.1
vte291-gtk4	rhel10-AppStream	RHEL 10.0
vte291-gtk4-devel	rhel10-CRB	RHEL 10.0
wsdd	rhel10-AppStream	RHEL 10.0
wsl-setup	rhel10-AppStream	RHEL 10.1
xalan-j2-manual	rhel10-CRB	RHEL 10.0
xalan-j2-xsltc	rhel10-CRB	RHEL 10.0
xdg-desktop-portal-devel	rhel10-CRB	RHEL 10.0
xerces-j2-demo	rhel10-CRB	RHEL 10.0
xerces-j2-javadoc	rhel10-CRB	RHEL 10.0
xhost	rhel10-AppStream	RHEL 10.0
xml-commons-apis-javadoc	rhel10-CRB	RHEL 10.0
xml-commons-apis-manual	rhel10-CRB	RHEL 10.0
xml-commons-resolver-javadoc	rhel10-CRB	RHEL 10.0
xmlunit-assertj	rhel10-CRB	RHEL 10.0
xmlunit-core	rhel10-CRB	RHEL 10.0
xmlunit-javadoc	rhel10-CRB	RHEL 10.0
xmlunit-legacy	rhel10-CRB	RHEL 10.0
xmlunit-matchers	rhel10-CRB	RHEL 10.0
xmlunit-placeholders	rhel10-CRB	RHEL 10.0
xmvn	rhel10-CRB	RHEL 10.0

Package	Repository	New in
xmvn-generator	rhel10-CRB	RHEL 10.0
xmvn-generator-javadoc	rhel10-CRB	RHEL 10.0
xmvn-javadoc	rhel10-CRB	RHEL 10.0
xorg-x11-font-utils	rhel10-AppStream	RHEL 10.0
xprop	rhel10-AppStream	RHEL 10.0
xrdb	rhel10-AppStream	RHEL 10.0
xwayland-run	rhel10-AppStream	RHEL 10.0
xxd	rhel10-AppStream	RHEL 10.0
xz-java-javadoc	rhel10-CRB	RHEL 10.0
yara-devel	rhel10-CRB	RHEL 10.1
yelp-xsl-devel	rhel10-CRB	RHEL 10.0
yggdrasil	rhel10-AppStream	RHEL 10.0
yggdrasil-devel	rhel10-CRB	RHEL 10.0
yggdrasil-worker-package-manager	rhel10-AppStream	RHEL 10.0
zlib-ng	rhel10-CRB	RHEL 10.0
zlib-ng-compat	rhel10-BaseOS	RHEL 10.0
zlib-ng-compat-devel	rhel10-AppStream	RHEL 10.0
zlib-ng-compat-static	rhel10-CRB	RHEL 10.0
zlib-ng-devel	rhel10-CRB	RHEL 10.0

A.2. PACKAGE REPLACEMENTS

Review packages that were replaced, renamed, merged, or split in Red Hat Enterprise Linux (RHEL) 10.

Original package(s)	New package(s)	Changed since	Note
abattis-cantarell-fonts	redhat-text-vf-fonts	RHEL 10.0	
adobe-source-code-pro-fonts	redhat-mono-vf-fonts	RHEL 10.0	
annobin	annobin-docs, annobin-plugin-gcc	RHEL 10.0	
apr-util-bdb	apr-util-lmdb	RHEL 10.0	
audit	audit, audit-rules	RHEL 10.0	
bind-dnssec-doc, bind-dnssec-utils	bind-dnssec-utils	RHEL 10.0	
cairomm	cairomm1.16	RHEL 10.0	
cairomm-devel	cairomm1.16-devel	RHEL 10.0	
cairomm-doc	cairomm1.16-doc	RHEL 10.0	
cheese	snapshot	RHEL 10.0	
chrome-gnome-shell	gnome-browser-connector	RHEL 10.0	
cockpit-bridge, cockpit-pcp	cockpit-bridge	RHEL 10.0	
cockpit-composer	cockpit-image-builder	RHEL 10.0	
cockpit-ws	cockpit-ws, cockpit-ws-selinux	RHEL 10.1	
cups-filters	cups-browsed, cups-filters, cups-filters-driverless	RHEL 10.0	
cups-filters-libs	libcupsfilters	RHEL 10.0	
emacs-nox	emacs-nw	RHEL 10.0	
eog	loupe	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
evince	papers	RHEL 10.0	
evince-libs	papers-libs	RHEL 10.0	
evince-nautilus	papers-nautilus	RHEL 10.0	
evince-previewer	papers-previewer	RHEL 10.0	
evince-thumbnailer	papers-thumbnailer	RHEL 10.0	
flex, flex-doc	flex	RHEL 10.0	
gcc-toolset-12-gdb	gdb	RHEL 10.0	
gcc-toolset-13-gdb	gdb	RHEL 10.0	
gedit	gnome-text-editor	RHEL 10.0	
glibmm24	glibmm2.68	RHEL 10.0	
glibmm24-devel	glibmm2.68-devel	RHEL 10.0	
glibmm24-doc	glibmm2.68-doc	RHEL 10.0	
gnome-shell-extension-systemMonitor	gnome-shell-extension-system-monitor	RHEL 10.0	
gnome-shell-extension-top-icons	gnome-shell-extension-status-icons	RHEL 10.0	
gnome-terminal	ptyxis	RHEL 10.0	
google-noto-cjk-fonts-common, google-noto-sans-cjk-jp-fonts, google-noto-sans-cjk-ttc-fonts	google-noto-sans-cjk-vf-fonts	RHEL 10.0	
google-noto-emoji-color-fonts	google-noto-color-emoji-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
google-noto-sans-anatolian-hieroglyphs-vf-fonts	google-noto-sans-anatolian-hieroglyphs-fonts	RHEL 10.0	
google-noto-sans-arabic-ui-fonts	google-noto-sans-arabic-fonts	RHEL 10.0	
google-noto-sans-arabic-ui-vf-fonts	google-noto-sans-arabic-vf-fonts	RHEL 10.0	
google-noto-sans-avestan-vf-fonts	google-noto-sans-avestan-fonts	RHEL 10.0	
google-noto-sans-bengali-ui-vf-fonts	google-noto-sans-bengali-ui-fonts	RHEL 10.0	
google-noto-sans-buginese-vf-fonts	google-noto-sans-buginese-fonts	RHEL 10.0	
google-noto-sans-buhid-vf-fonts	google-noto-sans-buhid-fonts	RHEL 10.0	
google-noto-sans-carian-vf-fonts	google-noto-sans-carian-fonts	RHEL 10.0	
google-noto-sans-cuneiform-vf-fonts	google-noto-sans-cuneiform-fonts	RHEL 10.0	
google-noto-sans-cypriot-vf-fonts	google-noto-sans-cypriot-fonts	RHEL 10.0	
google-noto-sans-deseret-vf-fonts	google-noto-sans-deseret-fonts	RHEL 10.0	
google-noto-sans-devanagari-ui-vf-fonts	google-noto-sans-devanagari-ui-fonts	RHEL 10.0	
google-noto-sans-display-fonts	google-noto-sans-fonts	RHEL 10.0	
google-noto-sans-display-vf-fonts	google-noto-sans-vf-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
google-noto-sans-egyptian-hieroglyphs-vf-fonts	google-noto-sans-egyptian-hieroglyphs-fonts	RHEL 10.0	
google-noto-sans-elymaic-vf-fonts	google-noto-sans-elymaic-fonts	RHEL 10.0	
google-noto-sans-gothic-vf-fonts	google-noto-sans-gothic-fonts	RHEL 10.0	
google-noto-sans-gurmukhi-ui-vf-fonts	google-noto-sans-gurmukhi-ui-fonts	RHEL 10.0	
google-noto-sans-hatran-vf-fonts	google-noto-sans-hatran-fonts	RHEL 10.0	
google-noto-sans-imperial-aramaic-vf-fonts	google-noto-sans-imperial-aramaic-fonts	RHEL 10.0	
google-noto-sans-khmer-ui-vf-fonts	google-noto-sans-khmer-vf-fonts	RHEL 10.0	
google-noto-sans-lao-ui-vf-fonts	google-noto-sans-lao-vf-fonts	RHEL 10.0	
google-noto-sans-linear-a-vf-fonts	google-noto-sans-linear-a-fonts	RHEL 10.0	
google-noto-sans-linear-b-vf-fonts	google-noto-sans-linear-b-fonts	RHEL 10.0	
google-noto-sans-lycian-vf-fonts	google-noto-sans-lycian-fonts	RHEL 10.0	
google-noto-sans-lydian-vf-fonts	google-noto-sans-lydian-fonts	RHEL 10.0	
google-noto-sans-mandaic-vf-fonts	google-noto-sans-mandaic-fonts	RHEL 10.0	
google-noto-sans-marchen-vf-fonts	google-noto-sans-marchen-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
google-noto-sans-math-vf-fonts	google-noto-sans-math-fonts	RHEL 10.0	
google-noto-sans-mayan-numerals-vf-fonts	google-noto-sans-mayan-numerals-fonts	RHEL 10.0	
google-noto-sans-meeteimayek-vf-fonts	google-noto-sans-meetei-mayek-vf-fonts	RHEL 10.0	
google-noto-sans-mro-vf-fonts	google-noto-sans-mro-fonts	RHEL 10.0	
google-noto-sans-multani-vf-fonts	google-noto-sans-multani-fonts	RHEL 10.0	
google-noto-sans-myanmar-ui-fonts	google-noto-sans-myanmar-fonts	RHEL 10.0	
google-noto-sans-myanmar-ui-vf-fonts	google-noto-sans-myanmar-vf-fonts	RHEL 10.0	
google-noto-sans-nabataean-vf-fonts	google-noto-sans-nabataean-fonts	RHEL 10.0	
google-noto-sans-ogham-vf-fonts	google-noto-sans-ogham-fonts	RHEL 10.0	
google-noto-sans-oriya-ui-fonts	google-noto-sans-oriya-fonts	RHEL 10.0	
google-noto-sans-osmanya-vf-fonts	google-noto-sans-osmanya-fonts	RHEL 10.0	
google-noto-sans-phags-pa-fonts	google-noto-sans-phagspa-fonts	RHEL 10.0	
google-noto-sans-runic-vf-fonts	google-noto-sans-runic-fonts	RHEL 10.0	
google-noto-sans-shavian-vf-fonts	google-noto-sans-shavian-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
google-noto-sans-sinhala-ui-vf-fonts	google-noto-sans-sinhala-ui-fonts	RHEL 10.0	
google-noto-sans-soyombo-vf-fonts	google-noto-sans-soyombo-fonts	RHEL 10.0	
google-noto-sans-symbols2-fonts	google-noto-sans-symbols-2-fonts	RHEL 10.0	
google-noto-sans-tagbanwa-vf-fonts	google-noto-sans-tagbanwa-fonts	RHEL 10.0	
google-noto-sans-takri-vf-fonts	google-noto-sans-takri-fonts	RHEL 10.0	
google-noto-sans-tamil-supplement-vf-fonts	google-noto-sans-tamil-vf-fonts	RHEL 10.0	
google-noto-sans-thai-ui-vf-fonts	google-noto-sans-thai-vf-fonts	RHEL 10.0	
google-noto-sans-ugaritic-vf-fonts	google-noto-sans-ugaritic-fonts	RHEL 10.0	
google-noto-sans-vai-vf-fonts	google-noto-sans-vai-fonts	RHEL 10.0	
google-noto-sans-wancho-vf-fonts	google-noto-sans-wancho-fonts	RHEL 10.0	
google-noto-sans-warang-citi-vf-fonts	google-noto-sans-warang-citi-fonts	RHEL 10.0	
google-noto-sans-yi-vf-fonts	google-noto-sans-yi-fonts	RHEL 10.0	
google-noto-sans-zanabazar-square-vf-fonts	google-noto-sans-zanabazar-square-fonts	RHEL 10.0	
google-noto-sansthai-looped-vf-fonts	google-noto-sans-thai-looped-fonts	RHEL 10.0	
google-noto-serif-cjk-ttc-fonts	google-noto-serif-cjk-vf-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
google-noto-serif-display-fonts	google-noto-serif-fonts	RHEL 10.0	
google-noto-serif-display-vf-fonts	google-noto-serif-vf-fonts	RHEL 10.0	
google-noto-serif-nyiakeng-puachue-hmong-fonts	google-noto-serif-np-hmong-fonts	RHEL 10.0	
google-noto-serif-nyiakeng-puachue-hmong-vf-fonts	google-noto-serif-np-hmong-vf-fonts	RHEL 10.0	
google-noto-serif-tamil-slanted-fonts	google-noto-serif-tamil-fonts	RHEL 10.0	
google-noto-serif-tamil-slanted-vf-fonts	google-noto-serif-tamil-vf-fonts	RHEL 10.0	
google-noto-serif-tangut-vf-fonts	google-noto-serif-tangut-fonts	RHEL 10.0	
gpsd-minimal	gpsd	RHEL 10.0	
gpsd-minimal-clients	gpsd-clients	RHEL 10.0	
ht-caladea-fonts	google-crosextra-caladea-fonts	RHEL 10.0	
iotop	iotop-c	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
iwl100-firmware, iwl1000-firmware, iwl105-firmware, iwl135-firmware, iwl2000-firmware, iwl2030-firmware, iwl5000-firmware, iwl5150-firmware, iwl6000-firmware, iwl6000g2a-firmware, iwl6000g2b-firmware, iwl6050-firmware	iwlwifi-dvm-firmware	RHEL 10.0	
iwl3160-firmware, iwl7260-firmware	iwlwifi-mvm-firmware	RHEL 10.0	
iwl3945-firmware, iwl4965-firmware	iwlegacy-firmware	RHEL 10.0	
jaxb-api4	jaxb-api	RHEL 10.0	
kexec-tools	kdump-utils, kexec-tools, makedumpfile	RHEL 10.0	
khmer-os-system-fonts	google-noto-sans-khmer-vf-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
langpacks-core-font-af, langpacks-core-font-bs, langpacks-core-font-ca, langpacks-core-font-cs, langpacks-core-font-cy, langpacks-core-font-da, langpacks-core-font-de, langpacks-core-font-en, langpacks-core-font-es, langpacks-core-font-et, langpacks-core-font-fi, langpacks-core-font-fr, langpacks-core-font-ga, langpacks-core-font-gl, langpacks-core-font-hr, langpacks-core-font-hu, langpacks-core-font-id, langpacks-core-font-is, langpacks-core-font-it, langpacks-core-font-kk, langpacks-core-font-lt, langpacks-core-font-lv, langpacks-core-font-mk, langpacks-core-font-ms, langpacks-core-font-nl, langpacks-core-font-pl, langpacks-core-font-pt, langpacks-core-font-ro, langpacks-core-font-sk, langpacks-core-font-sl, langpacks-core-font-sq, langpacks-core-font-sr, langpacks-core-font-sv, langpacks-core-font-tr	default-fonts-core-sans	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
langpacks-core-font-am	default-fonts-am	RHEL 10.0	
langpacks-core-font-ar	default-fonts-ar	RHEL 10.0	
langpacks-core-font-as	default-fonts-as	RHEL 10.0	
langpacks-core-font-ast	default-fonts-ast	RHEL 10.0	
langpacks-core-font-be	default-fonts-be	RHEL 10.0	
langpacks-core-font-bg	default-fonts-bg	RHEL 10.0	
langpacks-core-font-bn	default-fonts-bn	RHEL 10.0	
langpacks-core-font-bo	default-fonts-bo	RHEL 10.0	
langpacks-core-font-br	default-fonts-br	RHEL 10.0	
langpacks-core-font-dz	default-fonts-dz	RHEL 10.0	
langpacks-core-font-el	default-fonts-el	RHEL 10.0	
langpacks-core-font-eo	default-fonts-eo	RHEL 10.0	
langpacks-core-font-eu	default-fonts-eu	RHEL 10.0	
langpacks-core-font-fa	default-fonts-fa	RHEL 10.0	
langpacks-core-font-gu	default-fonts-gu	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
langpacks-core-font-he	default-fonts-he	RHEL 10.0	
langpacks-core-font-hi	default-fonts-hi	RHEL 10.0	
langpacks-core-font-ia	default-fonts-ia	RHEL 10.0	
langpacks-core-font-ja, langpacks-core-font-ko, langpacks-core-font-zh_CN, langpacks-core-font-zh_HK, langpacks-core-font-zh_TW	default-fonts-cjk-sans	RHEL 10.0	
langpacks-core-font-ka	default-fonts-ka	RHEL 10.0	
langpacks-core-font-km	default-fonts-km	RHEL 10.0	
langpacks-core-font-kn	default-fonts-kn	RHEL 10.0	
langpacks-core-font-ku	default-fonts-ku	RHEL 10.0	
langpacks-core-font-mai	default-fonts-mai	RHEL 10.0	
langpacks-core-font-ml	default-fonts-ml	RHEL 10.0	
langpacks-core-font-mr	default-fonts-mr	RHEL 10.0	
langpacks-core-font-my	default-fonts-my	RHEL 10.0	
langpacks-core-font-nb	default-fonts-nb	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
langpacks-core-font-ne	default-fonts-ne	RHEL 10.0	
langpacks-core-font-nn	default-fonts-nn	RHEL 10.0	
langpacks-core-font-nr	default-fonts-nr	RHEL 10.0	
langpacks-core-font-nso	default-fonts-nso	RHEL 10.0	
langpacks-core-font-or	default-fonts-or	RHEL 10.0	
langpacks-core-font-pa	default-fonts-pa	RHEL 10.0	
langpacks-core-font-ru	default-fonts-ru	RHEL 10.0	
langpacks-core-font-si	default-fonts-si	RHEL 10.0	
langpacks-core-font-ss	default-fonts-ss	RHEL 10.0	
langpacks-core-font-ta	default-fonts-ta	RHEL 10.0	
langpacks-core-font-te	default-fonts-te	RHEL 10.0	
langpacks-core-font-th	default-fonts-th	RHEL 10.0	
langpacks-core-font-tn	default-fonts-tn	RHEL 10.0	
langpacks-core-font-ts	default-fonts-ts	RHEL 10.0	
langpacks-core-font-uk	default-fonts-uk	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
langpacks-core-font-ur	default-fonts-ur	RHEL 10.0	
langpacks-core-font-ve	default-fonts-ve	RHEL 10.0	
langpacks-core-font-vi	default-fonts-vi	RHEL 10.0	
langpacks-core-font-xh	default-fonts-xh	RHEL 10.0	
langpacks-core-font-yi	default-fonts-yi	RHEL 10.0	
langpacks-core-font-zu	default-fonts-zu	RHEL 10.0	
libasan8	libasan	RHEL 10.0	
libertas-sd8686-firmware, libertas-sd8787-firmware, libertas-usb8388-firmware, libertas-usb8388-olpc-firmware	libertas-firmware	RHEL 10.0	
libkcapi-hmaccalc	libkcapi-hasher, libkcapi-hmaccalc	RHEL 10.0	
libpaper	libpaper, paper	RHEL 10.0	
libpeas	libpeas1	RHEL 10.0	
libproxy-gnome, libproxy-webkitgtk4	libproxy	RHEL 10.0	
libsolv-tools	libsolv-tools, libsolv-tools-base	RHEL 10.0	
libsoup	libsoup3	RHEL 10.0	
libsoup-devel	libsoup3-devel	RHEL 10.0	
libtsan2	libtsan	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
linux-firmware	amd-gpu-firmware, amd-ucode-firmware, atheros-firmware, brcmfmac-firmware, cirrus-audio-firmware, dvb-firmware, intel-audio-firmware, intel-gpu-firmware, intel-vsc-firmware, linux-firmware, mlxsw_spectrum-firmware, mrvlprestera-firmware, mt7xxx-firmware, nvidia-gpu-firmware, nxpwireless-firmware, qcom-firmware, realtek-firmware, tiwilink-firmware	RHEL 10.0	
lohit-assamese-fonts	google-noto-sans-bengali-vf-fonts	RHEL 10.0	
lohit-bengali-fonts	google-noto-sans-bengali-vf-fonts	RHEL 10.0	
lohit-devanagari-fonts	google-noto-sans-devanagari-vf-fonts	RHEL 10.0	
lohit-gujarati-fonts	google-noto-sans-gujarati-vf-fonts	RHEL 10.0	
lohit-kannada-fonts	google-noto-sans-kannada-vf-fonts	RHEL 10.0	
lohit-marathi-fonts	google-noto-sans-devanagari-vf-fonts	RHEL 10.0	
lohit-odia-fonts	google-noto-sans-oriya-vf-fonts	RHEL 10.0	
lohit-tamil-fonts	google-noto-sans-tamil-vf-fonts	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
lohit-telugu-fonts	google-noto-sans-telugu-vf-fonts	RHEL 10.0	
mariadb (mariadb:10.11)	mariadb, mariadb-client-utils	RHEL 10.0	
maven-plugin-bundle	maven-bundle-plugin	RHEL 10.0	
mingw32-filesystem, mingw32-pkg-config	mingw32-filesystem	RHEL 10.0	
mingw32-srvany	mingw-srvany-redistributable, mingw32-srvany	RHEL 10.0	
mingw64-filesystem, mingw64-pkg-config	mingw64-filesystem	RHEL 10.0	
mlocate	plocate	RHEL 10.0	
mysql (mysql:8.4)	mysql8.4	RHEL 10.0	
mysql-common (mysql:8.4)	mysql8.4-common	RHEL 10.0	
mysql-devel (mysql:8.4)	mysql8.4-devel	RHEL 10.0	
mysql-errmsg (mysql:8.4)	mysql8.4-errmsg	RHEL 10.0	
mysql-libs (mysql:8.4)	mysql8.4-libs	RHEL 10.0	
mysql-server (mysql:8.4)	mysql8.4-server	RHEL 10.0	
mysql-test (mysql:8.4)	mysql8.4-test	RHEL 10.0	
mysql-test-data (mysql:8.4)	mysql8.4-test-data	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
net-snmp-perl	net-snmp-perl, net-snmp-perl-module	RHEL 10.0	
nodejs-docs (nodejs:18, nodejs:20)	nodejs20-docs	RHEL 10.0	
nodejs-full-i18n (nodejs:18, nodejs:20)	nodejs20-full-i18n	RHEL 10.0	
npm (nodejs:18, nodejs:20, nodejs:22)	nodejs-npm	RHEL 10.0	
opensc	opensc, opensc-libs	RHEL 10.0	
openssh	openssh, openssh-keysign	RHEL 10.0	
openssl-pkcs11	pkcs11-provider	RHEL 10.0	
pam-docs	pam-doc	RHEL 10.0	
pangomm	pangomm2.48	RHEL 10.0	
pangomm-devel	pangomm2.48-devel	RHEL 10.0	
pangomm-doc	pangomm2.48-doc	RHEL 10.0	
passwd	shadow-utils	RHEL 10.0	
perl-Math-BigInt, perl-Math-BigRat	perl-Math-BigInt	RHEL 10.0	
plexus-build-api	plexus-build-api0	RHEL 10.0	
power-profiles-daemon	tuned-ppd	RHEL 10.0	
python3-Cython	python3-cython	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
python3-lark-parser	python3-lark	RHEL 10.0	
python3.12	python3	RHEL 10.0	
python3.12	python3	RHEL 10.0	
python3.12-cffi	python3-cffi	RHEL 10.0	
python3.12-charset-normalizer	python3-charset-normalizer	RHEL 10.0	
python3.12-cryptography	python3-cryptography	RHEL 10.0	
python3.12-Cython	python3-cython	RHEL 10.0	
python3.12-debug	python3-debug	RHEL 10.0	
python3.12-devel	python3-devel	RHEL 10.0	
python3.12-flit-core	python3-flit-core	RHEL 10.0	
python3.12-idle	python3-idle	RHEL 10.0	
python3.12-idna	python3-idna	RHEL 10.0	
python3.12-iniconfig	python3-iniconfig	RHEL 10.0	
python3.12-libs	python3-libs	RHEL 10.0	
python3.12-lxml	python3-lxml	RHEL 10.0	
python3.12-mod_wsgi	python3-mod_wsgi	RHEL 10.0	
python3.12-numpy	python3-numpy	RHEL 10.0	
python3.12-numpy-f2py	python3-numpy-f2py	RHEL 10.0	
python3.12-packaging	python3-packaging	RHEL 10.0	
python3.12-pip	python3-pip	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
python3.12-pip-wheel	python3-pip-wheel	RHEL 10.0	
python3.12-pluggy	python3-pluggy	RHEL 10.0	
python3.12-ply	python3-ply	RHEL 10.0	
python3.12-psycopg2	python3-psycopg2	RHEL 10.0	
python3.12-pybind11	python3-pybind11	RHEL 10.0	
python3.12-pybind11-devel	pybind11-devel	RHEL 10.0	
python3.12-pycparser	python3-pycparser	RHEL 10.0	
python3.12-PyMySQL	python3-PyMySQL	RHEL 10.0	
python3.12-PyMySQL+rsa	python-PyMySQL+rsa	RHEL 10.0	
python3.12-pytest	python3-pytest	RHEL 10.0	
python3.12-pyyaml	python3-pyyaml	RHEL 10.0	
python3.12-requests	python3-requests	RHEL 10.0	
python3.12-scipy	python3-scipy	RHEL 10.0	
python3.12-setuptools	python3-setuptools	RHEL 10.0	
python3.12-setuptools-wheel	python3-setuptools-wheel	RHEL 10.0	
python3.12-test	python3-test	RHEL 10.0	
python3.12-tkinter	python3-tkinter	RHEL 10.0	
python3.12-tkinter	python3-tkinter	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
python3.12-urllib3	python3-urllib3	RHEL 10.0	
python3.12-wheel	python3-wheel	RHEL 10.0	
python3.12-wheel-wheel	python3-wheel-wheel	RHEL 10.0	
qgpgme	qgpgme-qt6	RHEL 10.0	
qgpgme-devel	qgpgme-qt6-devel	RHEL 10.0	
redis	valkey	RHEL 10.0	
redis-devel	valkey-devel	RHEL 10.0	
rsyslog, rsyslog-logrotate	rsyslog	RHEL 10.0	
rust-srpm-macros	rust-toolset-srpm-macros	RHEL 10.0	
sdl2-compat	SDL2	RHEL 10.0	
sil-abyssinica-fonts	google-noto-sans-ethiopic-vf-fonts	RHEL 10.0	
smc-meera-fonts	rit-meera-new-fonts	RHEL 10.0	
smc-rachana-fonts	rit-rachana-fonts	RHEL 10.0	
swtpm	swtpm, swtpm-selinux	RHEL 10.0	
texlive-base, texlive-texlive-docindex	texlive-base	RHEL 10.0	
thai-scalable-waree-fonts	google-noto-sans-thai-vf-fonts	RHEL 10.0	
tomcat	tomcat9	RHEL 10.0	
tomcat-admin-webapps	tomcat9-admin-webapps	RHEL 10.0	

Original package(s)	New package(s)	Changed since	Note
tomcat-docs-webapp	tomcat9-docs-webapp	RHEL 10.0	
tomcat-el-3.0-api	tomcat9-el-3.0-api	RHEL 10.0	
tomcat-jsp-2.3-api	tomcat9-jsp-2.3-api	RHEL 10.0	
tomcat-lib	tomcat9-lib	RHEL 10.0	
tomcat-servlet-4.0-api	tomcat9-servlet-4.0-api	RHEL 10.0	
tomcat-webapps	tomcat9-webapps	RHEL 10.0	
unbound-libs	unbound-anchor, unbound-libs	RHEL 10.0	
util-linux, util-linux-user	util-linux	RHEL 10.0	
valgrind	valgrind, valgrind-docs, valgrind-gdb, valgrind-scripts	RHEL 10.1	
valgrind, valgrind-docs, valgrind-gdb, valgrind-scripts	valgrind	RHEL 10.0	
vim-common	vim-common, vim-data, xxd	RHEL 10.0	
zlib	zlib-ng-compat	RHEL 10.0	
zlib-devel	zlib-ng-compat-devel	RHEL 10.0	
zlib-static	zlib-ng-compat-static	RHEL 10.0	

A.3. MOVED PACKAGES

Review packages that were moved between repositories within Red Hat Enterprise Linux (RHEL) 10.

Package	Original repository*	Current repository*	Changed since
acpica-tools	rhel9-BaseOS	rhel10-CRB	RHEL 10.0
ant-openjdk21	rhel9-AppStream	rhel10-CRB	RHEL 10.0
ant-unbound	rhel9-CRB	rhel10-AppStream	RHEL 10.0
apache-commons-compress	rhel9-CRB	rhel10-AppStream	RHEL 10.0
appstream-compose	rhel9-CRB	rhel10-AppStream	RHEL 10.0
avahi-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
babel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
boost-system	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
boost-system	rhel10-BaseOS	rhel10-AppStream	RHEL 10.1
bpftool	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
catatonit	rhel9-CRB	rhel10-AppStream	RHEL 10.0
cups-filesystem	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
cxl-libs	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
disruptor	rhel9-AppStream	rhel10-CRB	RHEL 10.0
evolution-data-server-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
evolution-data-server-doc	rhel9-AppStream	rhel10-CRB	RHEL 10.0
evolution-data-server-tests	rhel9-AppStream	rhel10-CRB	RHEL 10.0
fabtests	rhel9-AppStream	rhel10-CRB	RHEL 10.0
fence-agents-aliyun	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-aliyun	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-all	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-all	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-amt-ws	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-amt-ws	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-apc	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-apc	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-apc-snmp	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-apc-snmp	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-aws	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-aws	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-azure-arm	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-azure-arm	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-bladecenter	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-bladecenter	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-brocade	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-brocade	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-cisco-mds	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-cisco-mds	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-cisco-ucs	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-cisco-ucs	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-drac5	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-drac5	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-eaton-snmp	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-eaton-snmp	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-emerson	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-emerson	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-eps	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-eps	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-gce	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-gce	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-heuristics-ping	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-heuristics-ping	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-hpblade	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-hpblade	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ibmblade	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ibmblade	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ifmib	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ifmib	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-moonshot	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-moonshot	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-mp	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-mp	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-ssh	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ilo-ssh	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ilo2	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ilo2	rhel9-HighAvailbility	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-intelmodular	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-intelmodular	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ipdu	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ipdu	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-ipmilan	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-ipmilan	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-kdump	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-kdump	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-lpar	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-lpar	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-mpath	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-mpath	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-openstack	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-openstack	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-redfish	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-redfish	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-rhevm	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-rhevm	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-rsa	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-rsa	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-rsb	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-rsb	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-sbd	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-sbd	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-scsi	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-scsi	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-vmware-rest	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-vmware-rest	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-vmware-soap	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-vmware-soap	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-wti	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
fence-agents-wti	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fence-agents-zvm	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
fence-agents-zvm	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
fuse3	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
fuse3-libs	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
gcc-plugin-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
gcc-plugin-devel	rhel10-CRB	rhel10-AppStream	RHEL 10.1
gdbm	rhel9-CRB	rhel10-BaseOS	RHEL 10.0
geocode-glib-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
ghostscript-tools-dvipdf	rhel9-AppStream	rhel10-CRB	RHEL 10.0
glib2-doc	rhel9-AppStream	rhel10-CRB	RHEL 10.0
gnome-desktop3-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
gnome-online-accounts-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
google-noto-fonts-common	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
google-noto-kufi-arabic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-kufi-arabic-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-music-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-naskh-arabic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-naskh-arabic-ui-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-naskh-arabic-ui-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-naskh-arabic-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-nastaliq-urdu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-rashi-hebrew-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-rashi-hebrew-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-adlam-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-adlam-unjoined-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-adlam-unjoined-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-adlam-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-anatolian-hieroglyphs-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-arabic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-arabic-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-armenian-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-balinese-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-balinese-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bamum-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bamum-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bassa-vah-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bassa-vah-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-batak-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bengali-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-bhaiksuki-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-buginese-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-buhid-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-canadian-aboriginal-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-canadian-aboriginal-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-caucasian-albanian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-chakma-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-cham-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-cham-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-cherokee-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-cuneiform-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-cypriot-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-devanagari-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-duployan-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-elbasan-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-elymaic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-ethiopic-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-georgian-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-gothic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-grantha-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-gunjala-gondi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-gurmukhi-ui-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-gurmukhi-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-hanifi-rohingya-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-hanifi-rohingya-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-hanunoo-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-hatran-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-hebrew-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-indic-siyaq-numbers-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-inscriptional-pahlavi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-inscriptional-parthian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-javanese-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-kannada-ui-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-kannada-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-kayah-li-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-khmer-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-khojki-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-khudawadi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-lao-looped-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-lao-looped-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-lao-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-lepcha-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-limbu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-linear-a-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-linear-b-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-lisu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-lisu-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mahajani-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-malayalam-ui-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-malayalam-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mandaic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-manichaean-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-marchen-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-masaram-gondi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-math-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mayan-numerals-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-medefaidrin-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-medefaidrin-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-meetei-mayek-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mende-kikakui-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-meroitic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-miao-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-modi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mongolian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-mono-vf-fonts	rhel9-CRB	rhel10-BaseOS	RHEL 10.0
google-noto-sans-mro-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-multani-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-myanmar-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-myanmar-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-nabataean-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-new-tai-lue-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-new-tai-lue-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-newa-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-nushu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-ogham-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-ol-chiki-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-ol-chiki-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-old-hungarian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-old-italic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-old-north-arabian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-old-permic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-old-persian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-old-sogdian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-oriya-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-osage-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-pahawh-hmong-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-palmyrene-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-pau-cin-hau-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-psalter-pahlavi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-rejang-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-runic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-samaritan-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-saurashtra-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sharada-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-siddham-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-signwriting-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sinhala-ui-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sogdian-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sora-sompeng-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sora-sompeng-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-soyombo-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-sundanese-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-sundanese-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-syloti-nagri-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-symbols-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-syriac-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tagalog-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tagbanwa-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tai-le-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tai-tham-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tai-tham-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tai-viet-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-takri-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tamil-supplement-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tamil-ui-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tamil-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-telugu-ui-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-telugu-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-thaana-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-thai-looped-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-thai-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-adrar-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-agraw-imazighen-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-sans-tifinagh-ahaggar-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-air-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-apt-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-azawagh-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-ghat-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-hawad-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-rhissa-ixa-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-sil-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tifinagh-tawellemmet-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-tirhuta-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-vf-fonts	rhel9-CRB	rhel10-BaseOS	RHEL 10.0
google-noto-sans-wancho-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-warang-citi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-yi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-sans-zanabazar-square-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-ahom-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-armenian-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-balinese-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-bengali-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-serif-bengali-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-devanagari-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-devanagari-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-dogra-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-ethiopic-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-ethiopic-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-georgian-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-grantha-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-gujarati-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-gujarati-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-gurmukhi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-hebrew-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-hebrew-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-kannada-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-kannada-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-khmer-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-khojki-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-khojki-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-lao-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-malayalam-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-malayalam-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-myanmar-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
google-noto-serif-sinhala-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-tamil-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-tamil-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-tangut-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-telugu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-telugu-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-thai-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-tibetan-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-tibetan-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-vf-fonts	rhel9-CRB	rhel10-BaseOS	RHEL 10.0
google-noto-serif-yezidi-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-serif-yezidi-vf-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
google-noto-traditional-nushu-fonts	rhel9-CRB	rhel10-AppStream	RHEL 10.0
ha-cloud-support	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
ha-cloud-support	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
ibus-gtk4	rhel9-CRB	rhel10-AppStream	RHEL 10.0
iptables-nft	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
iptables-utils	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
json-c-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
ledmon-libs	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
libbabeltrace	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
libevdev-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
libgweather-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
libical-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
libical-glib-devel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
libnghttp2-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
libpq	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
libtool-ltdl	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
libtracecmd-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
libtraceevent-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
libtracefs-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
liburing	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
libuv-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
lttng-ust	rhel9-AppStream	rhel10-CRB	RHEL 10.0
mariadb-connector-c	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
mariadb-connector-c-config	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
mariadb-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
mariadb-embedded-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
mariadb-test	rhel9-CRB	rhel10-AppStream	RHEL 10.0
mpdecimal	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
mysql-libs	rhel9-CRB	rhel10-AppStream	RHEL 10.0
ocl-icd	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
opencsd	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
openwsman-python3	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
openwsman-python3	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
pacemaker-cluster-libs	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
pacemaker-cluster-libs	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
pacemaker-libs	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
pacemaker-libs	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
pacemaker-schemas	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
pacemaker-schemas	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
pcp-testsuite	rhel9-AppStream	rhel10-CRB	RHEL 10.0
perl-AutoLoader	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-B	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-base	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Carp	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Class-Struct	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-constant	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Data-Dumper	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Digest	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Digest-MD5	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-DynaLoader	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Encode	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Errno	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
perl-Exporter	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Fcntl	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-File-Basename	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-File-Path	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-File-stat	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-File-Temp	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-FileHandle	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Getopt-Long	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Getopt-Std	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-HTTP-Tiny	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-if	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-interpreter	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-IO	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-IO-Socket-IP	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-IO-Socket-SSL	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-IPC-Open3	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-libnet	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-libs	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-locale	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-MIME-Base64	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Mozilla-CA	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-mro	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Net-SSLeay	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
perl-overload	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-overloading	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-parent	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-PathTools	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Pod-Escapes	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Pod-Perldoc	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Pod-Simple	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Pod-Usage	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-podlators	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-POSIX	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Scalar-List-Utils	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-SelectSaver	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Socket	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Storable	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Symbol	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Term-ANSIColor	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Term-Cap	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Test2-Suite	rhel9-CRB	rhel10-AppStream	RHEL 10.0
perl-Text-ParseWords	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Text-Tabs+Wrap	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-Time-Local	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-URI	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
perl-vars	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
podman-tests	rhel9-AppStream	rhel10-CRB	RHEL 10.0
postgresql-docs	rhel9-CRB	rhel10-AppStream	RHEL 10.0
postgresql-private-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
postgresql-server-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
postgresql-static	rhel9-CRB	rhel10-AppStream	RHEL 10.0
postgresql-test	rhel9-CRB	rhel10-AppStream	RHEL 10.0
postgresql-upgrade-devel	rhel9-CRB	rhel10-AppStream	RHEL 10.0
python3-attrs	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
python3-babel	rhel9-AppStream	rhel10-CRB	RHEL 10.0
python3-iniconfig	rhel9-AppStream	rhel10-CRB	RHEL 10.0
python3-jsonschema	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
python3-packaging	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
python3-perf	rhel9-BaseOS	rhel10-AppStream	RHEL 10.0
python3-pluggy	rhel9-AppStream	rhel10-CRB	RHEL 10.0
python3-pyelftools	rhel9-AppStream	rhel10-CRB	RHEL 10.0
python3-pytest	rhel9-AppStream	rhel10-CRB	RHEL 10.0
python3-setuptools-wheel	rhel9-BaseOS	rhel10-CRB	RHEL 10.0
python3-wcwidth	rhel9-AppStream	rhel10-BaseOS	RHEL 10.0
sbd	rhel9-ResilientStorage	rhel10-AppStream	RHEL 10.0
sbd	rhel9-HighAvailability	rhel10-AppStream	RHEL 10.0
sil-nuosu-fonts	rhel9-AppStream	rhel10-CRB	RHEL 10.0
toolbox-tests	rhel9-AppStream	rhel10-CRB	RHEL 10.0

Package	Original repository*	Current repository*	Changed since
virt-manager	rhel9-AppStream	rhel10-CRB	RHEL 10.0

A.4. REMOVED PACKAGES

Review packages that are part of RHEL 9 but are not distributed with Red Hat Enterprise Linux (RHEL) 10.

Package	Note
aajohan-comfortaa-fonts	
adwaita-gtk2-theme	
adwaita-qt5	
anaconda-user-help	
ansible-collection-redhat-rhel_mgmt	
ant-javamail	
apcu-panel	
aspnetcore-runtime-6.0	
aspnetcore-runtime-7.0	
aspnetcore-targeting-pack-6.0	
aspnetcore-targeting-pack-7.0	
atkmm	
atkmm-devel	
atkmm-doc	
atlas	
atlas-devel	
atlas-z14	

Package	Note
atlas-z15	
authselect-compat	
autoconf-latest	
autoconf271	
autocorr-af	
autocorr-bg	
autocorr-ca	
autocorr-cs	
autocorr-da	
autocorr-de	
autocorr-dsb	
autocorr-el	
autocorr-en	
autocorr-es	
autocorr-fa	
autocorr-fi	
autocorr-fr	
autocorr-ga	
autocorr-hr	
autocorr-hsb	
autocorr-hu	
autocorr-is	

Package	Note
autocorr-it	
autocorr-ja	
autocorr-ko	
autocorr-lb	
autocorr-lt	
autocorr-mn	
autocorr-nl	
autocorr-pl	
autocorr-pt	
autocorr-ro	
autocorr-ru	
autocorr-sk	
autocorr-sl	
autocorr-sr	
autocorr-sv	
autocorr-tr	
autocorr-vi	
autocorr-vro	
autocorr-zh	
autotrace	The **autotrace** package has been removed because the**fontforge** package now uses the **potrace** package instead of**autotrace**.
avahi-autoipd	
avahi-gobject	

Package	Note
avahi-gobject-devel	
babl	
babl-devel	
babl-devel-docs	
bacula-client	
bacula-common	
bacula-console	
bacula-director	
bacula-libs	
bacula-libs-sql	
bacula-logwatch	
bacula-storage	
bind9.18	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bind9.18-chroot	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bind9.18-devel	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bind9.18-dnssec-utils	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bind9.18-doc	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.

Package	Note
bind9.18-libs	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bind9.18-utils	The **bind9.18** package provides an alternative application stream for version 9.18 of the BIND DNS server. In RHEL 10, BIND 9.18 is provided by the **bind** package.
bitmap-fangsongti-fonts	
bogofilter	
Box2D	
brasero-nautilus	
cheese-libs	
clucene-contribs-lib	
clucene-core	
clucene-core-devel	
clutter	
clutter-gst3	
clutter-gtk	
cogl	
compat-hesiod	The **compat-hesiod** package, which was used for identity related functionality, has been removed. You can use other technologies instead, for example, LDAP or Kerberos.
compat-libgfortran-48	
compat-locales-sap	
compat-locales-sap-common	
compat-openssl11	The **compat-openssl11** package has been removed. You can use the **openssl-3** package instead.

Package	Note
compat-paratype-pt-sans-fonts-f33-f34	
compat-sap-c++-12	
compat-sap-c++-13	
containernetworking-plugins	
containers-common-extra	
copy-jdk-configs	
crypto-policies-pq-preview	
culmus-aharoni-clm-fonts	
culmus-caladings-clm-fonts	
culmus-david-clm-fonts	
culmus-drugulin-clm-fonts	
culmus-ellinia-clm-fonts	
culmus-fonts-common	
culmus-frank-ruehl-clm-fonts	
culmus-hadasim-clm-fonts	
culmus-miriam-clm-fonts	
culmus-miriam-mono-clm-fonts	
culmus-nachlieli-clm-fonts	
culmus-simple-clm-fonts	
culmus-stamashkenaz-clm-fonts	

Package	Note
culmus-stamsefarad-clm-fonts	
culmus-yehuda-clm-fonts	
cups-filters-devel	
curl-minimal	The **curl-minimal** package has been removed. You can use the **curl** package instead.
dbus-glib	The **dbus-glib** package has been removed. You can use a GDBus from the **glib2** package instead.
dbus-glib-devel	The **dbus-glib** package has been removed. You can use a GDBus from the **glib2** package instead.
devhelp	
devhelp	
devhelp-devel	
devhelp-libs	
dhcp-client	The **dhcp** package has been removed. You can use the **kea** package instead.
dhcp-common	The **dhcp** package has been removed. You can use the **kea** package instead.
dhcp-relay	The **dhcp** package has been removed. You can use the **kea** package instead.
dhcp-server	The **dhcp** package has been removed. You can use the **kea** package instead.
dlm	
dlm-lib	
dotnet-apphost-pack-6.0	
dotnet-apphost-pack-7.0	
dotnet-hostfxr-6.0	

Package	Note
dotnet-hostfxr-7.0	
dotnet-runtime-6.0	
dotnet-runtime-7.0	
dotnet-sdk-6.0	
dotnet-sdk-6.0-source-built-artifacts	
dotnet-sdk-7.0	
dotnet-sdk-7.0-source-built-artifacts	
dotnet-targeting-pack-6.0	
dotnet-targeting-pack-7.0	
dotnet-templates-6.0	
dotnet-templates-7.0	
double-conversion	
double-conversion-devel	
doxygen-doxywizard	
dyninst-testsuite	
efs-utils	
emacs-cython-mode	
enchant	
enchant-devel	
evince	
evince-libs	
evince-nautilus	

Package	Note
evince-previewer	
evince-thumbnailer	
evolution	
evolution-bogofilter	
evolution-data-server-ui	
evolution-data-server-ui-devel	
evolution-devel	
evolution-ews	
evolution-ews-langpacks	
evolution-help	
evolution-langpacks	
evolution-mapi	
evolution-mapi-langpacks	
evolution-pst	
evolution-spamassassin	
festival	The **festival** package has been removed. You can use the **espeak-ng** package instead.
festival-data	The **festival** package has been removed. You can use the **espeak-ng** package instead.
festvox-slt-arctic-hts	The **festvox-slt-arctic-hts** package has been removed. You can use the **espeak-ng** package instead.
firefox	
firefox-x11	

Package	Note
flite	The **flite** package has been removed. You can use the **espeak-ng** package instead.
flite-devel	The **flite** package has been removed. You can use the **espeak-ng** package instead.
fltk	
fltk-devel	
flute	
fontawesome-fonts	The **fontawesome-fonts** package has been removed. You can use the **fontawesome4-fonts** package instead.
fontawesome-fonts-web	The **fontawesome-fonts** package has been removed. You can use the **fontawesome4-fonts** package instead.
gc	
gc-devel	
gcc-toolset-12	
gcc-toolset-12-annobin-annocheck	
gcc-toolset-12-annobin-docs	
gcc-toolset-12-annobin-plugin-gcc	
gcc-toolset-12-binutils	
gcc-toolset-12-binutils-devel	
gcc-toolset-12-binutils-gold	
gcc-toolset-12-build	
gcc-toolset-12-dwz	
gcc-toolset-12-gcc	
gcc-toolset-12-gcc-c++	

Package	Note
gcc-toolset-12-gcc-gfortran	
gcc-toolset-12-gcc-plugin-annobin	
gcc-toolset-12-gcc-plugin-devel	
gcc-toolset-12-libasan-devel	
gcc-toolset-12-libatomic-devel	
gcc-toolset-12-libgccjit	
gcc-toolset-12-libgccjit-devel	
gcc-toolset-12-libgccjit-docs	
gcc-toolset-12-libitm-devel	
gcc-toolset-12-liblsan-devel	
gcc-toolset-12-libquadmath-devel	
gcc-toolset-12-libstdc++-devel	
gcc-toolset-12-libstdc++-docs	
gcc-toolset-12-libtsan-devel	
gcc-toolset-12-libubsan-devel	
gcc-toolset-12-offload-nvptx	
gcc-toolset-12-runtime	
gcc-toolset-13	
gcc-toolset-13-annobin-annocheck	
gcc-toolset-13-annobin-docs	

Package	Note
gcc-toolset-13-annobin-plugin-gcc	
gcc-toolset-13-binutils	
gcc-toolset-13-binutils-devel	
gcc-toolset-13-binutils-gold	
gcc-toolset-13-dwz	
gcc-toolset-13-gcc	
gcc-toolset-13-gcc-c++	
gcc-toolset-13-gcc-gfortran	
gcc-toolset-13-gcc-plugin-annobin	
gcc-toolset-13-gcc-plugin-devel	
gcc-toolset-13-libasan-devel	
gcc-toolset-13-libatomic-devel	
gcc-toolset-13-libgccjit	
gcc-toolset-13-libgccjit-devel	
gcc-toolset-13-libitm-devel	
gcc-toolset-13-liblsan-devel	
gcc-toolset-13-libquadmath-devel	
gcc-toolset-13-libstdc++-devel	
gcc-toolset-13-libstdc++-docs	

Package	Note
gcc-toolset-13-libtsan-devel	
gcc-toolset-13-libubsan-devel	
gcc-toolset-13-offload-nvptx	
gcc-toolset-13-runtime	
gcc-toolset-14	
gcc-toolset-14-annobin-annocheck	
gcc-toolset-14-annobin-docs	
gcc-toolset-14-annobin-plugin-gcc	
gcc-toolset-14-binutils	
gcc-toolset-14-binutils-devel	
gcc-toolset-14-binutils-gold	
gcc-toolset-14-binutils-gprofng	
gcc-toolset-14-dwz	
gcc-toolset-14-gcc	
gcc-toolset-14-gcc-c++	
gcc-toolset-14-gcc-gfortran	
gcc-toolset-14-gcc-plugin-annobin	
gcc-toolset-14-gcc-plugin-devel	
gcc-toolset-14-libasan-devel	
gcc-toolset-14-libatomic-devel	

Package	Note
gcc-toolset-14-libgccjit	
gcc-toolset-14-libgccjit-devel	
gcc-toolset-14-libitm-devel	
gcc-toolset-14-liblsan-devel	
gcc-toolset-14-libquadmath-devel	
gcc-toolset-14-libstdc++-devel	
gcc-toolset-14-libstdc++-docs	
gcc-toolset-14-libtsan-devel	
gcc-toolset-14-libubsan-devel	
gcc-toolset-14-offload-nvptx	
gcc-toolset-14-runtime	
gcr-base	
gdisk	
gdk-pixbuf2-xlib	
gedit-plugin-bookmarks	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-bracketcompletion	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-codecomment	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-colorpicker	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-colorschemer	The **gedit** package has been removed. You can use the GNOME Text Editor instead.

Package	Note
gedit-plugin-commander	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-drawspaces	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-findinfiles	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-joinlines	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-multiedit	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-sessionsaver	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-smartspaces	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-synctex	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-terminal	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-textsize	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-translate	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugin-wordcompletion	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugins	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gedit-plugins-data	The **gedit** package has been removed. You can use the GNOME Text Editor instead.
gegl04	
gegl04-devel	

Package	Note
gegl04-devel-docs	
gegl04-tools	
gfs2-utils	
ghc-srpm-macros	
ghostscript-x11	
gl-manpages	
glade	
glade-devel	
glade-libs	
glm-devel	
glm-doc	
gnome-backgrounds	
gnome-backgrounds-extras	
gnome-common	
gnome-logs	The **gnome-logs** package has been removed. You can use the**cockpit** package instead.
gnome-photos	The **gnome-photos** package has been removed. You can use the**loupe** package instead.
gnome-photos-tests	The **gnome-photos** package has been removed. You can use the**loupe** package instead.
gnome-screenshot	
gnome-session-xsession	
gnome-shell-extension-panel-favorites	

Package	Note
gnome-shell-extension-updates-dialog	
gnome-terminal-nautilus	
gnome-themes-extra	
gnome-tweaks	
gnome-video-effects	
gnu-efi-compat	
google-noto-sans-khmer-ui-fonts	
google-noto-sans-lao-ui-fonts	
google-noto-sans-phoenician-vf-fonts	
google-noto-sans-thai-ui-fonts	
gpm	
gpm-devel	
gpm-libs	
gsl	
gsl-devel	
gspell	
gspell-devel	
gspell-doc	
gtk2	
gtk2-devel	

Package	Note
gtk2-devel-docs	
gtk2-immodule-xim	
gtk2-immodules	
gtkmm30	
gtkmm30-devel	
gtkmm30-doc	
gtksourceview4	The **gtksourceview4** package has been removed. You can use the **gtksourceview5** package instead.
gtksourceview4-devel	The **gtksourceview4** package has been removed. You can use the **gtksourceview5** package instead.
gtkspell3	
gtkspell3-devel	
gubbi-fonts	
gvfs-devel	
ha-openstack-support	
hesiod-devel	The **compat-hesiod** package , which was used for identity related functionality, has been removed. You can use other technologies instead, for example, LDAP or Kerberos.
hexchat	
highcontrast-icon-theme	
http-parser	
http-parser-devel	
ibus-gtk2	
initial-setup	InitialSetup, which provided a first boot configuration after installation, has been removed. You can use the **gnome-initial-setup** or **systemd-firstboot** package instead.

Package	Note
initial-setup-gui	InitialSetup, which provided a first boot configuration after installation, has been removed. You can use the **gnome-initial-setup** or **systemd-firstboot** package instead.
inkscape	
inkscape-docs	
inkscape-view	
iputils-ninfod	
ipxe-roms	
jakarta-activation2	
java-1.8.0-openjdk	
java-1.8.0-openjdk-demo	
java-1.8.0-openjdk-demo-fastdebug	
java-1.8.0-openjdk-demo-slowdebug	
java-1.8.0-openjdk-devel	
java-1.8.0-openjdk-devel-fastdebug	
java-1.8.0-openjdk-devel-slowdebug	
java-1.8.0-openjdk-fastdebug	
java-1.8.0-openjdk-headless	
java-1.8.0-openjdk-headless-fastdebug	
java-1.8.0-openjdk-headless-slowdebug	
java-1.8.0-openjdk-javadoc	

Package	Note
java-1.8.0-openjdk-javadoc-zip	
java-1.8.0-openjdk-slowdebug	
java-1.8.0-openjdk-src	
java-1.8.0-openjdk-src-fastdebug	
java-1.8.0-openjdk-src-slowdebug	
java-11-openjdk	
java-11-openjdk-demo	
java-11-openjdk-demo-fastdebug	
java-11-openjdk-demo-slowdebug	
java-11-openjdk-devel	
java-11-openjdk-devel-fastdebug	
java-11-openjdk-devel-slowdebug	
java-11-openjdk-fastdebug	
java-11-openjdk-headless	
java-11-openjdk-headless-fastdebug	
java-11-openjdk-headless-slowdebug	
java-11-openjdk-javadoc	
java-11-openjdk-javadoc-zip	

Package	Note
java-11-openjdk-jmods	
java-11-openjdk-jmods-fastdebug	
java-11-openjdk-jmods-slowdebug	
java-11-openjdk-slowdebug	
java-11-openjdk-src	
java-11-openjdk-src-fastdebug	
java-11-openjdk-src-slowdebug	
java-11-openjdk-static-libs	
java-11-openjdk-static-libs-fastdebug	
java-11-openjdk-static-libs-slowdebug	
java-17-openjdk	
java-17-openjdk-demo	
java-17-openjdk-demo-fastdebug	
java-17-openjdk-demo-slowdebug	
java-17-openjdk-devel	
java-17-openjdk-devel-fastdebug	
java-17-openjdk-devel-slowdebug	
java-17-openjdk-fastdebug	

Package	Note
java-17-openjdk-headless	
java-17-openjdk-headless-fastdebug	
java-17-openjdk-headless-slowdebug	
java-17-openjdk-javadoc	
java-17-openjdk-javadoc-zip	
java-17-openjdk-jmods	
java-17-openjdk-jmods-fastdebug	
java-17-openjdk-jmods-slowdebug	
java-17-openjdk-slowdebug	
java-17-openjdk-src	
java-17-openjdk-src-fastdebug	
java-17-openjdk-src-slowdebug	
java-17-openjdk-static-libs	
java-17-openjdk-static-libs-fastdebug	
java-17-openjdk-static-libs-slowdebug	
jboss-jaxrs-2.0-api	
jboss-logging	
jboss-logging-tools	
jdeparser	

Package	Note
jigawatts	
jigawatts-javadoc	
jmc	
jmc-core	
julietaula-montserrat-fonts	
kacst-art-fonts	
kacst-book-fonts	
kacst-decorative-fonts	
kacst-digital-fonts	
kacst-farsi-fonts	
kacst-fonts-common	
kacst-letter-fonts	
kacst-naskh-fonts	
kacst-office-fonts	
kacst-one-fonts	
kacst-pen-fonts	
kacst-poster-fonts	
kacst-qurn-fonts	
kacst-screen-fonts	
kacst-title-fonts	
kacst-titlel-fonts	
keybinder3	

Package	Note
keybinder3-devel	
keybinder3-doc	
khmer-os-battambang-fonts	
khmer-os-bokor-fonts	
khmer-os-content-fonts	
khmer-os-fasthand-fonts	
khmer-os-freehand-fonts	
khmer-os-handwritten-fonts	
khmer-os-metal-chrieng-fonts	
khmer-os-muol-fonts	
khmer-os-muol-fonts-all	
khmer-os-muol-pali-fonts	
khmer-os-siemreap-fonts	
kmod-kvdo	
ladspa	
ladspa-devel	
lasso	
lasso-devel	
libabw	
libadwaita-qt5	
libbase	
libblockdev-kbd	

Package	Note
libcanberra-gtk2	
libcdio-paranoia	
libcdio-paranoia-devel	
libcdr	
libcdr-devel	
libcmis	
libdazzle	
libdb	
libdb-cxx	
libdb-cxx-devel	
libdb-devel	
libdb-devel-doc	
libdb-sql	
libdb-sql-devel	
libdb-utils	
libdmx	
libEMF	
libEMF-devel	
libeot	
libepubgen	
libetonyek	
libetonyek-devel	
libexttextcat	

Package	Note
libfonts	
libformula	
libfreehand	
libfreehand-devel	
libgdata	
libgdata-devel	
libgnomekbd	
libgnomekbd-devel	
libguestfs-gobject	
libguestfs-gobject-devel	
libiscsi	
libiscsi-devel	
libiscsi-utils	
liblangtag	
liblangtag-data	
liblangtag-devel	
liblangtag-doc	
liblangtag-gobject	
liblayout	
libloader	
liblockfile	
liblockfile-devel	

Package	Note
libmatchbox	
libmemcached-awesome	
libmemcached-awesome-devel	
libmemcached-awesome-tools	
libmspub	
libmspub-devel	
libmwaw	
libmypaint	
libnsl2	The **libnsl2** package, which provided underlying infrastructure for the NIS service, has been removed. The NIS protocol support has also been removed from RHEL 10.
libnumbertext	
libodfgen	
libodfgen-devel	
liborcus	
libotr	
libotr-devel	
libpagemaker	
libpagemaker-devel	
libpmemobj++-devel	
libpmemobj++-doc	
libpng15	
libpst-libs	

Package	Note
libqhull	
libqhull_p	
libqhull_r	
libqxp	
libqxp-devel	
LibRaw	
LibRaw-devel	
libreoffice	
libreoffice-base	
libreoffice-calc	
libreoffice-core	
libreoffice-data	
libreoffice-draw	
libreoffice-emailmerge	
libreoffice-filters	
libreoffice-gdb-debug-support	
libreoffice-graphicfilter	
libreoffice-gtk3	
libreoffice-help-ar	
libreoffice-help-bg	
libreoffice-help-bn	
libreoffice-help-ca	

Package	Note
libreoffice-help-cs	
libreoffice-help-da	
libreoffice-help-de	
libreoffice-help-dz	
libreoffice-help-el	
libreoffice-help-en	
libreoffice-help-eo	
libreoffice-help-es	
libreoffice-help-et	
libreoffice-help-eu	
libreoffice-help-fi	
libreoffice-help-fr	
libreoffice-help-gl	
libreoffice-help-gu	
libreoffice-help-he	
libreoffice-help-hi	
libreoffice-help-hr	
libreoffice-help-hu	
libreoffice-help-id	
libreoffice-help-it	
libreoffice-help-ja	
libreoffice-help-ko	
libreoffice-help-lt	

Package	Note
libreoffice-help-lv	
libreoffice-help-nb	
libreoffice-help-nl	
libreoffice-help-nn	
libreoffice-help-pl	
libreoffice-help-pt-BR	
libreoffice-help-pt-PT	
libreoffice-help-ro	
libreoffice-help-ru	
libreoffice-help-si	
libreoffice-help-sk	
libreoffice-help-sl	
libreoffice-help-sv	
libreoffice-help-ta	
libreoffice-help-tr	
libreoffice-help-uk	
libreoffice-help-zh-Hans	
libreoffice-help-zh-Hant	
libreoffice-impress	
libreoffice-langpack-af	
libreoffice-langpack-ar	

Package	Note
libreoffice-langpack-as	
libreoffice-langpack-bg	
libreoffice-langpack-bn	
libreoffice-langpack-br	
libreoffice-langpack-ca	
libreoffice-langpack-cs	
libreoffice-langpack-cy	
libreoffice-langpack-da	
libreoffice-langpack-de	
libreoffice-langpack-dz	
libreoffice-langpack-el	
libreoffice-langpack-en	
libreoffice-langpack-eo	
libreoffice-langpack-es	
libreoffice-langpack-et	
libreoffice-langpack-eu	
libreoffice-langpack-fa	
libreoffice-langpack-fi	
libreoffice-langpack-fr	
libreoffice-langpack-fy	
libreoffice-langpack-ga	
libreoffice-langpack-gl	

Package	Note
libreoffice-langpack-gu	
libreoffice-langpack-he	
libreoffice-langpack-hi	
libreoffice-langpack-hr	
libreoffice-langpack-hu	
libreoffice-langpack-id	
libreoffice-langpack-it	
libreoffice-langpack-ja	
libreoffice-langpack-kk	
libreoffice-langpack-kn	
libreoffice-langpack-ko	
libreoffice-langpack-lt	
libreoffice-langpack-lv	
libreoffice-langpack-mai	
libreoffice-langpack-ml	
libreoffice-langpack-mr	
libreoffice-langpack-nb	
libreoffice-langpack-nl	
libreoffice-langpack-nn	
libreoffice-langpack-nr	
libreoffice-langpack-nso	
libreoffice-langpack-or	

Package	Note
libreoffice-langpack-pa	
libreoffice-langpack-pl	
libreoffice-langpack-pt-BR	
libreoffice-langpack-pt-PT	
libreoffice-langpack-ro	
libreoffice-langpack-ru	
libreoffice-langpack-si	
libreoffice-langpack-sk	
libreoffice-langpack-sl	
libreoffice-langpack-sr	
libreoffice-langpack-ss	
libreoffice-langpack-st	
libreoffice-langpack-sv	
libreoffice-langpack-ta	
libreoffice-langpack-te	
libreoffice-langpack-th	
libreoffice-langpack-tn	
libreoffice-langpack-tr	
libreoffice-langpack-ts	
libreoffice-langpack-uk	
libreoffice-langpack-ve	
libreoffice-langpack-xh	

Package	Note
libreoffice-langpack-zh-Hans	
libreoffice-langpack-zh-Hant	
libreoffice-langpack-zu	
libreoffice-math	
libreoffice-ogltrans	
libreoffice-opensymbol-fonts	
libreoffice-pdfimport	
libreoffice-pyuno	
libreoffice-sdk	
libreoffice-sdk-doc	
libreoffice-ure	
libreoffice-ure-common	
libreoffice-voikko	
libreoffice-wiki-publisher	
libreoffice-writer	
libreoffice-x11	
libreoffice-xsltfilter	
libreofficekit	
libreport	
libreport-anaconda	
libreport-cli	
libreport-filesystem	

Package	Note
libreport-gtk	
libreport-plugin-bugzilla	
libreport-plugin-reportuploader	
libreport-rhel-anaconda-bugzilla	
libreport-web	
librepository	
librevenge	
librevenge-devel	
librevenge-gdb	
librx	
librx-devel	
libserializer	
libsigc++20	
libsigc++20-devel	
libsigc++20-doc	
libsigsegv	
libsigsegv-devel	
libsmbios	
libsss_simpleifp	
libstaroffice	
libstemmer	
libstemmer-devel	

Package	Note
libstoragemgmt-smis-plugin	
libteam	
libtimezonemap	
libtimezonemap-devel	
libuninameslist	
libvisio	
libvisio-devel	
libvisual	
libvisual-devel	
libwmf	
libwmf-devel	
libwmf-lite	
libwpd	
libwpd-devel	
libwpd-doc	
libwpe	
libwpe-devel	
libwpg	
libwpg-devel	
libwpg-doc	
libwps	
libwps-devel	
libwps-doc	

Package	Note
libxklavier	The **libxklavier** package has been removed. You can use the **tecla** package instead.
libxklavier-devel	The **libxklavier** package has been removed. You can use the **tecla** package instead.
libXp	
libXp-devel	
libXScrnSaver	
libXScrnSaver-devel	
libXxf86dga	
libXxf86dga-devel	
libzmf	
libzmf-devel	
lklug-fonts	
lohit-gurmukhi-fonts	
lpsolve	
lua-guestfs	
man-pages-overrides	
matchbox-window-manager	
maven-plugin-build-helper	
memkind	
memkind-devel	
mesa-libGLw	
mesa-libGLw-devel	

Package	Note
mingw32-pcre	The **mingw32-pcre** package has been removed. You can use the **mingw-pcre2** package instead.
mingw32-pcre-static	The **mingw32-pcre** package has been removed. You can use the **mingw-pcre2** package instead.
mingw64-pcre	The **mingw64-pcre** package has been removed. You can use the **mingw-pcre2** package instead.
mingw64-pcre-static	The **mingw64-pcre** package has been removed. You can use the **mingw-pcre2** package instead.
mod_auth_mellon	The **mod_auth_mellon** package, which provided SAML authentication module for the Apache HTTP Server, has been removed. You can migrate to OAuth2 authentication instead, which can be configured by using the **mod_auth_openidc** package.
mod_jk	The **mod_jk** package has been removed. You can use the **mod_proxy_cluster** package instead.
mod_security	
mod_security-mlogc	
mod_security_crs	
motif	The **motif** package has been removed. You can use the GTK libraries and GNOME window manager isntead.
motif-devel	The **motif** package has been removed. You can use the GTK libraries and GNOME window manager isntead.
mysql	
mysql-common	
mysql-devel	
mysql-errmsg	
mysql-libs	
mysql-server	
mysql-test	

Package	Note
mythes	
mythes-bg	
mythes-ca	
mythes-cs	
mythes-da	
mythes-de	
mythes-devel	
mythes-el	
mythes-en	
mythes-eo	
mythes-es	
mythes-fr	
mythes-ga	
mythes-hu	
mythes-it	
mythes-lv	
mythes-nb	
mythes-nl	
mythes-nn	
mythes-pl	
mythes-pt	
mythes-ro	

Package	Note
mythes-ru	
mythes-sk	
mythes-sl	
mythes-sv	
mythes-uk	
navilu-fonts	
nbdkit-gzip-filter	
neon	The **neon** package set been removed. You can migrate to an alternative C HTTP client library, for example, **libcurl**.
neon-devel	The **neon** package has been removed. You can migrate to an alternative C HTTP client library, for example, **libcurl**.
NetworkManager-dispatcher-routing-rules	
NetworkManager-initscripts-updown	
NetworkManager-team	The **teamd** service and the **libteam** library have been removed in RHEL 10. Therefore, the **NetworkManager-team** has also been removed. You can configure bond with NetworkManager instead of a network team.
nginx	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-all-modules	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-core	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-filesystem	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-mod-devel	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.

Package	Note
nginx-mod-http-image-filter	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-mod-http-perl	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-mod-http-xslt-filter	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-mod-mail	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nginx-mod-stream	In RHEL 10, the **nginx** package is available as a non-modular RPM package and will no longer be available in multiple alternative module streams.
nispor	
nispor-devel	
nscd	The **nscd** has been removed. You can use the **sssd** package for account caching and the **unbound** package for DNS caching.
nvme-stas	
ocaml-augeas	
ocaml-augeas-devel	
ocaml-camomile	
ocaml-camomile-data	
ocaml-camomile-devel	
ocaml-csexp	
ocaml-csexp-devel	
ocaml-csv	
ocaml-csv-devel	
ocaml-dune-devel	
ocaml-dune-doc	

Package	Note
ocaml-extlib	
ocaml-extlib-devel	
ocaml-ocamlbuild-devel	
ocaml-xml-light	
ocaml-xml-light-devel	
opal-firmware	
opal-prd	
opal-utils	
openal-soft	
openal-soft-devel	
openchange	
openscap-devel	
openscap-engine-sce-devel	
openscap-python3	
openslp-server	
oscap-anaconda-addon	The **oscap-anaconda-addon** package used for hardening RHEL systems during installation has been removed. You can create hardened installation images by using the image builder service.
overpass-fonts	
owasp-java-encoder	
paktype-naqsh-fonts	
paktype-tehreer-fonts	
pam_ssh_agent_auth	

Package	Note
pcre	The **pcre** package has been removed. You can use the**pcre2** package instead.
pcre-cpp	The **pcre** package has been removed. You can use the**pcre2** package instead.
pcre-devel	The **pcre** package has been removed. You can use the**pcre2** package instead.
pcre-static	The **pcre** package has been removed. You can use the**pcre2** package instead.
pcre-utf16	The **pcre** package has been removed. You can use the**pcre2** package instead.
pcre-utf32	The **pcre** package has been removed. You can use the**pcre2** package instead.
pentaho-libxml	
pentaho-reporting-flow-engine	
perl-AnyEvent	
perl-B-Hooks-EndOfScope	
perl-Class-Accessor	
perl-Class-Data-Inheritable	
perl-Class-Singleton	
perl-Class-Tiny	
perl-Crypt-OpenSSL-Bignum	
perl-Crypt-OpenSSL-Random	
perl-Crypt-OpenSSL-RSA	
perl-Date-ISO8601	
perl-DateTime	

Package	Note
perl-DateTime-Format-Builder	
perl-DateTime-Format-ISO8601	
perl-DateTime-Format-Strptime	
perl-DateTime-Locale	
perl-DateTime-TimeZone	
perl-DateTime-TimeZone-SystemV	
perl-DateTime-TimeZone-Tzfile	
perl-DB_File	
perl-Devel-CallChecker	
perl-Devel-Caller	
perl-Devel-LexAlias	
perl-Digest-SHA1	The **perl-Digest-SHA1** package has been removed. You can use the **perl-Digest-SHA** package instead.
perl-Dist-CheckConflicts	
perl-DynaLoader-Functions	
perl-Encode-Detect	
perl-Eval-Closure	
perl-Exception-Class	
perl-File-chdir	
perl-File-Copy-Recursive	
perl-File-Find-Object	

Package	Note
perl-File-Find-Rule	
perl-HTML-Tree	
perl-Importer	
perl-libxml-perl	
perl-Mail-AuthenticationResults	
perl-Mail-DKIM	
perl-Mail-Sender	
perl-Mail-SPF	
perl-MIME-Types	
perl-Module-Implementation	
perl-Module-Pluggable	
perl-namespace-autoclean	
perl-namespace-clean	
perl-Net-CIDR-Lite	
perl-Net-DNS	
perl-Net-DNS-Nameserver	
perl-NetAddr-IP	
perl-Number-Compare	
perl-Package-Stash	
perl-Package-Stash-XS	
perl-PadWalker	

Package	Note
perl-Params-Classify	
perl-Params-Validate	
perl-Params-ValidationCompiler	
perl-Perl-Destruct-Level	
perl-Ref-Util	
perl-Ref-Util-XS	
perl-Scope-Guard	
perl-Specio	
perl-Sub-Identify	
perl-Sub-Info	
perl-Sub-Name	
perl-Switch	
perl-Sys-CPU	
perl-Sys-MemInfo	
perl-Test-LongString	
perl-Test-Taint	
perl-Variable-Magic	
perl-XML-DOM	
perl-XML-RegExp	
perl-XML-Twig	
perl-YAML-LibYAML	
perltidy	

Package	Note
php	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-bcmath	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-cli	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-common	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-dba	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-dbg	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-devel	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-embedded	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-enchant	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-ffi	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-fpm	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-gd	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-gmp	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-intl	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-ldap	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.

Package	Note
php-libguestfs	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-mbstring	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-mysqlnd	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-odbc	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-opcache	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pdo	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pecl-apcu	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pecl-apcu-devel	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pecl-rrd	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pecl-xdebug3	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pecl-zip	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-pgsql	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-process	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-snmp	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
php-soap	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.

Package	Note
php-xml	The **php:8.1** and **php:8.2** application streams are not offered in RHEL 10. PHP 8.3 is included in RHEL 10 as non-modular packages.
pinfo	
pki-jackson-annotations	
pki-jackson-core	
pki-jackson-databind	
pki-jackson-jaxrs-json-provider	
pki-jackson-jaxrs-providers	
pki-jackson-module-jaxb-annotations	
pki-resteasy-client	
pki-resteasy-core	
pki-resteasy-jackson2-provider	
pki-resteasy-servlet-initializer	
plexus-containers-container-default	
plotnetcfg	
plymouth-theme-charge	
pmdk-convert	
podman-plugins	The **podman-plugins** package has been removed. You can use the **gvisor-tap-vsock** package instead.
poppler-qt5	
poppler-qt5-devel	
postgresql-test-rpm-macros	

Package	Note
pstoedit	
pulseaudio-module-x11	
python-botocore	
python-gflags	
python-packaging-doc	
python-pyroute2	
python-qt5-rpm-macros	
python-sphinx-copybutton	
python3-bind	
python3-chardet	
python3-dmidecode	
python3-dnf-plugin-multisig	
python3-ethtool	
python3-lasso	
python3-libproxy	
python3-libreport	
python3-netifaces	The **python3-netifaces** package has been removed. You can use the **python3-ifaddr** package instead.
python3-nispor	
python3-py	
python3-pycdlib	
python3-pycurl	
python3-pyghmi	

Package	Note
python3-pyqt5-sip	
python3-pyrsistent	
python3-pysocks	
python3-pytz	
python3-pywbem	
python3-qt5	
python3-qt5	
python3-qt5-base	
python3-qt5-devel	
python3-readthedocs-sphinx-ext	
python3-requests+security	
python3-requests+socks	
python3-scour	
python3-sip-devel	
python3-snowballstemmer	
python3-sphinxcontrib-applehelp	
python3-sphinxcontrib-devhelp	
python3-sphinxcontrib-htmlhelp	
python3-sphinxcontrib-httpdomain	
python3-sphinxcontrib-jsmath	

Package	Note
python3-sphinxcontrib-qthelp	
python3-sphinxcontrib-serializinghtml	
python3-sphinxcontrib-websupport	
python3-toml	
python3-tomli	
python3-tracer	
python3-wx-siplib	
python3.11	
python3.11	
python3.11-attrs	
python3.11-cffi	
python3.11-charset-normalizer	
python3.11-cryptography	
python3.11-Cython	
python3.11-debug	
python3.11-devel	
python3.11-idle	
python3.11-idna	
python3.11-iniconfig	
python3.11-libs	
python3.11-lxml	
python3.11-mod_wsgi	

Package	Note
python3.11-numpy	
python3.11-numpy-f2py	
python3.11-packaging	
python3.11-pip	
python3.11-pip-wheel	
python3.11-pluggy	
python3.11-ply	
python3.11-psycopg2	
python3.11-psycopg2-debug	
python3.11-psycopg2-tests	
python3.11-pybind11	
python3.11-pybind11-devel	
python3.11-pycparser	
python3.11-PyMySQL	
python3.11-PyMySQL+rsa	
python3.11-pyparsing	
python3.11-pysocks	
python3.11-pytest	
python3.11-pyyaml	
python3.11-requests	
python3.11-requests+security	
python3.11-requests+socks	

Package	Note
python3.11-scipy	
python3.11-semantic_version	
python3.11-setuptools	
python3.11-setuptools-rust	
python3.11-setuptools-wheel	
python3.11-six	
python3.11-test	
python3.11-tkinter	
python3.11-tkinter	
python3.11-urllib3	
python3.11-wheel	
python3.11-wheel-wheel	
python3.12-psycopg2-debug	
python3.12-psycopg2-tests	
python3.12-PyMySQL+rsa	
python3.12-scipy-tests	
python3.12-semantic_version	
python3.12-setuptools-rust	
qgnomeplatform	
qhull-devel	
qt5	
qt5-assistant	

Package	Note
qt5-designer	
qt5-devel	
qt5-doctools	
qt5-linguist	
qt5-qdbusviewer	
qt5-qt3d	
qt5-qt3d-devel	
qt5-qt3d-doc	
qt5-qt3d-examples	
qt5-qtbase	
qt5-qtbase-common	
qt5-qtbase-devel	
qt5-qtbase-doc	
qt5-qtbase-examples	
qt5-qtbase-gui	
qt5-qtbase-mysql	
qt5-qtbase-odbc	
qt5-qtbase-postgresql	
qt5-qtbase-private-devel	
qt5-qtbase-static	
qt5-qtconnectivity	
qt5-qtconnectivity-devel	
qt5-qtconnectivity-doc	

Package	Note
qt5-qtconnectivity-examples	
qt5-qtdeclarative	
qt5-qtdeclarative-devel	
qt5-qtdeclarative-doc	
qt5-qtdeclarative-examples	
qt5-qtdeclarative-static	
qt5-qtdoc	
qt5-qtgraphicaleffects	
qt5-qtgraphicaleffects-doc	
qt5-qtimageformats	
qt5-qtimageformats-doc	
qt5-qtlocation	
qt5-qtlocation-devel	
qt5-qtlocation-doc	
qt5-qtlocation-examples	
qt5-qtmultimedia	
qt5-qtmultimedia-devel	
qt5-qtmultimedia-doc	
qt5-qtmultimedia-examples	
qt5-qtquickcontrols	
qt5-qtquickcontrols-doc	
qt5-qtquickcontrols-examples	

Package	Note
qt5-qtquickcontrols2	
qt5-qtquickcontrols2-devel	
qt5-qtquickcontrols2-doc	
qt5-qtquickcontrols2-examples	
qt5-qtscript	
qt5-qtscript-devel	
qt5-qtscript-doc	
qt5-qtscript-examples	
qt5-qtsensors	
qt5-qtsensors-devel	
qt5-qtsensors-doc	
qt5-qtsensors-examples	
qt5-qtserialbus	
qt5-qtserialbus-devel	
qt5-qtserialbus-doc	
qt5-qtserialbus-examples	
qt5-qtserialport	
qt5-qtserialport-devel	
qt5-qtserialport-doc	
qt5-qtserialport-examples	
qt5-qtsvg	
qt5-qtsvg-devel	

Package	Note
qt5-qtsvg-doc	
qt5-qtsvg-examples	
qt5-qttools	
qt5-qttools-common	
qt5-qttools-devel	
qt5-qttools-doc	
qt5-qttools-examples	
qt5-qttools-libs-designer	
qt5-qttools-libs-designercomponents	
qt5-qttools-libs-help	
qt5-qttools-static	
qt5-qttranslations	
qt5-qtwayland	
qt5-qtwayland-devel	
qt5-qtwayland-doc	
qt5-qtwayland-examples	
qt5-qtwebchannel	
qt5-qtwebchannel-devel	
qt5-qtwebchannel-doc	
qt5-qtwebchannel-examples	
qt5-qtwebsockets	
qt5-qtwebsockets-devel	

Package	Note
qt5-qtwebsockets-doc	
qt5-qtwebsockets-examples	
qt5-qtx11extras	
qt5-qtx11extras-devel	
qt5-qtx11extras-doc	
qt5-qtxmlpatterns	
qt5-qtxmlpatterns-devel	
qt5-qtxmlpatterns-doc	
qt5-qtxmlpatterns-examples	
qt5-rpm-macros	
qt5-srpm-macros	
raptor2	
raptor2-devel	
rasqal	
rasqal-devel	
redis	The **redis** package has been removed. You can use the **valkey** package instead that provides similar functionality.
redis-devel	The **redis** package has been removed. You can use the **valkey** package instead that provides similar functionality.
redis-doc	The **redis** package has been removed. You can use the **valkey** package instead that provides similar functionality.
redland	
redland-devel	
rpmlint	

Package	Note
ruby-libguestfs	
runc	The **runc** package has been removed. You can use the **crun** package instead.
saab-fonts	
sac	
satyr	
scap-workbench	The **scap-workbench** tool has been removed. You can use the **oscap** and **autotailr** command-line tools for tailoring and scanning.
SDL2	
selinux-policy-minimum	
sendmail	The **sendmail** package has been removed. You can use the **postfix** package instead, which provides an alternative secure, modern, feature-rich SMTP daemon.
sendmail-cf	The **sendmail** package has been removed. You can use the **postfix** package instead, which provides an alternative secure, modern, feature-rich SMTP daemon.
sendmail-doc	The **sendmail** package has been removed. You can use the **postfix** package instead, which provides an alternative secure, modern, feature-rich SMTP daemon.
sendmail-milter	The **sendmail** package has been removed. You can use the **postfix** package instead, which provides an alternative secure, modern, feature-rich SMTP daemon.
sendmail-milter-devel	The **sendmail** package has been removed. You can use the **postfix** package instead, which provides an alternative secure, modern, feature-rich SMTP daemon.
setxkbmap	
sgabios	
sgabios-bin	
sid	

Package	Note
sid-base-libs	
sid-iface-libs	
sid-log-libs	
sid-mod-block-blkid	
sid-mod-block-dm-mpath	
sid-mod-dummies	
sid-resource-libs	
sid-tools	
sil-scheherazade-fonts	
sip	
spamassassin	
speech-tools-libs	
sssd-polkit-rules	
suitesparse	
suitesparse-devel	
sushi	
teamd	The **libteam** package providing the **teamd** utility has been removed. You can use the Linux bonding driver instead.
texlive-xdvi	
thai-scalable-fonts-common	
thai-scalable-garuda-fonts	
thai-scalable-kinnari-fonts	
thai-scalable-loma-fonts	

Package	Note
thai-scalable-norasi-fonts	
thai-scalable-purisa-fonts	
thai-scalable-sawasdee-fonts	
thai-scalable-tlwgmono-fonts	
thai-scalable-tlwgtypewriter-fonts	
thai-scalable-tlwgtypist-fonts	
thai-scalable-tlwgtypo-fonts	
thai-scalable-umpush-fonts	
thunderbird	
tigervnc	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-icons	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-license	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-selinux	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-server	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-server-minimal	The **tigervnc** package has been removed. You can use GNOME Connections instead.
tigervnc-server-module	The **tigervnc** package has been removed. You can use GNOME Connections instead.
totem-pl-parser	
tracer-common	
transfig	

Package	Note
ucs-miscfixed-fonts	
udftools	
unifdef	
usb_modeswitch	
usb_modeswitch-data	
usbredir-server	
usermode-gtk	
WALinuxAgent-cvm	
webkit2gtk3	
webkit2gtk3-devel	
webkit2gtk3-jsc	
webkit2gtk3-jsc-devel	
wpebackend-fdo	
wpebackend-fdo-devel	
xbean	
xmlrpc-c	
xmlrpc-c-c++	
xmlrpc-c-client	
xmlrpc-c-client++	
xmlrpc-c-devel	
xmlsec1-gcrypt	The **gcrypt** library has been removed from RHEL 10 and, therefore, the **xmlsec1** package parts that depended on this library have also been removed. You can use the **xmlsec1-openssl** package instead.

Package	Note
xmlsec1-gcrypt-devel	The **gcrypt** library has been removed from RHEL 10 and, therefore, the **xmlsec1** package parts that depended on this library have also been removed. You can use the **xmlsec1-openssl** package instead.
xmlsec1-gnutls	The **gcrypt** library has been removed from RHEL 10 and, therefore, the **xmlsec1** package parts that depended on this library have also been removed. You can use the **xmlsec1-openssl** package instead.
xmlsec1-gnutls-devel	The **gcrypt** library has been removed from RHEL 10 and, therefore, the **xmlsec1** package parts that depended on this library have also been removed. You can use the **xmlsec1-openssl** package instead.
xorg-x11-drivers	
xorg-x11-drv-dummy	
xorg-x11-drv-evdev	
xorg-x11-drv-evdev-devel	
xorg-x11-drv-fbdev	
xorg-x11-drv-libinput	
xorg-x11-drv-libinput-devel	
xorg-x11-drv-v4l	
xorg-x11-drv-vmware	
xorg-x11-drv-wacom	
xorg-x11-drv-wacom-devel	
xorg-x11-drv-wacom-serial-support	
xorg-x11-server-common	
xorg-x11-server-devel	
xorg-x11-server-source	
xorg-x11-server-utils	

Package	Note
xorg-x11-server-Xdmx	
xorg-x11-server-Xephyr	
xorg-x11-server-Xnest	
xorg-x11-server-Xorg	
xorg-x11-server-Xvfb	
xorg-x11-utils	
xorg-x11-xbitmaps	
xorg-x11-xinit	
xorg-x11-xinit-session	
xsane	
xsane-common	
xxhash	
xxhash-devel	
xxhash-doc	
xxhash-libs	
yajl	
yelp	
yelp-devel	
yelp-libs	
zhongyi-song-fonts	

A.5. PACKAGES WITH REMOVED SUPPORT

Review packages that are distributed in a supported repository in RHEL 9 and in the CodeReady Linux Builder repository RHEL 10.

Certain packages in RHEL 10 are distributed through the CodeReady Linux Builder repository, which contains unsupported packages for use by developers.

> **NOTE**
>
> The following table contains packages that are supported in RHEL 9 but are not supported in RHEL 10.

Package	RHEL 9 repository
acpica-tools	rhel9-BaseOS
babel	rhel9-AppStream
evolution-data-server-devel	rhel9-AppStream
evolution-data-server-doc	rhel9-AppStream
evolution-data-server-tests	rhel9-AppStream
geocode-glib-devel	rhel9-AppStream
ghostscript-tools-dvipdf	rhel9-AppStream
glib2-doc	rhel9-AppStream
gnome-desktop3-devel	rhel9-AppStream
gnome-online-accounts-devel	rhel9-AppStream
golang-github-cpuguy83-md2man	rhel9-BaseOS
libgweather-devel	rhel9-AppStream
libical-devel	rhel9-AppStream
libical-glib-devel	rhel9-AppStream
python3-babel	rhel9-AppStream
ruby-doc	rhel9-AppStream
rubygem-mysql2-doc	rhel9-AppStream
rubygem-pg-doc	rhel9-AppStream
sil-nuosu-fonts	rhel9-AppStream

Package	RHEL 9 repository
toolbox-tests	rhel9-AppStream