Oracle Linux
Software Collection Library for Oracle Linux 7

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Preface

Oracle® Linux: Software Collection Library for Oracle Linux 7 provides details of the Software Collection Library release 3.8 that is available from Oracle for Oracle Linux 7.

Conventions

The following text conventions are used in this document:

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

Documentation Accessibility

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

For information about the accessibility of the Oracle Help Center, see the Oracle Accessibility Conformance Report at https://www.oracle.com/corporate/accessibility/templates/t2-11535.html.

Access to Oracle Support for Accessibility

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

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain

compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

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Release Notes

The Software Collection Library is currently available for Oracle Linux 7 (x86_64) and is supported for customers with Oracle Linux Premier Support. Note that a subset of the complete Software Collection Library for Oracle Linux 7 (as available for the x86_64 platform) is also available for the 64-bit Arm (aarch64) platform. For more information, see Software Collection Libraries for Oracle Linux 7 (aarch64).

Oracle Linux 8 provides similar components in the form of Application Streams. For more information, see Oracle Linux: Managing Software on Oracle Linux.

About the Software Collection Library for Oracle Linux

The Software Collection Library enables you install and use several different versions of the same software at the same time on a system. Software collections are primarily intended for development environments, which often require more recent versions of software components such as Perl, PHP, or Python to gain access to the latest features, but which need to avoid the risk of disrupting other processes on the system that rely on different versions of these components. You use the Software Collection Library `scl` utility to run the developer tools from the software collections that you have installed under the `/opt/rh` directory hierarchy. The `scl` utility isolates the effects of running these tools from other versions of the same software utilities that you have installed.

The Software Collection Library version 3.8 replaces the previous release of the Software Collection Library. This version includes all of the software collections that were available in the previous release, along with some package updates, and also includes additional software collections that were not available in previous releases.

Additions and Updates for the 3.8 Release

The following information applies to the software collections that are available for Oracle Linux 7.

New in the 3.8 release in Oracle Linux 7

The following collections are new in the 3.8 release of the Software Collection Library:

- `devtoolset-11`
- `rh-nginx120`
- `rh-redis6`

Differences From the Upstream Release

There are some minor differences between the Oracle versions of the software collections and the upstream release.

The following changes are included:

- Addition of Oracle Linux GPG keys.

- Removal of the MariaDB, MongoDB, MySQL, PostgreSQL, and Thermostat software collections.

- Removal of the `rhscl-dockerfiles` package.

- Branding changes.

Available Software Collections

The following software collections are available in the Oracle Linux 7 `SoftwareCollections` channel on the Unbreakable Linux Network (ULN) and the Oracle Linux 7 `software_collections` repository on the Oracle Linux yum server.

devassist09
DevAssistant 0.9.3 assists in the creation and configuration of the development environment for projects that use the C, C++, Java, and Python programming languages. DevAssistant has a modular architecture that enables it to be modified to work with many languages, frameworks, and tools.
For more information, see https://devassistant.github.io.

devtoolset-3
The Developer Toolset consists of development, debugging, and performance monitoring tools, including the latest versions of the GNU compiler collection, GNU debugger, and the Eclipse development platform.
For more information, see https://gcc.gnu.org/, https://www.gnu.org/software/gdb/, and https://www.eclipse.org/.

devtoolset-4
The Developer Toolset consists of development, debugging, and performance monitoring tools, including the latest versions of the GNU compiler collection, GNU debugger, and the Eclipse development platform.
For more information, see https://gcc.gnu.org/, https://www.gnu.org/software/gdb/, and https://www.eclipse.org/.

devtoolset-6
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger. Note that the Eclipse development platform is no longer available as part of this collection, but you can install the `rh-eclipse46` collection separately.
The following upgraded components are included in the Developer Toolset version 6.1:

- GCC updated to version 6.3.1.

- `elfutils` updated to version 0.168.

- GDB updated to version 7.12.1.

A bug fix update has also been made available for `ltrace`.
For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

devtoolset-7
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger.

The following upgraded components are included in the Developer Toolset version 7.0:

- `GCC` updated to version 7.3.1.

- `binutils` updated to version 2.28.

- `elfutils` updated to version 0.170.

- `make` updated to version 4.2.1.

- `GDB` updated to version 8.0.1.

- `strace` updated to version 4.17.

- `SystemTap` updated to version 3.1.

- `Valgrind` updated to version 3.13.0.

- `OProfile` updated to version 1.2.0.

- `Dyninst` updated to version 9.3.2.

For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

devtoolset-8
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger.
The following upgraded components are included in the Developer Toolset version 8.1:

- `GCC` updated to version 8.2.1.

- `GDB` updated to version 8.2.

- `binutils` updated to version 2.30.

- `elfutils` updated to version 0.176.

- `strace` updated to version 4.24.

- `SystemTap` updated to version 3.3.

- `Valgrind` updated to version 3.14.0.

- `OProfile` updated to version 1.3.0.

For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

devtoolset-9
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger.
The following upgraded components are included in the Developer Toolset version 9.1:

- `GCC` updated to version 9.3.1.

- `GDB` updated to version 8.3.

- `make` updated to version 4.2.1.

- `binutils` updated to version 2.32.

- `strace` updated to version 5.1.

- `ltrace` updated to version 0.7.91.

- `SystemTap` updated to version 4.1.

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- `Valgrind` updated to version 3.15.0.

- `Dyninst` updated to version 10.1.0.

For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

devtoolset-10
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger.
The following upgraded components are included in the Developer Toolset version 10.1:

- `Dyninst` updated to version 10.2.1.

- `elfutils` updated to version 0.182.

- `SystemTap` updated to version 4.4.

For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

devtoolset-11
The Developer Toolset includes development, debugging, and performance monitoring tools, which include the latest versions of the GNU compiler collection and GNU debugger.
The following upgraded components are included in the Developer Toolset version 11.0:

- `GCC` updated to version 11.2.1.

- `binutils` updated to version 2.36.1.

- `elfutils` updated to version 0.185.

- `dwz` updated to version 0.14.

- `GDB` updated to version 10.2.

- `strace` updated to version 5.13.

- `SystemTap` updated to version 4.5.

- `Valgrind` updated to version 3.17.0.

- `Dyninst` updated to version 11.0.0.

- `make` updated to version 4.3.

- `annobin` updated to version 9.82.

For more information, see https://gcc.gnu.org/ and https://www.gnu.org/software/gdb/.

git19
Git 1.9.4 is built on a decentralized architecture and provides a distributed revision-control system that emphasizes high performance and data integrity, as well as support for non-linear, distributed work flows.
For more information, see https://git-scm.com/.

httpd24
The Apache HTTP Server implements event-based processing for enhanced performance, FastCGI, an improved SSL module, and the `mod_auth_kerb` module.
The `httpd24` software collection provides version 2.4.34 of the software. This release includes a number of bug and security fixes and enhancements from the previous

version, as well as improvements for SSL/TLS and support for version 2 of the Automatic Certificate Management Environment (ACME) certificate issuance and management protocol.
For more information, see https://httpd.apache.org/docs/2.4/.

`maven30`

Maven 3.0.5 is a tool for managing builds, documentation, and reporting for Java projects.
For more information, see https://maven.apache.org/.

`nginx16`

NGINX 1.6.2 is a combined web and proxy server that is designed to provide enhanced concurrency and performance without placing excessive demands on memory. Supported features include SSL verification enhancements, improved logging options, thread pooling, and hash load balancing.
For more information, see https://nginx.org/.

`nodejs010`

Node.js 0.10 is a programming platform that includes `npm` to share and reuse code. This software collection requires the V8 JavaScript engine that is implemented by `v8314`.
For more information, see https://nodejs.org/en/.

`perl516`

Perl 5.16.3 provides better performance, new debugging features, enhanced Unicode support, improved interoperability with MySQL and PostgreSQL, and the `mod_perl` and `perl-DateTime` modules for use with `httpd24`.
For more information, see https://www.perl.org/ and https://perldoc.perl.org/.

`php54`

PHP 5.4.40 provides PEAR 1.9.4, various language and interface improvements, and the APC, memcache, and Zend OPcache extensions.
For more information, see https://www.php.net/.

`php55`

PHP 5.5.21 has enhanced language features for better exception handling, generators, and Zend OPcache, and also includes the memcache and mongodb extensions.
For more information, see https://www.php.net/.

`python27`

Python 2.7.18 includes a number of additional utilities, a new ordered dictionary type, faster I/O, and better forward compatibility with Python 3. Also included are the Python 2.7.8 interpreter, web-programming extension libraries and `mod_wsgi` for use with `httpd24`, PostgreSQL connectors, and the `numpy` and `scipy` modules for scientific applications.
In this release, the `python27-python-pymongo` package has been updated to version 3.2.1. Note that this version is not fully compatible with the previously shipped version 2.5.2.
For more information, see https://www.python.org/.

`python33`

Python 3.3.2 includes the Python 3.3.2 interpreter, web-programming extension libraries, and `mod_wsgi` for use with `httpd24`, MySQL, and PostgreSQL connectors. Also included are the `numpy` and `scipy` modules for scientific applications.
For more information, see https://www.python.org/.

`rh-eclipse46`

The `rh-eclipse46` software collection is an integrated development environment. Previous releases of Eclipse were available as part of the Developer Toolset collections. This release

provides an independent software collection that is dependent on the `rh-java-common` collection.

In this release, the `rh-eclipse46` collection is version 4.6.3, which is based on the Eclipse Foundation's Neon release train.

This version of the collection provides several bug fixes and the following new plugins:

- The `m2e` plugin provides support for developing maven-based projects.

- The `TestNG` plugin provides support for writing and executing tests by using the `TestNG` framework.

Most other plugins have received incremental updates to fix upstream bugs.
For more information, see https://www.eclipse.org//.

rh-git29
The Git 2.9.3 revision control system is used to track changes in files and coordinate work among multiple contributors in a distributed environment.
For more information, see https://git-scm.com/.

rh-git218
The Git 2.18.4 revision control system is used to track changes in files and coordinate work among multiple contributors in a distributed environment. This collection includes some bug fixes, as well as features that improve on the `rh-git29` software collection. This version includes the Large File Storage (LFS) extension.
For more information, see https://git-scm.com/.

rh-git227
The Git 2.27.0 release of Git is a distributed revision control system with a decentralized architecture. This version introduces numerous enhancements including the following:

- `git` checkout command is split into `git switch` and `git restore`.

- Behavior of the `git rebase` command has changed.

- Git Large File Storage (LFS) is updated to version 2.11.0.

For more information, see https://git-scm.com/.

rh-haproxy18
The HAProxy 1.8.24 proxy software provides a mechanism that can proxy Transmission Control Protocol (TCP) requests and perform a variety of related functions, such as content-based switching, server load balancing, TCP traffic regulation and monitoring, and HTTP compression.
For more information, see https://cbonte.github.io/haproxy-dconv/.

rh-java-common
The `rh-java-common` software collection provides common Java libraries and tools that are used by other software collections. It is usually installed as a dependency for these collections.
In this release, the `rh-java-common` collection has been updated and extended to comply with the changes that are in the dependent components.

rh-maven33
Apache Maven 3.3.9 is a tool that you use to build and manage Java projects. The software provides a single interface to a uniform build system that eases Java development and aids comprehension of any Java-based project.

Note that this version of the `rh-maven33` software collection also includes several bug fixes. For more information, see https://maven.apache.org/docs/3.3.9/release-notes.html.

rh-maven35

Apache Maven 3.5.0 is a tool that you use to build and manage Java projects. The software provides a single interface to a uniform build system that eases Java development and aids comprehension of any Java-based project.
This version of the `rh-maven35` software collection includes several bug fixes and enhancements, including console color output and several other improvements.
For more information, see https://maven.apache.org/docs/3.5.0/release-notes.html.

rh-maven36

Apache Maven 3.6.1 is a tool that is used to build and manage Java projects. The software provides a single interface to a uniform build system that eases Java development and assists with comprehension of any Java-based project.
This version of the `rh-maven36` software collection also includes several bug fixes and performance enhancements.
For more information, see https://maven.apache.org/docs/3.6.1/release-notes.html.

rh-nginx18

NGINX 1.8.1 is a combined web and proxy server that is designed to provide enhanced concurrency and performance without placing excessive demands on memory. Newer features include SSL verification enhancements, improved logging options, thread pooling, and hash load balancing.
For more information, see https://nginx.org/.

rh-nginx110

NGINX 1.10.2 provides a number of features, including dynamic module support, HTTP/2 support, and numerous performance improvements.
Note that the `rh-nginx110` collection does not support integration with Phusion Passenger. If you require NGINX with Passenger support, continue using `rh-nginx18`, which provides NGINX version 1.8.
The `rh-nginx110` software collection has optional support for Perl, in conjunction with the `rh-perl524` software collection. To configure Perl handlers and call Perl functions from SSI scripts, install the `rh-nginx110-nginx-mod-http-perl` package.
For more information, see https://nginx.org/.

rh-nginx112

NGINX 1.12.1 provides a number of features, including IP Transparency, TCP/UDP load balancing, enhanced caching and support for multiple SSL certificates of different types. Many other enhancements and features are available in this release. Refer to the upstream documentation for more information.
Note that the `rh-nginx110` collection does not support integration with Phusion Passenger. If you require NGINX with Passenger support, continue using `rh-nginx18`, which provides NGINX version 1.8.
The `rh-nginx110` software collection includes optional support for Perl, in conjunction with the `rh-perl524` software collection. To configure Perl handlers and call Perl functions from SSI scripts, install the `rh-nginx110-nginx-mod-http-perl` package.
For more information, see https://nginx.org/.

rh-nginx114

NGINX 1.14.1 provides a number of features, including a mirror module, a gRPC proxy module, HTTP/2 server push functionality, and improvements to `vim` syntax-highlighting scripts.

For more information, see https://nginx.org/.

rh-nginx116
NGINX 1.16.1 provides a number of new features, including improved TLS certificate handling, an additional load-balancing algorithm, and improvements to UDP proxying.
For more information, see https://nginx.org/.

rh-nginx118
NGINX 1.18.0 is a web and proxy server that focuses on high concurrency, performance, and low memory usage. This version includes improvements to the HTTP request rate and connection limiting, as well as a new `auth_delay` directive. Support for new variables has also been added to multiple directives.
For more information, see https://nginx.org/.

rh-nginx120
NGINX 1.20.1 is a web and proxy server that focuses on high concurrency, performance, and low memory usage. This version provides a number of new features, such as SSL certificate validation with Online Certificate Status Protocol (OCSP), and additional configuration settings for HTTP/2 and cache management.
For more information, see https://nginx.org/.

rh-nodejs4
Node.js 4.6.2 is a JavaScript programming platform that includes `npm` to share and reuse code. This software collection requires the V8 JavaScript engine that is implemented by `v8314`.
For more information, see https://nodejs.org/en/.

rh-nodejs6
Node.js 6.11.3 is a JavaScript programming platform that includes `npm 3.10.9`. This version also includes various bug fixes.
For more information, see https://nodejs.org/en/.

rh-nodejs8
Node.js 8.11.4 is a JavaScript programming platform that includes `npm` to share and reuse code. This release introduces the `async_hooks` module and experimental support for N-API and full support for HTTP/2.
This software collection uses the V8 JavaScript engine version 6.0, which is included in this collection. This release removes the dependency on `v8314`, which was required in previous Node.js collections.
For more information, see https://nodejs.org/en/.

rh-nodejs10
Node.js 10.21.0 is a JavaScript programming platform that includes `npm` to share and reuse code. Full support for N-API, stability improvements, and security enhancements are included in this release.
This software collection uses the V8 JavaScript engine version 6.6, which is included in this collection.
For more information, see https://nodejs.org/en/.

rh-nodejs12
Node.js 12.22.5 is a JavaScript programming platform that includes `npm` to share and reuse code. This release introduces support for ECMAScript 2015 (ES6) modules, improved support for native modules, and some performance improvements.
This software collection uses the V8 JavaScript engine version 7.6, which is included in this collection.

For more information, see https://nodejs.org/en/.

rh-nodejs14
Node.js 14.17.5 is a release of Node.js that includes V8 version 8.3, a new experimental WebAssembly System Interface (WASI), and a new experimental Async Local Storage API. For more information, see https://nodejs.org/en/.

rh-passenger40
Phusion Passenger 4.0.50 is a fast and robust and lightweight web application server that is designed to be used in conjunction with applications that are written in Python or Ruby. This software collection is typically used in conjunction with several other software collections, including the various Python, Ruby or Ruby on Rails collections, and a web server like NGINX or the Apache HTTP Server.
For more information, see https://www.phusionpassenger.com/.

rh-perl520
Perl 5.20.1 includes additional scripts and utilities, as well as the database connectors for MySQL and PostgreSQL. Other included components are the `DateTime` module and the `mod_perl` Apache module that is supported by the `httpd24` collection.
For more information, see https://www.perl.org/.

rh-perl524
Perl 5.24.0 includes additional scripts and utilities, as well as the database connectors for MySQL and PostgreSQL. Other included components are the `DateTime` module and the `mod_perl` Apache module that is supported by the `httpd24` collection.
For more information, see https://www.perl.org/.

rh-perl526
Perl 5.26.3 includes some security improvements, bug fixes, and enhancements. Enhancements include changes to remove the current directory from the `@INC` module search path, deprecation of the `do` statement, stricter regular expression patterning, and support for Unicode 9.0.
The `rh-perl526-perl` package installs core modules, along with the interpreter, which is provided in the `rh-perl526-perl-interpreter` package. Note that this is a change in behavior from previous releases, where core modules were not included in the base `perl` package.
For more information, see https://www.perl.org/.

rh-perl530
Perl 5.30.1 includes security improvements, bug fixes, and enhancements. Note that certain language features are deprecated or removed in this version of Perl. In addition, the `rh-perl530-perl-CGI` package is added to the `rh-perl530` Software Collection. The `rh-perl530-perl-CGI` package includes a Perl module that implements the Common Gateway Interface (CGI) to enable you to run scripts that are written in the Perl language.
Other notable changes include the following:

- Removal of the `Math::BigInt::CalcEmu`, `arybase`, and `B::Debug` modules and the `:locked` and `:uniq` attributes.

- File descriptors are opened with a `close-on-exec` flag.

- Subroutine attributes must precede subroutine signatures.

- `pack()` function no longer returns malformed UTF-8 format.

- Using the `sysread()` and `syswrite()` functions on `:utf8` handles returns fatal error.

- Support for Unicode 12.1.

- Unicode code points that have a value greater than `IV_MAX` are no longer allowed.

- The following are no longer allowed: comma-less variable lists in formats, a bare `<<` here-document operator, certain formerly deprecated uses of an unescaped left brace (`{`) character in regular expression patterns, `sort` pragma for specifying a `sort` algorithm, use of the `$*` and `$#` variables, and declaring variables by using the `my()` function in a false condition branch.

The `rh-perl530-perl` package installs core modules along with the interpreter, which is provided in the `rh-perl530-perl-interpreter` package.
For more information, see https://www.perl.org/.

`rh-php56`
PHP 5.6.25, including PEAR 1.9.5, enhanced language features for constant expressions, variadic functions, argument unpacking and interactive debugging. The memcache, mongodb and XDebug extensions are also included.
For more information, see https://www.php.net/.

`rh-php70`
PHP 7.0.27, including PEAR 1.10, enhanced language features and performance improvements.
For more information, see https://www.php.net/.

`rh-php71`
PHP 7.1.8, including PEAR 1.10.4 and the APCu extension version 5.1.8. This release includes many bug fixes and performance improvements.
For more information, see https://www.php.net/.

`rh-php72`
PHP 7.2.24, including PEAR 1.10.5 and the APCu extension version 5.1.12. This version includes many bug fixes and performance improvements, including the following: object-to-array and array-to object casts for numeric keys, a new `object` typehint, and a change to `HashContext` from a resource to an object.
For more information, see https://www.php.net/.

`rh-php73`
PHP 7.3.29 includes many notable changes, updates, and performance enhancements over PHP 7.2, including some deprecations and backward incompatibility changes.
Other notable changes include the following:

- Several new and upgraded extensions.

- Improvements to multibyte string handling.

- Improvements to FastCGI Process Manager (FPM) logging.

- Support for LDAP controls.

For more information about this PHP release, see https://www.php.net/.
See https://www.php.net/manual/en/migration73.php for specific information about migrating from PHP 7.2 to PHP 7.3.

rh-python34

Python 3.4 includes the Python 3.4.2 interpreter, web-programming extension libraries and `mod_wsgi` for use with `httpd24`, MySQL, and PostgreSQL connectors, as well as the `numpy` and `scipy` modules for scientific applications.
For more information, see https://www.python.org/.

rh-python35

Python 3.5.1 includes the Python 3.5.1 interpreter, web-programming extension libraries and `mod_wsgi` for use with `httpd24`, MySQL, and PostgreSQL connectors, as well as the `numpy` and `scipy` modules for scientific applications.
For more information, see https://www.python.org/.

rh-python36

Python 3.6.12 includes the Python 3.6.12 interpreter, web-programming extension libraries and `mod_wsgi` for use with `httpd24`, MySQL, and PostgreSQL connectors, as well as the `numpy` and `scipy` modules for scientific applications. This version includes several syntax features, including formatted string literals and asynchronous generators and comprehensions. The `secrets` module is also included in the standard library and dictionaries were reimplemented to use significantly less memory to enhance performance. Note that support for DTrace and SystemTap probes is also provided.
For more information, see https://www.python.org/.

rh-python38

Python 3.8.11 includes the following newer Python modules: `contextvars`, `dataclasses`, and `importlib.resources`, as well as new language features, and improved performance. Also included are web-programming extension libraries and `mod_wsgi` for use with `httpd24`, as well as PostgreSQL connectors and the `numpy` and `scipy` modules for scientific applications. For a complete list of the new features and enhancements in this version, see https://docs.python.org/3/whatsnew/3.8.html.

rh-redis32

Redis 3.2.4 is an open source, in-memory data structure store that is commonly used as a database and cache, as well as a message broker.
For more information, see https://redis.io.

rh-redis5

Redis 5.0, a persistent key-value database. Redis also now provides `redis-trib`, which is a cluster management tool.
For more information, see https://redis.io.

rh-redis6

Redis 6.0.16 is a recent version of a persistent key-value database. This version is compatible with REdis Serialization Protocol version 3 (RESP3), and provides server-side functionality such as access control lists, SSL-encrypted communication and threaded operations.
For more information, see https://redis.io.

rh-ror41

Ruby on Rails 4.1.5 is a version of the web application framework that is written in the Ruby language.
This release includes the following features:

• Spring application pre-loader.

- Action Pack.

- Action Mailer.

- Security fixes for earlier versions of the software.

For more information, see https://rubyonrails.org/.

`rh-ror42`
Ruby on Rails 4.2.6 is a recent version of the web application framework that is written in the Ruby language. This version includes the following features: Active Job, improvements such as support for asynchronous mails, performance enhancements such as the Adequate Record feature, and a default Web Console that is included with each new application.
For more information, see https://rubyonrails.org/.

`rh-ror50`
Ruby on Rails 5.0.1 provides a number of bug fixes and the following features:

- Action Cable framework for handling WebSockets in Rails.

- API mode to assist in creating a Rails application for an API server more easily.

- Exclusive use of the `rails` CLI over Rake.

- Addition of `ActionRecord` attributes.

    Note that you can now override `ActiveRecord` attributes, if needed.

For further details, see the upstream release notes.
The `rh-ror50` software collection is supported with the `rh-ruby24` and `rh-nodejs6` collections.
For more information, see https://rubyonrails.org/.

`rh-ruby22`
Ruby 2.2.9 is a stable release of Ruby 2.2. This release is backward compatible with Ruby 2.0.0, and Ruby 1.9.3 at a source level.
For more information, see https://www.ruby-lang.org/.

`rh-ruby23`
Ruby 2.3.8 is a stable release of Ruby 2.3 and includes many features, including the following: a frozen string literal pragma, a safe navigation or lonely operator, improved debugging, and many performance enhancements. This release is backward compatible with Ruby 2.2.2, Ruby 2.0.0, and Ruby 1.9.3 at a source level.
For more information, see https://www.ruby-lang.org/.

`rh-ruby24`
Ruby 2.4.6 includes the following performance features:

- Improved hash table performance.

- New `binding#irb` method starts a read–eval–print loop (REPL) session, which provides for easier debugging and introspection of variables during runtime.

- Improved debugging of threads and better deadlock detection.

- Fixnum and Bignum classes are integrated into the Integer class.

- Support for Unicode case mappings.

- Support for the OpenSSL 1.1.0 library.

Ruby 2.4 is backward compatible with Ruby 2.3.1, Ruby 2.2.2, Ruby 2.0.0, and Ruby 1.9.3. The `rh-ruby23` and `rh-ruby22` software collections continue to supported.
For more information, see https://www.ruby-lang.org/.

`rh-ruby25`
Ruby 2.5.9 introduces the following performance improvements:

- Simplified block usage with the `rescue`, `else`, and `ensure` keywords.

- New `yield_self` method.

- Support for branch and method coverage measurement.

- New `Hash#slice` and `Hash#transform_keys` methods.

Ruby 2.5 is backward compatible with Ruby 2.4, Ruby 2.3.1, Ruby 2.2.2, Ruby 2.0.0, and Ruby 1.9.3. The `rh-ruby23` and `rh-ruby22` software collections continue to be supported.
For more information, see https://www.ruby-lang.org/.

`rh-ruby26`
Ruby 2.6.7 includes several performance improvements.
Ruby 2.6 is backward compatible with Ruby 2.5, Ruby 2.4, Ruby 2.3.1, Ruby 2.2.2, Ruby 2.0.0, and Ruby 1.9.3. The `rh-ruby23` and `rh-ruby22` software collections are also still supported.
For more information, see https://www.ruby-lang.org/.

`rh-ruby27`
Ruby 2.7.4 includes multiple performance improvements and new features, such as Compaction GC and the command-line interface (CLI) for the LALR(1) parser generator, as well as an enhancement to REPL. Ruby 2.7 maintains source-level backward compatibility with Ruby 2.6.
For more information, see https://www.ruby-lang.org/en/news/2019/12/25/ruby-2-7-0-released/ and https://www.ruby-lang.org/en/news/2020/03/31/ruby-2-7-1-released/.

`rh-ruby30`
Ruby 3.0.2 provides multiple performance improvements and new features, such as Ractor, Fiber Scheduler, and the RBS (Ruby Type Signature) annotation language. Ruby 3.0 maintains source-level backward compatibility with Ruby 2.7.

`rh-scala210`
The Scala 2.10.6 software collection is a general-purpose programming language that is designed to express common programming patterns in a concise and type-safe manner. Scala 2.10.6 integrates both object-oriented and functional languages features and is fully interoperable with Java.
For more information, see https://docs.scala-lang.org/.

`rh-varnish4`
Varnish Cache 4.0.3 is an efficient reverse proxy for HTTP. Files and content are cached in memory to reduce response time and network bandwidth consumption. The Varnish Cache feature can improve web application performance significantly.
For more information, see https://varnish-cache.org/.

`rh-varnish5`
Varnish Cache 5.2.1 is an efficient reverse proxy for HTTP. This release provides bug fixes and enhancements over the previous version, including experimental HTTP/2 support, the `shard` director, and improvements to configuration through Varnish Configuration Language files and labels.

For more information, see https://varnish-cache.org/.

rh-varnish6
Varnish Cache 6.0.8 is a high-performance HTTP reverse proxy. This version includes support for Unix Domain Sockets (both for clients and for back-end servers), a new level of the VCL language (vcl 4.1), and improved HTTP/2 support.
For more information, see https://varnish-cache.org/docs/6.0/index.html.

ror40
Ruby on Rails 4.0.2 provides includes support for live-streaming over persistent connections; the feature can be used with ruby200. Note that this software collection requires the V8 JavaScript engine that is implemented by v8314.
For more information, see https://rubyonrails.org/.

ruby193
Ruby 1.9.3 includes Ruby on Rails 3.2.8 and includes enhanced Unicode support, improved threading, quicker loading, as well as the mod_passenger module, for use with httpd24, and a large collection of Ruby gems.
For more information, see https://www.ruby-lang.org/.

ruby200
Ruby 2.0.0 provides improved performance and reliability, as well as additional features and enhanced debugging. This version retains backward compatibility with Ruby 1.9.3 at the source level.
For more information, see https://www.ruby-lang.org/.

source-to-image
The source-to-image software collection provides a tool for building artifacts from source and injecting them into docker images. This collection is only available for Oracle Linux 7. Note that the collection depends on docker, which is available in the ol7_addons channel.
For more information, see https://github.com/openshift/source-to-image/blob/master/README.md.

v8314
The v8314 software collection, which provides a V8 JavaScript engine, is supported as a dependency of other software collections *only*.
For more information, see https://v8.dev/.

Installing the Software Collection Library Utility From ULN

The scl-utils package, which provides the Software Collection Library scl utility, is available in the Oracle Linux 7 latest channel.

The software collection packages are available in the Oracle Linux 7 SoftwareCollections channel.

To use a software collection on an Oracle Linux 7 system, you must first install the scl utility on that system.

To install scl on a system:

1. Log in to the ULN at linux.oracle.com and then subscribe the system to the following latest and SoftwareCollections channels:

   • ol7_x86_64_latest,

- `ol7_x86_64_optional_latest`
- `ol7_x86_64_SoftwareCollections`

2. Install the `scl-utils` package.

```
sudo yum install scl-utils
```

You can now install and use software collection packages on the system. See Installing a Software Collection From the Oracle Linux Yum Server and Using the Software Collection Version of a Command.

> **Note:**
>
> Alternatively, you can obtain the `scl-utils` and software collection packages from the Oracle Linux yum server. See Installing the Software Collection Library Utility From the Oracle Linux Yum Server.

Installing the Software Collection Library Utility From the Oracle Linux Yum Server

The `scl-utils` package, which provides the Software Collection Library `scl` utility is available in the Oracle Linux 7 `latest` repository on the Oracle Linux yum server.

The software collection packages are available in the following Oracle Linux 7 repository: https://yum.oracle.com/repo/OracleLinux/OL7/SoftwareCollections/x86_64/.

To use a software collection on an Oracle Linux 7 system, you must first install the `scl` utility on that system.

To install `scl` on a system:

1. Enable the `software_collections` repository:

```
sudo yum-config-manager --enable ol7_software_collections
```

2. Ensure that the `ol7_latest` and `ol7_optional_latest` repositories are also enabled:

```
sudo yum-config-manager --enable ol7_latest ol7_optional_latest
```

3. Install the `scl-utils` package.

```
sudo yum install scl-utils
```

You can now install and use software collection packages on the system. See Installing a Software Collection From the Oracle Linux Yum Server and Using the Software Collection Version of a Command.

Installing a Software Collection From the Oracle Linux Yum Server

After you set up the system to access the `software_collections` repository on the Oracle Linux yum server or the `SoftwareCollections` channel on ULN, you can use the `yum` command to install a software collection on the system as follows:

```
sudo yum install sw_col
```

Replace *sw_col* with the name of the software collection that you want to install.

A software collection can have a number of optional packages that you can also choose to install if required. To list these packages, use the following command:

```
sudo yum list available sw_col-\*
```

To list the installed software collections, use the `scl --list` command.

To list the packages that a software collection contains, use the `scl --list sw_col` command.

To display a list of all of the available packages within the Software Collection Library, restrict your `yum` query as follows:

```
sudo yum --disablerepo="*" --enablerepo="*_SoftwareCollections" list available
```

Updating or Removing a Software Collection

You can update or remove a software collection in the same way as you would update or remove any ordinary package, for example:

```
sudo yum update sw_col
sudo yum remove sw_col
```

Using the Software Collection Version of a Command

To enable and use the version of a command that a software collection contains, use the `scl` utility with the `enable` action:

```
sudo scl enable sw_col -- command args
```

By default, the specified command from the software collection runs in a `bash` environment. If required, you can specify a different shell environment.

If you want to enable several software collections so that you can run several utilities together, specify `bash` to provide the environment from which you can access the utilities, for example:

```
sudo scl enable sw_col1 sw_col2 -- bash
```

> **✎ Note:**
>
> The `X_SCLS` environment variable contains a list of the currently enabled software collections in the shell.

You can specify the commands that you want to run in a software collection environment and pipe these to the `scl` command:

```
cat cmd_file | scl enable sw_col -
```

You could also create an executable wrapper script to run an `scl` command, for example:

```
#!/bin/bash

scl enable php55 -- php $@
```

Starting with version 3.0, the `scl` utility can be called directly from the shebang (`#!`) line of a script, with the `enable` action provided. This feature change enables you to call an interpreter from within a collection directly from your scripts, for example:

```
#!/usr/bin/scl enable rh-python36 -- python

import platform
import sys
import os

print(os.system('python -V'))
print(platform.python_version())
print(sys.version)
```

For more information, see the `scl(1)` manual page.

Using Services That Are Provided by Software Collections

Some of the software collections install service scripts in `/etc/rc.d/init.d` that include the software collection name in the name of the service script, for example `httpd24-httpd`. You can control a software collection service by running the `systemctl` command.

Accessing Software Collection-Specific Manual Pages

A software collection is packaged with a manual page that describes its content. Use the following command to display the manual page for a software collection:

```
sudo scl enable sw_col -- man sw_col
```

Known Software Collection Issues

The following are known issues in this release.

Package Dependency Issues When Upgrading From an Earlier Software Collection Version

In the case where a certain Software Collection version is already installed on Oracle Linux 7, and the system is upgraded to a later Software Collection version, some dependency issues may result if the following packages are installed:

- `devtoolset-3-liblsan-devel`

- `devtoolset-3-libtsan-devel`

Typically, the error appears as follows:

```
--> Finished Dependency Resolution
Error: Package: devtoolset-3-liblsan-devel-4.9.1-10.el7.x86_64
(@ol7_x86_64_SoftwareCollections)
          Requires: liblsan = 4.9.1-10.el7
          Removing: liblsan-4.9.1-10.el7.x86_64
(@ol7_x86_64_SoftwareCollections12)
              liblsan = 4.9.1-10.el7
          Updated By: liblsan-6.2.1-3.1.el7.x86_64 (SCL23)
              liblsan = 6.2.1-3.1.el7
          Available: liblsan-5.2.1-2.2.el7.x86_64
(ol7_x86_64_SoftwareCollections)
              liblsan = 5.2.1-2.2.el7
          Available: liblsan-5.3.1-6.1.el7.x86_64
(ol7_x86_64_SoftwareCollections)
              liblsan = 5.3.1-6.1.el7
Error: Package: devtoolset-3-libtsan-devel-4.9.1-10.el7.x86_64
(@ol7_x86_64_SoftwareCollections)
          Requires: libtsan = 4.9.1-10.el7
          Removing: libtsan-4.9.1-10.el7.x86_64
(@ol7_x86_64_SoftwareCollections12)
              libtsan = 4.9.1-10.el7
          Updated By: libtsan-6.2.1-3.1.el7.x86_64 (SCL23)
              libtsan = 6.2.1-3.1.el7
          Available: libtsan-4.8.2-16.el7.x86_64 (ol7_x86_64_optional_latest)
              libtsan = 4.8.2-16.el7
          Available: libtsan-4.8.2-16.2.el7_0.x86_64
(ol7_x86_64_optional_latest)
              libtsan = 4.8.2-16.2.el7_0
          Available: libtsan-4.8.3-9.el7.x86_64 (ol7_x86_64_optional_latest)
              libtsan = 4.8.3-9.el7
              libtsan = 4.8.2-16.el7
          Available: libtsan-4.8.5-4.el7.x86_64 (ol7_x86_64_optional_latest)
              libtsan = 4.8.5-4.el7
              libtsan = 4.8.2-16.el7
          Available: libtsan-4.8.5-11.el7.x86_64 (ol7_x86_64_optional_latest)
              libtsan = 4.8.5-11.el7
              libtsan = 4.8.2-16.el7
          Available: libtsan-5.2.1-2.2.el7.x86_64
(ol7_x86_64_SoftwareCollections)
              libtsan = 5.2.1-2.2.el7
          Available: libtsan-5.3.1-6.1.el7.x86_64
(ol7_x86_64_SoftwareCollections)
              libtsan = 5.3.1-6.1.el7
```

The workaround is to uninstall and remove the listed rpm packages before running the `yum update` or `yum install` command. You should also exclude these

packages from a `yum update` or `yum install`, by editing the `/etc/yum.conf` file and updating the `exclude` option. Or, you can use the `--exclude` flag when running the `yum` command.

(Bug ID 24376931)

libasan-static Package Dependency

When installing the `devtoolset-3-libasan-devel-4.9.1-10.el7` package, which requires the `libasan-4.9.1-10.el7` package, there is a potential dependency issue if the `libasan-static-4.8.3-9.el7` package is already present on the system. An error such as the following is reported:

```
--> Finished Dependency Resolution
Error:  Multilib version problems found. This often means that the root
        cause is something else and multilib version checking is just
        pointing out that there is a problem. Eg.:

      1. You have an upgrade for libasan which is missing some
         dependency that another package requires. Yum is trying to
         solve this by installing an older version of libasan of the
         different architecture. If you exclude the bad architecture
         yum will tell you what the root cause is (which package
         requires what). You can try redoing the upgrade with
         --exclude libasan.otherarch ... this should give you an error
         message showing the root cause of the problem.

      2. You have multiple architectures of libasan installed, but
         yum can only see an upgrade for one of those architectures.
         If you don't want/need both architectures anymore then you
         can remove the one with the missing update and everything
         will work.

      3. You have duplicate versions of libasan installed already.
         You can use "yum check" to get yum show these errors.

      ...you can also use --setopt=protected_multilib=false to remove
      this checking, however this is almost never the correct thing to
      do as something else is very likely to go wrong (often causing
      much more problems).

      Protected multilib versions: libasan-4.9.1-10.el7.x86_64 !=
libasan-4.8.5-11.el7.i686
```

The workaround is to remove the `libasan-static` package before installing the `devtoolset-3-libasan-devel` package.

(Bug ID 21896256)

Software Collection and Package Version Conflicts

You cannot install multiple versions of software collections on a system due to package conflicts within matching software collections. The following software collections are known to conflict:

- `rh-nginx18`, `rh-nginx110` and `nginx16`

- `rh-nodejs4`, `rh-nodejs6` and `nodejs010`

- `python27`, `python33`, `rh-python34` and `rh-python35`

- `rh-ror42`, `rh-ror50` and `ror40`

- `ruby193`, `ruby200`, `rh-ruby22`, `rh-ruby23` and `rh-ruby24`

In most cases, the conflict may result from particular package conflicts within each software collection. Typically, the conflict occurs because it is only possible to install one set of macro files for the packages, which means that the `scldevel` packages for each collection tend to conflict. For instance, the `rh-php56-scldevel` and `php54-scldevel` packages within the `php54` and `rh-php56` software collections are known to conflict. Note that this behavior is expected. As such, do not attempt to install multiple versions of a software collections package on the same system.

In some cases, other conflicts may occur. For instance, the `devtoolset-3-tycho` and `devtoolset-4-tycho` packages conflict. This conflict occurs due to binary mismatches within the packages. As previously stated, do not attempt to install multiple versions of a software collections package on the same system.

(Bug IDs 20090086, 23311408, 24286085, 24376992, 25115835, 25164232, 25424807, 25562645, 25562669, 25562714, 25562760, 26540817)

rh-php56-build Dependency Issue When Upgrading Software Collection Version

A package dependency conflict results when attempting to upgrade the `rh-php56` collection from an earlier Software Collection version to later Software Collection version. Typically, the following output is displayed during the upgrade:

```
--> Finished Dependency Resolution
Error: Package: rh-php56-build-2.0-6.el7.x86_64
(@ol7_x86_64_SoftwareCollections)
          Requires: rh-php56-runtime(x86-64) = 2.0-6.el7
          Removing: rh-php56-runtime-2.0-6.el7.x86_64
(@ol7_x86_64_SoftwareCollections)
              rh-php56-runtime(x86-64) = 2.0-6.el7
          Updated By: rh-php56-runtime-2.3-1.el7.x86_64
(ol7_x86_64_SoftwareCollections)
              rh-php56-runtime(x86-64) = 2.3-1.el7
```

The workaround for this issue is to uninstall and remove the `rh-php56-build-2.0-6.el7.x86_64` rpm package before running the `yum update` or `yum install` command, for example:

```
sudo yum remove rh-php56-build-2.0-6
```

You should also exclude these packages from the `yum update` or `yum install` command by editing the `/etc/yum.conf` file and updating the `exclude` option. Or, you can use the `--exclude` flag when running the `yum` command.

(Bug ID 25424699)

source-to-image Dependency on Docker

The `source-to-image` package has a dependency on `docker`, but it is not in the `ol7_latest` channel. If the system where `source-to-image` is to be installed is not

subscribed to the `ol7_addons` channel, the installation fails due to a missing dependency.

Note that the system must be subscribed to the `ol7_addons` channel to install `source-to-image`.

rh-ror41 Dependency on v8314

The `rh-ror41` collection has a dependency on the `v8314` collection. The `therubyracer` gem, which compresses and provides a runtime for Javascript, uses the V8 Javascript engine that is made available in the `v8314` software collection.

To enable this collection and make it available to `rh-ror41`, run the command:

```
sudo scl enable v8314
```

(Bug ID 25683450)

2

Software Collection Libraries for Oracle Linux 7 (aarch64)

Oracle only provides the latest versions and additions to the Software Collection library for the Arm (aarch64) platform and these are only supported for the latest update level of Oracle Linux 7. A subset of the complete Software Collection Library (as available for the x86_64 platform) is available for the 64-bit Arm (aarch64) platform.

The following collections are available for Oracle Linux 7 on the 64-bit Arm (aarch64) platform:

- `devtoolset-6`
- `devtoolset-7`
- `devtoolset-8`
- `devtoolset-9`
- `devtoolset-10`
- `httpd24`
- `oracle-armtoolset-1`
- `oracle-armtoolset-8`
- `python27`
- `rh-git29`
- `rh-git218`
- `rh-maven35`
- `rh-nginx112`
- `rh-nginx114`
- `rh-nginx116`
- `rh-nodejs6`
- `rh-nodejs8`
- `rh-nodejs10`
- `rh-nodejs12`
- `rh-perl526`
- `rh-php70`
- `rh-php71`
- `rh-php72`
- `rh-php73`
- `rh-python36`

- `rh-ruby25`

- `rh-ruby26`

- `rh-ruby27`

- `rh-varnish5`

- `rh-varnish6`

The Oracle Linux 7 (aarch64) release of the Software Collection Library also includes a toolchain that provides a solid developer toolset to build code for 64-bit Arm platforms and compile modules against the provided kernel. The toolset includes version 7.3 of the `gcc` compiler that is used to build the aarch64 version of Unbreakable Enterprise Kernel Release 5 and Unbreakable Enterprise Kernel Release 6.

Developer tools are released as a software collection, which can be found in the `/addons/Oscl` directory repository on the provided ISO for each Oracle Linux 7 (aarch64) release, which are also available in the `software_collections` repository on the Oracle Linux yum server or the `SoftwareCollections` channel on ULN. You can install the `oracle-armtoolset-1` software collection by using the `yum` command:

```
sudo yum install scl-utils oracle-armtoolset-1
```

After installing the `oracle-armtoolset-1` software collection, you can enable it as follows:

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

The `oracle-armtoolset-1` software collection is released as an addition to the Software Collection Library for Oracle Linux and is only available on the 64-bit Arm (aarch64) platform.

> **Note:**
>
> The `oracle-armtoolset-1` software collection is required if you need to build kernel modules from source.