

[Skip to main content](#)

[__Back to top](#)

[__ `Ctrl` + `K`](#)

[[!conda 25.1.2.dev29 documentation -](#)

[Home](#)](../_static/conda_logo_full.svg)](../index.html)

* [\[Conda\]\(https://docs.conda.io/projects/conda/\)](#)

* [\[Conda-build\]\(https://docs.conda.io/projects/conda-build\)](#)

* [\[Miniconda\]\(https://docs.anaconda.com/free/miniconda/\)](#)

* [\[conda.org\]\(https://conda.org\)](#)

* [\[__ GitHub\]\(https://github.com/conda/conda "GitHub"\)](#)

* [\[!\[Element\]\(../_static/element_logo.svg\)\]\(http://bit.ly/conda-chat-room "Element"\)](#)

* [\[__ Discourse\]\(https://conda.discourse.group/ "Discourse"\)](#)

* [\[Conda\]\(https://docs.conda.io/projects/conda/\)](#)

* [\[Conda-build\]\(https://docs.conda.io/projects/conda-build\)](#)

* [\[Miniconda\]\(https://docs.anaconda.com/free/miniconda/\)](#)

* [\[conda.org\]\(https://conda.org\)](#)

* [\[__ GitHub\]\(https://github.com/conda/conda "GitHub"\)](#)

* [\[!\[Element\]\(../_static/element_logo.svg\)\]\(http://bit.ly/conda-chat-room "Element"\)](#)

* [\[__ Discourse\]\(https://conda.discourse.group/ "Discourse"\)](#)

Navigation

- * [\[User guide\]\(../index.html\)](#) __
- * [\[Getting started with conda\]\(../getting-started.html\)](#)
- * [\[Installing conda\]\(../install/index.html\)](#) __
 - * [\[Installing on Windows\]\(../install/windows.html\)](#)
 - * [\[Installing on macOS\]\(../install/macos.html\)](#)
 - * [\[Installing on Linux\]\(../install/linux.html\)](#)
 - * [\[RPM and Debian Repositories for Miniconda\]\(../install/rpm-debian.html\)](#)
- * [\[Tasks\]\(../tasks/index.html\)](#) __
 - * [\[Managing conda\]\(../tasks/manage-conda.html\)](#)
 - * [\[Managing environments\]\(../tasks/manage-environments.html\)](#)
 - * [\[Managing channels\]\(../tasks/manage-channels.html\)](#)
 - * [\[Managing packages\]\(../tasks/manage-pkgs.html\)](#)
 - * [\[Managing Python\]\(../tasks/manage-python.html\)](#)
 - * [\[Managing virtual packages\]\(../tasks/manage-virtual.html\)](#)
 - * [\[Creating custom channels\]\(../tasks/create-custom-channels.html\)](#)
 - * [\[Creating projects\]\(../tasks/creating-projects.html\)](#)
 - * [\[Viewing command-line help\]\(../tasks/view-command-line-help.html\)](#)
- * [\[Configuration\]\(../configuration/index.html\)](#) __
 - * [\[Using the .condarc conda configuration file\]\(../configuration/use-condarc.html\)](#)
 - * [\[Settings\]\(../configuration/settings.html\)](#)
 - * [\[Administering a multi-user conda installation\]\(../configuration/admin-multi-user-install.html\)](#)
 - * [\[Mirroring channels\]\(../configuration/mirroring.html\)](#)
 - * [\[Disabling SSL verification\]\(../configuration/disable-ssl-verification.html\)](#)
 - * [\[Using non-standard certificates\]\(../configuration/non-standard-certs.html\)](#)
 - * [\[Using Custom Locations for Environment and Package](#)

Cache](../configuration/custom-env-and-pkg-locations.html)

- * [Improving interoperability with pip](../configuration/pip-interoperability.html)

- * [Using the free channel](../configuration/free-channel.html)

- * [Concepts](index.html) __

- * [Commands](conda-commands.html)

- * [Packages](packages.html)

- * [Package specification](pkg-specs.html)

- * [Package search and install specifications](pkg-search.html)

- * [Channels](channels.html)

- * Environments

- * [Installing with conda](installing-with-conda.html)

- * [Performance](conda-performance.html)

- * [Conda for data scientists](data-science.html)

- * [Plugins](conda-plugins.html)

- * [Troubleshooting](../troubleshooting.html)

- * [Cheatsheet](../cheatsheet.html)

- * [Configuration](../../configuration.html)

- * [Commands](../../commands/index.html) __

- * [`conda clean`](../../commands/clean.html)

- * [`conda compare`](../../commands/compare.html)

- * [`conda config`](../../commands/config.html)

- * [`conda create`](../../commands/create.html)

- * [`conda doctor`](../../commands/doctor.html)

- * [`conda env`](../../commands/env/index.html) __

- * [`conda env config`](../../commands/env/config/index.html) __

- * [`conda env config vars`](../../commands/env/config/vars/index.html) __

- * [`conda env config vars list`](../../commands/env/config/vars/list.html)

- * [`conda env config vars set`](../commands/env/config/vars/set.html)
- * [`conda env config vars unset`](../commands/env/config/vars/unset.html)
- * [`conda env create`](../commands/env/create.html)
- * [`conda env export`](../commands/env/export.html)
- * [`conda env list`](../commands/env/list.html)
- * [`conda env remove`](../commands/env/remove.html)
- * [`conda env update`](../commands/env/update.html)
- * [`conda info`](../commands/info.html)
- * [`conda init`](../commands/init.html)
- * [`conda install`](../commands/install.html)
- * [`conda list`](../commands/list.html)
- * [`conda notices`](../commands/notices.html)
- * [`conda package`](../commands/package.html)
- * [`conda remove`](../commands/remove.html)
- * [`conda rename`](../commands/rename.html)
- * [`conda run`](../commands/run.html)
- * [`conda search`](../commands/search.html)
- * [`conda update`](../commands/update.html)
- * [Release notes](../release-notes.html)
- * [Glossary](../glossary.html)
- * [Developer guide](../dev-guide/index.html) __
- * [Architecture](../dev-guide/architecture.html)
- * [Contributing to conda](../dev-guide/contributing.html)
- * [Development Environment](../dev-guide/development-environment.html)
- * [Deep dives](../dev-guide/deep-dives/index.html) __
- * [`conda install`](../dev-guide/deep-dives/install.html)
- * [`conda init` and `conda activate`](../dev-guide/deep-dives/activation.html)

- * [`conda config` and context`](../../dev-guide/deep-dives/context.html)
- * [Solvers](../../dev-guide/deep-dives/solvers.html)
- * [Logging](../../dev-guide/deep-dives/logging.html)
- * [Writing Tests](../../dev-guide/writing-tests/index.html) __
- * [Integration Tests](../../dev-guide/writing-tests/integration-tests.html)
- * [Deprecations](../../dev-guide/deprecations.html)
- * [Releasing](../../dev-guide/releasing.html)
- * [Plugins](../../dev-guide/plugins/index.html) __
 - * [Auth Handlers](../../dev-guide/plugins/auth_handlers.html)
 - * [Health Checks](../../dev-guide/plugins/health_checks.html)
 - * [Request Headers](../../dev-guide/plugins/request_headers.html)
 - * [Post-commands](../../dev-guide/plugins/post_commands.html)
 - * [Pre-commands](../../dev-guide/plugins/pre_commands.html)
 - * [Reporter Backends](../../dev-guide/plugins/reporter_backends.html)
 - * [Settings](../../dev-guide/plugins/settings.html)
 - * [Solvers](../../dev-guide/plugins/solvers.html)
 - * [Subcommands](../../dev-guide/plugins/subcommands.html)
 - * [Virtual Packages](../../dev-guide/plugins/virtual_packages.html)
- * [Specifications](../../dev-guide/specs/index.html) __
 - * [Technical specification: solver state](../../dev-guide/specs/solver-state.html)
- * [API](../../dev-guide/api.html) __
 - * [`conda``](../../dev-guide/api/conda/index.html) __
 - * [`__main__``](../../dev-guide/api/conda/__main__/index.html)
 - * [`_vendor``](../../dev-guide/api/conda/_vendor/index.html) __
 - * [`frozendict``](../../dev-guide/api/conda/_vendor/frozendict/index.html)
 - * [`_version``](../../dev-guide/api/conda/_version/index.html)
 - * [`activate``](../../dev-guide/api/conda/activate/index.html)

- * `[`api`](../../dev-guide/api/conda/api/index.html)`
- * `[`auxlib`](../../dev-guide/api/conda/auxlib/index.html) __`
- * `[`collection`](../../dev-guide/api/conda/auxlib/collection/index.html)`
- * `[`compat`](../../dev-guide/api/conda/auxlib/compat/index.html)`
- * `[`decorators`](../../dev-guide/api/conda/auxlib/decorators/index.html)`
- * `[`entity`](../../dev-guide/api/conda/auxlib/entity/index.html)`
- * `[`exceptions`](../../dev-guide/api/conda/auxlib/exceptions/index.html)`
- * `[`ish`](../../dev-guide/api/conda/auxlib/ish/index.html)`
- * `[`logz`](../../dev-guide/api/conda/auxlib/logz/index.html)`
- * `[`type_coercion`](../../dev-guide/api/conda/auxlib/type_coercion/index.html)`
- * `[`base`](../../dev-guide/api/conda/base/index.html) __`
- * `[`constants`](../../dev-guide/api/conda/base/constants/index.html)`
- * `[`context`](../../dev-guide/api/conda/base/context/index.html)`
- * `[`cli`](../../dev-guide/api/conda/cli/index.html) __`
- * `[`actions`](../../dev-guide/api/conda/cli/actions/index.html)`
- * `[`common`](../../dev-guide/api/conda/cli/common/index.html)`
- * `[`conda_argparse`](../../dev-guide/api/conda/cli/conda_argparse/index.html)`
- * `[`find_commands`](../../dev-guide/api/conda/cli/find_commands/index.html)`
- * `[`helpers`](../../dev-guide/api/conda/cli/helpers/index.html)`
- * `[`install`](../../dev-guide/api/conda/cli/install/index.html)`
- * `[`main`](../../dev-guide/api/conda/cli/main/index.html)`
- * `[`main_clean`](../../dev-guide/api/conda/cli/main_clean/index.html)`
- * `[`main_commands`](../../dev-guide/api/conda/cli/main_commands/index.html)`
- * `[`main_compare`](../../dev-guide/api/conda/cli/main_compare/index.html)`
- * `[`main_config`](../../dev-guide/api/conda/cli/main_config/index.html)`
- * `[`main_create`](../../dev-guide/api/conda/cli/main_create/index.html)`
- * `[`main_env`](../../dev-guide/api/conda/cli/main_env/index.html)`

- * [main_env_config](../../dev-guide/api/conda/cli/main_env_config/index.html)
- * [main_env_create](../../dev-guide/api/conda/cli/main_env_create/index.html)
- * [main_env_export](../../dev-guide/api/conda/cli/main_env_export/index.html)
- * [main_env_list](../../dev-guide/api/conda/cli/main_env_list/index.html)
- * [main_env_remove](../../dev-guide/api/conda/cli/main_env_remove/index.html)
- * [main_env_update](../../dev-guide/api/conda/cli/main_env_update/index.html)
- * [main_env_vars](../../dev-guide/api/conda/cli/main_env_vars/index.html)
- * [main_export](../../dev-guide/api/conda/cli/main_export/index.html)
- * [main_info](../../dev-guide/api/conda/cli/main_info/index.html)
- * [main_init](../../dev-guide/api/conda/cli/main_init/index.html)
- * [main_install](../../dev-guide/api/conda/cli/main_install/index.html)
- * [main_list](../../dev-guide/api/conda/cli/main_list/index.html)
- * [main_mock_activate](../../dev-guide/api/conda/cli/main_mock_activate/index.html)
- * [main_mock_deactivate](../../dev-guide/api/conda/cli/main_mock_deactivate/index.html)
- * [main_notices](../../dev-guide/api/conda/cli/main_notices/index.html)
- * [main_package](../../dev-guide/api/conda/cli/main_package/index.html)
- * [main_pip](../../dev-guide/api/conda/cli/main_pip/index.html)
- * [main_remove](../../dev-guide/api/conda/cli/main_remove/index.html)
- * [main_rename](../../dev-guide/api/conda/cli/main_rename/index.html)
- * [main_run](../../dev-guide/api/conda/cli/main_run/index.html)
- * [main_search](../../dev-guide/api/conda/cli/main_search/index.html)
- * [main_update](../../dev-guide/api/conda/cli/main_update/index.html)
- * [python_api](../../dev-guide/api/conda/cli/python_api/index.html)
- * [common](../../dev-guide/api/conda/common/index.html) __
- * [_logic](../../dev-guide/api/conda/common/_logic/index.html)
- * [_os](../../dev-guide/api/conda/common/_os/index.html) __
- * [linux](../../dev-guide/api/conda/common/_os/linux/index.html)

- * `[`osx`](../../dev-guide/api/conda/common/_os/osx/index.html)`
- * `[`unix`](../../dev-guide/api/conda/common/_os/unix/index.html)`
- * `[`windows`](../../dev-guide/api/conda/common/_os/windows/index.html)`
- * `[`compat`](../../dev-guide/api/conda/common/compat/index.html)`
- * `[`configuration`](../../dev-guide/api/conda/common/configuration/index.html)`
- * `[`constants`](../../dev-guide/api/conda/common/constants/index.html)`
- * `[`disk`](../../dev-guide/api/conda/common/disk/index.html)`
- * `[`io`](../../dev-guide/api/conda/common/io/index.html)`
- * `[`iterators`](../../dev-guide/api/conda/common/iterators/index.html)`
- * `[`logic`](../../dev-guide/api/conda/common/logic/index.html)`
- * `[`path`](../../dev-guide/api/conda/common/path/index.html)` __
- * `[`_cygpath`](../../dev-guide/api/conda/common/path/_cygpath/index.html)`
- * `[`directories`](../../dev-guide/api/conda/common/path/directories/index.html)`
- * `[`python`](../../dev-guide/api/conda/common/path/python/index.html)`
- * `[`windows`](../../dev-guide/api/conda/common/path/windows/index.html)`
- * `[`pkg_formats`](../../dev-guide/api/conda/common/pkg_formats/index.html)` __
- * `[`python`](../../dev-guide/api/conda/common/pkg_formats/python/index.html)`
- * `[`serialize`](../../dev-guide/api/conda/common/serialize/index.html)`
- * `[`signals`](../../dev-guide/api/conda/common/signals/index.html)`
- * `[`toposort`](../../dev-guide/api/conda/common/toposort/index.html)`
- * `[`url`](../../dev-guide/api/conda/common/url/index.html)`
- * `[`core`](../../dev-guide/api/conda/core/index.html)` __
- * `[`envs_manager`](../../dev-guide/api/conda/core/envs_manager/index.html)`
- * `[`index`](../../dev-guide/api/conda/core/index/index.html)`
- * `[`initialize`](../../dev-guide/api/conda/core/initialize/index.html)`
- * `[`link`](../../dev-guide/api/conda/core/link/index.html)`
- * `[`package_cache_data`](../../dev-guide/api/conda/core/package_cache_data/index.html)`

- * [path_actions](../../dev-guide/api/conda/core/path_actions/index.html)
- * [portability](../../dev-guide/api/conda/core/portability/index.html)
- * [prefix_data](../../dev-guide/api/conda/core/prefix_data/index.html)
- * [solve](../../dev-guide/api/conda/core/solve/index.html)
- * [subdir_data](../../dev-guide/api/conda/core/subdir_data/index.html)
- * [deprecations](../../dev-guide/api/conda/deprecations/index.html)
- * [env](../../dev-guide/api/conda/env/index.html) __
- * [env](../../dev-guide/api/conda/env/env/index.html)
- * [installers](../../dev-guide/api/conda/env/installers/index.html) __
- * [base](../../dev-guide/api/conda/env/installers/base/index.html)
- * [conda](../../dev-guide/api/conda/env/installers/conda/index.html)
- * [pip](../../dev-guide/api/conda/env/installers/pip/index.html)
- * [pip_util](../../dev-guide/api/conda/env/pip_util/index.html)
- * [specs](../../dev-guide/api/conda/env/specs/index.html) __
- * [binstar](../../dev-guide/api/conda/env/specs/binstar/index.html)
- * [requirements](../../dev-guide/api/conda/env/specs/requirements/index.html)
- * [yaml_file](../../dev-guide/api/conda/env/specs/yaml_file/index.html)
- * [exception_handler](../../dev-guide/api/conda/exception_handler/index.html)
- * [exceptions](../../dev-guide/api/conda/exceptions/index.html)
- * [exports](../../dev-guide/api/conda/exports/index.html)
- * [gateways](../../dev-guide/api/conda/gateways/index.html) __
- * [anaconda_client](../../dev-guide/api/conda/gateways/anaconda_client/index.html)
- * [connection](../../dev-guide/api/conda/gateways/connection/index.html) __
- * [adapters](../../dev-guide/api/conda/gateways/connection/adapters/index.html) __
- * [ftp](../../dev-guide/api/conda/gateways/connection/adapters/ftp/index.html)
- * [http](../../dev-guide/api/conda/gateways/connection/adapters/http/index.html)
- * [localfs](../../dev-guide/api/conda/gateways/connection/adapters/localfs/index.html)

- * [`s3`](../../dev-guide/api/conda/gateways/connection/adapters/s3/index.html)
- * [`download`](../../dev-guide/api/conda/gateways/connection/download/index.html)
- * [`session`](../../dev-guide/api/conda/gateways/connection/session/index.html)
- * [`disk`](../../dev-guide/api/conda/gateways/disk/index.html) ____
- * [`create`](../../dev-guide/api/conda/gateways/disk/create/index.html)
- * [`delete`](../../dev-guide/api/conda/gateways/disk/delete/index.html)
- * [`link`](../../dev-guide/api/conda/gateways/disk/link/index.html)
- * [`lock`](../../dev-guide/api/conda/gateways/disk/lock/index.html)
- * [`permissions`](../../dev-guide/api/conda/gateways/disk/permissions/index.html)
- * [`read`](../../dev-guide/api/conda/gateways/disk/read/index.html)
- * [`test`](../../dev-guide/api/conda/gateways/disk/test/index.html)
- * [`update`](../../dev-guide/api/conda/gateways/disk/update/index.html)
- * [`logging`](../../dev-guide/api/conda/gateways/logging/index.html)
- * [`repodata`](../../dev-guide/api/conda/gateways/repodata/index.html) ____
- * [`jlap`](../../dev-guide/api/conda/gateways/repodata/jlap/index.html) ____
- * [`core`](../../dev-guide/api/conda/gateways/repodata/jlap/core/index.html)
- * [`fetch`](../../dev-guide/api/conda/gateways/repodata/jlap/fetch/index.html)
- * [`interface`](../../dev-guide/api/conda/gateways/repodata/jlap/interface/index.html)
- * [`lock`](../../dev-guide/api/conda/gateways/repodata/lock/index.html)
- * [`subprocess`](../../dev-guide/api/conda/gateways/subprocess/index.html)
- * [`history`](../../dev-guide/api/conda/history/index.html)
- * [`instructions`](../../dev-guide/api/conda/instructions/index.html)
- * [`misc`](../../dev-guide/api/conda/misc/index.html)
- * [`models`](../../dev-guide/api/conda/models/index.html) ____
- * [`channel`](../../dev-guide/api/conda/models/channel/index.html)
- * [`dist`](../../dev-guide/api/conda/models/dist/index.html)
- * [`enums`](../../dev-guide/api/conda/models/enums/index.html)

- * [leased_path_entry](../../dev-guide/api/conda/models/leased_path_entry/index.html)
- * [match_spec](../../dev-guide/api/conda/models/match_spec/index.html)
- * [package_info](../../dev-guide/api/conda/models/package_info/index.html)
- * [prefix_graph](../../dev-guide/api/conda/models/prefix_graph/index.html)
- * [records](../../dev-guide/api/conda/models/records/index.html)
- * [version](../../dev-guide/api/conda/models/version/index.html)
- * [notices](../../dev-guide/api/conda/notices/index.html) __
 - * [cache](../../dev-guide/api/conda/notices/cache/index.html)
 - * [core](../../dev-guide/api/conda/notices/core/index.html)
 - * [fetch](../../dev-guide/api/conda/notices/fetch/index.html)
 - * [types](../../dev-guide/api/conda/notices/types/index.html)
 - * [views](../../dev-guide/api/conda/notices/views/index.html)
- * [plan](../../dev-guide/api/conda/plan/index.html)
- * [plugins](../../dev-guide/api/conda/plugins/index.html) __
 - * [hookspec](../../dev-guide/api/conda/plugins/hookspec/index.html)
 - * [manager](../../dev-guide/api/conda/plugins/manager/index.html)
 - * [post_solves](../../dev-guide/api/conda/plugins/post_solves/index.html) __
 - * [signature_verification](../../dev-guide/api/conda/plugins/post_solves/signature_verification/index.html)
- * [reporter_backends](../../dev-guide/api/conda/plugins/reporter_backends/index.html) __
 - * [console](../../dev-guide/api/conda/plugins/reporter_backends/console/index.html)
 - * [json](../../dev-guide/api/conda/plugins/reporter_backends/json/index.html)
- * [solvers](../../dev-guide/api/conda/plugins/solvers/index.html)
- * [subcommands](../../dev-guide/api/conda/plugins/subcommands/index.html) __
 - * [doctor](../../dev-guide/api/conda/plugins/subcommands/doctor/index.html) __

health_checks`](../../dev-guide/api/conda/plugins/subcommands/doctor/health_checks/index.html)

* [`types`](../../dev-guide/api/conda/plugins/types/index.html)

* [`virtual_packages`](../../dev-guide/api/conda/plugins/virtual_packages/index.html) __

* [` archspec`](../../dev-guide/api/conda/plugins/virtual_packages/archspec/index.html)

* [`conda`](../../dev-guide/api/conda/plugins/virtual_packages/conda/index.html)

* [`cuda`](../../dev-guide/api/conda/plugins/virtual_packages/cuda/index.html)

* [`freebsd`](../../dev-guide/api/conda/plugins/virtual_packages/freebsd/index.html)

* [`linux`](../../dev-guide/api/conda/plugins/virtual_packages/linux/index.html)

* [`osx`](../../dev-guide/api/conda/plugins/virtual_packages/osx/index.html)

* [`windows`](../../dev-guide/api/conda/plugins/virtual_packages/windows/index.html)

* [`reporters`](../../dev-guide/api/conda/reporters/index.html)

* [`resolve`](../../dev-guide/api/conda/resolve/index.html)

* [`testing`](../../dev-guide/api/conda/testing/index.html) __

* [` cases`](../../dev-guide/api/conda/testing/cases/index.html)

* [` fixtures`](../../dev-guide/api/conda/testing/fixtures/index.html)

* [` gateways`](../../dev-guide/api/conda/testing/gateways/index.html) __

* [` fixtures`](../../dev-guide/api/conda/testing/gateways/fixtures/index.html)

* [`helpers`](../../dev-guide/api/conda/testing/helpers/index.html)

* [`integration`](../../dev-guide/api/conda/testing/integration/index.html)

* [`notices`](../../dev-guide/api/conda/testing/notices/index.html) __

* [` fixtures`](../../dev-guide/api/conda/testing/notices/fixtures/index.html)

* [`helpers`](../../dev-guide/api/conda/testing/notices/helpers/index.html)

* [`solver_helpers`](../../dev-guide/api/conda/testing/solver_helpers/index.html)

* [`trust`](../../dev-guide/api/conda/trust/index.html) __

* [` constants`](../../dev-guide/api/conda/trust/constants/index.html)

* [`signature_verification`](../../dev-guide/api/conda/trust/signature_verification/index.html)

* [`utils`](../../dev-guide/api/conda/utils/index.html)

- * [`conda_env``](../dev-guide/api/conda_env/index.html) __
- * [`cli``](../dev-guide/api/conda_env/cli/index.html)
- * [`installers``](../dev-guide/api/conda_env/installers/index.html)

- * [__](../index.html)
- * [User guide](../index.html)
- * [Concepts](index.html)
- * Environments

Environments#

An environment is a directory that contains a specific collection of packages that you have installed. For example, you may have one environment with NumPy 1.7 and its dependencies, and another environment with NumPy 1.6 for legacy testing. If you change one environment, your other environments are not affected. You can easily activate or deactivate environments, which is how you switch between them. You can also share your environment with someone by giving them a copy of your ``environment.yaml`` file. For more information, see [Managing environments](../tasks/manage-environments.html).

Conda directory structure#

``ROOT_DIR``#

The directory where the conda distribution was installed into.

EXAMPLES:

/opt/Anaconda #Linux

C:\Anaconda #Windows

`/pkgs`#

Also referred to as PKGS_DIR. This directory contains decompressed packages, ready to be linked in conda environments. Each package resides in a subdirectory corresponding to its canonical name.

`/envs`#

The system location for additional conda environments to be created.

The following subdirectories comprise the default Anaconda environment:

`/bin`

`/include`

`/lib`

`/share`

Other conda environments usually contain the same subdirectories as the default environment.

Virtual environments#

A virtual environment is a tool that helps to keep dependencies required by different projects separate by creating isolated spaces for them that contain per-project dependencies for them.

Users can create virtual environments using one of several tools such as Pipenv or Poetry, or a conda virtual environment. Pipenv and Poetry are based around Python's built-in venv library, whereas conda has its own notion of virtual environments that is lower-level (Python itself is a dependency provided in conda environments).

Scroll to the right in the table below.

Some other traits are:

	Python virtual environment	Conda virtual environment
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Libraries	Statically link, vendor libraries in wheels, or use apt/yum/brew/etc.	Install system-level libraries as conda dependencies.
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System	Depend on base system install of Python.	Python is independent from system.
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Extending environment	Extend environment with pip.	Extended environment with conda or pip.
----------------------------------	------------------------------	---

****Non-Python dependencies**** | | Manages non-Python dependencies (R, Perl, arbitrary executables).

****Tracking dependencies**** | | Tracks binary dependencies explicitly.

Why use venv-based virtual environments#

- * You prefer their workflow or spec formats.
- * You prefer to use the system Python and libraries.
- * Your project maintainers only publish to PyPI, and you prefer packages that come more directly from the project maintainers, rather than someone else providing builds based on the same code.

Why use conda virtual environments?#

- * You want control over binary compatibility choices.
- * You want to utilize newer language standards, such as C++ 17.
- * You need libraries beyond what the system Python offers.
- * You want to manage packages from languages other than Python in the same space.

Workflow differentiators#

Some questions to consider as you determine your preferred workflow and virtual environment:

- * Is your environment shared across multiple code projects?
- * Does your environment live alongside your code or in a separate place?
- * Do your install steps involve installing any external libraries?
- * Do you want to ship your environment as an archive of some sort containing the actual files of the environment?

Package system differentiators#

There are potential benefits for choosing PyPI or conda.

PyPI has one global namespace and distributed ownership of that namespace. Because of this, it is easier within PyPI to have single sources for a package directly from package maintainers.

Conda has unlimited namespaces (channels) and distributed ownership of a given channel. As such, it is easier to ensure binary compatibility within a channel using conda.

___On this page

- * Conda directory structure

- * ``ROOT_DIR``

- * ``/pkgs``

- * ``/envs``

- * Virtual environments

- * Why use venv-based virtual environments

- * Why use conda virtual environments?

- * Workflow differentiators

- * Package system differentiators

[__Edit on GitHub](<https://github.com/conda/conda/edit/main/docs/source/user-guide/concepts/environments.rst>)

[__Show Source]([../_sources/user-guide/concepts/environments.rst.txt](https://github.com/conda/conda/blob/main/docs/source/user-guide/concepts/environments.rst.txt))

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