

# Repository Administration

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## Quick start

- Manage repositories in the "Repository" admin panel, with `trac-admin` or in the `[repositories]` section of `trac.ini`.
- Set up a call to `trac-admin $ENV changeset added $REPO $REV` in the post-commit hook of each repository. Additionally, add a call to `trac-admin $ENV changeset modified $REPO $REV` in the post-revprop-change hook of repositories allowing revision property changes.
- Set the `[trac] repository_sync_per_request` option to an empty value to disable per-request syncing.
- Make sure the user under which your Subversion hooks are run has write access to the Trac environment, or use a tool like `sudo` to temporarily elevate privileges.

## Specifying repositories

Starting with 0.12, Trac can handle more than one repository per environment. The pre-0.12 way of specifying the repository with the `repository_dir` and `repository_type` options in the `[trac]` section of `trac.ini` is still supported, but two new mechanisms allow including additional repositories into an environment.

It is also possible to define aliases of repositories, that act as "pointers" to real repositories. This can be useful when renaming a repository, to avoid breaking all the links to the old name.

A number of attributes can be associated with each repository, which define the repository's location, type, name and how it is displayed in the source browser. The following attributes are supported:

Attribute	Description
<code>alias</code>	A repository having an <code>alias</code> attribute is an alias to a real repository. All <a href="#">TracLinks</a> referencing the alias resolve to the aliased repository. Note that multiple indirection is not supported, so an alias must always point to a real repository. The <code>alias</code> and <code>dir</code> attributes are mutually exclusive.
<code>description</code>	

Attribute	Description
	The text specified in the <code>description</code> attribute is displayed below the top-level entry for the repository in the source browser. It supports <a href="#">WikiFormatting</a> .
<code>dir</code>	The <code>dir</code> attribute specifies the location of the repository in the filesystem. It corresponds to the value previously specified in the option <code>[trac] repository_dir</code> . The <code>alias</code> and <code>dir</code> attributes are mutually exclusive.
<code>hidden</code>	When set to <code>true</code> , the repository is hidden from the repository index page in the source browser. Browsing the repository is still possible, and links referencing the repository remain valid.
<code>type</code>	The <code>type</code> attribute sets the type of version control system used by the repository. Trac supports Subversion and Git out-of-the-box, and plugins add support for many other systems. If <code>type</code> is not specified, it defaults to the value of the <code>[trac] repository_type</code> option.
<code>url</code>	The <code>url</code> attribute specifies the root URL to be used for checking out from the repository. When specified, a "Repository URL" link is added to the context navigation links in the source browser, that can be copied into the tool used for creating the working copy.

A repository name and one of `alias` or `dir` attributes are mandatory. All others are optional.

After adding a repository, the cache for that repository must be re-synchronized once with the `trac-admin $ENV repository resync` command.

```
repository resync <repos>
    Re-synchronize Trac with a repository.
```

## In `trac.ini`

Repositories and repository attributes can be specified in the `[repositories]` section of `trac.ini`. Every attribute consists of a key structured as `{name}.{attribute}` and the corresponding value separated with an equal sign (`=`). The name of the default repository is empty.

The main advantage of specifying repositories in `trac.ini` is that they can be inherited from a global configuration (see the [global configuration](#) section of [TracIni](#)). One drawback is that, due to limitations in the `ConfigParser` class used to parse `trac.ini`, the repository name is always all-lowercase.

The following example defines two Subversion repositories named `project` and `lib`, and an alias to `project` as the default repository. This is a typical use case where a Trac environment previously had a single repository (the `project` repository), and was converted to multiple repositories. The alias ensures that links predating the change continue to resolve to the `project` repository.

```
[repositories]
project.dir = /var/repos/project
project.description = This is the 'main' project repository.
project.type = svn
project.url = http://example.com/svn/project
project.hidden = true

lib.dir = /var/repos/lib
lib.description = This is the secondary library code.
lib.type = svn
lib.url = http://example.com/svn/lib

.alias = project
```

Note that `name.alias = target` makes `name` an alias for the `target` repo, not the other way around.

## In the database

Repositories can also be specified in the database, using either the "Repositories" admin panel under "Version Control", or the `trac-admin $ENV repository` commands.

The admin panel shows the list of all repositories defined in the Trac environment. It allows adding repositories and aliases, editing repository attributes and removing repositories. Note that repositories defined in `trac.ini` are displayed but cannot be edited.

The following [trac-admin](#) commands can be used to perform repository operations from the command line.

```
repository add <repos> <dir> [type]
    Add a repository <repos> located at <dir>, and optionally specify its type.
```

```
repository alias <name> <target>
    Create an alias <name> for the repository <target>.
```

```
repository remove <repos>
    Remove the repository <repos>.
```

```
repository set <repos> <key> <value>
    Set the attribute <key> to <value> for the repository <repos>.
```

Note that the default repository has an empty name, so it will likely need to be quoted when running `trac-admin` from a shell. Alternatively, the name "(default)" can be used instead, for example when running `trac-admin` in interactive mode.

## Repository caching

The Subversion and Git repository connectors support caching, which improves the performance browsing the repository, viewing logs and viewing changesets. Cached repositories must be [synchronized](#); either explicit or implicit synchronization can be used. When searching changesets, only cached repositories are searched.

Subversion repositories are cached unless the type is `direct-svnfs`. Git repositories are cached when `[git] cached_repository` is `true`.

## Repository synchronization

Prior to 0.12, Trac synchronized its cache with the repository on every HTTP request. This approach is not very efficient and not practical anymore with multiple repositories. For this reason, explicit synchronization through post-commit hooks was added.

There is also new functionality in the form of a repository listener extension point (*IRepositoryChangeListener*) that is triggered by the post-commit hook when a changeset is added or modified, and can be used by plugins to perform actions on commit.

## Mercurial Repositories

Please note that at the time of writing, no initial resynchronization or any hooks are necessary for Mercurial repositories - see [?#9485](#) for more information.

### Explicit synchronization

This is the preferred method of repository synchronization. It requires setting the `[trac] repository_sync_per_request` option in `trac.ini` to an empty value, and adding a call to `trac-admin` in the `post-commit` hook of each repository. Additionally, if a repository allows changing revision metadata, a call to `trac-admin` must be added to the `post-revprop-change` hook as well.

```
changeset added <repos> <rev> [?]
```

Notify Trac that one or more changesets have been added to a repository.

```
changeset modified <repos> <rev> [?]
```

Notify Trac that metadata on one or more changesets in a repository has been modified.

The `<repos>` argument can be either a repository name (use `"(default)"` for the default repository) or the path to the repository.

Note that you may have to set the environment variable `PYTHON_EGG_CACHE` to the same value as was used for the web server configuration before calling `trac-admin`, if you changed it from its default location. See [Trac Plugins](#) for more information.

### Subversion

The following examples are complete `post-commit` and `post-revprop-change` scripts for Subversion. They should be edited for the specific environment, marked executable (where applicable) and placed in the `hooks` directory of each repository. On Unix (`post-commit`):

```
#!/bin/sh
export PYTHON_EGG_CACHE="/path/to/dir"
/usr/bin/trac-admin /path/to/env changeset added "$1" "$2"
```

**Note:** Check with `whereis trac-admin`, whether `trac-admin` is really installed under `/usr/bin/` or maybe under `/usr/local/bin/` and adapt the path. On Windows (`post-commit.cmd`):

```
@C:\Python26\Scripts\trac-admin.exe C:\path\to\env changeset added "%1" "%2"
```

The `post-revprop-change` hook for Subversion is very similar. On Unix (`post-revprop-change`):

```
#!/bin/sh
export PYTHON_EGG_CACHE="/path/to/dir"
/usr/bin/trac-admin /path/to/env changeset modified "$1" "$2"
```

On Windows (`post-revprop-change.cmd`):

```
@C:\Python26\Scripts\trac-admin.exe C:\path\to\env changeset modified "%1" "%2"
```

The Unix variants above assume that the user running the Subversion commit has write access to the Trac environment, which is the case in the standard configuration where both the repository and Trac are served by the web server. If you access the repository through another means, for example `svn+ssh://`, you may have to run `trac-admin` with different privileges, for example by using `sudo`.

Note that calling `trac-admin` in your Subversion hooks can slow down the commit and log editing operations on the client side. You might want to use the [?contrib/trac-svn-hook](#) script which starts `trac-admin` in an asynchronous way. The script also comes with a number of safety checks and usage advices which should make it easier to set up and test your hooks. There's no equivalent `trac-svn-hook.bat` for Windows yet, but the script can be run by Cygwin's `bash`.

See the [?section about hooks](#) in the Subversion book for more information. Other repository types will require different hook setups.

## Git

Git hooks can be used in the same way for explicit syncing of Git repositories. If your git repository is one that gets committed to directly on the machine that hosts trac, add the following to the `hooks/post-commit` file in your git repo (note: this will do nothing if you only update the repo by pushing to it):

```
#!/bin/sh
REV=$(git rev-parse HEAD)
trac-admin /path/to/env changeset added <repos> $REV
```

Alternately, if your repository is one that only gets pushed to, add the following to the `hooks/post-receive` file in the repo:

```
#!/bin/sh
tracenv=/path/to/env      # change with your Trac environment's path
repos=                    # change with your repository's name
while read oldrev newrev refname; do
    if [ "$oldrev" = 0000000000000000000000000000000000000000 ]; then
        git rev-list --reverse "$newrev" --
    else
        git rev-list --reverse "$newrev" "^$oldrev" --
    fi | xargs trac-admin "$tracenv" changeset added "$repos"
done
```

The `<repos>` argument can be either a repository name (use `"(default)"` for the default repository) or the path to the repository.

## Mercurial

For Mercurial, add the following entries to the `.hgrc` file of each repository accessed by Trac (if [?TracMercurial](#) is installed in a Trac `plugins` directory, download [?hooks.py](#) and place it somewhere accessible):

```
[hooks]
; If mercurial-plugin is installed globally
commit = python:tracext.hg.hooks.add_changesets
changegroup = python:tracext.hg.hooks.add_changesets

; If mercurial-plugin is installed in a Trac plugins directory
commit = python:/path/to/hooks.py:add_changesets
changegroup = python:/path/to/hooks.py:add_changesets
```

```
[trac]
env = /path/to/env
trac-admin = /path/to/trac-admin
```

## Per-request synchronization

If the post-commit hooks are not available, the environment can be set up for per-request synchronization. In that case, the `[trac] repository_sync_per_request` option in [trac.ini](#) must be set to a comma-separated list of repository names to be synchronized.

Note that in this case, the changeset listener extension point is not called, and therefore plugins using it will not work correctly.

## Automatic changeset references in tickets

You can automatically add a reference to the changeset as a ticket comment whenever changes are committed to the repository. The description of the commit needs to contain one of the following formulas:

- **Refs #123** - to reference this changeset in #123 ticket
- **Fixes #123** - to reference this changeset and close #123 ticket with the default status *fixed*

This functionality requires installing a post-commit hook as described in [#ExplicitSync](#), and enabling the optional commit updater components by adding the following line to the `[components]` section of your [trac.ini](#), or enabling the components in the *Plugins* admin panel.

```
tracopt.ticket.commit_updater.* = enabled
```

For more information, see the documentation of the `CommitTicketUpdater` component in the *Plugins* admin panel and the [?CommitTicketUpdater](#) page.

## Migration from a single-repository setup (Subversion)

The following procedure illustrates a typical migration from a Subversion single-repository setup to multiple repositories.

1. Remove the default repository specification from the `[trac] repository_dir` option.
2. Add the main repository as a named repository.
3. Re-synchronize the main repository.
4. Set up post-commit and post-revprop-change hooks on the "main" repository, and set `[trac] repository_sync_per_request` to an empty value.
5. Add an alias to the main repository as the default repository (by leaving out the the name, e.g. `.alias = main`). This ensures that all links predating the migration still resolve to the main repository.
6. Repeat steps 2, 3 and 4 to add other "named" repositories as needed.

## Migration from a single-repository setup (Mercurial)

The following procedure illustrates a typical migration from a Mercurial single-repository setup to multiple repositories. Please note that at the time of writing, no initial resynchronization or any hooks are necessary for

Mercurial repositories - see [?#9485](#) for more information.

1. Upgrade to the latest version of the [?TracMercurial](#) plugin.
2. Remove the default repository specification from the `[trac] repository_dir` option.
3. Add the main repository as a named repository.
4. Add an alias to the main repository as the default repository (by leaving out the the name, e.g. `.alias = main`). This ensures that all links predating the migration still resolve to the main repository.
5. Repeat step 3 to add other "named" repositories as needed.

## Troubleshooting

### My trac-post-commit-hook doesn't work anymore

You must now use the optional components from `tracopt.ticket.commit_updater.*`, which you can activate through the Plugins panel in the Administrative part of the web interface, or by directly modifying the `[components]` section in the `trac.ini`. Be sure to use [explicit synchronization](#) as explained above.