

Subversion Repository Administration: Tips & Tricks

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1. Subversion Repository Administration Tips & Tricks: Overview

As of May 2007, the installed version of Subversion on `svn.berkeley.edu` is 1.4.3. Documentation for this version is available as a [single HTML page](#) as well as in [other formats](#).

It is anticipated that a very few users (those who are most familiar with administrative aspects of `svn`), will create new repositories (documented in this HowTo). Repository administrators will [govern write access to projects](#), and be responsible for [creating new projects in their repositories](#).

2. Creating a new repository

The Subversion repositories maintained by IST use the filesystem (rather than a Berkeley DB database) to store versioned data. The standard command-line command to create repositories looks something like the following:

```
svnadmin create --fs-type fsfs /path/to/repository
```

[Creating the Repository](#) in the [Subversion Manual](#) provides additional information.

Once the repository is created, additional steps are followed to standardize the new repo. These steps are scripted, and are most completely documented here by reference to the [template shell script](#) used to perform these steps. What follows below is commentary; but the shell script itself is the most complete and reliable documentation.

Once the repository is created, groups and permissions must be set in order to allow functionality and govern access at the Unix group & permissions level. [Note: governing commit/write privileges is covered in a separate document, [Subversion Repositories: Governing Commit Permissions](#).]

The following succinctly illustrates group and file permissions for a repository on `svn.berkeley.edu`. This is the layout/model used in standard repositories, in which the commit permissions are governed by a versioned configuration file (note the link in the `hooks/` directory). Notes and further explanations follow the console output:

```
$ pwd
/svn/svn-ist/berkeley/projects/cfgtest

$ ls -lgd
drwxrwsr-x  8 repoadm      512 Mar 21 16:12 .

$ ls -lg
```

```
total 16
-rw-rw----  1 repoadm    379 Mar 21 16:12 README.txt
drwxr-s---  4 asag      512 Mar 21 16:12 SVN
drwxr-s---  2 asag      512 Mar 21 16:12 conf
drwxrws---  2 repoadm   512 Mar 21 16:12 dav
drwxrws---  5 asag      512 Mar 21 17:01 db
-r--r----- 1 asag        2 Mar 21 16:12 format
drwxr-s---  2 asag      512 Mar 21 16:12 hooks
drwxrws---  2 asag      512 Mar 21 16:12 locks

$ ls -lg conf/
total 4
-rw-r-----  1 repoadm    684 Mar 21 16:12 authz
-rw-r-----  1 repoadm    309 Mar 21 16:12 passwd
-rw-rw-r--  1 repoadm   1361 Mar 21 16:12 svnserve.conf

$ ls -lg hooks/
total 56
lrwxrwxrwx  1 asag        51 Mar 21 16:12
commit-access-control.cfg
-> ../SVN/commit-permissions/commit-access-control.cfg
-rwxr-xr-x  1 repoadm   11545 Mar 21 16:12
commit-access-control.pl
-rwxr-xr-x  1 repoadm    571 Mar 21 16:12 post-commit
-rw-rw----  1 repoadm   1411 Mar 21 16:12 post-commit.tmpl
-rw-rw----  1 repoadm   1411 Mar 21 16:12 post-lock.tmpl
-rw-rw----  1 repoadm   1475 Mar 21 16:12
post-revprop-change.tmpl
-rwxr-xr-x  1 repoadm   2399 Mar 21 16:12 pre-commit
-rw-rw----  1 repoadm   2336 Mar 21 16:12 pre-commit.tmpl
-rw-rw----  1 repoadm   2336 Mar 21 16:12 pre-lock.tmpl
-rw-rw----  1 repoadm   1952 Mar 21 16:12
pre-revprop-change.tmpl
-rw-rw----  1 repoadm   2336 Mar 21 16:12 pre-unlock.tmpl
-rw-rw----  1 repoadm   1533 Mar 21 16:12 start-commit.tmpl

$ ls -lag SVN/
total 8
drwxr-s---  4 asag      512 Mar 21 16:12 .
drwxrwsr-x  8 repoadm   512 Mar 21 16:12 ..
drwxrws---  7 asag      512 Mar 21 16:12 .svn
drwxrws---  3 asag      512 Mar 21 16:58 commit-permissions

$ ls -lag SVN/commit-permissions/
total 8
drwxrws---  3 asag      512 Mar 21 16:58 .
drwxr-s---  4 asag      512 Mar 21 16:12 ..
drwxrws---  7 asag      512 Mar 21 16:58 .svn
-rw-rw----  1 asag      517 Mar 21 16:58
commit-access-control.cfg
```

Unix Groups Legend:

repoadm

Subversion and CVS application administrators on `svn.berkeley.edu`. In general, logins in this group are used to set up new repositories in ist-administered directory trees on this server (and, thus, are the ones most interested in the material covered in this document)

asag

Users of the repository; in this case, users of a repository that belongs to the IST-AS Architecture Group (IST-ASAG)

svnusers

All users of IST's Subversion repositories on `svn.berkeley.edu` are members of this group

Notes on file permissions:

- The top level of the repository tree (`/svn/ist-svn`) allows the `svnusers` group `r-s` permission, and denies permission to others; this restricts the entire repository tree from host users who are not in the `svnusers` group.
- The directory tree is in the `repoadm` group, so that only members of this group can create new repositories; others have `r-x` permission on parent directories to repositories, to allow access through the directory tree to any member of `svnusers`.
- Within individual repositories, groups and permissions are restricted to the narrowest within which the repository can be properly used and administered.
- The file `commit-access-control.cfg` governs write (commit) access on different parts of the repository. This file may be modified by administrators of the repository in which it resides. Cf. [Subversion Repositories: Governing Commit Permissions](#) for detailed information.
- Note read and execute permissions granted to `Others` in the `hooks/` directory.

To make a repository and effect permissions described above with a shell script, modify [this script template](#) appropriately for the desired repository location, your template file location, and your desired repository user group.

3. Unix groups and permissions used to secure access-controlled repositories

Unix groups and permissions are used to secure access-controlled repositories from inappropriate read or write access. The following goals are realized:

1. Repositories should not be created except by members of `repoadm`.
2. Only users who are members of `svnusers` should be granted read-access to any location in the repository tree.

The second goal is achieved by restricting the root of the repository tree to group read and

execute access by members of `svnusers`; no permissions are granted to other users. All users of any repository in the tree are (must be) members of `svnusers`.

The first goal is achieved by setting the group on directories in the tree, including the root directory of each repository, to `repoadm`, and granting only `r-x` permission to others.

The following shows the directory permission and group employed in the IST-AS branch of the directory tree:

```
drwxr-s--- vadmin  svnusers  /svn/svn-ist
drwxrwsr-x [userid] repoadm /svn/svn-ist/berkeley
drwxrwsr-x [userid] repoadm /svn/svn-ist/berkeley/projects
drwxrwsr-x [userid] repoadm
/svn/svn-ist/berkeley/projects/ist
drwxrwsr-x [userid] repoadm
/svn/svn-ist/berkeley/projects/ist/as
```

Permissions and groups in a repository created within the directory tree are described in the [Creating a new repository](#) section, above.

4. SVN Repository URLs vs. Filesystem on Subversion Server

The root of the Subversion Repository Service repositories on the host (`svn.berkeley.edu`) filesystem is the directory `/svn/ist-svn/`. However, directories that contain repositories directly under this root (e.g., `/svn/ist-svn/berkeley/`) are symbolically linked from under the `/svn/` directory:

```
$ pwd
/svn
$ ls -l berkeley
lrwxrwxrwx  1 root      root          16 May  3 13:50 berkeley ->
ist-svn/berkeley
```

This allows Subversion users to construct access repositories via URLs without `ist-svn` ... "branding" of the repositories corresponds to the campus, not to the campus organization that happens to provide the repository service.