

Moving ROOT from CVS to Subversion

What is Subversion?

- Subversion is a free SCM intended to replace CVS
- Stays close to the familiar CVS UI, but fixes many design flaws and offers much improved functionality
- Development started in June 2000, project became self hosting in Aug 2001
- Current version 1.4.x

Why Subversion?

- Atomic commits
- Renaming and versioning of files and directories
- Branching and tagging constant time operations
- Binary diffs
- Improved client-server communication
- Apache as remote server

Who is Using Subversion

- Apache
- KDE
- Gnome
- GCC
- Python
- Samba
- Mono
- PuTTY
- GnuPG
- CUPS
- Linux From Scratch
- Conectiva
- Ethereal
- Boost
- TWiki
- Zope

How it Was Done

- Configure Apache 2 with `dav_svn_module`
- Create server certificates to support https
- Use the `cvs2svn 2.0` script

```
./cvs2svn --fallback-encoding=646 --retain-conflicting-attic-files -s /home/svn/root /home/cvs/root
```

- Remove `.cvsignore` files
- Set `svn:keyword` Id property on all source files
- Remove unlabeled and obsolete branches and tags

Repository Organization

- We use the most common Subversion repository structure:
 - root/trunk
 - root/tags
 - root/branches
 - root/branches/dev
- See <http://root.cern.ch/viewvc>

Pre-Commit Hook

- Scripts run via the pre-commit hook
 - `svnperms.py`
 - `case-insensitive.py`
 - `detect-merge-conflicts.sh`
 - `log-police.py`

Post-Commit Hook

- Scripts run via the post-commit hook
 - `svn-mailer`
 - `svn2feed.py`
 - `svn_cvsinject.sh`

Getting the svn Client

- By default installed on SLC4 and all other modern Linux distributions
- On Mac OS X 10.4 available via Fink or standalone dmg, comes as part of Leopard
- On Windows available via cygwin or standalone pure Windows version
- Binaries exist for Solaris, HP-UX, (XYZ)BSD

Impact on the Developers

- Transition went absolutely smoothly
- Did not cost any of our team members more time than reading the HOWTO wiki page to get started (15 min)
- They love the open branches/dev capability to store and share private developments

Impact on the Users

- For users that were using directly cvs:

```
cvs -d :pserver:cvs@root.cern.ch:/user/cvs co root
```

- Becomes:

```
svn co http://root.cern.ch/svn/root/trunk root
```

- Added bonus: http is more likely to be open in the firewall than pserver

Migration Strategy

- Via the `svn_cvsinject` script we are keeping the cvs head up to date with the svn trunk
- The few patches on patch branches will be added by hand in cvs and they will remain available
- By end of October we plan to stop keeping the head and trunk in sync
 - We will start using new svn features which are not compatible with cvs (externals)

Conclusions

- After a careful preparation, and a small pilot project, the final transition took about 4 hours
- The benefits of moving to Subversion are many
- We are now using a SCM that is actively being developed
- The ROOT developers are all enthusiasts