An Introductory Subversion Tutorial

Faheem Mitha

February 4, 2004

1 Communicating with a local repository

```
We have two machines, a local one (called local) and a remote one
(called remote). We first create a local repository where we store our revisions.

# Create svn repository locally. A subversion repository stores data
# in a Berkeley database format.
[faheem@local]$ svnadmin create repos

# Contents of repos
[faheem@local]$ ls -l repos

# Create a checkout area and cd to it
[faheem@local]$ mkdir wc; cd wc

# check out empty repository into checkout area
# top level of repository is top level of checkout area
[faheem@local] ~/wc$ svn co file:///home/faheem/repos .

# Create test directory and cd to it
[faheem@local] ~/wc$ mkdir test; cd test

# Add test file to checkout area
[faheem@local] ~/wc/test$ cat foo.txt
This is a file which
is about to be committed to the repository.

# Observe that subversion does not currently know about the test directory
[faheem@local] ~/wc/test$  cd ..; svn st
?      test

# Schedule test to be added at next commit; observe that ‘svn add’ works
# recursively by default.
[faheem@local] ~/wc$ svn add test/
A         test
A         test/foo.txt
```

```
# Commit ‘svn ci’ commits everything by default
# Note that some editor environmental variable must be set, eg EDITOR
# or SVN_EDITOR so ‘svn ci’ knows what to use. Put ‘export SVN_EDITOR=jed’
# in .bashrc if necessary.
[faheem@local] ~/wc$ svn ci
Adding         test
Adding         test/foo.txt
Transmitting file data .
Committed revision 1.

# Check the log for the commit.
[faheem@local] ~/wc$ svn log
No commit for revision 0.
------------------------------------------------------------------------
r1 | faheem | 2004-01-18 16:47:31 -0500 (Sun, 18 Jan 2004) | 3 lines

* test: Add new test directory
* test/foo.txt: Add test file

------------------------------------------------------------------------

# The revision is now saved to the repository. We remove the test/
# directory but information is still stored locally in the .svn directory.
[faheem@local] ~/wc$ rm -rf test/; ls -la
total 16
drwxrwxr-x    3 faheem   faheem       4096 Jan 18 21:26 .
drwx------    8 faheem   faheem       4096 Jan 18 15:48 ..
drwxrwxr-x    7 faheem   faheem       4096 Jan 18 21:24 .svn

# Subversion notices the missing directory and file when checking status.
[faheem@local] ~/wc$ svn st
!      test

# The files can be restored by the update command.
[faheem@local] ~/wc$ svn up
A  test
A  test/foo.txt
Updated to revision 1.

# We now modify the file foo.txt.
[faheem@local] ~/wc$ cat test/foo.txt
This is a file which
has been committed to the repository.

# Subversion notices the file has local modifications.
[faheem@local] ~/wc$ svn st
M      test/foo.txt
```

```
# We can an obtain a diff from the last revision (in unified diff format).
[faheem@local] ~/wc$ svn diff
Index: test/foo.txt
===================================================================
--- test/foo.txt        (revision 1)
+++ test/foo.txt        (working copy)
@@ -1,2 +1,2 @@
 This is a file which
-is about to be committed to the repository.
+has been committed to the repository.

# We now commit revision 2
[faheem@local] ~/wc$ svn ci
Sending        test/foo.txt
Transmitting file data .
Committed revision 2.

# The working copy is now out of date with respect to the repository,
since it is still at revision 1 while the repository is at revision 2.
[faheem@local] ~/wc$ svn log
------------------------------------------------------------------------
r1 | faheem | 2004-01-18 16:47:31 -0500 (Sun, 18 Jan 2004) | 3 lines

* test: Add new test directory
* test/foo.txt: Add test file

------------------------------------------------------------------------

# Once we upate from the repository after running ‘svn up’, the
# log shows revision 2.
[faheem@local] ~/wc$ svn up; svn log
At revision 2.
------------------------------------------------------------------------
r2 | faheem | 2004-01-18 21:34:31 -0500 (Sun, 18 Jan 2004) | 2 lines

* test/foo.txt: Changed file

------------------------------------------------------------------------
r1 | faheem | 2004-01-18 16:47:31 -0500 (Sun, 18 Jan 2004) | 3 lines

* test: Add new test directory
* test/foo.txt: Add test file

------------------------------------------------------------------------

# We can still see the differences between the first and second
# revision by doing an ‘svn diff’ with appropriate arguments.
[faheem@local] ~/wc$  svn diff -r1:2
Index: test/foo.txt
===================================================================
--- test/foo.txt        (revision 1)
+++ test/foo.txt        (revision 2)
@@ -1,2 +1,2 @@
 This is a file which
-is about to be committed to the repository.
+has been committed to the repository.
```

```
# Similarly we can selectively view the log for revision 2.
[faheem@local] ~/wc$ svn log -r2
------------------------------------------------------------------------
r2 | faheem | 2004-01-18 21:34:31 -0500 (Sun, 18 Jan 2004) | 2 lines

* test/foo.txt: Changed file

------------------------------------------------------------------------

# We can get back to revision 1 by using ‘svn up’ with appropriate arguments.
[faheem@local] ~/wc$ svn up -r1; cat test/foo.txt
U  test/foo.txt
Updated to revision 1.
This is a file which
is about to be committed to the repository.

# We get back to revision 2 by running ‘svn up’ which by default gives
# the most recent revision committed to the repository, also called HEAD
[faheem@local] ~/wc$ svn up
U  test/foo.txt
Updated to revision 2.

# If we make a local change we later decide we don’t want
[faheem@local] ~/wc$ svn diff
Index: test/foo.txt
===================================================================
--- test/foo.txt        (revision 2)
+++ test/foo.txt        (working copy)
@@ -1,2 +1,3 @@
 This is a file which
 has been committed to the repository.
+Here is a new line.

# we can revert back to revision 2.
[faheem@local] ~/wc$ svn revert test/foo.txt
Reverted 'test/foo.txt'
```

2 Communicating with a remote repository

```
# To communicate with a remote repository it is convenient to set up a
# passwordless login. The first step is to generate dsa or rsa keys. It
# is simplest to use a blank passphrase.
[faheem@local]$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/faheem/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/faheem/.ssh/id_rsa.
Your public key has been saved in /home/faheem/.ssh/id_rsa.pub.
The key fingerprint is:
...

# Copy rsa public key to remote.
[faheem@local]$ scp .ssh/id_rsa.pub faheem@remote:.ssh/id_rsa.pub.local
faheem@remote's password:
id_rsa.pub           100% |*****************************************************************
```

```
# Rename id_rsa.pub.local to authorized_keys or add it to
# authorized_keys if it exists.
[faheem@remote] ~/.ssh$ mv id_rsa.pub.local authorized_keys
[faheem@remote] ~/.ssh$ cat authorized_keys id_rsa.pub.local >  authorized_keys.tmp;
                        mv authorized_keys.tmp authorized_keys

# Now we can ssh to remote without logging in. Assume there is a
# repository on remote identical to that on local, which we check out.
[faheem@local]$  mkdir wc_remote; cd wc_remote;
               svn co svn+ssh://remote/home/faheem/repos .
A  test
A  test/foo.txt
Checked out revision 2.

# We can similarly send commits back to the remote repository.
[faheem@local] ~/wc_remote$  svn diff
Index: test/foo.txt
===================================================================
--- test/foo.txt        (revision 2)
+++ test/foo.txt        (working copy)
@@ -1,2 +1,3 @@
 This is a file which
 has been committed to the repository.
+We now make a change locally which will be committed remotely.

# Once automatic login is set up, the commit happens transparently.
[faheem@local] ~/wc_remote$ svn ci
Sending        test/foo.txt
Transmitting file data .
Committed revision 3.

# If we update the working copy, we see that the local change has been sent.
[faheem@local] ~/wc_remote$ svn up; svn log
At revision 3.
------------------------------------------------------------------------
r3 | faheem | 2004-01-18 23:51:19 -0500 (Sun, 18 Jan 2004) | 2 lines

* test/foo.txt: Making local change which will be sent to remote
  repository.

------------------------------------------------------------------------
r2 | faheem | 2004-01-18 21:34:31 -0500 (Sun, 18 Jan 2004) | 2 lines

* test/foo.txt: Changed file

------------------------------------------------------------------------
r1 | faheem | 2004-01-18 16:47:31 -0500 (Sun, 18 Jan 2004) | 3 lines

* test: Add new test directory
* test/foo.txt: Add test file

------------------------------------------------------------------------
```