SubVersion Howto Guide
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This document is a quick induction into the use of SubVersion via the command line ie on Linux but is is the same as on Windows provided the command line tools are installed.

Subversion or commonly known as SVN in most communities, is a version control system to manage and maintain versions of files between multiple users much like Concurrent Version System known as CVS and is largely seen as the successor to CVS for its features and simplicity.

First thing that needs to be done is to decide on a common area which is accessible by you and your members for the project which is commonly accessible.

This documentation is based for the unit CITS3200 which has the default assumptions. The default machine used for the repository is cits3200.csse.uwa.edu.au and the default common shared area is /home/cits3200/cits3200XX where XX is group number or letter (Substitute accordingly for machine name and common share area accordingly)

For this example, it will show step how to setup a SVN repository, checking in/out and updating the repository.

I am currently sitting on uggp.csse.uwa.edu.au, so I’m going to remotely connect to the cits3200.csse.uwa.edu.au.

[ashley@uggp]/home/staff/ashley% ssh ashley@cits3200.csse.uwa.edu.au
The authenticity of host 'cits3200 (130.95.1.45)' can't be established.
Are you sure you want to continue connecting (yes/no)? yes
ashley@pc3200's password:

Last login: Tue Jul 22 11:23:58 2008 from linux-vm2.csse.uwa.edu.au
******************************************************************
*** Welcome to CITS3200 ***
*** Centos 5.1 ***
*** ***
*** Reserved exclusively for CITS3200 Students ***
*** ***
*** Authorised users only! ***
******************************************************************
Now that I have connected, I will traverse down to the shared area ie

[ashley@cits3200]/% cd /home/cits3200/cits3200xx

[ashley@cits3200]/home/cits3200/cits3200xx%

Ask the machines what is it name.

[ashley@cits3200]/home/cits3200/cits3200xx% hostname
cits3200

Tell me where I am on the filesystem

[ashley@cits3200]/home/cits3200/cits3200xx% pwd

/home/cits3200/cits3200xx

Show me a listing of the files and directory

[ashley@cits3200]/home/cits3200/cits3200xx% ls -al

total 24
  drwxrwxr-x  6 apache staff 4096 Jul 10 14:24 .
  drwxr-xr-x  9 root  root 4096 Jul 22 11:27 ..
  drwxrwxr-x  2 apache staff 4096 Jul 10 12:28 public_html
  drwxrwxr-x  7 apache staff 4096 May  9 11:40 svn
  drwxrwxr-x  9 apache staff 4096 Jul 10 14:24 trac
  drwxrwxr-x  2 apache staff 4096 Jul 10 15:07 weblogs

What groups do I belong to?

[ashley@cits3200]/home/cits3200/cits3200xx% groups
staff systems

Now from the above commands you can see that I've changed directory into /home/cits3200/cits3200xx and the default directory/files are owned by apache and the group staff which I am a member of which both have read, write and execute
permissions. If these permissions are not set correctly ie for the group it will defeat the purpose of the repository as they can’t get access to the files/directories in the area

Now that we are in the common group area ie /home/cits3200/cits3200xx, we need to create Subversion Repository Area called "svnroot" (Can actually called anything but it seems like most people call the root repository area svnroot so I’m just sticking with the default syntax) and create a project called project_example to check in/out files and directories.

[ashley@cits3200]/home/cits3200/cits3200xx% pwd

/home/cits3200/cits3200xx

Create a directory svnroot.

[ashley@cits3200]/home/cits3200/cits3200xx% mkdir svnroot

List the contents of svnroot.

[ashley@cits3200]/home/cits3200/cits3200xx% ls -al svnroot

    total 8
    drwxr-xr-x  2 ashley staff 4096 Jul 22 11:36 .
    drwxrwxr-x  7 apache staff 4096 Jul 22 11:36 ..

(We can see that the directory is empty)

Now we create a SVN project called project_example.

[ashley@cits3200]/home/cits3200/cits3200xx% svnadmin create svnroot/project_example

(We just initialised a project called project_example with the necessary files and structure)

[ashley@cits3200]/home/cits3200/cits3200xx% ls -al svnroot

    total 12
    drwxr-xr-x  3 ashley staff 4096 Jul 22 11:37 .
    drwxrwxr-x  7 apache staff 4096 Jul 22 11:36 ..
    drwxr-xr-x  7 ashley staff 4096 Jul 22 11:37 project_example
As you can see it just populated the project_example directory, but the group permissions
does not have all the permissions set for the group ie missing write permissions so let
set the permissions for the entire directory and files recursively just in case.

[ashley@cits3200]@home/cits3200/cits3200xx% ls -al svnroot/project_example
total 36
drwxr-xr-x 7 ashley staff 4096 Jul 22 11:37 .
drwxr-xr-x 3 ashley staff 4096 Jul 22 11:37 ..
drwxr-xr-x 2 ashley staff 4096 Jul 22 11:37 conf
drwxr-xr-x 2 ashley staff 4096 Jul 22 11:37 dav
drwxr-xr-x 5 ashley staff 4096 Jul 22 11:37 db
-r--r--r-- 1 ashley staff 2 Jul 22 11:37 format
drwxr-xr-x 2 ashley staff 4096 Jul 22 11:37 hooks
drwxr-xr-x 2 ashley staff 4096 Jul 22 11:37 locks
-rw-r--r-- 1 ashley staff 229 Jul 22 11:37 README.txt

As you can see it just populated the project_example directory, but the group permissions
does not have all the permissions set for the group ie missing write permissions so let
set the permissions for the entire directory and files recursively just in case.

[ashley@cits3200]@home/cits3200/cits3200xx% pwd

/home/cits3200/cits3200xx

[ashley@cits3200]@home/cits3200/cits3200xx% chgrp -R staff svnroot
[ashley@cits3200]@home/cits3200/cits3200xx% chmod -R g+rwx svnroot
[ashley@cits3200]@home/cits3200/cits3200xx% ls -al svnroot

total 12
drwxrwxr-x 3 ashley staff 4096 Jul 22 11:37 .
drwxrwxr-x 7 apache staff 4096 Jul 22 11:36 ..
drwxrwxr-x 7 ashley staff 4096 Jul 22 11:37 project_example

[ashley@cits3200]@home/cits3200/cits3200xx% ls -al svnroot/project_example

总 36
drwxrwxr-x 7 ashley staff 4096 Jul 22 11:37 .
drwxrwxr-x 3 ashley staff 4096 Jul 22 11:37 ..
drwxrwxr-x 2 ashley staff 4096 Jul 22 11:37 conf
drwxrwxr-x 2 ashley staff 4096 Jul 22 11:37 dav
drwxrwxr-x 5 ashley staff 4096 Jul 22 11:37 db
-r--rwxr-- 1 ashley staff 2 Jul 22 11:37 format
drwxrwxr-x 2 ashley staff 4096 Jul 22 11:37 hooks
As you can see now all files are owned the group staff which has read, write and execute permissions.

You can set the default permissions of files being create by setting the umask variable in your shell.

That is basically if for setting up a SVN repository, the next part is actually checking in/out files from the SVN repository remotely via ssh.

Let's say I'm working on ugp.csse.uwa.edu.au and I want to check out the contents of project_example (Although the project_example at the moment is empty). So I am going to create a directory called svn_checkout as a work area for me to checkout SVN projects.

ashley@uggp:~:667> hostname
uggp

ashley@uggp:~:667> pwd
/home/staff/ashley

ashley@uggp:~:667> mkdir svn_checkout
ashley@uggp:~:667> ls –al svn_checkout

total 24
drwxr-xr-x 2 ashley staff 4096 2008-07-22 15:17 ./
drwxr-xr-x 141 ashley staff 20480 2008-07-22 15:17 ../

(The svn_checkout directory we created should be empty)

ashley@uggp:~:667> cd svn_checkout

ashley@uggp:~/svn_checkout:671> pwd
/home/staff/ashley/svn_checkout

ashley@uggp:~/svn_checkout:672> svn co
svn+ssh://ashley@cits3200.csse.uwa.edu.au/home/cits3200/cits3200xx/svnroot/project_example

ashley@cits3200.csse.uwa.edu.au's password:
(Prompts me for my Linux password, if successful you should see something like this)

Checked out revision 0.

ashley@uggp:~/svn_checkout:673> cd ..
ashley@uggp:~:674> ls -al svn_checkout

total 28
  drwxr-xr-x 3 ashley staff 4096 2008-07-22 15:18 ./
  drwx--x--x 141 ashley staff 20480 2008-07-22 15:17 ../
  drwxr-xr-x 3 ashley staff 4096 2008-07-22 15:18 project_example/

As you can see it checked out or rather it made a copy of the project_example area onto my home area which I can work on but remember there no files within the project_example as of yet.

ashley@uggp:~:675> ls -al svn_checkout/project_example

  total 12
  drwxr-xr-x 3 ashley staff 4096 2008-07-22 15:18 ./
  drwxr-xr-x 3 ashley staff 4096 2008-07-22 15:18 ../
  drwxr-xr-x 6 ashley staff 4096 2008-07-22 15:18 .svn/

Although there are zero files in the project area it created a directory called .svn which has information about the project itself.
Lets create a couple of files and directories in our locally checkout version of project_example

ashley@uggp:~/svn_checkout:680> pwd

/home/staff/ashley/svn_checkout

ashley@uggp:~/svn_checkout:681> cd project_example

ashley@uggp:~/svn_checkout/project_example:683> mkdir sample

Created a sample directory under the project_example directory

ashley@uggp:~/svn_checkout/project_example:684> touch fileA.txt

Created a empty file called fileA.txt in project_example directory

ashley@uggp:~/svn_checkout/project_example:685> touch fileB.txt

Created a empty file called fileB.txt in project_example directory

ashley@uggp:~/svn_checkout/project_example:686> touch sample/fileC.txt

Created a empty file called fileC.txt in a subdirectory called sample under the project_example directory.

ashley@uggp:~/svn_checkout/project_example:687> echo "Demo" >> sample/fileC.txt

Injected some contents ie the word Demo into fileC.txt file.

ashley@uggp:~/svn_checkout:698> cat project_example/sample/fileC.txt

Demo

To prove that I injected the word Demo in the file fileC.txt

ashley@uggp:~/svn_checkout/project_example:688> cd ..

Now we have made changes by creating several files in the locally check out version of the project_examplein our own home area. We have to tell SVN to check it back into the repository you can check individual files or entire directories.
In this example, I am explicitly tell SVN that I just want to check in one file in this case fileA.txt

ashley@uggp:~/svn_checkout:680> pwd

/home/staff/ashley/svn_checkout

Shows my current working directory on uggp.csse.uwa.edu.au

ashley@uggp:~/svn_checkout:700> cd project_example

ashley@uggp:~/svn_checkout/project_example:701> ls

fileA.txt  fileB.txt  sample/

As before there is fileA.txt, fileB.txt and a sample directory which has fileC.txt in it.

ashley@uggp:~/svn_checkout/project_example:703> svn add fileA.txt

A fileA.txt

I’m telling SVN explicitly that fileA.txt is part of the project and needs to be committed to the repository on cits3200.csse.uwa.edu.au

ashley@uggp:~/svn_checkout/project_example:704> svn ci --message "Revision 1"

ashley@cits3200.csse.uwa.edu.au's password:

Adding fileA.txt
Transmitting file data.
Committed revision 1.

Subversion has committed fileA.txt to subversion repository project_example that I originally checked out from cits3200.csse.uwa.edu.au.

You can do this for multiple files or directories ie I have not checked in fileB.txt nor the fileC.txt in the subdirectory sample.
ashley@uggp:~/svn_checkout/project_example:737> pwd
/home/staff/ashley/svn_checkout/project_example

ashley@uggp:~/svn_checkout/project_example:738> svn add fileB.txt

A fileB.txt

Added fileB.txt to be checked into cits3200.csse.uwa.edu.au the next time I do a SVN commit (ci)

ashley@uggp:~/svn_checkout/project_example:739> svn add sample

A sample
A sample/fileC.txt

Added the subdirectory to be checked into cits3200.csse.uwa.edu.au the next time I do a SVN commit (ci). Notice that it found the subdirectory file fileC.txt without me explicitly mentioning it.

ashley@uggp:~/svn_checkout/project_example:740> svn ci --message "Revision 2"

ashley@cits3200.csse.uwa.edu.au's password:

Adding fileB.txt
Adding sample
Adding sample/fileC.txt
Transmitting file data ..
Committed revision 2.

As you can see now its committed the two files into the project_example. SVN will only do comit files into the repository if it knows about it be either doing a svn add to a file or direcotory. SVN will only commit files if they are different and it knows about it ie

ashley@uggp:~/svn_checkout/project_example:743> pwd
/home/staff/ashley/svn_checkout/project_example

ashley@uggp:~/svn_checkout/project_example:744> echo "Hello" >> fileA.txt

I’ve injected the word “Hello” into fileA.txt
ashley@uggp:~/svn_checkout/project_example:745> cat fileA.txt

Hello

Show you the contents of fileA.txt

ashley@uggp:~/svn_checkout/project_example:746> svn ci --message "Revision 3 - Changed FileA.txt"

ashley@cits3200.csse.uwa.edu.au's password:
Sending fileA.txt
Transmitting file data .
Committed revision 3.

As you can see the only changes was to fileA.txt so it committed only the changes that it is aware of.

Now lets delete the files that I’ve checked out on uggp.csse.uwa.edu.au and recheck the files out to see if they have been committed.

ashley@uggp:~/svn_checkout:755> pwd

/home/staff/ashley/svn_checkout

ashley@uggp:~/svn_checkout:756> ls -al

total 28
drw-xr-x  3 ashley staff  4096 2008-07-22 15:18 ./
drwx--x--x 141 ashley staff 20480 2008-07-22 15:17 ../
drwxr-xr-x  4 ashley staff  4096 2008-07-22 15:39 project_example/

Lets delete the entire contents of the project_examples area

ashley@uggp:~/svn_checkout:757> rm -rf project_example

Show me the contents of directory

ashley@uggp:~/svn_checkout:758> ls -al
Which is empty as I expected it.

ashley@uggp:~/svn_checkout:759> pwd

/home/staff/ashley/svn_checkout

Lets recheck the contents out from cits3200.csse.uwa.edu.au on the project_example.

ashley@uggp:~/svn_checkout:761> svn co
svn+ssh://ashley@cits3200.csse.uwa.edu.au/home/cits3200/cits3200xx/svnroot/project_example

ashley@cits3200.csse.uwa.edu.au's password:

A  project_example/fileB.txt
A  project_example/sample
A  project_example/sample/fileC.txt
A  project_example/fileA.txt

Checked out revision 3.

ashley@uggp:~/svn_checkout:762> cat project_example/fileA.txt
Hello

ashley@uggp:~/svn_checkout:763> cat project_example/sample/fileC.txt
Demo

As you can see it has checked out the entire contents plus the changes and that conclude the crash course on Subversion.

Last piece of advice read the inline help tools for subversion ie on a linux terminal type “man svn” or “svn help” which is probably the better one for explanations. It will give a breakdown on what it can do ie add, checkout (co), delete, checkin (ci), merge and host of of other operations associated with SVN.