Network Startup Resource Center

Network Management & Monitoring

Version Control

Content

What is Version Control?

- Three basic principals:
  - Keep a record and history of changes
  - Give public access to the informaion
  - To maintain different versions from the same data set

- What types of data?
- Source code,
  - Documenation
  - Configuration files
  - Generally, any type of data

Terminology

repository

A centralized copy of all files being tracked, structured in directory trees

Working copy

A local copy of data that can be changed and synchronized with the repository. Contains special information that allows for synchronization.

Version

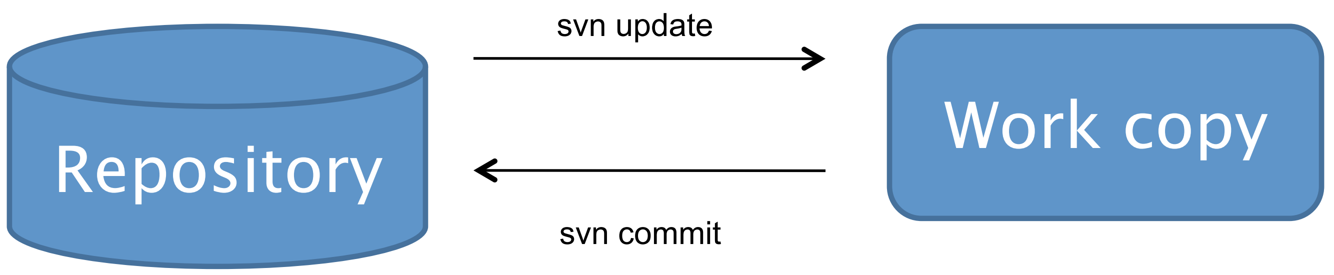
A group of directories and files that reflect the repository state at a determined moment.

Basic

The repository is the master copy

All work is done in a work copy

Changes are reflected and appear in the repository (using the *commit* command)



Change Control: states

Without change and updated

Copy is identical to the repository

A *commit* or *update* does nothing

Local changes and updated

The local copy has changed and the repository has not received the changes.

A *commit* will update the repository. *update* does nothing.

Without changes and not updated

Local copy has not changed, but the repository has changed.

update will change local state, *commit* won't work.

Local change and not up-to-date

Conflict! Need to run *update*

If SVN cannot resolve the conflict automatically, then a manual resolution will be required.

Sample session

Initial repository checkout

```
svn checkout <project>

vi <myfile.conf>  (...changes  ...)
svn commit <myfile.conf>  (reflects changes )
```

More changes:

```
svn update
vi  <myfile.conf>
svn commit <myfile.conf>
```

SVN and the repository

Clients con access locally or via the network

SVNROOT environment variable:

SVNROOT=

```
/svn/myproject                              # local disk
svn://svnserver/svn/myproject               # via svnserve
svn+ssh:// svnserver/svn/myproject # via SSH
```

Creating a repository

Installation

```
#apt-get install subversion
#svncreate <repository>
Edit <repository>/
```

Create as a “service”

```
Create /etc/init.d/subversion, which basically includes
        svnserve -d -r <repository>
#chkconfig  --add subversion
#chkconfig -level 2345 subversion on
```

Edit permissions

Edit <repositorio>/conf/svnserve.conf

Specify the password file:

```
[general]
password-db = <userfile>
realm = example realm
```

Create users:

```
[users]
pedro = foopassword
sandra = barpassword
```

SVN: Clients

There are clients for most operating systems:

- svn (UNIX)
- TortoiseSVN (Windows)
- ...

Local access or via the network

SVN Commands

import

Import a new project from a repository

checkout (co)

Copy the reposirty to a local directory

update (up)

Update the local copy from the repository

add

Add or new file or directory to the local copy

delete

Remove a file from the local copy

commit

Update the repository from the local copy

Other useful commands

mkdir

  Add a directory to the local copy

status

  File version and status

diff

  Show the differences between a local element (file, directory) and the item in the repository.

log

  Show the change history for one or more files

Many others: copy, export…

Work Cycle

Update the work copy

- svn update

Make changes to your local copy

- svn add
- svn delete
- svn copy
- svn move

Check your changes

- svn status
- svn diff
- svn revert

Combine your changes with others

- svn merge
- svn resolve

Complete your changes and place them in the repository

- svn commit

Advantages & Differences with CVS

CVS only controls changes to files

SVN creates a virtual file system that includes directories

CVS cannot control name changes or copies of files

The way in which SVN controls directories oallows for name changes and copies of files.

SVN permits “atomic” change control: all changes or no changes will be accepted

CVS does not provide similar functionality

In general SVN provides more flexibility for access, such as HTTP via Apache and the advantages this provides.

Conclusions

- A sophisticated version control system
- Very useful for programmers
- For network administrators many of the higher-lever functions are not necessary
- In reality, CVS and Subversion can both be used to assist with network administration.
- However, one cannot ignore:
  - The most popular tool is the tool that receives the most support
  - Many of us give support to programming teams in our daily work

References

“Version Control with Subversion” – O’Reilly

Online and free at http://svnbook.red-bean.com