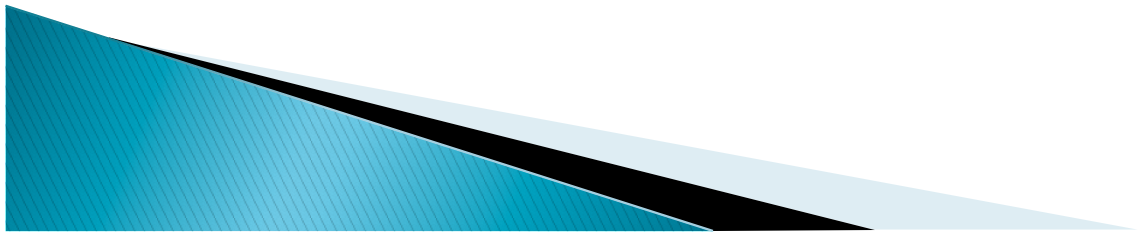
Subversion (SVN)

A Revision Control System
Successor to CVS



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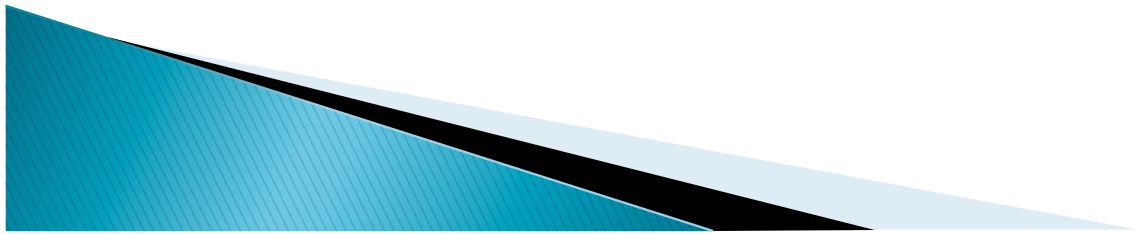


What is version control?

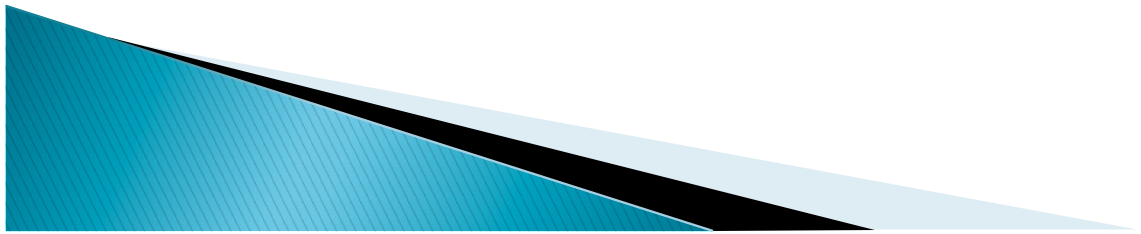
Three basic principals:

- 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

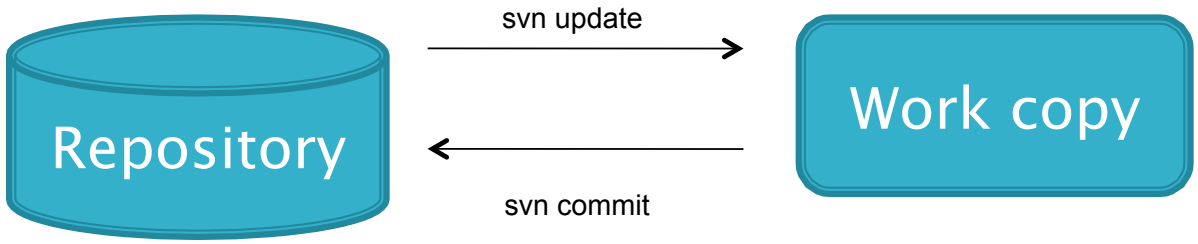


Terminology

- 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.

Basics

- 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)

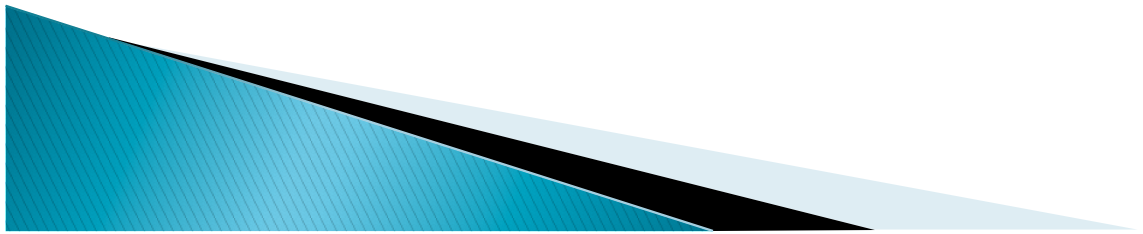


Change control: states

- 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.

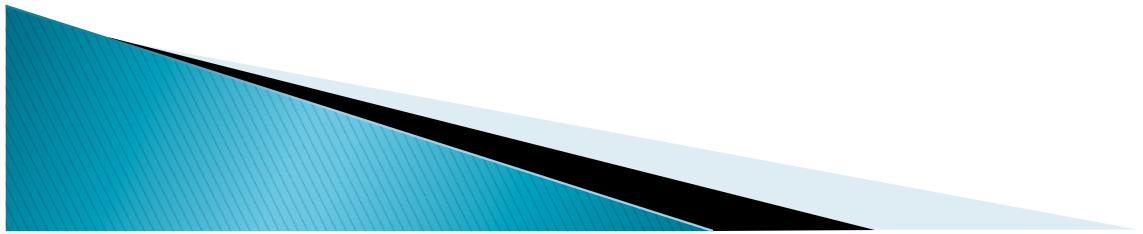
Sample session

- 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

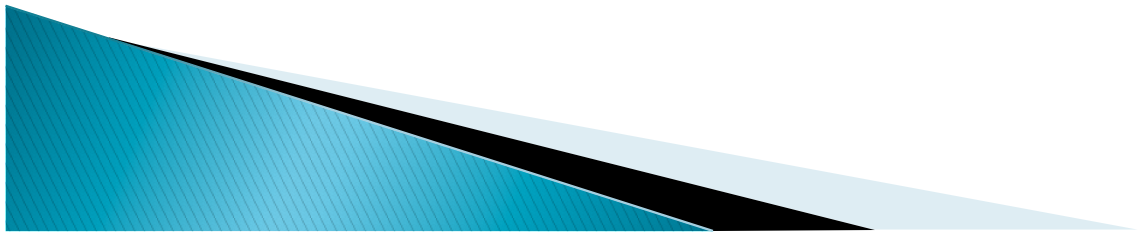


Creating a repository

- 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

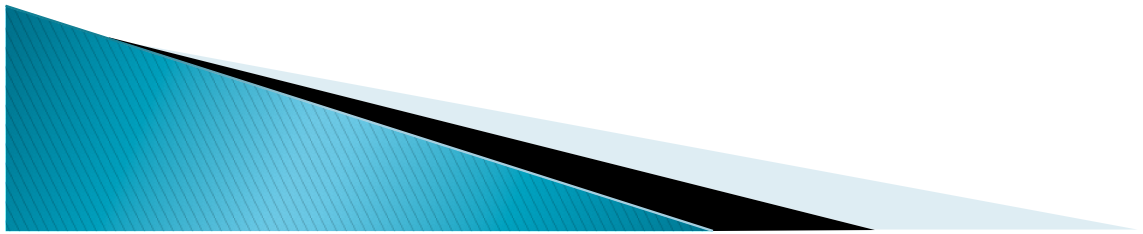
SVN – clients

- There are clients for most operating systems:
  - svn (UNIX)
  - TortoiseSVN (Windows)
  - ...
- Local access or via the network



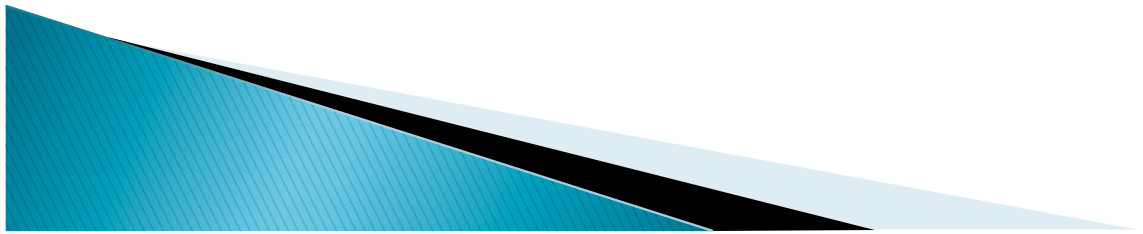
SVN Commands

- 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



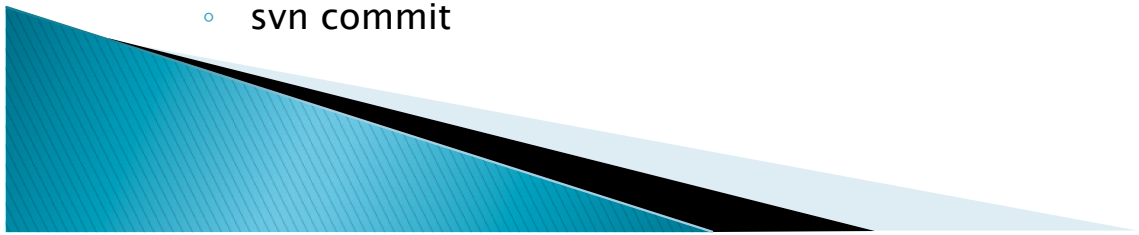
Other useful commands

- 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



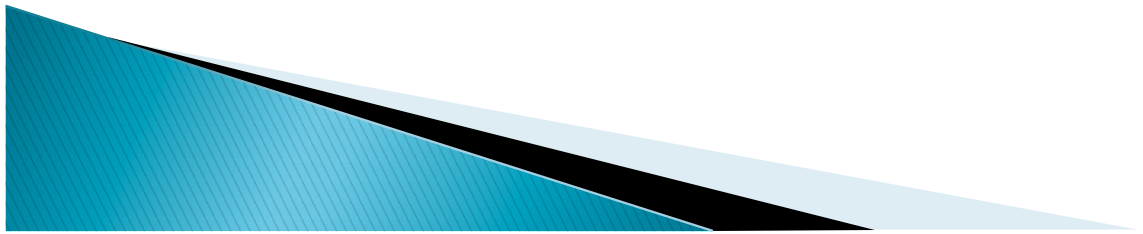
Advantages & differences with CVS

- 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.

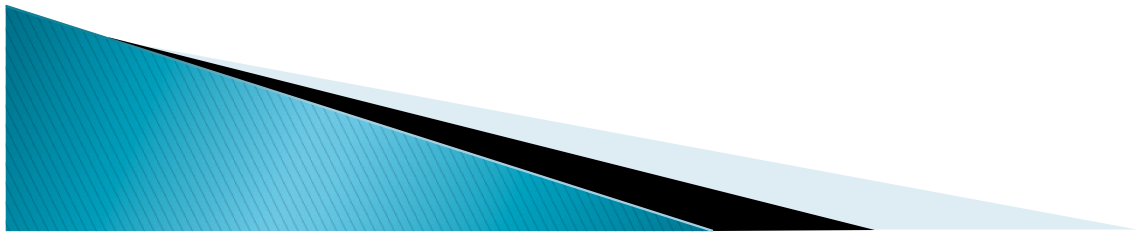
- SVN permits “atomic” change control: all changes or no changes will be accepted
- CVS does not provide similar functionality

- 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