

# SubVersion – the new Central Service at DESY

by Marian Gawron



What is Subversion?

- Revision Control System
- made to replace CVS



## SVN Basics

- Client Options

- Command line client
- Different GUIs for Windows, Linux and Mac
- Web access

- Svnserve

- Integrated server communicates over TCP/IP
- Tunnel mode (e.g. ssh)

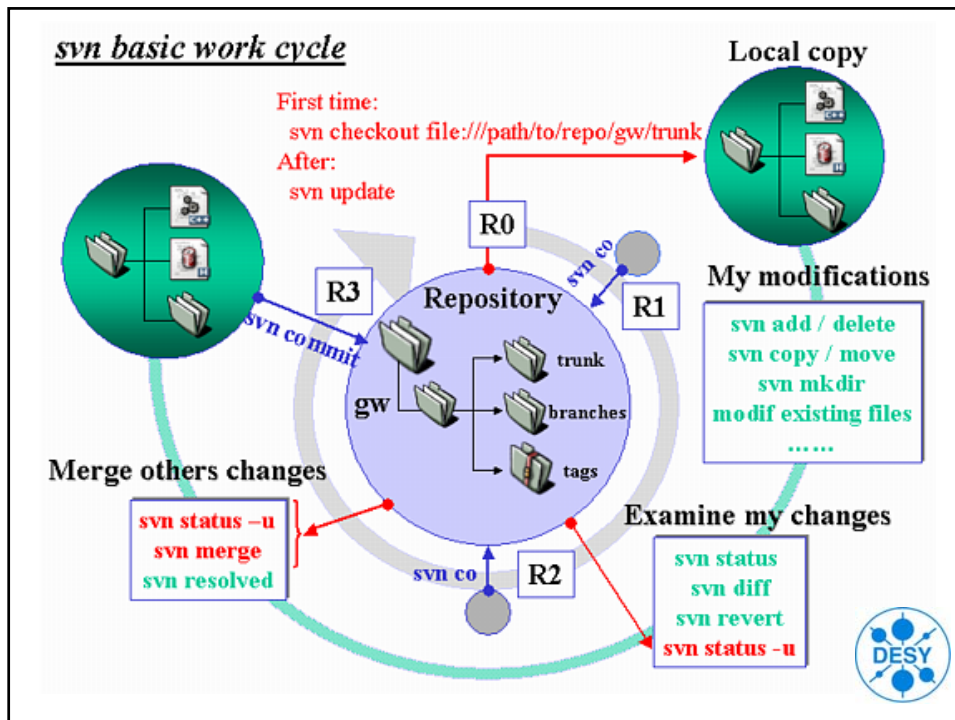
- Apache based Web Server



## Introducing SVN work cycle

- Checkout a working copy at the beginning (one time)
- afterwards **update** the local working copy (very often)
- SVN remembers the path to the repository and looks for changes itself
- Work on this copy: make and test changes
  - Use **svn add** to add various files or directories
  - **svn move** to move files or directories
  - or **svn delete** to delete files or directories
- **Before every commit update** your copy again maybe there are some conflicts
- **Commit** changes to the central project



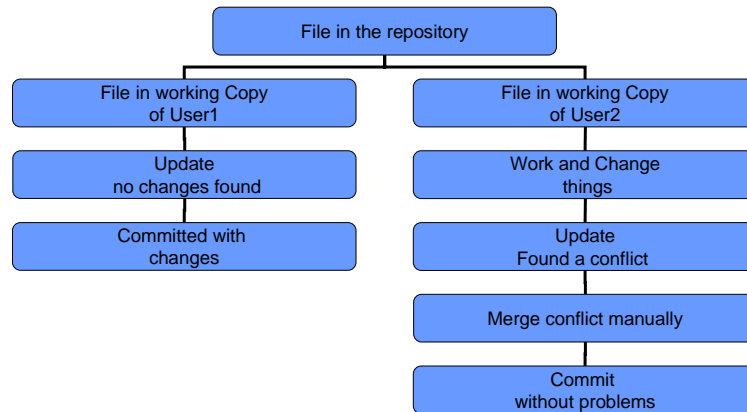


## Conflicts in SVN

- can happen that another developer works on the same file like you and he commits his work earlier
- because you know it could happen update your local working copy again before commit
  - `svn update`
- You see symbols in front of each file a change was made with (e.g. A(dd), M(odified), D(letion) or C(onflict) )
- We got a "C" in front of our working file
  - e.g. C                    branches/file.cgi
- Merge Conflicts by hand: look in the file
  - the conflict part is surrounded by "<<<<<<<" and ">>>>>>" the own part is on top if a line like "====" in the middle edit this file as you want
  - Afterwards run `svn resolved` and commit the file

DESYS

# Conflicts



# File of a Conflict

```

<html>
<head>
<title>SVN Index</title>
</head>
<body bgcolor=yellow>
<center><b><u><font color=dodgerblue>
<<<<<<<<< .mine
Code Management
=====
Management of Source Code
>>>>>>>> .r4
</font></u></b>
</center>
<br><br>
Welcome to the new SVN Server of DESY
<br><br>
  
```

## Basic SVN Commands

- **svn checkout (co)**
  - only first time after one checkout for each project SVN knows where to find it
- **svn update (up)**
- **svn add, delete(del, rm), copy(cp), move(mv)**
  - Working commands on working copy only
- **svn status(st), diff, revert**
  - Commands to test changes or undo them
- **svn merge, resolved**
  - Commands to find a solve conflicts
- **svn commit (ci)**



## Differences between CVS & SVN

- **Similar to CVS in many ways**
  - Commands like checkout, add, commit
- **New useful features and commands**
  - Merge, resolved, mkdir, copy, move
- **SVN works faster**
- **SVN has no direct rollback function**



## Differences between CVS & SVN in detail

- **Revision numbering**
  - Each revision
    - is a timestamp for one commit
    - defines a whole tree not only one file
- **Commits**
  - In SVN a commit is done all at once
  - better if there is a network problem SVN repository is save
- **Binary Files**
  - Take less space in SVN (algorithm Vdelta)



## Differences between CVS & SVN in detail

- **Directories**
  - Changes to directories are tracked in SVN
- **Renaming Files**
  - possible in SVN with "svn move" without losing history
- **Branching Tagging**
  - not generated automatically in SVN
  - expensive operation in CVS but a normal operation in SVN cause no difference between a normal directory and branches or tags





## Details

- Repository

- With URL <https://svnsrv.desy.de/...>
- Local access <file:///home/usr/repo>
- same as an array of trees



## Viewing repositories

- Online tool : ViewVC

- Only for viewing, downloading, reading
- No write permissions in ViewVC for anybody

- <https://svnsrv.desy.de/viewvc>



/calice]

**Index of /**

Files shown: 0  
 Directory revision: 2199 (of 2199)  
 Sticky Revision:  5et

File	Rev.	Age	Author	Last log entry
<a href="#">CondDB MySQL/</a>	1499	16 months	poeschl	Fix to prevent condbview.acl from crashing, # added to print statement
<a href="#">calice/</a>	299	2 years	poeschl	Update
<a href="#">calice_eddata/</a>	1769	10 months	lima	GL: update to TCMT strip ordering wrt Heal coords
<a href="#">calice_kicoconv/</a>	1860	9 months		This commit was manufactured by cvs2svn to create tag 'v04-02-06'.
<a href="#">calice_maps/</a>	2046	4 months	magnan	correct exit behaviour
<a href="#">calice_monitor/</a>	1252	21 months		This commit was manufactured by cvs2svn to create tag 'v01_00'.
<a href="#">calice_online/</a>	1864	9 months		This commit was manufactured by cvs2svn to create tag 'v04-05'.
<a href="#">calice_recut/</a>	2196	2 months		This commit was manufactured by cvs2svn to create tag 'v04-06-mc02'.
<a href="#">calice_sim/</a>	2199	2 months		This commit was manufactured by cvs2svn to create tag 'v01-00'.
<a href="#">calice_userlib/</a>	2185	2 months		This commit was manufactured by cvs2svn to create tag 'v04-10-mc03'.
<a href="#">ksof/</a>	58	3 years	gmavroma	removed

[Download GNU tarball](#)


Powered by [ViewVC 1.1-dev](#)

[ViewVC Help](#)

# Internal Structure

- A Look in a Repository
  - /conf directory containing repository configuration files
  - /dav directory for communication with apache
  - /db main directory with all stored files of the repository
  - format a file which contains values like version number of the repository
  - /hooks directory with scripts which SVN will execute if an action is made
  - /locks directory with locking data of SVN

**Never change things manually!!! If you are not sure**





## Authentication and Authorization to Web Server

- Anonymous
  - all repositories are readable to everybody
  - Location "public"
  - e.g. <https://svnsrv.desy.de/public/marlin>
- Via SSL
  - write permission is given to users with valid certificates
  - Location "svn"
  - e.g. <https://svnsrv.desy.de/svn/marlin>
- Via Kerberos
  - write permission is given to users with valid DESY account
  - Location "desy"
  - e.g. <https://svnsrv.desy.de/desy/marlin>



## Authentication with Apache

- Basic realm is global and exists for all pages
- Only necessary for writing permission (Limits)
- protects Location "public", with User rights and permissions
- Successful authentication only in other Locations when server sends request for Username of Certificate or Kerberos name
- FakeBasicAuth important
- Apache does Authentication and a general Authorization

## Authentication and Authorization in SVN

- Via SVN authorization file

- Gets Username from apache
- File where Administrators can give read/write permissions of their projects and subprojects
- Easy to handle and clear structure in the file

- example:

```
[repository:/...]  
User 1 = rw  
User 2 = r
```



## Administration

- After registration: maintainer is administrator of own projects
- Maintainer has the rights to add / delete members or to create new subprojects

- Online Interface for Administration

- <https://svnsrv.desy.de/admin/desy> for Kerberos based Authentication
- <https://svnsrv.desy.de/admin/svn> for SSL based Authentication



Hello Marian Gawron

You are a registered user (ID 3) <https://svnsrv.desy.de/admin>

Details of the Person you want to add or modify

Name(full DN-String of Certificate if exists): \_\_\_\_\_

DESY account name: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Write access to Project: \_\_\_\_\_

Commit-Mails:  yes  no

Send (data fields with \* are required) or  form contents

You are allowed to administer all projects except global  
You are member of global, afbackup and afadmin

Members of global

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	fribel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/O=GermanGrid/OU=DESY/CN=Frank Gaede	gaede	gaede@mail.desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@th.de	<input type="checkbox"/> delete

Members of afbackup

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	fribel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@th.de	<input type="checkbox"/> delete

Members of afadmin

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	fribel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@th.de	<input type="checkbox"/> delete

PROJECT CREATION AREA


Name of the new Project: \_\_\_\_\_

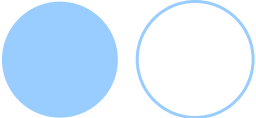
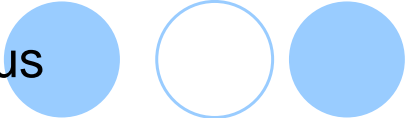
REQUESTS

User	requested Membership in	Status	action
fribel	fribel	<input type="radio"/> reject <input checked="" type="radio"/> accept	
gaelich	frictols	<input type="radio"/> reject <input checked="" type="radio"/> accept	


request(s) or  form contents

- add new members
- change own membership
- change own user information
- delete group members
- reject/accept requests




Status


- SVN server is working
  - svnsrv.desy.de
  - Intro: <http://svnsrv.desy.de>
- Repositories available and updated to current status in CVS soon
- Work on Online Administration Interface finished soon



## Sources

- SVN manual like on

- <http://svnbook.red-bean.com/en/1.4/index.html>

- “Apache Webserver 2” by Sebastian Wolfgarten