



Backing up AFS at University of West Bohemia

František Dvořák <valtri@civ.zcu.cz>

Oldřich Balák <obal@civ.zcu.cz>

Centre for Information Technology

University of West Bohemia



History (to 2003)

Two backup systems:

- AFS backup server - for AFS
- Networker - for end servers

Looking for new backup solution:

- new tape library
- required clients for Unix, Linux, and Windows
- preferred open-source (price, portability, ...)

It has been tested: bacula, amanda, fbackup, afsbackup ⇒ bacula



Backing up AFS

It is needed to back up:

- *PTS database* (AFS users and groups)
- *data*
- *permissions*

PTS database:

- cron job (encrypted data)
- bacula client fetches the data

Backing up AFS *(volumes)*

AFS volumes and permissions:

- several volume "groups": users, project, software
- using `vos dump`
 - by cron to disk array, then bacula
 - incremental: workaday at midnight (users, projects)
 - full: weekend (all volumes)
 - keeping of the backup: 14 days at disk array, 6 months on the tapes



Backing up AFS *(volumes)*

AFS volumes and permissions (cont.):

- three different locations (Pilsen Bory, Pilsen center, Cheb)
- restore: `vos restore`
- environment for users?



Bacula at UWB

- scope: 170 servers, 37000 user volumes + 680 project volumes, 3TB (1.4TB users + 1.25TB projects + 580GB software)
- type of the data:
 - filesystems (end clients)
 - special applications: AFS, databases
- launch modes:
 - bacula - time according to plan and state of job queue
 - cron + bacula - when exact time is required



Bacula at UWB

- topology:
 - director - supervises all the operations
 - storage - performs storage and recovery with the physical backup media
 - database - internal storage
 - console - management programs (text, gui)
 - clients - on the machines to be backed up
- at UWB: 4 servers, director+storage+DB



Bacula at UWB

- servers:
 - 2 servers in Pilsen Bory (tapes, disk array)
 - 1 server in Pilsen center
 - 1 server in Cheb
- tuning
 - 20 jobs in parallel for storage to disk array
 - 2 jobs in paralel for storage to tape library
- prefer disk array before tapes in future



Bacula at UWB

- server: Debian stable (currently 2.4.4)
- clients:
 - various platforms: Linux (Debian, RedHat, Scientific), Solaris, HP/Unix, Windows, FreeBSD, MacOS
 - historical platforms: Digital Unix, Ultrix, IRIS
 - preferred distribution version



HSM?

Use case:

- disk array + tape library
- move unused volumes from disks to tapes

Using open-source:

- fuse + bacula + openafs
- bacula: configuration needs to change manually