csync - roaming home directories

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csync - roaming home directories

1. Terminology and Concept
   - Terminology
   - Concept

2. Prototype and Problems
   - The Prototype
   - Problems and solutions

3. Rewrite: New features
   - VIO Plugin System
   - Testing driven development

4. Status
   - Development status of the rewrite

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Roaming Home Directories

Windows Server

//dom1/Users/gladiac

Linux Workstation

/home/gladiac

Linux Notebook

/home/gladiac

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What is csync?

csync is a bidirectional file synchronizer

- working with metadata (stat())
- working with a metadata journal
- client only (no specific csync daemon needed)
csync uses a simple design

- Collect and check metadata (update detection)
- Compare metadata (reconciliation)
- Copy files (propagation)
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csync prototype

- Proof of concept
- Demo
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Why a journal is needed to detect newly created files

- What is a journal?
What is a journal?

- It is the state of filesystem after the last synchronization
- It is a database with the metadata of each file
- Gets only written after a successful synchronization
- Demo
What happened?

- Time of the last synchronization: 5
- Time of new file on one replica: 4
- $4 < 5$ means no changes; file doesn’t exist on the opposite replica $\Rightarrow$ file has been removed
- Solution: first check if the file exists in the journal
Other discovered problems and solutions

Whats new?

- Uses faster algorithms (Linked list $O(n) \Rightarrow$ Red-Black Tree $O(\log n)$)
- Implements a journal (using sqlite3)
- Support for exclude list
- Better Virtual IO Plugin System (next slides)
- Completely testing driven development (more later)
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Idea behind VIO

- Be able to support various protocols (smb, sftp, …)
- Develop 3rd-party modules out of the csync source
- POSIX-like function inside of csync
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Why testing driven?

- Test new code as early as possible
- Don’t spend time in the debugger when starting to use the functions
- You can check if how well your code covers all possible conditions
Testing in csync

- Each C file has a test
- Each function of a file has one or more testcases
- Tests are executed by a testing framework.
CTest

- CTest ist part of the CMake build system
- Provides a 'make test' target
CDash

The Dashboard

- CTest submits testing result to CDash
- http://testing.csync.org/
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Status of the rewrite

- Base system and initialization:
  - Journal: abstract query and update function are already done
  - Journal: create table, update, insert, delete missing
  - VIO: in development

- Update detection: missing
- Reconciliation: missing
- Propagation: missing
Questions & Answers

Interested in development?

- Project page: http://www.csync.org/