

# Roaming Home Directories

Andreas Schneider <mail@cynapses.org>

csync

23rd April 2009



# Roaming Home Directories

- 1 Terminology and Concept
  - Terminology
  - Concept
- 2 Roaming Home Directories
  - PAM
  - pam\_csync
- 3 Plans for the future
  - Features users or developers asked for

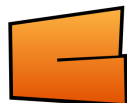
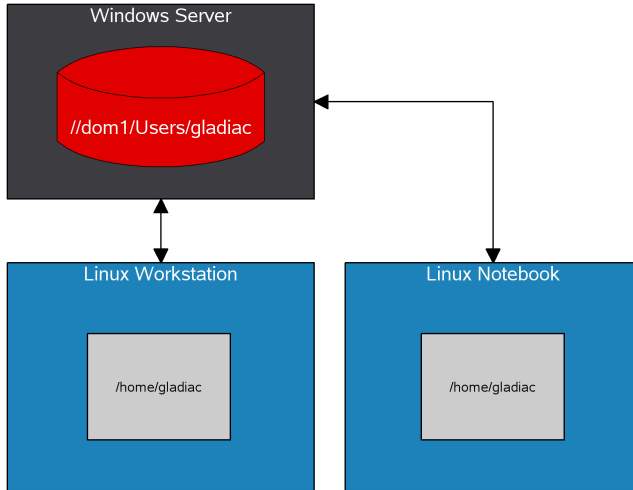


# csync - roaming home directories

- 1 Terminology and Concept
  - Terminology
  - Concept
- 2 Roaming Home Directories
  - PAM
  - pam\_csync
- 3 Plans for the future
  - Features users or developers asked for



# Roaming Home Directories



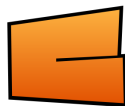
# Roaming Home Directories

- We don't talk about Profiles here
- This is about synchronizing files!
- No merging of content (not yet?)



# What is a replica?

- A tree or subtree of a filesystems
- This could be local or remote
- Changes are often made independently and as a result they do not contain the same information.



# What is a conflict?

A path is conflicting if it fulfills the following conditions:

- 1 it has been updated on one replica
- 2 it or any of its descendants has been updated on the other replica too, and
- 3 its contents are not identical.



# csync - roaming home directories

## 1 Terminology and Concept

- Terminology
- Concept

## 2 Roaming Home Directories

- PAM
- pam\_csync

## 3 Plans for the future

- Features users or developers asked for





# What do we need?

We need a bidirectional file synchronizer

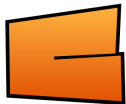
- working with metadata (`stat()`)
- working with a metadata status database
- client only (no specific daemon needed)



# What do we have?

csync simple file synchronizer which:

- collects and checks metadata (update detection)
- compares metadata (reconciliation)
- copy the files (propagation)



# How do we detect updates?

We compare the modification time of the file with the db entry.

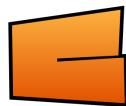
- no entry = new file
- newer modification time = file changed
- equal modification time = no changes
- ...



# What do we do with conflicts?

## The Merge Algorithm

- doesn't need any user interaction
- it is used by Microsoft for Roaming Profiles
- if it detects a conflict, it will use the most recent file and overwrite the file on the other replica



# Which protocols are supported?

- SMB: using Smbas libsmbclient
- SFTP: using libssh (will be in 0.43)



# For developers

csync uses:

- a red-black tree to store all information in memory
- a sqlite3 database to store all the metadata for the next synchronization
- a virtual IO plugin system to support different protocols
- a unit testing framework



# csync - roaming home directories

- 1 Terminology and Concept
  - Terminology
  - Concept
- 2 Roaming Home Directories
  - PAM
  - pam\_csync
- 3 Plans for the future
  - Features users or developers asked for



# Pluggable Authentication Module

Separates the tasks of authentication into four independent management groups:

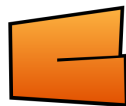
- authentication management
- password management
- account management
- session management





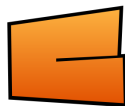
# csync - roaming home directories

- 1 Terminology and Concept
  - Terminology
  - Concept
- 2 Roaming Home Directories
  - PAM
  - **pam\_csync**
- 3 Plans for the future
  - Features users or developers asked for



# pam\_csync does ...

- authentication management to get the password and pass it to
- session management to synchronize the files



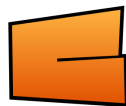
# pam\_csync features

- pam\_winbind support to get the Profile directory from the ADS
- kerberos support
- exclude users



# csync - roaming home directories

- 1 Terminology and Concept
  - Terminology
  - Concept
- 2 Roaming Home Directories
  - PAM
  - pam\_csync
- 3 Plans for the future
  - Features users or developers asked for



# GUI support

What's needed?

- A conflict algorithm
- Callback that for the GUI to display and modify conflicts



## More protocols

- WEBDAV: maybe possible with libneon
- RSYNC: maybe we can talk to rsync
- own daemon with mimetype support to merge special contents



## Questions & Answers

Interested in development?

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

