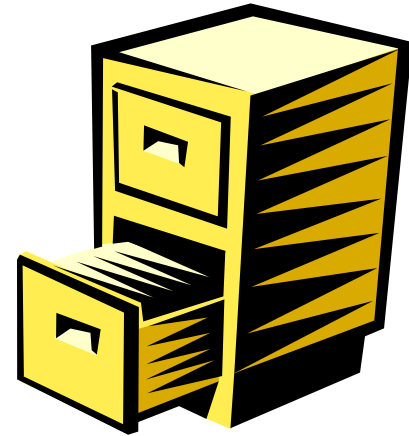


Digital U-STOR-IT



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Concept

◆ Web-based storage and file sharing

- Users can upload, download files
- User policy determines file access



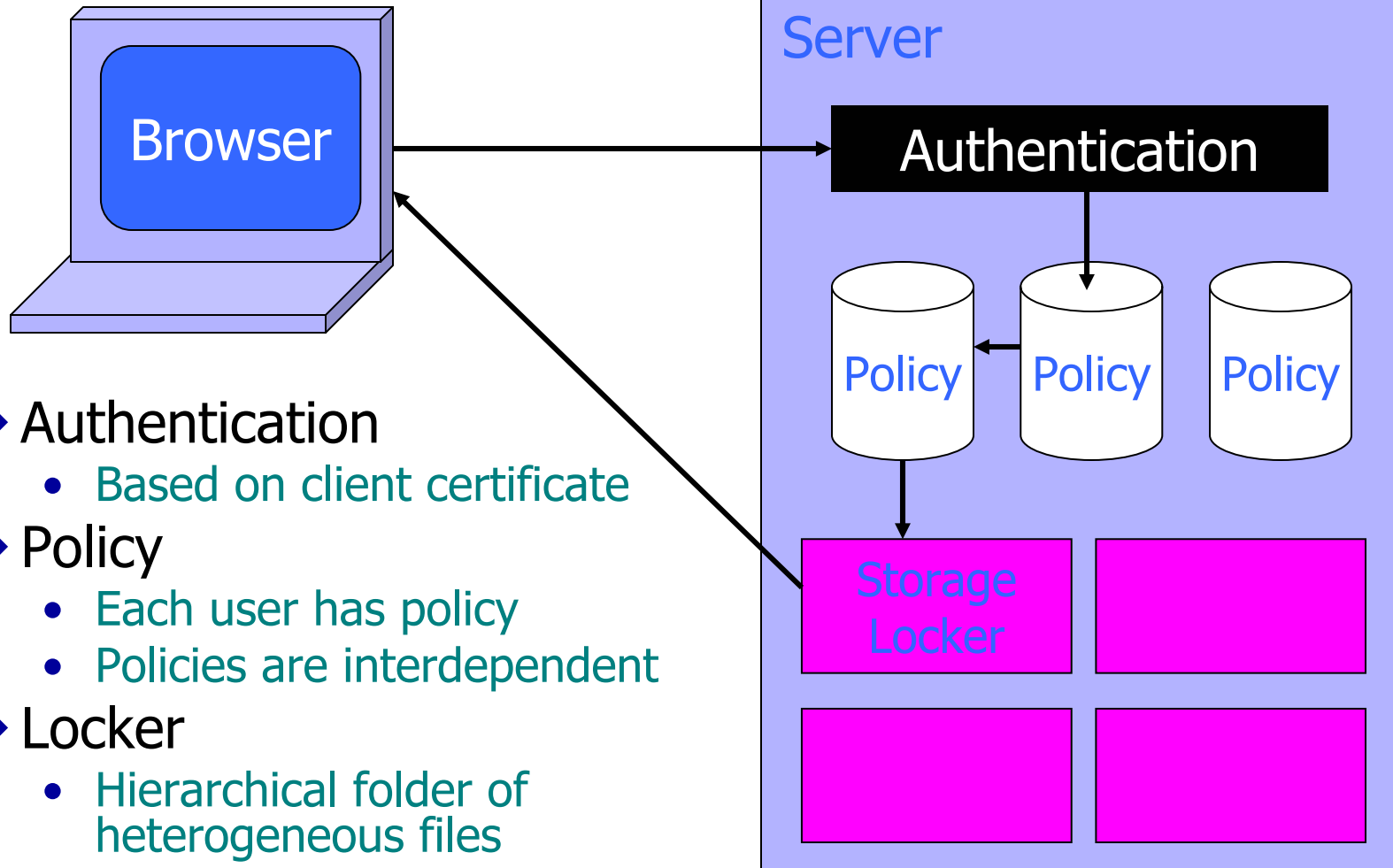
◆ Policy concepts

- Locker owner determines upload, download policy
 - Locker owner can delegate authority to file owner
 - File access can depend on many user policies

◆ Collaboration features

- Version control, email, newsgroup management

Centralized design, applicable to P2P



◆ Authentication

- Based on client certificate

◆ Policy

- Each user has policy
- Policies are interdependent

◆ Locker

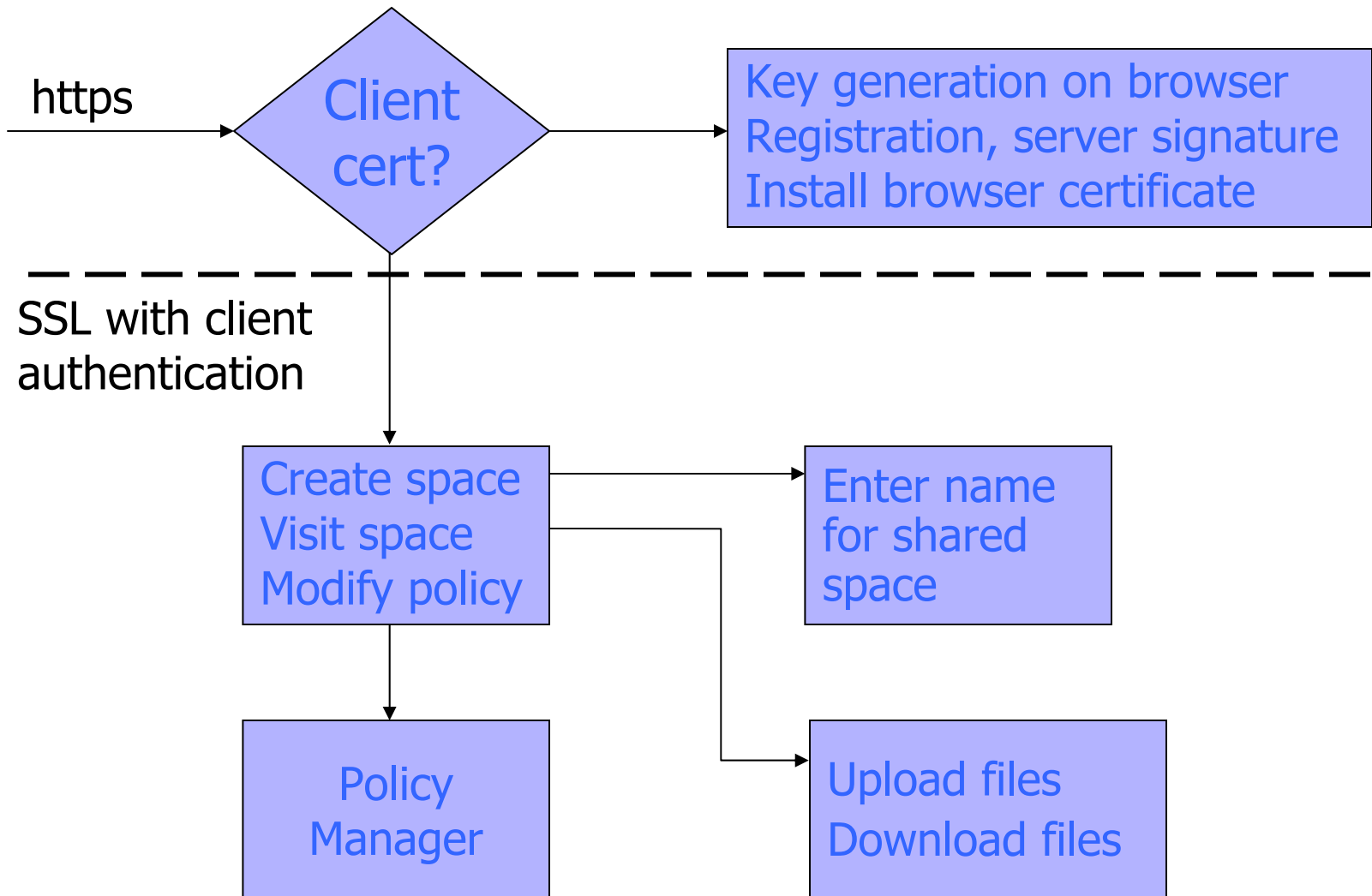
- Hierarchical folder of heterogeneous files
- Locker policy set by owner

Example

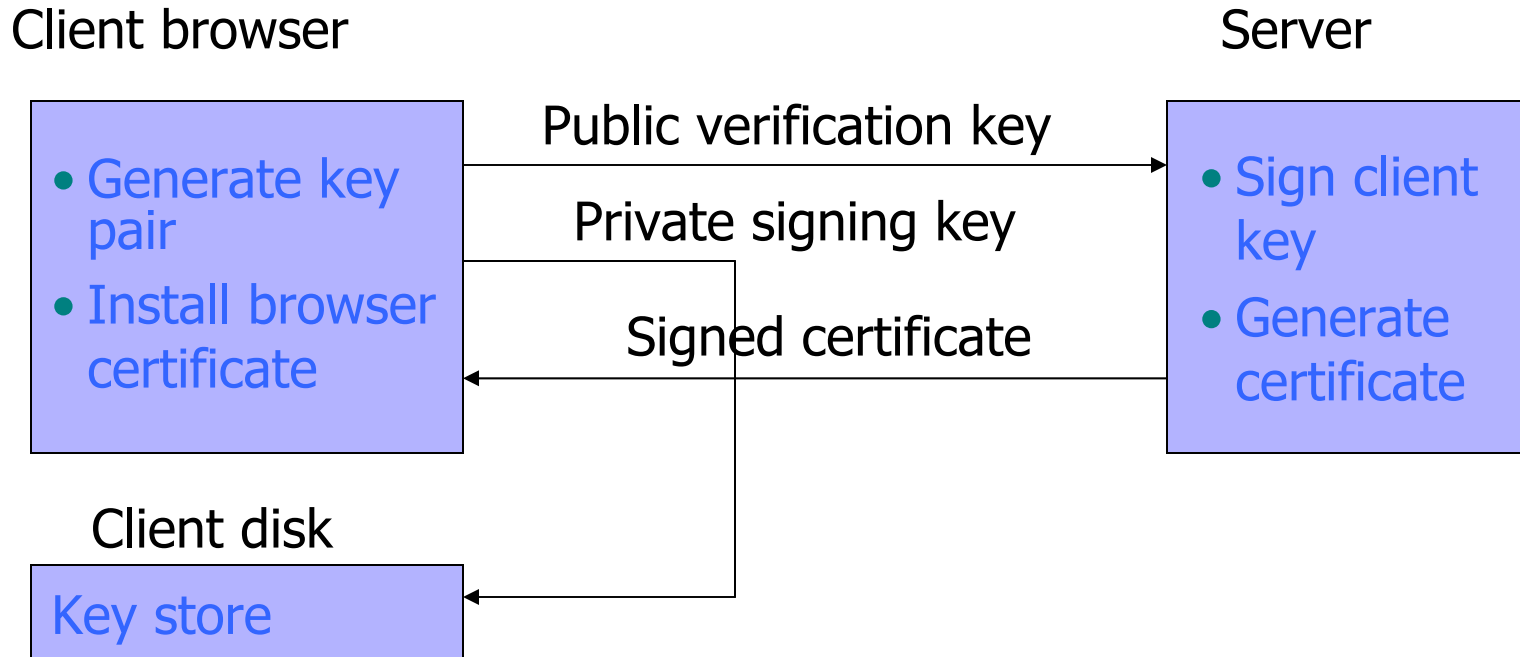
- ◆ Stanford photo club creates “photo locker”
 - Club members display pictures, share photo tips
- ◆ Policy
 - Club allows members to upload pictures
 - Club member who uploads picture owns it
 - Picture owner determines download
 - All members, specific friends, friends of friends, etc.

More flexible policy options than current commercial sites

Site design



Certificate generation



- ◆ Client signature and cert
 - used in SSL client authentication
 - Used for access control

How to define a user?

◆ First try: Email Address

- Email addresses are unique, so having two users identified as the same person is impossible
- However, most people have multiple email addresses...which one to use?
- If another user does not know your email address, he can't find you

◆ Second try: Name and Domain

- Users have only one name and domain, so there's no choice
- However, our system does not handle two users with the same name and domain, although they might exist in reality
- What exactly is a domain? No one is really sure...

◆ Final try: Name

- By using hidden user IDs, we can have multiple users with the same name
- Users provide other optional information to define themselves more (university or company, city, and state)

Certificate Request Form

https://wazoo.stanford.edu/cgi-bin/genReq.pl

Home USAG Stanford Yahoo! Rolling Stone Google Java Docs Hunger Site Weather Wazoo Waka

Personal Certificate Request

Fields marked with an asterisk (*) are required.
Click [here](#) for information about how this form relates to UStonit.

2048 (High Grade)

*First Name: *Last Name:

*Email:

City: State:

University or Company:

Your Usage (location, date, purpose, etc.):

How long would you like your certificate to last?
Unit of time: Years Amount of Time: 1

Submit your certificate request

Document: Done (26.38 secs)

Password/Cookie Authentication



- ◆ Allows easy remote user authentication
- ◆ DES/MD5 encrypted cookie stores user ID info
- ◆ Security based on a user determined password, potentially weaker than client certificate authentication
- ◆ Security made tighter by providing a restricted view of a user's account
- ◆ Security settings can be managed when logged in via client certificate

Communication Methods

◆ Bulletin Board



- Useful for providing suggestions and making inquiries about a specific file
- Post new messages and reply to previous messages
- Everyone who has read permission for a file may read postings

◆ Messaging Center



- Send personal messages regarding a file you and others have read permission for
- Manage messages in your inbox and sent box
- Users are notified when they receive a new message

Bulletin Board Postings

Bulletin Board Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media History Mail Print Edit Discuss AIM

Address <https://waka.stanford.edu:8443/ustorit/bulletin?action=list&fileid=94&filename=null> Go

Links >> Google Search Web Search Site PageRank Page Info Up Highlight

[Home locker\(Demo Guy\)](#) [Go](#) [Credentials](#) [Settings](#) [Mail Center](#) [Help](#)

Bulletin Board Postings for null:

[] [Too Dark](#) Demo Guy Aug 26, 2002 5:40:41 PM PDT
[Re: Too Dark](#) Demo Guy Aug 26, 2002 5:41:00 PM PDT
[Re: Too Dark](#) Demo Guy Aug 26, 2002 5:41:13 PM PDT

[] [New gif](#) Demo Guy Aug 26, 2002 5:41:47 PM PDT

[] [Change it](#) Demo Guy Aug 26, 2002 5:43:10 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:43:22 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:43:30 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:43:38 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:43:49 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:43:56 PM PDT
[Re: Change it](#) Demo Guy Aug 26, 2002 5:44:05 PM PDT

Start Bulletin Board Page - ... Microsoft PowerPoint - [slid... 5:45 PM

Version Control

- ◆ Ability to upload new versions of a file
- ◆ Useful for group projects, collaborations
- ◆ Allows other users to edit or change a file
- ◆ Owner decides who can “upload a new version” of his file
- ◆ Old versions of the file are stored
 - Anyone with read permission may view old versions
 - Only those who have delete permission may delete the file and its old versions
 - Previously, only uploading a *new* file and deleting it was possible

