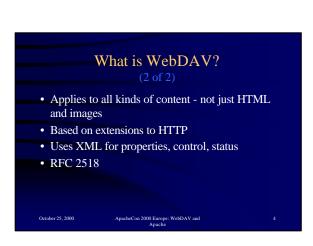
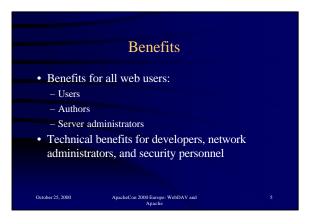




What is WebDAV? (1 of 2) • Web-based Distributed Authoring and Versioning - "DAV" is the usual short form • Goal: enable interoperability of tools for distributed web authoring • Turns the Web into a writeable medium







Author Benefits

- Author: the person who writes the content
- Standard way to place content on server
- Move/copy the content around
- Tag the content with metadata
- Overwrite protection in group scenarios

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Administrator Benefits

- Administrator: the person running the server
- DAV namespace does not have to mirror a specific directory structure (flexibility)
 - Could even be used for arbitrary repositories
- Authentication via HTTP; system accounts not required (security)

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Technical Benefits

Overview

- Properties ("metadata")
- Overwrite protection
- · Namespace management
- Infrastructure: old and new
- Replacement protocol

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Technical Benefits

Terminology

- Collection
- A collection of resources
 - A collection is also a resource
- Resource
 - Generic name for collections or *member resources*
- Member Resource
 - "Leaves" in a URL namespace

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Technical Benefits

Properties **Properties**

- Properties are name/value pairs
 - Names are uniquely identified with URIs
 - Values are well-formed XML fragments
- All resources have properties
 - Files and directories
 - Server-defined/maintained, or client-defined
- Records metadata such as author, title, modification time, or size

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Technical Benefits

Overwrite Protection

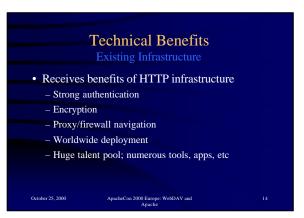
- Shared and exclusive locks
- Locks have characteristics such as timeouts, owners, and depth
- Identified by authentication and lock token
- Apply to whole resources, not portions

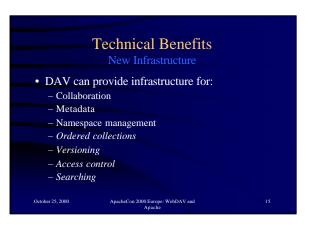
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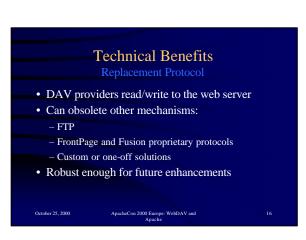
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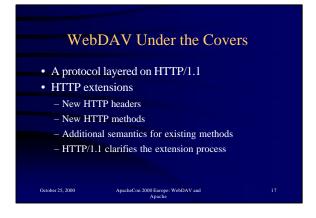
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Technical Benefits Namespace Management • "Namespace" refers to the URL hierarchy • DAV provides mechanisms to create, move, copy, and delete resources October 25, 2000 ApachaCon 2000 Europe: WebDAV and Apache











New HTTP Methods

Overview

- COPY, MOVE
- MKCOL
- PROPPATCH, PROPFIND
- LOCK, UNLOCK
- Semantics for HTTP/1.1 methods:
 - GET, PUT, DELETE, OPTIONS

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New HTTP Methods COPY, MOVE

- Pretty obvious: copy or move resources
- Copying collections uses Depth: header
- Destination: header specifies target
- Also uses Overwrite: header
- Optional request body controls the handling of live properties

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New HTTP Methods MKCOL

- Create a new collection
- Avoids overloading PUT method

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New HTTP Methods

PROPPATCH, PROPFIND

- PROPPATCH is used to set, change, or delete properties on a single resource
- PROPFIND fetches one or more properties for one or more resources

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More on PROPFIND

- Using PROPFIND anonymously allows users to discover files
- Best to require authentication
- In the future:
 - Browsers will want it for "nice" directories
 - Clients will want PROPFIND for metadata
 - Server will have finer granularity to hide items

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New HTTP Methods LOCK, UNLOCK

- Add and remove locks on resources
- Both use the Lock-Token: header

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Scenarios Collaborative authoring Network file system Unified repository-access protocol Remote software engineering Minimal support until versioning arrives

Scenario: Departmental Server

- Department of 20 staff
- They operate a private web server
- Web server acts as a repository
 - File servers used to play this role
- Everybody needs to author documents
- Web server (vs file server) provides better navigation, overviews, and offsite links

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Scenario: Departmental Server

- Web site is DAV-enabled
 - Allows remote authoring and maintenance
 - Allows tagging documents with metadata
- Security can be used to limit or partition areas for specific users
- Documents drop right onto the server
- New pages for summaries and overviews

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Scenario: Web Hosting

(1 of 2)

- 5000 users
- http://www.someisp.com/username/
- No need to enter users into /etc/passwd
 - Use any Apache mod_auth_* module
- User directories can be distributed, shifted, updated as needed across the filesystem

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Scenario: Web Hosting

- Apache's httpd.conf gets complicated
 - Need section for each user
 - Something like UserDir would be great
 - For now, include a generated file

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Other Scenarios

- Not restricted to the Internet
- LAN environments
 - Departmental workgroups
 - Software development teams
- WAN/VPN environments
- Remote workgroups, developmentBase protocol for client/server interactions

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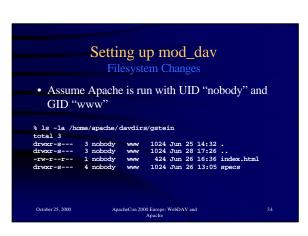
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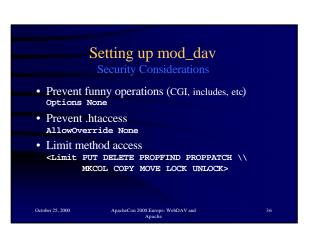
Setting up mod_dav Overview Grab and install tarball One simple directive: DAV On Use within <Directory> or <Location> Need to change file/dir ownership and privs Enable locking Add security as appropriate

Setting up mod_dav Installation • Grab tarball: - http://www.webdav.org/mod_dav/ • Install in one of two ways: - Via APXS (easiest) - Build within the Apache source tree • Expat (a subset) is part of Apache 1.3.9

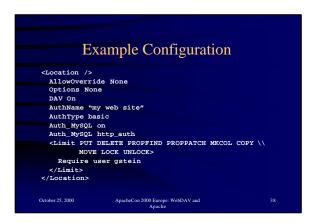




Setting up mod_dav Enable Locking • Additional directive for the lock database DAVLockDB /home/apache/davdirs/lock.db • Lock databases are per-server October 25, 2000 ApacheCon 2000 Europe: WebDAV and Apache



Limiting PROPFIND • Note that PROPFIND is in the <Limit> directive - Limits the use of PROPFIND to authorized users - Based on concerns mentioned earlier about "discoverability" of a web site October 25, 2000 ApacheCon 2000 Europe: WebDAV and Apache



DAV Tools and Clients Overview Open source Joe Orton's sitecopy and cadaver Nautilus Python, Perl, C client APIs Commercial Adobe: GoLive 5.0 Microsoft: Office 2000, IE5 Lots of DAV servers



DAV Tools and Clients Joe Orton's cadaver Interactive command-line tool Provides listing, moving, copying, and deleting of resources on the server October 25, 2000 ApacheCon 2000 Europe: WebDAV and Apache

DAV Tools and Clients Nautilus • Nautilus is the file manager for GNOME • Uses gnome-vfs - "Virtual File System" - Can target WebDAV repositories • Provides full GUI-based management of a DAV repository

DAV Tools and Clients

- Good for experimentation
- Building new apps
- Most are layered onto existing HTTP APIs
- Python API from Greg Stein
- Perl API from Patrick Collins
- C API (Neon) from Joe Orton

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DAV Tools and Clients

- One of the first Web authoring tools to support the DAV protocol
- Page design, authoring, construction
- Uses locking to assist authoring teams
- Site management

DAV Tools and Clients

- Broad distribution
- Word, Excel, etc are DAV-enabled
 - Open/save files directly from/to web server
 - Uses DAV locks for overwrite protection
- First round of Microsoft's move to DAV
 - Also: IIS5, Exchange 2000

DAV Tools and Clients

- Enabled with the "Web Folders" add-on
- Adds "Web Folders" section into Windows Explorer, under "My Computer"
 - Allows drag and drop of files
 - Standard move/copy/delete/rename of files

Future Clients (Wish List)

- KDE file manager
- Pharmacy (a GNOME frontend to CVS)
- Emacs EFS
- Mozilla
- CVS-like front-end
 - Subversion is going in this direction

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Implementing mod_dav

- Apache has great extensibility
- But:
 - Hard to add new methods
 - Security: file ownership, SUID helpers, etc
 - Alternate access to repository
- Security issues led to private repository
- Module provides excellent speed

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