What's new in httpd 2.2?

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http://www.outoforder.cc/presentations/
2.2?

- major.minor.patch
- Versioning Scheme:
  - Even = Stable / General Availability
    - 2.0.x & 2.2.x
  - Odd = Development / Alpha / Beta
    - 2.1.x & 2.3.x
Stable...

- Rules:
  - Changes require Voting (RTC)
  - Cannot break forward compatibility
    - Module API
    - Binary API
    - Configuration Directives
History

• 2.0al released in March 2000
• 2.1-dev created in November, 2002
• 2.2.0 released on ?
Current Status

• 2.1.6-alpha on June 27 2005
• Plenty of Features!
• Needs alpha/beta testing
• Source Compat with most modules
  • mod_php, mod_perl2, etc
- Authentication
- Caching
- Proxying
- Smart Filtering
- Event MPM
- DBD Framework
- Many Many Others!
Authentication

• Refactor of Authentication Modules
• Split into methods and providers
• Easy to write new providers
  • Before, required each back-end to write a full Basic or Digest Auth Layer
• Removed Auth*Authoritative Directives
mod_authn_file

• Provides a back-end for both Basic and Digest Authentication

• Default configuration is partially backwards compatible.
<Location /use-basic>
  AuthType Basic
  AuthName “Private Area”
  AuthBasicProvider file
  AuthUserFile /example/.htpasswd
  Require valid-user
</Location>

<Location /use-digest>
  AuthType Digest
  AuthName “Private Area”
  AuthDigestProvider file
  AuthUserFile /example/.htpasswd
  Require valid-user
</Location>
<Location /use-file-and-ldap>
  AuthType Basic
  AuthName “Private Area”
  AuthBasicProvider file ldap
  AuthUserFile /example/.htpasswd
  AuthLDAPURL ldap://ldap.example.com/o=Example
  Require valid-user
</Location>
mod_authn_alias

- Mix and match any authentication provider
- Check multiple back-ends of the same type
<AuthnProviderAlias ldap ldap-alias1>
  AuthLDAPBindDN cn=youruser,o=ctx
  AuthLDAPBindPassword yourpassword
  AuthLDAPURL ldap://ldap.host/o=ctx
</AuthnProviderAlias>

<AuthnProviderAlias ldap ldap-other>
  AuthLDAPBindDN cn=yourotheruser,o=ctx
  AuthLDAPBindPassword yourotherpassword
  AuthLDAPURL ldap://other.ldap.host/o=ctx
</AuthnProviderAlias>

<Location /use-aliased-ldap>
  AuthBasicProvider ldap-alias1 ldap-other
  Require valid-user
</Location>
Future Auth Dev..

- mod_authnz_dbd
- Built on apr_dbd
- MySQL, Postgres, SQLite Drivers available
Caching

- No longer experimental
- Attempts to be HTTP RFC Compliant
- Two Storage Modules:
  - mod_disk_cache
  - htcacheclean
  - mod_mem_cache
  - no advantages over disk_cache
Why Cache?

• Performance....
  • Proxied Content
    • Slow back-end servers
  • Dynamic Content
    • Don’t Regenerate pages for every hit
How Fast?

- mod_disk_cache:
  - IO Limited, not CPU.
  - Kernel will use sendfile()
  - Easily saturate Gigabit Links
CacheEnable disk /
CacheRoot /var/cache/apache
CacheDirLevels 5
CacheDirLength 3

CachelgnoreCacheControl off
CachelgnoreHeaders None
CachelgnoreNoLastMod On

CacheDefaultExpire 600
CacheMaxExpire 3600
mod_proxy

- Forward and Reverse Proxy
- Protocols:
  - HTTP 0.9, 1.0, 1.1
  - AJP 13
  - FTP
  - CONNECT (SSL Proxying)
Big Features

• Connection Pooling
• AJP
  • Native Protocol for talking to Tomcat
  • Replace mod_jk, mod_jk2, mod_webapp..
• mod_proxy_balancer
  • Load Balancer
• Change Worker Status
# Set the soft maximum (smax) to 1
ProxyPass / http://server.example.com/ smax=1
ProxyPassReverse / http://server.example.com/
ProxyPass /balancer-manager !
<Location /balancer-manager>
  # <insert authentication here>
  SetHandler balancer-manager
</Location>
ProxyPass /balancer-manager !

<Location /balancer-manager>
  # <insert authentication here>
  SetHandler balancer-manager
</Location>

ProxyPass / balancer://example/

<Proxy balancer://example/>
  BalancerMember http://server1/
  BalancerMember http://server2/
  BalancerMember http://server3/
</Proxy>
Load Balancer Manager for ooo.thunder.in.force-elite.com

Server Version: Apache/2.1.5-dev (Unix) DAV/2 mod_ssl/2.1.5-dev OpenSSL/0.9.7g mod_transform/0.7.0
Server Built: May 19 2005 18:16:37

LoadBalancer Status for balancer://test

<table>
<thead>
<tr>
<th>StickySession</th>
<th>Timeout</th>
<th>FailoverAttempts</th>
<th>Method</th>
<th>Route</th>
<th>RouteRedir</th>
<th>Factor</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
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<tr>
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<td>1.thunder</td>
<td></td>
<td></td>
<td>Ok</td>
</tr>
<tr>
<td>http</td>
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<td></td>
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Apache/2.1.5-dev (Unix) DAV/2 mod_ssl/2.1.5-dev OpenSSL/0.9.7g mod_transform/0.7.0 Server at ooo.thunder.in.force-elite.com Port 80
Load Balancer Manager for ooo.thunder.in.force-elite.com

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Edit worker settings for http://1.thunder

Load factor: 
Route: 
Route Redirect: 
Disabled: 

Submit
mod_filter

- Dynamic Configuration of Output Filters
- AddOutputFilterByType?
  - What if you don’t know the type?
    - Proxies!
- Chains?
FilterDeclare SSI
FilterProvider SSI INCLUDES \\n    resp=Content-Type $text/html
FilterChain SSI
FilterProvider unpack jpeg_unpack Content-Type $image/jpeg
FilterProvider unpack gif_unpack Content-Type $image/gif
FilterProvider unpack png_unpack Content-Type $image/png

FilterProvider downsample downsample_filter \  
    Content-Type $image
FilterProtocol downsample "change=yes"

FilterProvider repack jpeg_pack Content-Type $image/jpeg
FilterProvider repack gif_pack Content-Type $image/gif
FilterProvider repack png_pack Content-Type $image/png

<Location /image-filter>
    FilterChain unpack downsample repack
</Location>
Event MPM

• Experimental MPM

• Requires:
  • Linux 2.6 (EPoll)
  • *BSD (KQueue)
  • Mac OS X 10.4 (KQueue)
  • Solaris 10 (Event Ports)
HTTP Keep Alive

- Sends Multiple HTTP Requests over a single TCP Socket.
- Performance Tuning Docs commanded that it is Disabled!
- Designed to improve performance?
- Apache HTTPD is the problem....
Why?

- All other MPMs:
  - Child waits KeepAliveTimeout seconds
  - No other requests served
  - Fill up to MaxClients
The Solution!

- Event MPM uses a separate thread:
  - Handles all listening Sockets
  - Handles all KeepAlive connections
    - Workers pass a KeepAlive Conn back
    - Workers free to service other requests
Not Perfect.

- Pipelined Requests with mod_ssl
- No easy solution at this time
- Maybe fixed in 2.4?
mod_dbd

- Database Services for other modules
- Connection Pooling
- Connection Sharing (cross module)
- Make it easier to build applications on top of httpd.
More Features

• mod_ssl: TLS Upgrade inside HTTP
• mod_info: Hooks, File Names, and Line Numbers
• Large File Support enabled by default
• libpcre Updated to 5.0
• Dump loaded modules, httpd -M
• httxt2dbm: Create DBM Files for RewriteMap
Future Dev

• Async MPMs
• Summer of Code:
  • Perchild Replacement
  • mod_ftp
  • mod_smtpd
• TH17
  Caching Tips for improving Performance

• FR09
  Clustering and Load Balancing using mod_proxy
Questions?

- Slides Online:
  - http://www.outoforder.cc/