CACHING

CacheSetup Configuration - Headers

The headers tab allows you to define the HTTP headers that will be applied to the rules established under the rules tab. The basic parameters are covered below:

Last-Modified Header
Determines if Zope will provide a Last-Modified header when serving content associated with this header rule.

ETag Header
Determines if Zope will provide an ETag header when serving content associated with this header rule.

Vary Header
Determines if Zope will provide a Vary header when serving content associated with this header rule.

max-age
This sets how long content can be stored in the user's web browser before it needs to be reloaded.

s-maxage
This sets how long content can be stored in the HTTP proxy before being reloaded from Zope.

Other Useful Caching Resources

- http://plone.org/documentation/kb/cache-content/
- http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html
- http://developer.yahoo.com/performance/rules.html

Types of Cache

Proxy Cache
Caching performed by a HTTP caching proxy (typically Varnish or Squid).

Browser Cache
Caching of previously downloaded content in a user's web browser.

RAM Cache
Caching of page content that is stored in the running Zope process' RAM.

What HTTP Status Codes Mean

General Categories of Status Codes:
1xx - Informational
2xx - Successful
3xx - Redirection
4xx - Client Error
5xx - Server Error

Specific codes used while debugging your caching setup:

200 - OK
This is the normal response of a web server after it receives a GET request. After sending HTTP headers, page content is served.

301 - Moved Permanently
This response is returned when the server needs to redirect to another location.

304 - Not Modified
Returned by the proxy server if it receives a conditional GET request, and the cached content has not expired yet.

CacheSetup Installation

`Products.CacheSetup` is an add-on product for Plone that will set up Zope's RAM Cache as well as insert HTTP Cache-Control headers to control browser and proxy caches.

`CacheSetup` can be installed via buildout by adding it to each Zope instance's `eggs` section of your buildout configuration. Example:
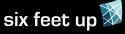
```
[instance]
…
eggs =
    …
    Products.CacheSetup
```

Once your configuration has been updated, you will need to re-run buildout:

```
$ bin/buildout -N
```

From there, `CacheSetup` can be installed through Plone's "Add/Remove Products" page. Upon successful installation you will see a "Cache Configuration Tool" available in the Plone Control Panel.

Cache-Control Headers

Cache control headers are sent in both HTTP requests and responses. They are intended to control both browser and proxy caches. The most important header is the 'Cache-Control' header, which is explained below.

HTTP Response Cache-Control Parameters

By default, Plone will not send out any Cache-Control headers. The most common way to get Plone to add these headers to HTTP responses is to install `Products.CacheSetup`. Once CacheSetup is installed, you can configure it to send out different Cache-Control headers based upon the type of content that Plone is serving. See "CacheSetup Configuration - Headers" section on back page for details.

max-age
 Specifies an amount of time in seconds that content can be considered 'fresh'.

s-maxage
 Similar to max-age, but applies to shared caches (proxy caches like Varnish or Squid).

public
 Marks content served to a user authenticated via HTTP authentication to be stored in a shared (proxy) cache.

private
 Marks content served to a user authenticated via HTTP authentication to NOT be stored in a shared (proxy) cache.

no-cache
 Tells a caching proxy server to NOT store data contained in this response.

Example:
 This will tell a browser and proxy cache to hold a cached version of the content for one day:

```
cache-control: max-age=86400, s-maxage=86400
```

HTTP Request Cache-Control Parameters

These parameters are set by a browser to tell a proxy cache how to serve content. All RFC-compliant proxy caches should obey these rules, but they can be configured not to.

no-cache
 Forces the proxy to ignore any cached version of a piece of content and fetch it from a backend server.

proxy-revalidate
 Tells the proxy server that content should be determined to be fresh based upon the expire information provided.

Example:

```
cache-control: no-cache
```

Vary Header

The Vary header can be applied to objects served from Zope if the option is enabled in `CacheSetup`. The Vary header instructs an HTTP proxy server to serve a certain version of a cached object to the appropriate user. If used, request headers specified in the Vary header must match for a piece of cached content to be sent to a user. For example, if "User A" requests an object with `Accept-Encoding: gzip` in the request, a proxy may cache the gzipped version of that content.

Later if "User B" requests the same object, that user may not support gzipped content so the caching proxy should not serve them the cached (gzipped) version. This would require the vary header to look like:

```
Vary: accept-encoding
```

ETag

ETags are generated by the server to help a client determine whether a component in its cache matches what is on the web server. How the ETag is generated is completely up to the web server. ETags can be generated by `CacheSetup`.

CacheSetup Configuration

`CacheSetup` comes with reasonable defaults to enable caching in both the browser and proxy cache. Depending upon your site's usage you may want to make some changes to the caching rules.

CacheSetup Configuration - Rules

The rules tab in the Cache Configuration Tool allows you to associate content types in your site with different kinds of caching:

Content Types
 Selects which Plone content types this rule applies to.

Templates
 Selects which Plone templates this rule applies to.

Cache Preventing Request Values
 This rule will not apply to requests that contain these values. These can be useful for items that are updated very frequently and that you do not want to be cached.

Header Sets
 These are the header sets that you can apply to these objects for both anonymous and authenticated users. These header sets correspond to what is defined underneath the `headers` tab in the Cache Configuration Tool.

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