Ctrl+F5 Won’t Save You

Strategies for Statis Asset Caching

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Scenario

- A nonprofit org posts in annual report to its website and sends out a blast email to its members with a link.
- Almost immediately, staff find and fix an error with the financials in the report.
- Hours later, they notice the URL in the email is still loading the original report with the error.

*Nonprofit’s website is running on Apache + Varnish

Scenario

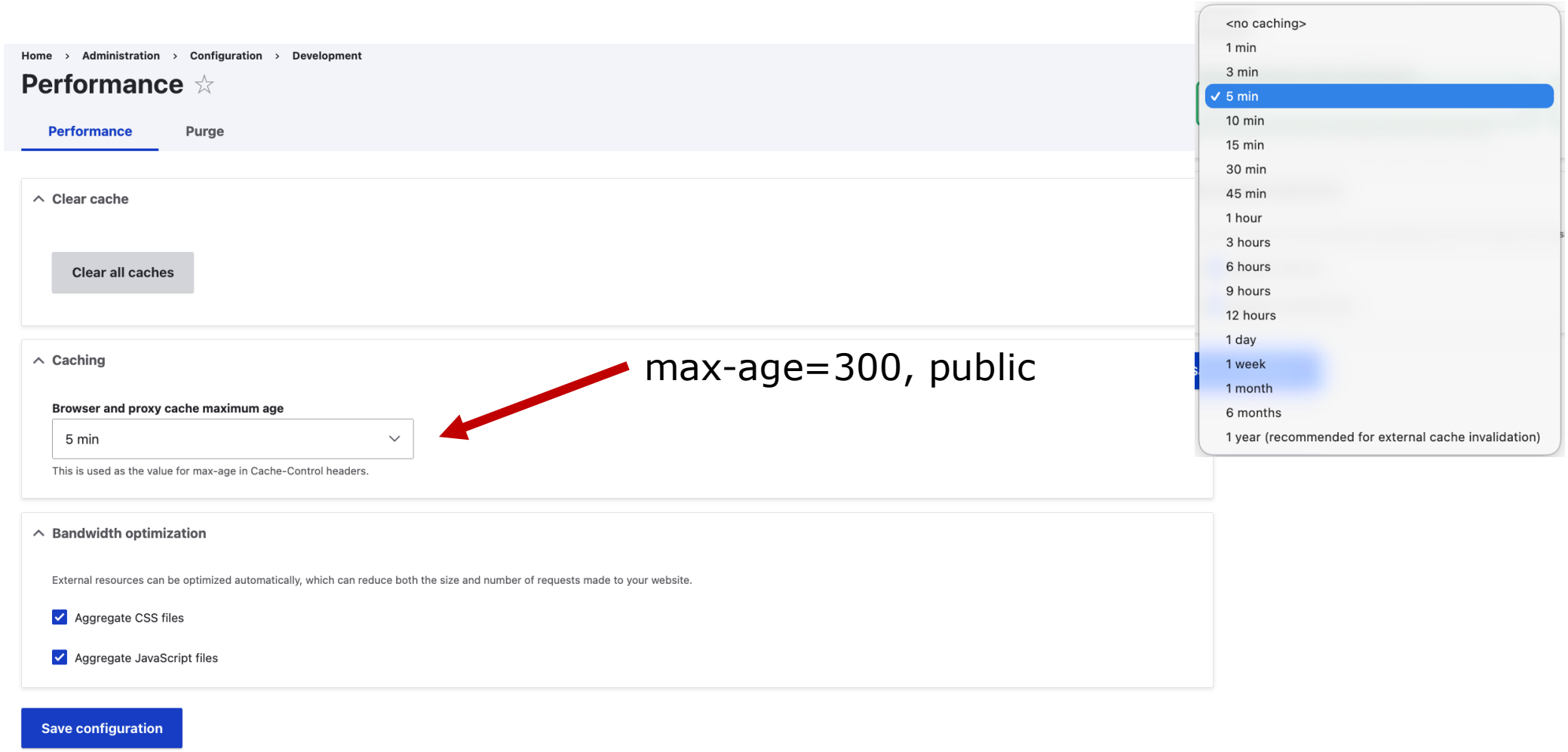
- Original filename: 2026_annual_report.pdf
- Replacement filename: 2026_annual_report_0.pdf
- Varnish is caching original file for 1 year

Cache-Control Header

- Header instructs external caches how to behave
  - External caches: Varnish, CDN, browser, etc.
- Examples:
  - max-age=300, public
  - must-revalidate, no-cache, private

Learn more:
https://developer.mozilla.org/en-US/docs/Web/HTTP/Reference/Headers/Cache-Control

Cache-Control (Dynamic Content)



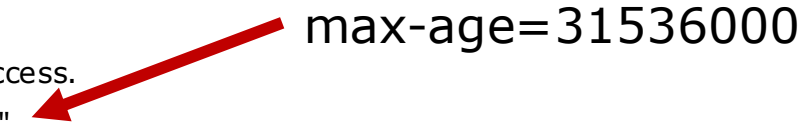
/admin/config/development/performance

Cache-Control (Static Assets)

```
# Requires mod_expires to be enabled.
<IfModule mod_expires.c>
  # Enable expirations.
  ExpiresActive On

  # Cache all files for 1 year after access.
  ExpiresDefault "access plus 1 year"

  <FilesMatch \.php$>
    # Do not allow PHP scripts to be cached unless they explicitly send cache
    # headers themselves. Otherwise all scripts would have to overwrite the
    # headers set by mod_expires if they want another caching behavior. This may
    # fail if an error occurs early in the bootstrap process, and it may cause
    # problems if a non-Drupal PHP file is installed in a subdirectory.
    ExpiresActive Off
  </FilesMatch>
</IfModule>
```



[docroot]/.htaccess

Detour into Philosophy

- Should user-uploaded file names be reusable?
- E.g. 2026_annual_report.pdf

Reusing File Names

- Caching Considerations
  - How can all layers of external cache be invalidated?
- Drupal Core Behavior
  - By default, user-uploaded file paths cannot be reused
  - Orphaned managed files are never deleted*
    - See https://www.drupal.org/node/2891902 (since D8.4.0)

*2026_annual_report.pdf will continue to be available to anyone with the URL

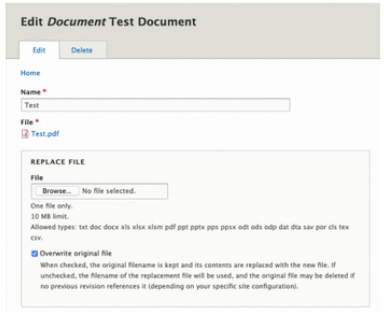
Replacing Media Entity Files

Media Entity File Replace

Add Issues for Media Entity File Replace to dashboard +

View | Version control | View history

This module allows content editors to easily replace the source files associated with file-based media types (like "Document"). The replacement file *overwrites* the existing file, keeping the same filename and path, which is usually what content editors want to do when performing a file replacement.



This module operates on the *media entity* level, meaning the file replacement is done by accessing the edit form for a media entity that has a file source field on it. If you're using Drupal's media module for document management, then this is what you want.

Without this module, content editors would typically try and replace a file by editing the media entity, using the "remove" button on the file widget, and uploading a new replacement file with the same filename. However, this does not work as intended, as Drupal will append a number to the end of the replacement file, like "_1" or "_2", instead of actually overwriting the original. The only workaround is to delete the media entity, hope the site is configured to automatically delete unused files on cron runs, wait for that deletion to occur, and then upload a new document with the same fil

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Maintainers


bkosborne


joevagyok

Issues for Media Entity File Replace

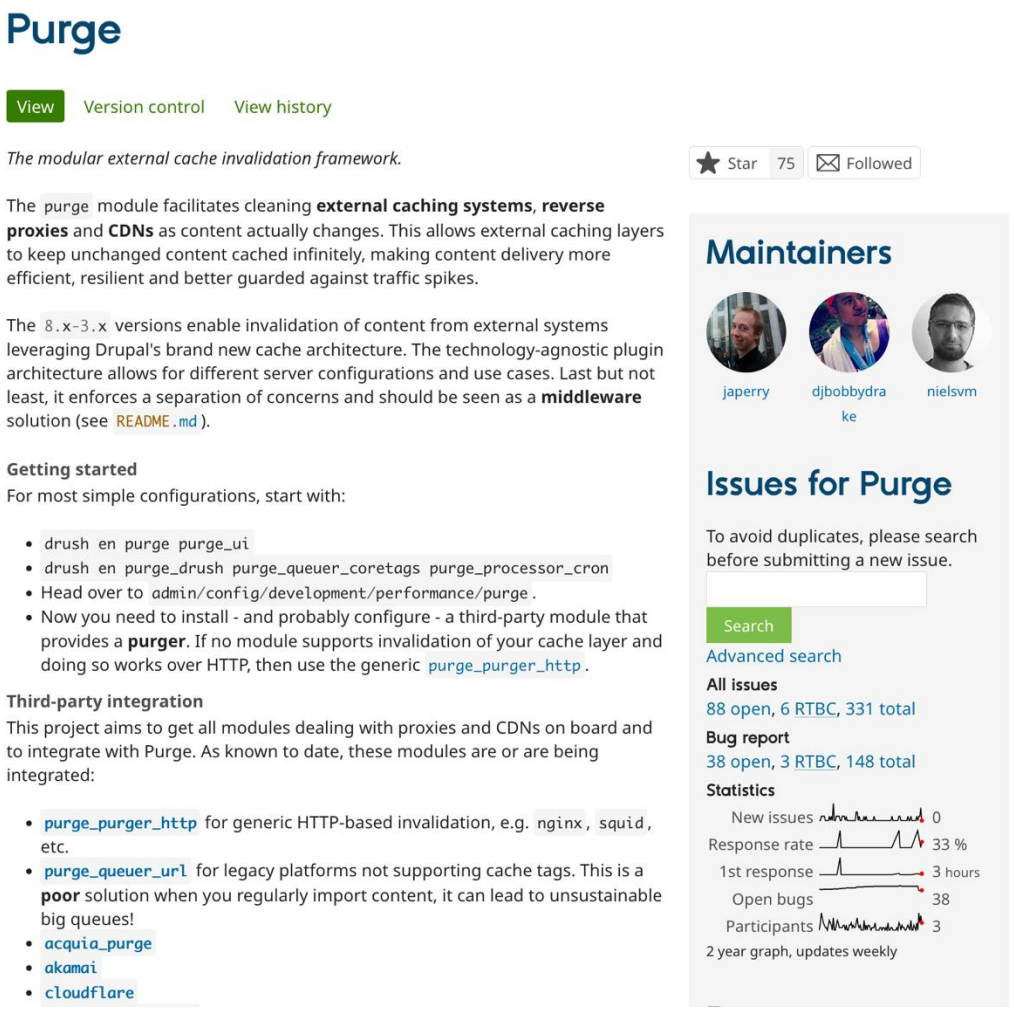
To avoid duplicates, please search

https://www.drupal.org/project/media_entity_file_replace

External Caching

- Need to invalidate Varnish and browser cache

External Caching



Purge

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The modular external cache invalidation framework.

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The `purge` module facilitates cleaning **external caching systems**, **reverse proxies** and **CDNs** as content actually changes. This allows external caching layers to keep unchanged content cached infinitely, making content delivery more efficient, resilient and better guarded against traffic spikes.

The `8.x-3.x` versions enable invalidation of content from external systems leveraging Drupal's brand new cache architecture. The technology-agnostic plugin architecture allows for different server configurations and use cases. Last but not least, it enforces a separation of concerns and should be seen as a **middleware** solution (see `README.md`).

Getting started

For most simple configurations, start with:

- `drush en purge purge_ui`
- `drush en purge_drush purge_queuer_coretags purge_processor_cron`
- Head over to `admin/config/development/performance/purge`.
- Now you need to install - and probably configure - a third-party module that provides a **purger**. If no module supports invalidation of your cache layer and doing so works over HTTP, then use the generic `purge_purger_http`.

Third-party integration

This project aims to get all modules dealing with proxies and CDNs on board and to integrate with Purge. As known to date, these modules are or are being integrated:

- `purge_purger_http` for generic HTTP-based invalidation, e.g. `nginx`, `squid`, etc.
- `purge_queuer_url` for legacy platforms not supporting cache tags. This is a **poor** solution when you regularly import content, it can lead to unsustainable big queues!
- `acquia_purge`
- `akamai`
- `cloudflare`

Maintainers

japerry djbobbydrake nielsvm

Issues for Purge

To avoid duplicates, please search before submitting a new issue.

Search

Advanced search

All issues

88 open, 6 RTBC, 331 total

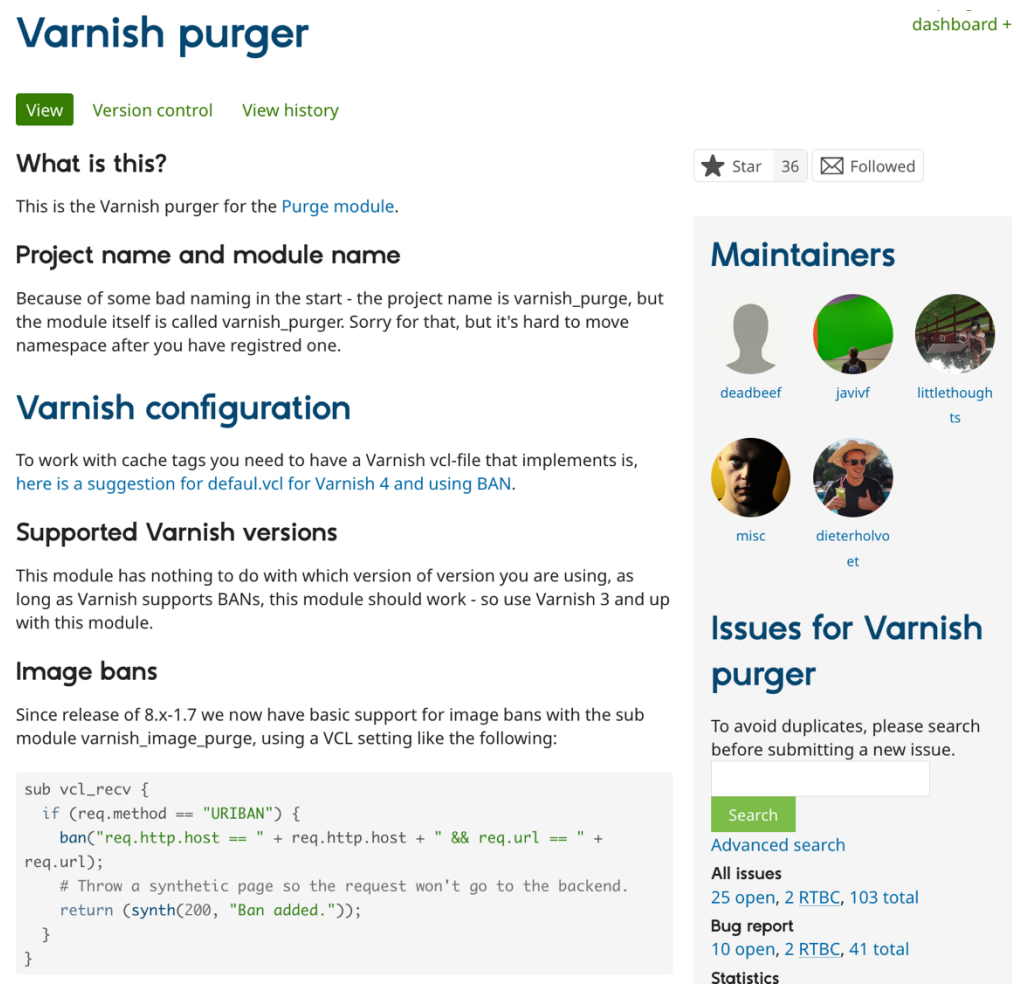
Bug report

38 open, 3 RTBC, 148 total

Statistics

New issues 0
Response rate 33 %
1st response 3 hours
Open bugs 38
Participants 3

2 year graph, updates weekly



Varnish purger

dashboard +

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What is this?

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This is the Varnish purger for the Purge module.

Project name and module name

Because of some bad naming in the start - the project name is varnish_purge, but the module itself is called varnish_purger. Sorry for that, but it's hard to move namespace after you have registred one.

Varnish configuration

To work with cache tags you need to have a Varnish vcl-file that implements is, here is a suggestion for defaul.vcl for Varnish 4 and using BAN.

Supported Varnish versions

This module has nothing to do with which version of version you are using, as long as Varnish supports BANs, this module should work - so use Varnish 3 and up with this module.

Image bans

Since release of 8.x-1.7 we now have basic support for image bans with the sub module varnish_image_purge, using a VCL setting like the following:

```
sub vcl_recv {
  if (req.method == "URIBAN") {
    ban("req.http.host == " + req.http.host + " && req.url == " +
req.url);
    # Throw a synthetic page so the request won't go to the backend.
    return (synth(200, "Ban added."));
  }
}
```

Maintainers

deadbeef javivf littlethoughts misc dieterholvoet

Issues for Varnish purger

To avoid duplicates, please search before submitting a new issue.

Search

Advanced search

All issues

25 open, 2 RTBC, 103 total

Bug report

10 open, 2 RTBC, 41 total

Statistics

https://www.drupal.org/project/purge

https://www.drupal.org/project/varnish_purge

External Caching

Purge File

View | Version control | View history

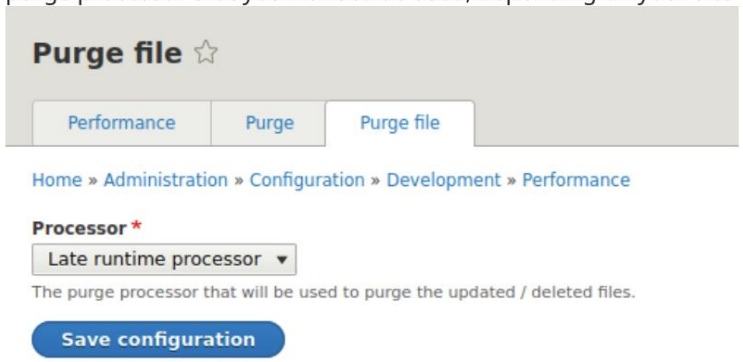
This module purges the URLs of files through the Purge module. The purge is done when the files are either updated or deleted. This functionality is useful when your site allows replacing files maintaining the same URL and is using an external cache for anonymous users like Varnish or Acquia purge.

How to use

First, ensure that your site:

- Have enabled the purge module.
- Have at least one purger enabled that supports URLs.
- Have at least one purge processor enabled.

Then, go to 'Configuration > Development > Performance > Purge file' and set the purge processor that you want to be used, depending on your site requirements:



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Maintainers


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tunic

Issues for Purge File

To avoid duplicates, please search before submitting a new issue.

https://www.drupal.org/project/purge_file

External Caching

- Varnish invalidation is solved, but what about browsers?
- Browser cache can’t be invalidated
- BUT Cache-Control header can instruct to check first

Max-age

- max-age value is relative to the server, NOT the browser (or external cache)
  - A max-age value is evaluated based on the first time Apache served the file.
  - The first time your browser received the asset is irrelevant.
  - Once max-age has been exceeded, it will behave like no-cache (check upstream before serving from cache).
  - E.g. If Apache serves an asset with max-age=3600, at 13:00 UTC, all external caches will serve cached copies until 14:00 UTC. After 14:00 UTC, all external caches will behave as if no-cache is set.

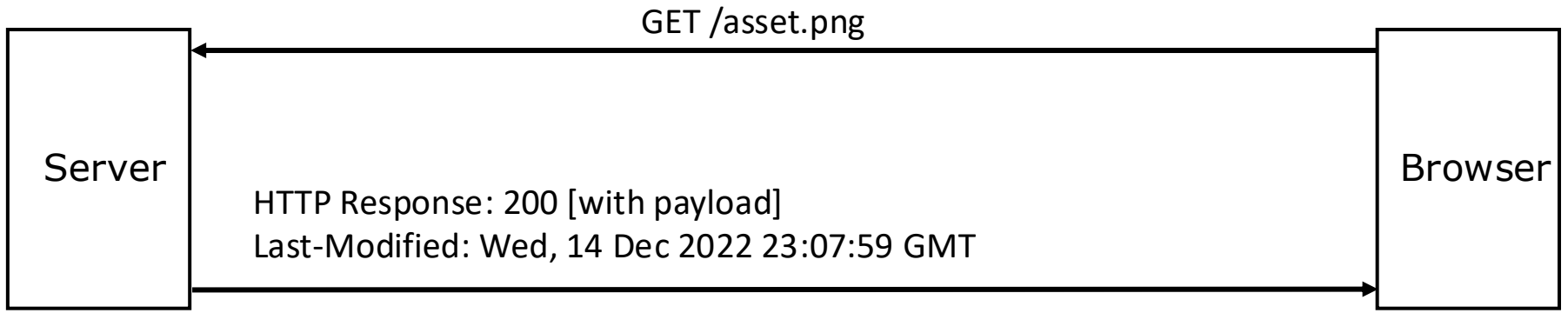
No-cache

- no-cache
  - Response *can* be cached
  - Response *must* be revalidated with origin before used
  - E.g. You can use - but check first

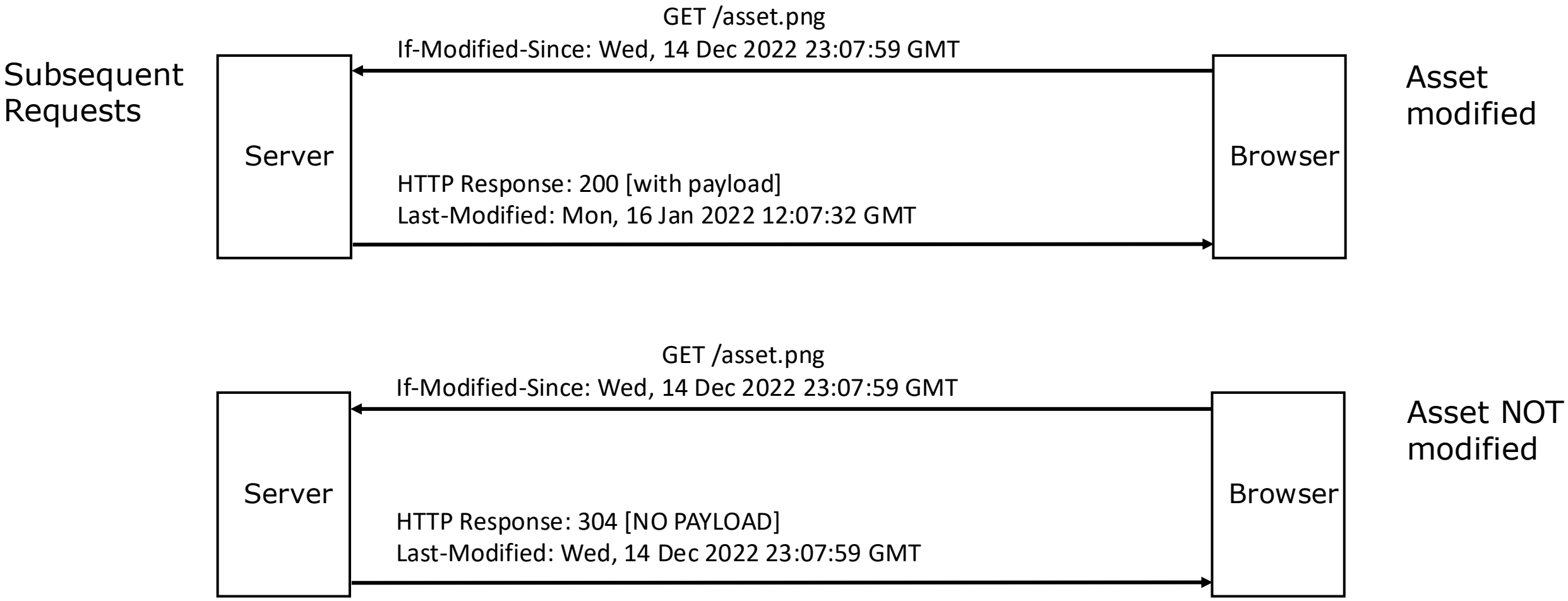
  Once max-age has been reached, then behavior is no-cache

Cache Revalidation

Initial Request



Cache Revalidation



Last-Modified vs ETag

	ETag	**Last-Modified**
Value representation	Hash of content, modified timestamp, size, etc	Date/time resource was modified on server
Data type	An opaque string E.g. “675af34563dc-tr34”	An HTTP-date E.g. “Fri, 12 Jun 2026 18:40:51 GMT”
Resolution	High precision	Limited to 1-second granularity
Priority	Takes precedence over Last-Modified.	Used as a fallback if the ETag is missing.

One more trick: s-maxage

- s-maxage is max-age but exclusively for shared cache
- Shared cache = Varnish, CDN, etc.
- Shared cache ≠ Browser (e.g. private cache)

E.g. Cache-control: max-age=60, s-maxage=3600, public

- Shared cache max-age is 1 hour
- Private cache max-age is 1 minute

Cache-Control for Static Assets

```
<IfModule mod_headers.c>
  <FilesMatch "\.(ico|jpg|jpeg|png|gif|webp|avif|txt|pdf)$">
     Header set Cache-Control "max-age=0, s-maxage=3600, public"
  </FilesMatch>
</IfModule>
```

Scenario

- File is replaced with identical file name, 2026_annual_report.pdf
- Varnish is purged (Purge File)
- Browsers revalidate requests (Cache-Control header)
- Users instantly see corrected Annual Report PDF.

What about JS and CSS Files?

- JS/CSS files should be defined and attached via Drupal's Libraries system
  - https://www.drupal.org/node/2274843
- Core appends a cache-busting string

What about JS and CSS Files?

my_module/css/red-text.css:

```
.text-content {
  color: red !important;
}
```

my_module/my_module.libraries.yml:

```
global-styling:
  css:
    theme:
      css/red-text.css: {}
```

my_module/my_module.module:

```
function libraries_test_preprocess_page(&$variables) {
  $variables['#attached']['library'][] = 'my_module/global-styling';
}
```

What about JS and CSS Files?

- Cache-busting string is automatically appended:

200	GET	drupal-ca…	contextual.icons.theme.css?tgzj8j	stylesheet	css	1.20 kB	3.40…
200	GET	drupal-ca…	red-text.css?tgzj8j	stylesheet	css	450 B	42 B
200	GET	drupal-ca…	shortcut.theme.css?tgzj8j	stylesheet	css	910 B	1.30 …

- Cache-busting string is regenerated on cache-rebuild

What about JS and CSS Files?

- D10.2.0 added “asset.query_string” service
  - https://www.drupal.org/node/3358337

core/lib/Drupal/Core/Asset/AssetQueryString.php:

```
public function reset(): void {
  // The timestamp is converted to base 36 in order to make it more compact.
  $this->state->set(self::STATE_KEY, base_convert(strval($this->time->getRequestTime()), 10, 36));
}
```

What about JS and CSS Files?

- When aggregation is enabled, no cache-busting string is appended
- Aggregated URLs are generated based on assets
  - If no library version is declared, then by hashed file_get_contents() value
  - If library version is declared, then by version
    - Don’t forget to increment library versions if declaring!
    - Or maybe don’t declare a library version to begin with?
- Beginning on D11.4.0, library version will be disregarded in favor of a hashed file_get_contents() value

What about JS and CSS Files?

Always use the file contents to determine asset aggregate filename hashes

View Edit View history

Problem/Motivation

When building asset aggregate URLs, we use a combination of library versions for libraries that have them, and file contents for libraries that don't - this is to save hashing every file in an aggregate.

After ~~#3505776: Retain asset aggregates for 45 days by default to reduce generation of identical files~~ it is a bit more awkward if you update a file without updating a version for a library, because drush cr doesn't automatically clear the aggregate files. There are ways to disable the behaviour in local dev etc. but it can be a gotcha.

Thinking about whether to open this issue at all, I suddenly realised that all of core's own libraries are defined with `VERSION` which changes every patch release, even though the individual files often don't change for months or years.

This means that for core libraries, the logic is doing the opposite of what we want it to - results in more changes to aggregate filenames rather than less.

We can remove VERSION from all core libraries, but given it would also make things easier for contrib/custom themes and modules, I think always using the file contents is probably easier. Can profile it to see what the impact is.

Closed (fixed)	
Project:	Drupal core
Version:	11.4.x-dev
Component:	asset library system
Priority:	Normal
Category:	Task
Assigned:	Unassigned
Reporter:	catch
Created:	8 May 2026 at 12:17 CDT
Updated:	14 Jun 2026 at 21:55 CDT

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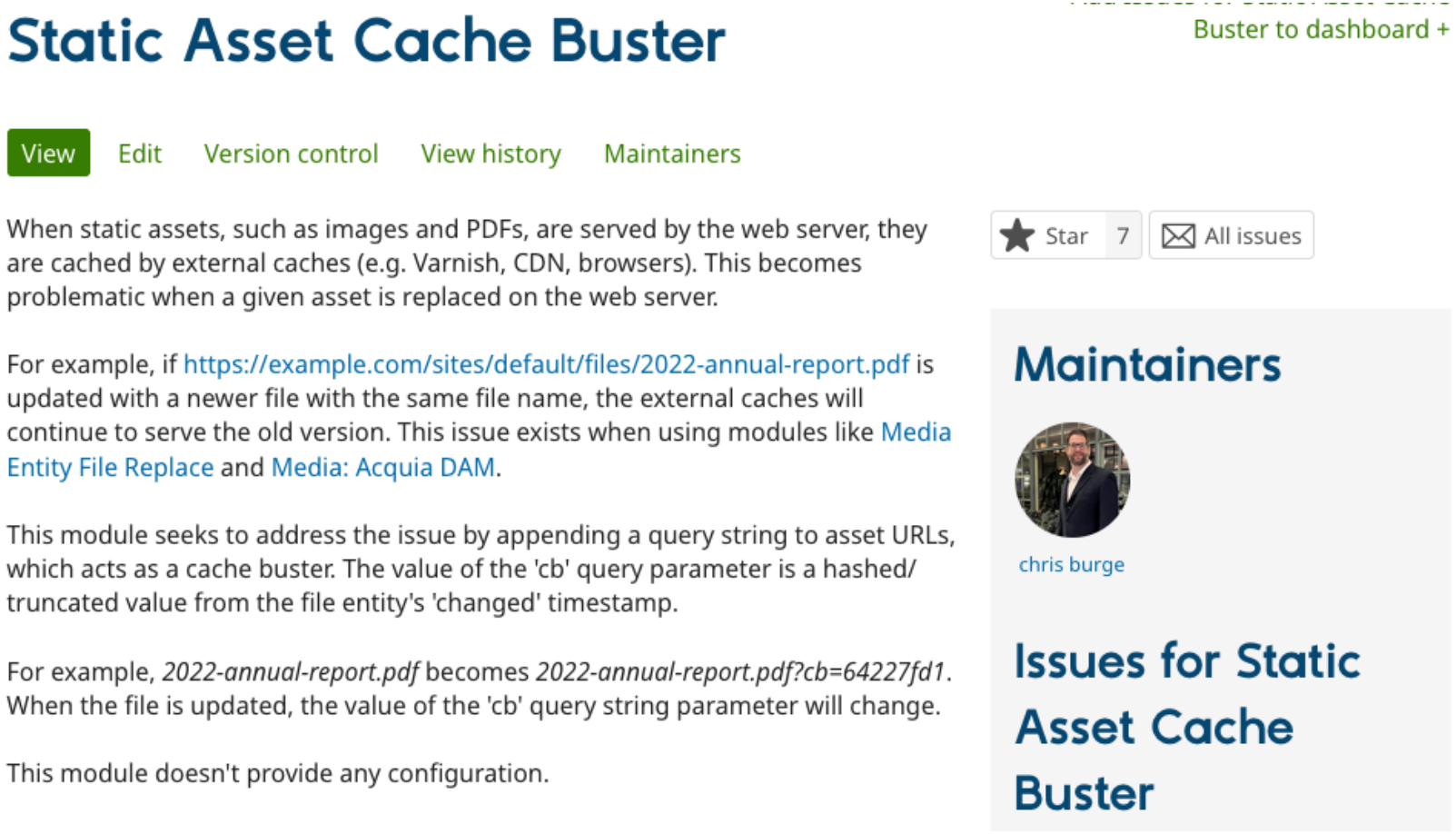
https://www.drupal.org/project/drupal/issues/3589208

Static Asset Cache Buster



https://www.drupal.org/project/static_asset_cache_buster

Static Asset Cache Buster

- Cache Buster Query String:

```
function _static_asset_cache_buster_get_cache_buster_query(string $timestamp): array {
  return [
    'cb' => substr(hash('md5', $timestamp), 0, 8),
  ];
}
```

- Result e.g.: 2026_annual_report.pdf?cb=9e94c91c

Static Asset Cache Buster

- Use either a “Path wildcard” or a “URL wildcard” invalidation type for Purge configuration
- By default, 2026_annual_report.pdf will be purged
  - 2026_annual_report.pdf?cb=9e94c91c will not be purged
- Using wildcard will purge 2026_annual_report.pdf*

Practical Considerations

- Always perform end-to-end testing with caching changes.
  - Specifically test cache invalidation.
- Major browsers appear to cache JS, CSS, fonts, and images
- Firefox and Edge cache but validate PDFs
- Safari doesn’t cache PDFs
- Chrome??
  - “Your organization has blocked the use of DevTools on this page”

Related Media Modules

- https://www.drupal.org/project/media_download
- https://www.drupal.org/project/media_entity_download
- https://www.drupal.org/project/media_link_enhancements
- https://www.drupal.org/project/media_entity_link
- https://www.drupal.org/project/orphaned_files

Questions? Comments?