
DRUPALCON
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# Scaling Drupal 8

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Session Track : Coding and development


# Who we are ?

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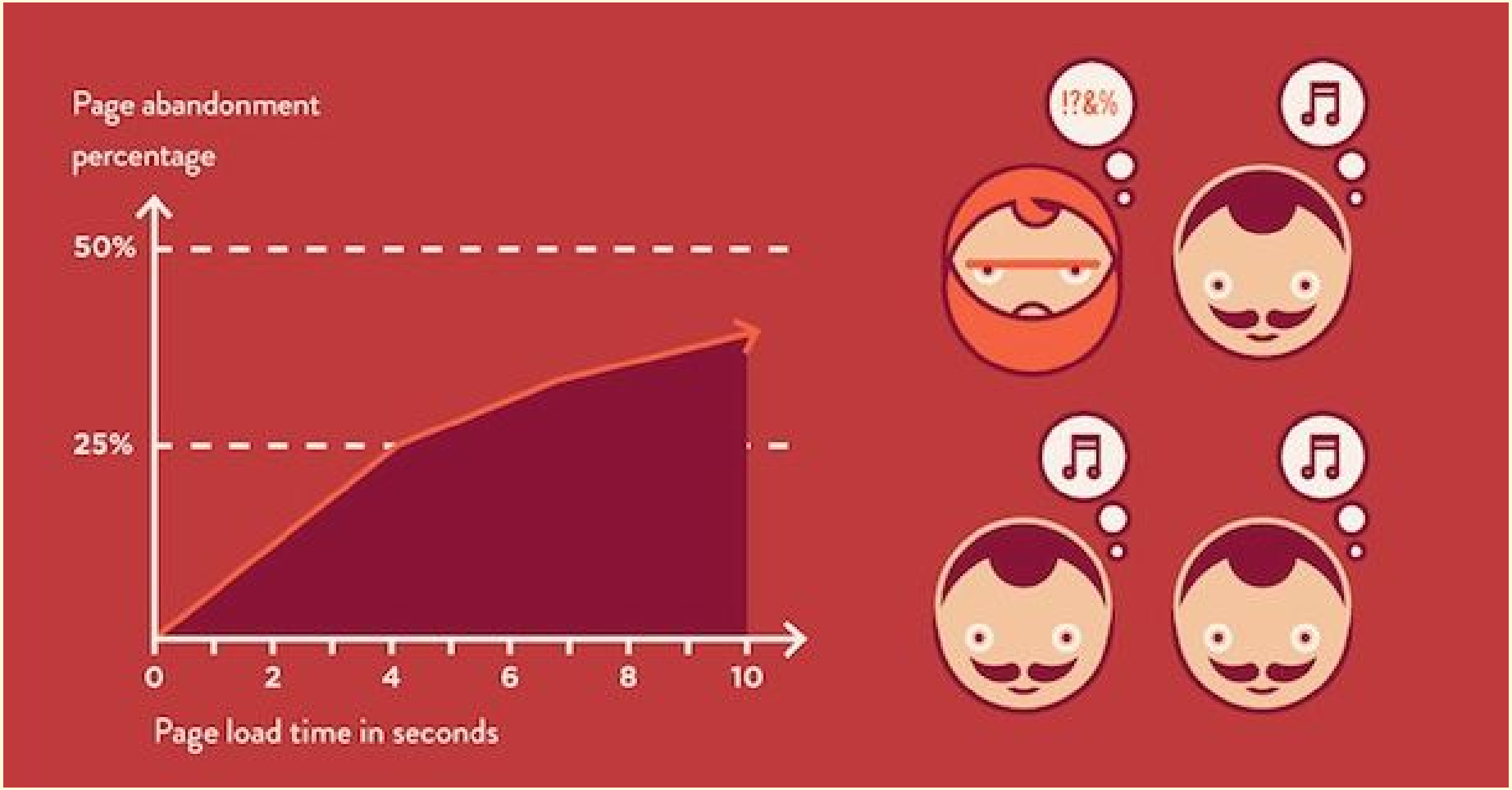
# Website Optimization

A phrase used to describe the procedures to optimize the speed at which your website loads in a Web browser. This type of optimization generally involves editing your website to optimize scripts, HTML or CSS code for faster loading. It's also reduces the number of components such as images, scripts, or video components that are needed to render the webpage.


# Why Optimization

- Latency matters.
  - Amazon found every 100ms of latency cost them 1% in sales.
  - Google found an extra .5 seconds in search page generation time dropped traffic by 20%.
  - A broker could lose $4 million in revenues per millisecond if their electronic trading platform is 5 milliseconds behind the competition.
- For impatient web users, web page loading should not be greater than the blink of visitor eye.

# Why Optimization




The data [comes from an infographic](#) compiled by OnlineGraduatePrograms.com,


# Optimization

- Front End Optimization
- Back End Optimization


# Front end Optimization

- Compress your html, assets(css,js)
- Optimise/Combine assets(js,css)
- Make fewer http requests
- Move your assets at bottom
- Use lazy loading
- Use image sprites (css3embed), avoid iframes,


# Front end Optimization

- Optimize assets
  - Use CDN
  - Place assets on cookie-free domain
- Reduce DNS lookups
- Remove duplicate assets
- Use expires header


# Backend optimization

- Use a CDN
- Varnish
- Memcache
- Opcache
- Index database tables (use dbtuner)


# Backend optimization (Authenticated)

- Use authcache
- ESI , authcache ESI module
- BigPipe!


# Performance improvements in Drupal 8

- Asset system is for serving assets
- Entity caching in Core
- Caching enabled by default
- Assets aggregation


# Cache API

- Cache Tags
- Cache contexts
- Cache Max-age
- Cache Invalidations


# Cache Tags

→ For dependencies on data managed by Drupal, like entities & configuration

→ I'm rendering a block based on the country context , that can be outdated , :(

→ we have cache:tags here.

$build['#cache'][tags][] = 'node:5';


# Cache Contexts

→ Caching something by variations.

→ The data that I'm caching is varying by some variations like permissions , language, url, country specific ?

```
$build['#cache']['contexts'][] = 'user.permission';
$build['#cache']['contexts'][] = 'country';
```


# Cache Max-age

→ Sometimes, render arrays becomes outdated, if we need permanent max time.

→ we have max-age

```
$build['#cache'][max-age][] = Cache::
 PERMANENT;
```


# Bigpipe

→ Bigpipe
→ Dynamic Page Cache
→ Page Cache
→ Varnish/CDN


# Pagecache

Drupal don’t need to do any nothing before replying.

- For non personalized pages
- Enabled by default in Drupal 8


# ab -c1 -n 10

```
Concurrency Level:      1
Time taken for tests:   0.148 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      807610 bytes
HTML transferred:       801660 bytes
Requests per second:    67.61 [#/sec] (mean)
Time per request:       14.791 [ms] (mean)
Time per request:       14.791 [ms] (mean, across all concurrent requests)
Transfer rate:          5332.32 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.0      0       0
Processing:    13   15   1.5     15      18
Waiting:       12   13   1.6     13      17
Total:         13   15   1.5     15      18
```


# ab -k -c1 -n 10

```
Concurrency Level:      1
Time taken for tests:   0.148 seconds
Complete requests:      10
Failed requests:        0
Keep-Alive requests:    0
Total transferred:      807610 bytes
HTML transferred:       801660 bytes
Requests per second:    67.52 [#/sec] (mean)
Time per request:       14.810 [ms] (mean)
Time per request:       14.810 [ms] (mean, across all concurrent requests)
Transfer rate:          5325.26 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.0      0       0
Processing:    12   15   2.3     14      18
Waiting:       11   14   2.3     13      17
Total:         13   15   2.3     14      19
```


# ab -k -c10 -n 10

```
Concurrency Level:      10
Time taken for tests:   0.078 seconds
Complete requests:      10
Failed requests:        0
Keep-Alive requests:    0
Total transferred:      807610 bytes
HTML transferred:       801660 bytes
Requests per second:    128.38 [#/sec] (mean)
Time per request:       77.896 [ms] (mean)
Time per request:       7.790 [ms] (mean, across all concurrent requests)
Transfer rate:          10124.80 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.1      0       0
Processing:    55   67   7.8     70      77
Waiting:       55   67   7.4     70      76
Total:         55   68   7.8     70      78
```


# Dynamic Page cache

- For authenticated users
- Enabled by default in Drupal 8


# ab -c1 -n 10 -C SESS3a01eec4189fa03554ca74065aed5cfa

```
Concurrency Level:      1
Time taken for tests:   1.242 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      808950 bytes
HTML transferred:       801660 bytes
Requests per second:    8.05 [#/sec] (mean)
Time per request:       124.243 [ms] (mean)
Time per request:       124.243 [ms] (mean, across all concurrent requests)
Transfer rate:          635.84 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.2      0       1
Processing:    93  124  34.0    116     205
Waiting:       85  116  32.7    109     193
Total:         93  124  34.0    117     205
```


# ab -c10 -n 10 -C SESS3a01eec4189fa03554ca74065aed5cfa

```
Concurrency Level:      10
Time taken for tests:   0.444 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      808950 bytes
HTML transferred:       801660 bytes
Requests per second:    22.52 [#/sec] (mean)
Time per request:       444.058 [ms] (mean)
Time per request:       44.406 [ms] (mean, across all concurrent requests)
Transfer rate:          1779.02 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.1      0       0
Processing:   307  381  44.8    394     444
Waiting:      208  356  69.4    382     436
Total:        307  381  44.8    395     444
```


# Bigpipe

1. During rendering, the personalized parts are turned into placeholders.
2. By default, Drupal 8 uses the Single Flush strategy (aka "traditional") for replacing the placeholders. i.e. we don't send a response until we've replaced all placeholders.
3. The BigPipe module introduces a new strategy, that allows us to flush the initial page first, and then stream the replacements for the placeholders.
4. This results in hugely improved front-end/perceived performance (watch the 40-second screencast above).

- For authenticated users
- Proposed to get included in 8.1 as experimental


# ab -c10 -n 10 -C SESS3a01eec4189fa03554ca74065aed5cfa

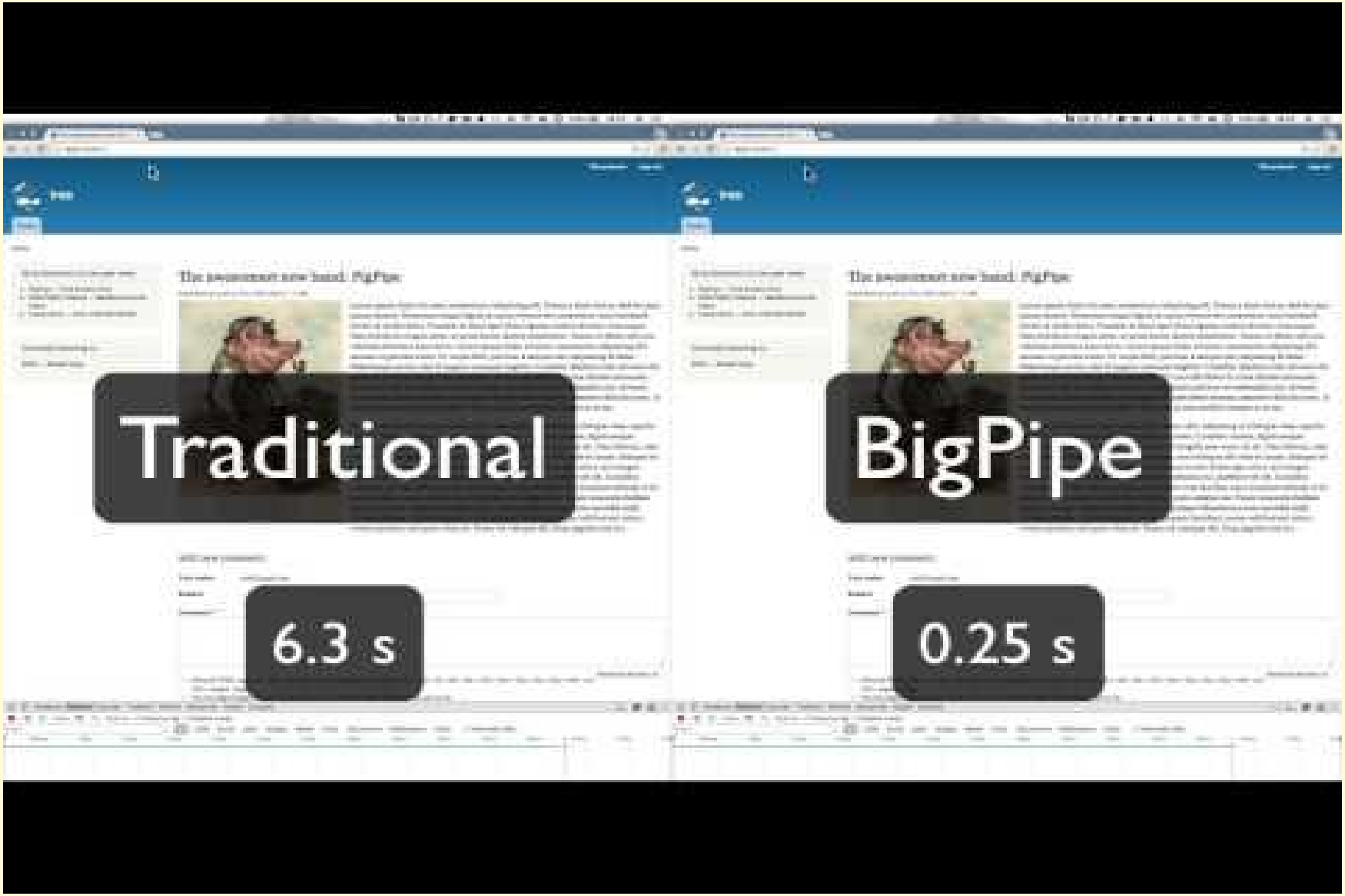
```
Concurrency Level:      1
Time taken for tests:   2.666 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      832511 bytes
HTML transferred:       824470 bytes
Requests per second:    3.75 [#/sec] (mean)
Time per request:       266.590 [ms] (mean)
Time per request:       266.590 [ms] (mean, across all concurrent requests)
Transfer rate:          304.96 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.0      0       0
Processing:   124  266 437.9    127    1513
Waiting:      104  244 426.6    107    1458
Total:        124  267 437.9    127    1513
```


# ab -c10 -n 10 -C SESS3a01eec4189fa03554ca74065aed5cfa

```
Concurrency Level:      10
Time taken for tests:   0.499 seconds
Complete requests:      10
Failed requests:        0
Total transferred:      832510 bytes
HTML transferred:       824470 bytes
Requests per second:    20.02 [#/sec] (mean)
Time per request:       499.417 [ms] (mean)
Time per request:       49.942 [ms] (mean, across all concurrent requests)
Transfer rate:          1627.89 [Kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median   max
Connect:        0    0   0.1      0       0
Processing:   354  416  42.5    410     499
Waiting:      321  380  49.7    367     478
Total:        354  416  42.4    410     499
```


Traditional
6.3 s
BigPipe
0.25 s


# Tools

- Google Pagespeed insights
- YSLOW
- Apache Benchmarking for stress
- JMeter / Blazemeter


# Questions ?


# Thanks!


# WHAT DID YOU THINK?

## EVALUATE THIS SESSION

asia2016.drupal.org/schedule