

Faster & more flexible CDN integration

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Bachelor thesis

“Improving Drupal’s page loading performance”

- Promotor: Prof. dr. Wim Lamotte
- Co-promotor: dr. Peter Quax
- Mentors: Stijn Agten & Maarten Wijnants



Goal

- **Faster web sites**

- Speed = satisfaction = more & happier visitors = more revenue



Goal

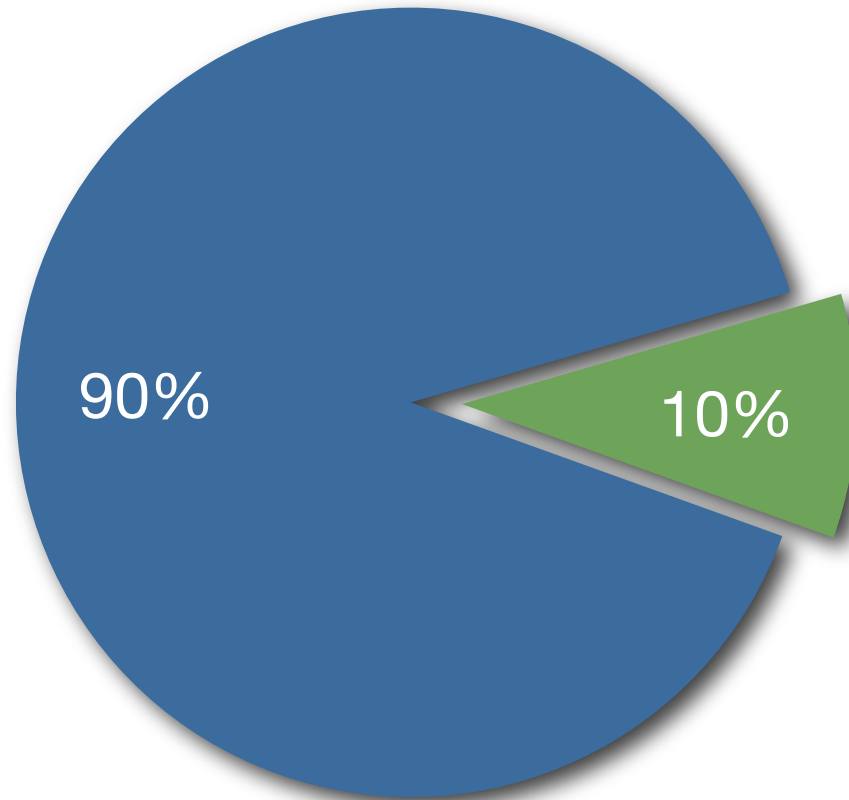
- **Faster web sites**

- Speed = satisfaction = more & happier visitors = more revenue

- Google: +0.5s → -20% searches



Terminology: page loading performance

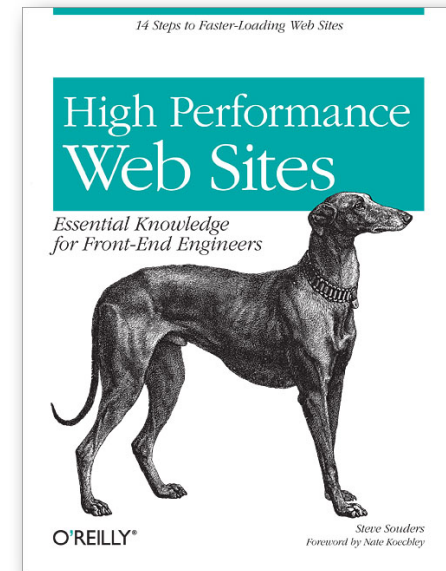


- CSS, JS, images ...
- HTML

Drupal's page loading performance

- One of the most effective measures:

“Use a CDN”

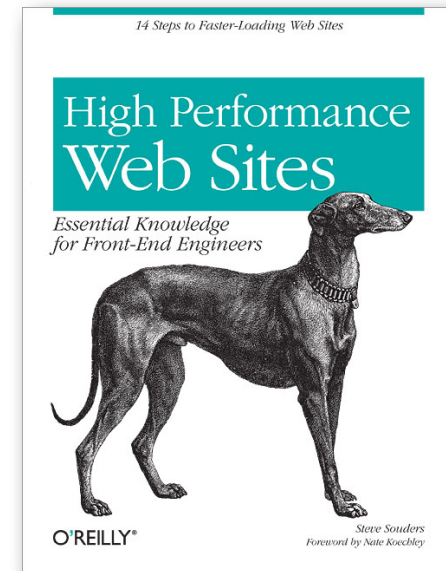


Drupal's page loading performance

- One of the most effective measures:

“Use a CDN”

- Drupal: not yet possible!



Terminology: CDN



Key properties of a CDN

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- Geographical spread

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- Pull versus Push

	Pull
transfer protocol	automatically
+	virtually no setup
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Key properties of a CDN

- Geographical spread
- Pull versus Push
- Lock-in

	Pull	Push
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Profiling: *Episodes*

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- Measures “episodes” during page loading

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- Measures “episodes” during page loading
- **Real measurements:** JS in browser, for *each* visitor
- No simulation!

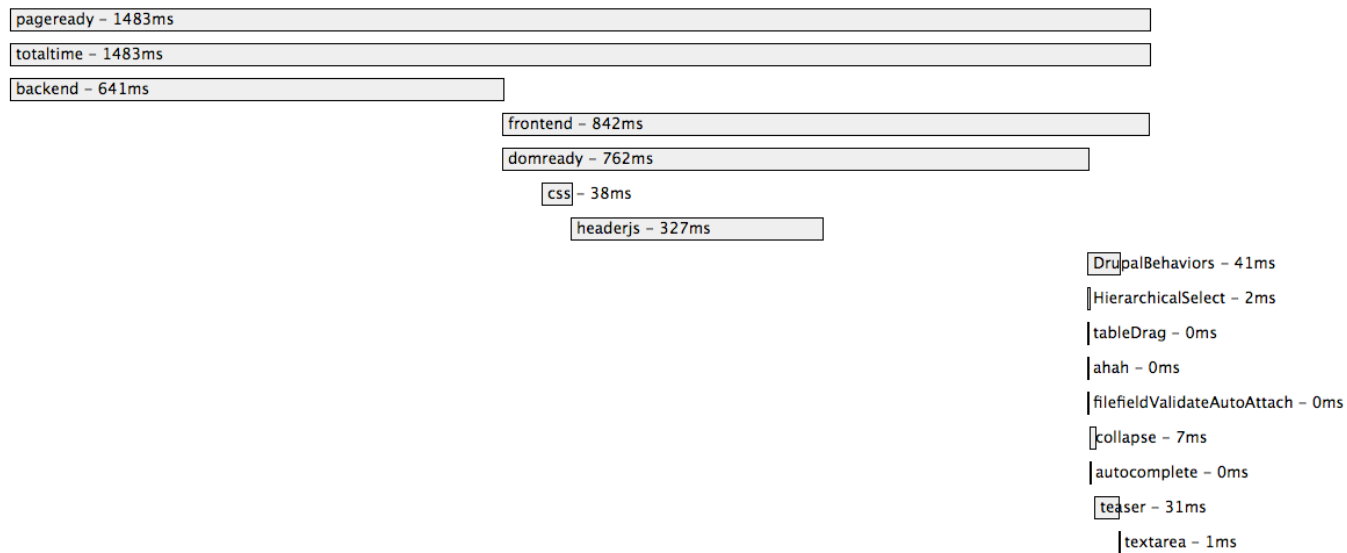
Episodes module

Episodes module

- **Drupal module** that offers Episodes integration

Episodes module

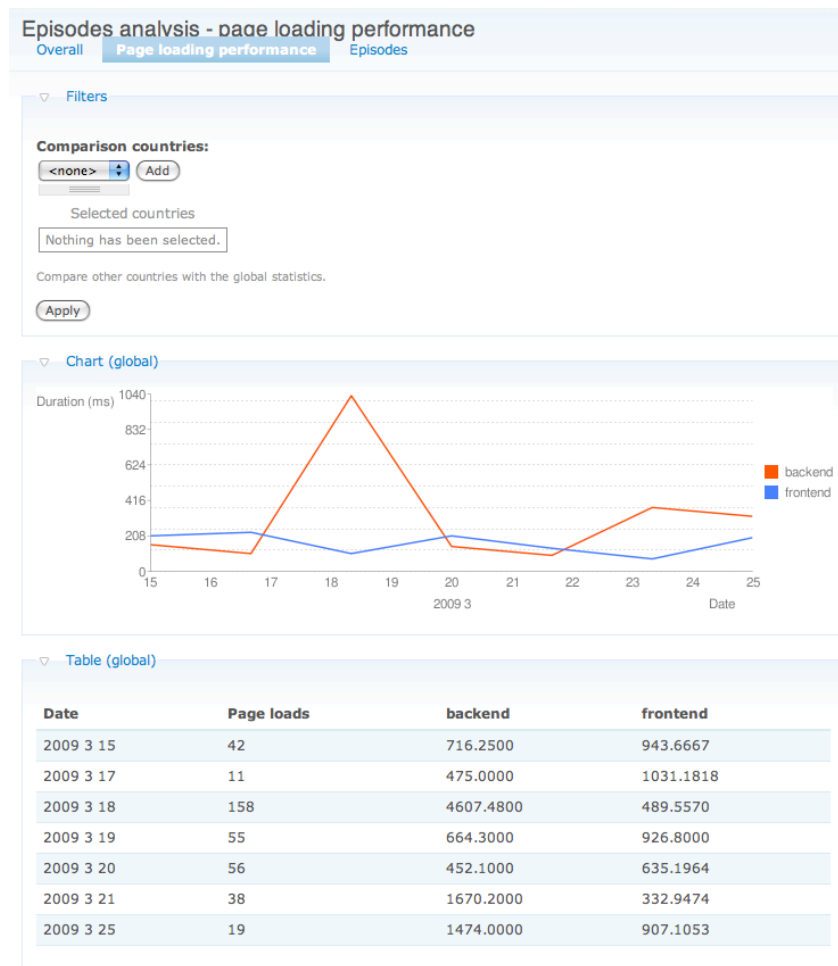
- **Drupal module** that offers Episodes integration



Episodes Server module

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- **Drupal module** that visualizes the collected measurements



Daemon: *File Conveyor*

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Daemon: *File Conveyor*

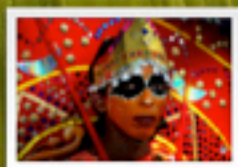
1. **Configuration:** simple XML file
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4. **Syncing:** supports many protocols (FTP, Amazon S3 ...) — extensible!
5. **Result:** SQLite DB with CDN URLs



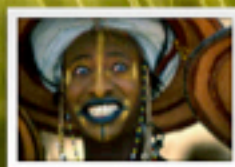
HD
249.88 GB, 167.58 GB free



monitored
No items



party.jpg
500 × 333



scary smile.jpg
500 × 333



traditional clothing.jpg
160 × 240

Daemon's capabilities: scenario 1

Company wants to switch from CDN provider X to Amazon S3.

- CDN X: FTP
- Amazon S3: custom protocol

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- Setup:
 - CDN X → Amazon S3
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Company wants to switch from CDN provider X to Amazon S3.

- CDN X: FTP
 - Amazon S3: custom protocol
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- Setup:
 - CDN X → Amazon S3
 - Daemon
 - Alternative: write a lot of code

Daemon's capabilities: scenario 2

U.S. company expands to South-Korea

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- Setup:
 - North-American CDN
 - Static file server in South-Korea
 - Daemon + language-/subdomain-based logic to pick CDN/server

Daemon's capabilities: scenario 2

U.S. company expands to South-Korea

- Setup:
 - North-American CDN
 - Static file server in South-Korea
 - Daemon + language-/subdomain-based logic to pick CDN/server
- Alternative: global CDN or slower web site in South-Korea

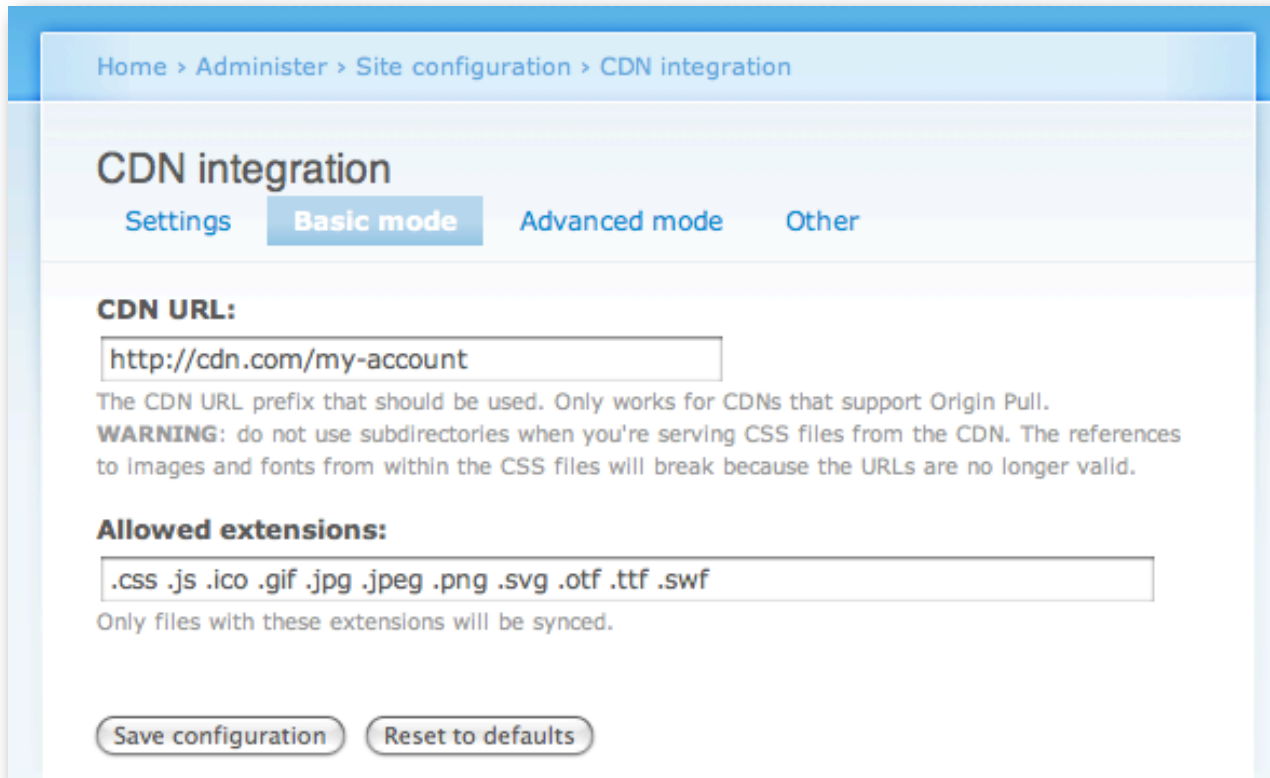
CDN integration module

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- Basic mode: Origin Pull CDN



Home > Administer > Site configuration > CDN integration

CDN integration

Settings **Basic mode** Advanced mode Other

CDN URL:

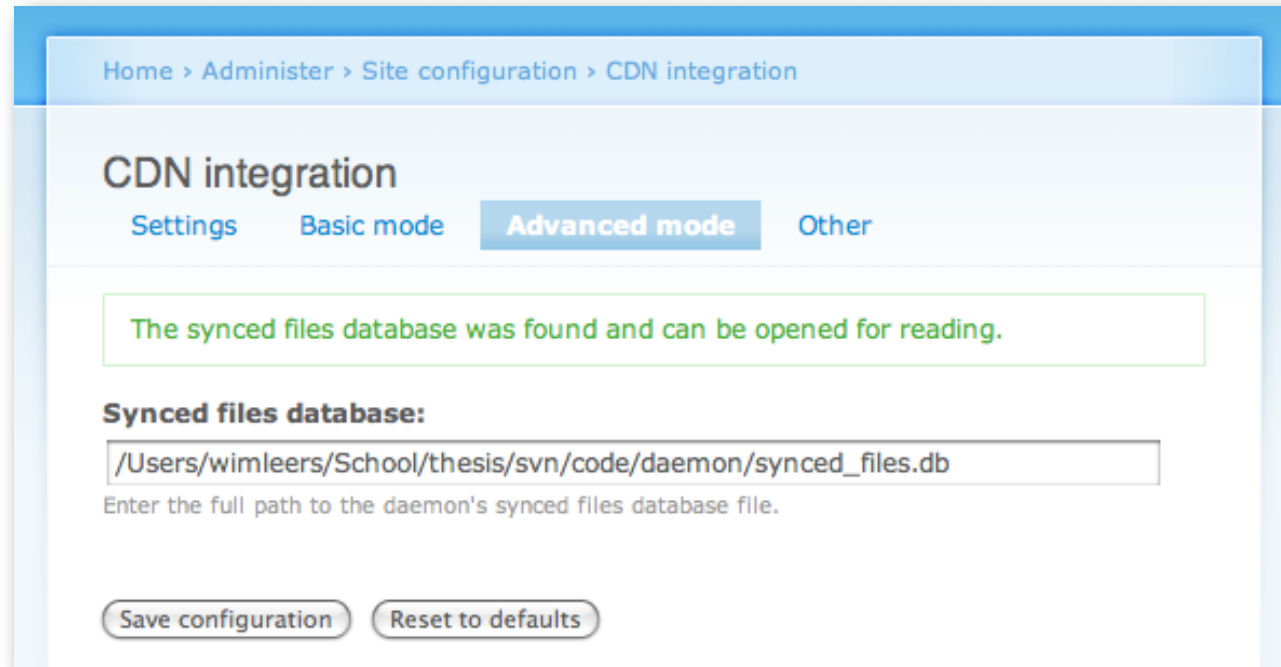
The CDN URL prefix that should be used. Only works for CDNs that support Origin Pull.
WARNING: do not use subdirectories when you're serving CSS files from the CDN. The references to Images and fonts from within the CSS files will break because the URLs are no longer valid.

Allowed extensions:

Only files with these extensions will be synced.

CDN integration module

- Drupal core patch for Drupal 6, committed to Drupal 7
- Basic mode: Origin Pull CDN
- Advanced mode: **any CDN** (daemon)



Home > Administer > Site configuration > CDN integration

CDN integration

Settings Basic mode **Advanced mode** Other

The synced files database was found and can be opened for reading.

Synced files database:

Enter the full path to the daemon's synced files database file.

Save configuration Reset to defaults

Test case

The screenshot shows a web browser window with the URL "News | DriverPacks.net". The main header features the "DriverPacks.net" logo and a green banner for "RÉPARER WINDOWS" (Repair Windows) with the text "Prévenir les erreurs de Windows" (Prevent Windows errors) and a "GRATUITEMENT" (Free) button. Below the header is a navigation menu with buttons for "News", "Downloads", "Forum", "Bugtracker", "Well-known users", "About", and "Donate".

The main content area is highlighted in yellow and contains the following text:

What are the "DriverPacks"?

Each DriverPack is a package of drivers that fit a certain category. There are for example DriverPacks for Sound devices and for Graphics devices. For each of these DriverPacks we include *every* device driver of that category. On top of that, we solve tricky problems — such as driver conflicts — for you.

They are intended to be used while creating a Windows 2000, XP, 2003 or Vista (and soon Windows 7) installation disc/image. We also provide you with the software to make that as simple as possible.

We've built this to **simplify the lives of network administrators and employees of pc shops**, but also enthusiast pc users.

Sounds cool? Then explore our [downloads](#) and come and say hi in our [forum](#)!

On the right side, there is a "Latest DriverPacks" section with filters for "XP", "Vista", and "7". Below the filters is a list of links:

- [Chipset 9.02](#)
- [Mass Storage 9.01](#)
- [Graphics A 8.12.1](#)
- [Graphics B 8.12.1](#)
- [Graphics C 8.12.1](#)

Below the list is a message: "Welcome from Belgium! For the fastest experience, you are downloading the images, CSS and JS from our static file server in Belgium." There is also a status bar showing "35 online".

At the bottom left, there is a "New site live!" announcement:

New site live!

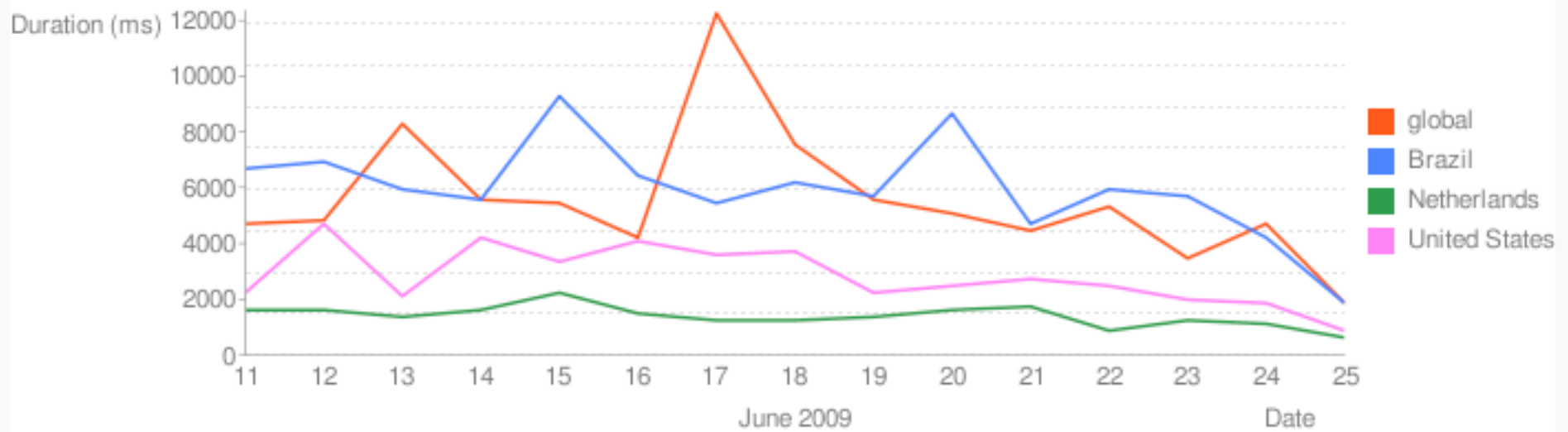
Posted on Thu, 06/11/2009 - 03:14 by [Wim Leers](#)

Finally the time has come! The new web site went live today!

At the bottom right, there is a "save on Delicious" widget with tags: windows drivers software unattended xp installation tools hardware slipstream driver, and it shows it was saved by 548 others.

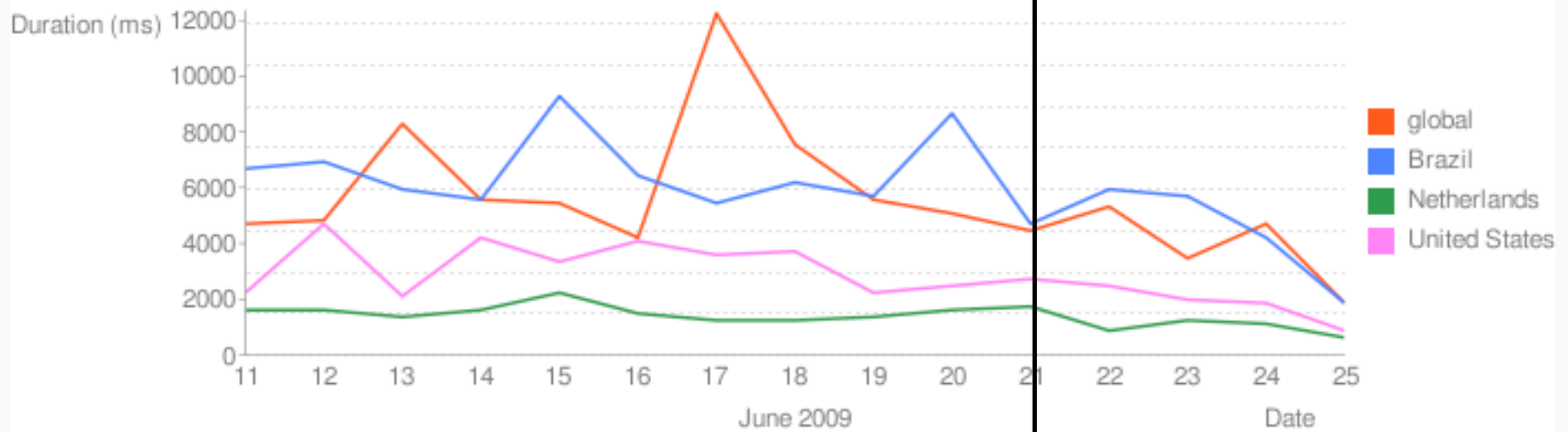
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Comparison of frontend episodes



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More info? See <http://wimleers.com/talk/drupalcon-paris-2009>