

# FEO in Joomla!, how to speed up your website

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# REASONS AND BENEFITS OF THE USE OPTIMIZATION

- users are more likely to be on the site, which translates into profit
- transfer savings
- higher positions in the search engines

# WHY OPTIMIZATION IS SO COOL?

We can get great results with little effort!



# USEFUL TOOLS - YSLOW

chrome-extension://ninejjcohidippngpapiilnmkgllmakh/yslow.html#783

Home | Grade | Components | Statistics | Rulesets YSlow(V2) | Edit | ? Help ↓

## Grade your web pages with YSlow

**YSlow gives you:**

- Grade based on the performance of the page (you can define your own ruleset)
- Summary of the page components
- Chart with statistics

Check here if the current page prevents itself from being embedded/iframed. A simpler post onload detection will be used instead.



[Run Test](#)

[»Learn more about YSlow and the Yahoo! Developer Network](#)

# USEFUL TOOLS - YSLOW

Site scoring and suggestions

The screenshot shows the YSlow tool interface in a browser window. The address bar displays "chrome-extension://ninejjcohidippngpapiilnmkgllmakh/yslow.html#783". The navigation menu includes "Home", "Grade", "Components", and "Statistics". The "Rulesets" dropdown is set to "YSlow(V2)", with "Edit" and "Help" buttons. The main content area shows a "Grade B" with an "Overall performance score 85". The URL being analyzed is "http://css-tricks.com/video-screencasts/p". Below the grade, there are filters for "ALL (23)" and categories: "CONTENT (6)", "COOKIE (2)", "CSS (6)", "IMAGES (2)", "JAVASCRIPT (4)", and "SERVER (6)". There are "Share" and "Tweet" buttons. A list of suggestions is shown on the left, with the top one being "D Make fewer HTTP requests". A detailed view of this suggestion is shown on the right, explaining that the page has 10 external JavaScript scripts, 4 external stylesheets, and 7 external background images, and providing advice on how to reduce the number of HTTP requests.

chrome-extension://ninejjcohidippngpapiilnmkgllmakh/yslow.html#783

Home **Grade** Components | Statistics | Rulesets YSlow(V2) Edit | ? Help ↓

**Grade B** Overall performance score 85 Ruleaset applied: YSlow(V2) URL: http://css-tricks.com/video-screencasts/p

ALL (23) FILTER BY: [CONTENT \(6\)](#) | [COOKIE \(2\)](#) | [CSS \(6\)](#) | [IMAGES \(2\)](#) | [JAVASCRIPT \(4\)](#) | [SERVER \(6\)](#) [Share](#) [Tweet](#)

**D** Make fewer HTTP requests

**F** Use a Content Delivery Network (CDN)

**A** Avoid empty src or href

**E** Add Expires headers

**A** Compress components with gzip

**A** Put CSS at top

**A** Put JavaScript at bottom

**A** Avoid CSS expressions

n/a Make JavaScript and CSS external

**C** Reduce DNS lookups

**A** Minify JavaScript and CSS

**A** Avoid HTTP redirects

**Grade D on Make fewer HTTP requests**

This page has 10 external Javascript scripts. Try combining them into one.

This page has 4 external stylesheets. Try combining them into one.

This page has 7 external background images. Try combining them with CSS sprites.

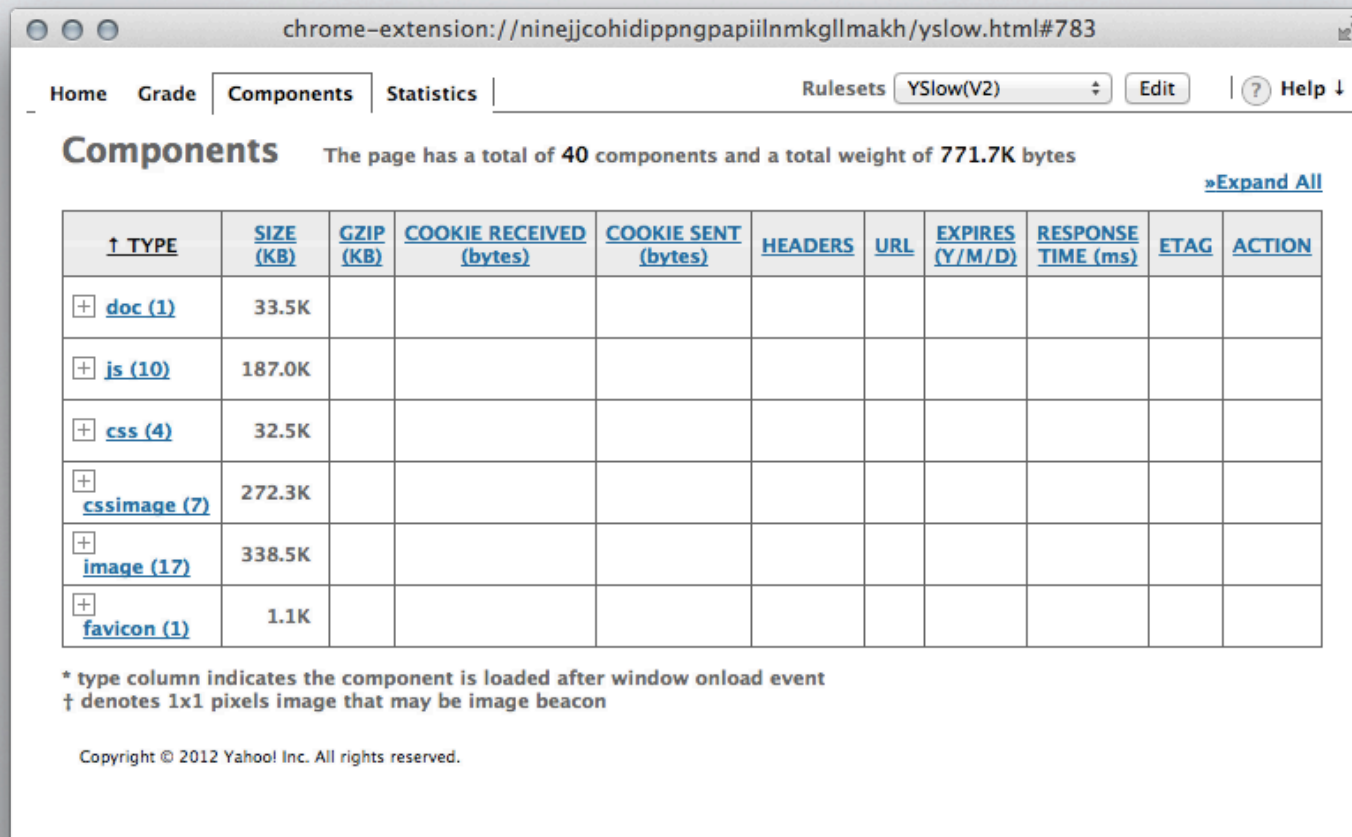
Decreasing the number of components on a page reduces the number of HTTP requests required to render the page, resulting in faster page loads. Some ways to reduce the number of components include: combine files, combine multiple scripts into one script, combine multiple CSS files into one style sheet, and use CSS Sprites and image maps.

[»Read More](#)

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# USEFUL TOOLS - YSLOW

Detailed presentation of web page elements



The screenshot shows the YSlow tool interface in a browser window. The address bar displays "chrome-extension://ninejjcohidippngpapiilnmkgllmakh/yslow.html#783". The navigation menu includes "Home", "Grade", "Components", and "Statistics". The "Components" tab is active, showing a summary: "The page has a total of 40 components and a total weight of 771.7K bytes". A table lists the components with columns for Type, Size (KB), GZIP (KB), Cookie Received (bytes), Cookie Sent (bytes), Headers, URL, Expires (Y/M/D), Response Time (ms), ETag, and Action. The table includes rows for doc (1), js (10), css (4), cssimage (7), image (17), and favicon (1). A legend at the bottom explains the type column and the † symbol.

Home Grade **Components** Statistics | Rulesets YSlow(V2) Edit | ? Help ↓

## Components

The page has a total of 40 components and a total weight of 771.7K bytes [»Expand All](#)

↑ TYPE	SIZE (KB)	GZIP (KB)	COOKIE RECEIVED (bytes)	COOKIE SENT (bytes)	HEADERS	URL	EXPIRES (Y/M/D)	RESPONSE TIME (ms)	ETAG	ACTION
+ doc (1)	33.5K									
+ js (10)	187.0K									
+ css (4)	32.5K									
+ cssimage (7)	272.3K									
+ image (17)	338.5K									
+ favicon (1)	1.1K									

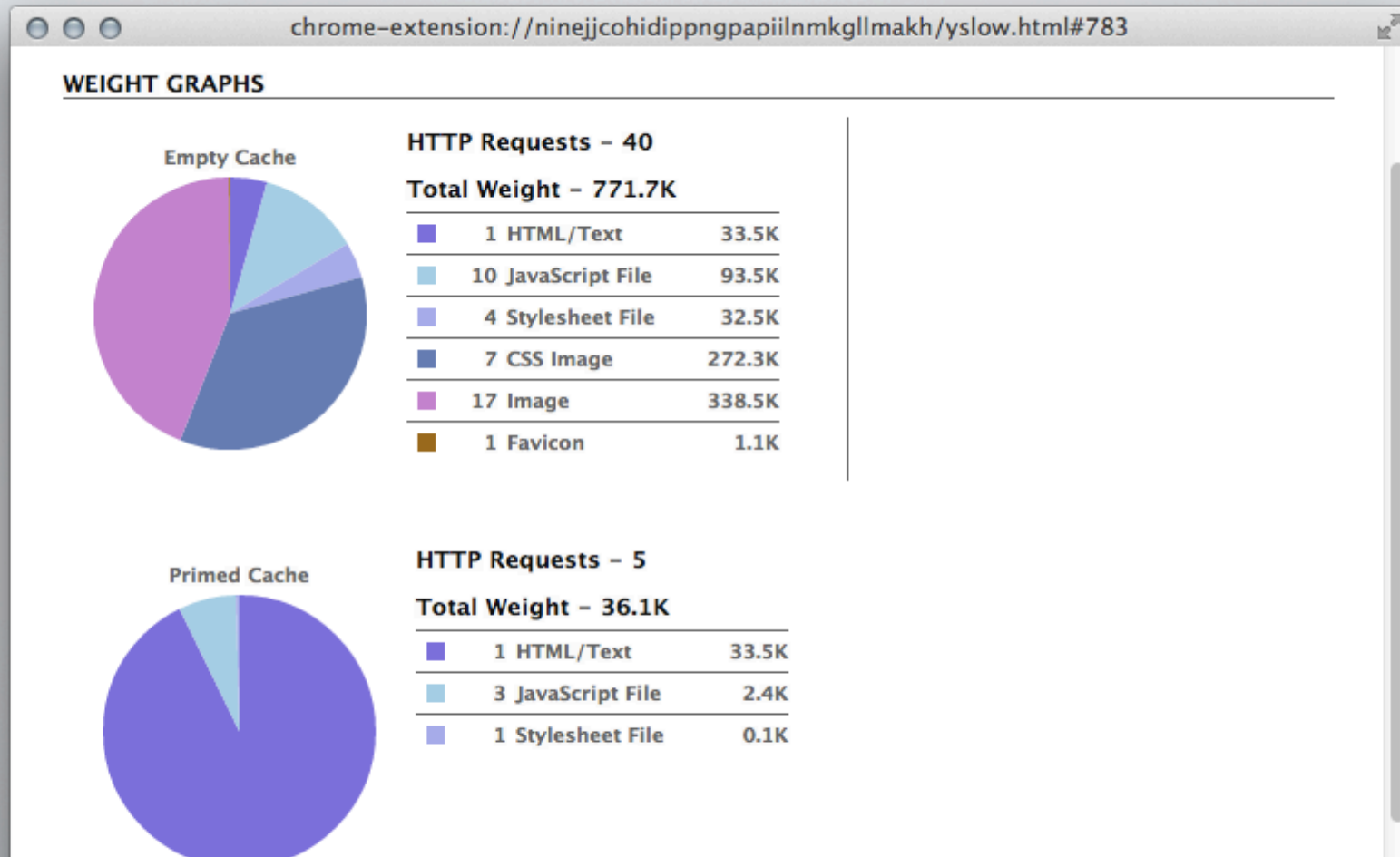
\* type column indicates the component is loaded after window onload event  
† denotes 1x1 pixels image that may be image beacon

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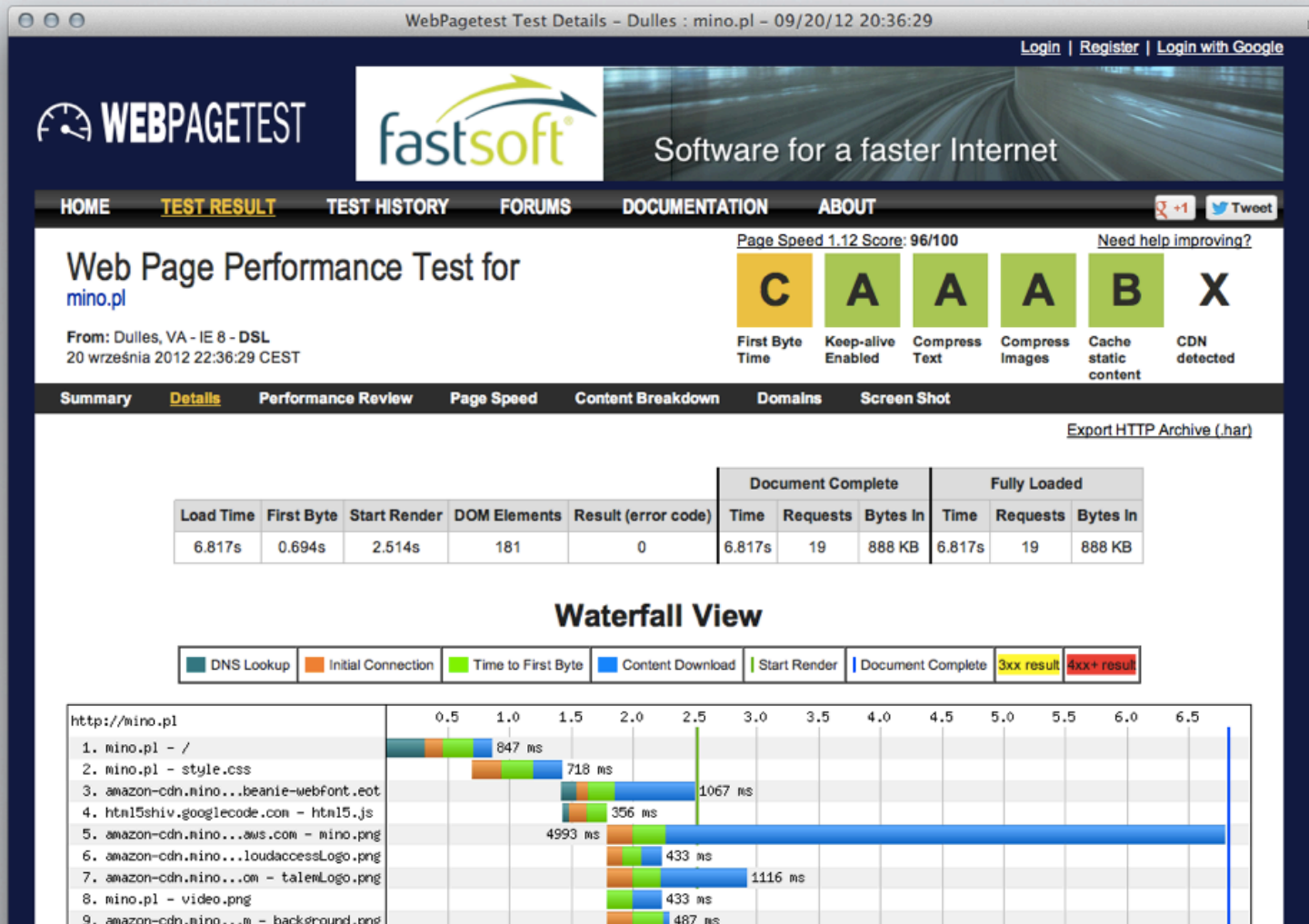


# USEFUL TOOLS - YSLOW

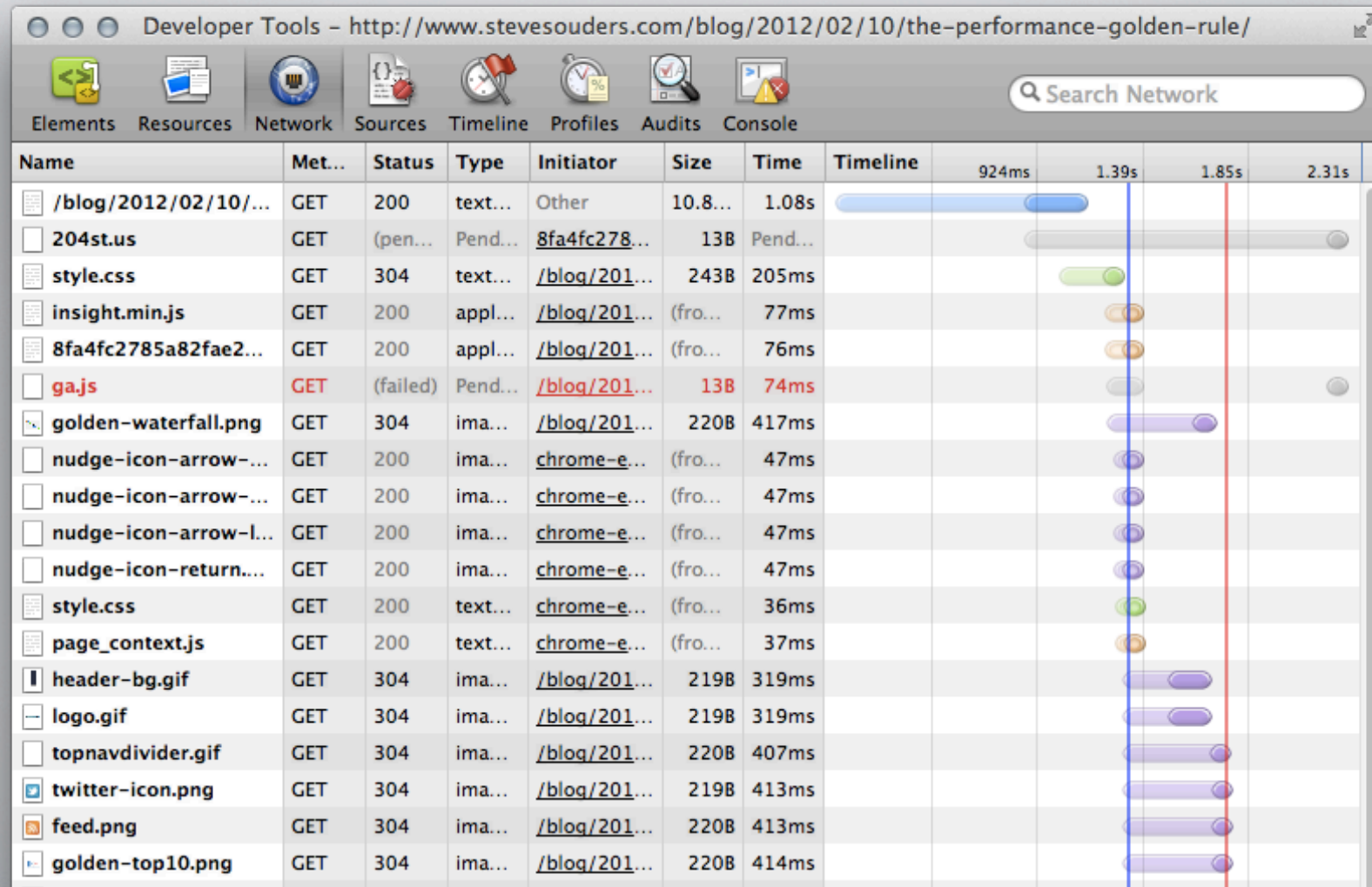
Pie charts with web site elements



# USEFUL TOOLS - STRONA WEBPAGETEST.ORG

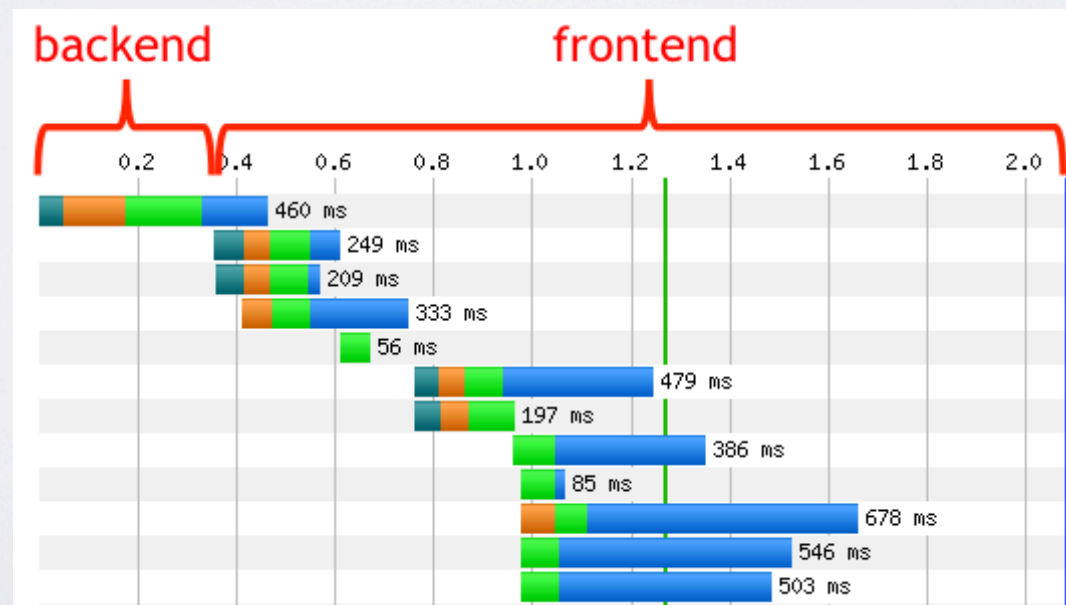


# USEFUL TOOLS - NETWORK TAB IN CHROME WEB INSPECTOR



# INTRODUCTION TO WEB OPTIMIZATION - 80/20 RULE

On average, **80%** of the page load time is devoted to the frontend.



# INTRODUCTION TO WEB OPTIMIZATION WWW

Most of the principles of optimization based on simple conclusions:

1. Smaller file copies faster than the larger
2. Large file copies faster than many smaller

I PART OF THE  
OPTIMIZATION -  
REDUCING THE SIZE OF  
THE WEBSITE

# LOSSLESS IMAGE COMPRESSION

Good tools for compression:

For Mac OS:

- ImageOptim
- CodeKit

For Windows:

- PNGGauntlet

# LOSSLESS IMAGE COMPRESSION - JOOMLA!

Compress all image files in folders:

- ***/templates/your\_template/images/***
- ***/images/***



# LOSSLESS IMAGE COMPRESSION - JOOMLA!

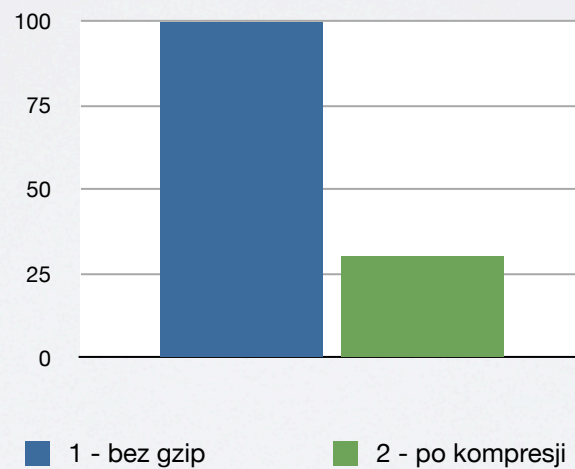
The screenshot shows the CodeKit application window. The top bar includes a search bar and a notification: "10 days left in free trial. Buy now >". The main interface is divided into a left sidebar and a main content area. The sidebar shows "PROJECTS" with a folder named "images" selected, and "FRAMEWORKS" below it. The main content area has tabs for "All Files", "Styles", "Scripts", "Pages", and "Images". The "Images" tab is active, displaying a list of 54 image files, each with a small thumbnail and a green checkmark on the right. The files listed are: /accept.png, /add.png, /arrow\_right.png, /arrow.png, /asterisk\_orange.png, /attach.png, /bullet\_black.png, /bullet\_blue.png, /bullet\_go.png, /bullet\_green.png, /bullet\_orange.png, /bullet\_pink.png, /bullet\_purple.png, and /bullet\_red.png. On the right side of the main content area, there is a summary for "54 Images" with a stack of image icons. Below this, a table shows the compression results, which is circled in orange:

Initial Size:	240,4 KB
Current Size:	91,7 KB
Reduction:	61,86 %

The values above are totals for all 54 selected files

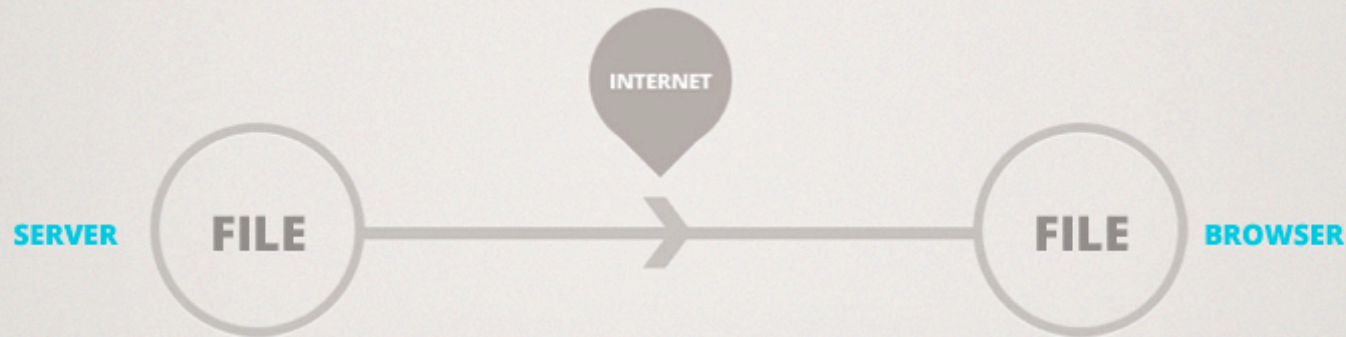
# GZIP COMPRESSION

Gzip compression reduces file size by up to 70%

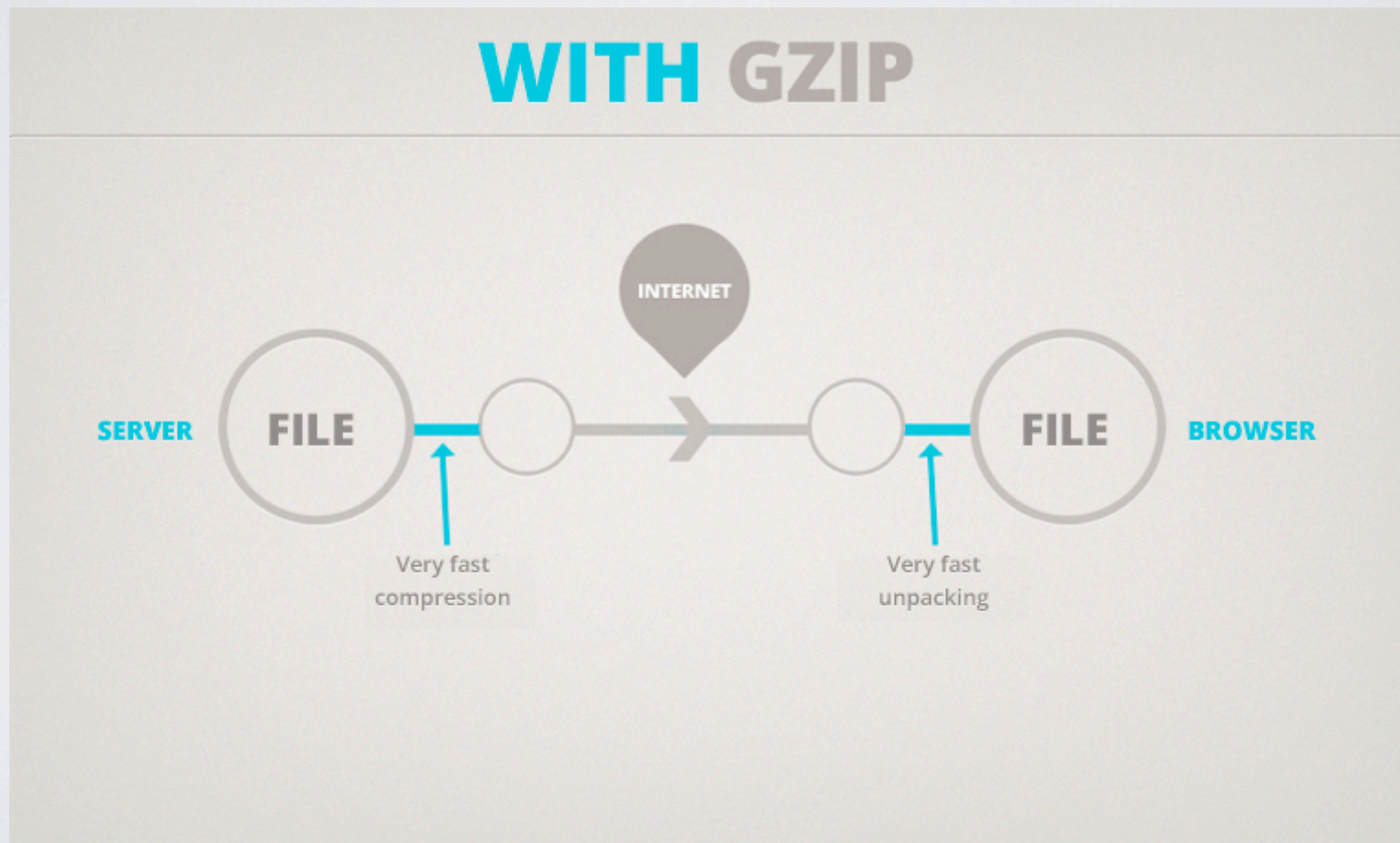


# GZIP COMPRESSION - HOW IT WORKS

## WITHOUT GZIP



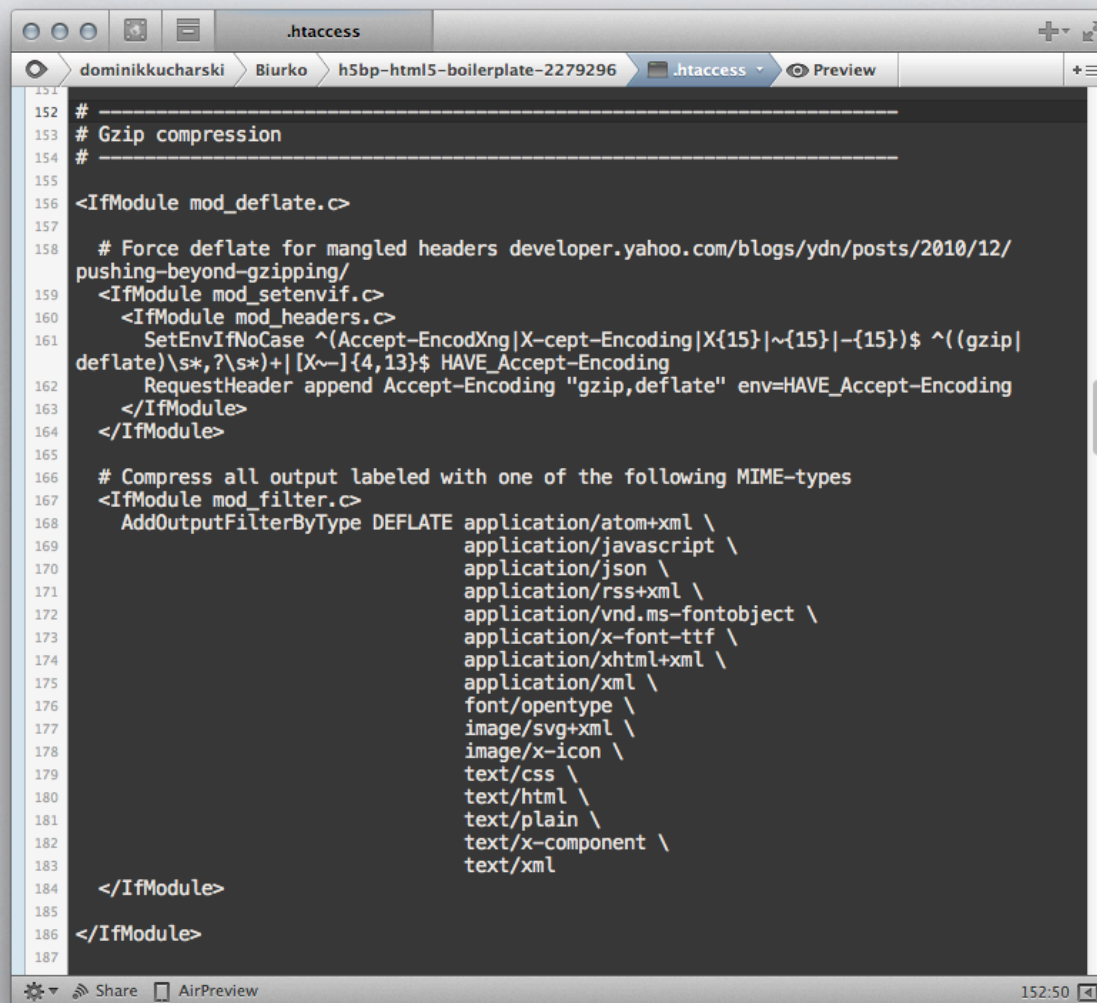
# GZIP COMPRESSION - HOW IT WORKS



# GZIP COMPRESSION - IMPLEMENTATION IN JOOMLA!

1. Download a HTML5 Boilerplate from [html5boilerplate.com](http://html5boilerplate.com)
2. Copy part of the code responsible for the gzip compression from .htaccess file in Boilerplate to .htaccess file in Joomla!

# GZIP COMPRESSION - IMPLEMENTATION IN



```
151
152 # -----
153 # Gzip compression
154 # -----
155
156 <IfModule mod_deflate.c>
157
158 # Force deflate for mangled headers developer.yahoo.com/blogs/ydn/posts/2010/12/
159 # pushing-beyond-gzipping/
160 <IfModule mod_setenvif.c>
161 <IfModule mod_headers.c>
162     SetEnvIfNoCase ^(Accept-EncodXng|X-cept-Encoding|X{15}|~{15}|-{15})$ ^((gzip|
163     deflate)\s*,?\s*)+|[X~]{4,13}$ HAVE_Accept-Encoding
164     RequestHeader append Accept-Encoding "gzip,deflate" env=HAVE_Accept-Encoding
165 </IfModule>
166 </IfModule>
167
168 # Compress all output labeled with one of the following MIME-types
169 <IfModule mod_filter.c>
170     AddOutputFilterByType DEFLATE application/atom+xml \
171     application/javascript \
172     application/json \
173     application/rss+xml \
174     application/vnd.ms-fontobject \
175     application/x-font-ttf \
176     application/xhtml+xml \
177     application/xml \
178     font/opentype \
179     image/svg+xml \
180     image/x-icon \
181     text/css \
182     text/html \
183     text/plain \
184     text/x-component \
185     text/xml
186 </IfModule>
187 </IfModule>
```

# JAVASCRIPT | CSS CODE COMPRESSION

Code Compression involves removing unnecessary characters from code (spaces, tabs, move to a new line).

The best effects gives a combination of gzip compression with code compression.

# CODE COMPRESSION IN Joomla!

- Template Framework options (Warp, Gantry etc.)
- Separate extension for Joomla!:
  - JCH Optimize
  - jbetolo
  - JS CSS Control
  - RokBooster



# CODE COMPRESSION IN JOOMLA! - JCH OPTIMIZE

▼ **Opcje podstawowe**

Combine CSS Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
Replace @import	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Combine JavaScript Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
Combine CSS Files	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify CSS	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify javascript	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify HTML	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Delete javascript	<input type="radio"/> Nie	<input type="radio"/> Tak

Position combined javascript  ▾

Lifetime (days)

► **Rozszerzone**

► **Sprite generator**

II PART OF THE  
OPTIMIZATION -  
REDUCING THE NUMBER  
OF REQUESTS TO THE  
SERVER

# REDUCING THE NUMBER OF REQUESTS TO THE SERVER



# COMBINING JAVASCRIPT AND CSS FILES

JCH Optimize

Combine CSS Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
Replace @import	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Combine JavaScript Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
Zip JavaScript and CSS	<input type="radio"/> Nie	<input type="radio"/> Tak
Minify CSS	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify javascript	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify HTML	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Defer javascript	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Position combined javascript	Last found javascript tag ▾	
Lifetime (days)	<input type="text" value="30"/>	

▶ [Rozszerzone](#)

▶ [Sprite generator](#)

# CSS SPRITES

- CSS Sprites is a technique for saving many of the graphical elements in a single file and display it by manipulating the background-position parameter.

Example code:

```
#logo { background: url(/images/sprite.png) 0 -100px no-repeat; }
```

# CSS SPRITES - EXAMPLE



# CSS SPRITES IN JOOMLA!

## JCH Optimize

The image shows a screenshot of the Joomla! administrator interface for the JCH Optimize extension. The 'Sprite generator' section is expanded, showing the following configuration options:

- Enable sprite generator:** Radio buttons for 'Nie' (selected) and 'Tak'.
- Image file type:** A dropdown menu set to 'PNG'.
- Amount of images in sprite:** A dropdown menu set to 'Minimum'.
- Sprite build direction:** A dropdown menu set to 'Vertical'.
- Wrap images:** Radio buttons for 'Nie' (selected) and 'Tak'.
- Include additional images in sprite:** An empty text input field.
- Exclude images from sprite:** An empty text input field.

# EMBEDDING IMAGES

Embedding images involves using the code in base64 instead of the standard graphics file.

```
background: url(data:image/png;base64,iVBORw0KGgoAAAANSUgAAAAEAAAZCAIAAAB/  
8tMoAAAACXBIWXMAABv9AAAb/QGX0Qc2AAAAMU1EQVR42kWLuREAIazDdN6JRZiE/YuIgnCpLH+sfYJGeKqRGtZY31dno3T/  
t/R/mAtRMDvkNuHCUwAAAABJRu5ErkJggg==) repeat-x;
```



III PART OF THE  
OPTIMIZATION - USEFUL  
TIPS

# USING THE EXPIRES HEADERS AND REMOVING ETAG

- The Expires header tells the web browser How long can keep the item on your hard drive and use it instead of downloading it from the server.
- ETag is a mechanism to verify the cached page elements. ETag is unfortunately unreliable, so better to turn it off and rely on Expires Headers

# EXPIRES | ETAG IN PRACTICE

Just re-copy the code from the .htaccess file from HTML5 Boilerplate to Joomla! .htaccess file.

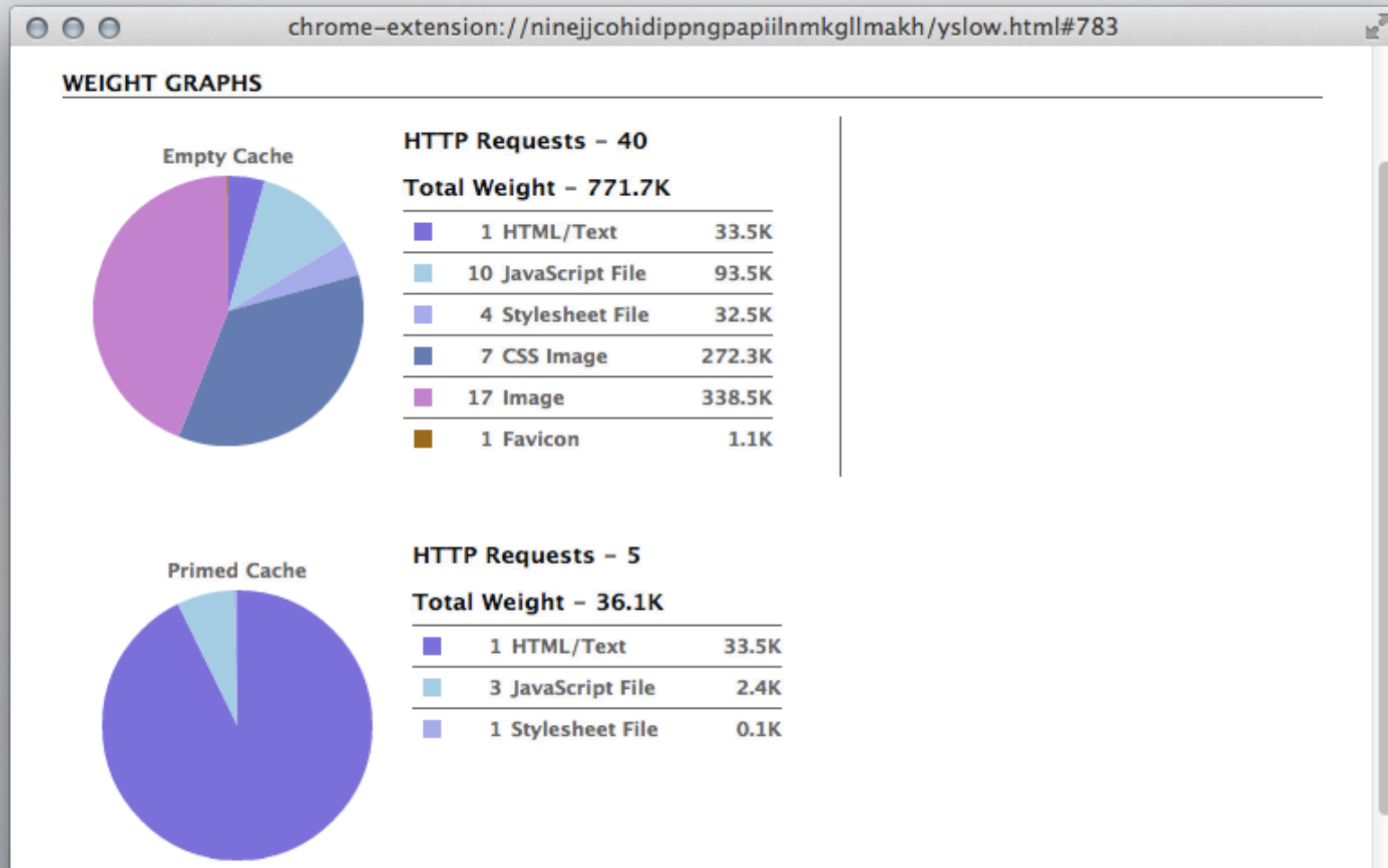
- Code for Expires starting from:

```
# -----  
# Expires headers (for better cache control)  
# -----
```

- Code for ETag starting from:

```
# -----  
# ETag removal  
# -----
```

# EXPIRES | ETAG IN PRACTICE



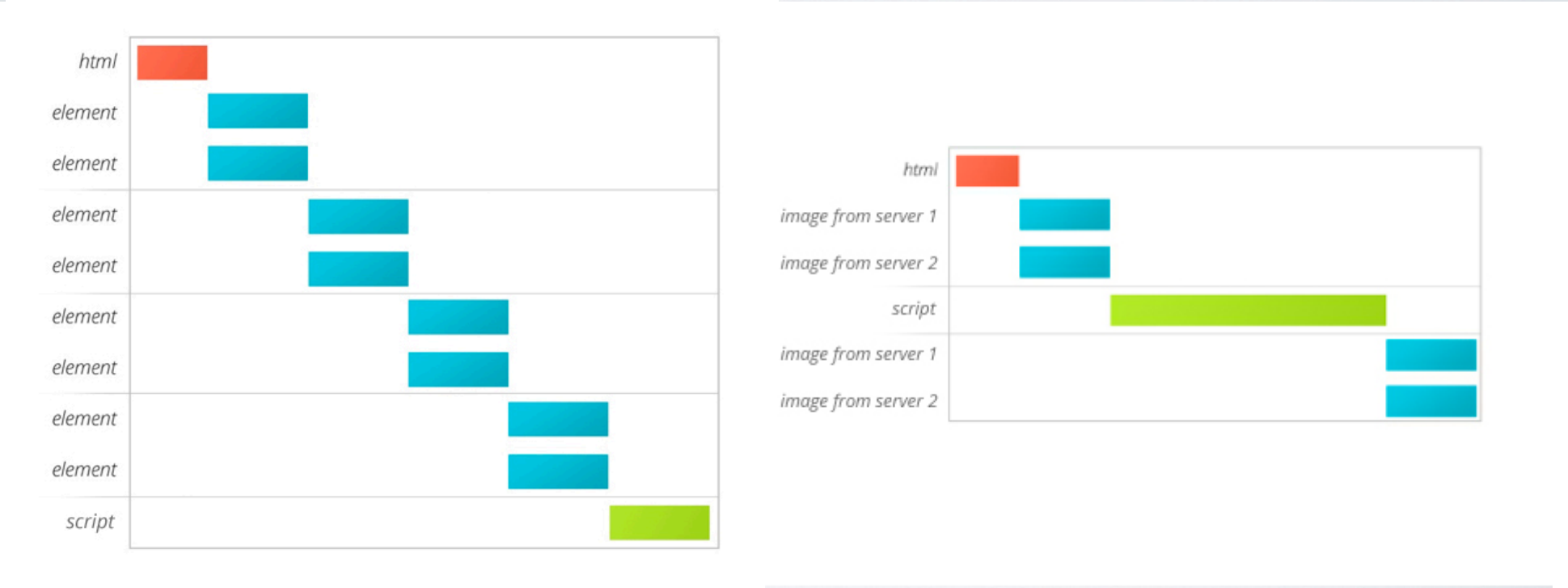
# PLACING SCRIPTS AT THE END OF THE DOCUMENT

When your web browser is loading JavaScript file then it stops downloading other files from the server, so page loads much more slowly.

# PLACING SCRIPTS AT THE END OF THE DOCUMENT

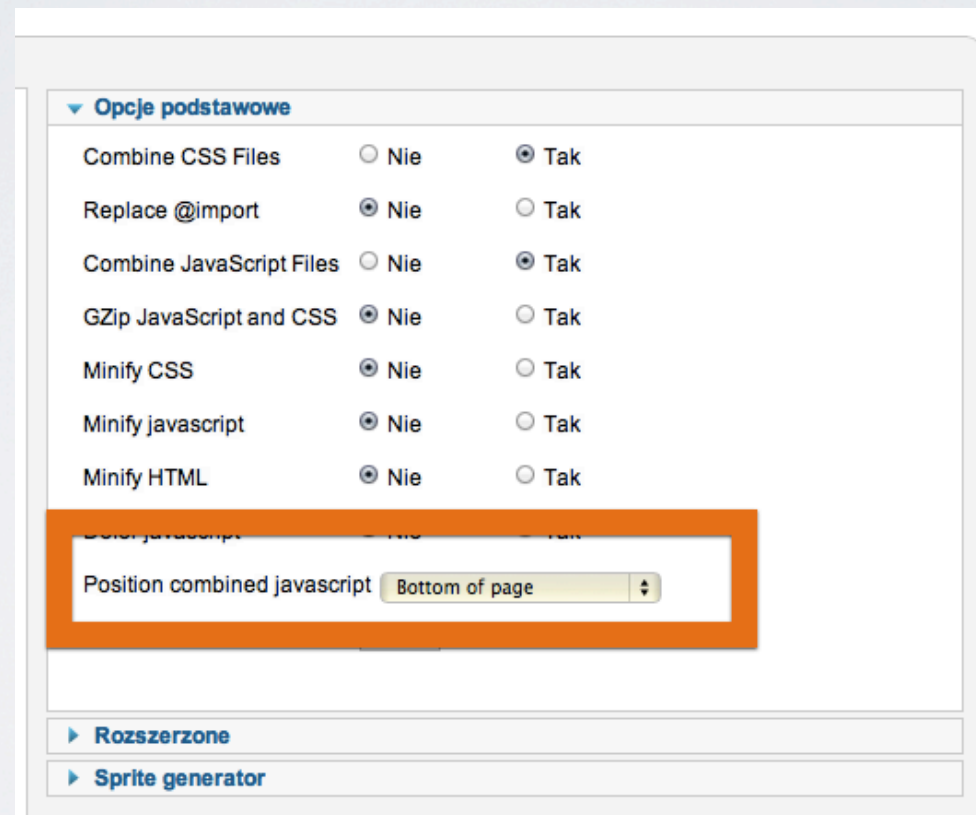
Script at the end

Script in the middle



# PLACING SCRIPTS AT THE END OF THE DOCUMENT - JOOMLA!

JCH Optimize



▼ Opcje podstawowe

Combine CSS Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
Replace @import	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Combine JavaScript Files	<input type="radio"/> Nie	<input checked="" type="radio"/> Tak
GZip JavaScript and CSS	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify CSS	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify javascript	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak
Minify HTML	<input checked="" type="radio"/> Nie	<input type="radio"/> Tak

Position combined javascript

► Rozszerzone

► Sprite generator

# REMOVING UNNECESSARY AND DUPLICATE FILES

Depending of the project part of the Joomla! files can not be useful to us.

When web site uses only Mootools core capabilities we can delete mootools-more.js (227KB) file.

Sometimes we rely only on jQuery and we an completely remove Mootools.



# REMOVING UNNECESSARY AND DUPLICATE FILES

The ideal extension to do this is InterEXT.

▼ Opcje podstawowe

Check for Overlaps?  ↓

Display Execution Time?  ↓

► MooTools Core

► MooTools More

► jQuery

► Group 1

► Group 2

► Group 3

► Group 4

► Group 5

► Group 6

► Group 7

► Group 8

► Group 9

► Group 10

► Opcje podstawowe

► MooTools Core

▼ MooTools More

MooTools More Action  ↓

MooTools More Menu Items

- default-menu
  - Homepage
  - Kontakt2
- mainmenu
  - Home
  - Products
  - Services
  - Portfolio
  - About Us
  - News
  - Contact Us
- main-menu-pl
  - Strona główna
  - Produkty
  - Usługi
  - Portfolio
  - O nas
  - Nowości
  - Kontakt

MooTools More Option  ↓

MooTools More Custom URL

Exceptions  ↓

► jQuery

# PLACING STYLE SHEETS AT THE BEGINNING OF THE DOCUMENT

Browser does not format the appearance of the page until you download all CSS files.

If the file is attached to the end of the document the browser will load the unformatted text on white background.

# CONTENT DELIVERY NETWORK

A content delivery network (CDN) is a large distributed system of servers deployed in multiple data centers in the Internet. The goal of a CDN is to serve content to end-users with high availability and high performance.



# CONTENT DELIVERY NETWORK

- CDN Integration with Joomla! is very simple thanks to the "CDN for Joomla!" extension
- Just buy CDN services and fill in a few fields in the Joomla! extension

# CONTENT DELIVERY NETWORK

## PLUGIN VIEW

### Plugin view

#### CDN for Joomla! v2.1.2 [FREE]

Use a Content Delivery Network in Joomla!

Please make sure this plugin is ordered as late as possible (after any other system plugins, but before the cache and SEO plugins)

[Więcej informacji...](#)



Save 25% on these CDN services with coupon code: nonumber

Site Root

CDN Domain

Handle HTTPS urls *Only available in PRO version!*

File Types  Wszystkie

#### Images

bmp

gif

jpg / jpeg

ico

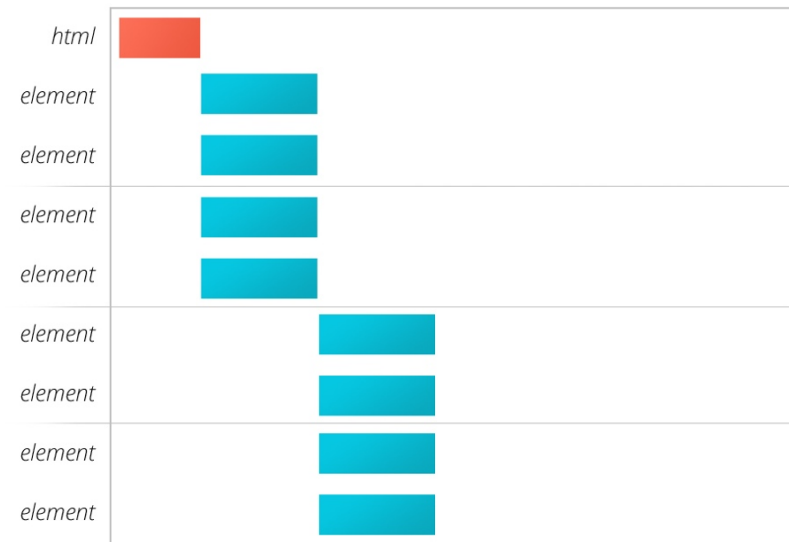
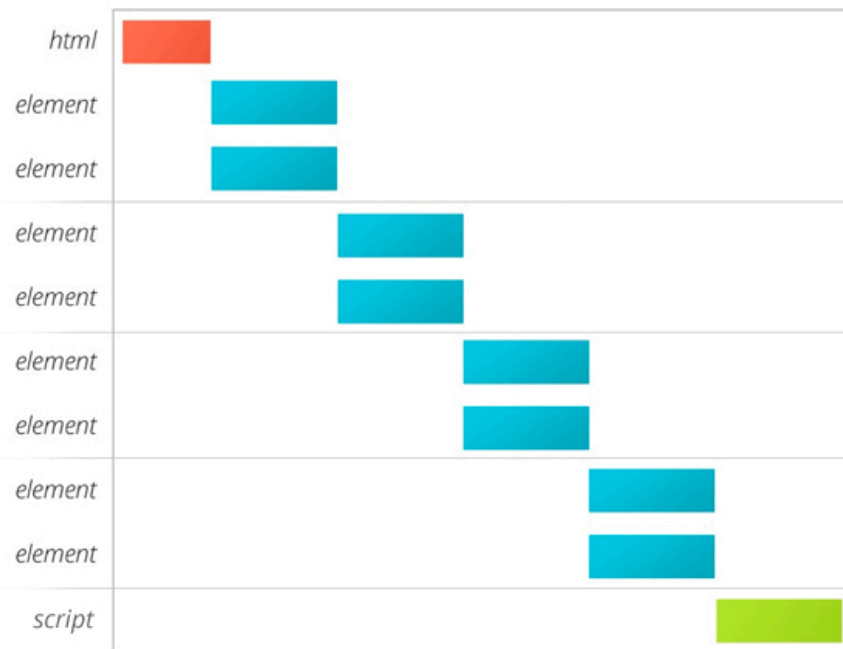
png

tif / tiff

#### Documents

# SPLIT FILES BETWEEN MULTIPLE SERVERS

Split files between multiple servers allows the browser to download simultaneously larger amounts of files.



# SUMMARY

If you want to get very good results with little effort (up to several hours):

- compress images
- turn on gzip, Expires Headers and turn off Etags using .htaccess file
- turn on code compression by using Joomla! extension



# SUMMARY

If you have bigger ambitions I recommend trying the rest of the advices presented in this presentation with an emphasis on reducing the number of requests.

# SUMMARY

Materials:

- Book „High Performance Web Sites: Essential Knowledge for Front-End Engineers”, Steve Sounders
- [stevesaunders.com](http://stevesaunders.com) - Steve Sounders blog
- [zoompf.com/blog](http://zoompf.com/blog)
- [webperformancetoday.com](http://webperformancetoday.com)

ANY QUESTIONS?

THANK YOU FOR YOUR  
ATTENTION :-)