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Image Acceleration in the Cloud

Challenges and Solutions

member of the MACH ALLIANCE

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Agenda

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Introduction

22s

is the average time in seconds it takes for a mobile landing site to fully load

53%

of users will abandon a website that takes **more than three seconds to load**

63%

of a website's total page weight is attributed to images

Businesses going through digitalization understand that it is no longer enough to compete on products and services—**customers expect an end-to-end experience that delivers value as quickly and seamlessly as possible.** According to Bain and Company, optimizing customer experiences results in up to 10% of revenue growth across industries. Companies that excel at customer experiences grow revenues four to eight percent above the market.

This pressure for speed begins with the customer's first interaction with the company's digital platform. The page loading time often means the difference between customer engagement and eventual adoption—or customer abandonment and subsequent adoption of a competitor's products and services.

This paper explores the current challenges that web developers face and proposes solutions to speed up page loading time through image acceleration in the cloud.

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The Challenges Developers Face: The Trade-off between Page Speed and Visual Content

"People remember only 20% of what they read, but 80% of what they see - and that is because the human brain processes visual cues better than the written language."

Visual content lies at the cornerstone of effective marketing. However, big visuals also mean heavy image and video files that slow down the page loading time. If customers leave the page before it fully loads, the design components will become meaningless.

Therefore, the challenge for marketers and developers is to balance two aspects of the customer experience that seem to be mutually exclusive: **speed and visual appeal.**

Average image weight is 960 kB per web page in 2022, more than three times higher than in 2011 at 260 kB.

Images account for about 63% of the average web page's total size

Page Speed

Since 2011, average image weight per web page has increased

3x

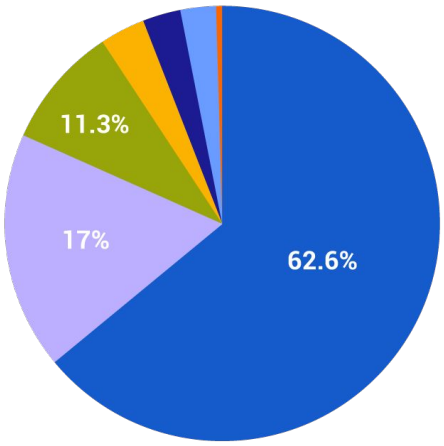
Visual Content

93%

of all human communication is visual

Increases user engagement by 650% compared to text-only posts

Improves conversion by up to 86% compared to text-only content



Poids des pages par type de contenu

Source: Google Developers

- Images
- Other
- HTML
- Fonts
- CSS
- Video
- Scripts

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Five Benefits of Image Optimization

1. Better user retention

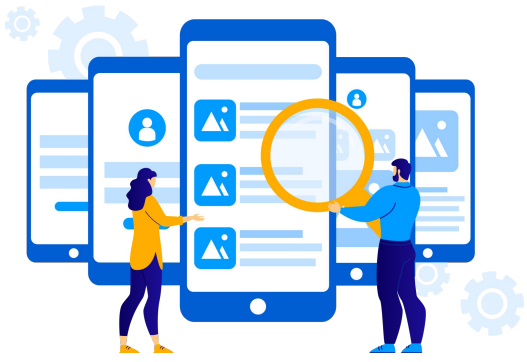
When users have to wait for a page to load, they abandon it altogether. **47% of users** expect a website to load in **two seconds or less**. By the time the average website becomes fully interactive - around the eight-second mark - most users would have abandoned the page.

2. Increased conversion rate

Optimizing page loading time might be the easiest way to increase conversion rate. According to a conversion prediction model built by Google, the number and the byte amount of graphic elements are the most significant predictors of conversion rate in 93% of the cases. In other words: **the heavier the images, the slower the page, the lower the conversion rate.**

3. Enhanced user experience

Happy customers view more pages and engage further with website content. On the other hand, **79% of customers who encounter issues** with website performance **will not return to the site again**.



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Five Benefits of Image Optimization

4. Higher revenue

The benefits described above translate directly into a more significant consequence: according to an often-quoted statistic, every 100ms improvement in loading time results in a 1% improvement in revenue. This means that if an e-commerce site was making $100,000 a day, a one-second page delay would result in **$2.5M of lost sales per year**.

While this figure might not hold across the board for websites experiencing different traffic volumes, page speed still correlates strongly with revenue across various case studies.

5. Improved SEO Ranking

In 2020, Google announced the **Core Web Vitals** update where page speed would become an even more important ranking factor in both desktop and mobile searches. There is a direct correlation between page speed and search ranking even within the top ten results. Websites that show up on the first page of Google search results typically have **an average loading time below 2.3 seconds** and haul in **95% of all click-through traffic**. In turn, pages with higher click-through rates are identified as valuable and are pushed further towards the top, thus reinforcing the importance of optimization.

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Five Solutions to Optimize and Accelerate Images

1. Generate all images server-side and deliver the right image size at the right moment of customers' journey

There is no point in serving a large original image on the client's web browser or mobile application to create a small thumbnail. Instead, all image sizes (thumbnail, preview, and full size) should be generated server-side and then delivered to the client-side accordingly.

The below example shows an original image weighing 4 MB that has been resized for different types of display on the web. For the average broadband connection, server-side image handling accelerates **up to 1200% of the loading time**.

Original image from camera, saved in JPEG

Size	4672x3104 px
Weight	4 MB
Loading	1,5 second

Resized image for full size display on website

3x faster

Size	1168x776 px
Weight	1 MB
Loading	0,5 second

Preview

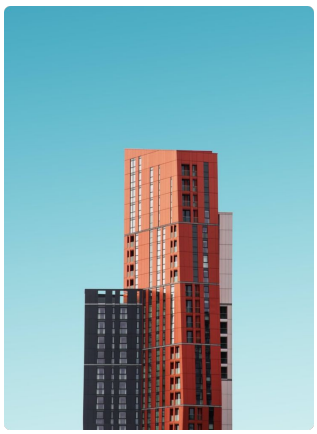
6x faster

Size	584x388 px
Weight	500 KB
Loading	0,25 second

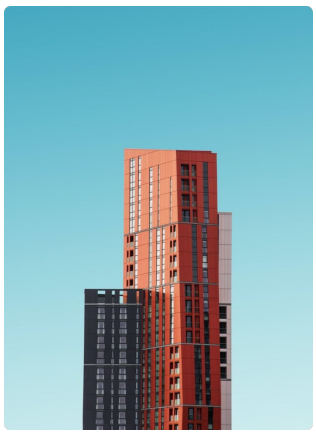
Thumbnail

12x faster

Size	292x388 px
Weight	250 KB
Loading	0,12 second



300×555 px
q100 ⇨ 41,3 KB



300×555 px
q70 ⇨ 12,5 KB

2. Leverage JPEG compression to reduce image size

The JPEG image file is the most commonly used format for images on the Web and can be compressed without visible quality loss. While JPEG does downgrade the quality of images in the interest of file weight (in MB), it can often reduce the image weight by three or four times without a visible reduction in image quality.

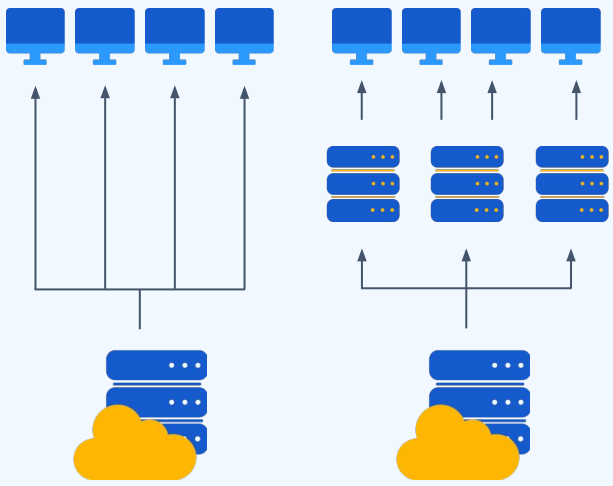
The example shows an image that has been compressed by four times while still maintaining its original quality.

3. Deliver WebP to compatible browsers and JPG/PNG to non-compatible browsers

Developed by Google, WebP is a modern image format that delivers superior lossless and lossy compression for images on the Web. Compared to PNGs of similar SSIM index quality, WebP lossless images are 26% smaller in size. WeBP lossy images are 25 – 34% smaller than JPEGs of equivalent quality. Moreover, according to Caniuse, WebP format is now supported by more than 90% browsers.

JPEG weight:
19.2 KB

WebP weight:
5.6 KB



Source: shimonsandler

4. Deliver images via rocket-fast CDNs

After generating server-side images and compressing them using JPEG or WeBP, the last piece of the puzzle is to deliver the images to the end users via rocket fast content delivery networks (CDNs). A CDN refers to a network of geographically distributed servers which cache a website's static content near the location of visitors.

CDNs offer three main benefits:

1. Users located far from the data center where the website or the application is hosted will experience lower latency and faster loading time.
2. CDNs absorb high load during traffic peaks and save money on hosting infrastructures.
3. CDNs keep websites safe by absorbing Denial-of-Service-like attacks.

5. Leverage the HTML5 <picture> element to make images responsive to different screen sizes

Responsive images optimize user's device type, window size, orientation, or resolution. A responsively designed image does not rely on the default browser resizing to display images on various devices: it would be a huge waste of bandwidth to deliver an image prepared for a 15-inch laptop screen on a low-resolution four-inch smartphone screen. Instead, responsive images are prepared in various resolutions to serve all form factors optimally.

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Introducing Cloudimage – the easiest way to optimize and accelerate images in the cloud

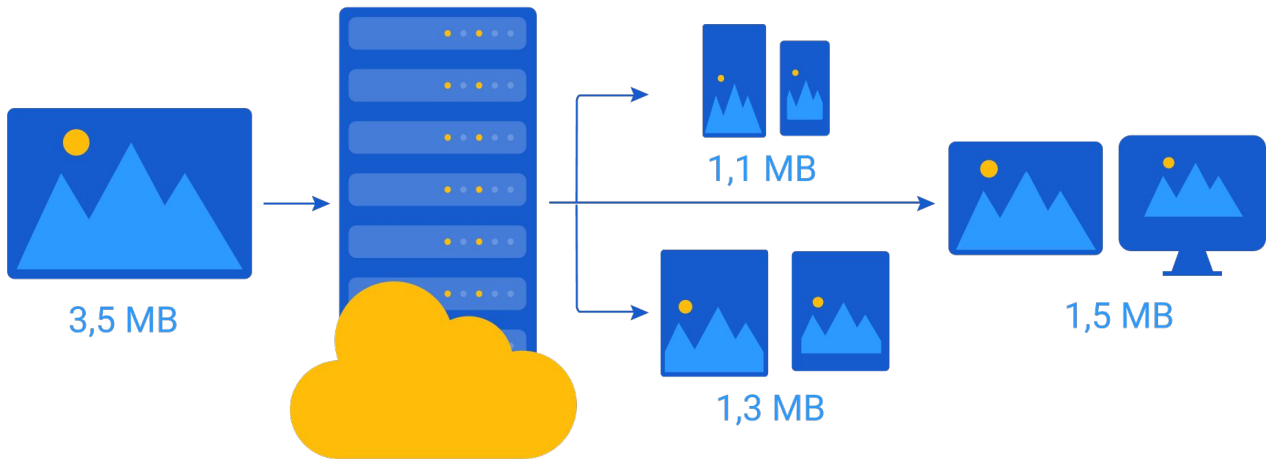
Save time & effort

- Combines all five solutions to image acceleration into a **single, easy-to-use product.**
- Replaces the need for an in-house image management solution.
- URL-based transformations require no learning curve. Users can set up and start implementing Cloudimage within an hour.
- Offers the most competitive pricing on the market thanks to a bandwidth-based pricing structure and low internal costs.
- Saves money on hosting infrastructure for image storage and resizing.

Recognizing the need for a cost-effective and easy-to-use tool for cloud-based image management, a team of European developers founded Cloudimage in 2015. Since then, **Cloudimage has optimized and delivered more than 200 billion images to some of the world's largest sites and mobile apps**.

Register for a free website audit with our images optimization experts at sales@scaleflex.com

Get a free Cloudimage account to try it out.



About Scaleflex

Scaleflex is a global leading B2B SaaS company developing the most powerful and scalable Digital Asset Management and Media Acceleration solutions. Our mission is to load, store, organize, optimize, publish and accelerate all media assets (images, videos, static files such as JS and CSS files, etc.) for websites or mobile applications.

With more than 2 billion brand assets per month under management, Scaleflex helps over 1000 organizations, including Michelin, St Gobain, Toom, Printemps, WhiteStuff, SeLoger, Knight Frank, Sotheby's Realty and various SaaS companies to provide more engaging, personalized experiences for their customers around the world.

For more information, visit scaleflex.com.