

## Improving Website Performance in China

This paper outlines cost-effective performance improvements that help your website or application perform better in China. Many of these recommendations also improve performance globally.

While some services can mitigate performance issues without requiring technical changes, understanding the factors below helps businesses make informed decisions and improve customer experience.

While China regulates internet content, e.g., by blocking international social media platforms, most issues with overseas websites stem from China's position on the global internet and its high-performance technical environment.



The global internet, in the main, was built by U.S. providers. China was over 10 years behind the rest of the world in its internet rollout. This has led to significant performance issues with internet connections to and from China. In most cases, internet traffic from China is routed to North America regardless of the final destination; for example, traffic from China to Europe is routed through the USA, adding 10s of seconds to a website's performance.

**For more information on Chinese and international internet performance:**  
[Chinese internet structure](#)

### Why Website Performance Matters in China

Only 25% of foreign websites are accessible in China; 20% take more than 20 seconds to load, and 55% are inaccessible.

We tested the top 100 companies listed on the London Stock Exchange and found that only 14 companies' websites were accessible in China.

The internet in China is one of the fastest in the world. It is built for over a billion daily users who demand and get fast performance. The internet in China has been and remains a major technical success story. Poor-performing overseas websites do not meet the needs of Chinese businesses or consumers.

The internet is a global infrastructure that costs hundreds of billions of dollars to build and operate, with much of that cost driven by energy consumption. Improving performance is therefore both an enhancement of the customer experience and a gain in resource and energy efficiency.

In this sense, performance optimisation is both a green initiative and a commercial one.

**Practical takeaway:** The internet in China is one of the fastest in the world. Internet issues between China and the rest of the world do lead to poor performance of overseas websites in China. This can be overcome by making a few technical changes.

## Internet performance

### Global Routing Inefficiencies

Public internet traffic from China to the rest of the world is routed through Japan and Taiwan (not Hong Kong), then on to North America before reaching any overseas servers. This does significantly increase response times.

Hosting in Hong Kong is often seen as a quick way to access the Chinese internet. For internet providers in Asia, the route from Hong Kong to mainland China via the Pacific Ring passes through Japan and Taiwan. For U.S. internet providers, the route from Hong Kong to North America then crosses the Pacific Ocean again, entering China via Japan and Taiwan, making it one of the slowest internet connections in the world. This service is often unavailable in overseas data centres operating in Hong Kong. It requires an agreement with Chinese network carriers.

### Limited International Bandwidth

The Pacific submarine cables have physical capacity limits for the traffic they can carry. Congestion is common, especially during business hours and peak usage periods.

To overcome this problem, host your website's large files and/or the website itself in Japan and Taiwan. Ensure the hosting provider has a direct connection to mainland China; not all do.

Avoid hosting services in Hong Kong unless your service provider has a direct internet connection to mainland China.

## Content Restrictions

Certain services and platforms are restricted or blocked. This can cause missing website elements, slow page load times, or broken layouts.

- International social media
- International multimedia platforms, e.g. YouTube
- Third-party system and services, e.g. Google, recapture
- International hosting services, e.g. CDNs

**Test your website from the internet in China to identify problems and issues with content:** [Web Page Test](#)

## Overseas DNS Performance in China

DNS resolution for overseas-registered domains is slow and unreliable in China.

Your domain name's DNS records "look up" is taking too long (over 250ms) for the Chinese internet (requiring a response time of 100ms) and resulting in your website being reported to the user as "not found".

To address this, use the China Name Server (DNS) service.

As of 2022, overseas companies can use Name Server (DNS) services in China, provided the domain is purchased through a Chinese ISP.

Learn more: [How do Name Servers \(NS\) and DNS operate in China](#)

## Multi-media contents

### Image Size and Media Optimisation

Images on many websites are significantly larger than they appear. Oversized images increase download time, server load, and degrade performance in China.

For example, if the maximum banner image width is 1,800px, ensure the image is resized to 1,800px. It will not change your website's appearance, but it will load faster.

Overly large image sizes are prevalent in online content. It is simple to correct.

- Improve your internet performance
- Reduce user "bouncing"
- Reduce internet usage. If we all did this, the internet would run faster and require less power

### Mobile and tablet considerations

Image optimisation is even more critical on mobile networks, which typically have lower bandwidth and higher latency.

Given CDN service issues in China, we recommend that you control image sizing on your website in HTML, e.g., by adding the "picture" tag.

### Prioritised image loading (Lazy Loading)

Images should load from top to bottom, displaying the most important content first. This improves perceived performance and reduces unnecessary data transfer.

## Third-Party Resources and Embedded Services

Modern websites often load content from many external sources. While convenient, this can severely impact performance in China.

Many of these services are blocked in China or slowed to the point of being unusable.

To overcome these problems, move/copy the content to your own website, removing the need for third-party resources.

#### Fonts and External Libraries

Services such as Google Fonts can take an extremely long time to load in China, sometimes blocking text rendering entirely.

#### CDN Dependencies

CDNs are effective for large global platforms but are often unnecessary and slow for typical business websites serving China.

#### Embedded Social Media

Overseas social platforms are blocked in China. Embedded social feeds often result in missing content or broken layouts. ReCAPTCHA software often does not work in China.

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If you wish Chinese consumers to purchase your products and services in China without using a VPN, you will need to review the use of reCAPTCHA software and systems. A Chinese consumer could be trying to complete a purchase, only to be stopped by a non-working reCAPTCHA.

Some reCAPTCHA services do not work reliably when accessed from mainland China.

Google's reCAPTCHA may fail to load because Google domains are frequently blocked or unreachable within the Chinese internet. When this happens, visitors may be unable to submit contact forms or complete registrations.

Google provides a workaround by allowing reCAPTCHA resources to be loaded from [recaptcha.net](https://recaptcha.net) instead of [google.com](https://google.com). This domain is also operated by Google and often works when the main Google domain is blocked.

However, this approach still relies on external services. For websites targeting Chinese users, it is often more reliable to use local or self-hosted verification software. Running CAPTCHA or anti-spam protection on your own server removes the dependency on external domains and usually provides a more consistent experience for users accessing the site from China.

**Practical takeaway:** If you wish Chinese consumers to purchase products and services from your website in China, please change the Google reCAPTCHA domain name to [reCAPTCHA.net](https://recaptcha.net).



## **Block Chinese IP addresses through your web hosting service provider**

Malware and Bot traffic are prevalent worldwide. This is where people send many messages to your website.

Your website hosting provider blocked this traffic. In doing so, it also blocks traffic from Chinese social media. Chinese social media often includes links to overseas websites. This is generally good, as it indirectly promotes your company. This traffic is frequently mistaken for malware or bot traffic and is blocked. For example, WeChat opens a website inside its platform using the same source IP address, which can result in WeChat being blocked.

Continuously monitor and verify that all intended internet traffic reaches your website:

[Web Page Test](#)