July 2024

catchpoint

Catchpoint Industry Benchmarks

Airline Website Performance Benchmark Report

Discover the top-performing airline websites and key metrics for success based on our comprehensive website performance analysis

Introduction

The significance of continuous, proactive monitoring cannot be emphasized enough in today's digital environment. Even slight differences in your website's speed, reliability, and accessibility can have a significant impact on your ability to surpass competitors in search rankings, maintain user engagement, and successfully convert visitors into customers.

Catchpoint, the leader in Internet Performance Monitoring (IPM), analyzed 15 airline websites to identify key trends in web performance and availability. The top three sites in terms of overall performance were **JetBlue, Emirates,** and **American Airlines.** Key factors that contributed to their ranking were consistent performance in metrics such as DNS, TTFB, page load time, Core Web Vitals, and a high availability percentage.

These metrics collectively indicate that the top airline websites provide a fast, stable, and reliable user experience, which is crucial for retaining and growing users, and ensuring their satisfaction. Continuous optimization in these areas will help maintain and further improve website performance.

Catchpoint has been conducting web performance benchmarking reports of this nature for many years, often as exclusive reports for our customers or other internal purposes. As a result, we have established our own set of standards, derived from combining the examination of existing industry standards and comparing these to real world examples.

Metrics tested:

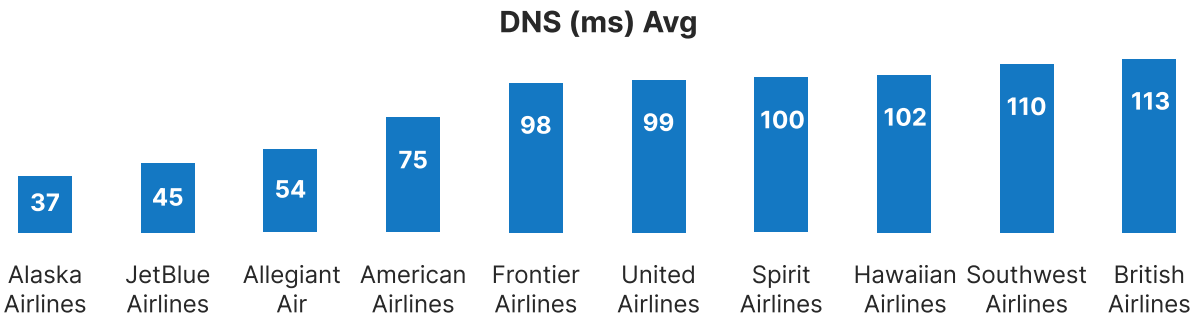
1. **DNS Lookup Time:** Time taken to resolve the domain name to its corresponding IP address
2. **Time to First Byte (TTFB):** The total time from the initial DNS request to receiving the first response packet from the server
3. **Document Complete:** Time from when the initial URL is issued until the browser triggers the onload event. This does not include any dynamic requests that may be called later by JavaScript
4. **Largest Contentful Paint (LCP):** Time when the largest content is visible within the viewport
5. **Cumulative Layout Shift (CLS):** Measures the unexpected shifting of webpage elements while the page is still loading
6. **Page Load Time:** Time until the last byte of the final element on the page is loaded
7. **Availability:** Percentage of time that the website is up and running

1. DNS

DNS lookup time measures the time taken to resolve a domain name to its corresponding IP address. A crucial part of delivering a website is fetching the base HTML, and DNS lookup times play a key role in this.

Catchpoint recommends that DNS lookup time should be less than 50ms.

Top 10 airlines with lowest DNS lookup times



Key insights:

- **Alaska, JetBlue,** and **Allegiant Air** have the best DNS lookup times, which likely contribute to faster initial webpage loading.
- Many of the analyzed airlines have DNS metrics close to or above 100ms, suggesting the need for DNS improvements.
- Most of the top 5 sites with low DNS times use either Cloudflare or Fastly.
- As DNS response times become longer, the process involves more steps, or resolution levels, to resolve the DNS query (up to 7).

Pro tips:

- The performance of authoritative DNS providers varies greatly, so choose your DNS provider wisely or carefully implement your own managed DNS.
- Improve DNS performance by continuously monitoring DNS performance to detect DNS issues early, pinpoint areas for DNS infrastructure improvement, and gain geographical insights to ensure consistent performance across different regions.
- If you're using your own DNS solution, specific techniques can be implemented such as optimizing DNS Time-To-Live (TTL) parameters, and using techniques such as CNAME flattening or DNS prefetching.
- To learn more about assessing DNS performance and its role in ensuring a fast, highly functioning website, download our report, written in partnership with IBM.

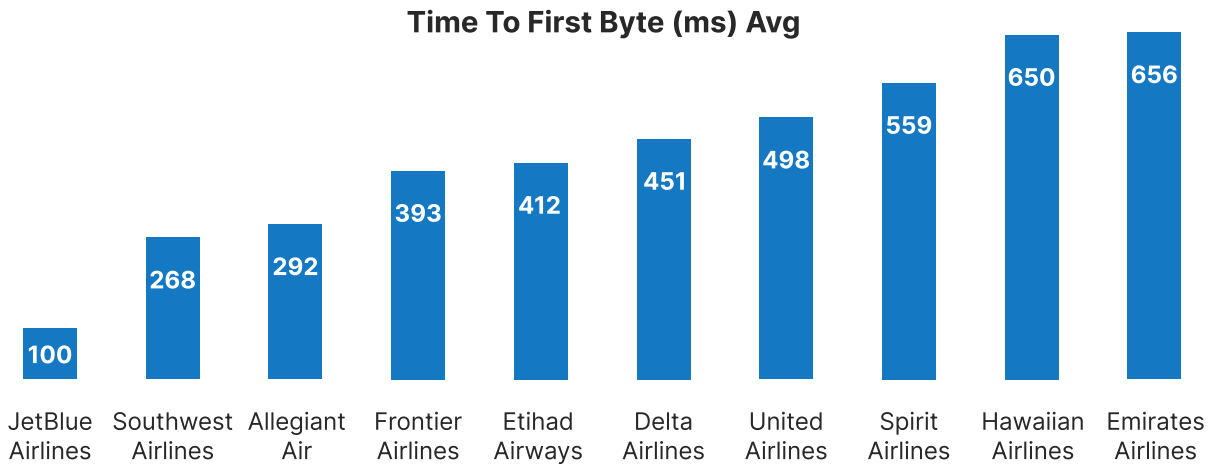
2. Time to First Byte

Time to First Byte (TTFB) measures the time from when a client makes an HTTP request to when the first byte of the response is received. It is crucial for several reasons: it enhances user experience by allowing content to be seen sooner, improves SEO as faster websites rank higher on search engines like Google, and helps identify performance bottlenecks in server or network infrastructure.

Additionally, enhancing TTFB improves overall webpage response time, ensuring a smoother user experience.

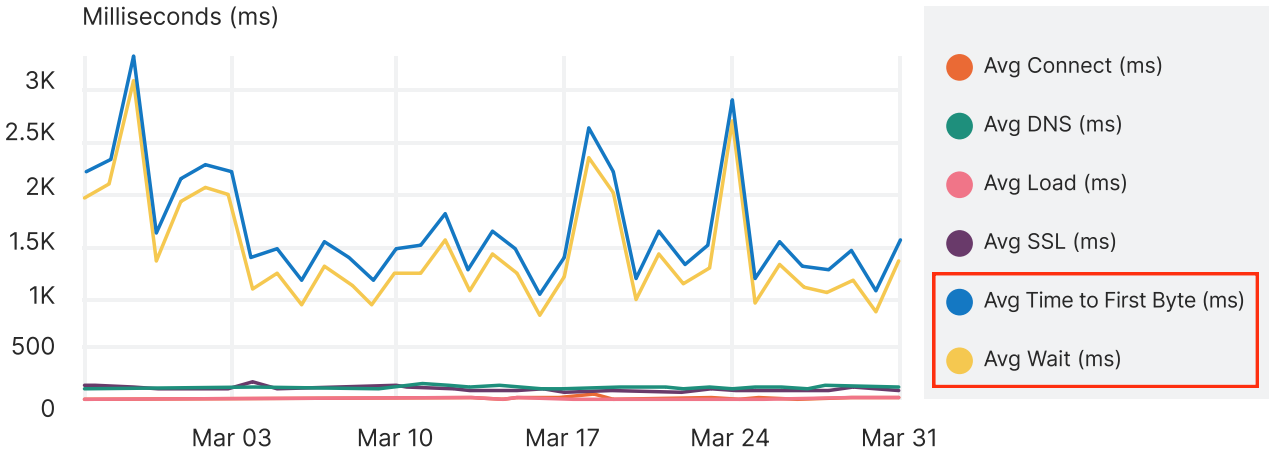
Recommended TTFB for a good user experience is about 200ms.

Top 10 airlines with the lowest TTFB numbers



Key insights:

- **JetBlue** has the best TTFB performance and is the only site in this analysis within the recommended standards.
- Airlines with the highest TTFB times should expect significant delays in server responses, which can negatively impact user experience. These airlines could benefit from server optimizations to improve initial load times.



This graph shows the TTFB of one of the sites in our analysis, which went as high as 3347ms. Note how higher wait times are directly linked to higher TTFBs, indicating that server delays contribute significantly to these spikes.

Pro tips:

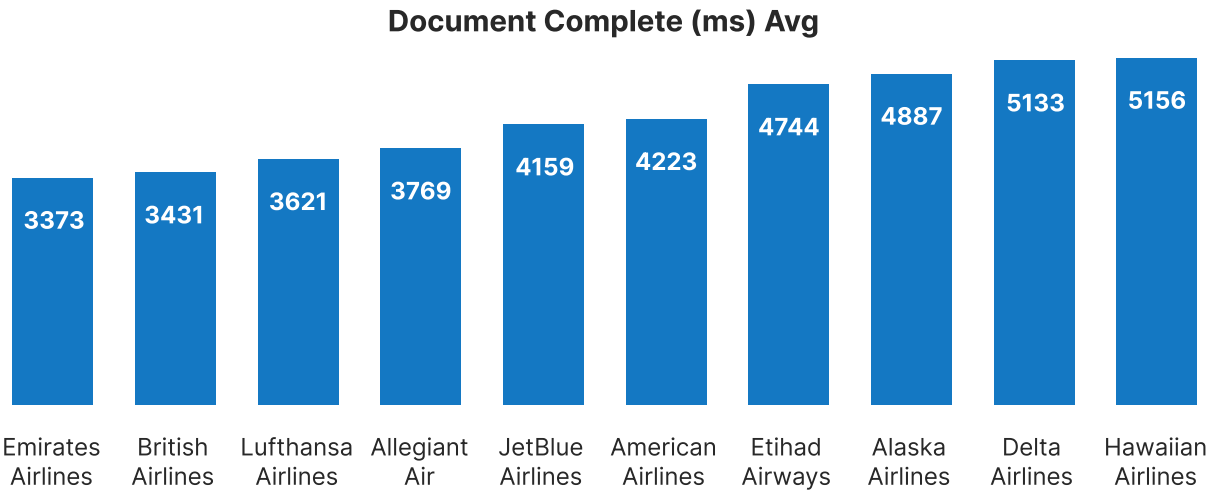
- To enhance TTFB performance, consider hosting content on a CDN, web perf techniques such as compressing assets or using browser caching, and minimizing redirects.

3. Document Complete

Document complete is the point where the browser triggers the onload event. This metric is important because it indicates that the browser has fully loaded all the necessary HTML, CSS, scripts, images, and resources, ensuring the webpage is ready for users to view and interact with. A shorter document complete time improves user satisfaction and engagement.

Our recommended document complete time is generally around 3 seconds, although this can vary depending on various factors, such as the type of website, the nature of its content, and user expectations.

Top 10 airlines with the lowest document complete times



Key insights:

- None of the sites analyzed in our study achieved document complete times within the 3-second benchmark, but **Emirates, British Airways,** and **Lufthansa** came closest to this target.

Pro tips:

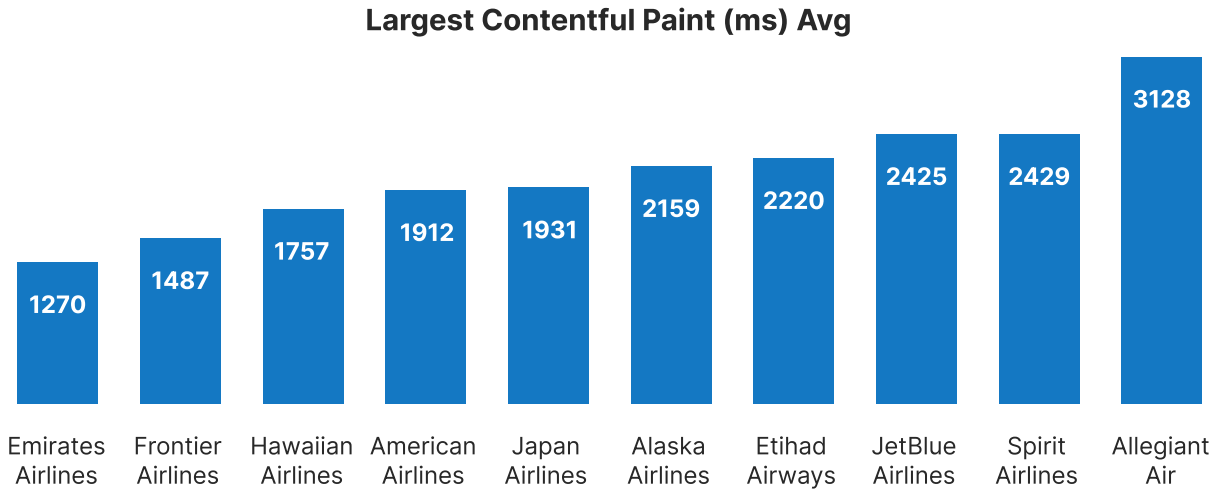
- To improve document complete times, prioritize rendering critical page elements first. This includes ensuring that the most crucial elements required for initial rendering (such as the main content, navigation, and primary styles) are part of the base HTML. Defer less essential content until after the document is complete.
- Optimize images and compress/minify resources to further enhance document complete times.

4. Largest Contentful Paint

Largest contentful paint (LCP) measures how long it takes for the main content of a page to load. High LCP metrics suggest that users will perceive the website to be loading slowly.

Our recommended standard for LCP is approximately 2.5 seconds.

Top 10 airlines with the fastest LCP times



Key insights:

- **Emirates** has the fastest LCP time, although most of the analyzed sites achieved LCP numbers within our recommendation, likely by prioritizing the early loading of the largest content on the page.
- **Allegiant Air's** high LCP time could lead to significantly slower loading of the main content, resulting in a poor user experience.

Pro tips:

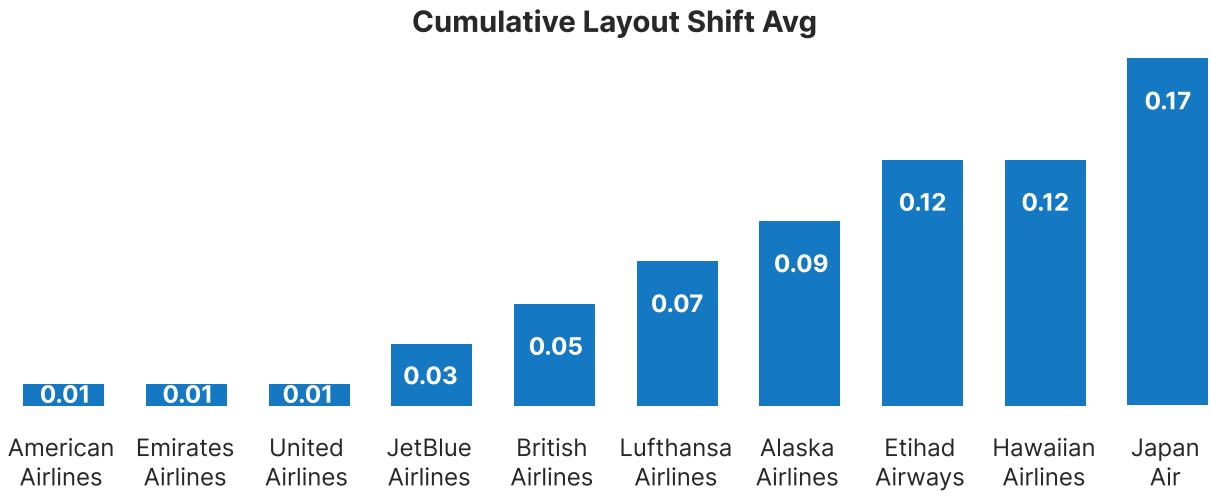
- A faster LCP improves user experience by quickly displaying key content. Prioritize preloading or immediate loading of the largest content elements on your page to effectively address LCP concerns.

5. Cumulative Layout Shift

Cumulative layout shift (CLS) measures the visual stability of a webpage. This metric is important because unexpected layout shifts can lead to a poor user experience. A lower CLS score indicates a more stable and user-friendly page.

The recommended CLS score should be below 0.1.

Top 10 airlines with the lowest CLS score



Key insights:

- **American Airlines, Emirates,** and **United** provide a very stable content layout with minimal unexpected shifts, leading to a smooth user experience.
- **Japan Airlines'** high CLS score suggests significant layout instability, which could lead to user frustration.

Pro tips:

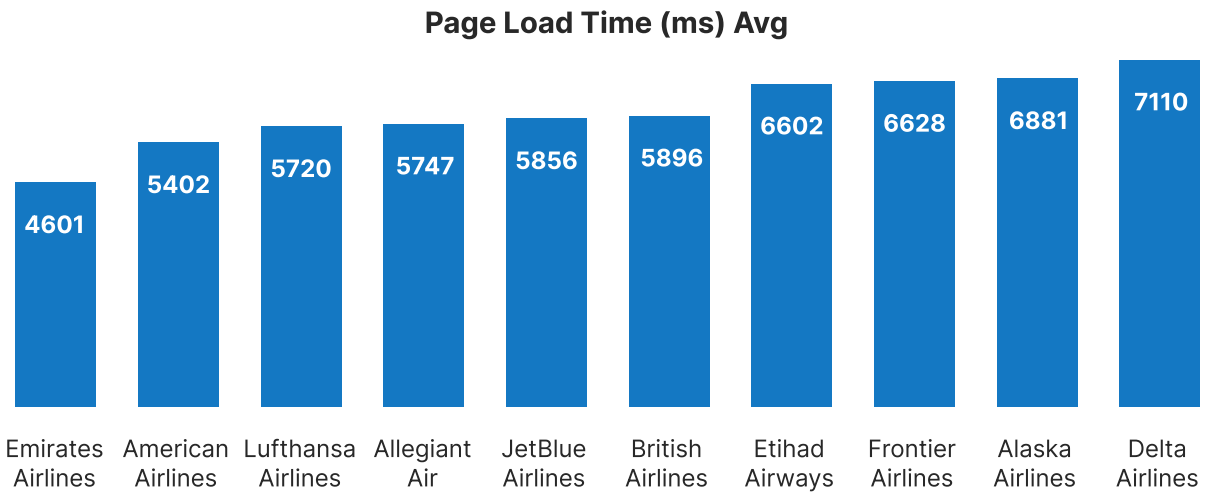
- To improve CLS scores, specify dimensions for images and videos, avoid loading dynamic content above the fold before user interaction, and apply other relevant optimizations such as delaying the loading of ads until after user interaction.

6. Page Load Time

Page load measures the time from initial navigation to receiving the last byte of the final element on the page. Various factors influence page load time, such as the number of requests on the page, the total amount of data downloaded, the quantity and quality of DNS connections, the loading of third-party requests, and the asynchronous loading of JavaScript.

Recommended page load time is less than 5 seconds.

Top 10 airlines with the lowest page load times



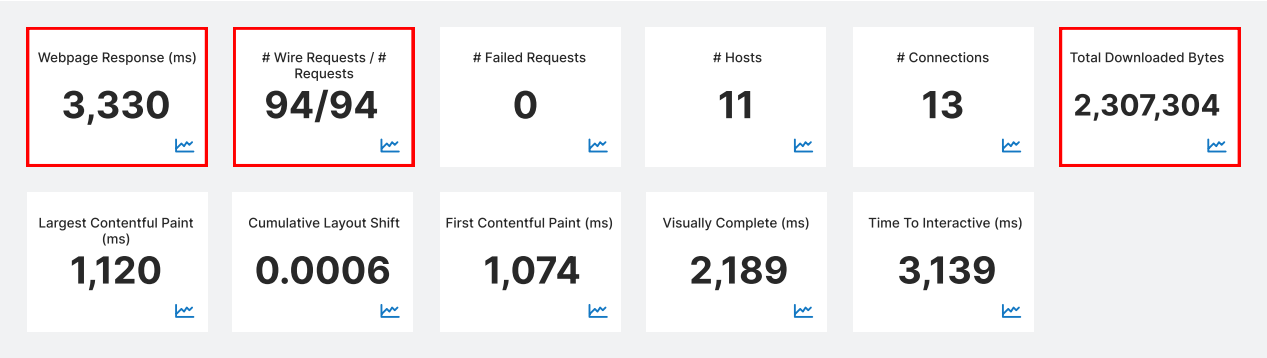
Key insights:

- Only **Emirates** is within our recommended range, with a page load time of 4601ms.
- **Delta Airlines** has a significantly slower page loading time within this group, suggesting the need for substantial optimization to enhance user experience.

Site Comparison

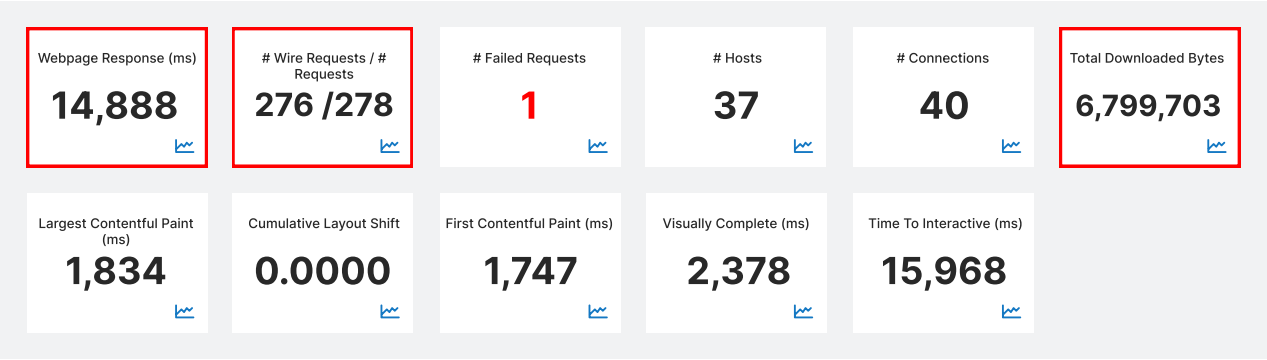
See the comparison below of one anonymized site with lower page load times to one with higher numbers. It concisely demonstrates the way in which number of requests, total downloaded bytes, and the time taken for each request are key factors in driving overall page load times.

Site A



Site A has a good overall page load time of 3,330ms. It handles fewer requests (94) and downloads less data (2,307,304 bytes), making it faster and more efficient for users.

Site B



Site B has a higher page load time of 14,888ms. It handles more requests (278) and downloads more data (6,799,703 bytes), making it slower and less efficient for users.

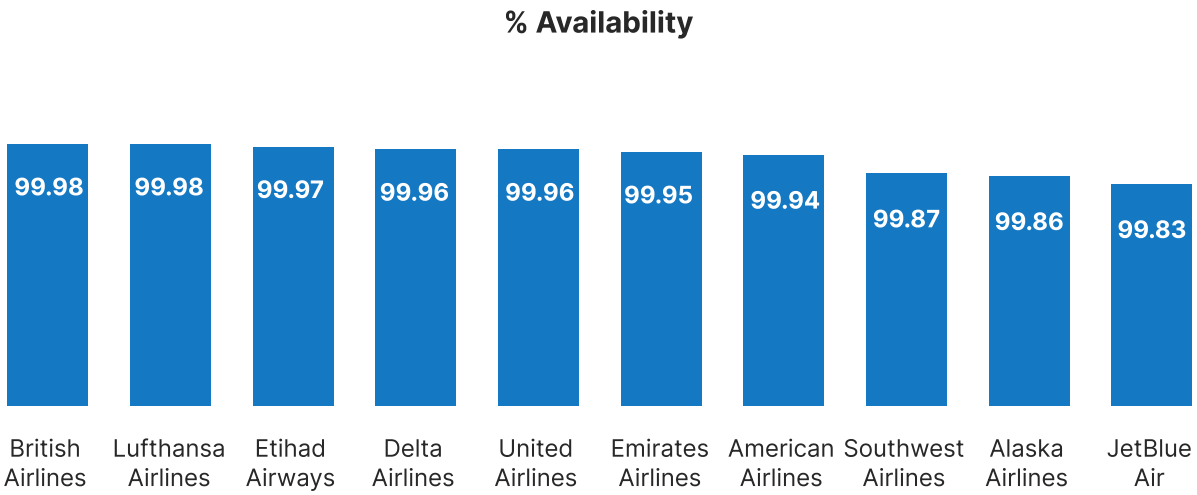
Pro tips:

- As a rule of thumb, it is recommended to keep the page as light as possible. This includes minifying CSS, JavaScript, and HTML to reduce file sizes, and optimizing images and other assets for faster loading, as the page weight directly impacts how long it takes for each request to be made and downloaded.
- Regarding third-party requests, it's critical to continuously monitor their performance to ensure they don't negatively impact overall page speed.

7. Availability

Availability is the final piece of the puzzle. It measures the percentage of time a website is up and running when a person or customer visits it. High availability ensures that users can access the site reliably at any time. Downtime can lead to a loss of traffic, reduced revenue, and erode user trust.

Top 10 airlines with the highest availability



Key insights:

- All of the top 10 sites have an availability percentage of 99% or higher, which is crucial for a good user experience.
- **British Airways** and **Lufthansa** provide nearly perfect availability, ensuring their websites are consistently accessible.
- **JetBlue,** while still highly reliable, has room for improvement to match the top performers in availability.
- Our analysis highlights how much Internet Resilience is a key capability of top-performing websites, ensuring users can access their services almost all the time. Maintaining such high availability is crucial for excellent user experience and retention.

Actionable steps for improvement

Here are 5 actionable steps to improve website performance:

1. **Regular monitoring and testing:** Implement continuous monitoring of all key performance metrics to promptly identify and address issues.

2. **Establish and adhere to industry benchmarks:** Regularly compare website performance against industry standards to identify areas for improvement.

   Use the performance data of top-performing websites in reports such as these as a benchmark to guide improvements.

3. **Holistic optimization:** Address not just individual metrics but also their interdependencies. For example, improving DNS and TTFB can collectively enhance overall page load times.

4. **User feedback:** Collect and analyze user feedback to understand pain points related to website performance. Use this data in conjunction with the insights gleaned from your monitoring strategy to prioritize optimization efforts.

5. **Performance audits:** The choice of CDN provider, for example, significantly impacts performance metrics like DNS and TTFB. Schedule regular audits to review and optimize server configurations, CDN settings, and frontend performance.

Catch issues before they impact your website performance

You can have the best website in the world, but if it's slow, or no one can reach it, your users are going to get frustrated, leading to lost revenue and a damaged reputation.

Catchpoint's Internet Performance Monitoring (IPM) enables detailed, global visibility across the Internet Stack – the tangled web of distributed network systems that connect your web applications to your users, including BGP, CDN, and DNS services. Our cloud-native platform ensures Internet Resilience across your organization with five enterprise IPM solutions, including a best-of-breed Website Experience Solution.

Website Experience, powered by Internet Performance Monitoring

Not only does Catchpoint's Website Experience Solution empower you to monitor your site's speed, usability, and resilience in real-time across various browsers, devices, and global locations, but it also allows you to rapidly identify and fix performance issues before they impact your business.

Key benefits

- Leverage WebPageTest's extremely accurate synthetic browser testing methods to monitor all your web pages' key metrics in a single dashboard.
- Find and fix performance complications before they impact revenue.
- Ensure reachability - not just availability.
- Alert the right people when performance thresholds are exceeded.
- Monitor DNS, BGP, CDNs, third-party assets, and other possible bottlenecks from real devices and browsers around the globe.
- Compare and contrast your web pages between releases.
- Compare your website's performance to your competitors and uncover opportunities for improvement with side-by-side benchmarking tests.
- Leverage real user monitoring (RUM) to paint a precise picture of your user base.

About Catchpoint

Trusted by the world's leading brands who understand in the digital age performance is paramount, Catchpoint is dedicated to monitoring what matters from where it matters to catch issues across the Internet Stack before they impact business.

The Catchpoint Platform offers a comprehensive suite of Internet Performance Monitoring capabilities, including Internet Synthetics, RUM, BGP, Tracing, performance optimization, and advanced analytics, all supported by high-fidelity data and flexible visualizations. Leveraging thousands of global vantage points inside the critical systems that make the Internet work, Catchpoint provides unparalleled visibility into what affects customer experiences, workforce efficiency, network performance, websites, applications, and APIs.

Today's digital world requires resilience and exceptional performance, which is why *The Internet Relies on Catchpoint*.

Learn more at: www.catchpoint.com/

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