



Individual Project Performance Review Document

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Version History

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1 Introduction

The web performance review for **QWEST** was conducted using Lighthouse. The review focuses on critical aspects such as performance, accessibility, best practices, and SEO. This document outlines the findings and provides recommendations for improving the web application's performance and overall user experience.

2 Performance Metrics

Performance Score: **98**

The performance score is calculated based on the following key metrics:

Metric	Value	Description
First Contentful Paint (FCP)	0.3 s	The time it takes for the first text or image to be painted.
Largest Contentful Paint (LCP)	0.5 s	The time it takes for the largest text or image to be painted.
Total Blocking Time (TBT)	130 ms	The total amount of time that the page is blocked from responding to user input.
Cumulative Layout Shift (CLS)	0	Measures the visual stability of the page by tracking layout shifts.
Speed Index (SI)	0.8 s	Measures how quickly the content is visually displayed during page load.

3 Accessibility

Accessibility Score: 86

Accessibility checks highlight opportunities to improve the web app's accessibility:

- **Buttons do not have an accessible name:** Ensure all interactive elements are labeled for assistive technologies
- **Document doesn't have a <title> element:** Add a title element to each page for better accessibility and SEO
- **[id] attributes on active, focusable elements are not unique:** Ensure all IDs are unique to avoid confusion for screen readers

Manual Checks Needed: Additional items need to be manually checked to ensure comprehensive accessibility compliance.

4 Best Practices

Best Practices Score: 59

Issues identified under best practices:

- **Does not use HTTPS:** Two insecure requests found. Ensure all communications use HTTPS
- **Uses deprecated APIs:** One warning found. Update or replace deprecated APIs
- **Registers an unload listener:** Remove unnecessary unload listeners
- **Missing source maps:** Provide source maps for large first-party JavaScript to improve debugging

Trust and Safety: Implement Content Security Policy (CSP) to protect against cross-site scripting (XSS) attacks.

5 SEO

SEO Score: 80

SEO checks ensure that the page follows basic search engine optimization advice:

- **Document doesn't have a <title> element:** Add a title element to improve SEO.
- **Document does not have a meta description:** Add a meta description for better search engine visibility.
- **Content Best Practices:** Format HTML properly to enable better understanding by crawlers.

Manual Checks Needed: Additional validators should be run to check for SEO best practices not covered by automated tools.

6 Conclusion

Reflecting on the performance review of the **QWEST** web application, significant strides have been made in optimizing the user experience. The application achieves an impressive performance score of **98**, underscoring the effectiveness of the implemented strategies. However, the review also highlights several areas for potential improvement.

Performance Reflection: The performance metrics indicate that the QWEST application excels in key areas such as First Contentful Paint (**FCP**), Largest Contentful Paint (**LCP**), Total Blocking Time (**TBT**), and Cumulative Layout Shift (**CLS**). These results suggest that our efforts to optimize the initial load time and visual stability have been successful. The **FCP** and **LCP** values, at **0.3** seconds and **0.5** seconds respectively, reflect a responsive and user-friendly interface. The minimal Total Blocking Time (**130** ms) and zero Cumulative Layout Shift further reinforce the seamless user experience.

Identified Bottlenecks: Despite the high performance score, there are areas where we can improve. The accessibility score of **86** reveals some issues, such as buttons lacking accessible names and non-unique **IDs** on focusable elements. These issues, while not critical, can impact users relying on assistive technologies. Addressing these will not only improve our accessibility score but also enhance the overall user experience.

The best practices score of **59** indicates several critical areas needing attention. The use of insecure **HTTP** requests, **deprecated APIs**, and **missing source maps** for large JavaScript files are notable bottlenecks. Transitioning to HTTPS and updating deprecated APIs are immediate priorities to improve security and reliability.

Applied Improvements: Throughout the development process, several improvements have been implemented to enhance the application's performance. Utilizing robust adaptive hashing algorithms like **BCrypt** for password hashing and implementing JSON Web Tokens (**JWT**) for secure authentication are notable security enhancements. Additionally, employing **secure session management** practices and ensuring access tokens are stored securely have contributed to a safer user environment.

Future Enhancements: To further enhance the **QWEST** application, I plan to:

- **Improve Accessibility:** Ensure all interactive elements have accessible names and unique IDs. Add a document title element and meta description to improve both accessibility and SEO.
- **Adopt Best Practices:** Transition all HTTP requests to HTTPS, remove deprecated APIs, and provide source maps for better debugging. Implement a comprehensive Content Security Policy (CSP) to guard against cross-site scripting (XSS) attacks.
- **Enhance SEO:** Add and properly configure SEO elements like titles and meta descriptions to improve search engine visibility.

By addressing these areas, the **QWEST** application can continue to provide a high-quality user experience while maintaining robust security and accessibility standards. Regular audits, continuous monitoring, and a commitment to adopting best practices will ensure that the application remains performant, secure, and user-friendly.