Layout Wizard – A Case Study

Executive Summary

JBT's primary objective for the new Layout Wizard project was to replace an aging existing product that is used to create the custom route design (a virtual 'road system') for Automated Guided Vehicles (AGV) at a customer's warehouse, manufacturing, or distribution center.

JBT's main goals for the new product were:

- Creating a cloud-based version of the product.
- Modernizing the UI.
- Improving performance.
- A platform agnostic design.
- Automating and improving the build and deployment processes.
- Implementing a modern and improved architecture and design
- A product that is easily testable and extendable in the future.

John Bean Technologies (JBT) Corporation is a global solution provider for food technology, aero tech, and automated systems.

JBT offers Automatic Guided Vehicle (AGV) products that bring automation to their customers' manufacturing and warehousing environments.

JBT's AGVs provide safe, precise, on-time delivery of materials, saving their customers millions in operational costs annually.

Industry: Automated Systems

Location: Chalfont, PA

Service: Lorem Ipsum

Website: jbtc.com/

Client's Key Challenges

JBT faced challenges with an old software product that was built using an outdated Microsoft technology stack. The software was slow, difficult to extend, and lacked the features necessary to meet the evolving needs of the business.

The company also faced issues with their manual software release process. Software releases were slow, prone to errors, and lacked visibility into the release progress, making it difficult to track the status of the releases. These problems resulted in long lead times, missed deadlines, and lower quality releases. JBT needed a more automated and efficient release process that would provide visibility into the progress, reduce manual effort, and ensure timely and highquality releases.

Critical limitations we discovered with the legacy application included:

- A thick desktop client had been in development for 25 years. It was written in C++/MFC and required a complex installation process.

- The legacy app's design and technology stack did not lend itself to cloud deployment.

- The UI code of the legacy application was tightly coupled to the business logic, severely impeding the development of new capabilities.

- That UI was also outdated and in need of modernization to be competitive in the industry.

- The build and release processes for the legacy application were manual, error prone, and infrequent.

VividCloud utilized a cloud-based architecture, a modern technology stack, and best DevOps practices to create a solution that overcame all of JBT's challenges.
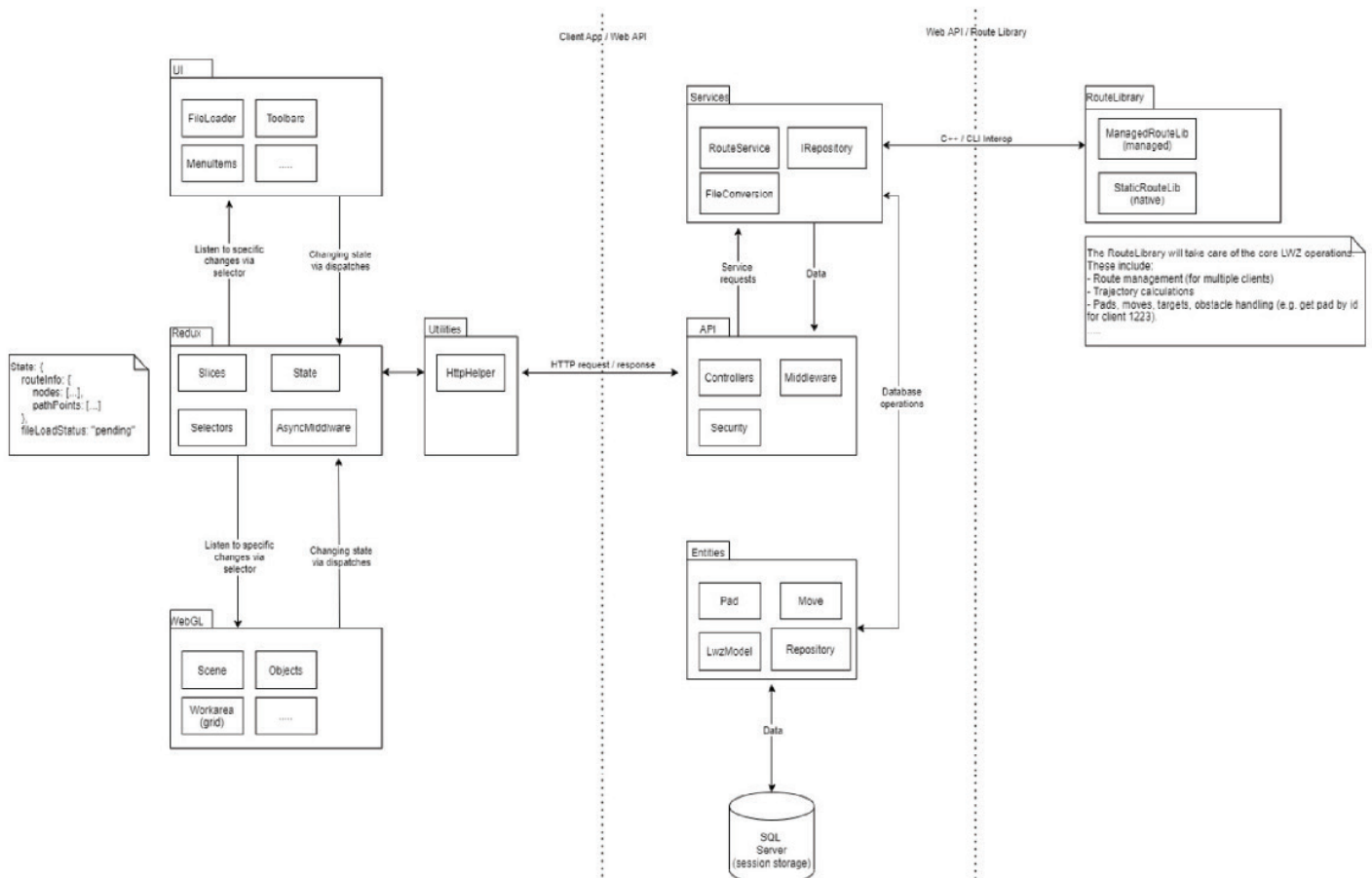

VIVID
CLOUD

Proposed Solution

VividCloud's solution began with a modern approach for web application design, including a single page client application and an encapsulated service layer.
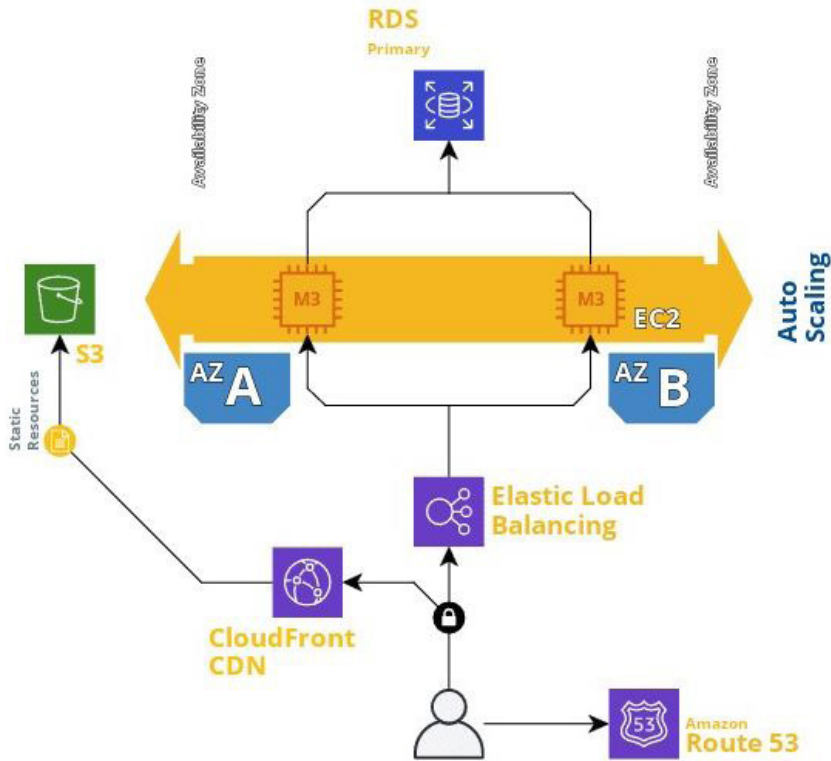
In addition to the cloud-based deployment, JBT required a desktop version of the application. To facilitate this, we created two separate releases – a cloud-based release and a desktop app release.

- The new client is a react/redux application which utilizes three.js and openGL.

- The services layer uses .NET Core (.NET 6) and the WebAPI framework.

- The database is SQL Server.

- Migrated from the legacy application are high-value, highly proven code libraries written in C++ with algorithms proprietary to JBT.
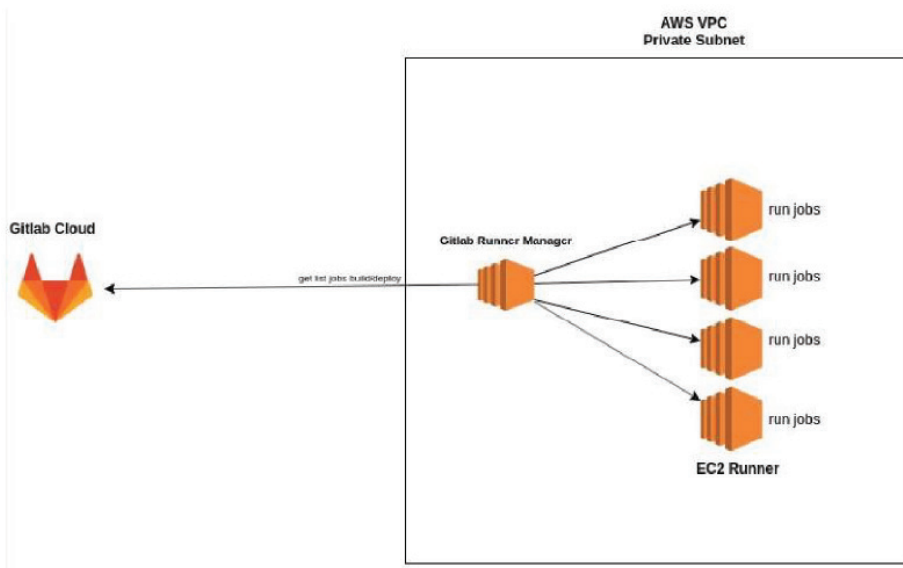
The diagram below depicts the architecture of the new product.

The cloud deployment of the new product involved an elastic service layer that is deployed behind a load balancer. The database is hosted in RDS, and the client is served via CloudFront, as depicted below.

In addition to the new product's cloud deployment, CICD pipelines are also cloud-based using EC2 machines configured with Gitlab runners, as depicted below.

Results and Benefits

VividCloud's Agile based project management allowed us to work closely with JBT to collaboratively deliver value-driven results that exceeded their expectations and fostered a strong, trust-based relationship. This close relationship allowed us to quickly identify and resolve any issues that arose, leading to a smoother and more efficient project process.

Not only did the new solution improve the quality of the project, but it also led to cost savings, especially around release management. The implementation of a new CICD pipeline has greatly improved the quality of the software development process. By automating the testing process, we were able to significantly reduce errors related to manual testing and ensure that the software meets the high standards of quality that our customers expect. Automated tests are run with every code change, providing immediate feedback on any potential issues, and allowing the team to quickly resolve them.

The CICD pipeline also streamlined the deployment process, reducing the risk of build and deployment errors and ensures that releases are deployed efficiently and consistently. The result is a significant improvement in the overall quality of the product and a reduction in the time and resources needed to maintain it.

In summary, by modernizing JBT Layout Wizard application using a cloud-based solution, the client is able to keep up with the rapidly changing demands of their market. The cloud-based solution provides the scalability and agility needed to quickly respond to changing market conditions and customer needs, providing the cuttingedge, industry competitive, solution that JBT's customers expect.

VIVID
CLOUD

AWS Services

The following services and capabilities of AWS are used in this solution:

- RDS (SQL Server) – used to persist the application entities.

- Auto Scaling Groups – the service layer is hosted in an ASG for elasticity in demand.

- Application Load Balancer – provides the access point to the ASG.

  CloudFront and S3 – used as a CDN for the client application files.

- Route 53 – for domain registration and management.

About VividCloud

VividCloud is a software development company focused on cloud and IoT. AWS is our cloud platform of choice, and we are an Advanced Tier APN Services Partner. We bring fully managed teams that free our client s from day to day oversight responsibilities.

VividCloud is based in Brunswick Maine, with 100% of our people onshore in the US.

Contact Us