



Streamlining Prescription Deliveries: Secure Middleware Integration for Healthcare Efficiency

Case Studies





Courier Middleware

Client Overview

One of the largest federally qualified health centers in the South West, offering comprehensive healthcare services across multiple locations. They provide primary care, pediatrics, behavioral health, dental, vision, specialty care, and pharmacy services, ensuring accessible care for all, regardless of financial circumstances.

Problem Statement

The client needed an efficient internal tool to manage the end-to-end workflow of prescription medication package deliveries. This included scheduling pickups, tracking delivery statuses, and generating delivery reports in real time, while integrating with their Courier Provider. The solution also needed to provide a unified interface to consolidate fragmented systems and data sources, reducing inefficiencies and inconsistencies. Given the sensitivity of patient data and the need for compliance with healthcare regulations, the solution needed to be securely deployable to an on-premises appliance with access restricted to authorized staff within their internal network.

Objectives

- Streamline the workflow for staff to manage prescription deliveries
- Integrate seamlessly with Courier Providers such as USPS, UPS and other local providers to schedule and track deliveries
- Provide a unified interface to interact with different systems
- Ensure security and compliance through restricted internal network access
- Facilitate flexible configuration management for evolving delivery needs

Solution

We developed a robust middleware application that integrates seamlessly with Courier Providers to schedule and manage package pickups and deliveries, track



delivery statuses in real-time, and provide comprehensive delivery reporting for enhanced visibility.

To maximize operational efficiency and security, we:

- Implemented a **modular application architecture**, allowed flexible integrations with other services
- Integrated **SAML authentication** with the client's existing authentication platform to ensure secure access.
- Utilized **OpenTelemetry** to collect detailed logs and traces, enabling proactive monitoring and support through alerts.
- Created a **flexible configuration management system**, empowering administrative staff to effortlessly adjust system behavior.
- Designed a **portable middleware solution** adaptable to any Courier Provider the client chooses, ensuring long-term scalability.

Deployment Strategy

- Deployed to **on-premises Windows Server** with configurations to restrict access to authorized staff within the client's internal network.
- **Automated build process** to generate a deployable application artifact, ensuring consistency and reducing deployment time.
- **Deployment strategy** designed for plug-and-play installation, streamlining the process for the client's IT team.
- Configured to manage **Windows IIS server settings and modules**, ensuring seamless integration into the existing infrastructure.

Highlights

- **Portable middleware** with the flexibility to integrate with any Courier Provider.
- **Unified platform** for managing all aspects of prescription deliveries.
- **Streamlined workflow**, minimizing administrative overhead.

Results and Impact

- **Simplified user interface** for managing prescription deliveries, reducing training time for staff.
- **Reduced human errors** related to manual data entry, improving accuracy and reliability.



- **Enhanced operational efficiency** through automation, allowing staff to focus on higher-priority tasks and reducing time spent on administrative work.
- **Scalable and adaptable architecture**, allowing seamless integration with future services and courier providers.
- **Basic reporting capabilities** providing essential data on delivery history, sales performance, and operational trends to monitor key performance indicators.

The Result

- 600+ deliveries managed daily
- 215,000 deliveries managed yearly
- 30% reduction in delivery processing time
- 60% decrease in manual errors

Conclusion

This solution provided a unified, secure platform with an intuitive workflow, empowering staff to efficiently manage prescription deliveries. By automating delivery scheduling and real-time tracking, human errors were significantly reduced, and the overall operational efficiency was enhanced. This allowed healthcare staff to focus more on patient care and other critical tasks, aligning with the client's mission of providing accessible and high-quality healthcare services.

Technology

- **Languages:** Go, TypeScript
- **Platform:** AWS (development sandbox), Windows Server/IIS (production deployment)
- **Security:** SAML
- **Data/Analytics:** Microsoft MSSQL
- **Monitoring:** Sentry
- **External Service Integrations:** Azure (Microsoft Entra ID), Courier APIs,