

# Jabil Software Services (JSS)

Embedded  
Systems



Web &  
Mobile



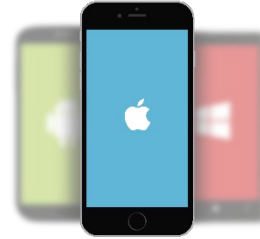
IoT



Cloud

Wireless  
Networking

Wireline  
Networking



## CASE STUDY

### IoT Enabled Shipping

# JABIL

## Customer Needs

JSS's customer is an American multinational Tier 1 package delivery and supply chain services company. They are a household name. They required assistance developing an IoT-enabled solution for use as part of their global shipping operations. The solution would facilitate the production and tracking of electronic labels used with shipping containers. The solution would also integrate with IoT-enabled edge devices fitted within these containers and display information extracted from such devices including label information, tracking location, and environmental parameters such as temperature, humidity, pressure, light, and vibration level. Finally, the solution would communicate data with a cloud-hosted application and would require a web-enabled dashboard.

## Scope

JSS developed an Azure-hosted back-end, a mobile app, and a web-dashboard as part of the project. The scope of these components included:

- Azure Back-End:
  - API's for user sign-up/login/logout, token infrastructure & authentication, and listing active shipments for any given user.
  - API to manage devices by reference numbers, tracking numbers or device ID's.
  - API to retrieve existing details from an IoT controller (including label details, sensor data, current location, and location history).
  - API to program updated label details into the IoT controller inside a shipping container.
  - Communications with the Sierra Wireless Octave cloud which itself supports direct communications with the IoT controllers via LTE.
  - Fleet simulation capability.
- Mobile App:
  - Device Control Dashboard displaying data from the IoT controller including records of temperature, humidity, pressure, light, acceleration, and battery level.
  - User profile information and sign-up/login/logout capability.
  - Discovery capability to list nearby devices and connect to selected devices via BLE.
  - Screen to create new shipping labels leveraging shipment APIs.
  - Shipments tracking screen including search capability and indicating the list of active shipments, geolocation/mapping information and shipment status information.
  - BLE device emulation and integration with IoT controllers.
- Web Dashboard (cloud-hosted):
  - User sign-up/login/logout.

- Delayed package information, including geolocation and mapping displays.
- Breadcrumb trails and location where all label scans occurred.
- History displays.

JSS dedicated a team of 5 staff to developing the IoT-enabled shipping solution, including mobile developers, cloud developers, and testers.

## Deliverables

JSS provided the Azure Back-End, Mobile App and Web Dashboard to the customer in accordance with the project scope. The mobile app communicates with the IoT-enabled controller locally via BLE and with the Azure back-end.

Deliverables provided by JSS included:

- Source code for the Azure back-end, mobile app, and web dashboard.
- Binary images for the mobile app and Azure backend (.Net Core).
- Test plans and tests results.
- Complete design documentation and user documentation.

The IoT-enabled shipping solution was developed by JSS leveraging an Agile methodology across several sprints over a 4-month period. JSS and the customer clearly agreed scope and schedule expectations, and JSS leveraged a formal project management methodology to ensure efficient delivery.

A high-level architectural diagram is shown below:



## Strategic Value

The IoT-enabled shipping solution allows JSS's customer to leverage the full value of data within the IoT controller installed within each of their shipping containers, to extract and manage data from these controllers, and to manage and update shipping labels. The solution permits JSS's customer to manage their global shipping operations more efficiently.

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*"JSS delivered the IoT-enabled shipping solution in a highly efficient manner and to our complete satisfaction. The solution has been deployed and is actively helping the business to manage and optimize shipping operations."*

**Customer Sales Manager**

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## About Package Delivery Customer

JSS's customer is an American multinational Tier 1 package delivery and supply chain services company. They are a household name.

## **About Jabil Software Services (JSS)**

Jabil Software Services (JSS) delivers a broad range of advanced software services across several industries, leveraging an experienced team of architects, software developers and quality assurance engineers. JSS specializes in the efficient development of embedded systems, web & mobile apps, IoT solutions, cloud solutions, and networking solutions (wireless/wireline).