



Embedded Systems

Web & Mobile

IoT

Cloud

Wireless Networking

Wireline Networking

# Jabil Software Services (JSS)



## CASE STUDY

### Commercial Kitchen Control System



# JABIL

## Customer Needs

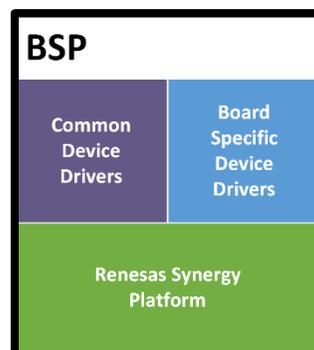
A world-leading supplier of commercial and industrial culinary solutions required an embedded controller for a new range of professional kitchen equipment for the hotel, retail, and café markets. The development of this solution necessitated the leveraging of a partner with deep experience and expertise in embedded software development. The control solution was required to manage an array of application-specific IO and execute edge logic for appliance control.

## Scope

The customer engaged JSS to provide the following services:

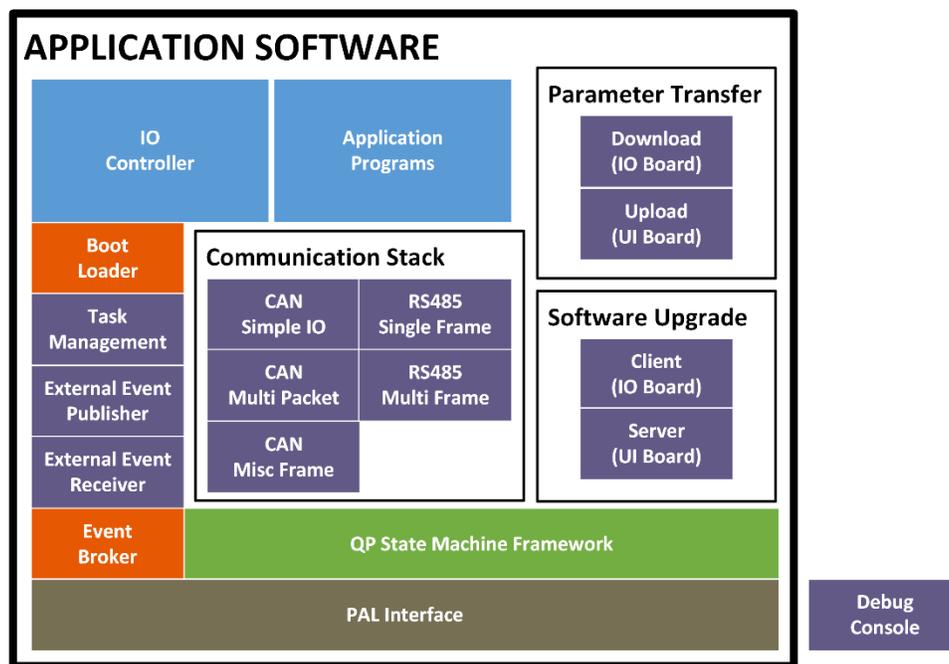
- Design, implementation, and test of the Board Support Package (BSP) for two distinct PCB's leveraged by the commercial kitchen equipment control system, including a Heater Control Board (HCB) and System Control Board (SCB).
- Design, implementation, and test of custom application-layer management software for the HCB and SCB, leveraging the Renesas Synergy platform, and including functions to control all onboard peripherals.
- End-to-end implementation of all internal communication protocols.
- Breadboard and alpha board bring up, physical debugging, and testing.
- Development of an automated testing solution and software-simulator to emulate all physical hardware components and permit rapid and comprehensive testing, including the simulation of conditions which would be difficult to test in production environments.
- Ongoing system support.

The following image shows the principal components of the BSP, where the purple and blue components were developed by JSS:



JSS developed and/or configured several application-level libraries in full accordance with customer requirements. The following image shows the application level libraries, with coloring as follows:

- Blue represents board specific software.
- Purple represents the application common library.
- Green represents third-party software.
- Brown represents a module containing a mix of common library code and board-specific code.
- Orange represents modules containing a mix of common library code and third-party software.



JSS dedicated a team of 12 staff to developing the solution, including architects, embedded developers, and testers. Several technologies were leveraged as part of the embedded development, including: C/C++, Qt, QP, E2E Studio, Git, Python, PyCharm, Postman, Renesas Synergy Software Package (S5D9 MCU Group with Arm Cortex-M4), Azure DevOps (Repos, Artifactory, Boards, Test Plans) & MS Project.

## Deliverables

The project was delivered using a hybrid approach over a 7-month period, leveraging a fixed scope developed during project initiation. Several features were developed in an Agile manner as part of project execution. JSS worked closely with the customer to

discuss and share previous experience and to tailor the solution ecosystem to effectively deliver all requirements. JSS leveraged a formal project management methodology to ensure efficient delivery.

Several engineers possessing both hardware and software expertise were allocated to the project. This provided useful support in examining electronic schematics and debugging hardware using oscilloscopes and other measuring equipment.

## Strategic Value

Great care was taken to develop a customer platform which is highly functional, extensible, and flexible. The customer leverages this platform to support a range of future products, thus avoiding the potential for undue development, rework, and cost.

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*“JSS demonstrated their significant expertise in embedded development during this project. They were able to rapidly and efficiently address all requirements and deliver a solution which will form the basis for a range of future products, thus facilitating faster time-to-market and time-to-revenue.”*

**Customer Engineering Representative**

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## About Customer

JSS's customer is an award-winning well-known global leader in the supply of professional culinary solutions for the hotel, retail, and café markets.

## 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).