Quick Service Restaurant (QSR) Playbook:

How to Boost Efficiency, Reduce Costs, and Meet Compliance and Food Safety Requirements with LoRaWAN

The fast-paced world of Quick Service Restaurants (QSRs) drives restaurant owners to find ways to boost efficiency, streamline processes, and deliver superior customer service. As technology continues to advance, the increasing adoption of wireless sensors is reshaping the food industry landscape. However, to fully leverage the power of connected devices, a reliable, scalable, and cost-effective wireless network is essential. This is where LoRaWAN shines for QSRs.

This playbook is designed to explain the value that LoRaWAN brings to QSRs. From its robust feature set to the low-cost of deploying and maintaining the infrastructure, we will explore how LoRaWAN is revolutionizing QSR operations and driving unparalleled business success.

Identifying a Business Case

As with any new use of technology, it is important start with a solid business case. For QSRs, one of the most common use cases for sensing technology is automating manual, error-prone tasks like temperature monitoring. Using sensors to automate this process can deliver significant benefit across the entire restaurant, including increased visibility into operating conditions, less time spent by restaurant staff on administrative tasks, enhanced food safety, and reduced food loss.

QSRs automating temperature monitoring with LoRaWAN technology have reported reducing daily temperature checks by 30 to 60 minutes each day and saving tens of thousands of dollars of inventory due to automated alerting.

With an “anchor” application like temperature monitoring in place, using the same wireless infrastructure to deliver broader business value becomes easy to achieve and can power transformative results.

Understanding the Solution Architecture

At a basic level, the architecture of LoRaWAN solution is straightforward and includes sensor-enabled end devices, a wireless network (gateways and network management software), and application software. Think of it as the solution DNA (Device, Network, Application).

Devices: LoRaWAN end-devices are the battery powered physical endpoints of the LoRaWAN solution where sensing occurs and control is exercised. End devices, like temperature sensors, communicate wirelessly with a network gateway using the LoRaWAN Layer 2 protocol as defined by the LoRa Alliance. They use a regionally designated ISM radio frequency band and LoRa Alliance specified channel plan to transmit data at an application-

Important Questions to Ask

With a wide range of options available, what is the best way to get started with a sensor enabled QSR solution? To begin, it is important to address to the following questions:

- What business problems are you trying to solve? Are you addressing a single area of concern, like temperature monitoring, or others?
- What are the regulatory and/or compliance requirements that must be considered? Does the technology you're considering help comply with these regulations?
- What data do you need to collect and how often?
- How many devices will be deployed, and is there a need to add devices in the future – for the same or different use case?
- Are the devices you need readily available and are they easy to deploy and manage?
- What areas of your facility must have network coverage?
- Is the solution for a single store location or are you using it across multiple stores?
- Does the solution vendor and/or network provider you are considering have experience in the QSR market?
- How will you measure success?

controlled interval, as well as to listen for control and application data messages if necessary.

End devices available to QSRs include a wide range of sensors, trackers, and monitors to provide specific operational enhancements. These devices can be used to measure temperature and gather data to alert of any spikes or dips in freezers or on fryers, but can also be strategically deployed throughout the restaurant, including in fridges, walk-ins, warming equipment, dry storage areas, grease traps, on windows and doors, and for many other purposes.

Network: LoRaWAN networks can be deployed in public, private, and hybrid configurations. QSRs often choose private networks and deploy network gateways exclusive to their environment with their end devices connecting only to those gateways. Gateways provide wireless LoRaWAN connectivity for end-devices, relaying data to and from the Network Server via IP backhaul (Ethernet, Wi-Fi, cellular or satellite). While a single LoRaWAN gateway can connect devices over a very long range, the ability of LoRaWAN to penetrate physical obstacles like concrete walls and metal enclosures makes it ideal for the QSR environment – outperforming cellular and Wi-Fi. In addition, a single LoRaWAN gateway can usually deliver the required coverage throughout the QSR environment, providing an extremely cost-effective network infrastructure.

Because of the critical nature of the environment and goods being monitored, many QSRs choose to partner with a network operator like Senet for their private network deployments to ensure the delivery of secure, carrier-grade wireless network service.

In this model, the QSR (or their solution provider partner) deploys the gateways and devices, while Senet maintains the cloud-based Network Operating System, delivering private connectivity through its Platform-as-a-Service (PaaS) offering.

Applications: Restaurant Operations Platforms and applications are used to compile and visualize the sensor information. These systems make store employees and operations leaders more productive and better equipped to do their jobs by providing real-time insights into what is happening in their stores. In addition to having real-time information on productivity and quality, automated data collection, visualization, and reporting through a centralized platform allows QSRs to uncover critical issues that need to be addressed to maintain compliance with food safety protocols in a single location or across a chain of stores.

Benefits and ROI: Accelerating Business Success

With many verification processes currently using paper-based methods, restaurant managers are challenged with understand what's happening in their restaurants in real time. However, by leveraging automated systems to aggregate data and optimize these processes, QSRs are benefiting from enhanced visibility into the day-to-day operations of their restaurants.

Compliance and Food Safety: QSRs face stringent regulatory requirements, particularly in terms of food safety and compliance. LoRaWAN temperature sensors enable continuous monitoring of food storage conditions, ensuring compliance with safety regulations and minimizing the risk of serving compromised food. This not only protects customers but also safeguards the reputation of the QSR brand and protects them from costly fines.

Inventory Management: By leveraging real-time data from connected devices, QSRs can improve inventory management, minimize food waste, and streamline equipment maintenance. Accurate inventory tracking ensures efficient supply chain management, preventing overstocking or stockouts, resulting in cost savings and improved profitability.

Infrastructure Monitoring and Safety: Water and gas leaks can cause significant damage to a restaurant's infrastructure, such as floors, walls, and equipment. By detecting leaks and alerting staff early, prompt action can be taken to minimize or prevent damage which can save restaurants from costly repairs and potential business disruption. Additionally, monitoring doors and windows to detect unauthorized access, open or unsecured states, or unexpected movement can be used to alert security personnel of potential dangers, preventing potential theft or vandalism.

Improved Customer Experience: Accurate inventory management ensures that popular menu items are always available, reducing customer wait times and increasing satisfaction. Temperature monitoring guarantees the freshness and quality of food, contributing to a positive dining experience. The ability to maintain a clean and hygienic environment through IoT-enabled sanitation monitoring also promotes customer trust and loyalty.

The Connected Future of QSRs

For QSRs, optimizing safety protocols, ensuring that line preparations are up to code, ingredients are fresh, and food quality remains in line with company guidelines are all critical steps that can be supported by LoRaWAN networks and connected devices.

The flexible, scalable, and cost-effective benefits of a LoRaWAN-enabled infrastructure facilitate real-world benefits making it the ideal solution for improving operational efficiency and safety.

They key to success is to identify the right DNA (devices, network, and application) for your business's specific needs.

Senet develops cloud-based software and services used by Solution Providers, System Integrators, and Network Operators for the on-demand deployment of Internet of Things (IoT) networks. Disruptive go-to-market models and technical advantages, including our patented Low Power Wide Area Virtual Network (LVN™), enable the full value of connectivity by delivering services that are easy to use and scale, making our customers successful in their digital transformation initiatives. With a multi-year head start over competing solutions, Senet offers services in over one hundred and eighty countries and owns and operates one of the largest public carrier-grade LoRaWAN® networks in the United States.

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