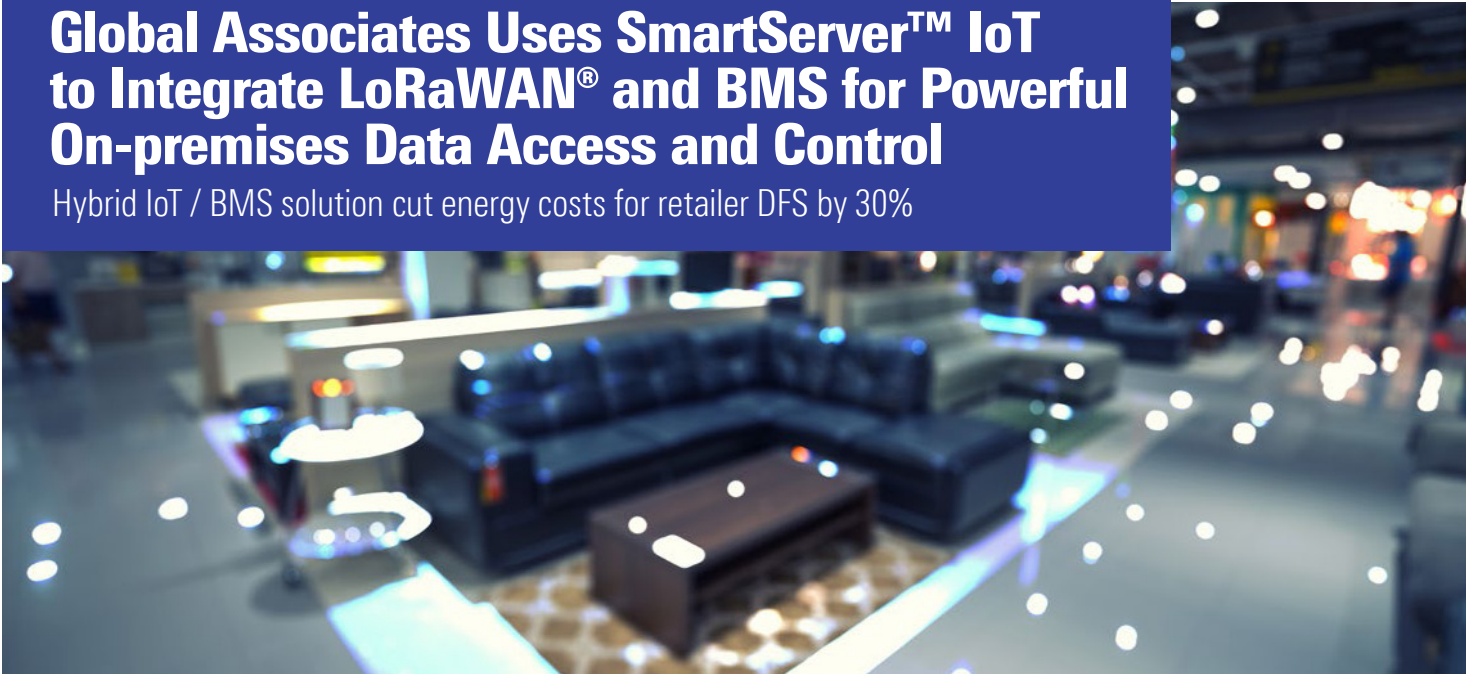


## CASE STUDY

# Global Associates Uses SmartServer™ IoT to Integrate LoRaWAN® and BMS for Powerful On-premises Data Access and Control

Hybrid IoT / BMS solution cut energy costs for retailer DFS by 30%



## Exec Summary

DFS, a leading UK-based furniture retailer, engaged [global associates](#), a master systems integrator and engineering firm, to reduce overall energy consumption across its 170 sites. [global](#) devised a hybrid IoT / building management system (BMS) solution integrating DFS' legacy infrastructure with the latest wireless, sensor, and cloud technologies. The largest challenge was how to quickly and cost-effectively integrate the numerous disparate systems to deliver unified data access and comprehensive system control. The [SmartServer™ IoT](#) edge server from EnOcean, with its open, multi-protocol architecture, enabled a seamlessly integrated system that is delivering significant quantifiable benefits to [global associates](#) and DFS.

## The Challenge

[global associates](#), an award-winning master systems integrator and engineering firm, was engaged by [DFS](#), a leading UK-based furniture retailer, to help in its drive toward carbon neutrality. [global](#)'s remit was to significantly reduce overall energy usage by implementing energy efficient controls across DFS' 170 sites including retail stores, offices, factories and warehouses. The initial target was to reduce energy usage by 10% with fast ROI – demonstrating tangible results within one year.

From previous projects, [global associates](#) knew that the right approach would be to use sensors to gather data from each site and feed that data into the existing building management system (BMS) to enable intelligent, on-premises control. This would then feed into a secure cloud-based platform for analytics and decision making. [global](#) chose [LoRaWAN®](#) sensors; there was no other solution that could provide the range of sensor types needed, as well as a 10km line of sight signal and 10 years' battery life.

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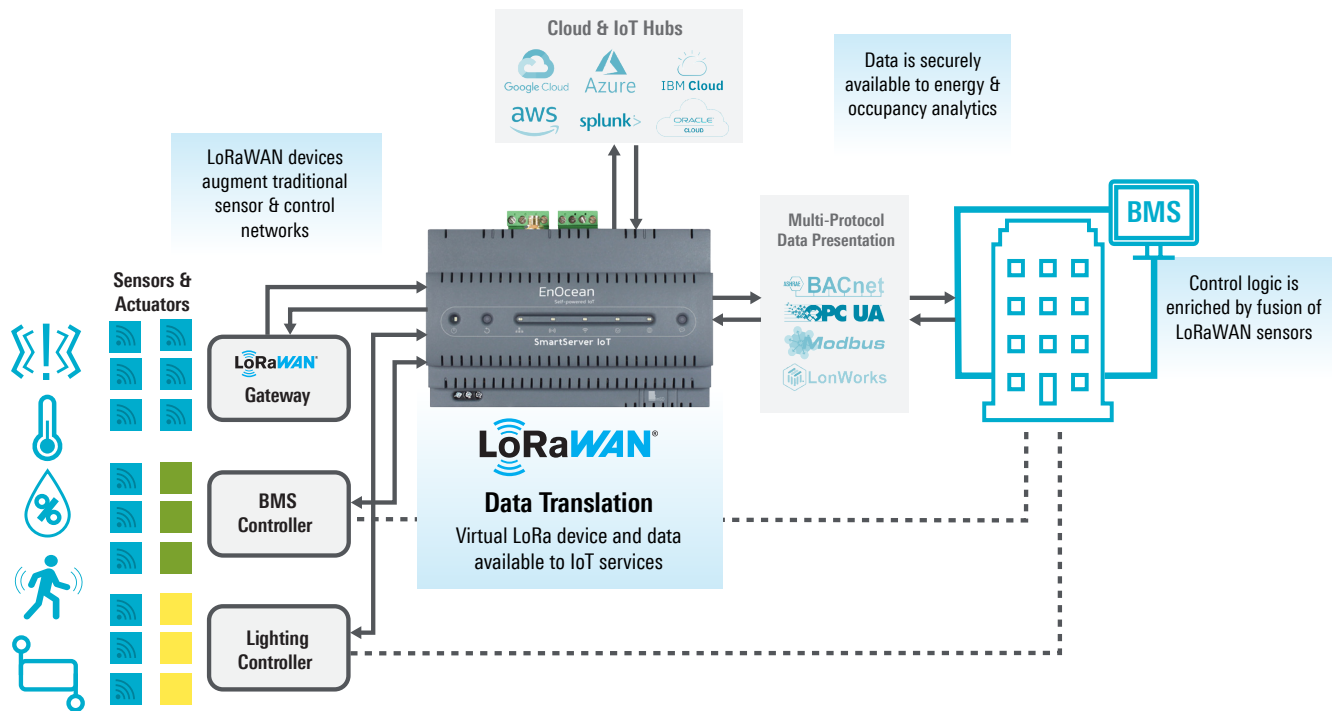
However, the LoRaWAN sensor outputs weren't directly compatible with DFS' existing BMS. In addition, global had to integrate other sensors and devices from the existing infrastructure including myriad concentrators, hubs, routers, and switches. Altogether they were looking at BACnet, Modbus, LON and various RS-485 connections alongside LoRaWAN wireless sensors and actuators for HVAC and lighting. And all the disparate data had to feed into a system that would process and make sense of it.

global weren't aware of anything that would provide a holistic answer. The company decided to begin its own internal, resource-intensive development project. Fortunately, soon after starting that project, global learned of the **SmartServer™ IoT** edge server. In addition to communications protocol and device integration, SmartServer IoT includes open APIs for creation of unlimited applications and services and provides a powerful bridge between on-premises solutions and cloud services. Within just a few days, EnOcean provided a proof of concept, and global adopted the solution.

### The Solution

global associates devised a hybrid IoT / BMS solution integrating DFS' legacy BMS and infrastructure with edge computing, cloud enablement, the latest LoRaWAN wireless sensors. The fully integrated, data-driven control and monitoring system is based around the SmartServer IoT.

LoRaWAN sensors monitor a wide array of conditions at each site including environmental (e.g., CO<sup>2</sup>, humidity, temperature), occupancy (i.e., motion detection), metering and load control (e.g., voltage, current, power, and energy), heat exchanger maintenance (i.e., vibration), and more. The sensors and other local devices feed into the SmarterServer IoT where a common data fabric called the IoT Access Protocol (IAP) abstracts the datapoints and converts them into BACnet datapoints. These datapoints feed into the BMS which can use the data to manage the building more efficiently.



The IAP handles all translations and data normalization, creating a digital twin of the universe of devices. Since the BMS sees each LoRa datapoint as a BACnet datapoint, there is no need to worry about the difference between a LoRaWAN air quality sensor and a hardwired building access sensor – or any other device. Within the centralized building management and control platform, each device appears in a common data layer, with its own alarms, control strategy and other operational parameters.

The system collects and processes over 700 different datapoints at one DFS site alone – updating every minute on the edge, and it is scalable for evolving requirements.

### The Result

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With the ability to integrate LoRaWAN and BMS at the edge of DFS' IoT network, global associates delivered to DFS a complete on-premises hybrid IoT / BMS solution that optimizes energy efficiency at each site. And because SmartServer IoT has an intuitive cloud interface, DFS can control the bigger picture: they can easily implement changes at one site, a group of sites, or globally in response to changing conditions or environmental regulations.

SmartServer IoT, with its open, multi-protocol architecture, delivered quantifiable benefits to both global associates and DFS. global trialed the operationally focused digital twin solution at several locations, and within less than a year, demonstrated significant energy savings:



**30%** total energy reduction

**~33%** electricity savings for a typical retail store

**~26%** savings on gas usage for a typical retail store

global associates continues to roll out the solution to additional DFS sites. Unique features in the SmartServer IoT make this a painless process. All that's needed is to copy/paste the reference build, then provision the specific devices at each site.

### Future Plans

DFS and global associates are looking at new use cases to further DFS' sustainability goals, including a project to gather plant operations data to move DFS toward more a proactive maintenance program. The companies are also working on machine learning and AI algorithms to enable future use cases and improvements. The system can also harness the data to benefit areas beyond facility maintenance and operations, with potential use cases in business operations, finance, marketing and more. The open and flexible approach enabled by the SmartServer IoT enables creation of any number of applications and services to power an endless number of valuable use cases.

"Thanks to its highly integrated design, the SmartServer IoT platform simplified and accelerated our task. We exceeded our customer's expectations with respect to energy savings and we estimate that the company will see a return on its capital investment within 14 months, or even less when you take capital allowances into consideration."



Paul Wetherfield  
CEO  
global associates

### Learn More



Learn more about the [SmartServer IoT](#).



View a webinar on [The Case for an Open IoT 'Data Fabric' for Smart Buildings Integration](#).



[Contact us for a demo](#).

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