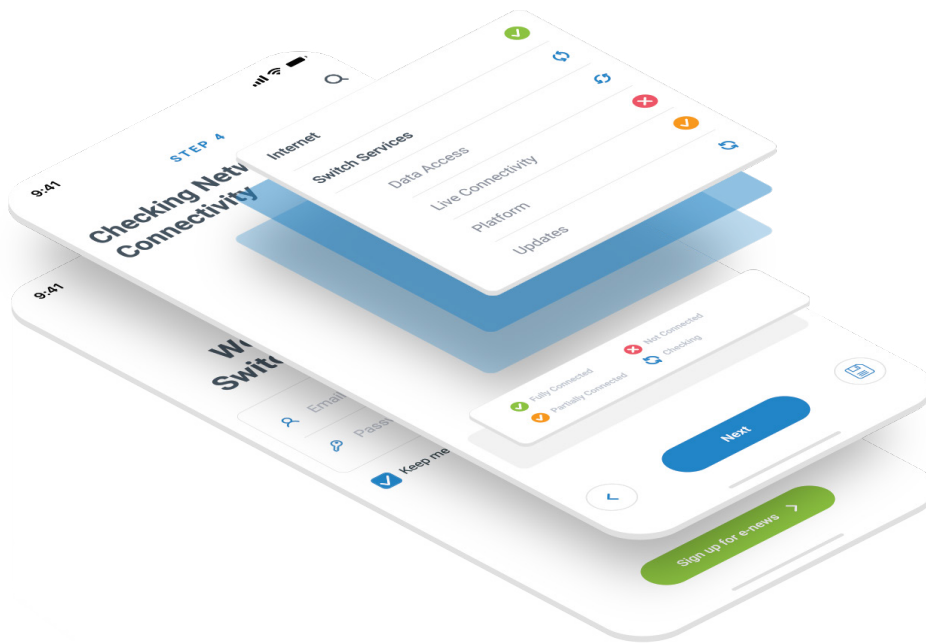


Case Study | Building Intelligence



Real estate company begins smart building integration, measuring data performance and site readiness



The Customer

Portfolio Overview

Type: Real estate owner
Industry: Commercial office
Size: 200 buildings
Geography: North America

Phase Overview

10 building deployment of Building Intelligence
Type: Commercial office buildings
1,000,000 ft²

The Opportunity

Planning for a smart building program deployment

This large commercial real estate owner was preparing to deploy the Switch Automation Platform across 10 large office buildings with the goal of reducing ongoing energy and maintenance expenses.

The buildings had been recently acquired and little was known about their underlying systems, network configurations and the available data points.

The Solution

Deploying Building Intelligence to measure site-readiness

Switch Automation deployed Building Intelligence to all 10 locations. The Switch IoT gateway was installed at each building to connect the sites to the Switch Platform and measure their readiness across three distinct data categories:



Data Completeness

The gateway scan of the BACnet networks returned a list of controllers in each building that operate HVAC and lighting systems. Then, the controller list was compared to the building's design specifications to ensure all systems and equipment were connected and properly configured for integration with the Switch Platform. The resulting system inventory helped the customer plan and prioritize their analytics and optimization activities.



Data Speed

Fast and reliable data is required to transition from reactive to proactive maintenance operations and enable real-time notifications of critical alerts and sub-optimal performance issues. Each controller must respond quickly to data requests, and transmit data at high speeds across the building network. Controllers were polled at 15-minute intervals to measure network response times and data reliability.



Data Quality

Switch then helped the customer detect risky data anomalies. Sensor and data point issues were identified for undiscoverable points, out of range sensors, non-changing values, incomplete BACnet details and incorrect units of measure.

The Results

Resolving roadblocks for a successful smart building program deployment

The site-readiness assessments identified three hidden issues across three buildings that would have prevented a successful smart building program deployment.



1. No devices discovered on the top 5 floors

The data completeness check identified missing equipment across one building's top five floors. These floors accommodate important tenants who would benefit from the proactive maintenance procedures enabled by the Switch Automation Platform.

The controls vendor investigated the issue and discovered a severed BMS communication wire that was damaged from a recent tenant fit out. The issue was resolved quickly and communication was restored to all equipment on the top five floors.



2. Too many variable air volumes (VAV) per control branch

The data speed check identified slow and unreliable response times from all VAV controllers within a building. The Switch Platform attempted to poll the controllers at 15-minute intervals, however only 60% of the polling requests returned a value. Without reliable data readings, Switch could not deploy accurate analytics to monitor space conditions throughout the building.

The controls vendor investigated the issue and determined that too many VAVs had been daisy-chained on each individual control branch. This resulted in slow communication speeds and unreliable data readings. The vendor reconfigured the control cabling to reduce the number of VAVs per branch and improve the response times across all controllers.



3. Miscalibrated CO² sensors

The data quality check identified miscalibrated CO² sensors throughout the building that were providing readings below outside air ambient levels, at <400 PPM during occupied hours. These miscalibrated CO² readings were impacting the ventilation controls in the building and would have produced inaccurate analytics on ventilation performance.

The controls vendor corrected the calibration factors and adjusted the CO² readings to their accurate values. The newly calibrated sensors immediately improved the building's ventilation performance and ensured accurate performance metrics.



5
floors of missing
equipment identified



40%
of VAVs
successfully
recalibrated



CO² level
readings
readjusted

// Auditing our ten sites for smart building readiness was crucial, particularly since three of our ten buildings were completely unfit for the retrocommissioning projects we want to pursue. Identifying and addressing these issues ensured that sensors were properly installed and calibrated, our network connectivity was healthy, and that our portfolio was ready for performance benchmarking and optimization //

Facilities Manager,
Commercial Real Estate Management
and Investment Company