

Splunk® at McKenney's

Business Intelligence for Buildings: raising the IQ of building management systems and helping customers optimize operations and save energy



“Once we get data from building and energy management devices into Splunk, the value of that data is so greatly improved that I really couldn’t see doing it without Splunk. I’m sometimes so amazed by what we can do with Splunk, I wonder if there’s magic in there.”

Brian Gilmore
Program Manager,
Enterprise Intelligence Group
Automation & Control Solutions
McKenney's, Inc.

OVERVIEW

INDUSTRY

- Infrastructure Management (mechanical contracting / engineering)

SPLUNK USE CASES

- Business analytics
- The Internet of Things
- Building / energy management
- Data visualization
- Event log management

BUSINESS IMPACT

- Real-time and historical operational insight into thousands of devices across hundreds of square miles
- Enables customers to better manage energy usage
- Easily track trends and perform failure forensics
- Value-added layer of business intelligence
- Increased partnership opportunities
- Reduced integration time

DATA SOURCES

- Thousands of data-producing devices, thermostats, instruments, access points, equipment, valves, and controllers
- Third-party building control and supervisory systems
- Tridium Niagara Framework and NiagaraAX
- RedCloud access management solution

The Business

McKenney's, Inc., one of the most trusted mechanical contractors in the Southeast, offers a full range of services, including heating, ventilating and air conditioning (HVAC), process piping, plumbing, service and maintenance, and building automation and control systems. The firm has offices in Atlanta, Georgia, and Charlotte, North Carolina, and is regularly ranked as one of the region's best places to work.

Challenges

Energy efficiency is one of the most critical factors in any building project. It's estimated that commercial buildings consume nearly 20% of all energy in the U.S., the majority of which is used for lighting and indoor climate control. From site selection and layout to building materials and mechanical systems, energy efficiency is a primary goal at every stage in a building's lifecycle.

The McKenney's Automation & Control Solutions (ACS) division provides systems that enable customers to manage their facilities for optimal comfort, cost savings and energy efficiency. One of the greatest challenges in achieving these objectives is integrating the data generated by a wide array of disparate systems and devices used to control discrete building and campus operations, including pumps, valves, thermostats, uninterruptible power supplies (UPSs), power distribution units (PDUs), variable air volume units and many others. The building systems from a single campus or site can be comprised of tens of thousands of devices—monitoring and providing analytics on these represented a big data challenge.

“It can be very difficult to collect the data from all of these siloed systems, and the challenge multiplies when you have to then put it into another system for analysis,” explains Brian Gilmore, program manager for the Enterprise Intelligence Group within the McKenney's ACS division. “Our goal is to provide a value-added layer of business intelligence to building control systems that allow facility managers, asset managers and other stakeholders to gain some actionable intelligence from the data coming from what can be many thousands of devices.”

Enter Splunk

The Enterprise Intelligence Group revolutionized the building control and automation market when it introduced its original bdco® solution in 2009, enabling customers to take point-in-time snapshots of all physical asset information across systems from many different vendors and different data formats. However, pieces of the original system lacked the capability to provide a historical perspective, making it difficult to track trends and perform failure forensics.

In mid-2011, the Enterprise Intelligence Group was called upon to upgrade and integrate the building automation and control system at a data center in Atlanta. This work led to the serendipitous discovery of Splunk by Gilmore and his team. “They took me into their network operations center where they had a wall full of what I later discovered were Splunk dashboards,” Gilmore recalls. “They wanted us to help them show graphics from the power system, supplementary cooling and the central plant in the same types of dashboards. As we began to build the business intelligence piece, I downloaded a free copy of Splunk and discovered I only had to add a timestamp to our data and we finally could do the complex historical aggregation we were missing.”

Gilmore attended a regional Splunk event to learn more. “We came back and worked with one of our developers and Splunk to forward data to an indexer in our office. The

“Our original goal was to use Splunk to bridge the gap between the boiler room and board room. What we discovered, however, was that the guys in the boiler room and in the facility, property and energy management groups are all now able to gain the same insights and same values from the system. It’s become a collaborative tool where everybody can gather around the same data and see the same big picture.”

Brian Gilmore

documentation and Splunk community make it easy—there’s always something on Splunkbase or Splunkdocs that tells us exactly what we need to do.”

Breakthroughs

bdoc takes off

In early 2012, McKenney’s was enlisted to assist Gulf Power and its partner Chevron Energy Solutions in implementing a new energy management system at Eglin Air Force Base through Gulf Power’s GSA contract services in Florida. At 724 square miles, Eglin is one of the largest military bases in the world and includes hundreds of buildings and a base population of about 17,000.

The Enterprise Intelligence Group leveraged its in-house experience with Splunk to provide bdoc with continuous collection and aggregation of data from almost any energy management, IT infrastructure or building control system. This enhanced version of bdoc uses Splunk to help monitor and analyze tens of thousands of sensors and data inputs from HVAC systems in more than 100 Eglin buildings.

Energy management dashboards

The new Eglin energy management system (EMS) will leverage the Splunk-enhanced bdoc solution to provide dashboards that will help base maintenance staff to assess building performance and energy efficiency, generate automated Air Force/DoD energy usage reports, compare current energy usage with historical data, and enable the deployment of load shedding and load shifting strategies to take advantage of favorable electric rates. The project is projected to save about \$2.5 million annually, with a payback period of less than three years.

Eglin is taking advantage of bdoc’s native field device integration capabilities and Splunk to provide a common interface for data from every nook of the campus. The Splunk-enabled system will connect to, normalize and present data harvested from thousands of devices from disparate manufacturers and protocols, including a very large HVAC control system and wireless power metering infrastructure.

Enhanced intelligence = strategic advantage

Thanks to Splunk, the new bdoc solution extends the ability of customers to view their data with the added dimension of time. “We’ve always allowed customers to see what was happening in the three-dimensional space that their facilities occupy, but it was just a real-time view and lacked historical perspective. By using Splunk to capture and index data, we now enable customers to compare averages and see trends in usage.”

The Splunk-enhanced bdoc solution provides for better fault detection and diagnosis, supports the practice of continuous commissioning, integrates physical infrastructure with business practices, and provides correlation between building and operational intelligence.

Fosters partnerships

The integration of Splunk into the McKenney’s bdoc solution is also helping to open doors with customers and potential partners. The firm recently announced a partnership with fellow Splunk integrator RedCloud, a provider of web-based physical access control systems. The Enterprise Intelligence Group uses Splunk to integrate RedCloud and bdoc to provide aggregated event management for a combined building control and access management solution.

“For a small team like ours, the Splunk platform is so accessible that it gives you a head start,” Gilmore notes. “Why run from the starting line when Splunk puts you halfway around the track. I can’t even comprehend trying to build what Splunk already gives you. It easily saved us hundreds of thousands of dollars in development costs.”

Free Download

Download [Splunk](#) for free. You’ll get a Splunk Enterprise license for 60 days and you can index up to 500 megabytes of data per day. After 60 days, or anytime before then, you can convert to a perpetual Free license or purchase an Enterprise license by contacting sales@splunk.com.