



Highly available colocation services bolster forward-looking IT initiatives

CSX supports data-driven tools and achieves an SDN-enabled environment

Operating roughly 20,000 miles of track across 23 states, the District of Columbia, Ontario and Quebec, CSX is one of the largest Class 1 railroads in the U.S. Based in Jacksonville, Florida, the company has a rich, nearly 200-year history, and operates according to five guiding principles: improving customer service, controlling costs, optimizing assets, operating safely, and valuing and developing employees, with the ultimate mission of becoming the best run railroad in North America. These values guide the company's direction and business decisions. To accelerate and support its path toward strategic IT solutions that support these principles, CSX requires a resilient IT infrastructure that boosts its efficiency, performance and availability which includes:

Redundant colocation services support availability

Diverse, low-latency connectivity options enable real-time data integration

Customer-driven corporate cultures align to strengthen relationship

SDP provides real-time, on-demand insight into data center environment



Railway innovations require robust, resilient IT environment

In the railroad business, providing on-time starts and on-time deliveries is essential to business success. Dedicated to being the best railroad in North America, CSX is constantly improving its operations and cost-efficiencies to achieve this goal. CSX has undergone a large IT transformation, utilizing real-time analytics, machine learning (ML) and automation to optimize its delivery, improve safety and drive its business forward. This transformation is reaping some significant advances in its service product and capabilities, including its ability to predict shipment arrival times from weeks to hours – something no other railroad is publishing to customers.

The railroad industry is also enabling automation with its locomotives to promote safety. Through Positive Train Control (PTC), a government-mandated program, CSX utilizes GPS-based technology to stop a train before an accident occurs or it enters an unauthorized area. To be successful, this program needs to rapidly process data to respond to a given scenario.

"On the technology front, we are pushing the boundary of what is possible," said Asher Lohman, senior technical director at CSX. "People don't expect a railroad to be a technologically advanced company, but in most regards we are."

To achieve this level of real-time data ingestion and bring essential end-to-end transportation services to its customers, CSX needed a resilient, high-performing IT infrastructure solution.

This presented a crossroads for CSX, which was operating its own data centers in Jacksonville, Florida and Indianapolis, Indiana as well as utilizing some additional services from another provider. While the



railroad planned to retain the Jacksonville facility, it wanted to consolidate its Indianapolis facility and the independent services into a single data center.

To determine the most logical and economically feasible solution, the company weighed its options and the value of each: build a new data center, buy an existing facility or collocate its environment.

With a plan set to move forward with collocation, the company began to investigate leading providers who could deliver a reliable, highly connected, flexible and secure environment, while helping to fast-track its move to the cloud.

QTS collocation offers diverse connectivity, reliable infrastructure and a customer-focused commitment

After a rigorous vetting process involving a cross-function team from its Facilities, Real Estate and IT departments, CSX chose the QTS Atlanta data center based on the availability of its infrastructure and network, network performance and latency, physical security, monitoring, reporting capabilities, and cost-effectiveness. The Atlanta facility also provided some geographic diversity from CSX's Jacksonville presence, ensuring availability in the midst of a localized threat.

In February 2019, CSX began migrating its workloads to QTS Atlanta. *"The move into QTS had the highest visibility any technology program has ever had because of the potential impact,"* noted Troy Worman, technical director for CSX Technology. *"It required us to stop train movement to migrate some of our critical applications. All of those transactions went off without a hitch."*

Throughout 2019, the CSX team visited the Atlanta data center on a biweekly basis—standing up equipment and interacting with QTS. *"We had to do a lot of different things from a networking perspective that took a lot of discussion and tweaking, and throughout the process, QTS and its partners were exemplary,"* noted Worman. *"This allowed us to be aggressive and to talk to our business partners about the avenues we needed to take with complete confidence. I really can't say enough good*

"QTS' vast network of data centers gives us the flexibility to take workloads and move them closer to where we need it to be effective—whether closer to the cloud or closer to other parts of our infrastructure."

Asher Lohman, senior technical director, CSX Transportation

things about the team at QTS that helped us pull off this transition because it was a pretty significant event."

QTS' redundant power and cooling supplies, as well as its scheduled maintenance and refresh cycles optimize the environment to ensure equipment is operating efficiently. QTS' own on-site power substation further supports this availability.

Offering rich connectivity options—including more than 20 network providers and three SDNs—QTS enhances resiliency and ensures the timely delivery of data between the data centers and into the field. QTS also supports CSX's need for rapid cloud deployment and offers 1 millisecond latency to the local carrier hotel.

To safeguard CSX's equipment, QTS Atlanta provides layers of physical security, including outer perimeter security fencing; a single-entry point with gated access; required biometric and iris scans to enter the data hall; on-site, around-the-clock security guards; and cameras covering the property and its entry points.

Transparent collocation environment elevates railroader's IT and service capabilities

Today, CSX is moving toward an active-active environment that bolsters availability and offers the flexibility to run its production environment out of either Jacksonville or Atlanta. This flexibility is critical as any disruption or downtime can suspend trains which impacts operations and frustrates customers.



"Power usage and asset utilization are key to controlling these costs, and SDP provides that critical visibility."

Troy Worman, technical director, CSX Transportation

"We've been able to build a software-defined network across the data centers that allows us to move workloads seamlessly across both locations. This is something we would not have been able to do before QTS," explained Lohman. "It will allow us to remain more highly available from a technology delivery perspective and deliver the applications and tools that more than 20,000 railroaders rely on every day to get their jobs done."

"Before QTS, we had a situation that was effective, but it was not efficient for transitioning into the 21st century and doing what we want to do from a resiliency perspective," added Worman. "The QTS solution allows us to move away from a failover situation with manual processes and red tape and move to a hot-hot situation that completely transforms our footprint."

This dynamic infrastructure also supports CSX's forward-looking IT initiatives which help CSX predict equipment failures like pulling a locomotive or other piece of equipment out of service before it fails.

As CSX continues to modernize its capabilities, machine learning will become an increasingly critical element of its solution. This will entail bringing in data from the edge and processing more applications. CSX can leverage QTS' family of strategically located data centers to position its environment closer to the data to minimize latency and access real-time data to enrich decision-making.

QTS also enhances decision-making by providing complete transparency into its environment. By digitizing the data center and delivering this data to CSX via its Service Delivery Platform (SDP)—a real-time data center management and optimization platform—QTS allows CSX to remotely view, manage and control its data center environment. This provides CSX with the same level of visibility it has in its self-managed Jacksonville facility, complete with real-time notifications of an outage or issue with the environment.

CSX uses SDP to schedule remote hands work and site visits; view and control power usage, physical access and asset allocation; and manage its roster—all in real-time. "QTS has enhanced our ability to manage our environment," said Worman. "When we need guys onsite or eyes on equipment, we jump on the platform or reach out to our QTS contact, and it gets done."

The information and analytics SDP supplies also allows CSX to better understand its month-over-month costs to improve cost-savings and the budgeting process. "Power usage and asset utilization are key to controlling these costs, and SDP provides that critical visibility," added Worman.

This responsiveness has enabled CSX to shift from planning weeks and months in advance to make small changes to its physical environment to being able to quickly schedule and implement those changes.

"Our relationship with QTS has completely enabled us to move to the next-generation, highly available infrastructure, SDN, and leveraging and integrating cloud solutions," summarized Worman. "QTS is an extension of our team—always available, never had a problem, very responsive. We can completely count on the folks at QTS."

Learn more about [QTS colocation](#) and [diverse connectivity options](#).

About QTS

QTS Realty Trust, Inc. (NYSE: QTS) is a leading provider of data center solutions across a diverse footprint spanning more than 7 million square feet of owned mega scale data center space within North America and Europe. Through its software-defined technology platform, QTS is able to deliver secure, compliant infrastructure solutions, robust connectivity and premium customer service to leading hyperscale technology companies, enterprises, and government entities. Visit QTS at www.qtsdatacenters.com, call toll-free 877.QTS.DATA or follow on Twitter @DataCenters_QTS.