



CASE STUDY: FINANCIAL SERVICES BUILD-TO-SUIT DATA CENTER

# Strength Through Flexibility

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*SMART COLLABORATION DRIVES A BETTER OUTCOME, FASTER*



## Large North American Bank Data Center Build-to-Suit Project



### The Situation

A Future-Focused Data Center Strategy

### Preparation

Choosing the Right Data Center model

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*As part of a comprehensive data center consolidation plan, leaders of one of the nation's largest commercial banks ascertained the need for a new core data center that would complement its primary Tier IV data center.*

### A PARTNERSHIP THAT GOES BEYOND THE BUILD

A collaborative partnership with Stream Data Centers gave the bank the security and control of a standalone facility and the ability to specify the design, build and ongoing operation of a dedicated data center building that incorporated the most critical elements of the existing customer-built facility. It also got them up and running in less than a year and saved the bank millions in capital expenses along the way, creating shareholder value with a reduced total cost of ownership (TCO).

### THE SITUATION

#### A Future-Focused Data Center Strategy

The bank is one of the largest financial institutions in the nation, with over \$500 billion in assets. Its diverse portfolio includes consumer and business banking, corporate and commercial banking, payment services, and wealth management and investment services.

Like all major institutions, the bank values its reputation. It has been recognized as a Most Admired Company by *Fortune* magazine for 10 years in a row and as one of the World's Most Ethical Companies by the Ethisphere Institute. As part of its commitment to be an effective steward of customer assets, the bank maintains a highly resilient infrastructure and systems that meet stringent operational requirements while maintaining regulatory compliance. To augment the robust IT infrastructure, the bank continues to invest heavily in digital capabilities that include real-time payments, artificial learning, data analytics and more to keep pace with changing consumer demands.

In the competitive and highly regulated banking industry, demands on financial institutions come not only from customers, but from regulators and shareholders. In fact, the financial services sector is one of the most heavily regulated industries in the nation. The bank's IT infrastructure systems are governed by the Office of the Comptroller of the Currency (OCC), an independent bureau of the U.S. Department of the Treasury that regulates and supervises national banking institutions. Banking systems also are designated as a critical infrastructure sector by the Cybersecurity and Infrastructure Security Agency (CISA). And whenever new capital investments or operational commitments are required, bank leaders have a responsibility to ensure that expenditures are justified and add value to the organization.

In the mid 2000s, the bank launched a strategic initiative to consolidate its existing data center footprint into fewer, larger, more resilient sites to enhance operational efficiencies, deliver cost savings and more readily maintain regulatory requirements. One of the first priorities was to establish a new primary data center. After surveying existing assets, the bank's IT leadership team determined that the existing primary data center was reaching the end of its service life, and the cost to retrofit the facility would be significant. Additionally, the existing primary data center had some physical challenges, including being housed in the basement of a multi-use building, which limited equipment movement. Furthermore, the presence of a gas station across the street and railroad tracks running behind the building posed risks that could not be remedied. Relocating the primary data center was the only practical solution.

Bank leaders consulted the OCC and reached a decision to build a company-owned, state-of-the-art Tier IV primary data center in a centralized location with low risk of natural disaster and human-caused disruption. During construction of the new primary data center, the bank continued to invest in technology upgrades totaling \$20 million at the legacy primary facility to ensure that its systems could support a smooth migration of production. In 2010, the new Tier IV facility was completed and became the bank's primary production data center. The facility was built to satisfy the Uptime Institute's Tier IV standards, with state-of-the-art engineering and operational capabilities. Upon completion of commissioning and testing, the bank began moving applications from the legacy primary data center as well as from another aging location on the West Coast.

Successful execution of the data center consolidation plan continued to drive operational and financial benefits. Thanks to the additional resiliency afforded by the Tier IV data center,

the bank no longer had to use a third-party disaster recovery facility located in Maryland. This saved millions of dollars in annual operating expenses, while enhancing business continuity capabilities by improving recovery point objectives and recovery time objectives (RPO/RTO).

With the new primary data center up and running, the institution shifted its focus to the need for a new core data center to mirror the primary site, with physical and operational advantages that the legacy data center footprint could not provide. The bank decided to establish a new data center outside the new primary site's geographic zone but close enough to have efficient data replication and performance. The selection team began to weigh its options, focusing on a geographic circle between 250 and 500 miles from the primary Tier IV data center.

Proposed solutions would be evaluated in light of requirements to ensure ongoing availability, security and regulatory compliance of the bank's IT infrastructure. Time to market and TCO would also shape their decision.

## PREPARATION

### Choosing the Right Data Center Model

The financial institution's leadership team considered three approaches for the new core data center: spearheading another company-built Tier IV facility comparable to the new primary data center, colocating within a multi-tenant data center facility, or exploring build-to-suit data center offerings.

Building another Tier IV facility would offer complete control of the data center's operations and on-site physical security. Disadvantages included longer time-to-market and up-front capital expenses between \$250 million and \$280 million.



Colocation would offer a lower TCO and faster time to market, but leadership preferred physical separation from other tenants and bank-dedicated mechanical, electrical and plumbing (MEP) systems. The team found excellent colocation options within the search radius, but the bank's operational preferences pointed to a dedicated purpose-built data center as the right solution.

The final option, build to suit, offered the best combination of time, TCO and operational resiliency. A build-to-suit data center would give the bank input on design and operational requirements, and reduce both capital expenditures and time to market.

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## The final deciding factor was the ability for a build-to-suit data center to give the bank full control of the building's physical security.

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The bank engaged a third-party real estate broker to help guide the review of the options and to help coordinate tours. After vetting potential partners and touring providers in several states, the leadership team chose to move forward with the build-to-suit option from Stream Data Centers, which had available, entitled land with completed site preparation work that was near the bank's corporate headquarters. By using entitled land and a well-proven existing design for the foundation of the new Tier III facility, Stream offered faster delivery at a much lower TCO to the bank than other options. At the same time, Stream's commitment to flexibility and collaboration meant that the sophisticated core design could be enhanced even further to satisfy the bank's requirements. These advantages gave the institution's IT stakeholders and internal project management office (PMO) confidence in Stream's ability to deliver the new core Tier III data center on time, within budget and precisely to order.

During finalization of the design requirements, the bank's PMO and IT infrastructure teams weighed the merits of adding supplementary features and capabilities to Stream's standard design. When the PMO asked the IT team to justify the expense associated with modifications, Stream served as a valuable sounding board, able to provide candid insight, based on past experience, of the value of having a certain feature versus the risk of not having it. Using this process, the team modified the baseline design to include supervisory control and data acquisition (SCADA) and electrical power management systems (EPMS) capabilities. Stream was equally forthright with the PMO

team when they felt a particular line item was not crucial. Upon completion, the bank's team was satisfied that they had fought for the right upgrades, including the addition of SCADA and EPMS, and let go of the less important ones.



## EXECUTION

### Partnering to Move into Operations Mode

The bank chose a triple-net lease structure, which offered excellent insight into operating expenses with the flexibility to accommodate any of its required changes in operational support. Since Uptime Institute certification was important to the bank, Stream contractually committed to complete the Uptime M&O Stamp of Approval Program within 12 months of service commencement.

Bank-specific requirements were included in the jointly approved methods of procedure (MOP), which drew upon the same template for procedures already in use at the customer's other facilities. This collaborative approach helped ensure the same internal controls already in use at the primary Tier IV facility were also in place at the Stream-delivered facility. These methods were created to give Stream the ability to effectively manage the facility without ever impacting the bank's operational or regulatory requirements. They also specified that anything touching the raised floor must be approved by the bank to ensure necessary levels of security and engineering review.

Throughout the process, the quality of communication and interaction reflected the strong partnership between the bank and Stream. At weekly meetings, the need to work closely together was reinforced through shared observations between the bank's facilities management team and Stream's operations management team. This relationship was instrumental to the project's success, giving Stream the essential insights to optimize both time to market and TCO for the bank.

## THE POWER OF POSITIVE RELATIONSHIPS

Once the banking institution had identified Stream as the front-runner for this critical project, its commitment to establishing a spirit of partnership became clear. The bank sent the head of the Board of Directors' IT and Infrastructure Committee, along with senior IT and real estate executives, to Stream's headquarters in Dallas for a face-to-face meeting to discuss the importance of the project and ensure all parties were on the same page.

Both Stream and the bank value the strength of teamwork, with no room for an "us" vs. "them" mentality. The attitude from day one was that all stakeholders were in this project together, working toward a common goal. As the project proceeded, the value of the relationship proved itself time after time. When issues arose, team members discussed them openly — and all discussions ended with positive reinforcement of their shared progress. The quality of the relationship between the bank and Stream proved to be a key differentiator that propelled the project to success.

### Project Highlights

Once the banking institution preliminarily selected Stream as its build-to-suit provider, a team of key board, executive and operational leaders traveled to Stream's Dallas headquarters to personally convey the bank's commitment to making the new facility a success.

- The lease for the new site was completed in December of 2016.
- The project broke ground in early 2017 on Stream's data center campus.
- Commissioning of the bank-dedicated facility was completed in the fourth quarter of 2017, less than a year from the construction start date.
- The bank took occupancy of the new facility in January 2018.
- By partnering with Stream instead of building and owning the new build-to-suit data center, the bank benefited from:
  - An accelerated time to market fueled by Stream's build-to-suit experience.
  - Operationalizing a cost that would otherwise require hundreds of millions in capital outlays.
  - Stream's proven operational expertise and willingness to function as an extension of the bank team.
  - A highly reliable core data center facility with a record of 100% uptime since opening.

### REFLECTION

#### Results and Lessons Learned

As is the case with all complex projects, the partners encountered some issues during design, construction and operational turnover of the new Tier III facility that warrant reflection.

#### Plan for the Unexpected

Commissioning was completed within 11 months of groundbreaking. Completion could have come even sooner, but a manufacturer's issue with the chillers added a month to the schedule. The bank, Stream and the bank's third-party engineering consultants worked with the manufacturer to find the remedy to what was a new issue with the chillers associated with operating in a very low-temperature environment. In retrospect, as suggested by the bank team, the construction team should have resolved any open issues (including the chiller issue) before turning over that responsibility to Operations. Despite the delay, the unforeseen benefit of having the operations team on-site for the entire commissioning process gave them the opportunity to familiarize themselves with the processes and procedures of operating the facility.

#### Incorporate Multidisciplinary Peer Review

Another opportunity for improvement was in peer review prior to construction. A more in-depth, multidisciplinary design review could have improved results. Generally, data centers and their engineering firms work from standard plans designed to maximize efficiencies. Modification of these plans to accommodate enhancements to a standard design requires extra care to ensure that a change in one area does not have a ripple effect.

For example, in one case, a change was made to the plans for the physical location of equipment in the new data center. The engineering company captured the new placement of the equipment but missed recalculating the current-interrupting capacity of the breaker on the moved equipment. Because the teams had to solve the problem after implementation, the issue had to be quickly addressed to avoid slowing down the project. In this case, the teams were able to collaborate to solve the breaker issue, but other issues may not be solved as easily or affordably. The bank team suggested that bringing in an outside engineering firm as a fresh set of eyes to review all changes whenever standard designs are modified would ensure that all design specs affected have been adjusted and that downstream systems have been modified as needed.

### Leverage Each Partner's Depth of Expertise

As mentioned earlier, the bank relied on a third-party real estate broker with data center leasing experience to help guide the initial research into viable options for the bank. The broker's targeted guidance helped the institution's team arrive at the right decision faster than they might have without the support. As the project progressed, the broker understood the value of stepping back to allow subject-matter experts from both teams to work directly with each other on certain technical and operational issues — creating an effective dynamic that drove the exceptional cooperation on design and well-ordered operational procedures.

The broker was involved during the budgeting process as well, and the initial operating budget that was approved was based on a staff of one chief engineer and eight associates. If the bank's infrastructure team had been given the opportunity for more input, however, they would have suggested an additional staff member to account for vacation, sick time and training/turnover related absences. Instead, an additional staff member had to be added to the new site's team after the fact, which in turn impacted operating expenses. In retrospect, the technical SMEs from the infrastructure team should have been consulted on staffing models. Even though the topic is real estate, the operational team can provide additional clarity to help avoid missteps.

### Apply Project-Specific Changes to Enhance the Standard Design

The enhancements made to the standard Tier III design during the project inspired Stream to make some ongoing changes to its base design and operational practices, including:

- The addition of sally ports at the perimeter of all sites large enough to accommodate them.
- The integration of advanced electrical monitoring technologies to visualize and manage capacity remotely.
- Permanent changes to the start-up and commissioning process on all future projects by requiring that both operations and construction teams sign off on each phase of the commissioning, beginning with Level 3 and through Level 5 (completion).
  - If either team spots a problem, each has the authority to halt the project until it is resolved.
  - If the teams disagree and both are making a good case, the issue is escalated to Stream's partners for a final decision.

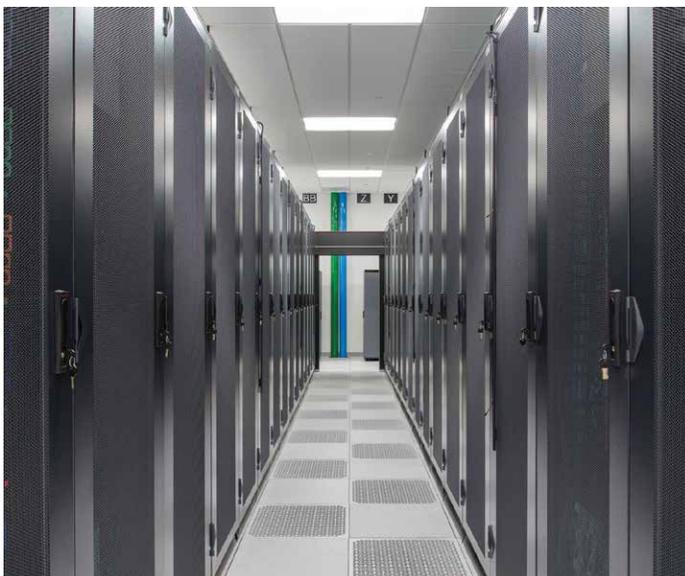


## CONCLUSIONS

Stream and the bank aligned early and maintained ongoing process and communication throughout the project. Thanks to this cooperative spirit, build-to-suit data center expertise and partnership, the following takeaways emerged:

- A new core data center containing elements that were important to the bank's leadership team was successfully developed in less than a year. A commitment to joint success ensured that the Stream employees working within the build-to-suit facility are effective extensions of the bank's internal team with the ability to maintain its standards for operational excellence over the long term.
- As part of the early commitment to partnership, the Stream and bank teams toured each other's facilities to study operational practices and efficiencies. They reviewed one another's methods of procedure (MOP) and standard operating procedures (SOP) to hone best practices for the Tier III build-to-suit facility. The extra step let both parties understand and appreciate the thought and experience that went into the systems and methodology at the partner organization.
- From the start, Stream's geographic presence and proven design/build capabilities were important considerations. Stakeholders from both teams understood that the operational execution would determine the success of the project and worked together starting on day one to ensure that the teams viewed the achievement as a joint effort.
- A willingness to collaborate on best practices in design and operations makes a difference. The bank spent years developing its own processes and procedures at the primary Tier IV facility, and needed a partner that was capable and willing to mirror those practices at the new core data center. Both teams continue to gain insight from an operations standpoint as a result of partnering closely and always working as "we" rather than "us/them."
- The spirit of teamwork resulted in operational success: The banking institution's IT leadership reported that working with the Stream-provided operations team at the new core data center was about 90% similar to working with their own data center employees at the Tier IV site and the new core facility's uptime was exemplary. The ultimate goal was a seamless experience for customers between service delivery by the bank's internal facilities and team and service delivery by the new build-to-suit facility and team.
- An ongoing commitment to open conversations and dialogue regarding maintenance windows is essential, including discussion about topics like the replacement of key components to better optimize performance. Open exchanges help the relationship seem less like landlord-tenant and more like a truly collaborative partnership.
- Stream was able to work within the bank's change management systems and adhere to established protocols for the project. This capability to integrate reporting systems, adopt the bank's MOP/SOP documents and adhere to best practices was crucial.

**The result:** a balanced partnership based on mutual respect and operational continuity — and successful completion of the project.





## ABOUT STREAM DATA CENTERS

Stream Data Centers has been providing premium data center solutions to Fortune 500 companies since 1999. To date, the company has acquired and developed over 2.5 million square feet of data center space nationally, representing more than 250 megawatts of power.

Product offerings include Hyperscale Data Centers, Private Data Centers, Ready-to-Fit™ Powered Shells, Retail Colocation and Build-to-Suit Data Centers — all with immediate connection to network carriers and public cloud providers. Above all, Stream is dedicated to improving the data center experience through exceptional people and service.

Stream Data Centers is a subsidiary of Stream Realty Partners, a full-service commercial real estate investment, development and services company. Founded in 1996, Stream has grown to a staff of 900 real estate professionals with offices in major markets across the U.S. The company manages nearly 230 million square feet of commercial properties and completes over \$3.5 billion in transactions annually.

### FOR MORE INFORMATION

Learn more about Stream's build-to-suit and data center development and operations services at [www.streamdatacenters.com/](http://www.streamdatacenters.com/)