



Home field advantage

Minnesota Vikings run with state-of-the art network

U.S. Bank Stadium, home field of the Minnesota Vikings football team, is considered to be one of the most state-of-the art sports and entertainment venues in the country, utilizing the latest technology to deliver world-class fan experiences. Since opening its doors in 2016, the stadium has hosted numerous football games, including the Super Bowl, and has become a premier destination for large events such as concerts, conventions, corporate gatherings and other major sporting matches.

Shortly after the stadium was built, the team began development on the Twin Cities Orthopedics (TCO) Performance Center, a 200-acre satellite campus that serves as the organization’s headquarters and training center. While smaller than the main stadium, the TCO Performance Center features cutting-edge technology for training athletes, hosting community events and supporting youth sports programs.

The Vikings organization wanted to ensure a consistent, high-quality fan experience for everyone visiting the stadium or performance center. Internet connectivity was at the core of this experience and required a reliable, high-capacity technology platform.

Challenge: Connecting fans to deliver a great experience

When the Vikings set out to build a new stadium, their primary concern was customer satisfaction. Ninety eight percent of the fan base has a smart phone, and without high-speed connectivity, those phones are little more than bricks in fans’ pockets.

At a glance:

Industry

Sports and entertainment

Challenge

Create the best fan experience, improve operational efficiency

Solution

Redesigned, upgraded WiFi and underlying backbone



Before the U.S. Bank Stadium was built, the Vikings played their games at the Metrodome, which lacked the technology to offer the level of connectivity that fans demanded. Entering the Metrodome was like entering a black hole; fans weren’t able to send texts, share photos or connect to social media. With most football games lasting for more than three hours, that’s a long time for modern fans to spend without a mobile device.

“That’s a big challenge for us from the standpoint of delivering that fan experience and our satisfaction scores reflected that,” said Rich Wang, Director of analytics and engagement for the Vikings. “Fans want the same connectivity experience at the stadium that they have at home.”

Wang estimated that 5 TB of data were being transmitted at the stadium by more than 14,000 Minnesota Vikings Football mobile app users and 40,000 fans who connected to the network directly. He estimated that usage would continue to rise, so any solution needed to handle exponentially increasing bandwidth demands.

The technology requirements were similar for the TCO Performance Center. The expectation was that the experience would be the same regardless of which facility people visited. Bandwidth and reliability were also critical for the business side of the team's operations.

Live broadcasting was another challenge. Sports fans watching the games at home or on their mobile devices

don't want to miss an important play due to poor transmission quality. They expect a flawless feed that keeps them connected to what's happening on the field. The team needed a robust, reliable network infrastructure that could support the continually evolving live broadcast.

The team also wanted to cut overhead costs by connecting more devices to the network to take advantage of operating efficiencies, such as using connected sensors for controlling the heating and cooling systems at the facilities. The Vikings needed a technology provider they could rely on to provide not only the network infrastructure, but the expertise for designing and implementing the solution.



Solution: Network transformation creates a new nervous system for the franchise

CenturyLink was brought in to design and implement the technology solution at both the stadium and TCO Performance Center. Working closely with the Vikings organization, CenturyLink's professional services team assessed the current WiFi coverage and bandwidth needs at both facilities and helped outline the goals for the project. This allowed them to put together a holistic solution that included the WiFi infrastructure, local area networking, and the SIP internet and voice system that would deliver on the fan experience and organizational needs.

"It was important to find a partner who could help us deliver the most amazing fan experience at what was going to be the most state-of-the-art sports and entertaining facility in the world," said John Penhollow, the team's vice president of corporate and technology partnerships. "CenturyLink delivered all the elements we needed to run our operations and deliver an exceptional game-day fan experience that enhances fans' enjoyment of the Vikings' winning, on-field performance."

Taking a smart city approach where networking lays the groundwork for the entire technology stack, CenturyLink and the Vikings IT staff designed a solution based on 10 Gbps circuits that could support the organization's growth at both the stadium and the satellite campus. In addition to providing the WiFi bandwidth for fans and operations, the infrastructure would support a wider variety of devices and monitors. Having a connected building where WiFi is pervasive enables them to operate their business more efficiently by providing better connectivity for fans, employees and retail point-of-sales systems, as well as WiFi-connected monitors that use real-time data to control the cooling and heating systems in the building.

The TCO Performance Center relies on the same technology as the stadium, and the two facilities mirror each other. This allows the Vikings to leverage their technology investment by having each location failover to the other, providing resiliency and reliability for fan experiences and operations.

“Connecting the two facilities has been a game changer,” said Cheryl Nygaard, director of information technology. “It has greatly improved communications throughout the organization by allowing our production crew to easily share files without having to drive back and forth from the stadium to the TCO Performance Center.”

CenturyLink also provides CenturyLink® Vyvx® Solutions for live broadcasting of games and events. Vyvx allows for multi-point distribution of TV channels with a single feed. Fiber-based data circuits provide the expandable bandwidth, reliability and security the organization needs while vastly reducing latency issues. The added capacity and network infrastructure at the stadium will support the Vyvx circuits that broadcasters utilize on game days.

The final solution consisted of:

- CenturyLink® MPLS/IP VPN
- CenturyLink® Vyvx® Solutions for real-time global broadcasting of games and events
- 10 Gbps fiber circuits for WiFi connectivity and interconnectivity between facilities
- SIP Internet and voice service
- Professional services for overall design, project management and installation of LAN, WAN, IPT and IPTV technologies at both USBank Stadium and TCO Performance Center

Results and future plans: Better data – and lots more of it

When the Vikings hosted the Super Bowl in 2018, fans at the stadium used more than 16.5 TB of data, an all-time record for any sporting event at the time. With 67,612 fans and 5,800 credentialed media in attendance, plus 103 million television viewers worldwide, this unprecedented demand put the WiFi connectivity along with the high-speed fiber network and Vyvx solution to the test, allowing more people to stream the game than ever before.

“High-profile events like Super Bowl LII can be stressful, but the reality is we had no blips that night. The CenturyLink technology held its own, and then some,” said Penhollow. “We look forward to hosting more large-scale events knowing that CenturyLink powers our technology backbone.”

Implementing the same technology at both the stadium and TCO Performance Center has resulted in clear improvements in network reliability and availability. “Before we had the redundant network, we had our fair share of internet outages that would bring operations to a halt,” said Josh Melstrom, network and security engineer for the Vikings. “Now that we have the redundant network between the two facilities, we haven’t had a single internet outage.”

With CenturyLink’s technology, Vikings fans have come to rely on the mobile app that keeps them connected to everything happening in the stadium, from ticketing and parking to transportation and the latest weather updates. Fans are also able to ask questions and engage with the Vikings directly. “With the Vikings app in your hand, you now have access to answers as soon as you walk into the stadium,” Wang said.

The app also makes it easier and faster for fans to access tickets. As a result, the Vikings are transitioning from physical tickets to mobile ticketing, which has increased from 30 percent in 2017 to 98.5 percent in 2019. Mobile ticketing makes it possible to compile more accurate data about the fan base and who is attending the games.



“Connecting the two facilities has been a game changer. It has greatly improved communications throughout the organization.”

- Cheryl Nygaard, Director of IT, Minnesota Vikings

Before mobile ticketing, the data collected at the time of ticket purchase indicated that 80 percent of the account holders were males over the age of 60. But a look around the stadium reveals that there is much more diversity in age and gender of the people actually in the seats. Knowing the makeup of the fan base in attendance makes it easier for the Vikings organization to tailor how it communicates with fans.

“Because of connectivity and mobile ticketing, we actually know who our customers are,” Wang said. “This allows us to be more efficient and impactful with our communication.”

In the future, CenturyLink will continue to support, augment and refresh the technology at U.S. Bank Stadium. CenturyLink will also help the Vikings organization as they focus on expanding the TCO Performance Center. The campus is being developed as a mixed-use center that will include hotel, retail, corporate and residential spaces. CenturyLink is providing the fiber optic infrastructure that will serve as the connectivity backbone for the entire campus.

“The football and business operations rely on CenturyLink technology every day,” said Penhollow. “When we were asked if CenturyLink can make us better, it was a resounding answer of ‘yes’. We know that CenturyLink will be with us as we look to develop new ways for the fans to enjoy game day, for our football team to build out their technology inside our headquarters facility, and for fans in general to enjoy what the Minnesota Vikings are all about.”



“Because of connectivity and mobile ticketing, we actually know who our customers are. This allows us to be more efficient and impactful with our communication.”

- Rich Wang, Director of Analytics and Engagement, Minnesota Vikings
