



KANSAS CITY CHIEFS' WI-FI MOVES THE CHAINS

Bob Stirton, Scott Fletcher and David Young say Arrowhead Stadium's new Wi-Fi network is winning points with fans as well as employees of the Kansas City Chiefs organization.

At a Glance

COMPANY: Kansas City Chiefs Football Club

LOCATION: Kansas City, Mo.

EMPLOYEES: 185 full-time

TECHNOLOGY SUPPORT STAFF: 7 full-time, 2 part-time

HISTORY: The Kansas City Chiefs are a professional football team in the National Football League's American Football Conference, West Division. First based in Texas, where the team played under the Dallas Texans banner, the Chiefs adopted their present name after moving to Kansas City in 1963. The organization plays its home games at Arrowhead Stadium and defeated the Minnesota Vikings in Super Bowl IV (1970).

A new and improved wireless network brings fans in Arrowhead Stadium closer to their team, and each other.



TWEET THIS!

The endgame seemed simple: Provide a superior wireless connection to everyone who attends a game at Kansas City's Arrowhead Stadium.

To get a handle on what was possible, and all that would be involved, Bob Stirton, director of information technology for the Kansas City Chiefs football organization, sent Network Engineer Scott Fletcher on a scouting mission to the 2012 Super Bowl at Lucas Oil Stadium in Indianapolis. Fletcher watched first-hand the inner workings of a recently installed Cisco Systems wireless network in full-on, gameday action.

Upon his return, Fletcher and the Chiefs' IT team began working in earnest on their own network, partnering with CDW to design and implement a Wi-Fi solution that would best address growing fan demand.

"We went through a lot of options, deciding exactly what we needed, determining our requirements, getting finances approved and getting all the cabling done," Stirton says. "It was a huge project."

Arrowhead Pride

By the time the first home game of the 2013 season rolled around, the Chiefs were ready to unveil Arrowhead Wi-Fi, a high-density Cisco-based wireless network that, along with a new mobile app powered by YinzCam, allows in-stadium fans to connect with the team, and each other, on gameday.

Every professional sports team believes their fans to be the greatest, but the Kansas City Chiefs have some pretty

cool stats to back up their claims: While the team may be located in the sixth-smallest media market in the National Football League, it boasts the second-best attendance record, having once sold out every game in the 76,416-seat Arrowhead Stadium for 18 years straight (1991–2009). Chiefs fans are so fervently vocal in cheering on their team that Guinness World Records recognized them in 2013 for recording the loudest crowd roar ever in an outdoor stadium. So when fans started asking for more wireless connectivity inside the stadium on gamedays, the Chiefs organization took notice.

"We're going to do whatever we can to improve their experience and make them happy," says David Young, the Chiefs' vice president of stadium operations. "To actually attend a Chiefs game is seen as a badge of honor among our fans, and people want to be able to take a picture and post it on Facebook, or check in on Foursquare and say, 'I'm at the game.' They can't do that without connectivity."

The Chiefs are not alone in trying to make their home games more appealing to digitally savvy fans. While the NFL experience traditionally concerns the sights, smells and sounds of sitting in the stands and cheering on a team, fans increasingly want a gameday experience supplemented by virtual connections and access to a wealth of information, instantly.

"It's no longer just about providing the best product on the field," Chiefs CFO Dan Crumb explains. "We've got to also provide fans with constant connectivity so that they can consume the information they want in the way they're used to doing and in a way that they're comfortable with."

The trend could explain why attendance across the NFL

95%

Percentage of professional sports stadiums that have some sort of wireless connectivity; just 35 percent have taken steps to provide fan seating areas with high-quality Wi-Fi

SOURCE: Mobile Sports Report and Sports & Entertainment Alliance in Technology (SEAT), "2013 State of the Stadium Technology Survey," October 2013



dropped markedly between 2008 and 2011, spurring NFL Commissioner Roger Goodell to encourage teams to offer more in-stadium Wi-Fi access.

"All NFL teams have realized that we are not only competing with other local sports and all the range of entertainment options out there, but we were also competing against ourselves in terms of how people consume our product," Young says. "If we're going to get people to come out to the stadium and brave the traffic and the weather, then we have to give them access to the mobility and modern technologies that they want."

Getting There

Installing Wi-Fi in any stadium is no easy task, but Arrowhead Stadium proved to be an especially challenging environment, Stirton says. The outdoor facility, built in 1972, is one of the largest in the NFL.

"Our greatest challenge was finding locations to mount the number of wireless access points and antennas required to support clients in the bowl of the stadium," Stirton says. "Our stadium bowl has very long seating sections, most of which offer no way to position antennas close to the middle of those sections."

And because Arrowhead is an open bowl, radio frequency signals "bounce around like crazy," Fletcher says. That problem is compounded by the sheer density of mobile devices that arrive on gameday, and the potential for interference from the gaggle of television crews and other media organizations on hand to cover each event.

"We vetted a number of options before we decided to hire CDW to work with us and provide the Wi-Fi infrastructure and installation," Fletcher says. "The experience and knowledge that CDW — specifically, Lead Engineer Travis Bugh — brought to the table was extremely valuable. His advice was key in engineering our Wi-Fi design, which worked from day one and throughout the season."

CDW worked closely with the Chiefs' in-house staff at every point of the implementation, from researching and choosing system components to tuning RF antennae to vetting and recommending outside firms for specialized tasks. CDW has similarly supported successful implementations at the Atlanta Falcons' Georgia Dome, the Chicago Cubs' spring training facility and 13 motorsport tracks owned by the International Speedway Corp.

"There is no cookie-cutter design for stadium networks," Bugh says. "Everything is magnified. So when you design and implement this type of network, it's really important that you have a team that understands what they're doing — from the cable vendor to the associate who performs the testing."

Ultimately, the Chiefs opted to deploy a Cisco-backed

A New Playbook

The new wireless network at Arrowhead Stadium has the potential to significantly boost the fan experience in many ways. Soon, the Kansas City Chiefs organization will offer in-stadium fans:

Exclusive content: Chiefs games attendees could soon be able to download and view next-generation stats and video not available to fans watching from home, including interviews with players and coaches and streaming video from inside the locker room of the moments leading up to the start of each game.

More convenience: The Chiefs plan to make it easier for fans to order food and other concessions from their seats, offering in-seat ordering via smartphone, as well as wireless point-of-sale tablets at bars, restaurants, concession stands and other retail outlets. The move is designed to speed up and simplify ordering and payments for customers anxious to get back to the action on the field.

More personalization: In time, the team expects to offer season ticket members the option to store tickets and other loyalty program information on their smartphones. "When they arrive at the stadium, they'll just scan their phone to process their ticket; however, the hope is that eventually the network can just recognize them wirelessly as ticket members and they can just walk right in," says David Young, the Chiefs' vice president of stadium operations. "Similarly, they'll be able to interact wirelessly with the loyalty program while at a game, and we'll be able to collect data from those interactions to push out personalized offers designed to enhance their gameday experience."

network "because they're really the proven design for stadiums," Fletcher says.

The Arrowhead Wi-Fi network comprises several brand-new, stadium-grade components, including Cisco 5555 firewalls, Cisco 5508 controllers, Cisco 3850 wireless switches and about 600 Cisco 3500 and 3600 series access points (APs). The IT team relies on Cisco Prime Infrastructure to manage network demand and balance bandwidth load. Despite all of the impressive new technology, Fletcher says one tough challenge remained: effectively positioning and mounting all of the APs. "There can't be any dead spots," he explains. "Just as important, you can't have too much signal because then it will just cancel itself out."

The task required the team to get creative. IT staff and network engineers mounted APs on tunnel entrances and installed three tiers of antennae on the ceiling above the lower bowl, positioning each at different angles to reach

every seating section. In the upper bowl, the team erected mast poles as AP mounts around the rim of the stadium, allowing the devices to shoot signals down over the crowd. The move presented massive logistical challenges and required industrial-level equipment. The Chiefs and CDW turned to Mark One Electric, a local solution provider, to anchor the poles within the stadium's concrete walls and run all the requisite cabling and conduit.

"We used very specific Cisco antennas to target certain fan sections, which helped to balance the number of clients that attach to each AP," Fletcher says.

Because the Chiefs and CDW took plenty of time upfront to research options and come up with just the right design and configuration, they had only a few months to install the network before the start of the 2013 season.

"It wasn't a rush job, but everyone did put in a lot of hours to meet the deadline," Bugh says. "In the end, it all came together and went as smoothly as anyone could possibly hope. It really was a dream project."

In fact, the project came in on time and within budget, Stirton says, and the team has since asked CDW to help with a new point-of-sale implementation at Arrowhead. "Whether the projects are big or small, CDW has been very responsive to our needs and follows up to ensure we are satisfied every step of the way," he says.

Happy Fans, Happy Team

NFL officials are actively promoting stadiumwide wireless network upgrades as a way to significantly enhance the fan experience, and that is already paying off for fans of the Kansas City Chiefs, Stirton says.

"People are really happy with it," he says. "They don't necessarily know that we've installed 600 access points around the stadium, but they know that they can use their smartphones and get the connectivity they need, when they need it."

Fans have been quick to take advantage of it. During 2013 season home games, the Chiefs saw huge spikes in social media postings from Arrowhead Stadium.

The Chiefs' new mobile app has been downloaded 75,000 times, providing information such as player and coach bios, real-time team and game stats, rosters, injury reports and news feeds, as well as access to NFL Red Zone, which features video highlights of every touchdown across the league.

By far, the app's most innovative and popular feature is instant replay, which offers multiple views of every play during every drive down the field, available only at Arrowhead Stadium on gameday. In time, the Chiefs also plan to offer in-stadium fans access to exclusive content through the app, including streaming video from the locker room leading up to the start of a game. Such features are especially attractive to armchair quarterbacks who don't just watch football, but clamor for extra analysis — the catch is that it can't be accessed from an armchair at home.

"Our organization thrives on fans attending our events and having a really good time," Young says. "Knowing that the fans are happier and enjoying their time at the stadium is the greatest benefit for our organization."

But the investment in Arrowhead Wi-Fi is also proving lucrative to the Chiefs in other ways. A pilot program that put wireless ordering devices in the hands of cocktail servers has led to measurable increases in club-level bar sales, he says. The Chiefs are extending the program to other food and retail outlets during the 2014 season. Using their smartphones, stadiumgoers also will be able to order concessions from their seats, purchase chances on the Chiefs 50/50 Raffle charity fundraiser and interact with the Chiefs Kingdom Pass loyalty program. Chiefs employees — including IT staff — also enjoy the ability to work from anywhere within the stadium, thanks to greater connectivity. Connectivity complaints are now a thing of the past, Young adds.

"The wireless network is essentially providing more convenience and functionality for everyone," Fletcher says. "It gives us a foundation to continue to add new features over time and really transform the fan experience. Fans now have that much more incentive to come out to the stadium and enjoy a Chiefs game."

In the end, that's what matters most to the Chiefs. "Providing our fans with memorable experiences is really what we're in business for," Crumb says. "Our Wi-Fi investment is providing our stadium fans with the best of all worlds. They get all the experience and thrill of being at the game and seeing the action unfold live, without missing any of the information and connectivity they're accustomed to having at home. That just creates a situation where everybody wins."

Photography by Dan Vidulich



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