Case Study
Cincinnati Bengals contract with CBTS for stadium wireless implementation

Client: Cincinnati Bengals

The Cincinnati Bengals are a professional American football team based in Cincinnati, competing in the NFL within the American Football Conference North division. Paycor Stadium, home of the Bengals—and previously Paul Brown Stadium—opened in August of 2000 with a capacity of 65,515.

Challenge	CBTS solution	Results
• Network traffic and bandwidth demands were growing exponentially over the years, and the current wireless network was unable to handle the increased demands.	• Over 1,600 HPE Aruba Wi-Fi 6 MU-MIMO-enabled access points were installed. The technology enables eight times the number of concurrent transmissions both up and down to substantially increase connectivity and quality.	• A 76% increase in unique device connections and a 230% increase in data volume per game was achieved, with averages reaching 8.5TB.
• The unique architecture of the stadium required the handling of massive amounts of bandwidth necessary for the high number of concurrent users.	• CBTS engaged M S Benbow & Associates—engineering experts who focus on high-capacity, high-performance, large public venues—for the design of a custom integrated solution that included both wireless and network design.	• During the playoff game, the network and firewall set a new NFL record for total sustained throughput of 22.3Gbps.
• The magnitude of endpoints connecting to the network was more capacity than the current firewall could withstand.	• Palo Alto Networks firewalls provided predictable throughput for the high volume of traffic while protecting the Wi-Fi infrastructure.	• The new Palo Alto Networks firewalls provide excellent performance under the punishing load, massive bandwidth, and high numbers of concurrent users.

Challenge

From watching instant replays on their phones, engaging in social media, checking the status of other games, or even ordering food from their seats, fans expect to stay connected while watching their favorite team. To provide this level of fan experience, the Bengals engaged altafiber and CBTS to engineer and build a fiber-enabled Wi-Fi network that supports the growing connectivity demand of fans.

CBTS solution

Large public venues (LPV) provide unique challenges in engineering. CBTS engaged M S Benbow & Associates (MSB), an integrated engineering firm specializing in LPVs and a long-time partner, to design and implement both the LAN and Wi-Fi networks within the venue. MSB also managed the construction and commission of the Aruba Wi-Fi 6 MU-MIMO-enabled access points, which were chosen for their seamless connectivity in LPVs. The new design included more than 1,600 access points, including 1,100 deployed in the stadium seating bowl. To support the new access points within Paycor Stadium, the Bengals deployed a 40GbE network core that delivers the fastest Internet speeds possible for fans. Post implementation, CBTS and MSB provided game-day support to ensure the system worked as designed, ensuring customer expectations were delivered.

Results

Paycor Stadium now delivers a world-class Wi-Fi network that allows fans to engage and connect in record-breaking numbers. The results are:

- A 76% increase in unique device connections per game.
- A 436% increase in maximum data rate, with average peak data rates reaching 10.7Gbps.
- A 230% increase in data volume per game averaging 8.5TB transferred per game, with 12.8TB transferred during Sunday's playoff game.
- Playoff game traffic soared to 22.3Gbps.

"Wi-Fi 6 is ideal for Paycor Stadium because it improves network capacity to allow more fans access at the same time and at faster speeds. With CBTS' support, we designed an enhanced network with the fan in mind to ensure that everyone in the stadium has access to high-quality, fast, and reliable Internet using the latest Wi-Fi technology."

-Steve Johnson, Paul Brown Stadium Manager of Capital Projects

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Contact us.