

HPE 
GreenLake

A smart stadium: a place for passion

Tottenham Hotspur leverages data insights
to boost fan engagement

Tottenham Hotspur built one of the smartest, most connected stadiums in the world to make match day unforgettable for tens of thousands of fans. From cashless transactions to intuitive wayfinding, technology is enabling new levels of safety and engagement, putting control of game day experiences directly into the hands of the fans.

“When you’re born a fan of a particular club, you die a fan of that club,” says Daniel Levy, Chairman of Tottenham Hotspur Football Club. “The allegiance goes from one generation to the next. That’s why there’s so much passion involved.”

Tottenham Hotspur Stadium is a place for passion. When building its new home, the team wanted to deliver an unforgettable experience for every visitor, whether it’s general admission fans, families with children, or VIPs. To meet this goal for over 3 million visitors a year, Spurs embedded technology into every corner of the building and every interaction point.

The business of entertaining

“We wanted an iconic building, something to stand the test of time and be known around the world,” relates Levy. “Everything we thought when designing this stadium was about making the experience more entertaining. Because we’re in the entertainment business.”

A wall of noise amplifies sound when the crowd chants or celebrates a goal. The largest bowl screens in Europe—with a total surface over 1 km²—show the most crucial action. There’s a choice for every visitor: traditional drinks and snacks, an on-site microbrewery, dinner with Michelin-rated chefs, or exclusive appearances by players and activations before and after the game.



Industry: Sports and entertainment

Country: United Kingdom

Vision

Deliver an enhanced fan experience by building a smart and connected stadium

Strategy

Integrate technology to support stadium services, maximize operational efficiencies, and make facilities flexible

Outcomes

- Enhances visitor experience, adopting a mobile-first approach and reaching 95% fan satisfaction
- Powers cashless stadium, speeding service and increasing sales insight and revenue
- Delivers 100% connectivity for 60,000 fans, team staff, and commercial partners

Everything is flexible, connected, and automated to minimize friction—from turnstile systems for streamlined access to lighting and temperature that set the mood.

A more engaging match day experience means fans ultimately stay longer and club revenue increases. The team scores a 95% fan satisfaction rate, up from 52% at Wembley, its temporary home.



We have now more data sources than any other stadium in the world. It's an accelerator for us to drive more revenues. But at its heart, it's an enabler for us to deliver an enhanced fan experience.”

– **Fran Jones**, Head of Partnerships, Tottenham Hotspur Football Club

A mobile-first experience for live events

The experience begins long before arrival at the stadium. Whether it's ticket purchases, transport routes, finding the right entrance, or a seat, the Spurs official mobile app customizes information for every visitor and delivers exclusive content throughout the event.

The arena spans 1.3 million square feet. Location services make it easier for first-time visitors to find their way to The Tottenham Experience (the largest club shop in Europe), The Goal Line Bar (the longest in the UK, which runs the length of the entire goal line), or even meet with friends. “Aruba Beacons give us the opportunity to create personalized location-based services,” shares Sanjeev Katwa, CTO, Tottenham Hotspur Football Club.

Smarter sales, safer flow

At opening, it was the first cashless stadium in the world. Fans can make purchases via contactless cards or mobile and wearable devices. For fans, this means faster service and shorter queue time, as well as improved hygiene.

“We can serve fans a lot faster. We get sales updates in real time on products that we're selling and what our sales position is,” says Katwa.

For the club, this delivers insight to drive more business. “We have now more data sources than any other stadium in the world. It's an accelerator for us to drive more revenues,” explains Jones. By understanding how fans move and engage at the stadium, the club can make intelligent decisions, such as launching real-time promotions.



Building the community, serving the community

The stadium's influence extends beyond the club and its fans. A year-round destination, with visitor attractions such as behind-the-scenes tours and The Dare Skywalk, attracts more visitors and business to the north Tottenham area. The club also joined efforts with local authorities in an ongoing restoration project to improve the local environment and services for both residents and visitors.

During the pandemic, the stadium became a place for hope and service. Its flexible facilities allowed the club to work with the UK National Health System (NHS) to help combat COVID-19.

The underground parking quickly converted into a drive-through testing hub, making testing safer for clinical staff and other essential workers.

Partnering with North Middlesex University Hospital, the club also transformed familiar areas of the stadium to deliver women's outpatient services, hosting over 41,000 appointments and giving women a safer space to receive maternity care.

Both technology and architectural design make the space adaptable to host way more than Spurs matches.

Mobile payment also supports health and safety measures after the pandemic closure. The club has moved to 100% digital ticketing through Near Field Communication (NFC) technologies, further reducing risk and allowing fans to have a seamless experience with just their mobile device.

Match day, connected

When fans are having a great time, they want to share it with friends and family who are not at the stadium with them. To deliver 100% connectivity across all facilities for over 62,000 people, the stadium features under-the-seat HPE Aruba Networking access points.

“The wireless connectivity from Aruba has been game changing,” says Katwa. More than 30% of visitors are connecting to the wireless network on match days, using over 4 TB of total bandwidth. The network has the capability for over 40,000 fans to livestream high-definition video, all at the same time.

Fans don’t see it, but this same connectivity supports the building’s controls and operations.

Embedding technology, from the ground up

The stadium’s digital platform has been a core building element since the early design stages. It integrates technology solutions from 12 different service providers to support everything that happens on match day, from access control to retail, from energy management to broadcasting.

Tottenham Hotspur needed a partner with broad expertise and technology capabilities and selected Hewlett Packard Enterprise to design and deliver an end-to-end solution. “Hewlett Packard Enterprise supported us on the journey to build one of the most technologically advanced stadiums in the world,” says Katwa.

HPE Services acted as the club’s advisory partner on hybrid cloud and edge technologies. It also provided advice, design, and build services on the stadium’s wired and wireless infrastructure. The services relationship continues today with ongoing support provided by HPE Complete Care Service. The assigned account support

team provides ongoing operational and technical advice, which helps Tottenham Hotspur save time operating the environment and spend more time adding value to the business.

Smart and flexible services

“Resilience is key. High availability is key. Security is key. And then, we want everything to be flexible,” notes Alex Haddow, head of IT at Tottenham Hotspur Football Club.

Besides hosting the Spurs games, the stadium is designed to be multipurpose, hosting concerts and other sporting events. Digital signage across the stadium can adapt to different uses, even in real time. The M cafe hosts media during match days, but the rest of the year, it’s open to visitors. As the club will host two National Football League (NFL) games a year for the next nine years, the grass pitch divides and retracts to reveal an artificial American football field. During its first NFL game, the club processed over 85,000 transactions and poured over 100,000 pints of beer.



An intelligent network enables flexibility for the stadium's critical services. HPE Aruba Networking solutions allow the club to secure and manage the public and private network, granting role-based access for staff, visitors, or commercial partners.

All data at the venue is analyzed at the network edge, driving real-time insights and furthering efficiencies across operations. "All this transactional information is happening at the edge. The edge is what powers the stadium," says Katwa.

Power at the core

"The data center is at the heart of everything we do," says Katwa. Two data centers power the stadium—from fan engagement analytics to back-end operations—and one of them is even part of the visitor experience. Those at the North-West Corner of Level 1 can take a look at the technology behind Tottenham Hotspur.

Katwa continues, "To put our data center behind glass is a pretty bold step. But for us it's to say, 'This is where the technology is, this is what's driving us.'"

The team runs hundreds of workloads on HPE ProLiant DL360 and HPE ProLiant DL380 Servers from user engagement analytics to VMware® estate, to building management systems. Most of the data is kept on HPE 3PAR StoreServ Storage.

To store data from over 700 CCTV cameras, the stadium chose HPE Apollo 4000 Server with Scalify RING, which delivers high density, cost efficiency, seamless capacity expansion, and the right performance to store video directly to a data lake repository. This solution helps the stadium ensure a safe experience for all visitors. The platform is also used as Veeam Backup Repository, increasing data protection and durability.

"Hewlett Packard Enterprise technology is actually the most important piece of technology in this building because without it, nothing else can operate," says Jones. "We need the data, the analytics, and the intelligence." For example, the club can make faster product mix decisions based on real-time transaction data or understand the busiest times for snack and drinks consumption and plan accordingly to keep fans satisfied.

The stadium of today

"'To dare is to do' is our team's motto. It does encapsulate how we approach our business," declares Jones. "We've tried to do something that's never been done before."

Tottenham Hotspur's vision is now a reality. The stadium powers seamless, reliable service for staff and partners, but most of all, it has the intelligence and digital tools to meet match day expectations, allowing every fan to celebrate the team and the sport the way they choose to.

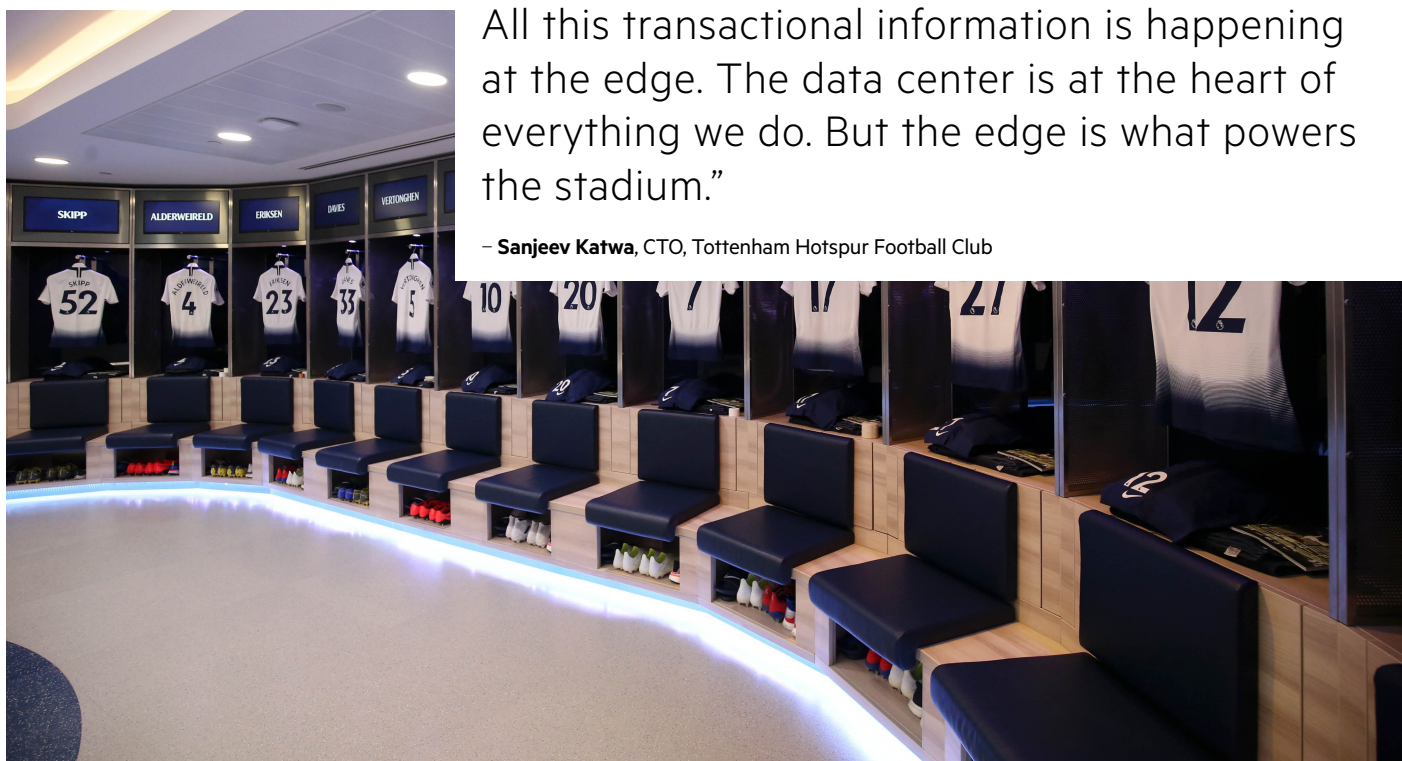
It's a living arena built for constant growth and evolution. The club continues to add access points and digital devices as needed. It also extended this technology approach to its training center, ensuring a consistent user experience and providing operational efficiencies across the business.

"Whether this is the stadium of the future or not, that's for other people to judge," concludes Levy. "But it's the stadium of today because everyone's talking about it."



All this transactional information is happening at the edge. The data center is at the heart of everything we do. But the edge is what powers the stadium."

– Sanjeev Katwa, CTO, Tottenham Hotspur Football Club





It's the stadium of today because everyone's talking about it."

- Daniel Levy, Chairman, Tottenham Hotspur Football Club



Explore more

→ [Find](#) more Digital Game Changer stories

[HPE.com/services](https://www.hpe.com/services)

[HPE.com/edge](https://www.hpe.com/edge)

Solution

Services

- Advisory and transformation services
- Network infrastructure design
- HPE Data Center Facilities
- HPE Complete Care Service

Software

- HPE Intelligent Management Center (IMC)
- HPE Aruba Networking ClearPass Policy Manager
- HPE Aruba Networking AirWave Network Management
- Scality RING

Hardware

- HPE 3PAR Storage
- HPE ProLiant DL380 and DL360 Servers
- HPE Apollo 4000 Systems with Scality RING Scalable Storage
- HPE Aruba Networking access points and access switches
- Aruba Beacons with Bluetooth Low-Energy



Chat



Email



Call



Updates

Visit [HPE GreenLake](#)

