Underground Passengers Enjoy Continuous Online Access

Wi-Fi supports digital Olympic Games and helps travelers stay connected in more than 120 London Underground stations

EXECUTIVE SUMMARY

Customer Name: Transport for London

Industry: Public sector

Location: United Kingdom

Number of Employees: 27,000

Challenge
· Support mayoral transport strategy to help London's transport systems keep pace with the world's best
· Make internal operational teams better informed and more efficient

Solution
· Service provided by Cisco included provison and design of high-user-density wireless network

Results
· Supported communications across critical stations during Olympic Games
· Helped deliver fuller, more timely travel information to London Underground staff and customers
· Contributed to network infrastructure consolidation and efficiency

Challenge

Transport for London (TfL) was created in 2000 as an integrated body responsible for transport system across the city. Its main role is to implement the Mayor of London's transport strategy and manage transport services across the capital. These services include London's buses, the London Underground, Docklands Light Railway, London Overground, Tramlink, London River Services, Victoria Coach Station and five percent of London's strategic road network. TfL faced a significant challenge in 2012, when London hosted the Olympic Games.

It was clear from the outset that London's transport system would be under considerable stress, which led authorities to think carefully, not just about how to adjust existing travel patterns, but also how to get timely information more easily into the hands of visitors. One obvious way of helping to achieve this, as well as supporting a London transport strategy proposal to provide better information, was to introduce wireless networking in underground stations.

"We needed to put more information in the hands of our customer service agents, or CSAs, to make sure they could enhance the journey of the travelling public," says Steve Townsend, chief information officer at Transport for London.

At the same time, the introduction of Wi-Fi was seen as an opportunity to help consolidate and streamline existing communications links across the organization, some of which were suffering from latency and resilience problems.

"We have a number of data transmission networks within Transport for London, and by providing a new core, we took the opportunity to improve efficiency and reduce operational cost," Townsend says. "What Wi-Fi gave us was a standard way of serving data to those environments in a much faster, more state-of-the-art fashion."

> "The way we manage our stations from a resource perspective, and the accessibility to tools, has been greatly enhanced."

Steve Townsend
Chief Information Officer
Transport for London

Solution

Wi-Fi, based on the 802.11 standard, was a good choice as the medium for below-ground network connectivity because it offered a favorable signal-to-noise ratio at the necessary depths, and it would not lock the underground or its users into a particular vendor. Furthermore, 802.11 Wi-Fi technology has a relatively lower power utilization and physical footprint compared to alternatives such as second- or third-generation mobile.

"We looked at the relevant technologies and made sure we used the most efficient ones," says Townsend. "Those that generated the least amount of heat, needed the least amount of maintenance, and would meet our safety and regulations standards."

Cisco, together with Fujitsu, was awarded a contract to provide the underlying new wireless infrastructure. A pilot was arranged to study how travelers would take to the technology and what value underground operational staff would get from the deployment. "We wanted blanket, seamless coverage from the moment you entered the ticket hall, so travelers would not lose their connections as they moved about the station," says Townsend.

The contract also included the planning and implementation of the Wi-Fi network, supported by a core network design validated by Cisco Services that helped accelerate the pace of deployment. "The Cisco Services people were a solid part of the design team and they brought value across the whole of the program from the perspectives of time saving and adherence to industry standards," Townsend says.

The Wi-Fi network (commonly known as the core) is owned and provided by TfL, and Virgin Media provides travelers with access to the World Wide Web.

Results

When the service went live, initially across 40 stations, it delivered one million Tweets, Facebook posts, emails, and web pages in a single week and was used by more than 100,000 passengers in the first four weeks. The service did not fail during the Olympics, and the feedback from users was that it helped improve their enjoyment of what was known as "the first digital Games". London citizens and visitors continue to enjoy those benefits today.
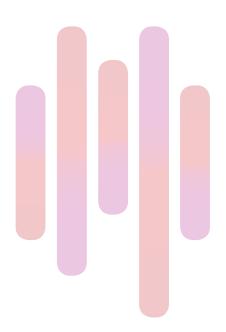
The Wi-Fi service, enabled by Cisco and Fujitsu and delivered by Virgin Media, has now been extended to 120 underground stations. An analysis of data traffic patterns shows travelers using the wireless platform for a whole range of applications, from journey planning and online shopping to email and social media browsing. Wi-Fi availability has also helped lift customer satisfaction scores for London Underground.

Gareth Powell, director of strategy and service development for London Underground, says: "Wi-Fi at our stations is proving extremely popular with customers. Millions of commuters and visitors from around the world are now able to keep up with live travel updates, news, and entertainment."

In addition to the very real benefit of giving travelers a way to access online content while traveling below ground, the infrastructure has brought greater back office capability. "The way we manage our stations from a resource perspective, and the accessibility to tools, has been greatly enhanced," says Townsend.

Furthermore, Wi-Fi is helping operational staff get better and more timely information about what is going on across the transport network, which assists in more efficient operations.

And it's easier to deliver new services. Townsend says: "When CSAs went below ground, out of the reach of traditional mobile networks, we were unable to send them real time information in bulk. This meant they often had to return back to the office during break times. They could, of course, be passed information via radio, but this would then mean they would have to remember it or somehow write it down."

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With Wi-Fi, however, CSAs can use handheld devices to access large amounts of real time data about the state of London's travel system, which means they are better placed to offer guidance and advice to travelers. The London Underground Control Centre now broadcasts this same information on a regular basis, so both are fully synced.

"Another potential advantage of the Wi-Fi network is that it can be used to retrieve conditional monitoring data from trains and other assets operating deep below ground on a daily basis," adds Townsend. "The benefit of this approach was demonstrated during the Games when Wi-Fi was used to monitor particular trains so they could be taken out of service and replaced if there were signs they might break down, thus reducing the likelihood of unforeseen service disruptions."

This capability is now being extended to other assets such as lifts and escalators, using the kinds of real time machine-to-machine and sensor-to-machine communications increasingly prevalent in the era of the Internet of Everything.

Townsend sums up: "These benefits have been achieved with a return-on-investment model that imposes a zero financial burden on TfL and could help enable the organization to achieve greater network infrastructure efficiency in future, significantly reducing its IT costs."

For More Information

To learn more about the Cisco architectures and solutions featured in this case study go to: www.cisco.com/go/wireless

Product List

Routing and Switching
• Cisco Catalyst® 3750 and 6513 Series Switches

Wireless
• Cisco 3502 and 3602 Wireless Access Points with CleanAir® technology
• Cisco Wireless Services Module 2 (WiSM2) controllers
• Cisco Mobility Services Engine
• Cisco Adaptive Wireless Intrusion Prevention System

Services
• Cisco High-Level and Low-Level Design

Management
• Cisco Prime™ Infrastructure