Public Venue:
Vivid, Sydney

OVERVIEW

Vivid Sydney is an 18 day festival of light, music and ideas, which runs from 23 May to 9 June, 2014. 1.43 million people attended this year's event, engaging with over 50 light installations, brought to life by 140 artists from 15 countries.

WHAT THEY NEEDED

- Required accurate location based data
- Proven wireless capacity covering high density outdoor environment
- Flexible AP installation/mounting options

SOLUTION

- SPoT Cloud-hosted Positioning Engine
- 25 ZoneFlex 7762 802.11n Outdoor Wi-Fi Aps
- 10 ZoneFlex 7731 Point-to-Point/ MultiPoint Bridges
- ZoneDirector 3000 Smart Wireless LAN Controller

BENEFITS

- Fewer APs required and installation
- Consistent signal strength and performance
- SPoT enabled accurately mapping and projection of Wi-Fi device density
- Reduce IBM to build the solution in half

THE CHALLENGE WITH PUBLIC VENUES

Ruckus helped IBM put the lights on location at Vivid Sydney. Ruckus SPoT™ location technology was used to light up IBM Vivid installation in first ever outdoor LBS solution in the Southern Hemisphere.

Vivid Sydney is a unique annual event of light, music and ideas. It is the largest event in the Southern Hemisphere and is sponsored by Australia's NSW Government and corporations to encourage people to come out during the winter season and stimulate the economy in Sydney. Vivid's light festival transforms Sydney into a wonderland of 'light art' sculptures, innovative installations and grand-scale projections.

From 23 May to 9 June 2014, the harbour city was awash with colour, in what was the biggest and brightest Vivid Sydney festival to date. Over 1.43 million people attended this year's event, breaking the record set in 2013, which included more than 19,000 international visitors. Vivid Sydney provided visitors with over 50 light installations around the city, including Vivid Aquatique Water Theatre at Darling Harbour, Sydney Opera House Sails, Museum of Contemporary Art Australia and Martin Place 'Urban Tree Project'.

Figure 1: Ruckus SPoT™ location technology was used to light up the IBM Vivid installation in the first ever outdoor LBS solution in the Southern Hemisphere.

Public Venue
Vivid, Sydney

wired sky

THE PROJECT

At this year's festival, IBM wanted to use data to create a transformative experience, fusing the physical and digital worlds. This took the form of a IBM 'Heart of the City' installation, which used data collected from the event and visualised it in a beautiful way. The installation displayed real-time data of the overall foot traffic from the Vivid Light Walk, allowing IBM to display real-time data relevant to the audience in a dynamic way.

"We wanted to visualise and capture the buzz of the event. To do so, we needed to source and find some sort of big data that we could visualise in a physical location at the lightshow, as well as on the web," explained Kurt Solarte, Design and Delivery Lead IBM Interactive Experience. At the IBM installation in Circular Quay, festival goers were able to view live data highlighting the busiest areas, key destinations and average time spent viewing the installations in the Vivid Light Walk precinct. This real-time information could not only help visitors navigate their journey on the ground, but also provides valuable insights for festival organisers.

Figure 2: (Above) Ruckus ZoneFlex outdoor access points are installed upside down on the light boxes throughout the Vivid Light Walk, capturing the buzz of the event.

To achieve these goals, IBM required a solution that was proven in supplying wireless capacity covering wide ranges and a complex, high density outdoor environment. It needed to provide accurate location based analytics of the foot traffic at the event, covering as much of the light walk as possible, which equated to 600-700,000m2.

A key challenge in this deployment was time – it needed to be implemented in a matter of weeks. Speed was of the essence and IBM put out a tender to find a reliable, robust and accurate location based services Wi-Fi solution.

THE DEPLOYMENT

IBM partnered with Ruckus Wireless and reseller Wired Sky to present the first ever outdoor LBS solution in the Southern Hemisphere. In the first instance, Wired Sky thought that they would be able to mount the Ruckus Smart Wi-Fi Access Points (APs) on light poles around Circular Quay. However, it soon transpired that this was not an option due to Sydney Council's requirements.

"From our perspective, if we had to use a different vendor, we would have walked away from the project and said it couldn't be done," said Matt Hall, Director at Wired Sky. "You have to be very specific with where you place other wireless APs, as you have to triangulate the location of devices and they are less adaptable due to the omnidirectional antennas and fibre cabling requirements. However, with Ruckus and its BeamFlex and SmartMesh technology, we were confident we could still roll-out the solution."

"Ruckus BeamFlex technology was an important piece of the puzzle," said Hall. "Due to the restrictions of mounting APs on the light boxes, we had to install them upside down. Traditional omni-directional antennas would have failed or performed poorly at this point but because BeamFlex directs transmit energy towards the best path to the receiving

Ruckus
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device, they still worked extremely well." Following confirmation of the final locations of the light boxes, Wired Sky was able to deploy the network within three days.

HITTING THE SPOT

Prior to deploying the solution, Wired Sky mapped out the lightwalk, potential location of APs and light installations. A Ruckus SPoT (Smart Positioning Technology) instance of the map was then created in the cloud. These details were converted to vectorised maps, with enhanced details and multi-zones, which could then be amended following the final location of the light boxes.

Ruckus SPoT combines unique advantages, including being completely cloud-based and offering higher accuracy and performance more cost-effectively. This means venues with Ruckus Smart Wi-Fi installed do not need any additional hardware to be "Location Intelligent" and can take advantage of third party analytic offerings through an open API.

In order to accurately pinpoint in real time a user's location, a one-time calibration of the deployment was required. "The Ruckus LBS technology is very simple to use and deploy. Essentially it's a checkbox on the wireless controller to get the LBS up and running," said Hall. "Then there is a small amount of calibration to be done with the APs. This involves downloading a free Ruckus calibration mobile app and marking your specific location in relation to each AP. This took no more than eight hours."

"The best way we found to collect the data we required and to capture Vivid's buzz was to use the SPoT cloud services provided by Ruckus," said Solarte. "The biggest differentiators for Ruckus were that it is completely cloud-based and the fact we had API access, providing us with easy to use, customisable, real-time location data."

All LBS data collected by the APs was sent securely to the Ruckus SPoT Location Engine in the cloud. The IBM Analytic Cloud Engine obtained the Ruckus SPoT data via API calling to provide a customised report. IBM then passed the analysed information to another system that mapped and projected the density of Wi-Fi devices detected onto the 3D heatmap at the event site, which lit up with different colours to indicate the density of Wi-Fi devices detected.

Figure 4: (Above) Ruckus cloud-hosted SPoT provided insights into visitor footfall.

Figure 5: (Below) Ruckus cloud-hosted SPoT provided a heat map of visitors, allowing Vivid to oversee visitor density and follow their path throughout the festival.

> "The best way we found to collect the data we required, and to capture Vivid's buzz, was to use the SPoT cloud services provided by Ruckus. It allowed us to build the solution in half the time it would have taken to custom write it all. The data provided was really accurate and ready to use in an instant."

Kurt Solarte
Design and Delivery Lead

IBM Interactive Experience

"The fact we could access the Ruckus SPoT solution was essential for our light installation and analysis of the density of Wi-Fi devices. It allowed us to build the solution in half the time it would have taken to custom write it all," said Solarte. "The data provided was really accurate and ready to use in an instant. We could get the data from the AP to Ruckus SPoT, to our Cloud Engine and onto the physical display in a matter of milliseconds."

Alongside the light installation, the deep analytics provided by Ruckus SPoT meant that IBM was able to pull some interesting insights for the festival. IBM were able to visualise the footfall traffic, by zone and time, as well as see the total amount of traffic, repeat vs new visitors, average dwell time and dwell time distribution.

"The light installation was very popular amongst visitors due to the beautiful way we visualised the data captured. We also found our website, providing a retrospective view of the event, was popular," said Solarte. "Not only is LBS technology peaking people's interest internally at IBM, but the public and events organisations, like Vivid, are intrigued by this information too."

Over 750,000 devices were detected at the event, with people visiting four installations on average. IBM also found that 7pm was the busiest time during the event, with the average dwell time being almost 12 minutes (from 18th May – 1st June).

Ruckus Smart Wi-Fi was a vital component to the success at Vivid and has long been a leader in high-density Wi-Fi deployments, the cornerstone of which has been its BeamFlex adaptive antenna technology.

"Wired Sky as a business is a bit like a wireless bootcamp. There's a lot of wireless stuff that comes here that doesn't last very long or fails in one or two environments, such as super high-density environments like stadiums. There has only been one graduate of this school and that is the Ruckus Smart Wi-Fi," concluded Hall.

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