



# McCarran Airport Case Study

## Business Challenge

The McCarran International Airport, located five miles south of downtown Las Vegas in Clark County, Nevada, is one of the busiest commercial airports in the United States. The geographic location of the airport between the Midwest and the West Coast and the close proximity to the Las Vegas Strip make McCarran an attractive place for a layover<sup>1</sup>.

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With over 40 million passengers yearly, the McCarran Airport requires high levels of bandwidth to accommodate the constant need for data<sup>2</sup>. Distributed Antenna Systems (DAS) offer wireless service providers the ability to boost cellular coverage, improve reliability and alleviate congestion on wireless networks, benefiting enterprising and retail shop owners by improving customer satisfaction.

In 2008, Verizon Wireless, acting as lead carrier, commissioned Ericsson, Inc. to develop and install a neutral-host DAS at McCarran. The four major U.S. carriers (Verizon Wireless, Sprint, AT&T and T-Mobile) hold an equal share in the project to this day. The project also involved the construction of a head end and a base transceiver station (BTS) hotel facility complete with environmental support sub-systems, such as 60T heating, ventilation and air conditioning (HVAC), fire protection, fire alarm, security and building management control system (BMCS)-integration. What made this especially unique and challenging was the fact that this campus-wide project was within an operational airport. At the time, McCarran had two terminals – Terminal 1 and Terminal 2 – and the D-Gates Satellite Concourse<sup>3</sup>. Ericsson, Inc. asked Pinnacle Wireless to bid on the project, and in August 2009, selected Pinnacle Wireless as the General Contractor.

## Solution

The project took-off in September 2009. The team had to delicately integrate the necessary equipment while ensuring no outages for existing customers. Ericsson, Inc. performed the radio frequency (RF) engineering, the supply of DAS equipment – electronics, antennas, coax – as well as the integration, commissioning and system fine-tunes of the DAS. Verizon Wireless and the other carriers supplied their respective base stations and allied equipment, plus all of the associated cell-site integration efforts.

Since McCarran Airport network users are travelers using a multitude of carriers, a neutral-host DAS system was deemed necessary. Pinnacle Wireless has extensive experience partnering with multiple carriers and integrating systems to meet such specifications – we are uniquely vendor agnostic for an unbiased approach to delivering the best solutions.

### As General Contractor, Pinnacle Wireless managed a variety of change orders, including:

- *Installing BTS equipment for certain carriers*
- *Installing antenna systems for location-based services (See Exhibit 1 for more information)*
- *Upgrading of the DOA's existing fiber plant for DAS use*
- *MIMO-retrofits*
- *Building the site for and installing a 450kVA generator*

Pinnacle Wireless met the construction, engineering and management challenges, thereby allowing Ericsson, Inc., its client Verizon Wireless and the other carriers to go live by New Year's Eve 2010.



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## Results

After years of development, the McCarran DAS project was officially deemed complete in April 2012 (See Exhibit 2 for a complete list of Pinnacle Wireless' project work). Since the completion of the project, the McCarran Airport has regularly appeared on "America's Best Airports" lists<sup>4</sup>. The increase in cellular coverage has also contributed to McCarran's status as a great airport in which to spend time<sup>5</sup>.

### Terminal 3

Towards the end of 2011, as construction of McCarran's new Terminal 3 was nearing completion, Pinnacle Wireless was appointed by Ericsson, Inc. as the General Contractor for a new project, to install and build the terminal-wide DAS and associated head end facility for the terminal.

The Terminal 3 project was completed on schedule and within budget, opening to the public on June 27, 2012, with the DAS on air for all carriers. The high-tech structure added 117 gates, its own separate ticketing, baggage claim and parking facilities. Terminal 3 expedited the travel experience with self-boarding gates and hi-tech aircraft docking systems that automate the aircraft alignment process. One thousand LEED and LCD displays throughout the terminal provide up-to-the-second airport data<sup>6</sup>.

The McCarran Airport is currently the ninth-busiest airport in the United States<sup>7</sup>. In 2013, the first full calendar year of operations with Terminal 3, total passenger traffic increased by about 189,000 more passengers. Significant gains included 3.4% more international arrivals and 4.1% more passengers in the critical travel month of December<sup>8</sup>. The airport remains focused on meeting and exceeding customer needs through the usage of cutting-edge technology. They are currently in the process of deploying free WiFi for passengers stuck aboard arriving and departing aircraft<sup>9</sup>.

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### Exhibit 1 – Location-Based Services

Location-based services (LBS) allow mobile devices to locate the user's location for various applications (e.g., navigation, ATM locations, restaurant recommendations, etc.). This feature works independently of GPS. The LBS-capability installed for this DAS system was unprecedented. Indoor LBS presents a distinct engineering challenge for the customer engineers, with the difficulty of managing the path of the signal to reach the user through multiple sectors in a large indoor campus implementation. Upon completion of the project, Verizon Wireless became the first carrier to offer indoor LBS-capability.

### Exhibit 2 – Pinnacle Wireless McCarran DAS Project Work

In total, Pinnacle Wireless deployed over 270 antennas, over 24,000 feet of raceways with over 50,000 feet of coaxial cabling and 36 repeaters to cover an aggregate area of about 1.8 million square feet, inclusive of a 0.5 mile tram tunnel. This included the installation of 24,000 feet of parallel raceway for future coax plant expansion, plus the facilities associated with the head end.

### Exhibit 3 – Testimonials

#### Ericsson, Inc. – McCarran DAS Projects

Jan Pedro Rosenkvist is Ericsson, Inc.'s Customer Project Manager for the McCarran Airport Projects.

***"I would like to say thank you to the Pinnacle team for their steady and professional approach to getting these projects completed."***

***The Terminal 3 opening was another proud occasion for the McCarran DOA. It is also a proud moment for the DAS team as we meet the expectations of the customers that travel through that terminal and for the personnel who work there."***

Jan Pedro Rosenkvist, Customer Project Manager  
for the McCarran Airport Projects

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