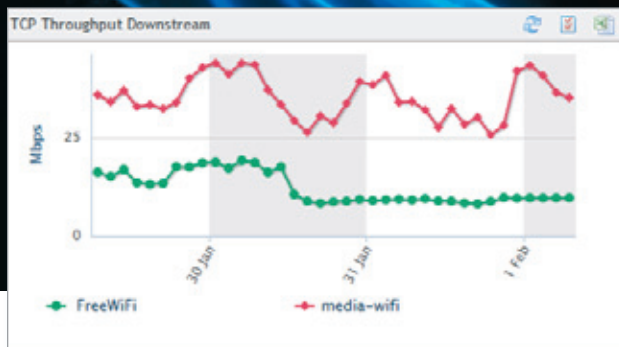


CUSTOMER CASE STUDY

Wifi Quality Delivered at PGA



“We were proud to help deliver world-class Wi-Fi quality at this prestige event.”
 Brad Whitehead, Spirent Account Manager,
 Service Assurance

A major us carrier committed to delivering the very best quality wi-fi service to the record-breaking crowds that attended the PGA phoenix open 2014.

Using Spirent’s AxonPulse Active Monitoring and Testing Solution, issues that affect coverage and performance were immediately addressed.

The Challenge

With attendance levels of over 500,000 on six occasions in its 75 year history, and expectations to shatter the attendance record in 2014, the Phoenix Open draws the largest crowds on the PGA tour.

The challenge for this major carrier was to deliver a wi-fi service that would cover the 110+ acre site, and handle the forecasted tsunami of bandwidth demand from fans, media, players and organizers.

Cisco was selected to provide world-class infrastructure, however the diagnostic capability stopped short of providing a quality of experience view.

To ensure any subscriber-affecting issues were discovered and corrected immediately, the carrier needed a wi-fi service assurance solution that would monitor quality from an end-user viewpoint, and deliver that insight immediately to a network operations center for proactive fault resolution.

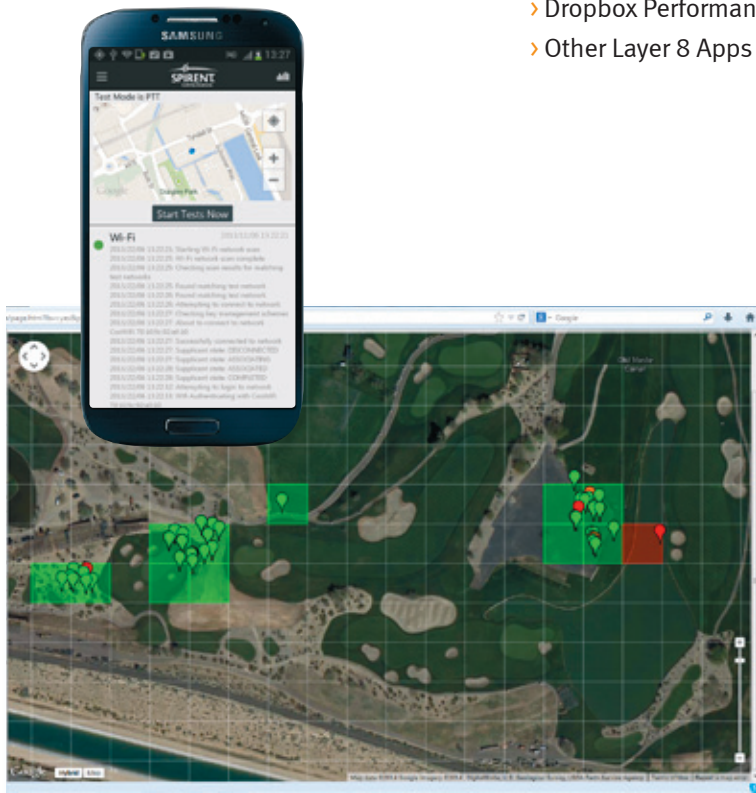
The quality assurance solution needed to have both a steady quality monitoring capability plus a mobile analysis capability for measuring coverage anywhere. Finally, the system needed to be quickly up & running, and easily removable after the event.

The Solution

The carrier chose the AxonPulse Active Monitoring and Testing Solution as its quality cornerstone.

AxonPoint devices were deployed at key areas around the course, buildings and public areas to monitor services 24x7 for the various SSIDs available to the press, staff and public. To ensure coverage, AxonPoint for Android was installed on the smartphones of field technicians who could roam anywhere and immediately see any black spots or areas subject to channel interference.

All results were immediately sent to the AxonCloud Control for real-time analysis. A daily report was also circulated for review by quality stakeholders.



Testing Coverage

AxonPoint for Android allows field engineers to run a full suite of network tests from a smartphone including RSSI signal strength and channel interference. Straight away signal strength were identified. What this discovery revealed was that the exhaustive radio plans did not translate into 100% actuality. Real-time insight allowed the carrier to immediately address the issue in time for the event.

Monitoring Quality Of Experience

AxonPoint devices ran test scripts continually throughout the tournament providing real-time data on the key performance and quality indicators that affect user quality of experience, including;

- › Time to Connect
- › Download/Upload Speed
- › Web Browsing Performance
- › Network Latency
- › DNS Performance
- › Wi-Fi Signal Quality and coverage
- › YouTube Video Performance
- › Dropbox Performance
- › Other Layer 8 Apps Performance

Several SSIDs were designed to meet the needs of separate user groups including a special service for the world media who required 25Mbps upload speeds for bandwidth-consuming video and hi-res imagery.

AxonPulse revealed that the high-speed Media QoS profile was incorrectly implemented and consequently the Media were not getting the fast uplink they required. Once alerted, on-site staff soon remedied the situation.

Wi-Fi Top Of The Leader Board

Analysis of the data collected showed that this major carrier delivered excellent Wi-Fi service quality throughout the tournament, including the Saturday where an attendance of 189,000 fans set a new single-day world record for golf tournaments.

Considering the scale of this event, the massive daily crowds and the demand for Social Media and online apps, Wi-Fi Quality was at the top of the leader board.

Metric Averages	Media Center	Public
Wi-Fi Time-to-Connect	3.0 sec	3.0 sec
Throughput Speeds (Layer 4) Down/Up	36.0 Mbps / 8.8 Mbps	13.1 Mbps / 3.1 Mbps
Web Browsing Speed	31.4 Mbps	12.1 Mbps
YouTube Video Load times	Load Time 1 sec Rebuff Time < 2sec	Load Time 1 sec Rebuff Time < 2sec
Network Latency	78 msec	78 msec
Dropbox File Transfer Speed Down/Up	6.7 Mbps / 3.0 Mbps	5.7 Mbps / 2.2 Mbps