



### Company

National Event Center  
Entertainment

### Key Issues:

- Needed to validate Wi-Fi network performance
- Needed to validate tiered data service offerings

### Solutions:

- IxChariot
- IxVeriWave

### Results:

- Reduced network latency
- Found two application-affecting defects
- Optimized radio coverage patterns

## Entertainment Arena Validates New Cutting-Edge Wi-Fi Services

### BETTER CUSTOMER EXPERIENCE MEANS BETTER CUSTOMER ATTENDANCE

An entertainment company located in the United States wanted to deploy 21st century technology to reduce network performance issues and improve customer experience. The entertainment company had a bad experience in the past where new technology improvements did not function as stated. This time, it wanted the system validated first.

The arena wanted to deliver an “experience” by offering new paid data services to customers to enhance their in-stadium experience. Cellular data services could not handle the demand for high-data rate services in such a dense area. Some of the features included electronic ordering and payment for food and drinks from arena seats, location/navigation to seats, access to live interactive content, and access to alternate data feeds/views during events. A free version of the service was available for 10 minutes as an enticement, but then a subscription (for the duration of event, monthly, or annually) was required.





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— Chief Architect

The arena upgraded its Wi-Fi network to support connection speeds up to 300 Mbps for 5 GHz networks using IEEE 802.11ac. This included almost 600 endpoints and miles of fiber optic cable. Older a/b/g/n Wi-Fi devices can still be used at slower speeds. Once the upgraded system was in place, the customer had the vendor perform real-world validation of the network to deliver objective proof that the solution actually worked as specified. Ixia delivered that proof.

### CUSTOMER ELIMINATES TWO PERFORMANCE DEFECTS

The IxChariot solution placed endpoints all over the stadium. Software loaded onto a server in the core pinged the different endpoints to capture details on key performance metrics, including throughput, packet loss, jitter, delay, Mean Opinion Score (MOS), and application latency. Application traffic was also generated by IxChariot to simulate real-world loading. This included voice, video, Netflix, Facebook, etc.

During the course of testing, two performance-affecting defects were found by Ixia’s IxChariot when the simulated application data was tested. The defects were found in the network switching setup, which was causing certain applications to run slowly. Using the captured data details, the switch programming was corrected.

This was what the Chief Architect had been afraid of—a hidden performance problem that would be difficult to isolate without actual (or real-acting synthetic) traffic loading. According to the Chief Architect, “Finding these two defects saved me hundreds of man hours and eliminated multiple bad customer experiences. If you want customers to actually pay for services, those services need to work right, all the time. I have the confidence in my system now that I didn’t have before.”

Other testing results helped improve the latency of the network as a bottle neck was discovered and eliminated. Once realistic data loading was run, the simulations showed how much throughput would pass through that portion of the network and the delays associated with it. This bottle neck was eliminated before the network went live for actual customer traffic.





## WI-FI RADIO PLAN IS OPTIMIZED

During the post-installation evaluation process, the wireless local area network (WLAN) was tested using the IxVeriWave product. While IxVeriWave is normally used to pretest deployments by modeling Wi-Fi Access Point (AP) frequency plans, the vendor had used another product instead. Once the IxVeriWave solution was installed (during the post Wi-Fi infrastructure installation portion of the project) and scanned the indoor and outdoor radios, it identified two instances of co-channel interference and one poor coverage area (due to interference from rebar and other metals that did not show up on the original simulation). The frequency plan was modified, and the interference problem was solved with the addition of another Wi-Fi radio.

After seeing the results, the customer plans to have its contracted service provider pre-test all future hardware and software rollouts to the network using the IxChariot and IxVeriWave products.

### IXIA WORLDWIDE

26601 W. Agoura Road  
Calabasas, CA 91302

(Toll Free North America)

1.877.367.4942

(Outside North America)

+1.818.871.1800

(Fax) 1.818.871.1805

[www.ixiacom.com](http://www.ixiacom.com)

### IXIA EUROPE

Clarion House, Norreys Drive  
Maidenhead SL64FL  
United Kingdom

Sales +44.1628.408750

(Fax) +44.1628.639916

### IXIA ASIA PACIFIC

101 Thomson Road,  
#29-04/05 United Square,  
Singapore 307591

Sales +65.6332.0125

(Fax) +65.6332.0127