Bright House Networks Lights Up Forum with World-Class WiFi Enabled by Cisco

Executive Summary:

Client:
Tampa Bay Times Forum

Challenges:
- Outdated network
- Unique venue
- Building was a "dead zone"
- Unhappy fans

Solution:
- World-Class WiFi Network
- 10 Gbps bandwidth
- 225 wireless access points

Results:
- Guests can easily connect to the network
- Scalable network for future growth
- Capacity for even the largest events

Although it didn't happen on the ice, the Tampa Lightning scored one of the biggest goals of the hockey season this past year. With huge assists from Bright House Networks and Cisco, the Lightning transformed their home arena into a state-of-the-art stadium WiFi venue.

When the Lightning opened their season against the Washington Capitals on Jan. 19, the Tampa Bay Times Forum (TBTF) boasted a new $1 million WiFi network that now ranks among the world's finest in sports and entertainment facilities. The world-class WiFi network -- planned and built by Bright House engineers using the Cisco Service Provider Wi-Fi solution and professional services last summer -- offers guests blazing broadband speeds so that they can use the same consumer electronics devices and enjoy the same rich-media services that they can at home.

As a result, guests can now easily make phone calls, exchange e-mails, check breaking news and sports scores, catch instant replays, send photos and search the Web while attending hockey games, concerts, basketball games, circus performances and other events at the arena. They can also update their Facebook pages, tweet, watch online videos and do anything else they could do on their home or office broadband networks.

"It's like you're instantly connected," says Craig Cowden, senior vice president of network engineering and operations and enterprise solutions for Bright House Networks. "Everyone in the venue also has access to a wide collection of sports-related Web sites, including the ESPN, NHL and Tampa Bay Lightning sites."

Those using the WiFi network benefit from low connection costs as well. Lightning suite members and Bright House Networks broadband customers receive free service with the credentials from their Bright House accounts. Non-Bright House Networks broadband customers pay $3.95 for four hours of service, and this price is cut in half for season ticket holders.

The new WiFi network is off to a great start. Over the first three months of the hockey season, network use grew steadily as attendees learned more about the venue's new capabilities. Lightning executives reported that 1,000 to 3,000 fans tapped into the network simultaneously at any given time during games, far below the network's vast capacity for concurrent usage.

"The network itself has been really, really fantastic," says Ian Steele, director of information technology (IT) for the Tampa Bay Lightning, which owns and runs the arena. "I've heard nothing but good things from our fans."

Steele's sentiments represent a marked improvement from previous hockey seasons, when fans regularly complained about the TBTF's poor wireless service. In fact, up until this past season, fans attending events at the 17-year-old arena would consider themselves lucky if they could get so much as an occasional dial tone on their mobile handsets.

"We were known as the place where no one's cell phone worked," Steele says. "You entered this building and it was a dead zone. You might as well as left your cell phone in the car."

And for good reason. Before Bright House Networks and Cisco went to work last summer, the TBTF had nominal WiFi capabilities to serve the growing needs of technology-savvy guests. Designed in the mid-1980s and built in 1996, the TBTF had just a minimal fiber backbone to serve the Lightning's basic office and food service needs. "This building was old," Steele says. "It was just not built for IT."

That all began to change in late June 2012 when the Lightning signed a seven year deal with Bright House Networks to develop, operate and maintain an advanced WiFi network that could meet the Lightning's current data requirements, as well as provide a scalable platform for launching enhanced broadband services in the future.

"I was looking for a custom, high-density solution built for a stadium, not an outdoor plaza," Steele says. "I wanted to make sure they weren't going to go out and buy access points (APs) off the shelf, hang them up and hope for the best. I wanted a real design plan."

Lightning officials chose Bright House Networks because of the cable and telecom company's success in developing both indoor and outdoor WiFi hotpots throughout a large swath of central Florida. With more than 17,000 public WiFi hotspots deployed in the Tampa/St. Petersburg and Orlando/Space Coast metro areas for both residential and commercial customers, Bright House engineers were well positioned to take on a major-league arena.

Moreover, Bright House had already built out thousands of hotspots for the enterprise and hospitality markets, serving commercial-class WiFi to businesses ranging from small restaurants to mega-resort vacation properties. Plans call for adding thousands more such hotspots over the next couple of years, greatly increasing the cable and telecom company's wireless broadband reach.

Lightning hockey executives also liked that Bright House Networks approached them first about forming a partnership to build and install the state-f-the-art WiFi system at TBTF. "It was great timing," Steele says. "They came to me."

The Lightning signed off on the project last summer because of the rapidly approaching Republican National Convention (RNC). Slated to be held in both the arena and the Tampa Convention Center next door, the RNC was set for the last week of August, more than a month before the normal start of the hockey season. To support the RNC's communications needs, a robust and secure WiFi network was required to serve both the convention center and the arena.

"What really spurred it on was the RNC," Steele says. "With 50,000 people coming to Tampa, that gave us a reason, a real monetary reason, to ramp up the TBTF's networking capabilities."

With the Republicans and droves of media professionals from around the world set to converge on Tampa in less than two months, Bright House Networks faced a daunting task. Typically, it takes at least 90 days to wire up large sports stadia and arenas for WiFi service, including such recently wired facilities as Cowboys Stadium in Dallas, Olympic Stadium in London and the Superdome in New Orleans. But because the convention was taking place in less than two months, Bright House Networks needed to accelerate the development pace greatly while maintaining the highest quality standards.

In other words, lightning-fast speed would be needed to wire the Lightning's home in record time for the RNC. Fortunately, Bright House Networks and its partners at Cisco were more than up to the task.

"While we had confidence in our design and implementation capabilities to provide carrier-class WiFi services at scale, we were challenged by the aggressive timeline tied to support the RNC," Cowden says. "In the end, the entire team just accepted the compressed schedule as another challenge to overcome."

Indeed, with less than 45 days to plan, design, build and test an advanced WiFi network in the aging arena before the RNC moved in for business, Bright House Networks quickly mobilized a team of 20 highly skilled engineers and technicians to tackle the challenge. This team immediately launched an extremely accelerated, two-week planning process to design the network and kick off the effort.

At the same time, the Bright House Networks team began assembling talented consultants and contractors to help with the project. Most notably, they partnered with Cisco, tapping into the computer networking company's vast design and consulting experience to create the network. But even Cisco, which had already helped build large WiFi networks for the New Orleans Superdome, London's Olympic Stadium and about 10 other stadia and arenas throughout Europe and the U.S., had never worked on such an aggressive network development and deployment schedule before teaming up successfully with Bright House Networks.

Working in tandem, the Bright House Networks and Cisco engineering teams designed a diverse core fiber network with 300 strands of fiber and 10 Gbps of bandwidth capacity, which amounted to orders of magnitude more robust than anything the TBTF had ever seen before.

The engineering teams also deployed the most advanced networking equipment available, including high-capacity routers and switches for directing and shuttling all the traffic around the arena. And they began installing an array of 225 high-density wireless APs, or wireless directional antennas, to beam signals to every nook and cranny of the 22,000-seat arena.

But, while the network design plans came together right away, the engineers had to overcome a number of logistical issues because of the unusually compressed schedule.

In particular, the hundreds of wireless antennas posed tricky challenges for the engineers designing and building the network. With space extremely tight in the arena, they quickly realized that they would have to install the directional antennas on catwalks high above the central bowl and near entrance gates, as well as in crowded concourse areas, bars, clubs, luxury suites, food stalls, and restaurants. And, in many cases, they would have to make sure that the APs were not noticeable to attendees.

Of course, the Bright House Networks and Cisco engineers also had to grapple with the basic problem of wireless interference. They had to design a robust WiFi network that could support thousands of different cell phones, tablets and other mobile devices, many of them being used at the same time, without disrupting service to any of them. In doing so, they had to take into account such critical factors as signal reflection off the cold ice surface and signal absorption by warm human bodies.

"A stadium is really a terribly challenging venue for WiFi because of all the different devices people bring into it and all the noise that's created by cell phones, tablets, etc.," says Brad Freathy, vice president of enterprise sales and solutions engineering for Bright House Networks. "We tried to head off the main challenges by designing a network that could handle people using a ton of bandwidth."

The engineers overcame the wireless interference issues by posting two different types of APs around the arena. Over the building's central bowl, far above the ice floor, they positioned three layers of larger, 18-inch by 11-inch antennas to focus energy on the smaller, eight-inch-square antennas serving the seats. In all, more than 90 of the larger APs feed the smaller square antennas, which each serve one seating section.

Despite all these technical and timing hurdles, the tremendous amount of coordination required and almost no margin for error, the Bright House Networks and Cisco teams met their near-impossible deadline and delivered an exceptional product for both the RNC and the Lightning. By the time the RNC opened for business on Monday Aug. 27, the new TBTF WiFi network was up and running smoothly. In the end, little fine-tuning was needed.

"We got the network in place," Cowden says. "It really became a tent pole for us to leverage for future large-scale enterprise endeavors." In fact, having completed such an intricate project in such a short period, the Bright House engineers felt as if there were no project they couldn't tackle.

"The demand for mobile devices and network connectivity continues to grow while cost effective WiFi access is critical for meeting the needs of mobility-enabled consumers in the Tampa Bay Times Forum," said Dr. Partho Mishra, vice president and general manager, small cell technology group. "Bright House Networks is in an enviable position of being able to successfully provide an enhanced experience for their customers through transforming wireless Internet access and offering higher speeds, robust security and more availability on almost any connected device in and around the Forum."

Nearly a year later, Bright House Networks and Lightning executives are now discussing ways to build on the new wireless infrastructure. Lightning executives are exploring such potential offerings as mobile apps for video streaming instant replays, game highlights and exclusive camera angles, expanded social media video contests and WiFi coverage of the arena parking lot, among other things.

"Who knows?" Steele says. "The possibilities are endless.... We're looking across the league, talking to our partners and seeing what they're doing."

With the TBTF project under their belts, Bright House Networks executives are also pursuing other sports stadia and entertainment arenas to help them with their WiFi networking needs.

In addition, the TBTF triumph has produced dividends outside sports venues. Bright House Networks is quickly becoming known in the central Florida business and hospitality community as the region's premiere WiFi design, implementation and service company.

"We're looking for other opportunities like this because we think there's real value there, and Bright House Networks is in the best position to deliver that value to our customers," Cowden says. "We're certainly ready and able to do the next one."