CASE STUDY MARKET: **SMART GRID** REGION: **UNITED STATES** COMPANY: **OPELIKA POWER SERVICES**

Opelika joins the most advanced cities with Ultra-Broadband communications

Opelika, Alabama's ultra-broadband solution enables Smart Grid and advanced consumer services while boosting their economic base

Opelika, Alabama (population 28,000), located in the south-central United States, has joined the ranks of the world's most advanced cities for communications infrastructure with a municipally owned 1 Gb/s, 450-mile fiber-to-the-home (FTTH) network. Managed by 52 municipal employees at Opelika Power Services (OPS), this city-wide ultra-broadband installation already enables high-quality triple-play services for residents and businesses, and soon will support a Smart Grid. This advanced communications platform is the first of its kind in Alabama and positions Opelika to compete successfully in the 21st century.

Challenges

- Establishing competitive broadband services for Opelika citizens
- Improving power grid efficiency through automation and monitoring
- Overcoming state restrictions on municipal financing for telecom projects
- Building a solid foundation for a dynamic economy and new job creation

Solutions

- FTTH backbone based on Nokia's Agile Optical Networking solution
- 1830 Photonic Service Switch platform
- Optical network terminals deployed at residences
- 7360 Intelligent Services Access Manager (ISAM) FX shelves
- OmniSwitch 6850E, Gigabit Ethernet switch at the aggregation layer
- 7750 Service Router for service aggregation, bandwidth management and subscriber control
- Integration of an IPTV solution
- Design, implementation, support and training

Benefits

- Opelika's ultra-broadband capability now rivals that of the fastest cities in the world, providing a superior economic base and quality of life for the future.
- The city's triple-play offering is cost effective and provides unmatched high-speed services for an enhanced user experience.
- Opelika's fiber network supports OPS's Smart Grid strategy for better energy management and usage.
- Opelika expects to earn back its telecom infrastructure investment within five years.

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David Horton, Director of Opelika Power Services

The challenges

Opelika, Alabama, is part of a greater metropolitan area with approximately 110,000 residents, including the university cities of Auburn and Columbus, Georgia. It sits at the intersection of several major highways and is just over an hour from Atlanta's international airport. Despite its favorable location near several industrial parks and a major regional medical center, Mayor Gary Fuller and other community leaders felt that Opelika's economic potential was being held back by a lack of cost-efficient and innovative communications services for businesses and residents. In the mid-2000s Fuller had tried to attract a competitor to the incumbent cable provider in order to provide more choice and higher-value service for city residents, but Opelika's relatively light population density made the commercial business case challenging.

In 2008 the city started looking for ways to improve its electrical distribution system with Smart Grid technology. Fuller attended a conference in Washington, D.C. and spoke to a former colleague who was managing a successful municipal broadband network in Tullahoma, Tennessee. That was the catalyst for what would become Opelika's transformation. "It became clear that the capacity of fiber is such that we needed to fully utilize it — not only for our Smart Grid project, but with video, ultra-high-speed internet and television service," says Fuller.

However, there were hurdles to making the project a reality. A state law restricted telecom financing by municipalities, and pole attachment agreements would be required to extend triple-play services to portions of the city that were served by other power companies. Additionally, the city would have to gain final approval for the project through a public referendum.

Why Nokia?

When Opelika set its sights on an ultra-broadband solution based on FTTH technology for both Smart Grid and triple play, it chose Nokia as its primary partner for multiple reasons.

“Nokia always seems to be on the cutting edge,” notes David Horton, Director of OPS. “They are forward-thinking and their technology is first rate. The Nokia team was involved in the planning as well as with the implementation. They have been great with structure and organization, as well as helping us with the unknowns. Our project manager does a great job at making sure that all of our supplies and needs are met.”

“We established a good relationship,” agrees Fuller, who notes that early on Opelika’s team visited Nokia’s testing facility in Dallas, Texas, bringing clarity to their needs, the appropriate solutions and other key aspects of the project. “Our rep spent a lot of time with us and helped us to see what could be done. From the outset we were impressed with Nokia’s great track record with the other communities they were serving.”

The solutions

Opelika completed a successful feasibility study for the project in 2009. That was followed by a public hearing and city-wide referendum in the summer of 2010 in which citizens approved the initiative. Pole attachment agreements with Alabama Power and the Tallapoosa River Electric Cooperative allowed Opelika’s broadband service to reach citizens who didn’t get their electricity from OPS, while a bond based on power utility revenue ensured that no tax dollars would be involved in the telecom financing.

Nokia then engineered and delivered a 450-mile optical backbone FTTH network to Opelika based on its gigabit passive optical network (GPON) technology, allowing the municipality to offer high-speed video, voice and data to every resident and business within the city limits.

Launched in October 2013, triple-play services are managed by OPS and are today offered in several tiers, ranging from 10/5 Mb/s up to 1 Gb/s for residential and corporate customers. “We pass by about 16,000 homes, and the studies we have done say we should capture 35 to 38 percent of those, ending up with 4000 to 5000 customers,” says Horton. The broadband buildout increased OPS’s staff from 30 to 52 total employees, with only a few working exclusively on triple play. Most staffers focus about 80 percent of their time on either the electric or the telecom side, but still divide their duties.

“Much of our original motivation to do this had to do with economic development and competition for services so that the citizens can have good, affordable options.”

David Horton, Director of Opelika Power Services

The benefits

Thanks to its advanced, city-wide broadband network, Opelika is now well positioned to compete for business, and expects to earn back its telecom infrastructure investment within five years. The city anticipates 2014 revenue of US $336,480 for telephone, US $738,000 for internet and just over US $1 million for video services.

Opelika’s triple-play offering has helped to bring down rates and increase service, with speed that cannot be matched by other providers. “When businesses look at a community in which to invest, they consider education, the libraries, and certainly having that fiber as well will be a tremendous calling card,” says Fuller. “Broadband is now among the top ten reasons for why companies want to relocate to a certain location, and this gives us something that no other city in Alabama has.”

“We have talked with many existing businesses about their current limitations and have demonstrated how the bandwidth will allow them to be more efficient, more productive, resulting in more revenue,” says June Owens, Manager of Marketing and Communication for OPS.

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Next steps

The Smart Grid portion of the project is still in development, with test meters currently in the field. Fault detection, teleprotection, SCADA and advanced automation throughout the grid are part of the entire plan to be executed on the electric power side. “Whenever we have a problem, whether someone knocks down a power pole, or we have a piece of equipment that operates inefficiently, this will give us the opportunity to see it and respond more quickly,” Horton notes. “It will enable us to become more efficient, get to a problem area faster, do switching without actually having to go to the scene and get people back on the grid in the shortest possible time. It allows us to be more proactive than reactive.”

Summary

“What we know today is what our infrastructure can do: It can provide bandwidth that people can utilize in ways that they can only begin to imagine,” says Owens. “Some may ask the question, ‘Who would need a gig,’ or even 50-25? Until it becomes available to them, they won’t know. The possibilities are now abilities. This network will allow people to test and develop their ideas.”

“When you grow up in a community like this, you really have a great desire to create a place where, after your children leave home and go to school, they can come back, find a decent-paying job and raise their own families,” says Horton. “The fiber network provides a great environment to attract diverse industry with good pay to help make that happen.”

“When we were planning this, we kept the larger metropolitan area in mind,” Fuller adds. “We now have the infrastructure in place to serve many more customers than those within the Opelika city limits. Having broadband is critical for a city these days, providing the same impact as the railroads, the airlines and the Interstate Highway System once did. This technology is the future, and its full impact will be greater five or ten years from now than it is today, because it’s going to be ever more critical for companies to have that speed of communications. I think we have a lot of opportunities.”

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