



CASE STUDY

Transforming an Alabama community into a smart city



Highlights

- Deployed Meraki wireless in government buildings for workers and for use by the public
- IT team simplified management, reduced troubleshooting, and saved time
- Started on smart city projects: public Wi-Fi, sensors, and LED street lights

“Tuesday is soccer night, so every Tuesday there are between 700 and 900 users on the guest network, and it works like a charm.”

STEPHEN DAWE

Chief Technology Officer, City of Opelika

LOCATION

Opelika, Alabama

INDUSTRY

Federal Government

PRODUCTS

MR - Wireless LAN

Overview

For Stephen Dawe, Chief Technology Officer at The City of Opelika, becoming a smart city means a lot more than piloting and implementing the latest technologies. It's about improving quality of life, furthering economic development, increasing educational opportunities, being good stewards of citywide resources, cutting down on crime, and reducing the digital divide. It's about using technology to benefit the entire community, help businesses succeed, and make government bodies more effective and efficient. However, before Dawe could even start thinking about making Opelika a smart city, he needed to determine a strategy for providing adequate network access in the areas that needed it most.

Demand drives change

Opelika, located in east Alabama, is the 11th fastest growing area in the United States, with around 36,000 residents covering 55 sq. miles. Dawe and his seven-person team are responsible for managing the IT infrastructure across the entire city, including all applications, data centers, wireless access, and other technologies used for departments such as police, parks and recreation, and fire. Dawe and his team are focused on delivering the best experiences for city employees and the general public and are continuously evaluating new technologies that can benefit the city, while remaining feasible and cost effective. When residents asked for wireless access at the city's sportsplex, Dawe began evaluating vendors that could handle thousands of devices on the network at once—and that the mayor's office would approve of.

Dawe has been a Cisco customer for years, so when he heard about the ease of management with Cisco Meraki access points, he decided to give them a try. The access points provided quick installation, easy provisioning, simplified troubleshooting, and network monitoring; so Dawe decided to deploy them at not only the Sportsplex, but also at city parks, the tennis center, three fire stations, the public works facility, environmental services, city hall, and the courts administrations building—just to start. He also deployed Meraki MS switches at several locations, with Cisco Catalyst switches supporting the underlying network infrastructure.

Meraki access points have dramatically changed how residents and workers connect to the city network by utilizing indoor access points for government workers to do their jobs, outdoor access points for parents to live stream their child's soccer games, and wireless security cameras to monitor equipment sheds that are connected over the Wi-Fi network. In the fire stations, firefighters can access the network 24/7 while fire trucks can be monitored wirelessly while in the engine bays. The public works facility provides connections inside and outside so employees can go online no matter where they are working, and security cameras can connect back over the network. Most impressively, are the connections at the Sportsplex, with coverage inside the gym, swimming pools, baseball diamonds, and five soccer fields. On soccer nights, around 900 people regularly connect to the network without a hitch, and the network even supported approximately 5,000 people at the state swim championships.

Beyond customer satisfaction with the wireless connections across the city, the IT team has realized several benefits since moving to Meraki. Deploying and configuring the access points was extremely easy: they just added them onto the correct VLAN and they were ready to go. With the built-in management tools in the Meraki dashboard, the team can easily monitor the traffic coming over the wireless network, see where users are accessing the network with heatmaps, get a breakdown of the devices and applications in use, and make adjustments accordingly via a web browser. Dawe highlighted, “Before Christmas, I was out of town at a function with one of my children, and there was a network problem. I just opened up the app and fixed it from my phone.” Dawe also has much more control over the network with the ability to limit application and session bandwidth for each client or for the SSID.

Meraki access points also give an added level of security. Dawe breaks down the city's SSIDs by department and offers a guest network which enables the team to enforce an access control list at every access point and at the switch level, providing two layers of security. They are also using firewall and traffic-shaping rules on the access points. Person-to-person (P2P) applications are blocked, and with the rules enforced on the access point, rather than the controller, it saves them a lot of bandwidth on the network and provides increased security. The team can also easily track and shut down rogue devices on the network. If someone plugs a wireless router into the office network, the Meraki network detects it and stops the device from connecting. For threat management and to detect network hackers and failing devices, they use a SIEM tool that is connected to the Meraki dashboard through an API. If there are more than 200 connections per minute from a single device trying to connect to one access point, Dawe receives an email and can easily ban the suspicious IP or MAC addresses.

Managing the access points and switches is much easier with Meraki. Only two members on the IT team know how to configure networking equipment with command line. By configuring and monitoring the devices through the Meraki dashboard, the entire team can manage the network, saving time and reducing troubleshooting to allow them to better allocate resources. With the time saved, the team has put a focus on researching and deploying smart city applications and technologies that put Opelika ahead of the curve in its mission to become a digital city.

“ With Meraki, managing the wireless network is so much easier. It has saved us time, allowing us to work on other things. As a city, we have some smart city initiatives, and getting time to work on that is crucial.”

STEPHEN DAWE

Chief Technology Officer, City of Opelika

The journey to become a smart city

Due to the time saved with Meraki, Dawe was able to spearhead the development of a strategy for becoming a smart city. With a systematic and thoughtful approach, Dawe analyzed various smart city initiatives to decide which projects to take on first. After looking at demand, financial feasibility, technological capability, and alignment to the city's mission, Dawe chose three citywide initiatives to start with: public Wi-Fi in city buildings and parks, environmental sensors, and street lights.

As the digital divide continues to grow, Dawe looks at internet access as a basic right. Everyone needs electricity and access to clean water, and they also need access to the internet if they are going to succeed in today's world economy. He explored the possibility of putting Wi-Fi across Opelika's entire 55 sq. miles, but due to vast forested areas, the team decided to focus on deploying wireless coverage in high-traffic areas. The plan is to roll out public Wi-Fi in underserved areas, public libraries, and all government-owned buildings and areas, so that people can access the internet when and where they need it. Bridging the digital divide will not only improve the quality of life, but also provide more economic opportunities for residents. Dawe plans to have Meraki wireless spread across the city in the next few years.



In order to support city sustainability projects, Dawe started exploring the concept of sensors, where he could implement them, what value they would add, and what the cost would be. In partnership with Cisco, Opelika is the first city in North America to deploy Cisco's LoRaWAN-compliant solution, which provides long-distance wireless connectivity for IoT endpoints at a low cost and with low power consumption. Operating at 915 MHz, Dawe can support over 1,000 sensors across the entire city. Opelika has also partnered with Auburn University to help the city understand the benefits of the sensors and how the data should affect decision-making. They also ensure that the city is measuring the correct indicators to see the value Sensors are being installed to monitor parking, nitric oxide levels, industrial park gases, and water quality. The city currently has 30 sensors deployed and is looking to add more as they decide how to most effectively collect and use the data.

With the help of Cisco, the biggest project for the city is implementing controllable LED street lights. In partnership with Cisco and CIMCON lighting, Dawe is installing sensors on top of the street lights that connect back to the Cisco gateway. Dawe chose this project because it could cut the city's street light electric bill by 50% by allowing him to control when the lights dim during low activity and brighten when cars and people go by.

The City of Opelika is moving into uncharted territory, leading the way for cities across the United States to determine and implement the right technologies that will truly make a difference for residents. The Cisco-based city-wide fiber network coupled with Meraki Wi-Fi, ensures a scalable and flexible technology foundation that will easily allow the addition of new technologies. Dawe will continue to research new technologies and solutions as they emerge and move forward with them if they support quality of life, economic development, and sustainability.



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