CASE STUDY

How Fortinet Saved the Second-Largest City in Illinois Millions of Dollars on Networking and Security

Located about 41 miles west of Chicago, Aurora is the second-largest city in Illinois, "But I would say we are second to none," proclaims Michael Pegues, Aurora's Chief Information Officer. The city has a long history as an industrial hub, home to companies such as Caterpillar and Burlington Northern. It is known as the "City of Lights" because it was one of the first cities in the United States to install electric streetlights.

Recently, Aurora has gained recognition as a pivotal technology hub within the Illinois Technology and Research Corridor, largely due to the proliferation of data centers.

When Mayor Richard Irvin was elected in 2017, he welcomed Pegues back home. An Aurora native, Pegues had been working abroad in IT and cybersecurity for Fortune 500 companies for decades. "Mayor Irvin said, 'I want you to transform the city of Aurora in terms of innovation and technology,'" he reports. "The three pillars of his government are public safety, education, and economic development. He wanted technology to be the foundation underpinning all three of those main pillars, and that is what we have been doing."

Pegues took over a decentralized Layer 2 network with no segmentation. The police department, fire department, and public works function all had their own IT staff. And from a cybersecurity perspective, the network had "a lot of gaps," he says. "There were vulnerabilities to many different threat vectors. Plus, the total cost of ownership was exorbitant with the legacy network.

"We are one of the few cities in Chicago's western suburbs that has its own water utility," he adds. "My first question when I came in was: "How is IT security managed at the water treatment plant?" That is critical infrastructure, so robust security measures are absolutely essential. The response I recieved was simply, 'We have firewalls.' That was it. Clearly, there was a lot of work ahead to ensure comprehensive protection.

Segmentation and Security Services Lock Down the City's Network

The city centralized IT staff, decision-making, and spending on technology investments. As contracts with legacy networking and security vendors began to expire, Pegues' team began preparing to revamp their network. They considered two possible providers: Fortinet and an alternative. "At the time, there was not a huge differentiation in my mind," Pegues says, "but we brought on a senior network engineer from the private sector, who was absolutely certain that Fortinet was the right choice.

AURORA
CITY OF LIGHTS

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City of Aurora

Details

Customer: City of Aurora

Fortinet Partner: Scientel Solutions

Industry: Government

Headquarters: Aurora, Illinois

Business Impact

- Reduced staff time for network and security management
- Switch configuration implementation decreased from 30 minutes to 10 minutes
- VPN configuration decreased from three hours to 15 minutes connecting and disconnecting from VPNs
- Lean IT team can manage increasingly complex networks without the need for additional hires

"I have worked with other leading security providers in the past," reports engineer Keith Wouk, who is now the city's director of IT operations. "In my experience, the big difference between Fortinet and its competitors is that Fortinet streamlines network management. Fortinet solutions are very efficient to manage because the interfaces are easy to use."

Aurora decided to transition its network to Fortinet and engaged Scientel Solutions, a full-service technology integrator based in Aurora. Scientel performed a comprehensive network discovery, cataloging all the city's existing devices. Then, the service provider and the city's IT team worked together to define an upgrade path.

With Scientel's assistance, the city of Aurora deployed FortiGate Next-Generation Firewalls (NGFWs) with the FortiGuard AI-Powered Security Services Enterprise Protection Bundle. The city liked the FortiGate single-pane-of-glass management for NGFWs, switches, and access points. Because the Fortinet Security Fabric provides clear visibility into security issues, the central IT team can better mitigate cybersecurity exposures across key government departments.

"We also greatly appreciate the ability of the FortiGate to segment our network, which lowers our risk profile should we ever get compromised," Pegues says. "In particular, we were very happy to be able to set up the water treatment plant as an island. Now, if a threat actor were to compromise our IT network, the water treatment plant could hit the proverbial red button, disconnect from the city network, and run independently."

In addition to the water treatment plant, the city runs separate network segments for its police department, fire department, 911 emergency response, RiverEdge park and outdoor concert venue, and a community virtual learning space designed to provide local students with internet access outside school hours. A sixth segment gives third-party vendors access to the resources they need to manage, without opening up the entire network.

"This segmentation adds an extra layer of security to our critical infrastructure," Pegues says. At the same time, the city strengthens its edge security for each network segment by leveraging every service in the FortiGuard Enterprise Bundle, from web filtering to intrusion prevention system (IPS) capabilities to attack surface reporting at the instance level.

Fortinet Provides a Secure, High-Performing, State-of-the-Art Network

After its initial deployment of the NGFWs, the city began to expand its Fortinet Security Fabric, again supported by Scientel. It rolled out the FortiAnalyzer data analytics platform for unified log management and visibility of Fortinet devices networkwide and to create historical log reporting and event correlation. "FortiAnalyzer provides real-time data and rich information about security events for logging and troubleshooting purposes," Wouk says. "It also gives us bandwidth, usage, and threat-level reporting. And we forward the log data from FortiAnalyzer to a third-party SOC [security operations center], which alerts us to any security events on our network."

Next, Aurora rolled out FortiSwitch secure Ethernet switches and FortiAP secure wireless access points. The LAN devices provide core networking capabilities that Wouk and his colleagues can manage through the FortiGate NGFWs. Additionally, the FortiNAC network access control solution protects network access at

Business Impact(cont.)

- Over $5 million in cost savings on devices and support fees over five years
- $150,000 annual reduction in electricity expense
- Improvement in security through automatic blocking of threat actors and malicious websites
- Improved security with faster detection and response time to threats
- Bandwidth doubled, turbocharging network performance

Solutions

- FortiGate Next-Generation Firewall
- FortiAnalyzer
- FortiSwitch
- FortiAP
- FortiNAC
- Fortinet Secure SD-WAN

Services

- FortiGuard AI-Powered Security Services Unified Threat Protection (UTP) Bundle

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RiverEdge. The city intends to roll out FortiNAC more broadly over time. And Fortinet Secure SD-WAN helps ensure that network traffic flows smoothly.

For connectivity, the city has a fiber ring, and Fortinet Secure SD-WAN balances east-west traffic and monitors for disruptions across the network. "We also use the SD-WAN to steer certain applications to dedicated bandwidth, such as Microsoft Teams or Outlook," Wouk says. This network design enables Aurora to fully use both directions on the network, enhancing network performance throughout the city. "We doubled our bandwidth by using both ISPs at the same time via Fortinet Secure SD-WAN," Wouk adds.

Scientel delivers 24×7×365 network operations center (NOC) services to the city, monitoring, maintaining, and responding to any equipment outages. The firm is also involved whenever the city expands its network and provides support as needed. "Scientel operates as an extension of Aurora's IT department, collaborating not only with IT engineers but also with departments throughout the city, including police, fire, and public works," says Roxana Hoffman, the firm's operations director. "We work with the city to design and manage a state-of-the-art, robust, and secure network that provides the stability and scalability Aurora requires."

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Faster Threat Detection, Straightforward Network Management

The improvement in security compared with the city's legacy network infrastructure is a night-and-day difference. "The FortiGates get information from FortiGuard Labs about outside threat actors, and they block websites that are deemed malicious from the get-go," Wouk says. "I receive notifications all the time about botnets that have been blocked. Our legacy firewalls did not offer that, and it is a huge improvement in security."

At the same time, the Fortinet Security Fabric has dramatically increased the city's visibility into threats and security events, further enhancing network protections. Whereas the city's legacy network provided virtually no visibility of security at the edge or of overall network performance, all network elements today—from endpoints attached to the switches to OT equipment at the water treatment plant to devices connecting via the wireless FortiAPs—have easily identifiable performance statistics and information about any identified security threat.

"The Fortinet solutions give us better visibility into security events on our network," Wouk says. "That means our team can quickly respond to any issue that arises. The Fortinet Security Fabric is a key component in our ability to detect and respond."

Also crucial for the city's lean networking and security team, "Our Fortinet infrastructure is more secure and easier to manage and troubleshoot," Wouk says. "In our legacy infrastructure, just finding a particular switch meant going down a line of switches and looking through the MAC address tables. Fortinet gives us one place to find and control devices across the network, which makes network and security management very straightforward."

For example, Wouk explains, "It used to take us half an hour to get a switch ready for deployment. By contrast, with a FortiSwitch, we plug the switch in, and it lights up. It already has all the VLANs [virtual LANs] on it. Getting a switch up and running takes less than 10 minutes now. And configuring a VPN takes about 15 minutes with the Fortinet solutions. In our legacy environment, configuring a VPN took an hour and then troubleshooting took another two hours."

Millions of Dollars in Savings on Total Cost of Ownership

The result is a substantially lower total cost of ownership for the network. "With our previous vendor, the total cost of ownership amounted to $5 million over five years," Pegues says. "We have successfully achieved cost savings and avoidance totaling millions of dollars. We have managed to assign more strategic tasks to our networking and security team as their time has been freed up. This has also allowed us to streamline our resource utilization and allocation. Even our electricity bill has decreased by approximately $150,000 thanks to the Fortinet solutions optimizing our energy efficiency."

Looking ahead, the city of Aurora is considering enhancing its security capabilities by incorporating zero-trust measures. This includes deploying the FortiClient Enterprise Management Server (EMS) and the FortiAuthenticator user authentication platform. Additionally, Scientel's role in supporting the environment continues to expand.

“The idea is for our internal staff to manage our infrastructure but to leverage Scientel as additional hands, eyes, and expertise supporting the city of Aurora,” says Mark Taghap, the city’s CISO. “Scientel does a great job of guiding the team. They help set the baseline and our priorities. They have really helped the City of Aurora future-proof our infrastructure.”

The city is reaping substantial benefits from its relationships with both Scientel and Fortinet. “I do not have any solution providers that I consider just a vendor, unless we are buying a commodity-like product,” Pegues concludes. “All our technology partners are strategic. [They] help us see opportunities that we would not otherwise see, and it is just inherently better to build a long-lasting relationship where there are mutual benefits for both sides. That is the role Fortinet and Scientel play for the City of Aurora.”

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