

CASE STUDY

Fortinet Solutions Secure Manufacturing Lines to Keep Production Rolling 24x7

When U.S. manufacturers need engineering services, they turn to Wunderlich-Malec Engineering. From control system integration to electrical infrastructure design, energy microgrids to industrial water treatment, to myriad other areas of production and operational support, the firm's 560+ engineers have a plethora of experience serving various industry sectors.

"We specialize in the convergence of manufacturing with the Internet of Things, or IoT," explains Director of IT Dustin Fischer. When he arrived at Wunderlich-Malec, he also found opportunities for convergence in the organizational structure. "My team was strictly an IT group, which serviced corporate assets and provided a user help desk. I wanted to better utilize my team across the company's 36 offices to leverage our expertise to make our business units more efficient.

"I also saw an opportunity for our team to improve the firm's service to our clients," Fischer adds. "Over the past couple of years, we've expanded the IT team from five to 15 engineers. Now, Wunderlich-Malec business units hire us to design, build, maintain, and manage services for clients."

Today, the IT group leverages automation extensively to streamline internal tech support processes and help the business units provide customers with better technology systems. Customer engagements often include an IT network and operational technologies, such as supervisory control and data acquisition (SCADA) systems. Expertise in Fischer's IT team enables the company to provide networking and security for both areas of manufacturers' environments.

"Security is absolutely paramount," says Peter Czech, Senior Network Engineer for Wunderlich-Malec. "The threats are nonstop, and OT [operational technology] systems are getting connected to the network, which introduces new vulnerabilities." Ransomware is particularly concerning. "With a manufacturing line, you are typically talking about millions of dollars a day in operations," Fischer says. "So, every hour that a company is offline and not manufacturing results in hundreds of thousands of dollars in lost revenue. Keeping these systems operational is crucial."

Fortinet Standardizes Internal IT

For years, the company has trusted Fortinet solutions for its internal networking and security. Fischer's team has defined several packages of Fortinet solutions, and each of its 36 office locations can choose which of those packages best meets its needs.

"We have tier 1, tier 2, and tier 3 options," Fischer explains. "When a business unit opens an office, they procure one of those from our IT team—which one depends on how much development work they plan to do and how many employees



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Dustin Fischer
Director of IT
Wunderlich-Malec Engineering

Details

Customer: Wunderlich-Malec Engineering

Industry: Technology

Location: Eden Prairie, Minnesota

Business Impact

- Enhanced competitive advantage with highly secure OT networks
- Reduced administrative resources with streamlined IT and OT network management
- More efficient training with easier to use solution

will be in the office.” Each tier includes a FortiGate Next-Generation Firewall (NGFW), FortiSwitch enterprise switches, and FortiAP access points. Secure user authentication from FortiAuthenticator and FortiToken identity and access management solutions complete the package. For each new office, Fischer’s team ships the appropriate package to the location, installs the Fortinet solutions, and supports them continually.

The FortiGate NGFWs communicate with the firm’s two data centers via IPsec tunnels. “We use VDOMs [virtual domains] as well,” Fischer says. “We segment corporate traffic from the business units’ development side, using the FortiGate firewalls to create that separation with virtualized firewalls inside the VDOMs. That way, our business units can use whatever setup they need on the development side without affecting the corporate security posture.”

Wunderlich-Malec also uses Fortinet Secure SD-WAN for software-defined wide area networking between the offices and the data centers. “Fortinet does a good job with the SD-WAN,” Fischer says. “We use it to segregate traffic and watch the traffic loads out of our data centers, with multiple ISPs [internet service providers], to make sure we never go down and that our traffic layer stays consistent.”

The SD-WAN is particularly vital in the building and testing of OT equipment. “Fortinet Secure SD-WAN allows us to extend our gateways from our data centers to the offices,” Fischer explains. “We centralize all the business units’ development VMs [virtual machines] in our kernel, then use the SD-WAN to route dev traffic to the business units to test their PLCs [programmable logic controllers] against. That way, they do not have to send the physical devices anywhere; they can test them fully across applications and hardware on our centralized network.”

The corporate IT team uses FortiManager to deploy new NGFWs and manage policies across the dispersed network and FortiAnalyzer to monitor network events. “As companies start segmenting traffic and adding offices, they often have trouble understanding where traffic is going,” Fischer says. “With Fortinet, we centralized everything and brought all the management information we need into a single pane of glass. That enables us to quickly see what is happening across all our different units. Our Fortinet management systems consolidate information and do a good job of filtering through all the noise on the network to quickly identify issues. That streamlines my team’s processes, so we do not have to keep adding bodies just to look at logs.”

More Secure and Manageable Customer OT Environments

Fortinet solutions meet Wunderlich-Malec’s internal needs so well that the firm has begun to incorporate them into customer engagements as well. The firm builds thousands of electrical panels each year for deployment in various types of customer organizations. The panels usually consist of PLCs, which automate certain manufacturing processes, and every panel includes a switch. In some cases, the firm installs the panels and hands-off management to the customer organization. In other cases, the firm manages the equipment long-term. Wunderlich-Malec formerly used switches from a different vendor on these panels.

“We recently shifted to include a FortiSwitch in every panel we produce,” Fischer says. The FortiSwitch switches integrate tightly with the high-availability pair of FortiGate NGFWs that Wunderlich-Malec installs to protect each customer’s network edge and provide IT/OT segmentation. “We define the firewall policies, port communications, and how things are layered on the manufacturing floors

Solutions

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

FortiGuard Security Services

- Enterprise Bundle

“Everybody’s time is valuable, so being able to explain something concisely while still getting the point across to our customers is important. Fortinet solutions make that easy to do because administration is so easy.”

Peter Czech

Senior Network Engineer
Wunderlich-Malec Engineering



based on the customer's applications and what systems need to access the OT space. Then we set up rules to define which actions are allowed."

The switches and NGFWs integrate tightly as part of each customer's Fortinet Security Fabric so that whoever is managing the security infrastructure over time—whether the customer or Wunderlich-Malec—can manage far-flung firewalls and panels from a central location. "For example," Czech says, "we can quickly and easily set a security policy on a customer's FortiGate that blocks a certain application from the network. Being able to do that automatically, without an administrator having to go to every single port and IP address, is incredibly powerful."

Integration also improves the customer's security posture because the NGFWs and switches work together to achieve the same objectives. Automated threat response enables the entire security infrastructure to respond in unison when an issue is detected. And the tight integration between the switches and firewalls makes it much easier for administrators to understand what is happening on customer networks.

"The driving factor for our change to FortiSwitch switches on the panels we build was to improve visibility for us and the customers," Fischer continues. "We wanted to see what was happening down to the endpoint level so that we could quickly identify any issues in east-west traffic. Having a single-pane-of-glass view and high availability helps us ensure that our customers' networks are fully operational 24×7. That is why we are now including FortiSwitch enterprise switches and FortiSwitch Rugged industrial switches in many of our panels."

Each of Wunderlich-Malec's FortiGate NGFWs, internal and customer-deployed, includes the Enterprise Bundle from FortiGuard Labs. This provides the firewalls with intrusion prevention system (IPS), web security, content security, and—crucially for Wunderlich-Malec—OT and IoT security capabilities.

"The Enterprise Bundle is very good," Czech reports. "It gives us information about the OT devices and provides an added layer of security for them. Generally, OT equipment is not well-patched. The vendors do not upgrade those devices very often, and sometimes they cannot easily be upgraded for availability reasons. Having that visibility through the FortiGuard Labs Enterprise Bundle is absolutely critical for us."

Ease of Use Key to Fortinet Success

Because Wunderlich-Malec often hands-off management of the network and security infrastructure to clients when deployment is complete, ease of use is also crucial. "The Fortinet solutions we are using with clients make it a lot easier for us to show them where traffic is going and where there are potential vulnerabilities," Fischer says. "The Fortinet user interface provides a lot of information in a format that is really easy to understand. That is important because some manufacturing leaders are not highly technical."

Czech agrees. "Fortinet does a great job making all their products' graphical user interfaces, across the Security Fabric, look similar," he says. "It is not just the design, but their menus and options and logic are similar as well. That makes it simple to learn and understand the products." He has personal experience with the benefits of these similarities.

"Prior to Wunderlich-Malec, I had no experience whatsoever with Fortinet, and when I was offered the position, I wondered how much of a learning curve it was going to be," Czech says. "Learning a new vendor's equipment can be daunting. But I am still shocked at just how fast I was able to learn the Fortinet products and become productive with them."

He has had the same experience training customers to use their new Wunderlich-Malec-designed infrastructures: "I have given instructions to people who have never logged on to a firewall before, and they very quickly understood things that might have required a 40-hour class for another vendor's systems. Everybody's time is valuable, so being able to explain something concisely while still getting the point across to our customers is important. Fortinet solutions make that easy to do because administration is so easy."

Wunderlich-Malec is now extending the benefits of Fortinet Security Fabric visibility by deploying the FortiNAC network access control solution. Fischer's team is also considering the FortiSIEM security information and event management solution and FortiEDR for endpoint detection and response.



“We are a very entrepreneurial company, and we do a lot of development,” Fischer says. “Trying to facilitate that innovation while keeping our assets secure would be difficult if we were mixing three or four different vendors’ solutions. But with the Fortinet tools, we can allow our offices to control their own networks while segmenting so that any issues in a business unit will not affect the corporate side.

“As a company, we look at Fortinet as a true partner,” he concludes. “That is one of the driving factors for our designs: We use Fortinet unless a customer requires us to go to another manufacturer. Fortinet is our go-to, and every infrastructure that we design with Fortinet, we truly stand behind.”



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