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Whole Foods Market Grows Their Retail Wireless Experience

Industry
Retail

Strategic priorities

• Keeping distribution centers and stores running as efficiently as possible

• Delighting customers with tools that rely on in-store wireless networks, such as cashierless checkout, ordering prepared foods, and in-store fulfillment for online shopping orders

• Getting better insight into wireless network problems that could ripple across a global network of interconnected locations

VMware footprint

• VMware Edge Network Intelligence™

Whole Foods Market relies on data and applications running over wireless networks to manage its stores and distribution centers. When connectivity problems happen, the costs can include lost sales, bottlenecks in the flow of goods, IT time and frustration, and, worst of all, unhappy customers. Whole Foods needed a clearer picture of what was really happening in their wireless networks. After a short proof of concept, they quickly recognized that VMware Edge Network Intelligence™, part of VMware SASE™, could offer important benefits in addition to the solutions they had in place. Now the company has true visibility into the root causes of network problems. The IT team at Whole Foods estimates they have saved hundreds of staff hours since implementing the software.

About the customer

For more than 40 years, Whole Foods Market has been the world's leading natural and organic foods retailer. As the first certified organic national grocer, Whole Foods Market has more than 500 stores in the United States, Canada and the United Kingdom.

"The data we get from VMware Edge Network Intelligence reflects the actual experience that people are having, the packets flowing to and from devices. We not only can look at network health in aggregate at a high level, but breaking data out per client and being able to drill down to individual clients has been pretty excellent."

Paul Jorgenson, Senior Network Development Engineer, Whole Foods Market

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Technology for foodies

Whole Foods Market has been a retail pioneer since it was founded in Austin, Texas. In 1980, Whole Foods was one of only a few grocers in the United States with a focus on natural foods. The company became an early e-commerce adopter in 2000 with the launch of WholePeople.com. Now, as a part of Amazon, Whole Foods continues to innovate with technology as part of its mission to "nourish people and the planet."

Whole Foods and its parent company rely on data to keep stores, warehouses and management systems running smoothly. To provide a true picture of their networking infrastructure, they needed a monitoring solution that would work with equipment from traditional vendors and Whole Foods' or Amazon's in-house solutions. They had point solutions that would give them pieces of the puzzle, but not a single tool that gave them a comprehensive view of network health.

Guided by analyst reports and industry rankings, Whole Foods decided to deploy a proof of concept with VMware Edge Network Intelligence. "We liked what we saw," said Paul Jorgenson, a Senior Network Development Engineer at Whole Foods, "and then we did a wider rollout." Now VMware Edge Network Intelligence is running on the network at 90 percent of all Whole Foods stores and six out of 10 distribution centers, with plans to implement the software at all stores and distribution centers.

Insight into critical connectivity issues

Brick-and-mortar retailers rely on wireless networks, and Whole Foods is no exception. Guest Wi-Fi, the order flow for prepared foods in stores, picking products in-store to fulfill online grocery orders, scanning pallets of products in distribution centers – all these tasks and more rely on the wireless network.

According to Jorgenson, before Whole Foods implemented VMware Edge Network Intelligence, his team was "flying blind" when they received tickets about applications not working or networks being down. "We would have to do manual pings and checks, packet captures and analysis, depending on the severity of the situation. We really had no way to know what our latency was to our application servers, or even which app servers were involved."

Jorgenson joked that whenever there's a network problem, "They always say it's a wireless problem, even when it isn't.

But the nice thing about having VMware Edge Network Intelligence is that we can quickly tell if a problem really is a wireless problem, or if we need to start looking for answers in a different place."

> "VMware Edge Network Intelligence has saved me and my team at least 200 hours over the last year, because we're not chasing problems that we have no data about."
>
> Paul Jorgenson, Senior Network Development Engineer, Whole Foods Market

For example, Whole Foods trialed a program where customers could order prepared foods in stores using tablets. The application that managed the process developed connectivity problems. As a result, customers were unhappy with the experience, they did not use the tablets, and stores lost potential sales.

Before VMware Edge Network Intelligence, Jorgenson and his team spent hours troubleshooting with few improvements. "Once we had VMware Edge Network Intelligence, I looked up the subnet for devices that had been reported to have wireless issues. I looked at all the devices and clicked through a few of them. They had absolutely perfect signal to noise ratios, unbroken graphs, great metrics." Once they determined where the true cause was — not in the wireless network — Whole Foods was able to resolve the problem quickly. "That's the difference in having visibility. You don't have to guess and just throw solutions at the wall," said Jorgenson.

Jorgenson noted that VMware Edge Network Intelligence also was able to solve a problem with wireless handheld scanners used in stores. He spent two weeks at a site trying to figure out what was happening, "manually setting packet captures with a server, a cable and a span port, correlating events, looking at round trip times and trying to understand the problem," said Jorgenson. The problem was somewhat resolved with app optimization, but eventually the scanners began having latency issues that affected even more stores and slowed operations.

"There was a big effort to identify the source of the latency," said Jorgenson. "I collected all the endpoint information for every app on these handheld scanners, figuring out all the communication with endpoints, ports, protocols."

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Jorgenson loaded those profiles into VMware Edge Network Intelligence and created a library of all the apps in use. The team started to notice spikes in TCP round trip times and were able to correlate those spikes with stores that had lower-bandwidth circuits. Whole Foods was able to use that data to justify accelerating circuit upgrades at stores, restoring normal operations.

During the process of diagnosing the scanners, Jorgenson and his team noticed that if a certain app was not set up correctly, it would send 20 to 30 GB of logs per day — which didn't help the circuit utilization problem. "That was not caught by in-band monitoring tools," said Jorgenson. "I was able to catch it because VMware Edge Network Intelligence works out of band as well. That was another big win."

Saving IT time and cost

Jorgenson contrasted VMware Edge Network Intelligence with other tools he has worked with. "Other monitoring tools have a hard time telling you what clients are doing. They might give you a list of IP or MAC addresses, but they're not going to tell you, for example, what their average round trip time to a specific server is over the last two weeks. And that's probably the most powerful thing about it."

Whole Foods was able to deploy VMware Edge Network Intelligence as a virtual image, eliminating the need for additional hardware at store locations. "Now we can put VMware Edge Network Intelligence on our network stack without physical hardware or staff on site. It's easier to deploy, and the installation has gone smoothly," said Jorgenson.

"VMware Edge Network Intelligence has saved me and my team at least 200 hours over the last year, because we're not chasing problems that we have no data about," said Jorgenson. When his team worked on the issue with the wireless scanners, "That issue was affecting almost every store. With VMware Edge Network Intelligence we were able to identify and fix the problem nine months faster than we otherwise would have. Without that feedback we might still be trying to find the root cause."

Into the future with VMware

Whole Foods is looking into deploying VMware Edge Network Intelligence in its corporate offices, to help understand the causes when audio and video calls drop or experience jitter and lag. The company is also hoping to integrate their VMware Workspace ONE Unified Endpoint Management environment with VMware Edge Network Intelligence, to generate even more useful data about device performance and better analyze and correlate the causes of issues.

"I definitely would recommend VMware Edge Network Intelligence to other retailers," Jorgenson continued. "It's excellent. I don't know of any other tools that can tell you how your apps and your endpoint devices are doing from an outside perspective. With other tools, you can set metrics inside your app and your infrastructure, but sometimes that doesn't tell you the real information that you need."