

Reliability starts at the edge:

How optimizing tax technology can improve
customer experience and remove frustrations



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Retailers face myriad disruptions every day. But as we become increasingly reliant on technology, one concern looms especially large: outages.



The threat is real. Trusted retailers across large swaths of America experienced windows of lost connectivity during the 2021 holiday season, grabbing headlines, frustrating customers and putting transaction tracking in peril (if not momentarily cutting those sales off altogether).

The threat of getting knocked offline makes having reliable tax technology all the more critical, as retailers start to question whether the cloud is the most reliable place to be. The good news is that new technologies and advances in edge computing are creating options for retailers large and small.

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But that’s changing. In January 2022, Vertex unveiled its Vertex® Indirect Tax O Series® Edge cloud solution. This enables global omnichannel retailers to configure, automate and deploy containerized tax engines where transactions are being processed, delivering enhanced performance and scalability for tax automation at the point of need.

Retailers have traditionally dealt with a process that has been inefficient and prone to error.

“Tax engines have historically been centralized or cloud-based solutions, so retailers would have to take that transaction and send a request over the internet to get a response,” Christian said. “That’s problematic, because what happens if the network goes down?”

Vertex O Series Edge leverages the latest edge computing technology to manage tax calculation at the point of transaction for the highest availability, improved control over performance and a streamlined tax technology landscape. It is an end-to-end solution that enables the calculation of tax locally, in store or in an e-commerce data center to maximize performance while transactions are aggregated centrally for reporting and compliance.

“What we’re doing with edge is we’re enabling retailers to have a full-fledged tax engine right there in the store or right there in the point of sale (POS) terminal,” Christian said. “They get the full features and all the current rates and rules, enabling them to calculate tax correctly, without having to go to the internet.”





While there are many benefits of combining edge computing with tax technology, the most important thing it delivers is resiliency.

“Loss of connectivity is still one of the top things that our retail customers say is a pain point,” said Vertex Product Manager Principal Matt Thoman. “Even with better network capabilities, retailers can still have bandwidth issues and random things can happen. In a retail store, 10 minutes of downtime at your checkout lines could cost you tens of thousands of dollars in transactions.”

That’s why a tax calculation system that uses edge computing is so important. It keeps working even if a retailer loses internet connection or their bandwidth decreases.

This is critical for both retailers with in-store operations who require high-availability checkout solutions as well as e-commerce operations that need a highly scalable, low-latency tax solution. Retailers selling across multiple channels have unique tax and IT needs in each of those channels. Vertex O Series Edge provides a reliable solution that avoids common pitfalls and gives retailers’ IT departments flexibility and control.



Beyond resiliency: What makes for superior tax technology



Resiliency might be a tax technology solution's most important feature, but it is not the only thing retailers should consider when choosing a partner. Here are a few other critical areas where edge computing can make all the difference:

1 Protecting the checkout experience

According to a study by the Baymard Institute, the average online shopping cart abandonment rate is 69.82%, with shoppers citing reasons including lengthy or complicated checkout processes and not being able to calculate an order's total up front. With brick-and-mortar stores, complications or lags at checkout lead to an all-too-familiar result: people simply walking away and doing their shopping someplace else.

"From an IT perspective, keeping the checkout lines moving is the number one thing that retailers are always concerned about when they talk about the in-store experience," Thoman said. "And even in the e-commerce world ... if you get even a moderate slowdown in your tax calculation, you're risking a cart abandonment."

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These are issues edge computing can help solve — and it comes down to eliminating network latency.

“If you take a company that is sending a transaction over the internet and receiving the response back, that communication involves network latency,” Christian said, noting that’s a challenging scenario for retailers to deal with due to its unpredictable nature. “You can’t predict the route your transaction is going to take from your system to the centralized server and back again ... and performance is a really big deal. By eliminating the latency [with edge computing], we get consistent performance for the organization.”



But removing latency is not only important to improve the checkout experience. It also allows retailers to scale.

DMA, a corporate tax advisory with offices in North America and Europe that has been assisting retailers with tax administration for decades, has helped many clients navigate the implementation of better systems for tax calculation.

“A lot of organizations from a retail and e-commerce perspective shockingly have legacy solutions in place,” said Ralph Etienne, DMA’s Managing Director, Tax Transformation. “So a lot of times we’re helping them automate. We’ve worked with companies who maybe started smaller and had more traditional accommodations, with a number of accountants who knew their stuff like the back of their hand. Then, the company is moving into different locations where the regulations and taxes are different — not only per state but per city, per county or even part of a city where they could have different regulations on taxes. And there’s no way you can do that with the old school method.”

A solution like Vertex O Series Edge helps, Etienne said. “It’s not even a nice-to-have anymore. It’s a requirement.”

“Edge computing is a way that retailers can scale and make sure that the performance stays in line with what they need,” Thoman agrees. “With cloud solutions, scalability is done centrally by the vendor. Edge gives the retailer the ability to scale each location independently so they can meet the performance needs.”

2 Compatibility with existing edge container infrastructure

Another benefit to edge computing in tax technology is that it fits within retailers' existing container infrastructure.

"I'm really excited about this because we're using a very modern industry standard technology," Christian said. "Companies can use these standard tools for tax, just like they're doing with so many of their other applications, such as inventory management and credit card processing."

Traditionally, tax technology needed to use large databases and app servers to provide calculations, which added mountains of complexity. But being able to leverage edge computing has changed all that.

One way to think about containerization is like a wrapper around a particular software.

"What's inside that package is fully ready to run," Thoman said. "It contains all the components that it needs. And because it's packaged, it installs where retailers need it to, automatically. It's a simple way of deploying the same software in many different locations over and over again."

Then, orchestration tools automatically move the container where it is needed.

"Retailers can then deploy around the world simultaneously using standard technology," Christian said. "They're standard and easy to deploy. And we expect that challenges around things like upgrades and all those big headaches, they're largely going to go away."

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3 Visibility and maintenance of many localized tax calculation endpoints

Imagine a mid-sized retailer with 100 stores, or a larger retailer with thousands. As containers run in each store, or at each POS terminal calculating tax, how can retailers be sure systems are optimized and functioning properly?

With Vertex O Series Edge, retailers have clear visibility into these calculation endpoints.

“CPU, utilization, memory, all of these are really important to monitor and ensure that things are running right,” Christian said. “That telemetry data is pushed to the control center, providing visibility to the retail organization.”

Through a centralized module, retailers can log in and view the status of the containers they have running and make decisions based on that data, such as adjustments on higher- or lower-volume days.

“If you’re only doing local calculation and you have to manually install and update software and try to control the performance of 100 endpoints locally, that’s not edge computing,” Thoman said.

Similarly, in terms of recording data, retailers would ideally want that funneled to a centralized location.

“In the case of tax compliance activities, they all need to be done once, not once for every location,” Thoman said. “So, it’s important to centralize your data after you’ve calculated it.”



4 Data security

Making sure all of that data is secure is another critical area for retailers.

When retailers use a software-as-a-service (SaaS) solution instead of edge computing, the SaaS solution sits within a vendor's data center, not the retailer's. This puts it outside the retailer's firewall, meaning that every time the retailer engages with the SaaS solution, it must breach its firewall to do so. This opens retailers up to unnecessary vulnerability.

"Edge computing allows for that transaction to happen completely behind the firewall because the engine is hosted locally," Thoman said. "In the tax world, you have customer transaction data that might contain personally identifiable information from the customer that is used to calculate the transaction. If every transaction has to pass through your firewall, you've created a lot more security vulnerabilities."

Similarly, retailers can use edge computing to minimize the risk of breaching their proprietary data.

"Information about their transaction volumes, what they're selling, when they're selling it — obviously retailers don't want that information outside their firewall," Christian said.

DMA's Senior Tax Technology Manager Tim Allen said the ability to use edge computing to improve data security is a benefit his clients appreciate.

"You can set up these edge container systems ... so you're on the same network. You can apply your own security standards to it," Allen said. "You're not going over the internet. And then any of that information you need to send is safe within your network."

This functionality is important to retailers across industries.

"Whether you're a retailer of clothing or a retailer of pharmaceuticals, everybody wants to secure that (data)," Allen said. "Edge definitely helps with that."





Reliability in the face of disruption

In a world where uncertainty looms large for retailers, tax technology is one area that can remain steadfast. By leveraging edge computing, retailers can rest assured their systems are safe, secure and dependable.

It's a concept whose time has come.

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Vertex Inc., is a leading global provider of indirect tax software and solutions. The company's mission is to deliver the most trusted tax technology enabling global businesses to transact, comply and grow with confidence. Vertex provides solutions that can be tailored to specific industries for major lines of indirect tax, including sales and consumer use, value added and payroll. Headquartered in North America, and with offices in South America and Europe, Vertex employs over 1,300 professionals and serves companies across the globe.

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