SCALE
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Retail On The Edge
From the Experts at Scale Computing

By 2020, customer experience will overtake price and product as the keybrand differentiator. New technologies like the Internet of Things and Edge Computing will help retailers support this demand with a more flexible, reliable, secure, scalable, and resilient in-store infrastructure.

THE RETAIL WORLD IS DRAMATICALLY CHANGING.
Customers change their buying behavior rapidly, searching for the
seamless transition between online and in-store experiences.

BY 2020, CUSTOMER EXPERIENCE WILL OVERTAKE PRICE AND PRODUCT

Just a few years after the internet became a reality, Jeff Bezos founded Amazon and started to sell books online. He knew from the beginning that he wanted more. He wanted to sell everything.

Like many other innovators - Scale Computing included - Amazon started in a garage. In fact, the company servers hosted in the garage required so much power that Bezos and his wife couldn't run other electrical equipment without blowing a fuse.

Today, Amazon sells millions of products and is one of the 5 largest global companies; Bezos is one of the top 5 wealthiest people in the world.

Amazon is considered the leader in innovation in online shopping for many. Over the last decade, almost every retailer has followed the behavior of Amazon - what Amazon does and how Amazon does it.

The news in 2017 that Amazon was going to buy Whole Foods for $13.7 billion was something most could not believe. Every retailer in the world was amazed by Amazon's bold move. Amazon was going physical!

Customer Experience

Amazon operated strictly online for two decades. During this period, Amazon learned a lot about customer buying behaviors and how quickly a consumer can change the way they shop. From all of its data, Amazon learned that customers who shopped online also wanted to shop at physical locations.

Customers are continuously searching for the seamless transition between online and in-store experiences. The retailers who master that virtual and physical combination will become the leaders for the coming decades. It will be interesting to see what other acquisitions on top of Whole Foods Amazon has in mind to expand into the tangible world of the consumer.

Continuous Innovation is Required

Today's retail innovation is driven by digitalization. Many shops have closed their doors because they did not anticipate changes in customer buying behavior. Traditional retailers state that they cannot fight online retailers like Amazon anymore - and they're often right. Online retailers have taken on a large portion of 'brick and mortar' retailers' business. Behind this transition from physical to virtual buying, however, is the lack of innovation in the physical space.

Many retailers still use the same technology as a decade or more ago: a few point-of-sale (PoS) systems, one or more servers, and some external storage to host it all. Although functional, this design is often clunky, slow, and not scalable when considered against an online retailer's infrastructure design. More innovative retailers have digitized by installing security appliances, using in-store digital promotion, offering in-store Wi-Fi, and other modernizations, but they still fall short of the flexibility offered by a virtual store-front.

In-store IT infrastructure must become flexible, scalable, and secure. Infrastructure that works for the retailer is ready to support in-store innovation and promote the new applications driving today's customer data and tomorrow's customer experience. New technologies like edge computing and the Internet of Things (IoT) will help to facilitate the needs of the modern retail store.

Retailers must innovate in order to provide the experience customers desire. Innovative retailers not only survive...they thrive in today's market. Innovation in retail will outperform others in the same market segment regardless of company age or size.

As edge computing matures, it is inevitable that there will be a broad adoption in the retail market.

We have all enjoyed a wide variety of options for IT infrastructure in the last few years: public cloud, private cloud, hybrid cloud, hyper-converged infrastructure, and more. Even with all of these options, a new need has arisen in the form of edge computing.

Edge computing refers to the necessity of on premise IT infrastruc-ture resources outside of the datacenter where they would typically be housed. Edge computing resource needs are small; they do not require a full datacenter or even a small datacenter implementation. Edge computing may require infrastructure as simple as an IoT device, or infrastructure as large as a micro-datacenter of multiple compute appliances.

If you are imagining edge computing in the context of remote office/branch office computing, you aren't wrong. However, edge computing is not as simple as that. It can also be adjacent to manufacturing systems, medical equipment, point of sales, IoT devices, and more. The needs of edge computing are widespread across every industry. It won't be long before edge computing becomes a common or even required feature for retailers. For instance, out-of-the way server closets in a warehouse will house the infrastructure and applications that enable real-time processing of supply chain systems without the latency or cost that might occur if the data resides remotely.

But why edge computing and not simply the cloud? Cloud computing has many benefits, especially scalability and elasticity, but the almighty cloud is not without its limits. Chief among these limits are internet connectivity and latency. On-prem infrastructure assets for edge computing provide more reliable performance and connectivity to keep systems operational even if internet connectivity fails.

At the stores, IoT-driven backroom technology such as RFID, realtime point of sale (POS), and smart shelving systems will improve the accuracy of inventory tracking throughout the supply chain. Automated inventory management can reorder items without requiring humans to take inventory, making it easier to prevent shortages of popular items at peak times.

Unlike full datacenter implementations, edge infrastructure needs to be easy to configure and manage and easily connected back to the primary datacenter or even the cloud; it should not warrant dedicated IT staff. These requirements are what make hyperconverged infrastructure (HCI) technology well-suited for edge computing.

Unfortunately, not every solution can scale down in a cost effective manner. Many solutions are not economically viable given their high demand for resources like processor and RAM--too expensive to buy and too expensive to operate.

Edge computing, particularly in retail where locations are abundant, requires a lightweight solution that can operate effectively at a low cost. Ease of use and operational efficiency must also be considered. With ease-of-use and scalability in mind at every step of the product's design and creation, the hyperconverged HC3 solution meets the needs of edge computing and more.

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The Internet of Things (IOT) is a network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, and network connectivity.

TOMORROW'S RETAIL APPLICATIONS ARE CONNECTED

Historically, application development in retail has produced large, monolithic applications designed with a specific functionality in mind (warehouse management systems, scanning and pricing, etc.). These systems are traditionally interconnected through a complex web of point-to-point interfaces.

These traditionally non-flexible infrastructure configurations constrain retailers from responding rapidly in the new and dynamic digital-physical environment. Instead, retailers must adopt new and agile applications to innovate a better customer experience.

Innovative Applications are Connected

Retailers who don't innovate may end up in troubled waters. Many once-mighty retailers no longer exist or may be one step away from disaster due to the traditionally inflexible monolithic retail application and its stagnant nature.

Innovative applications that take connectivity and flexibility in mind will be the key to driving customer data and subsequently customer experience.

Operational Applications

In principal, there are two different types of software applications. The first are operational applications, such as software for pricing (the traditional way) and labeling. Operational software pushes the price and weight data to scales, assists in inventory management, and helps to manage the security software covering the retail location(s). Typically, an operational application also drives energy management for physical locations; most locations still use conventional heating and air-conditioning systems.

Energy consumption, loss prevention, and security are common (and growing) concerns for many retailers. More IoT devices and other intelligent in-store systems means more risk of being hacked. Retailers must be aware of their exposure to these types of security risks and re-think the way they prioritize security for their stores.

Applications Driving Customer Intelligence

The second type of software application are those that drive customer data intelligence. Retailers are afraid of smartphone-wielding shoppers who browse products, check pricing in-store, and then purchase online. New ways to connect with customers while in-store are needed, and the more innovative retailers have found a few.

Location-based beacon technology uses sensors to track a customer's path through a store to help improve the store layout.

Electronic shelf labels are intelligent labels placed on a shelf or product that allow a retailer to track a customer's selections. For example, if a customer takes a suit from a rack for a closer look, these labels can drive intelligent micro digital signage (MDS) devices at this key point-of-decision - the product in the customer's hand. If the customer places the product - the suit - back on the rack, a customized "special offer" is displayed near the suit to promote that specific product.

Consumer applications make it possible to prepare your shopping list at home. In store, the customer is then shown the most efficient way to pick up the products from the shopping list that was created. Paired together with check-out technologies, the retailer can analyze customer shopping behaviors by tracking what was on the planned shopping list and what was an impulse purchase in the store.

These applications and many, many more are all interconnected, and most are connected with the consumer. A truly innovative retailer can see the need to gather customer data and drive the push for more in-depth analytics.

> "We got rid of all [of the] chaotic infrastructure in the stores, provided a template for ALL stores, [and are] able to manage all stores from one PC... [We've been able to] consolidate the number of vendors and contracts and drive better economics. We created a Store-as-a-Service for ourselves and our franchisees."

IT ARCHITECT, DESIGN & INNOVATION
TOP 25 GLOBAL RETAILER

INNOVATION ON THE EDGE REQUIRES INNOVATIVE INFRASTRUCTURE

Why Hyperconverged?

Hyperconverged infrastructure (HCI) is simple and easy to use. An HCI solution can be deployed rapidly and much easier than a traditional infrastructure. HCI also allows better streamlining of IT operations and reduces management footprint by automating many of the common management tasks.

A hyperconverged infrastructure is, by design, highly available. This high availability reduces planned and unplanned downtime and will typically mitigate what would have been a disaster in a traditional infrastructure design.

Hyperconverged systems are intended to scale. Once a HCI solution is implemented, expanding compute and storage capacity is easy to do and typically completed in minutes.

What About Economics?

This is where the Scale Computing HC3 Edge solution comes into play. The Scale Computing HC3 Edge solution is known not only for being low cost, but also for being extremely easy to implement and manage.

Scale Computing was one of the first vendors to provide a HCI solution to the small and mid-sized markets. Since then, Scale Computing has become a market leader by providing solutions both large and small. With scale in its name, Scale Computing can confidently claim its ability to provide solutions at a low enough cost to satisfy the needs of even the smallest businesses, and the capability to scale those businesses for the years of growth to come.

Scale Computing and Lenovo Retail Infrastructure

HC3 Edge is a range of customized HC3 systems that can be as small as an IoT device with an Intel Atom processor or range up to a multi-appliance micro-datacenter. Together with Lenovo, Scale Computing delivers a customized, highly flexible, and economically viable hyperconverged infrastructure for an unprecedented price point.

HC3 for edge computing provides the combined advantages of efficient performance, ease of use, and integration with public cloud services and private cloud HC3 systems.

Far from a stripped-down system, Scale Computing's HC3 Edge has all of the features and functionality of mainline HC3 systems and can be managed alongside HC3, HC3 Cloud Unity, and other HC3 Edge systems from a single multi-system management interface. HC3 Edge is the edge computing component for your complete hybrid IT infrastructure.

Benefits of the Solution

The Scale Computing-Lenovo Edge solution provides a unique platform ready to host the workload for any "store-of-the-future."

RESOURCE CONSERVATION With a unique, patented software design, the Scale Computing HC3 hyperconverged system requires less resources than any other hyper-converged solution in the market.

HIGH AVAILABILITY The HC3 system is a true hyperconverged solution that includes built-in replication, cluster-wide redundancy, and automated rolling updates – all to secure the best possible uptime available in the market today.

VIRTUALIZATION Scale Computing HC3 solutions come standard with embedded KVM-based virtualization – there is no additional hypervisor license cost and no recurring fees to use the hypervisor. In fact, a new HC3 VM can be created quickly and easily in under one minute. The built-in virtualization software is also easy to manage through HC3's unified, browser-based management console.

BUILT IN DATA PROTECTION The Scale Computing HC3 solution offers integrated replication and failover capabilities for disaster recovery as well as optional off-site cloud protection. Additional, optional security technologies are available such as UPS systems from APC by Schneider, or F5 security solutions running on HC3 as a VM.

MANAGING 1000s OF STORES With the web-based management interface, thousands of stores can be managed from a single location and in a single interface.

ECONOMICAL The Scale Computing-Lenovo HC3 system offers the most economical, expandable, resilient solution available in the market today. Besides a very attractive initial price point, implementation and ongoing management costs are very low – typically 60-80% lower than other solutions.

More Information

If you would like to know more about the Scale Computing-Lenovo HC3 solution for retail please contact your local Scale Computing representative or send an email to info@scalecomputing.com.

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