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Retail Transformation with Edge

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Retail transformation is an ongoing trend that is changing the way retail companies conduct business. As access to data exponentially increases and technologies like Artificial Intelligence (AI) improve, it is increasingly important for the retail industry to update its technological architecture, embrace emerging ways to connect with customers and streamline supply chain and inventory management.

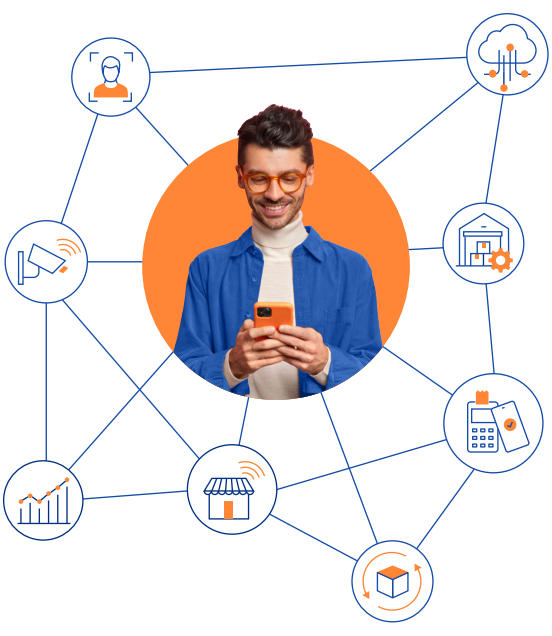
Retail transformation is a term used to describe the use of technology to boost sales, improve customer experiences, and reduce costs. In-store examples can include self-checkout, digital shelf labels and smart freezers. Retail transformation also extends to store-branded mobile apps, digital customer personalisation and other virtual shopping experiences and aids. Other elements of retail transformation include using customer data to gain insights and increase operational efficiency.

Edge computing is a key component of retail transformation

Edge computing refers to computational processes that takes place at or near the physical location of either the user or the source of the data. In the retail sector, this means bringing data closer to the store, distribution centres and customer endpoints such as self-checkout machines.

This enables retailers to process data locally, lowering latency and increasing bandwidth, resulting in improved resilience, cost and real-time operational intelligence. There are many different applications for edge technology in both front-of-store and back-of-store retail situations.

Edge has a number of front-of-store applications for retail businesses, such as **modernisation at the Point of Sale (POS)** which includes countertop checkout, self-checkout terminals, grab and go services and mobile POS. Using edge computing for these use cases can improve transaction speed and security and enhance efficiency in areas with an unreliable internet connection, streamlining checkout and improving the customer experience. Other retail applications for edge technology can include digital signage, sensors, virtual displays and augmented reality.



Key scenarios

Edge technology can also **analyse store traffic and shopper behaviour** to track the store's performance and the performance of various products and promotions. Tracking customer traffic plays a pivotal role in enhancing personalised promotions and optimising customer engagement strategies.

There are also many back-of-store applications for edge technology in retail environments. These can include **automation for store shelf restocking, inventory traceability,** AI and machine learning systems for optimising ordering and shipping, as well as emerging capabilities such as in-store pickup of online purchases, and curbside pickup or delivery.

In the warehouse, relying on manual labor both for repetitive physical tasks and data entry and analysis can lead to human error and inefficiency. Edge computing can **support or even replace the need for manual labor by automating these tasks,** either with robots or with software, resulting in better efficiency, reliability and accuracy and less fatigue and injury.

Edge technology also has security applications – a top of mind concern for retailers. These include **AI and threat detection** which can be used to proactively support security monitoring and loss prevention through methods such as smart video surveillance with advanced video analytics. Edge technology can be used to control access to a store or warehouse by adding layers of authentication, controlling when doors are locked, providing real-time knowledge of who is in the building and improving response capabilities.

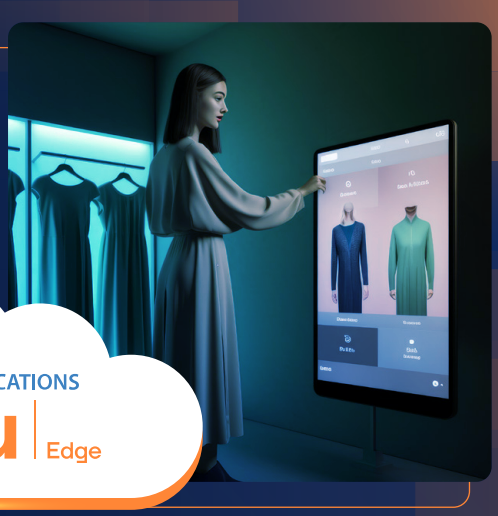
Tackling the challenges ahead

For many retailers, the challenge lies in properly implementing edge computing. In many cases, existing edge technology has been cobbled together over years or decades, has a very limited footprint, or has been built for specific purposes. Furthermore, data nodes located at the edge might not be in environments conducive to traditional digital architecture. These factors make retail transformation at scale an extremely complicated process. As a result, some retailers approach edge deployments in a tactical manner, focusing on specific use cases without embracing a holistic strategy for digital transformation.

Legacy technology stacks are often isolated and monolithic, lacking the ability to integrate efficiently across a larger network. This disharmony between different technological components results in increased complexity which makes it difficult to deploy technologies such as AI and Internet of Things (IoT) devices in stores. In order to properly approach retail transformation, an open, agnostic and agile edge platform is required. That's where we bring you Tata Communications Vayu Edge.

Tata Communications Vayu Edge is an infra and cloud agnostic, multi access edge platform

Tailored for driving industry leading business use cases. It's an expertly managed platform that gives you the flexibility of securely deploying and managing any application anywhere at scale.



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At Tata Communications, we specialise in helping our retail customers accelerate their digital transformation by leveraging cutting-edge cloud-native technologies.

Leverage our 'use case in a box' solution templates to instantly address your specific business needs and eliminate edge related challenges.

Our focus is on helping retail customers build, secure, and manage enterprise-grade edge applications.

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For more information, visit us at www.tatacommunications.com

Contact us