Introducing the Open Retail Reference Architecture

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Digital transformation in the Retail industry is accelerating. This transformation was already underway but has taken a new level of urgency as a result of the impact the Covid-19 Pandemic has had on the workforce and processes that Retailers have been forced to endure[1]. Businesses have had to either step up their digital game, or face being obsoleted by their competitors. Whether you sell merchandise or food, financial services or automobiles, hard or soft goods, you are expected to have an on-line menu or catalog. You are expected to take on-line orders, and in many cases you are expected to deliver orders directly, to the curbside, or at least in a controlled pick-up location.

But the digital transformation is not just about having an on-line presence. It is just as important to have engaging experiences in the store. Whether that is being able to present offers, make recommendations, in-store navigation, store-safety, facilities and equipment maintenance, custom and personalized services, inventory management and replenishment, digital signage and electronic pricing labels, or even some of the more advanced forms of self- and automated-checkout. All of these require increasing digital capabilities.

And, more often, these capabilities need to be created and performed in the store; at the edge. In-store AI, analytics, or process automation becomes increasingly important. Local processing is critical to ensure consistent and real-time interactions; to reduce the overhead of transmitting large amounts of contextual data to the cloud, including removing potentially sensitive and private information from that data; and to ensure the continuity of business in the event of network outages. All of this is demanding compute resource in the store, and more so compute resource within the devices – the point of sale (POS) terminal, information kiosks, digital signs, intelligent cameras and other sensors, automated refrigeration, stock handling, and even intelligent shopping carts – that make up a modern store experience. Innovation around these types of equipment will continue to grow in the years ahead.

However, this creates a critical gap in the retail store infrastructure. We need a platform, a framework, in which different retail processing suppliers can work together to deliver their unique value. To respect the limited footprint and cost constraints of a typical retail outlet, solutions need to be able to share a common infrastructure, to integrate, to leverage common security practices, and a consistent approach to support and service. In short, the industry needs a framework in which we can all bring our own unique value to a collective and coherent ecosystem that is vibrant and economically attractive to Retail merchants.

To that end, a new project is being started within the LF Edge umbrella that creates an open source framework to enable exactly that level of collaboration amongst Retail industry vendors; as envisioned by the Open Retail Initiative (https://www.intel.com/content/www/us/en/retail/open-retail-initiative.html).

Goals

The goal of this project is to create:

1. A base foundation of retail-centric APIs at cloud and edge for building best in class retail experiences (allowing multiple vendors, suppliers and projects to both utilize and implement the APIs)
2. A common application deployment platform for edge-native deployments (to minimize validation and integration testing required)
3. Consistent integration methods, drawing on cloud-native development practices (so that integrating applications and data at the edge uses the same technology as at the cloud)
4. A comprehensive set of connectors for retail IOT devices
5. A community based on OSS principles to enable higher velocity of innovation

This open source framework will be a sub-project of EdgeX Foundry. With the creation of this sub-project, we are enlisting other key partners to help build out the Open Retail Reference Architecture (ORRA).

Scope

The scope of this project is a set of software that can be provisioned in a variety of in-store compute resource – including purpose-built devices such as POS terminals, etc., back-office servers and gateways – and more centralized hybrid-cloud infrastructure to facilitate the creation of services and the collection of data that will compel the next generation of innovation in the Retail industry.

This project will build on collaboration between lF Edge projects EdgeX Foundry, Open Horizon, and Secure Device Onboard (SDO).

Stakeholders

IBM, Intel, and HP Inc. are supporting the creation of this project within the Linux Foundation and invite others to participate.

We are targeting this project to other Retail suppliers, merchants, and partners in creating solutions for the Retail industry.

How To Get Involved

We are seeking retail application vendors who are prepared to help us build this project.

If you have material contributions you want to make to the creation, maintenance, and enhancement of this project, please follow the directions outlined at: https://wiki.edgexfoundry.org/display/FA/Open+Retail+Reference+Architecture.

Hashtags

#retail
#edge
#ORI
#SDO
#SecureDeviceOnboard
#OpenHorizon
#EdgeXFoundry
#EdgeXIoT
#LFEdge
#opensource

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1. “IDC FutureScape: Worldwide IT Industry 2021 Predictions”, IDC, https://www.idc.com/getdoc.jsp?containerId=US46942020