Vertical Solutions Working Group

November 17, 2020

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Agenda

HP to present Introduction to HP Engage Edge – World’s first retail product powered by EdgeX!

Learn how HP is using EdgeX to create solutions to allow businesses to gather and process onsite, real-time data from an array of endpoints in order to better manage and monitor business metrics.

Meeting recording & slides to be posted to:
https://wiki.edgexfoundry.org/display/FA/Vertical+Solutions+Working+Group
HP ENGAGE EDGE INTRO

Sandip Kamat – Global Product Management & Strategy
Henry Lau – Distinguished Technologist, Retail & Industry Solutions
Nov 17, 2020
SOLUTIONS IT SPEND $19.4B MARKET (CAGR 11.8%)

IT Spend for 2020 per Use Case

- Inventory Management, $8.1B
- Loss prevention, $3.4B
- Workforce Management, $3.0B
- Promotion Effectiveness, $2.6B
- Customer Engagement, $2.3B

Source: IHL IT Spend Report, February 2020
BUSINESSES ARE DIGITIZING FOR ACTIONABLE INSIGHTS

- Data remains in silos
- Cloud lock-ins, privacy & latency issues
- Too many sensor protocols
- Custom implementations can’t scale

Ready Edge Compute
Seamless Data ingestion to create insights
RETAIL/HOSPITALITY/INDUSTRY SURVEYS (IHL, 2020)

### Top Priorities for 2020

- **Personalizing the Customer Experience**: 63%
- **Inventory Visibility**: 54%
- **Empowering Store Associates**: 53%
- **Support Store Pickup/Delivery of Digital Orders**: 42%
- **Upgrade CRM/Loyalty**: 38%
- **Refresh POS Infrastructure (HW or SW)**: 37%
- **Customer Journey Design**: 37%
- **POS Concept Evolution (mPOS, cloud POS)**: 36%
- **IT Transformation**: 31%
- **WFM Software/Hardware**: 28%
- **Store Comms (WAN/WiFi) Upgrade**: 25%

### Spending Plans

#### Store Transformation Within 24 Months

- **Proximity / Location-Based Marketing**: 43% (330% increase)
- **Single Unified Commerce Platform**: 36% (310% increase)
- **Internet of Things**: 33% (300% increase)
- **RFID**: 33% (266% increase)
- **Video Analytics**: 31% (288% increase)
- **SD-WAN**: 33% (450% increase)
- **Conversational Commerce**: 28% (460% increase)
- **Edge Computing**: 34% (750% increase)
“From our research, edge computing at the store/restaurant level is one of the highest growth technology areas in all of retail with 460% growth from 2019-2021”

Greg Buzek, President, IHL Group
WHY HP
HP PORTFOLIO
Purpose-built Solutions, Global Presence

All-in-One
- Engage One Prime: Small and Medium Businesses
- RP9 G1: Performance All-in-One
- Engage One: Retail Redefined

Convertible
- Engage Go: Enables mobile and fixed POS

Modular
- MP9 G4: Small Multi-purpose
- Engage Flex Pro / C: Performance Multi-purpose

Peripherals
- Displays
- Barcode Scanners
- Receipt Printers
- Other Peripherals

Cloud Solutions
- Engage Catalog: Preloaded POS Apps
- Engage Console: Mobile Device Mgmt

Edge Solutions
- Engage Edge: Accelerate Store Digitization
• Edge Solutions promise better latency, privacy & security, but hard to implement.
• Many sensor types/protocols
• Custom solutions hard to scale & service

Our opportunity
• Build on HP’s market leading Hardware portfolio, Global footprint, Service coverage and Security.
• Accelerate time-to-market with a ready Edge Compute.
• Industry-leading data ingestion framework. (Bring any sensor, it just works!)
• Scalable & Extensible (multiple compute options, use cases)
WHY EDGEX

Edge Today
- Controlled by a single vendor / proprietary
- Customized & non-scalable solutions
- CIOs can’t update sensors, analytics, use cases.
- No industry collaboration, community innovation

EdgeX
- ✓ Vendor-neutral, Industry-standard, Open framework
- ✓ Ecosystem unifies & accelerates deployment of IoT
- ✓ Freedom for CIOs to upgrade their components, sensors or analytics engines.
- ✓ Broad industry support, community innovations

6M DOWNLOADS!
(MAY 2020)
INTRODUCING
HP ENGAGE EDGE
HP ENGAGE EDGE

Accelerate your Edge Solutions

Purpose-built hardware (Starting with HP MP9)

Preloaded Data-Ingestion Software

Enable such use cases

Data ingestion software ready for a variety of sensors

Threat Detection
Inventory Management
Customer Engagement
Promotion Effectiveness
Workforce Management
World's first retail product powered by EdgeX™

- Common sensors supported out-of-the-box
- Intel certified “RFP-ready-kit”
- HP’s world-class services & carepacks
# VALUE PROP

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
<th>Why</th>
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<tbody>
<tr>
<td>World’s first retail product powered by the EdgeX Foundry™</td>
<td>Retail, Hospitality &amp; Industry partners looking to...</td>
<td>✓ Accelerates your Edge deployments</td>
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<td>Purpose-built</td>
<td>manage their business metrics..</td>
<td>✓ Avoids custom implementations</td>
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<td>Preloaded data ingestion software</td>
<td>With Real time, onsite Edge solutions.</td>
<td>✓ Frees you to focus on core competencies</td>
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<td>Choice of HP hardware</td>
<td>No cloud lock-ins, latency &amp; privacy issues</td>
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<td>HP’s warranty &amp; service</td>
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USE CASES

Loss Prevention

Inventory

Engagement

Promotions

Labor Autom.
AUTONOMOUS CAR EDGE

- When driving a vehicle, milliseconds matter
- Numerous sensor data streams
- Real-time data analysis
FACTORY AUTOMATION EDGE

- Predictive maintenance of equipment
- Environmental measurements
- Monitor shop floor traffic
- People tracking
- Asset management
- Shelf replenishment
- Loss prevention
THE STORE ROOM CLOSET SYNDROME

- Run out of space
- Run out of plugs
- Incompatible tech
- Difficult to maintain or upgrade
COMMON FRAMEWORK FOR FLEXIBILITY & ADAPTABILITY
HP ENGAGE EDGE - SOFTWARE
ENGAGE EDGE SOFTWARE LAYERS

- **HP Components:**
  - HP ThinPro OS
  - Docker Container Engine
  - Edge Framework

- **Solution Components:**
  - Devices Config
  - Applications Config
  - Use Case Applications

Hardware: HP MP9 G4
EDGEX MIDDLEWARE FRAMEWORK

- An open source, vendor neutral, flexible, interoperable, software platform
- Interacts with physical devices and Information Technology systems
SELF-CHECKOUT LOSS PREVENTION – LAYOUT
SELF-CHECKOUT LOSS PREVENTION – ARCHITECTURE

EdgeX Framework

REST/API Device Service

MQTT Device Service

AI/ML Object Recognition

Video Pipeline

Event Reconciler

Loss Detector

Insights / Results

HP Engage Edge
QSR INVENTORY TRACKING – ARCHITECTURE

EdgeX Framework

RFID Event Handler
Insights / Results

HP Engage Edge

MQTT Device Service

RFID Subsystem SW

RFID Antenna

RFID Reader
SOLUTIONS DEVELOPMENT
SOLUTION DEVELOPMENT FLOW

(1) Sensor data stream(s)

(2) Use case application(s)

(3) Data export(s)
“EDGE” IS FULL OF POSSIBILITIES

• Check out the HP blog post

• Currently running pilots, join us

• Let’s accelerate the future!
THANK YOU
Thank you