#CiscoLive

The bridge to possible

Applications and Data at the Edge

The Business Case for an Edge as a Service approach for Lifecycle management

Ola Mabadeje
Product Manager
Emerging Technologies & Incubation

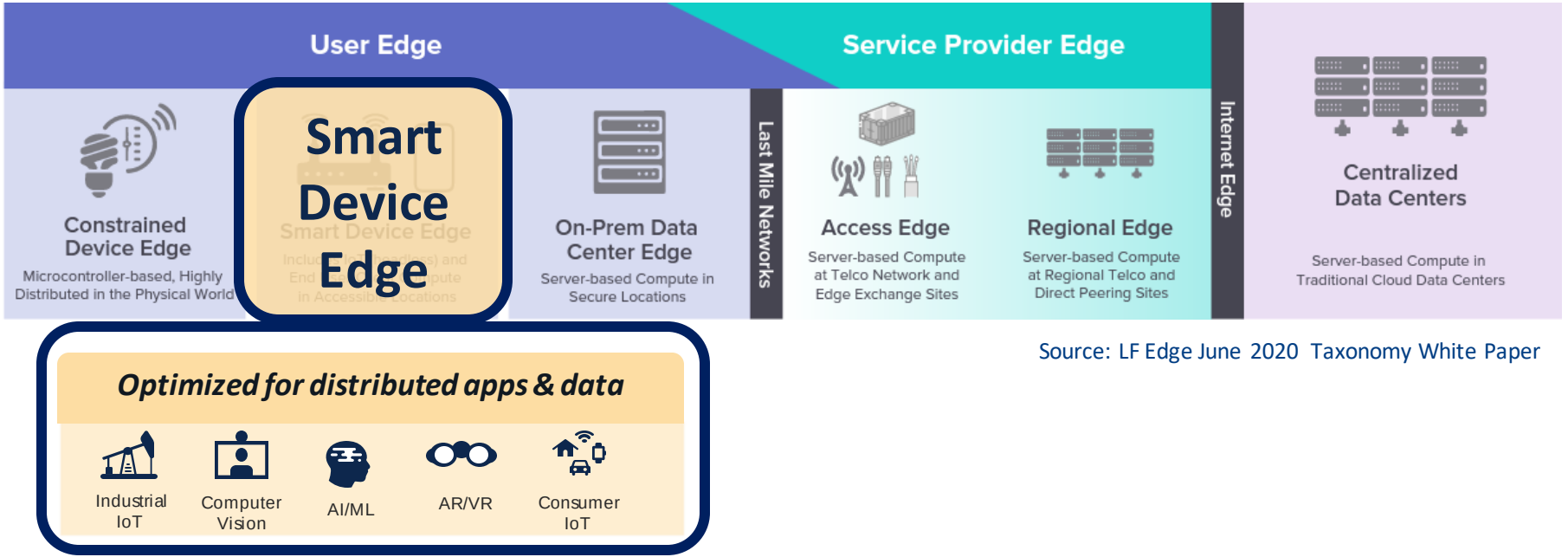
PSONWT-2212

Agenda

- Introduction
- Which Edge?
- Why now?
- Challenges with current approaches to Edge applications and data lifecycle management
- The Edge as a Service approach
- Business case study comparing approaches
- Conclusion

Which Edge?

Linux Foundation Edge Taxonomy



Source: LF Edge June 2020 Taxonomy White Paper

Why now?

Market trends and Customer use cases show a changing landscape and need for a better approach

"Currently, 30% of all Edge deployments include AI/ML. Our projection is that it trends towards 100% in a few years. Data explosion at the Edge is real, it continues to grow exponentially and becomes the biggest Edge driver.
- Gartner

" Around 10% of enterprise-generated data is created and processed outside a traditional centralized data center or cloud. By 2025, this figure will reach 75%"
- Gartner

"By 2024, the Number of Apps at the Edge Will Increase 800%"
-IDC FutureScape Prediction

Edge is becoming more important for data Pre-processing, to figure out what data to keep locally and to figure out what data to transfer to the cloud.
- Edge Architect, Retail

Cost of transit is absolutely a concern. we have created some mini data lakes at the sites, because network is, while people think it's cheap, not cheap
- Director of IT, Mining

To improve efficiency, we need edge computing to run outlier detection algorithms that prevent waste of time for scientist
- Director Data Science, Big Pharma

Current deployment approaches and challenges

Vendors Contractors

Loss Prevention

Solution Software
Libraries Runtimes
Management Software
Operating System
Compute Hardware

Digital Signage

Solution Software
Libraries Runtimes
Management Software
Operating System
Compute Hardware

Inventory Management

Solution Software
Libraries Runtimes
Management Software
Operating System
Compute Hardware

Internal DIY Kit

Siloed point solutions

- Long deployment times (months)
- Slow innovation cycles
- Difficult to customize

DIY solutions

- Long deployment times (Years)
- High cost of Upskilling
- Expensive to maintain

Current approach is not sustainable

Delayed time to Business Value

"Deploying an App to all stores can range from four to six months. Anytime we're deploying something new, we need to ensure we are not impacting store operations. We go into our first pilot store, then ***it's a slow rollout from there****"*
– VP of IT and InfoSec, Retail

Broken Support Model

"The biggest challenge is, our whole infrastructure is run on an open-source platform. We have to support ourselves. ***Biggest pain point is no vendor support****…"*
-Edge Architect, Retail

High IT Opex & Capex

"It could cost ***$20K -$30K to send a tech to an offshore platform*** *to upgrade, modify or do a break-fix"*
– CTO, Oil & Gas System Integrator

"on an average day, ***compute utilization is 12% to 15%..****"*
- SVP, Retail Systems

Skills gap

"Upskilling is a big challenge*. For example, as an infrastructure team member in the past, I have never written code, but now I have to write code to deliver infrastructure-as-a-code. Every day, there is one new thing that is coming up."*
-Domain Architect, Edge Systems

Persona Goals

VP of IT

"How can I improve time to business value with the current skills gap while avoiding additional IT overhead"

Developer

"How can I build AI and data heavy Apps at the Edge and deploy them in seconds in a platform neutral setting, so I can focus on business logic?"

App Manager

"How do I minimize the toil of managing a variety of apps across 1,000s of sites while enabling rapid deployment for App Developers and non-technical users."

Edge as a Service Market Drivers

XaaS as a mainstream consumption model

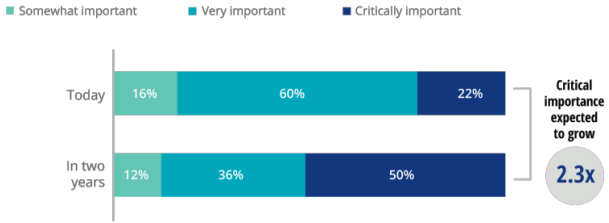
Open-Source software maturity and adoption

Acceleration and impact of Developer Velocity programs

FIGURE 4

Over the next two years, XaaS will become even more critical to organizational success

Strategic importance of XaaS to organization's business success



Note: N=600 US IT and LoB professionals. Small percentages reporting "minimally important" are not shown.
Source: Deloitte Everything-as-a-Service (XaaS) Study, 2021 edition.

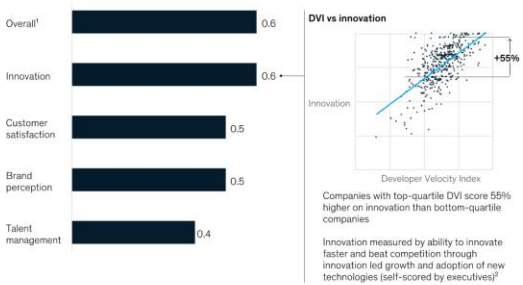
Deloitte Insights | deloitte.com/insights

LF Edge Expands Ecosystem with Open Horizon, adds seven New Members and reaches critical deployment milestones

SAN FRANCISCO, CA – April 30, 2020 – LF Edge, an umbrella organization under The Linux Foundation that aims to establish an open, interoperable framework for edge computing independent of hardware, silicon, cloud, or operating system, today announced continued project momentum with the addition a new project and several technical milestones.

Top companies by Developer Velocity have an innovation edge.

Correlation between Developer Velocity Index (DVI) and key business performance indicators,
n = 440, 1=highest positive correlation, –1=highest negative correlation, 0.5+=strong correlation



Companies with top-quartile DVI score 55% higher on innovation than bottom-quartile companies

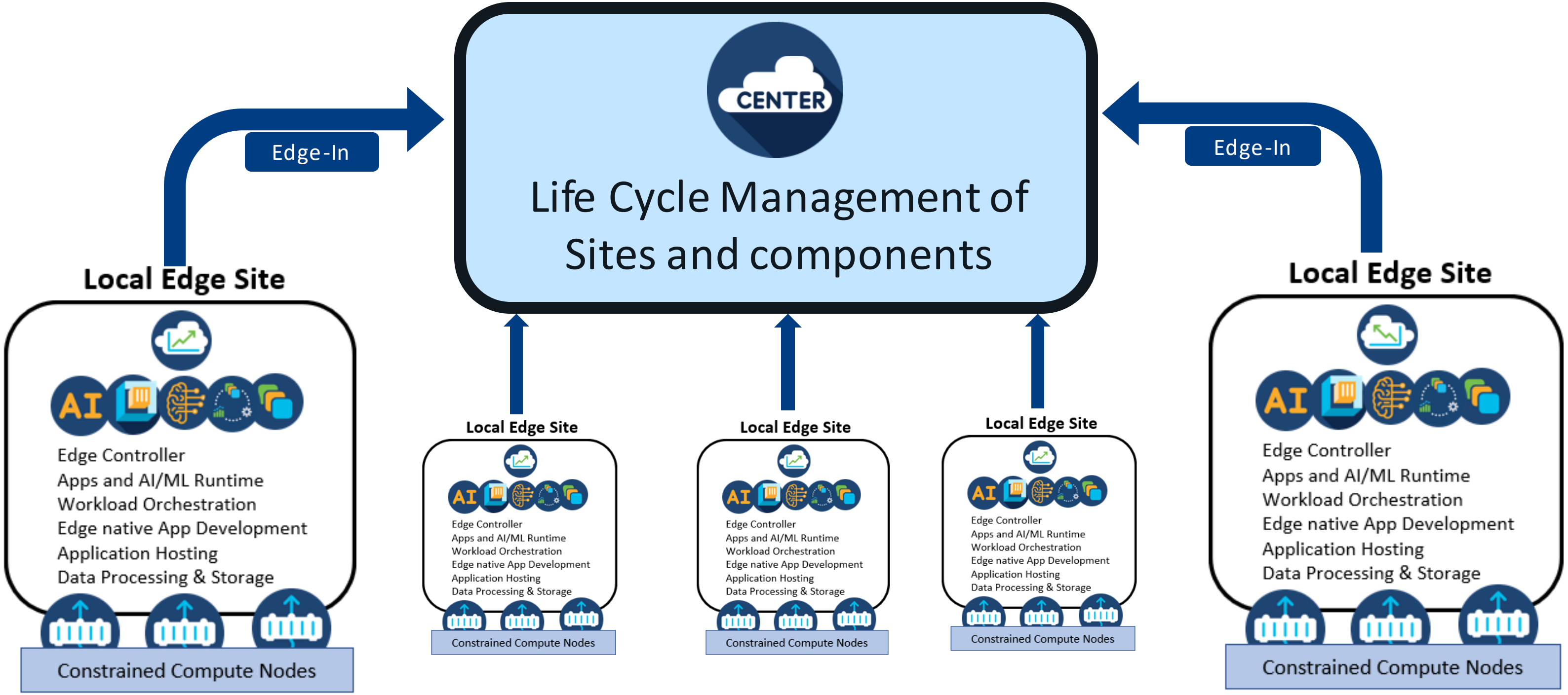
Innovation measured by ability to innovate faster and beat competition through innovation led growth and adoption of new technologies (self-scored by executives)[2]

[1] Average of innovation, customer satisfaction, brand perception, and talent management.
[2] Measured by an average of new technology adoption (level of adoption for artificial intelligence, machine-learning, Internet of Things, augmented and virtual reality, fifth generation, blockchain, digital twins, robotic process automation, edge computing, and autonomous physical devices) and McKinsey innovation quotient metrics (an organization's innovation-led growth as well as innovation speed and perception relative to competitors).
[3] Source: Developer Velocity Survey; expert interview

A more efficient approach

Edge as a Service

"A SaaS based approach for solving edge-native use cases"



Customer Benefits

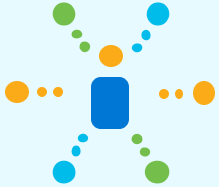
Accelerated Time to Value

Non-tech Expert Friendly

Optimal Developer Experience

Low Investment Risk

Community Software rules



Flexibility and Scalability

Illustrative Customer Case Study

Customer Profile

North American Retailer with $10+ Billion in revenues

- 300 new store locations
- Deploy 3 computer vision Use cases

Use cases

Use Case 1

Scan Avoidance

Use Case 2

Rolltainer Detection

Use Case 3

Stock Room Utilization

Why is the Customer making this investment?

*The 2020 National Retail Security Survey finds shrink at an all-time high, accounting for 1.62% of a retailer's bottom line, costing the industry $61.7 billion.**

*Source: National Retail Security survey 2020

Case Study Personas and Jobs-to-be-done

Line of Business

Deploy Apps within budget and with strong ROI

- 3 Use cases
- 300 New Stores

Software Developers

Perform Internal PoC

- Build and Integrate Libraries, Data Processing tools and AI/ML runtime
- Hardware/OS sizing
- App/Model Development

Perform Pilots

- Hardware/OS ecosystem compatibility
- Service Level Objectives adherence
- Security assessments

App Manager

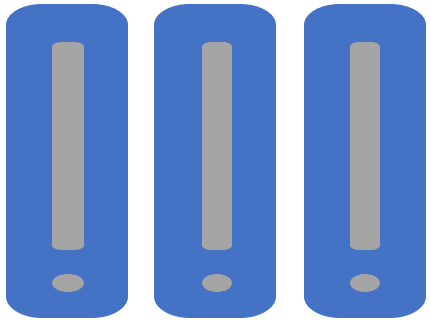
Deploy and Manage in production

- 6 test store pilots
- 300 Production deployments
- Lifecycle management

Case Study Solution Options & Attributes

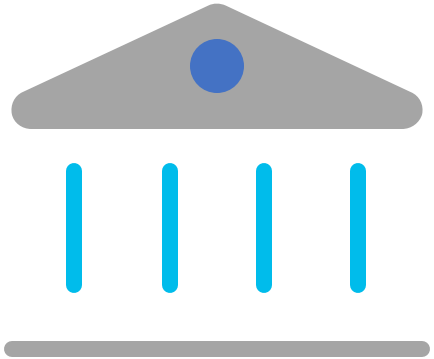
Build/Buy

- Vertical Bespoke deployments
- One use case at a time
- Complex and lengthy deployment
- Expensive Support and Lifecycle management
- Low compute utilization rates



Edge as a Service

- Multiple use cases on one horizontal platform
- Flexible, open and future-proof
- Provider's Software DevKits and Lifecycle management tools across multiple use cases
- Scale from 10s of sites to 1000s in minutes
- Optimal compute utilization rates

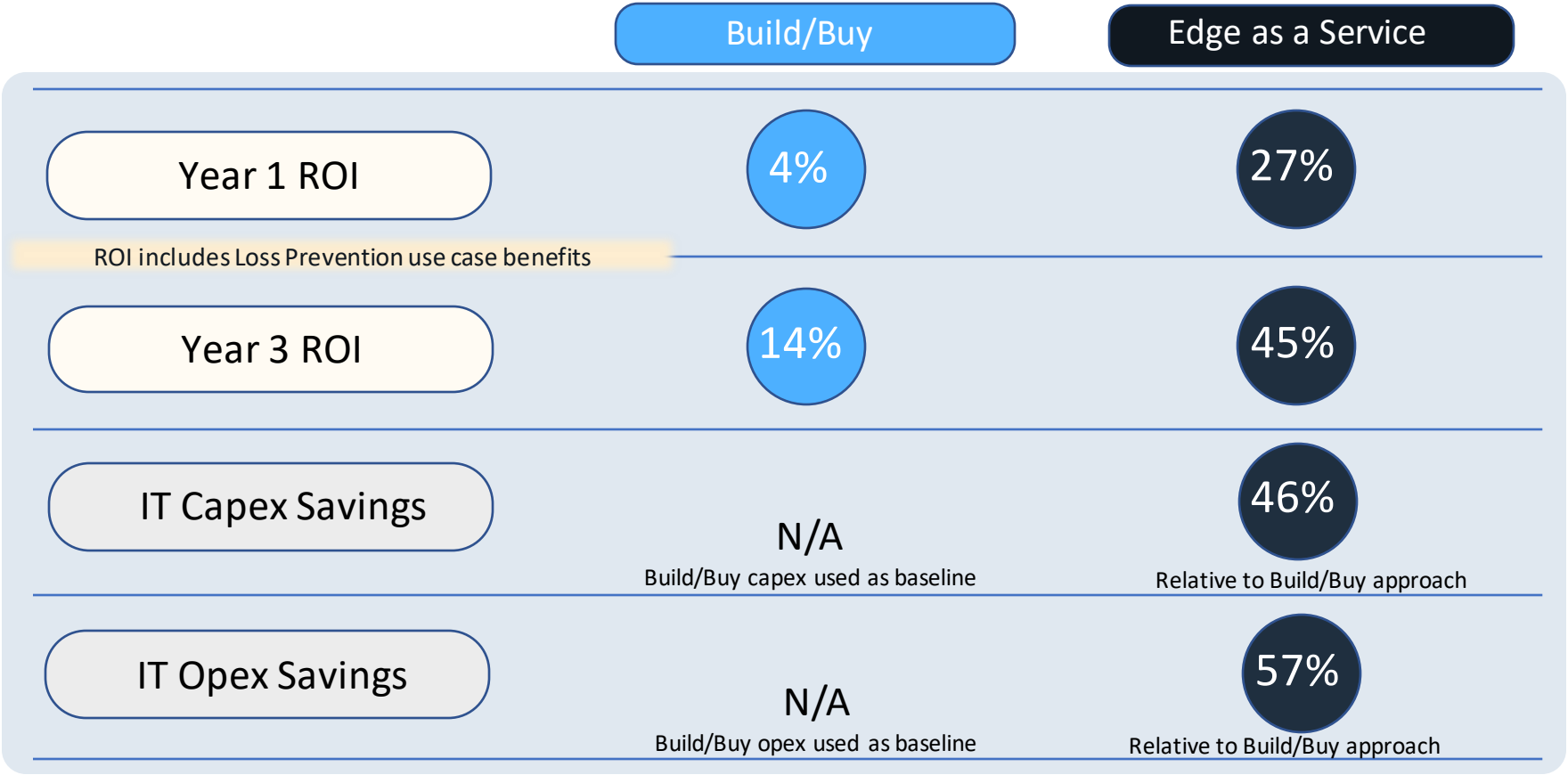


Case Study Framework

Overview of Solution options and business drivers

Scenarios	Cost Categories	Build/Buy Cost Drivers	Edge as a Service Cost Drivers
Solution options Buy/Build Vs. Edge as a Service	IT CAPEX	1. Compute Nodes & Spares per site per use case 2. Cameras 3. Application & ML Model Development	1. Edge Compute Nodes per site 2. Cameras 3. Application & ML Model Development
Use cases 3 use cases across 300 retail stores	IT OPEX	1. Implementation Costs 2. Camera Software License 3. ML Model Licensing 4. First line IT Support 5. Managed Service Provider Solution Support	1. Implementation Costs 2. Camera software License 3. ML Model Licensing 4. IT Support (Sites, Apps and Nodes)
Economic Analysis Scope: Compare 3-year investment scenarios			

Economic Benefit Estimates



Economic Analysis Inputs and assumptions

Shrink/Loss Prevention Calculation Inputs*

# of Employee Apprehensions	560
$ loss per employee	$1,139
# of Shoplifting incidences per store	689
$ loss per shoplifting	$300
$ per Robbery	$828

**Source: National Retail Security survey 2020*

IT Opex and Capex estimates

Nodes per Site for EaaS	1 Leader and 2 others	
Nodes per use case for Build/Buy	1 Live and 1 Spare	
Camera Equipment and Licensing cost	Based on Cisco GPL	
Camera Equipment count	3 per site	
ISV Dev cost	Estimated per ISV input	
ISV Licensing cost	Estimated per ISV input	
Edge Compute Node cost		$1,250
EaaS Annual Subscription per node	Cost based pricing estimate	
IT Level 1 Support FTE		1
IT Level 1 Support FTE Fully loaded annual cost	$	150,000
MSP Level 2 Apps Support annual cost	$	200,000
MSP Level 2 Field Support annual (per 100 sites)	$	100,000

Source: Primary research and internal estimates

Wrap up and Call to Action

Learn more

Co-innovate

- Technology and Business Model innovation is happening concurrently at the Edge
- Cisco is actively innovating in this space
- To Learn more:
  - Attend the Edge-Native session **BRKNWT-2205** at CLUS
  - Visit the Emerging Technologies & Incubation booth at CLUS
  - Co-innovate with us through our Design Partner Program, visit https://www.ciscodesignpartners.com/

Thank you

#CiscoLive