The Intelligent Edge is here

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Experiences and outcomes come to life at the Edge

- Deliver enhanced experiences everywhere
- Connect patients and caregivers
- Keep workers safe and connected
- Improve results and predict failures before they occur
The Edge is a Place...

Simply ... The Edge is NOT the data center and NOT the cloud and the cloud is just a data center you don’t know where it is

The Edge are things & data generation & decision making & actions ... a PLACE where new data sources meet actions
The Edge is a Place...

Industrial Edge

Telco & Media Edge

Analytics and AI Edge

Workspace Edge
Why Compute at the Edge?

- Latency
- Bandwidth
- Cost
- Threats
- Duplication
- Reliability
- Compliance
HPE new product category: “Converged Edge Systems”
The first marriage of core OT and IT, expressly designed for the IoT

HPE Edgeline Systems
3 Points of Convergence all in one box:
Deep analytics/compute, Data acquisition/control, Enterprise management

1. Unprecedented Edge compute
   Deep compute, open standards
   - Up to 64 Intel Xeon cores
   - Hot plug compute options
   - High Performance GPU
   - Open, Industry Standards
   Avoid cloud or appliance lock-in

2. Unique integration of precision data capture & control
   Deep data ingest, “Things” control
   Edgeline OTLink

3. Data center-class security, device & systems management
   Remote maintenance, config., updates
   HPE “Integrated Lights Out” Systems/Device Management
   - Millions shipped

Engineered for the harsh edge environment:
Compact, low energy, rugged – shock, vibration, temperature, various mounting options
It is Real and Happening...

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Analytics and AI Edge

Workspace Edge
Edgeline in Automotive
Production line quality control

Former Outdated Models

New Converged Model

“The Things”
Door handles, wipers, locks, lighting infotainment, etc.

Edgeline System

+ OT Link
HW & SW
Edgeline in Oil & Gas production

Customer benefits

- Aggregate data from >100 asset types (incl. 3rd party)
- Run analytics for local reporting and optimization
- Fast setup and repair. Easy maintenance.

- Platform Value

- Rugged edge-optimized system with direct OT* connectivity
- Highly available, modular system for rapid deployment and serviceability
- HPE remote systems management

Enterprise IT + Converged OT

HPE Edgeline EL4000
Converged Edge Systems

VMware vSAN - Up to 48TB raw storage

Operations APP 1 ESXi VM1
Operations APP 1 ESXi VM2
Operations APP 1 ESXi VM3

1-4 M.2 SSDs

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Ethernet/WiFi/LTE

FR Data Uplink

Communications Equipment

Field Equipment

Process Control Systems

Enterprise IT

Converged OT

Ethernet or Industrial Protocols (MODBUS, PROFINET ect.)

Operations

APP 1
ESXi
VM

1-4 M.2
SSDs
It is Real and Happening...

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Workspace Edge
To create the world's best Mobile Edge Solution

Combining the two best in class solutions

SAMSUNG

SW

vRAN Function

ME App

Mobile Edge Computing Platform

HW

Traffic & Time Sync.

Acceleration

NIC

FPGA With Samsung ASIC

FPGA

Smart NIC

EL8000 Edge Server

Smart NIC for vRAN Function

Cascade Lake CPU

GPU

GPU

GPU

GPU

GPU for ME App

Empty Slot

Empty Slot
It is Real and Happening...

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Workspace Edge
Edgeline Workstation at F1
Delivering predictable performance on the F1 Edge

Delivering on:

- High Availability
  - Enterprise class management/redundancy
- High Performance
  - Supporting 4K screen resolution
- Space Savings
  - 4 servers/GPU per 1U
- Reliability in harsh environments
  - Pit lanes at race tracks

Powering the Pit Lane Video Wall
It is Real and Happening...

Industrial Edge

Analytics and AI Edge

Telco & Media Edge

Workspace Edge
AI-assisted Video Analysis

More & More Video Data Generated

<table>
<thead>
<tr>
<th>Store Type</th>
<th>Camera Streams</th>
<th>Network Utilization</th>
<th>Storage (30 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Retail</td>
<td>10</td>
<td>82 Mbps</td>
<td>13 TB</td>
</tr>
<tr>
<td>Large Retail</td>
<td>60</td>
<td>490 Mbps</td>
<td>79 TB</td>
</tr>
<tr>
<td>Warehouse</td>
<td>250</td>
<td>2 Gbps</td>
<td>330 TB</td>
</tr>
</tbody>
</table>

1. 1080P (Full HD), 30 fps, 50KB frames, H.264 encoded, Medium VQ streams
2. Assume 12 hours of motion per day

More & More Cameras Installed

1 billion installed security cameras WW (2020)
30 billion frames per day

Video is Best Analyzed at the Edge

- Latency
- Bandwidth
- Cost
- Threats
- Duplication
- Reliability
- Compliance
An operator can typically monitor a maximum of approximately **16** camera feeds at any given time.

With AI an operator can monitor upwards of **600** camera feeds at any given time.
Foxconn Manufacturing
Pointnext + Edgeline + ISV Partner

Automated Server Quality Audit using Gantry Robot, Cameras, HPE Edgeline EL4000 and User-intuitive, Flexible and Scalable AI Training

Factory contains 5 progressive assembly lines, for ~ 45,000 units/month. The system saves 96 sec on each unit assembly audit.

Benefits

ROI
~ 1.5 years*
* Depends on factory volume

Product quality
First Pass Yield + 1%
Out Of Box audit -25%

Customer Experience
Defect on Arrival -25%

1 plate requires high quality photos (75MB or 600Mbs) which must be processed real-time

Processing Time
Cloud
21 seconds
vs.
Edgeline
1 second
AI-assisted Video Analysis
Retail use case – Product placement
Enterprise-class IT moves to the Edge

HPE Edgeline Converged Edge Systems

- IT-OT Integration
- Edge-optimized systems management
- Ruggedized form factor
- OT Link HW and Platform SW
Thank you