Intelligent Edge

HPE makes sense out of SAP’s SAP Leonardo suite and how that integrates into your ‘Digital Core’ to unleash the business and disrupt.

2 November 2017

Drew Iacone - HPE
Vice President – Global SAP Practice and Alliance Based out of Palo Alto, USA SAP focused since 2007
## Today’s Agenda

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Opening Remarks

HPE believes the world will be hybrid and that the intelligent edge will unleash an industrial IoT revolution.

At the center of this is your Digital Core.

Adding Intelligence to the Digital Core fuels the **business case** for Digital Transformation.

Empower Intelligent Edge to realize the purpose of Core ERP.
Opening Remarks
HPE’s innovation commitment to help customers progress toward the future

- Multi-purpose & Secure
- Mission Critical
- Workload specialized
- Software defined
- Composable Infrastructure
- Hyper Converged
- Edge computing
- Campus Infrastructure

On Premise Data Center

Cloud

Internet of Things

Future
100% of SAP Customers will be hybrid by 2025
What will happen to SAP ERP?

SAP and SAP HANA are trademarks or registered trademarks of SAP SE in Germany and in several other countries. All other third-party trademark(s) is/are property of their respective owner(s).
Mission Critical Connections in the ‘Edge to Core’ era
Understanding the key architectural considerations and how this impacts your hybrid cloud deployment options

Digital Core
(SAP S/4HANA)

SAP HANA Persistence
SAP BW or Enterprise HANA
Disaster Recovery Site
Enterprise Storage
On-Premise Application Tier
Non-SAP HANA Databases
Data Lake / SAP HANA VORA
SaaS solutions

Logical Data Warehouse solutions

Outside IT (OT) and IoT solutions

Typical ‘Core’ SAP systems required to ‘Run Live’

Digital Core
(SAP S/4HANA)

Structured
Virtual Tables

Replication (batch to trigger based)
(Classic ELT/ETL tools or Native SAP Extractors)

Logical Data Warehouse
(SAP HANA +++)

Structured
Unstructured

(on HPE’s Data Center solutions)

(Shift Left with HPE’s Edgeline ‘Converged Edge’ solutions)
Role of Modern ERP
Evolution and progression of ‘Insight to Action’ in context of the ‘Industrial IoT revolution’

Insight

People
Technology
Process

Enterprise resource planning and optimization

Action

Business Suite era
People use technology turn insight into action via traditional analytics and reporting
Process improvement is rigid

Digital Core era
Technology and people turn insight into action via embedded and predictive analytics
Process improvement is agile

Edge to Core era
Technology turns insight into action via IoT data, predictive analytics, and machine learning
Process improvement is fluid
HPE Next: HPE’s Business Case for Digital Transformation
Understanding SAP’s critical role in our ‘Next Gen IT’ and ‘Quote to Cash’ projects

<table>
<thead>
<tr>
<th>Offerings</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume:</td>
<td>26+ platforms</td>
<td>10 platforms</td>
</tr>
<tr>
<td>50K active configurations¹</td>
<td>10K active configurations</td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>~27 platforms</td>
<td>7 platforms</td>
</tr>
<tr>
<td>Option SKUs:</td>
<td>~3500 across major commodities</td>
<td>~875 across major commodities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supply Chain &amp; Manufacturing:</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 manufacturing locations</td>
<td>7 manufacturing locations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services:</th>
<th>From</th>
<th>To</th>
</tr>
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<tbody>
<tr>
<td>33 supported languages</td>
<td>10 languages</td>
<td></td>
</tr>
<tr>
<td>Diffused locations</td>
<td>Centralized hubs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processes &amp; IT:</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 processes</td>
<td>100 processes</td>
<td></td>
</tr>
<tr>
<td>~950 applications</td>
<td>~350 applications</td>
<td></td>
</tr>
<tr>
<td>10 ERP systems</td>
<td>1 ERP system</td>
<td></td>
</tr>
</tbody>
</table>

We run SAP…

HPE first deployed SAP ERP over 20 years ago… we started our journey to SAP S/4HANA here.

**ERP & supply chain**
- SAP ERP Central Component (ECC) **accelerator**—ERP processes in key areas such as order management administration, month/quarter/fiscal year end processing, and live operational reporting.
- SAP S/4HANA (S/4) in sandbox—Delivering modern ‘experience-at-scale’ to users for both ERP and SCM. UAT for new Process’
- SAP Global Trade Services (GTS) reporting views enabled via a SAP HANA live sidecar

**Next Gen SAP analytics**
- Migrated off SAP Business Warehouse (BW) Accelerator to SAP BW on SAP HANA and saw great query performance across the board for all SAP BW reports
- Near real-time **visibility** into inventory and accounts for lookups and ‘Quote to Cash’

**Financial planning**
- Migrated **SAP BusinessObjects™ Planning and Consolidation (BPC)** to SAP HANA to improve overall performance for core users
- Drive accelerated and sophisticated scenario planning in real time
- End user productivity increases and gains

40 TB of SAP HANA | 28 TB (production)

**Deployed on HPE’s Mission Critical Infrastructure solutions**
(ConvergedSystem/SAP HANA appliances)

18.5 TB of SAP HANA

2 TB of SAP HANA

18.5 TB of SAP HANA
We run SAP…
HPE’s instance consolidation and agile migration strategy into a single greenfield SAP S/4HANA instance
We run SAP…
HPE leverages APO and now IBP to optimize our Global Supply Chain and collaboration with critical suppliers

Every 60 seconds, we ship… 12 Network Devices… 10+TB Storage… 5 Servers

<table>
<thead>
<tr>
<th>Plan</th>
<th>Source</th>
<th>Make</th>
<th>Deliver</th>
<th>Services</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>10K+ Active SKUs</td>
<td>100+ Suppliers</td>
<td>5M+ Units Annually</td>
<td>70+ Ship-to Countries</td>
<td>200+ Spares Suppliers</td>
<td>15K+ Orders managed daily</td>
</tr>
</tbody>
</table>

- Networking
- Server & Blade Solutions
- Storage Solutions
- Converged Systems
- High Performance Compute

2016 Industry Awards
- #4 top IT SC (#17 all SC)
- 10/10 social responsibility
- #1 Vendor in Q3
- Stop Slavery
- #1 in industry segment

#2016 Industry Awards
Global Supply Chain Scale
… via 7 HPE fulfillment nodes, 37 direct ship nodes, 35 distribution nodes, 102 critical suppliers

END-TO-END REAL-TIME ORCHESTRATION

- Components
- Suppliers
- LSP’s
- Mfg
- Integration Centers
- HPE
- Integration Partner/ VAR
- CMs
- ODMs
- OEM / Cloud / SaaS
- Enterprise

- Logistics
  - 5 Key partners
  - Delivery precision >99%
  - Claims <10 ppm
  - 650,000 EG shipments/year
  - 3,500,000 boxes/year
  - 75,000 tons/year
  - 60 trucks/day

- Partners
  - 3 ODMs
  - 2 CMs
  - > 10 Integration Partners
  - Managing 18,500 orders / month

- Disturbance
  - 100+ Suppliers
  - 20,000 Parts
  - 60 engineering events/day
    - 20 reactive
    - 40 proactive
  - 200+ Shortages/month
  - 300+ Escalations/month

~80% of data is outside the 4-walls of HPE
Live Demo: Smart Warehouse IoT Use Case

- Sensors on/in in-bound delivery vehicles
- Connect & Collect
- Video capture of delivery vehicles from Warehouse
- Model/Learn
- New Insights
- Real-time Action

- Predictive Maintenance Alert: Vehicle has a failing cooling unit.
- Logistics Optimization Alert: Prioritize unload of subject vehicle
- Product Safety/Quality Alert: Flag inventory or goods for secondary inspection upon unload

This live demo is running SAP IoT Services and Leonardo Edge Services with SAP Data Hub on HPE’s EdgeLine 1000 (EL1000)
Retrofitting your important ‘Things’ with SAP Leonardo

SAP Leonardo connects your edge to your core to improve yields, utilization, productivity, safety, quality, profitability, etc.

Typical ‘Intelligent Edge’ SAP systems

- SAP Leonardo Edge (micro) Services*
- SAP IoT Services (formerly Plat.ONE)
- Manufacturing Execution / MII
- Warehouse Management
- Transportation Management
- Plant Maintenance
- Service / Fleet Management

Things

(on HPE’s Edgeline solutions)

Typical ‘Core’ SAP systems

- Digital Core (SAP S/4HANA)
- Logical Data Warehouse (SAP HANA +++)
- Structured
- Virtual Tables
- Unstructured

(on HPE’s Data Center solutions)

* Required ‘Core’ services shown here like SAP Machine Learning and SAP Predictive Analytics can run on the SAP Cloud Platform or On-Premise but should be run wherever you intend to build your Data Lake or Logical Data Warehouse longer term.
Why customers are shifting left to turn Data → Insights then Insights → Action in the ‘Edge to Core era’

How SAP Leonardo works

Apply learnings as micro services

Leonardo services include creating or updating transactions in ERP

Push models and algorithms to the Edge to be applied

Build and run models via SAP Predictive Analytics and Machine Learning

Send Edge data to Core for baseline modeling and to update models

Why SAP Customers like the option to Shift Left with HPE Edgeline systems

<table>
<thead>
<tr>
<th>Why</th>
<th>Shift Left with HPE Edgeline systems</th>
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<tbody>
<tr>
<td>Latency</td>
<td>Bandwidth</td>
</tr>
<tr>
<td>Data Corruption</td>
<td>Threats</td>
</tr>
<tr>
<td>Cost</td>
<td>Compliance</td>
</tr>
</tbody>
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Your Edge - HPE Edgeline IoT Systems

Data Center-class IoT optimized solutions engineered to be deployed into harsh edge environments

HPE Edgeline GL10
Intelligent Gateway

Expandable, low power edge gateway powered by Intel Atom dual core processor for data aggregation and light compute at the edge

HPE Edgeline GL20
Intelligent Gateway

Industrialized, performance-optimized edge gateway is powered by Intel Core i5 processor for data aggregation and higher compute capabilities

HPE Edgeline EL1000
Converged Edge System

Features a single compute blade (up to 16 Intel Xeon cores), with two data capture/control slots and multiple I/O and storage options

HPE Edgeline EL4000
Converged Edge System

Includes up to four compute blades (up to 64 Intel Xeon cores), with four data capture/control slots, and scalable high capacity storage

HPE ProLiant m510
Server for ELx000
(General Purpose IoT Workloads)
(Intel Xeon D, 2.0GHz, 8 or 16 cores)

HPE ProLiant m710x
Server for ELx000
(High End IoT Workloads: Video, etc.)
(Intel E3v5, 3.1-3.6GHz, 4 cores, GPU)

HPE Factory Ship option for SAP Leonardo Edge*

* General availability for factory ship option on m510 and m710x is expected in Fall 2017
# Add-On Options

## GPUs

- **NVIDIA Tesla P4**
  - **GPU Memory:** 8GB
  - **EL1000 Capacity:** 1-2 Cards
  - **EL4000 Capacity:** 1-4 Cards

## Wireless Connectivity

- **HPE GL10**
- **HPE GL20**
- **Aruba AP-205**
- **Aruba AP-335**
  - 3G/4G
  - BT/BLE
  - WiFi
  - ZigBee
  - LoRa
  - Sigfox
  - And more…

## HPE Micro Datacenter

A single and half cabinet data center solution which supports edge deployed converged hybrid infrastructure. Provides a protected data center environment for medium or large implementations.

- Self contained space, power and cooling
- Software defined
- Unified remote management/control of all infrastructure
- Factory enabled rapid hybrid infrastructure

Description: Any site looking to expand SAP infrastructure to support heavy data analytics.
HPE’s Edge: What is HPE doing to make their edge… intelligent?

Smart Device / Predictive Maintenance Use Case: Your Core is HPE’s Edge and it (or you) call us 5+ million times a day!

Learning Takes Time --- Avoid the Panic Monster

The Edge to Core era is just a ‘Bigger’ Big Data problem

Practical Examples from HPE’s ‘Intelligent Edge’

Knowing that your Digital Core includes a Data Lake and lots of Non-SAP Data!
Why Trust HPE…
… for your SAP deployment and implementation needs

28 year Alliance

We know SAP® | We run SAP | End-to-end portfolio | Co-Innovation roadmap

Mission Critical Infrastructure Solutions | Industry and Intelligent Edge/IoT Solutions | SAP Service and Support offerings | Secure Hybrid Cloud Options

SAP is trademark or registered trademark of SAP SE in Germany and in several other countries. All other third-party trademark(s) is/are property of their respective owner(s).
We know SAP…

Co-Innovation Engineering Labs

Over 200 engineers from SAP and Hewlett Packard Enterprise are working together around the world in Walldorf, Palo Alto, and Chennai.

Customer POC Labs in the Cloud

6 labs for SAP Customers can request end-to-end mission-critical solutions for testing SAP HANA, Non-SAP HANA, Big Data together. Up and Running in ~3 weeks via remote access (BYOL).

Global SAP Competency Center

Over 100 dedicated pre-sale SAP subject matter experts in every major market backed by a highly tenured SAP Technical Advisory Council (TAC).
Your Core – HPE’s Mission Critical Solutions for SAP

#1 Market Share for SAP HANA*

 Trusted by more than 2500 SAP HANA customers

Innovation to extend the investment value

Click the link below to view the report and see the full results: [http://www.gartner.com/reprints/hpe-eq-servers?id=1-3B64WPI&ct=160706&st=sb](http://www.gartner.com/reprints/hpe-eq-servers?id=1-3B64WPI&ct=160706&st=sb)
HPE is your guide in the Edge to Core era
We have the delivery experience, global reach, and scale to make it happen

- 11,000+ Projects in 2016
- 99.8% Satisfied engagements
- 25,000+ Experts
- 3,000,000+ Service events

- 1,000+ SAP Projects in last 2 years
- 99% Problems resolved via our SAP HANA CoE
Thank You

We’re here to help you go further, faster

A true partnership where collaborative people, empowering technology and transformative ideas accelerate change

Accelerating innovation
Accelerating transformation
Accelerating value
Accelerating Live!

Find us on the Web
http://acceleratelinebusiness.com

See us at Sapphire, TechEd, or at a Forum event near you
Where to go for more information

HPE SAP Accelerate Live Business Web Page

For the latest and greatest information on HPE and SAP, make sure to visit: http://acceleratelivebusiness.com

Register for additional HPE SAP Webinars

- SAP Sapphire Best of Show – Bringing context to the innovations and announcements at SAPPHIRE NOW from SAP, the SAP partner ecosystem, and of course HPE
- Big Bang vs Agile - Move to SAP S/4HANA faster, more easily and more affordably with HPE's agile S4in4 approach
- Your Apps | Your Data  Protect your SAP data without holding back your Digital Transformation and Hybrid Cloud agenda with HPE
- Your Edge | Your Core  Bringing OT and IT together to implement a future-proofed IoT strategy with SAP and HPE

Visit us at SAP TechEd in Las Vegas from September 24 - 26

HPE Booth #300
Your Core - HPE Compute Solutions for SAP HANA
Data Center infrastructure designed for flexibility and unmatched scalability

HPE Synergy TDI Compute Blocks
2-socket Intel E5 and 2-4 socket Intel E7 compute blocks

HPE ProLiant DL380 TDI Compute Blocks
Cost Optimized Solutions for entry level workloads on the Intel E5 architecture

HPE ProLiant DL580 TDI Compute Blocks
Scalable 2 Socket and 4 Socket Intel E7 compute blocks for enterprise class workloads

HPE MC990 X TDI Compute Blocks
4-20 socket Intel E7 compute blocks with flexible modularity for mission-critical applications

HPE Superdome X TDI Compute Blocks
Unparalleled scalability and flexibility with 2/4/8/16 socket Intel E7 building blocks for mission critical workloads

HPE ConvergedSystem 500 Appliances for SAP HANA
(CS500 is based on the HPE DL580)

HPE ConvergedSystem 900 Appliances for SAP HANA
(CS900 is based on the HPE Superdome X)
Your Core - HPE Storage Solutions for SAP HANA
Comprehensive data persistence and protection

**All Flash Storage for SAP HANA Persistence**

- **3PAR StoreServ**
  - 6 nines availability
  - Quality of Service guarantees resource prioritization
  - Snapshot capable for near instant backup and recovery

- **XP7 Storage**
  - 100% data availability
  - Extreme scaling and efficiency—single XP7 rack scales supports up to 128 SAP HANA servers
  - Robust data protection – zero data loss or corruption

**Comprehensive Data Protection**

- **HPE StoreOnce**
  Disk based backup appliance with PB scale

- **Catalyst Plug-in for SAP HANA**
  - High speed online backup and recovery giving DBAs complete control of backup process

- **Recovery Manager Central (RMC) for SAP HANA**
  - App consistent snapshot backup with remote data replication