COMPOSABILITY, AUTOMATION AND THE INTELLIGENT EDGE

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YOUR USE OF APPS AND DATA IS CHANGING

More connected people, apps, and "Things" generating more and more data

10X faster growth than traditional business data

Human data

Sensor data

Business data

File & Object
Connectivity
Network or direct connect the devices and things at the edge

Compute
Analyse data from the edge to reveal new business insights

Control
Configure, actuate, or orchestrate the things and equipment at the edge
EVOLUTION TO THE INTELLIGENT EDGE

Data flow

“Things” generate data and need control

Operations technology

Data is sensed, Things controlled

Stage 1

Data acquired and aggregated

Stage 2

The Edge

Edge IT, Data center and Cloud

Early analytics and compute

Stage 3

Deep analytics and compute

Stage 4

Accelerate insight by “shifting left”: moving compute and data from the data center to the Edge
**HPE EDGELINE CONVERGED EDGE SYSTEMS**

Converge **Operational Technology** out at the edge with **Enterprise-class IT**.

“Things” generate data and need control.

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**Stage 1**
- **Operations technology**
  - Data is sensed, Things controlled

**Stage 2**
- Data acquired and aggregated

**Stage 3**
- **The Edge**
  - Early analytics and compute

**Stage 4**
- **Edge IT, Data center and Cloud**
  - Deep analytics and compute

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**OT systems**
- Control systems, data acquisition systems, industrial networks

**HPE Edgeline Converged Edge Systems**
- Engineered for harsh edge environments (shock, vibration, temperatures, mounting)

**Enterprise IT systems**
- Intel Xeon compute, storage, management, security, enterprise networks
PUTTING IT ALL TOGETHER: ARCHITECTURE FOR BIG DATA ANALYTICS


Data science toolchains
Data flow design, data science workbench, model management, application deployment

“IoT”
Edge processing of data in motion
- Acquired
- Queued, routed and orchestrated
- Cached and stored locally
- Applied with rules and analytic models

“Fast data”
Core processing of data in motion
- Ingested
- Restructured, enriched
- Persisted for real time usage and offline analytics
- Applied with rules and analytic models

“Big data”
Analysis of data at rest
- Hosted in data lake
- Transformed and restructured
- Aggregated
- Molded by rules and models
- Prepared for deep learning

“AI”
Deep learning/machine learning
- Trains/builds analytic models
- Creates test models

Business systems

On-premises

On-premises or cloud
PUTTING IT ALL TOGETHER: ARCHITECTURE FOR BIG DATA ANALYTICS


On-premise lifecycle management by HPE OneView

AI-driven operations by HPE InfoSight

“IoT”
Edge processing of data in motion

“Fast data”
Core processing of data in motion
Apollo 2000 & 4200 ProLiant

“Big data”
Analysis of data at rest
Apollo 4500

“AI”
Deep learning/machine learning
Apollo 6500

On-premises

BlueData

On-premises or cloud
AI will be the new UI
THE GOAL: SIMPLIFY IT OPERATIONS

Self-Managing

Self-Healing

Self-Optimizing

Storage  Servers  Networking  Converged

Powered by HPE InfoSight: Autonomous and context-aware
IMPROVING EFFICIENCY THROUGH AI
5 key steps in the machine learning and predictive analytics process of InfoSight

1. **Observing** – the 1000s of data points and sensors built into the HPE and partner products
2. **Learning** – applying advanced pattern recognition to the sensor data collected across all devices globally
3. **Predicting** – anticipating problems based on the observations and learnings
4. **Recommending** – intelligent decisions that prevent issues, improve performance, and optimize resources
5. **Acting** – automation resulting in game-changing benefits and outcomes
COMPANY-WIDE FOCUS ON MAKING HYBRID IT SIMPLE

API integrations with partner products

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HPE COMPOSABLE INFRASTRUCTURE: WHAT ARE WE TRYING TO DO?

Use a template-based approach and flexible pools of **compute, storage, and fabric** to abstract infrastructure elements and **automate operational changes at scale**.

**Programmatically control** composable infrastructure through a **single, open RESTful API** native to **HPE OneView**, which automates the **provisioning, configuration, and monitoring** of infrastructure.
WHERE DOES COMPOSABILITY MAKE SENSE?

Fits with agile, cloud-native, DevOps approach

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**Infrastructure Automation**

- Frequent, rapid, unattended infrastructure (re-)deployment tasks
- Service desk: automatic ticket creation, workflows, case closure…
- DevOps: integrate any app development and IT operations (Gartner STREET process):
COMPOSABILITY: SOFTWARE-DEFINED INFRASTRUCTURE DONE RIGHT

Enables faster infrastructure deployment

HPE OneView templates, built by subject matter experts, specify configuration information

Template 1

Template 2

Template 3

Template 4

Provisioning with templates ensures faster deployments with fewer errors whether it’s 1 system or 100
COMPOSABILITY: SOFTWARE-DEFINED INFRASTRUCTURE DONE RIGHT

Simplifies lifecycle updates and increases productivity

With one template and one click, updates go to all the servers that need updating providing consistency and reducing the risk of errors.
COMPOSABILITY: INFRASTRUCTURE FOR ANY WORKLOAD

Use infrastructure like code

HPE OneView Unified API

Many Manual Steps

- Update Firmware
- Update drivers
- Set BIOS settings
- Set unique identifiers (WWN, SN, UUID, MAC)
- Install OS, App/Hypervisor
- Configure smart array
- Configure network connectivity
- Configure SAN zoning
- Configure SAN array

Productivity
HPE ONEVIEW UNIFIED API
The enabler for increase agility

Automate infrastructure for DevOps

New-HPOVProfile -name myESXhost -template ESX6.5host
HPE ONEVIEW UNIFIED API INTEGRATION WITH RED HAT

Example: Hybrid IT for SAP

Transform app and service delivery
- Faster delivery to the business
- Build apps and deploy across multiple clouds

Automate and Orchestrate
- Deliver automation, orchestration and control across clouds
- Improve SLA and cost of services delivered via on-premise private cloud infrastructure

Edge to Converged to Composable
- Deploy services on physical and virtual with the same ease via programmable infrastructure as code
- Increase speed, agility and business alignment
HPE SYNERGY WITH RED HAT OPENSTACK 13 AND CEPH STORAGE

Private Cloud reference architecture from www.hpe.com/info/ra

- Secure enterprise-ready private cloud that is flexible, simple to deploy and cost efficient
- Auto-discovery of all available resources for quick deployment
- Management of hardware by profiles defined in software allows fast re-purposing of compute, storage and fabric resources to meet workload demands
- Software:
  - Red Hat Enterprise Linux
  - Red Hat OpenShift
  - Red Hat OpenStack
  - Red Hat Ceph Storage
- Single frame – three frame expandability:
  - For up to 20 additional nodes.
ORCHESTRATE PHYSICAL INFRASTRUCTURE LIKE THE CLOUD

Hybrid cloud ecosystem

Cloud provider

Apps

Infrastructure

Public cloud

Single API and UI

Azure

Google Cloud

aws
Hybrid cloud ecosystem

Public cloud

Single API and UI

On-premises private cloud Orchestrated by HPE OneView

Cloud provider

Apps

Infrastructure

75%

36

10

Compute

Storage

HANA

HANA

HANA

HANA

HANA

Database

Analytics

VDI

DEV

DEV

DEV

DEV

DEV

DEV

DEV

DEV
THANK YOU

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