

PLEASE READ THE SPEAKERS NOTES ON THIS SLIDE BEFORE PRESENTING IT FOR THE FIRST TIME. WE HAVE ALSO PREPARED A BRIEF VIDEO ON EFFECTIVE DELIVERY OF THIS UPDATED SYNERGY PRESENTATION AVAILABLE AT THE LINK BELOW:



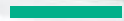
SYNERGY TRAINING

Delete This Slide Before Delivering



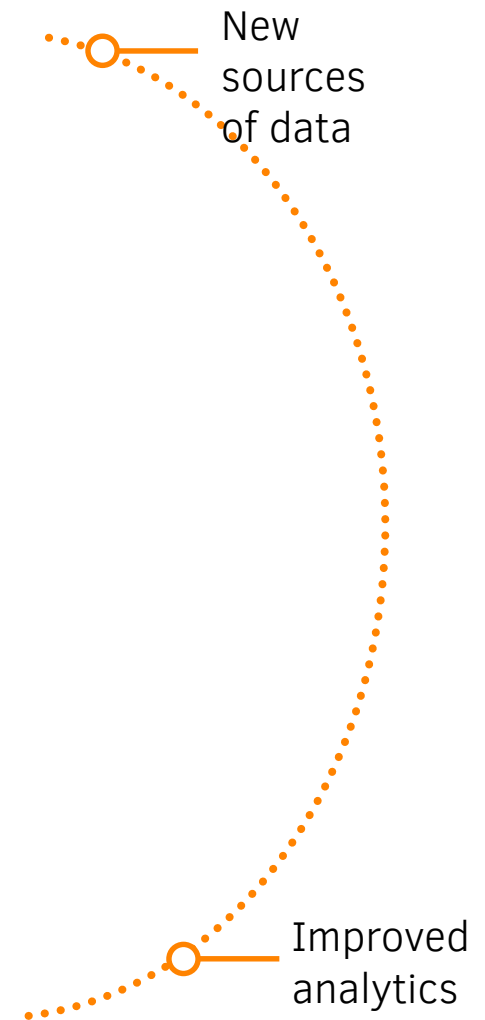
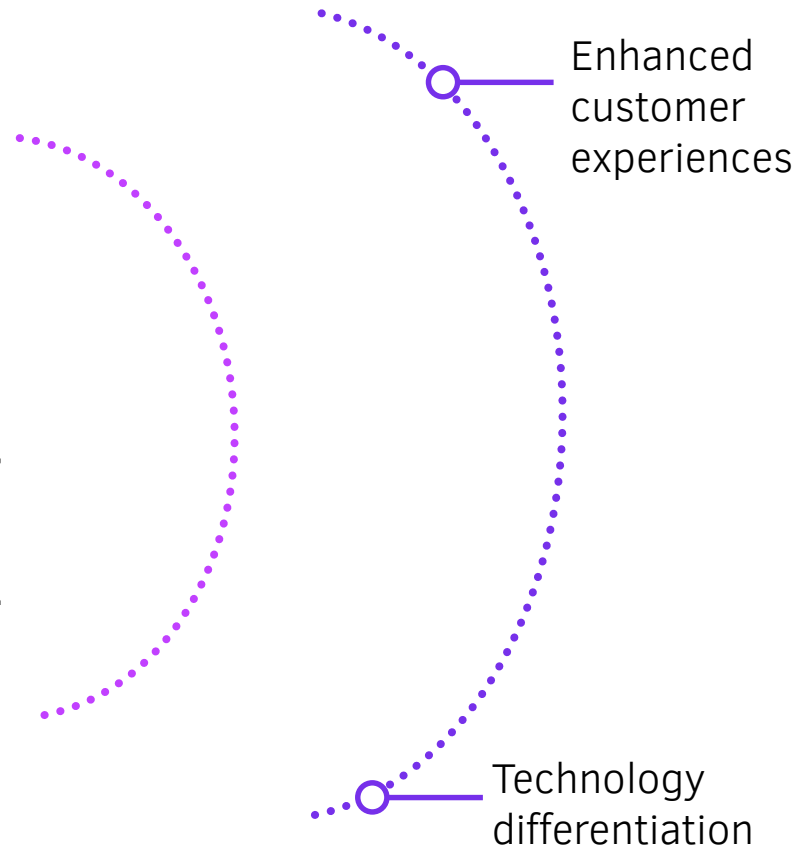
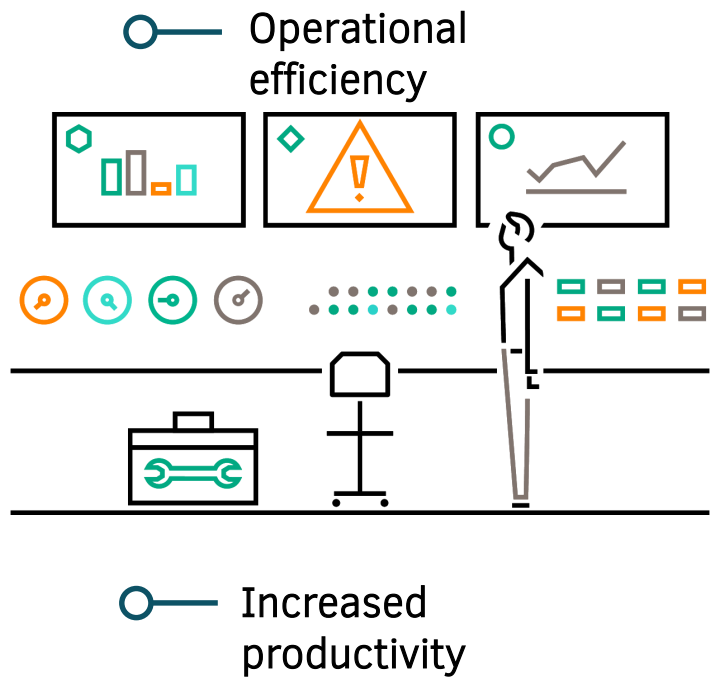
**Hewlett Packard
Enterprise**

HPE SYNERGY

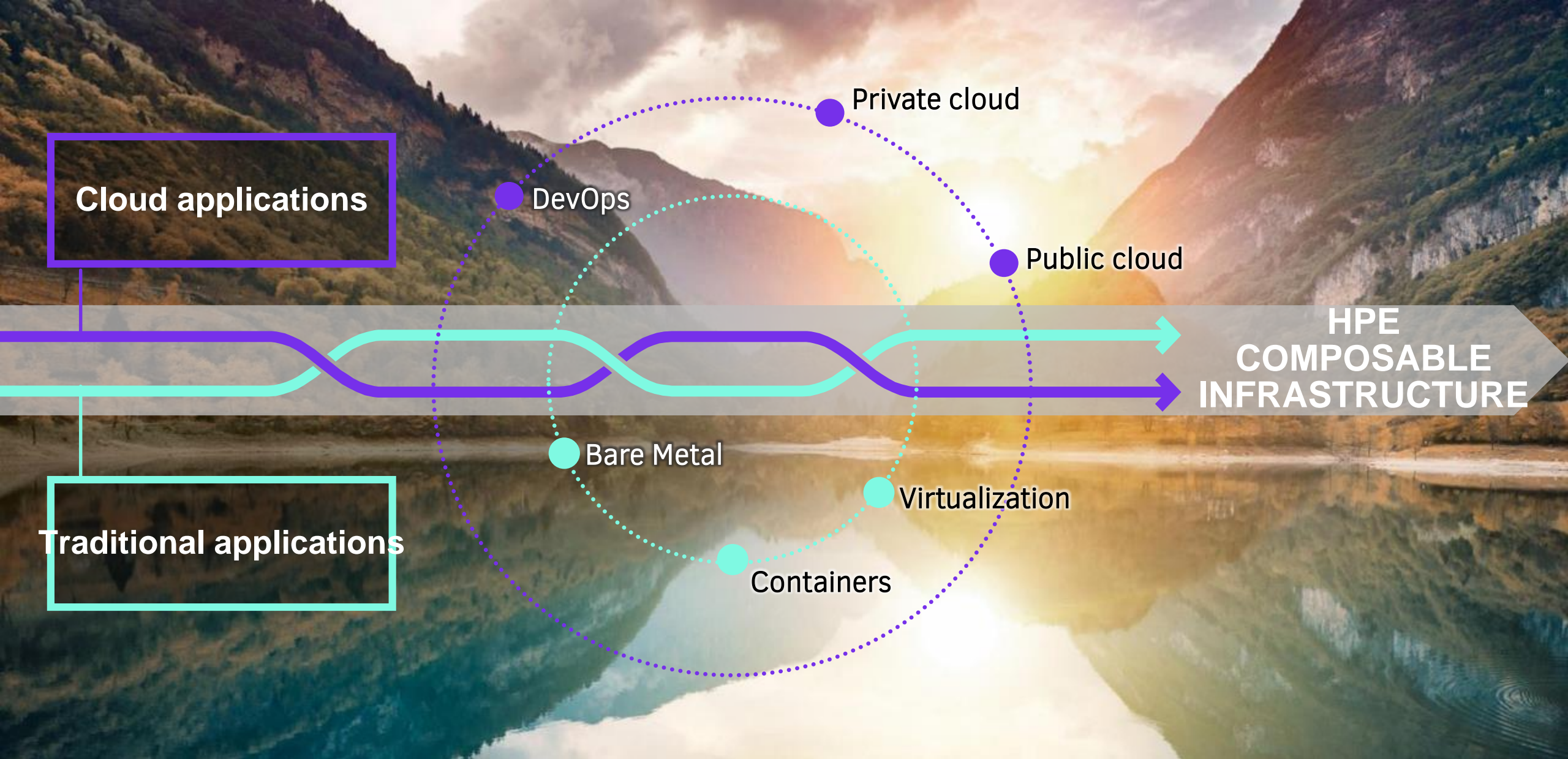


January 2020





BUSINESS OUTPUTS, NOT JUST BUSINESS OPERATIONS



Cloud applications

Traditional applications

Private cloud

DevOps

Public cloud

Bare Metal

Virtualization

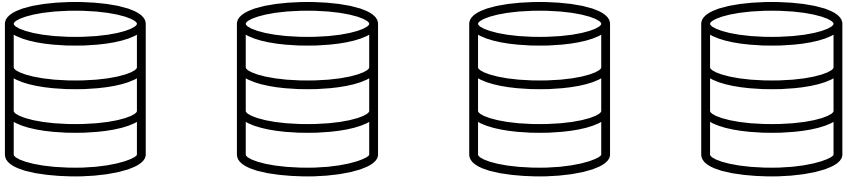
Containers

**HPE
COMPOSABLE
INFRASTRUCTURE**

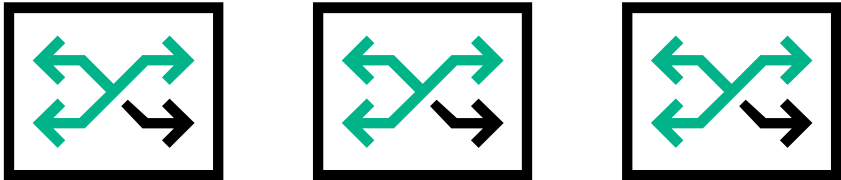


1

FLUID RESOURCE POOLS



Storage



Networking

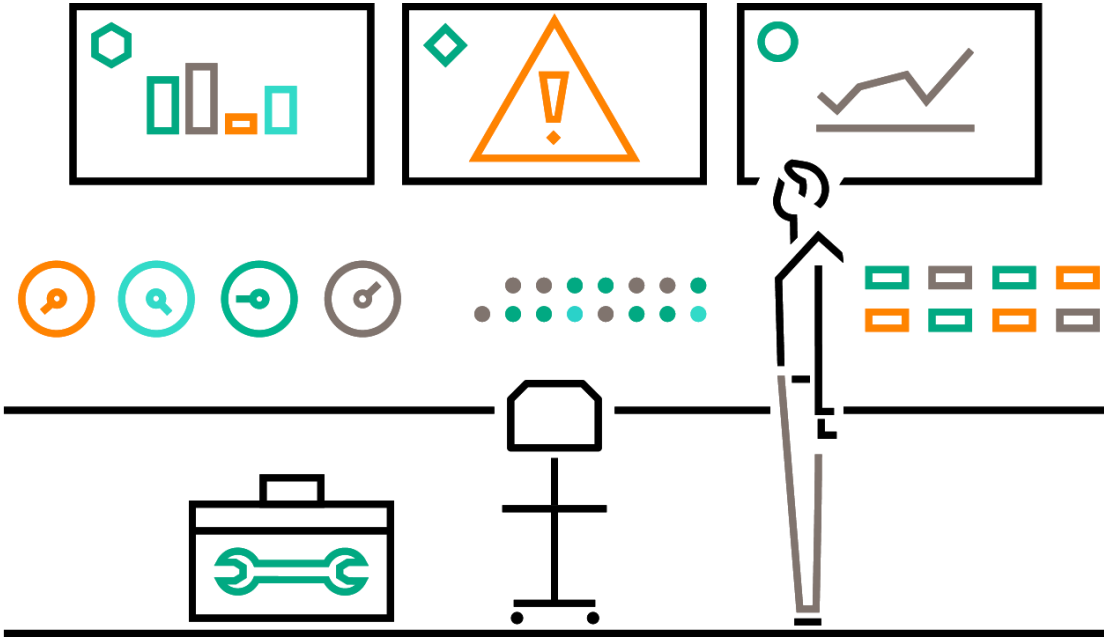


Compute



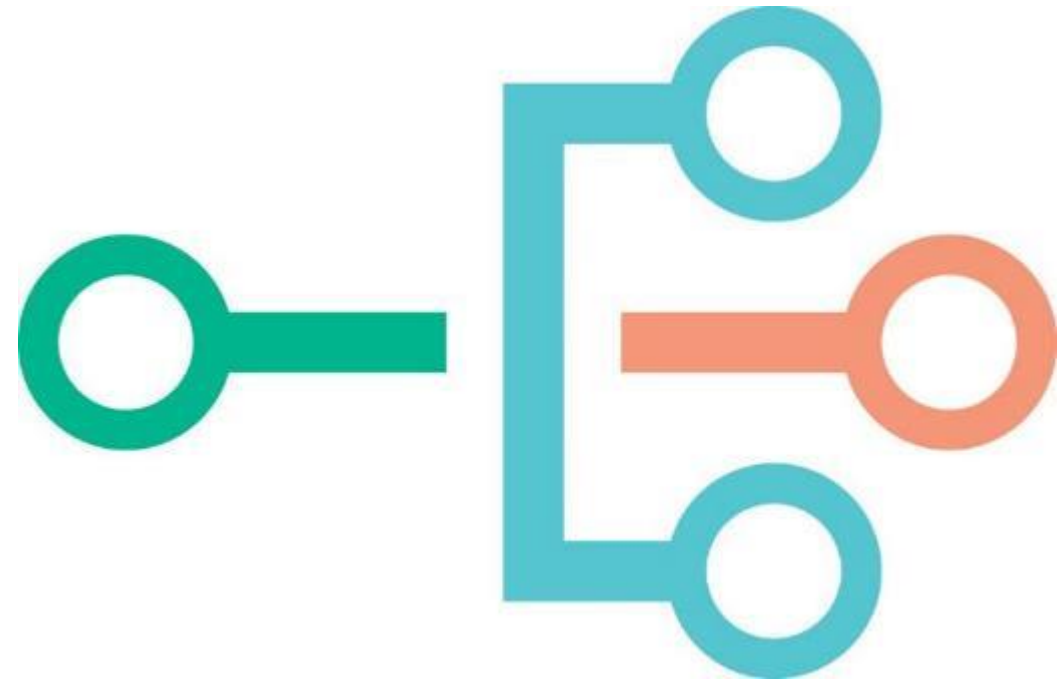
2

SOFTWARE DEFINED INTELLIGENCE



3

UNIFIED API

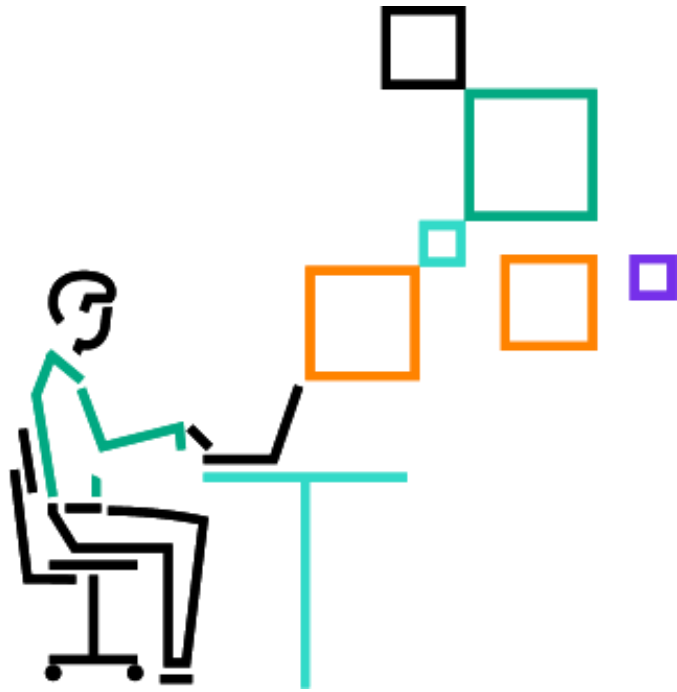
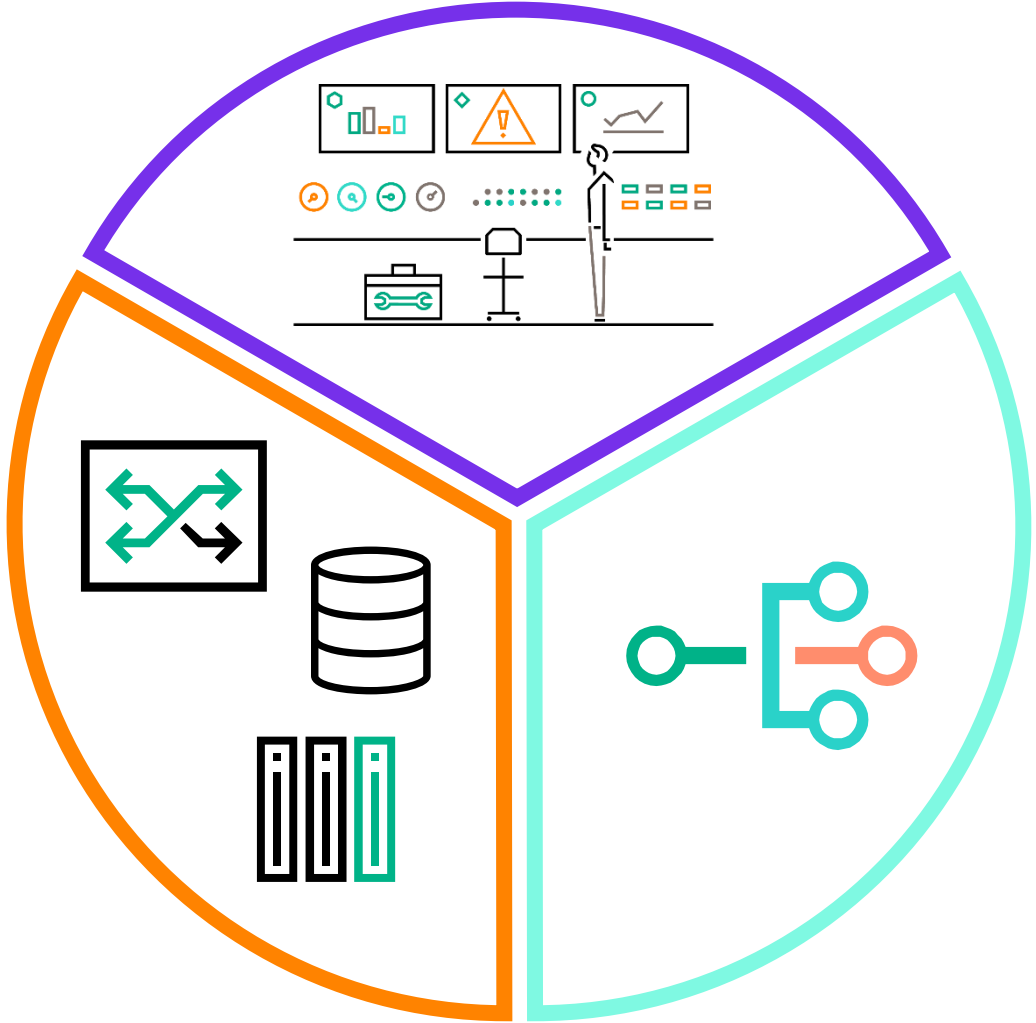


HPE OneView

Partner Ecosystem



COMPOSABLE INFRASTRUCTURE



HPE'S COMPOSABLE PORTFOLIO

HPE Synergy



HPE Composable Rack



HPE GreenLake

BENEFITS OF COMPOSABLE INFRASTRUCTURE

Automate everyday operations



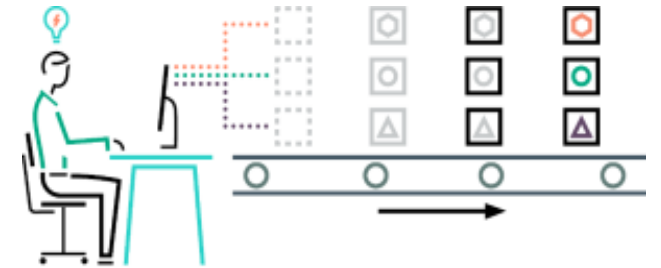
Deploy at cloud-like speed and scale



One infrastructure for any workload



Develop apps faster and smarter



UNLOCKING VALUE

**EFFICIENCY OF IT
INFRASTRUCTUR
E TEAMS**

60%
MORE

**LOWER
COST OF
OPERATIONS**

35%
LOWER

**PRODUCTIVITY
OF APP
DEVELOPERS**

30%
HIGHER

**DEPLOY AT
CLOUD-LIKE
SPEED AND
SCALE**

71%
LESS
TIME

Based on IDC study (FEB 2019): [Generating Business Value Through IT Agility Using HPE Synergy](#)

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY



“One of the advantages of the HPE Synergy environment is the ability to blend hyperconverged or conventional production modes. In the former, the server and storage resources are combined in a single frame, facilitating straightforward, highly scalable management, while optimizing the space used. For its part, the conventional mode allows the consumption of resources outside the frame, such as HPE 3PAR.”

– Brice Munier,
Head of Business PLAN/Architecture, Adista

[Read the case study](#)



SUPERIOR ECONOMICS

Up to
30%

Lower
cost/VM vs.
BladeSystem

Based on HPE analysis at 1 VM
per 4GB of memory, 2019

Up to
28%

Lower TCO vs.
Cisco UCS

Based on the HPE Synergy Sales
Business Value Calculator
(TCO/ROI), 2019

Up to
32%

Lower TCO vs.
rack servers

Based on the HPE Synergy Sales
Business Value Calculator
(TCO/ROI), 2019



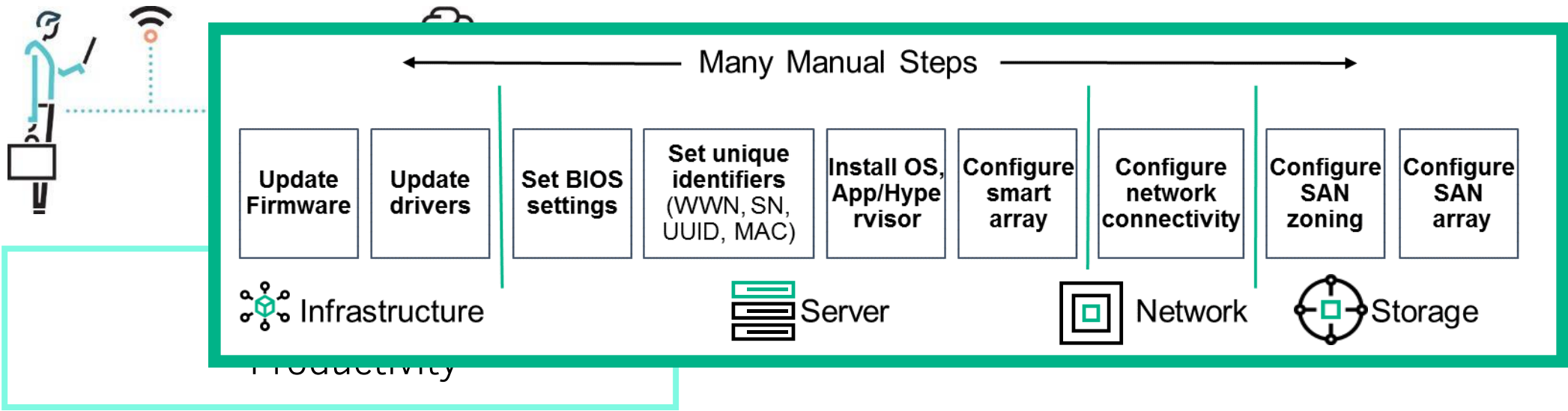


Hawksford

- Delivers vital **agility and scalability**
- Enables **easy expansion**
- Improved processing power speeds
- Facilitates **ambitious process re-engineering**
- Financial and regulatory **requirements are met**



HPE OneView Unified API



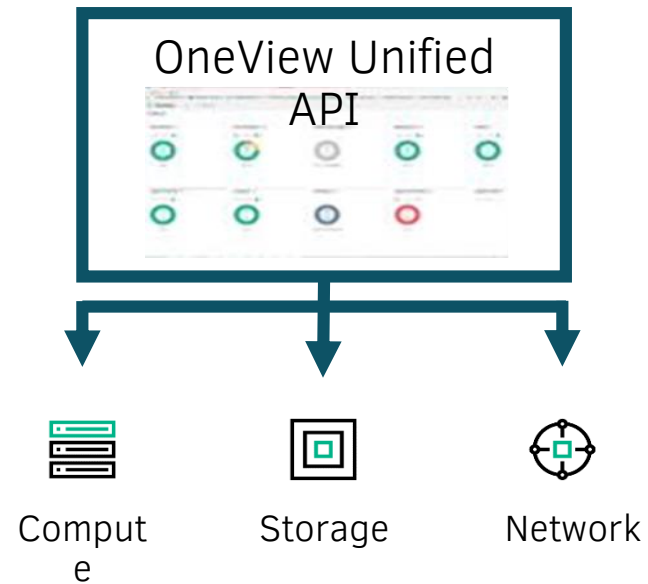
Source: * Clutch Cost to Build a Mobile App: A Survey + HPE internal tests.

HPE OneView Unified API

Automate infrastructure for DevOps



```
New-HPOVProfile -name myESXhost -template ESX6.5host
```



HPE SYNERGY ECOSYSTEM

TRANSFORM TO SOFTWARE-DEFINED

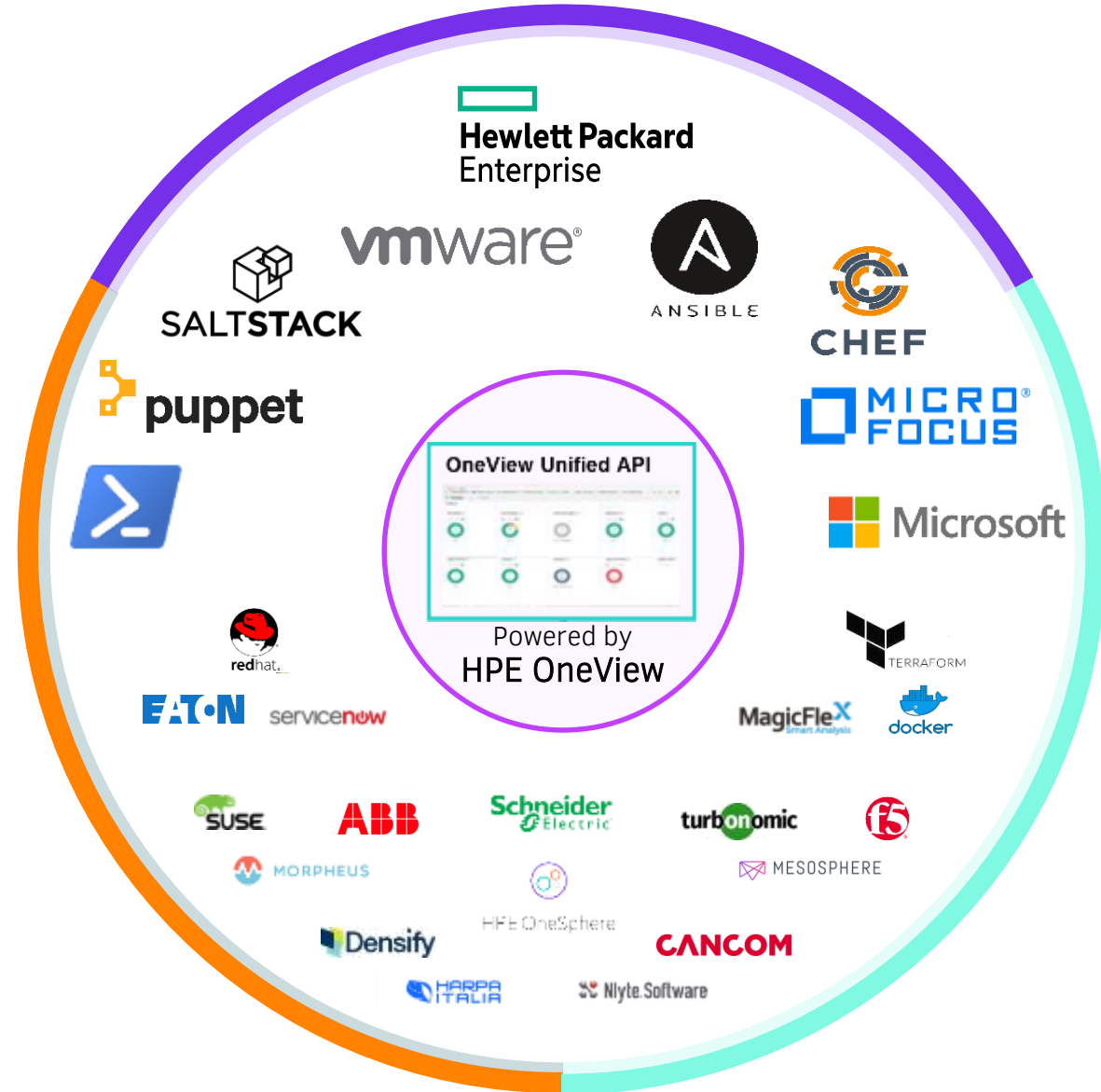
Streamline IT Ops and Facilities

COMPOSE FOR ANY WORKLOAD

Automate infrastructure for DevOps

CONNECT FROM CORE TO CLOUD

Optimize across clouds





“With many years as an HPE partner, we know we can trust the stability of their equipment. We see HPE Synergy as the next generation of blade technology. It brought us the ability to dynamically compose any kind of infrastructure we need internally or for a client without having to stop what we’re doing and provision tailor-made hardware.”

– Neal Fendley, Chief Information Officer,
Edafio Technology Partners

[Read the case study](#)



ACCELERATING TIME TO VALUE



IMPROVE PRODUCTIVITY

INCREASE AGILITY

GAIN INTELLIGENT INSIGHTS

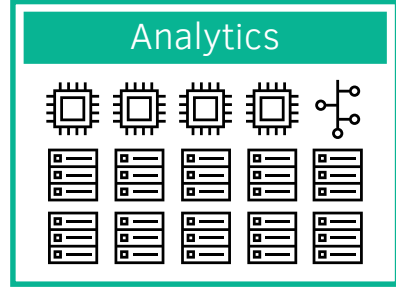




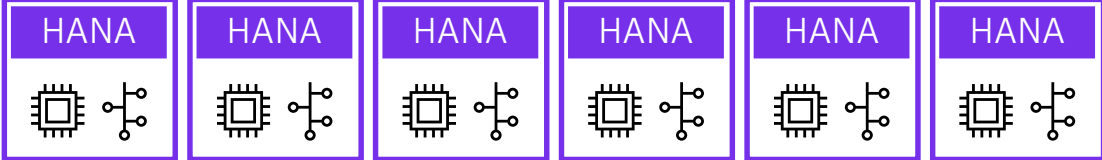
CITRIX



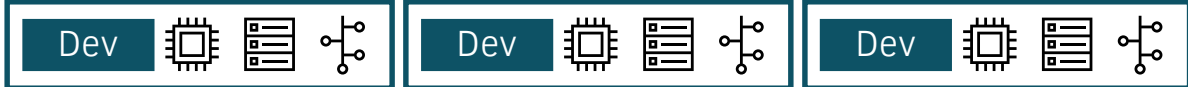
SAS



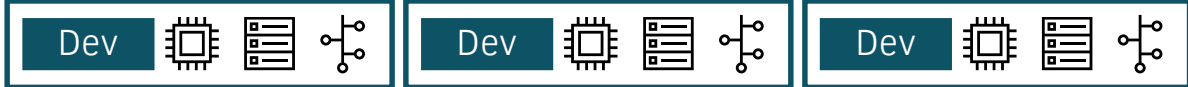
SAP HANA



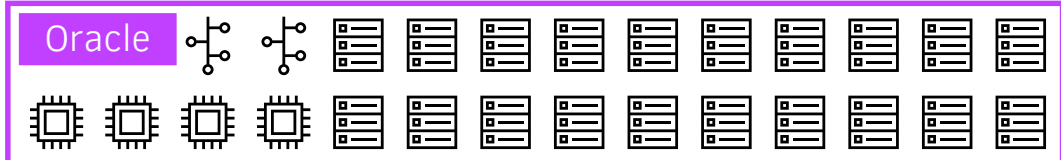
CHEF



ANSIBLE



ORACLE





“We confidently expect that HPE Synergy will bring to life some new revenue opportunities and certainly some new capabilities in terms of our product and service offerings.”

– Bruce Trevarthen,
Group CEO, LayerX Cloud Ltd.

[Read the case study](#)



HPE SYNERGY INFRASTRUCTURE



Composer



Composable Frame



Composable Fabric



Composable Compute



Composable Storage



DESIGNED FOR THE FUTURE

25%*

more power per resource

2.5x*

more efficient cooling

16Tb/s

bandwidth today and Photonics pre-enabled



* Pursuant to HPE internal analysis

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

LARGE SCALE, SMALL APPLIANCE

EFFICIENTLY SCALE

with auto-integration of resources

EASILY DEPLOY

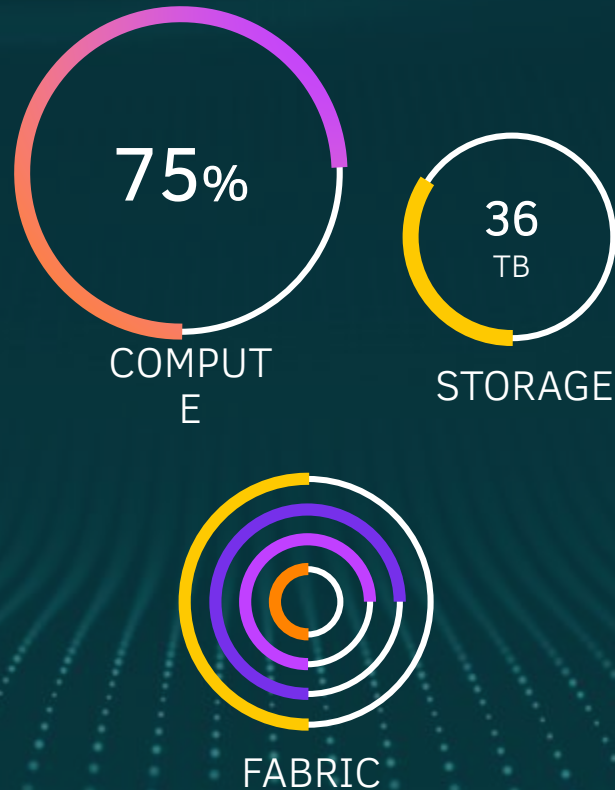
into existing footprint

RESILIENT AND SECURE

management infrastructure

FUTURE READY DESIGN

with built-in flexibility

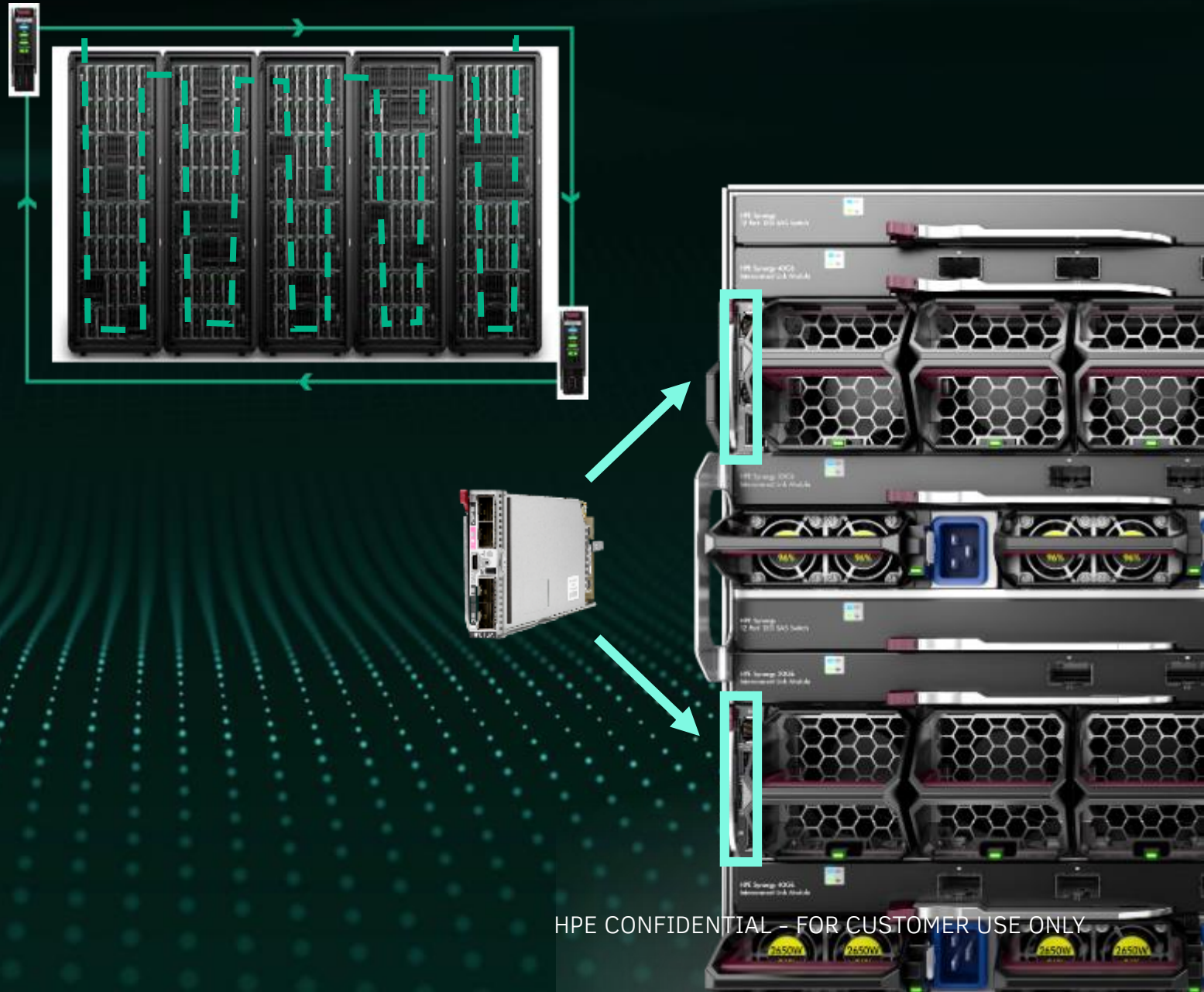


FRAME LINK MODULE

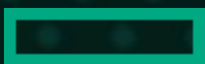
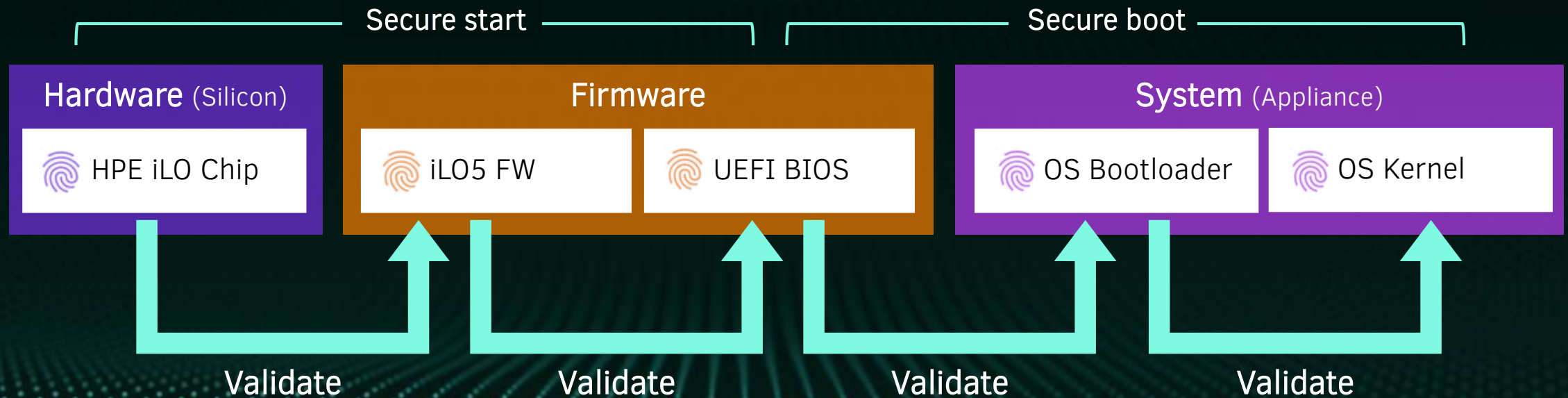
10Gb Ethernet fabric using
HPE Synergy Frame Link
Modules

Enables easy, cost-efficient
scale and in-frame shared
services

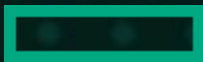
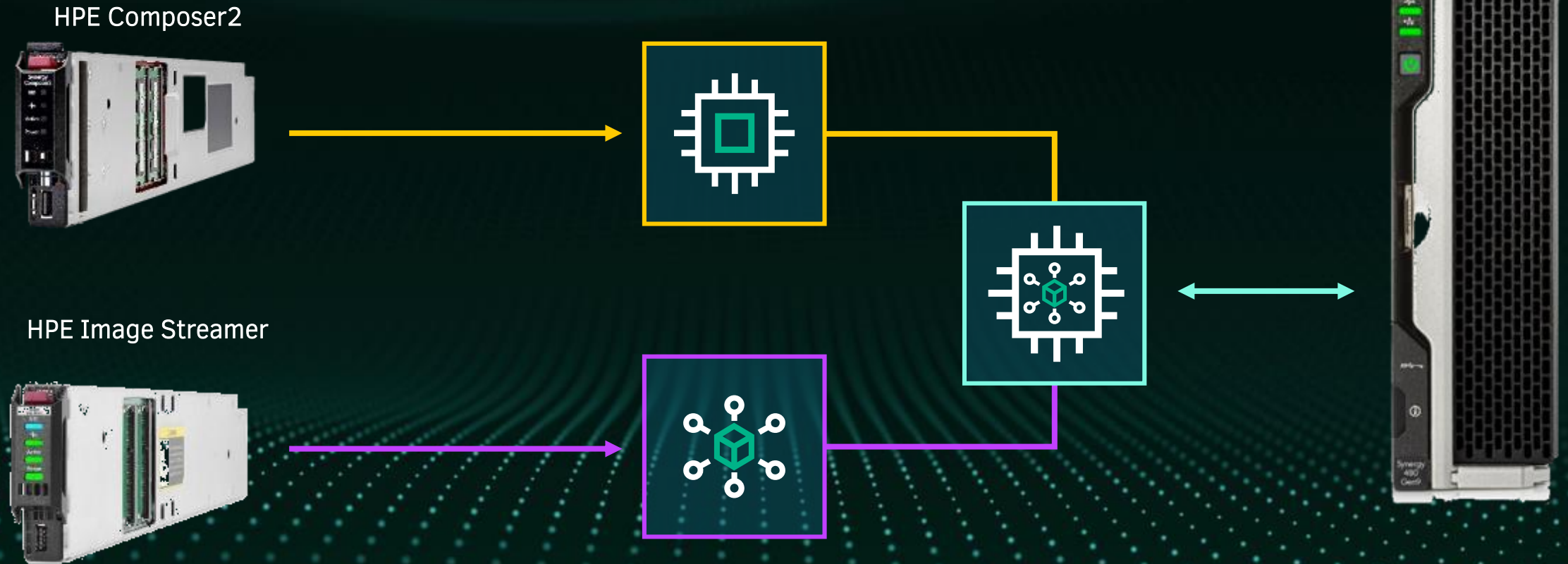
Ensures high availability with
extensive redundant topology



SILICON LEVEL SECURITY IN COMPOSER2



HARDWARE & SOFTWARE PROVISIONING



HPE SYNERGY COMPOSABLE FABRIC



FABRIC

Extending HPE Virtual Connect technology to Synergy

Ethernet, converged FCoE, and native Fibre Channel

Wire once connectivity integrates with existing networks

Traditional L2/L3 CLI switch options available

HPE Virtual Connect SE 100Gb F32 Module



HPE Virtual Connect SE 32Gb Fibre Channel Modul

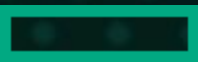
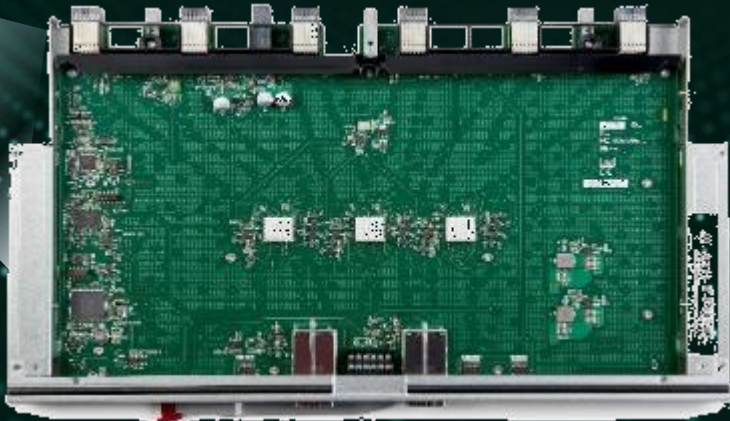




Master Interconnect



Satellite Interconnect



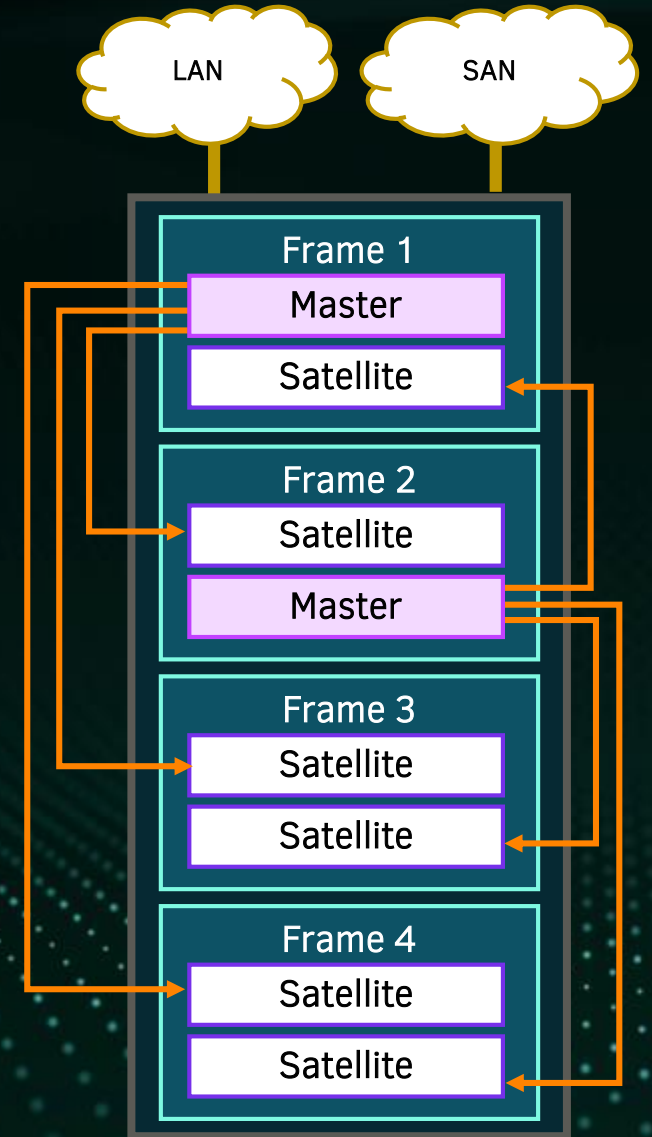
LOGICAL ENCLOSURE

Reduce hardware complexity and cost

Maximize data throughput and minimize latency

Simplify management

Efficiently scale fabrics up to 5 frames



HPE SYNERGY COMPOSABLE STORAGE



FLEXIBLE COMPOSABLE STORAGE

DAS pool of up to five storage modules per frame

Up to 200 drives with 3 PB capacity*

No predetermined ratio

Flexible File, Block or Object data support



* Using 15TB SAS drives available as of July 2019

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

EXTERNAL STORAGE

Fast, efficient provisioning of SAN storage

Provision volumes of different types and sizes

Automatic SAN zoning for profile portability

Volume properties

Filter pools by defined connections

Storage pool

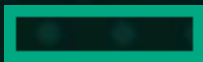
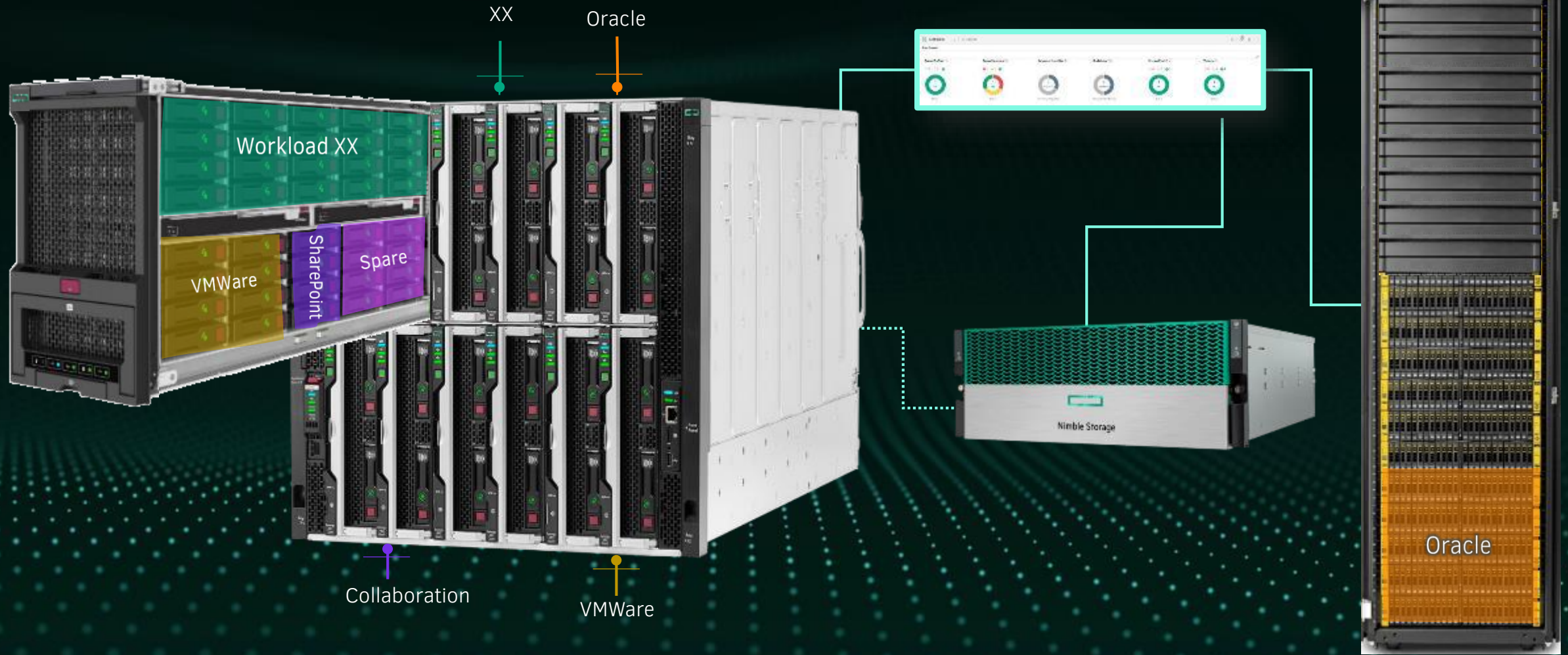
Capacity GiB

Provisioning


Sharing

Perman





HPE SYNERGY COMPOSABLE COMPUTE



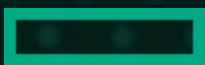
COMPUTE

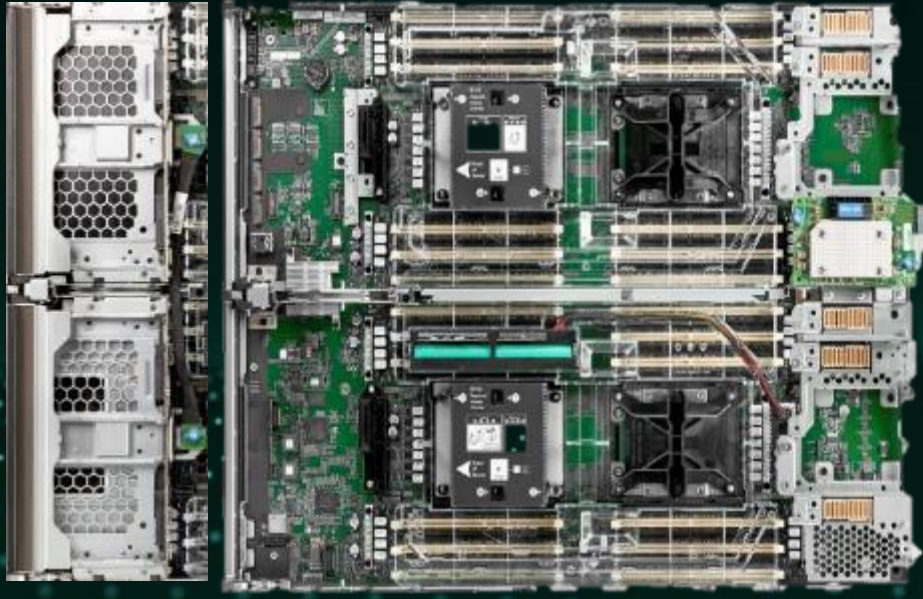
Run multiple tiers / levels of availability in one infrastructure

Optimize performance with up to 6TB of memory

Provision and re-provision rapidly and simply

Run your OS from anywhere with stateless server options



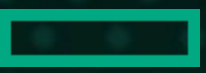


1.7 GHz **Speed** 3.6 GHz

2 **Sockets** 4

4 **Cores** 112

8 **Threads** 192



ACCELERATED COMPUTE

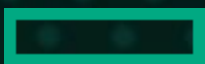
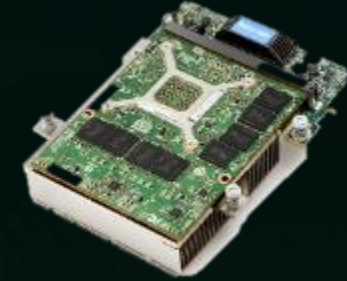
Enhance your compute with GPU accelerators

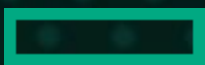
Highest GPU density available anywhere

Deployment flexibility: Mezz MXM, high-density MXM, and PCIe

Re-purpose GPUs from display to compute mode

Bare metal, virtualized CPU, or virtualized CPU & GPU

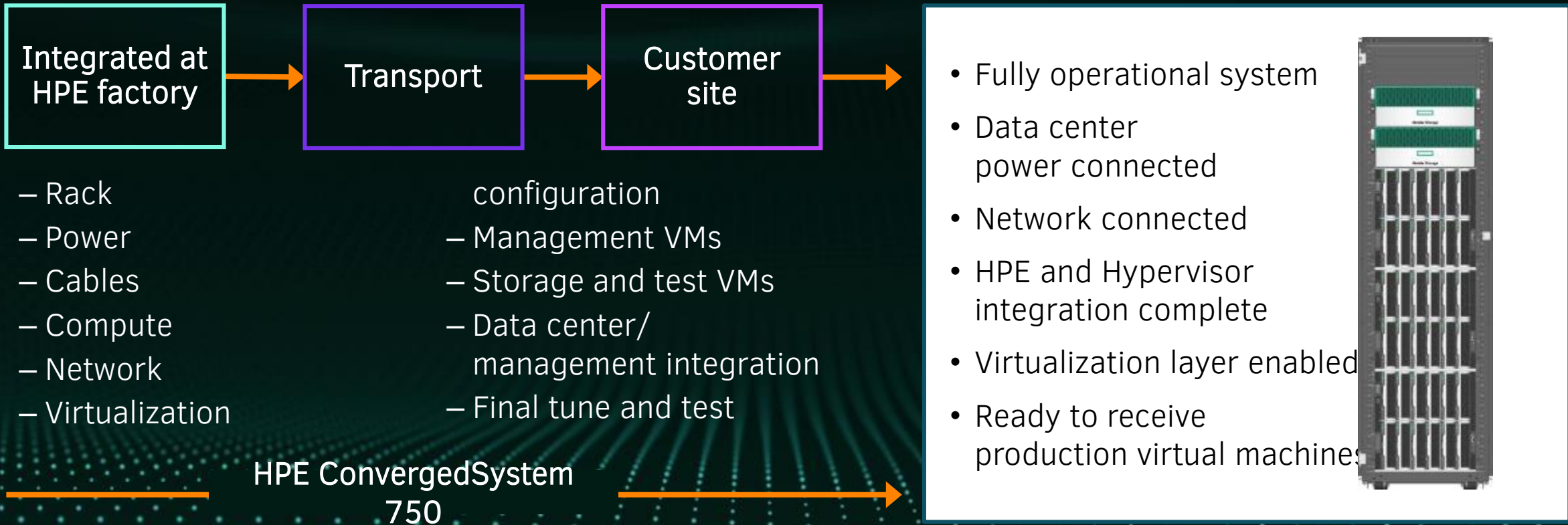




HPE SYNERGY SOLUTIONS



INTEGRATED SOLUTIONS



Client
Virtualization

Data management

Business applications

Data analytics/ Big
Data

Private/ Hybrid cloud

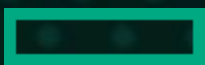
Containers

DevOps

Software-Defined
Storage



Virtualization



HYBRID CLOUD

Reduces complexity

Integrated management for
composability

Efficient - software-driven with more
automation

20X
faster
deployment
time*



*HPE Internal testing, April 2018

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

CLIENT VIRTUALIZATION

Highly secure VDI deployments

Cost-effective client virtualization

Facilitating multiple use cases

Recompose
Workloads
< 5
min*

vmware®

CITRIX



*HPE Internal testing, September 2017

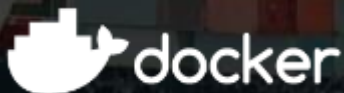
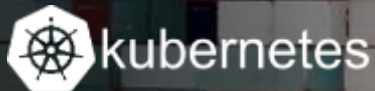
CONTAINERS

Flex container resources up and down

Deploy containers at cloud-like speed

Advanced container data management

<2 hr
for Red
Hat
OpenShift
deployment*



*HPE Internal testing, December 2017

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

DATA MANAGEMENT

Accelerate database deployments

Consolidate different workloads

Simplify management

Deploy
ORACLE
in under
3
min*



ORACLE

▶TR/010N ▶TR/01▶03

*HPE Internal testing, February 2017

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

SAP HANA

Provision resources for HANA and non-HANA workloads

Maximize the efficiency for HANA deployments

Automate the lifecycle management of SAP HANA environments

Deploy
SAP
HANA in
less than
4
minutes*

SAP HANA

*HPE Internal testing, May 2018

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

SOFTWARE DEFINED STORAGE

Disaggregated storage and compute

High-speed interconnect between frames

Single infrastructure for any workload

18 vSAN ReadyNode configs already validated*

vmware

Microsoft

HEDVIG

*HPE and VMware certification, June 2019

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

TELCO – NETWORK FUNCTION VIRTUALIZATION

Reduce complexity and risk

Simplify the install and build

Reduce Cost (TBD)- Modular design

78%
Red Hat
NFV
deployment
reduction*



*HPE Internal testing, May 2019

HPE CONFIDENTIAL – FOR CUSTOMER USE ONLY



HPE POINTNEXT SERVICES





HPE
POINTNEXT

What's our impact

25,000
IT experts globally

11,000
IT projects delivered per year

\$8B
revenue

80
countries

30+
ecosystem partners

<p>Advisory Envision and define</p>	<p>Professional Design and implement</p>	<p>Operational Consume and simplify</p>
--	---	--





Advisory

- Rapid Advisory Service for Synergy

Installation

- HPE Synergy First Frame & Additional Frame Startup

- Factory Express First Frame & Additional Frame Startup

Pre-production

- HPE Infrastructure as Code for Synergy

- HPE Image Streamer Implementation Service

Education

- HPE Synergy Administration 3 days

- HPE Synergy Test Drive Composability 1 day

- HPE Synergy Image Streamer 2 days

- HPE OneView Administration 3 days

Post-production

- HPE Synergy Additional Frame Installation and Startup Service

- HPE Synergy Node Installation Service

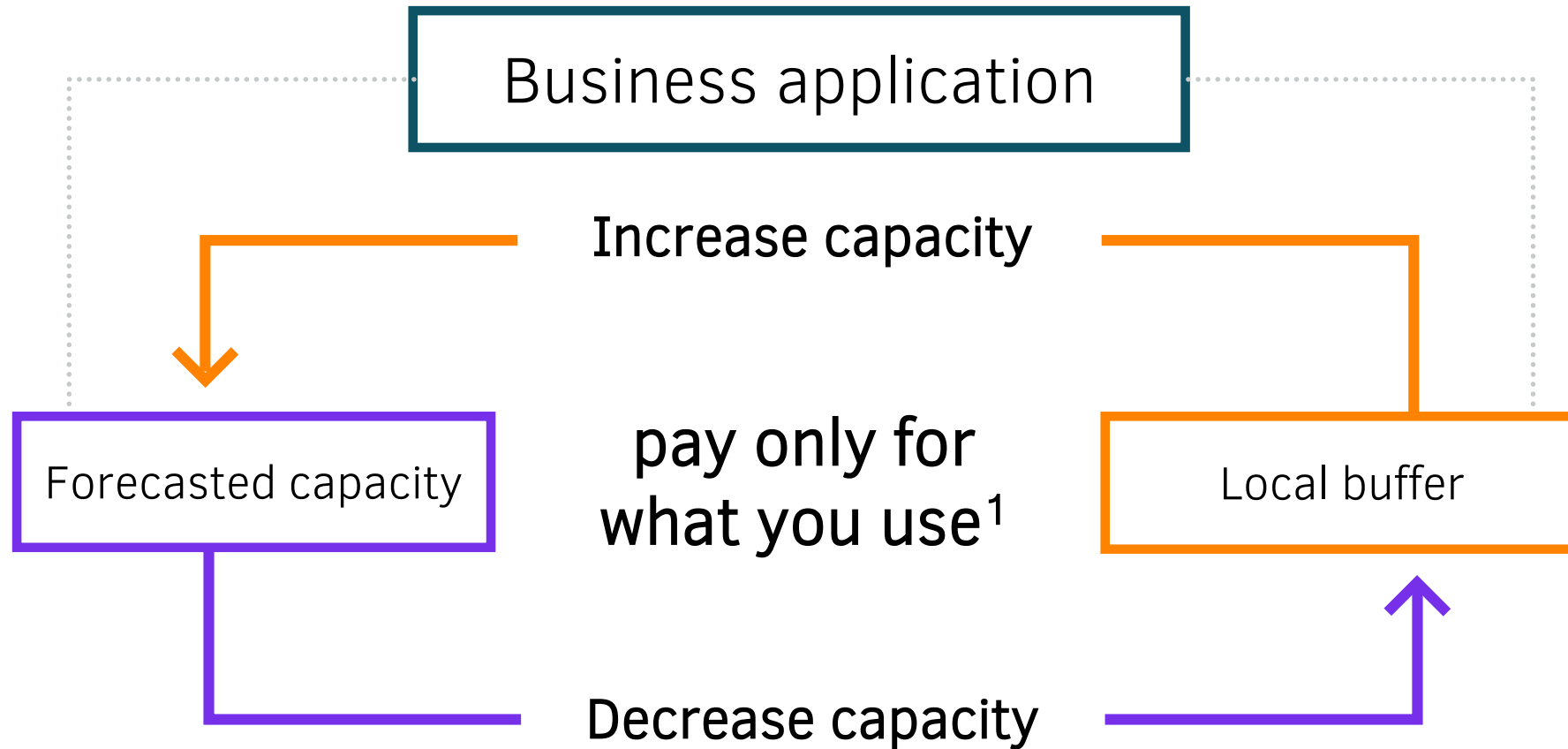
- HPE Synergy Firmware Analysis and Firmware update Implementation Services

- HPE Add Image Streamer Installation and Startup

HPE Operational Services: HPE Datacenter Care, HPE Proactive Care, and HPE Foundation Care



HPE GREENLAKE: CONSUMPTION-BASED IT ON *YOUR* TERMS



¹ minimum commitment may apply



THANK YOU!



a50000177enw

HPE CONFIDENTIAL - FOR CUSTOMER USE ONLY

HPE SYNERGY SOLUTIONS—AVAILABLE NOW

Traditional enterprise

Data management

- [SAP HANA TDI Certified](#)
- [Oracle Linux® Certified](#)
- [Oracle 12c In-Memory OLAP, RA](#)
- [SAP HANA on Synergy, RA](#)
- [HPE Reference Configuration for Linux based high availability for SQL Server 2017 on HPE Synergy](#)
- [Microsoft SQL Server® 2017 with VMware® vSphere®, RA](#)
- [Oracle 12c RAC, RA](#)
- [SAP HANA lifecycle activity, RA](#)

Data analytics

- [SAS® 9.4 on HPE Synergy SY480/SY660](#)
- [SAS 9.4 on HPE 3PAR 8400 and HPE Synergy](#)
- [Edge-to-core with SAS Analytics](#)
- [Deploying a composable SAS infrastructure](#)

Virtualization and VDI

- [Oracle VM Certified](#)
- [Deploying VMware vSphere on HPE Synergy Best Practice Guide](#)
- [VDI Citrix® XenApp®, RA](#)
- [VDI VMware Horizon® / VMware NSX® on Synergy](#)

Storage

- [VMware vSAN™ Certified](#)
- [vSAN ReadyNode Configuration Guide](#)
- [HPE Nimble Storage and HPE Synergy](#)
- [Hedvig validation](#)

Cloud-native

Containers | DevOps

- [Securing containers with Aqua Security, RC](#)
- [Kubernetes Containers, RC](#)
- [Fast Data Analytics on Mesosphere DC/OS, RA](#)
- [Red Hat® OpenShift® Container Platform—Nimble, RC](#)
- [Red Hat OpenShift Container Platform—3PAR, RC](#)
- [Docker CaaS on Synergy, RC](#)
- [Chef Automate, RC](#)

Private cloud

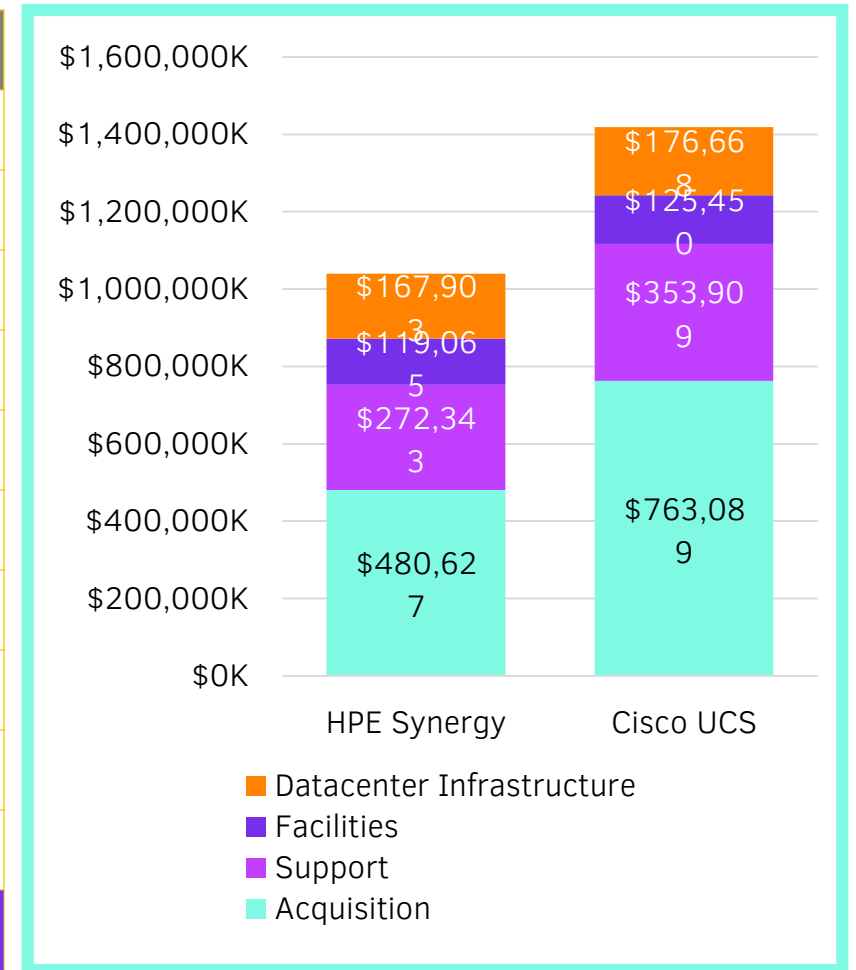
- [VMware Cloud Foundation™ certification on HPE Synergy](#)
- [Configuration guide VCF 3.5](#)
- [VMware Cloud Foundation on HPE Synergy with GPU acceleration for Horizon 7 client virtualization](#)

HPE SYNERGY VS CISCO UCS GREENFIELD TCO EXAMPLE

RESULT

35 node, mid-range compute

	Category	HPE Synergy	UCS Blades	Savings	% Savings
Acquisition	Compute and Storage	\$353,351	\$527,645	\$174,294	33%
	Frame/Interconnect/Other	\$89,436	\$118,678	\$29,242	25%
	Rack	\$2,200	\$2,200	\$0	0%
	Software	\$35,640	\$114,566	\$78,926	69%
Support	Hardware support	\$50,633	\$72,475	\$21,842	30%
	Software support	\$221,710	\$281,434	\$59,724	21%
Facilities	Power and cooling	\$114,660	\$120,810	\$6,150	5%
	Carbon footprint	\$4,405	\$4,640	\$235	5%
Datacenter Infrastructure	Power infrastructure	\$163,292	\$172,057	\$8,766	5%
	Space infrastructure	\$4,611	\$4,611	\$0	0%
Total Cost of Ownership		\$1,039,938	\$1,419,116	\$379,179	27%



Source: HPE Synergy Sales Business Value Calculator- Detailed (default greenfield analysis configuration and assumptions), October 2019.
See slide notes for more information.

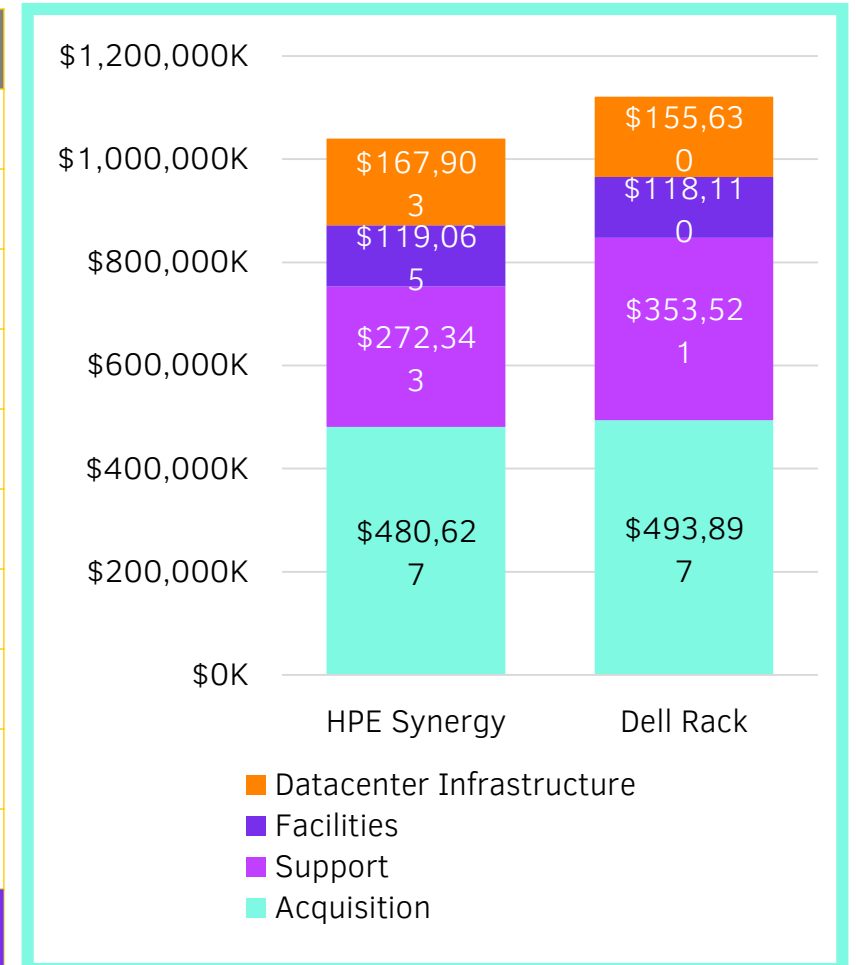
a50000177enw

HPE SYNERGY VS DELL RACK GREENFIELD TCO EXAMPLE

RESULT

35 node, mid-range compute

	Category	HPE Synergy	Dell Rack	Savings	% Savings
Acquisition	Compute	\$353,351	\$400,396	\$47,045	12%
	Frame/Interconnect	\$89,436	\$24,120	-\$65,316	-271%
	Rack	\$2,200	\$2,200	\$0	0%
	Software	\$35,640	\$67,181	\$31,541	47%
Support	Hardware support	\$50,633	\$111,853	\$61,220	55%
	Software support	\$221,710	\$241,668	\$19,958	8%
Facilities	Power and cooling	\$114,660	\$113,740	-\$920	-1%
	Carbon footprint	\$4,405	\$4,370	-\$35	-1%
Datacenter Infrastructure	Power infrastructure	\$163,292	\$151,019	-\$12,272	-8%
	Space infrastructure	\$4,611	\$4,611	\$0	0%
Total Cost of Ownership		\$1,039,938	\$1,121,159	\$81,221	7%



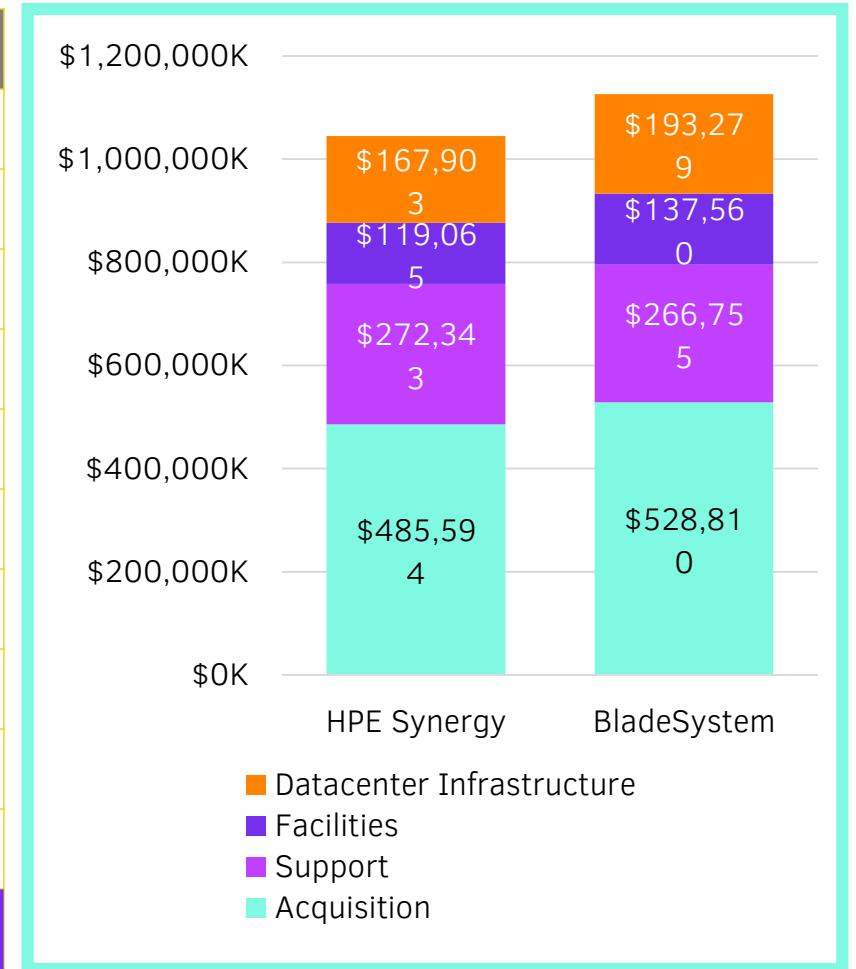
Source: HPE Synergy Sales Business Value Calculator- Detailed (default greenfield analysis configuration and assumptions), October 2019.
See slide notes for more information.

HPE SYNERGY VS BLADESYSTEM GREENFIELD TCO EXAMPLE

RESULT

35 node, mid-range compute

	Category	HPE Synergy	BladeSystem	Savings	% Savings
Acquisition	Compute	\$353,351	\$363,191	\$9,841	3%
	Frame/Interconnect	\$94,403	\$107,444	\$13,041	12%
	Rack	\$2,200	\$2,200	\$0	0%
	Software	\$35,640	\$55,975	\$20,335	36%
Support	Hardware support	\$50,633	\$45,045	-\$5,588	-12%
	Software support	\$221,710	\$221,710	\$0	0%
Facilities	Power and cooling	\$114,660	\$132,475	\$17,815	13%
	Carbon footprint	\$4,405	\$5,085	\$680	13%
Datacenter Infrastructure	Power infrastructure	\$163,292	\$188,668	\$25,376	13%
	Space infrastructure	\$4,611	\$4,611	\$0	0%
Total Cost of Ownership		\$1,044,905	\$1,126,404	\$81,499	7%



Source: HPE Synergy Sales Business Value Calculator- Detailed (default greenfield analysis configuration and assumptions), October 2019.
See slide notes for more information.

a50000177enw