

# Morning Update

## HPE ProLiant Gen11: waarom?



# Praktisch

- Iedereen standaard op 'mute'
- Vragen via de chat
- Slides worden na het event doorgestuurd
- Evaluatieformulier



**Hewlett Packard**  
Enterprise

# **HPE ProLiant Gen11**

## **Compute engineered for your hybrid world**

---

Geert Kuijken, Enterprise Architect

# Agenda

---

**HPE ProLiant Gen11 introduction**

**Industry-Standard Server Architecture: “Feeding the Beast”**

**HPE ProLiant Gen11 Line-up**

**HPE ProLiant: Above and Beyond**



# Digital transformation is essential.

Data-first modernization makes it possible.

## HPE ProLiant

is compute engineered for *your* hybrid world



**Intuitive**

cloud operating experience

**Trusted**

security by design

**Optimized**

performance for your workloads



# Intuitive cloud operating experience

**Simple**

**Unified**

**Automated**

Securely transform your IT focus from the manual  
and mundane to strategic and value-adding



# Trusted security by design

**Fundamental**

**Uncompromising**

**Protected**

Deploy with confidence and have  
peace of mind against security threats





# Optimized performance for your workloads

**Efficient**

**Accelerated**

**Open**

Accelerate innovation  
everywhere your data lives



# HPE ProLiant Gen11 optimized performance

## New world records for HPE ProLiant Gen11 with 4th Gen Intel® Xeon® Scalable processor

**#1** World records for energy-efficiency HPE ProLiant ML350 Gen11

**#1** World record for 448 cores on VMware Vmmark HPE ProLiant DL380 Gen11

**#1** World record performance for Decision Support HPE ProLiant DL380 Gen11

**2.2 x** More users for Online Transaction Processing (OLTP)

**2.76 x** Higher integer compute rate performance

**3.3 x** Higher floating point rate performance

**1.68 x** more virtualization performance

**19 %** better price/performance on virtualization

## New world records for HPE ProLiant Gen11 with 4th Gen AMD EPYC™ processor

**#1** World record DSS performance, with Microsoft® SQL Server 2022 Enterprise Edition

**#1** World record DSS price/performance, with Microsoft SQL Server 2022 Enterprise Edition

**#1** World record 2P Windows ERP OLTP performance on SAP® SD Standard Application Benchmark

**#1** World record virtualization performance with 256 total cores on VMware Vmmark® benchmark

**#1** World record 1P server-side Java performance

**#1** World record for (CPU-based) Video rendering 1P & 2P

**#1** World record 2P 2-node virtualization performance VMware Vmmark benchmark

**#1** World record 1P energy efficiency

# Agenda

---

**HPE ProLiant Gen11 introduction**

**Industry-Standard Server Architecture: “Feeding the Beast”**

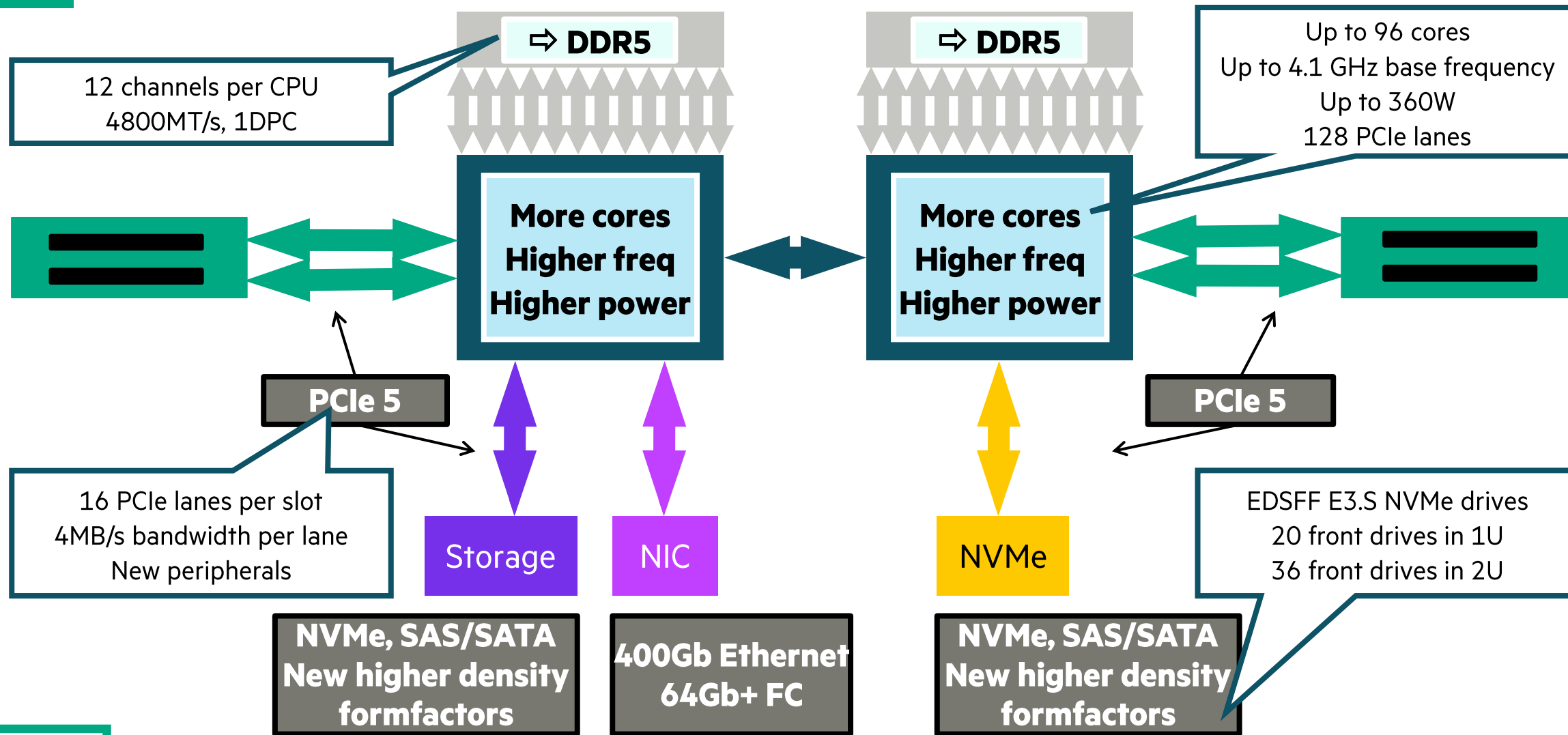
**HPE ProLiant Gen11 Line-up**

**HPE ProLiant: Above and Beyond**



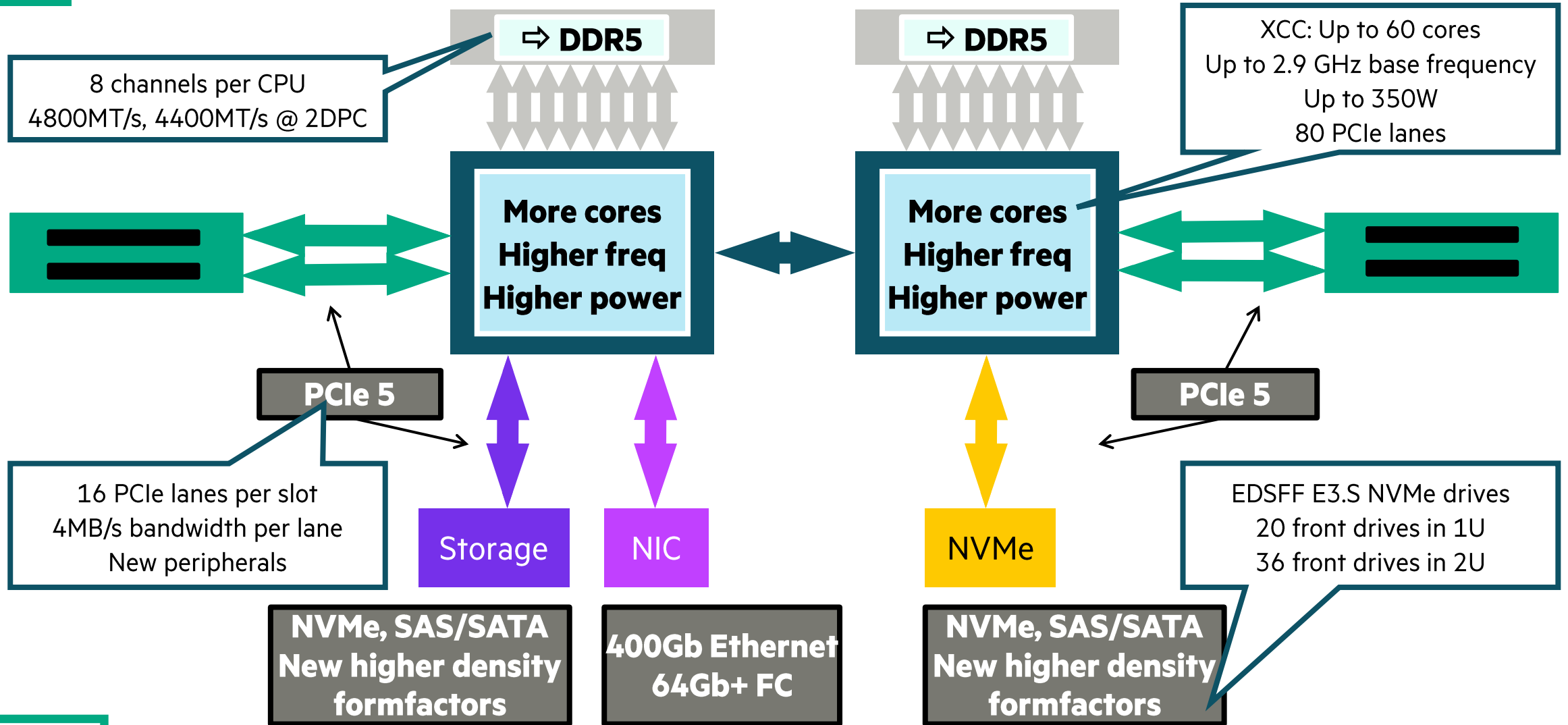
# Industry-Standard Server architecture for HPE ProLiant Gen11 with AMD

“Feeding The Beast”: 4<sup>th</sup> Gen AMD EPYC



# Industry-Standard Server architecture for HPE ProLiant Gen11 with Intel

“Feeding The Beast”: 4<sup>th</sup> Gen Intel Xeon



# Agenda

---

**HPE ProLiant Gen11 introduction**

**Industry-Standard Server Architecture: “Feeding the Beast”**

**HPE ProLiant Gen11 Line-up**

**HPE ProLiant: Above and Beyond**



# HPE ProLiant Gen11 with 4th Generation AMD EPYC Processors



## Cost optimized solution

**1U, 1P**

HPE ProLiant DL325 Gen11



Price performance  
Core count  
Network bandwidth

## Single-socket scalable solution

**2U, 1P**

HPE ProLiant DL345 Gen11



Large storage capacity  
I/O bandwidth  
Memory bandwidth

## Rack-optimized dense solution

**1U, 2P**

HPE ProLiant DL365 Gen11



Front-end serviceability  
Compute density  
No LFF support

## Accelerator-optimized solution

**2U, 2P**

HPE ProLiant DL385 Gen11



Max GPU support  
Network bandwidth  
Core count  
I/O bandwidth



# HPE ProLiant DL325 Gen11



Cost Optimized Solution



1U, 1P

HPE ProLiant DL325 Gen11



FEATURE	SPECS
Processors	<b>1 4th Generation AMD EPYC™ processors up to 96 cores 400W</b>
Memory	Up to 3TB, DDR5 up to 4800 MT/s, CXL 1.1 supported
Front Drive Count	Up to 4 LFF HDD/SSD; SAS/SATA Up to 10 SFF HDD/SSD; SAS/SATA/NVMe <b>Up to 20 EDSFF 3.S 1T*; NVMe</b>
Rear Drive Count	No rear drive support
Boot Options	<b>Up to 1x internal access SATA/NVMe M.2 or 1x External access Hot-pluggable RAIDED M.2 NVMe</b> <small>(NOTE: will <i>not</i> take up a PCIe slot)</small>
GPU Support	<b>Up to 2SW or 2DW*</b>
I/O	<b>Up to 2 x16 PCIe Gen5 slots</b> <b>Up to 2 x8 OCP3.0 slots (upgradable to x16)</b>
Storage Controller	Gen11 Controllers (PCIe and OROC)
Chassis Depth	SFF: 25.5"; <b>LFF/EDSFF: 27.9"; GPU chassis: 32.2"</b>
Targeted Workloads	Software Defined Compute; CDN; low-end VDI

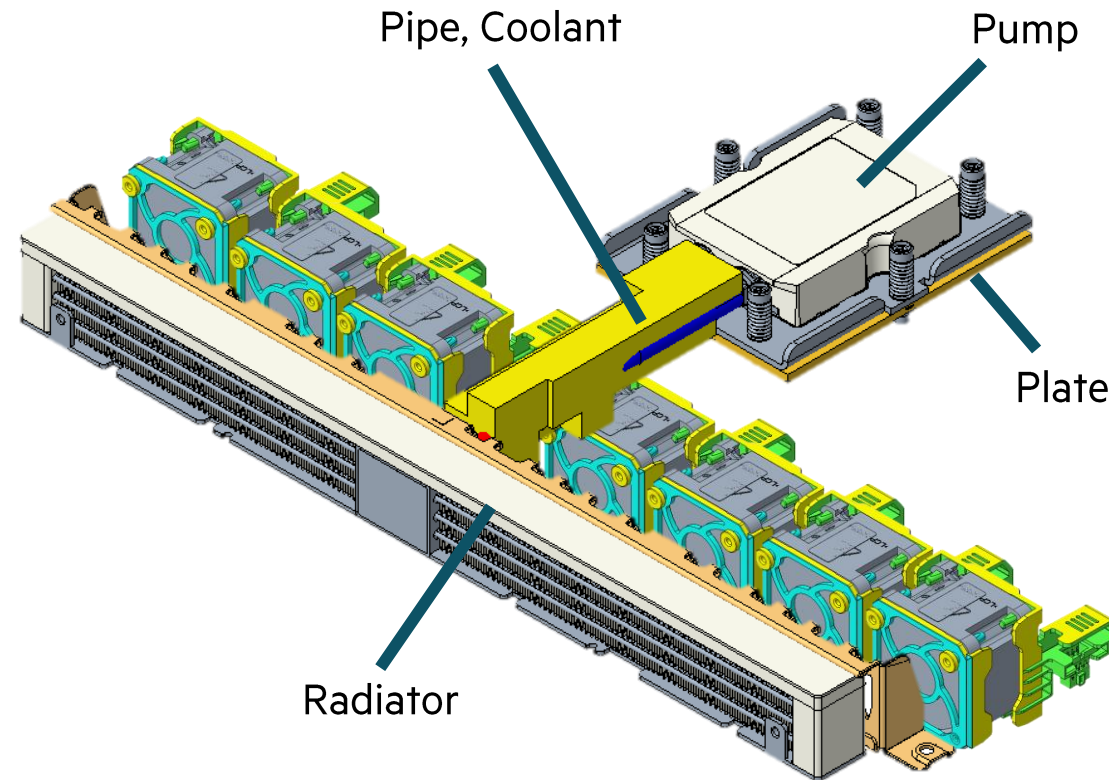
**New features from the prior generation**



# DL325 Gen11 smart cooling solution



- The HPE Smart Cooling Solution is a closed-loop liquid cooling solution designed for  $\geq 320\text{W}$  TDP processors





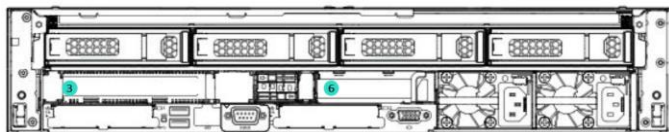
# HPE ProLiant DL345 Gen11



Single-socket scalable solution



2U, 1P  
HPE ProLiant DL345 Gen11



FEATURE	SPECS
Processors	<b>1x 4th Generation AMD EPYC™ processors up to 96 cores 400W</b>
Memory	Up to <b>3TB, DDR5 up to 4800 MT/s</b> , CXL 1.1 supported
Front Drive Count	Up to 12 LFF HDD/SSD; SAS/SATA Up to 24 SFF HDD/SSD; SAS/SATA/NVMe <b>Up to 36 EDSFF 3.S 1T*; NVMe</b>
Mid Tray Count	<b>Up to 8 SFF SAS/SATA/NVMe OR Up to 4 LFF SAS/SATA</b>
Rear Drive Count	<b>Up to 2 SFF SAS/SATA/NVMe OR Up to 4 LFF SAS/SATA</b>
Boot Options	<b>Hot-pluggable RAIDED M.2 NVMe (NOTE: slot-less)</b> Internal / external access
GPU Support	<b>Up to 4SW or 2DW</b>
I/O	<b>Up to 6 x16 PCIe Gen5 slots</b> <b>Up to 2 x8 OCP3.0 slots (upgradable to x16)</b>
Storage Controller	Gen11 Controllers (PCIe and OROC)
Chassis Depth	<b>SFF/EDSFF: 25.4”; LFF: 26.1”; GPU chassis: 31.4”</b>
Targeted Workloads	Software Defined Storage; Video Transcoding

**New features from the prior generation**

# HPE ProLiant Gen11 with 4th Generation Intel Xeon Scalable processors

**TCO & Density optimized**

**Rack-optimized**

**Performance, expandability,  
and scalability for diverse  
workloads**

**Powerful Tower solution  
for wide range of  
workloads**

**1U, 1P**

HPE ProLiant DL320 Gen11



**1U, 2P**

HPE ProLiant DL360 Gen11



**2U, 2P**

HPE ProLiant DL380 Gen11



**2P Tower**

HPE ProLiant  
ML350 Gen11



**Data Management, Cold Storage, IT infrastructure, Inference  
Virtualization, Edge AI, VDI**

**Collaborative, Ent Solutions,  
on retail, Edge AI & VDI**

**Collaborative, Ent Solutions,  
Data & Analytics, AI, VDI**

**The most powerful and  
Storage Flexibility 2P tower**



# HPE ProLiant DL320 Gen11



**TC & Density optimizes RoBo,  
Enterprise, GPU-dense  
1U, 1P**

HPE ProLiant DL320 Gen11



## Feature

## Specs

Front Drive or Front GPU	<ul style="list-style-type: none"> <li>Up to 4 LFF HDD/SSD; SAS/SATA</li> <li>Up to 12 LFF HDD/SSD; SAS/SATA</li> <li><b>Up to 8+2 SFF HDD/SSD; SAS/SATA/NVMe</b></li> <li><b>Up to 4 SFF NVMe/SAS/SATA or 8 E3.s 1T, with additional 4 singlewide GPU or 2 doublewide GPU</b></li> </ul>
Rear Drive Count	No rear drive
Boot Options	<b>Hot-pluggable / internal RAID1 M.2 NVMe</b> <b>2x SATA/NVMe M.2 connector (onboard)</b>
Rear GPU Support	<b>Up to 2 singlewide GPU, x16 FHHL</b>
I/O	<b>Embedded 2x1Gb</b> <b>Up to 2 x16 PCIe Gen5</b> <b>Up to 1 OCP slot</b>
Memory	Up to <b>2TB, DDR5 up to 4800 MT/s</b>
Storage Controller	Gen11 Controllers (PCIe, OROC); Software RAID with Intel VROC
Chassis Depth	<b>SFF: ~23.8"; 4LFF: ~26.2"</b> 12LFF: ~39.2", GPU front end: 30.4"
Targeted Workloads	Data Mgmt; Data Collection; Cold Storage; Virtualization, Edge AI, VDI

### Note:

- 16 DIMM Sockets
- DDR5 speeds up to 4400 MHz 2DPC or 4800 MHz 1DPC



# Workload Driven Modular Server



## Dense footprint

- (1) 4<sup>th</sup> Gen Intel® Xeon Processor, up to 32 Cores / 270Watt,
- up to (16) DDR5 RDIMM max 2TB ,
- (2) SATA M.2 onboard

## Optimized Rear I/O

- (2) PCIe Gen5 FHHL x16, (1) OCP3.0 x16,
- (1) Hot pluggable NVMe OS Boot modular -optional
- (2) USB3.0, (1) VGA, (1) Serial Port -optional,
- (1) 1Gb iLO Ethernet Mgmt Port



Chassis Types	(8+2) SFF Chassis <23.8" (605 mm), 1 Row Fits in 800mm rack	(4) LFF Chassis <26.2" (665 mm), 1 Row Fits in 800mm rack (w/o CMA)/1,075mm	(12) LFF Chassis <39.2" (995 mm), 3 Rows Fits in 1,200mm rack
Front cage capability	(8+2) SAS/SATA (8+2) x2 NVMe or, (8) x4 NVMe or, (8+2) x4 NVMe with (1) PCIe re-timer	(4) SAS/SATA LFF	(12) SAS/SATA LFF w/storage controller, or (10) SAS/SATA LFF direct attach
Target Workloads	Data Management Virtualization Content Delivery Network (CDN) Intelligent Video Analytics (IVA)	General Compute Data Collection Software Defined Compute / Storage	Cold Storage Compute Storage Fed, Wild & Stormy Software Defined Storage
Value Proposition	High Density Scalability <b>Optimized TCO &amp; \$/VM</b>	High capacity at low \$/GB , High Speed I/O Memory bandwidth, Backup, Archiving, Disaster Recovery	Backup, Archiving, Disaster Recovery, Social Media Usage, infrequent Data Access <b>Minimize TCO per gigabyte at high density</b>



# HPE ProLiant DL380 Gen11



**Rack-optimized  
General Purpose Standard  
2U, 2P**  
HPE ProLiant DL380 Gen11



Feature	Specs
Front + Midbay Drive Count	Up to 24SFF SAS/SATA/NVMe+8 Midbay SFF SAS/SATA/NVMe <sup>1</sup> Up to 12 LFF SAS/SATA + 4LFF SAS/SATA or 8SFF SAS/SATA/NVMe <sup>1</sup> <b>Up to 36 EDSFF 3.S 1T NVMe or 18 EDSFF 3.S 2T NVMe (Gen5)</b>
Rear Drive Count	Up to 6SFF SAS/SATA/NVMe HDD/SSD Up to 4LFF SAS/SATA HDD/SSD
Boot Options	<b>Optional Hot-pluggable RAID1 M.2 NVMe Internal / external access</b>
GPU Support	Up to 3DW or 8SW
I/O	Up to 8, up to x16, <b>PCIe Gen5 slots</b> <b>Up to 2 x16 OCP slots</b>
Memory	Up to 8TB <b>DDR5 up to 4800 MT/s</b>
Storage Controller	<b>Gen11 Controllers (PCIe and OCP)</b>
Chassis Depth	SFF: 28.2"; <b>LFF: 30.4"; EDSFF: 30.4"</b>
Targeted Workloads	Collaborative, CRM, Data Mgmt, Analytics & AI, VDI, SCM, ERM, and Content Mgmt, Containers

- Note:
- 32 DIMM Sockets – 16 per Processor –
  - DDR5 speeds up to 4400 MHz 2DPC or 4800 MHz 1DPC

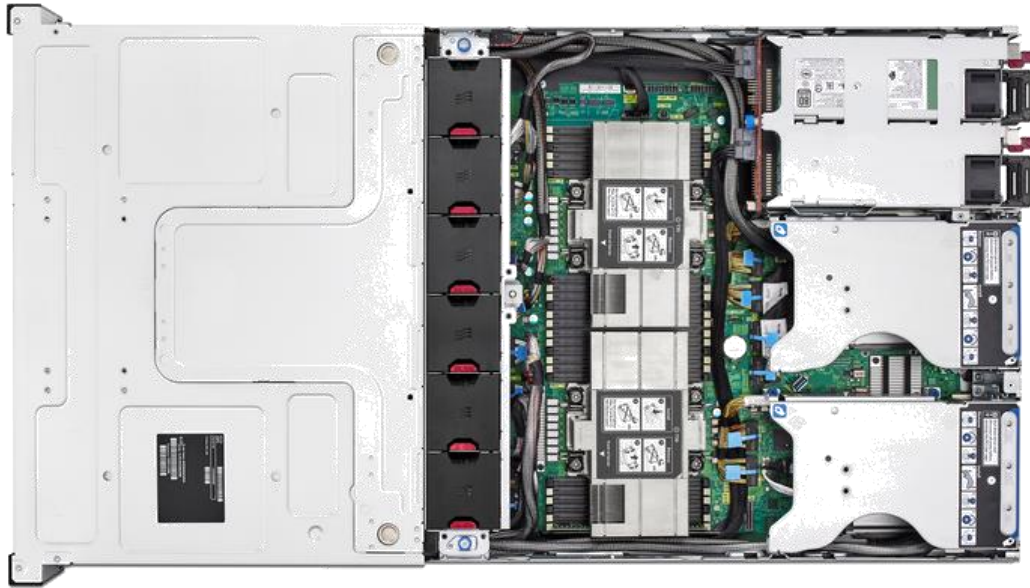


# HPE ProLiant DL380a Gen11

For graphic-intensive applications



- Dual 4th Gen Xeon Scalable processors (up to 56 cores each)



- 24 DIMM slots – 12 per processor (8 channels)
  - DDR5 up to 4400 MHz 2DPC or 4800 MHz 1DPC
- Up to 4 x16 PCIe Gen5 and 2 OCP slots
- **31.13"** chassis depth (81.6cm)

- Up to 8 SFF NVMe or EDSFF drives
- **Supports 4 double-wide NVIDIA A100 or H100 with Ampere bridge**
  - Future: 8 single-wide GPUs



- Bottom 2 power supplies for motherboard, top 2 power supplies for GPU auxiliary power

# HPE Synergy 480 Gen11 compute module

- **Intel's 4th Generation of Xeon Scalable Family processors**  
2-processor Blade platform for all workloads
- **Base Model with optional Drive Cage Options**  
Reduced complexity, increased flexibility & opportunity for change as requirements change
- **PCIe 5.0, 8 channel DDR5 Memory on 32 DIMMs**  
50% more data bandwidth and performance, up to 4TB per socket.
- **Multiple Storage solutions** with Direct Connect/VROC or a Tri-Mode Controller for flexibility in boot & storage solutions
  - 2x & 4x SAS/SATA/NVMe, 4x NVMe, or 8x EDSFF E3.s



Gen11 SR416ie-m  
Tri-mode controller



Dual M.2 HW RAID



No Drive (SAN Boot)



2 Drive SAS/SATA



4 Drive SAS/SATA



4 Drive NVMe Direct Connect



8 Drive EDSFF NVMe E3.S  
Direct Connect



HPE Synergy Compute continues to work with existing HPE Synergy Frames, most current options, and the latest version of HPE Composer2 / OneView.

# HPE ProLiant RL300 Gen11

Designed for service providers and digital-first enterprises running **cloud native workloads**



## More cores, less wattage

Consume less wattage with compute that scales up to 128 cores per socket

## Predictable performance

Single threaded-cores with constant clock speeds

## Flexible management

Built on the legendary HPE ProLiant foundation, with flexibility to pursue and expand your open-source strategy



# Predictable performance

HPE ProLiant RL300 Gen11 server

**Ampere® Altra® (80 core) and  
Altra Max® (128 core) processors**

Single-threaded cores with constant clock speeds deliver consistently high performance



**More cores per socket, lower wattage:  
161W (80 core) or 178W (128 core) @ 3GHz**

Designed for the unique characteristics of **cloud-native** workloads

**Web servers**

**Content delivery**

**AI & analytics**

**In-memory caching**

**Database**

**Media encoding**

Workloads with extreme throughput and latency constraints



# Agenda

---

**HPE ProLiant Gen11 introduction**

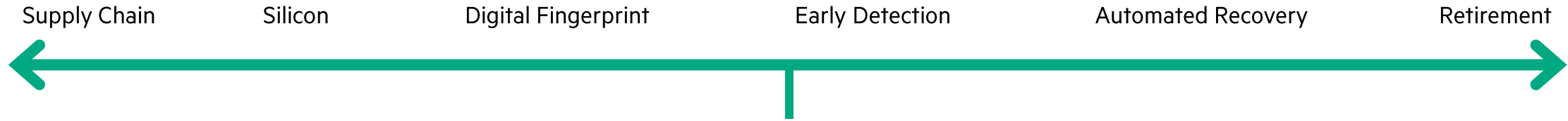
**Industry-Standard Server Architecture: “Feeding the Beast”**

**HPE ProLiant Gen11 Line-up**

**HPE ProLiant: Above and Beyond**



# 360-degree security



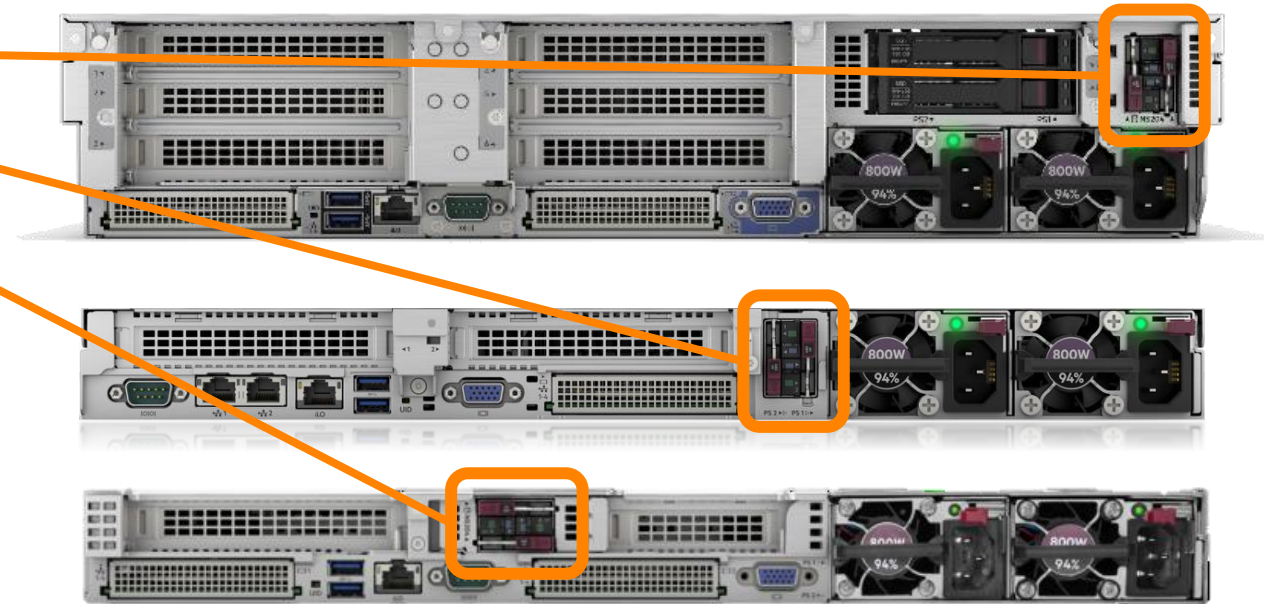
## HPE holistic security view continues

- **Trusted supply chain:** vendor – HPE – customer
- Automated security with **SiRoT** (Silicon Root of Trust)
- Secure repurposing/retirement of infrastructure with **OBSE** (NIST standards)
- **Zero Trust** architecture with standard platform certificates: IDevID, SPDM, PLDM



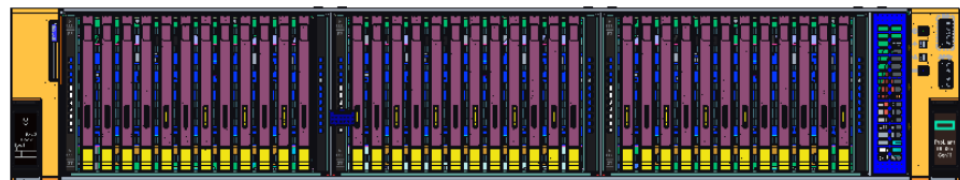
# Gen11 OS boot device

- Dedicated hardware hot-pluggable RAID 1 solution with two 2280 M.2 NVMe media (480GB)
- Auto-creates Hardware RAID1 volume using inbox OS drivers
- Full HPE iLO integration using open-standard PLDM APIs
- Redfish Storage, Events, and Firmware Updates
- Replacement drives automatically rebuild
- Different mounting options



# EDSFF: Enterprise & Datacenter Standard Form Factor

- **Near-future** option for HPE ProLiant Gen 11:
  - 20x E3.S or 10x E3.S 2T drives in 1U chassis
  - 36x E3.S or 18 E3.S 2T drives in 2U chassis
  - 8x E3.S front drives in Synergy blade
  - 5<sup>th</sup> Gen PCIe devices, CPU direct attach or via RAID controller



Maximum Potential SSD Performance based on Interface Bandwidth			
Drive Type and Generation	# of lanes	MB/s	4KiB IOPS (KIOPS)
PCIe Gen5	4	14,178	3,462
PCIe Gen5	2	7,089	1,731
PCIe Gen5	1	3,545	865
PCIe Gen4	4	7,089	1,731
PCIe Gen4	2	3,545	865
PCIe Gen4	1	1,772	433
PCIe Gen3	4	3,545	865
PCIe Gen3	2	1,772	433
SAS 24G	1	2,160	527
SAS 12G	1	1,080	264
SATA 6G	1	540	132



# New Gen11 RAID controllers

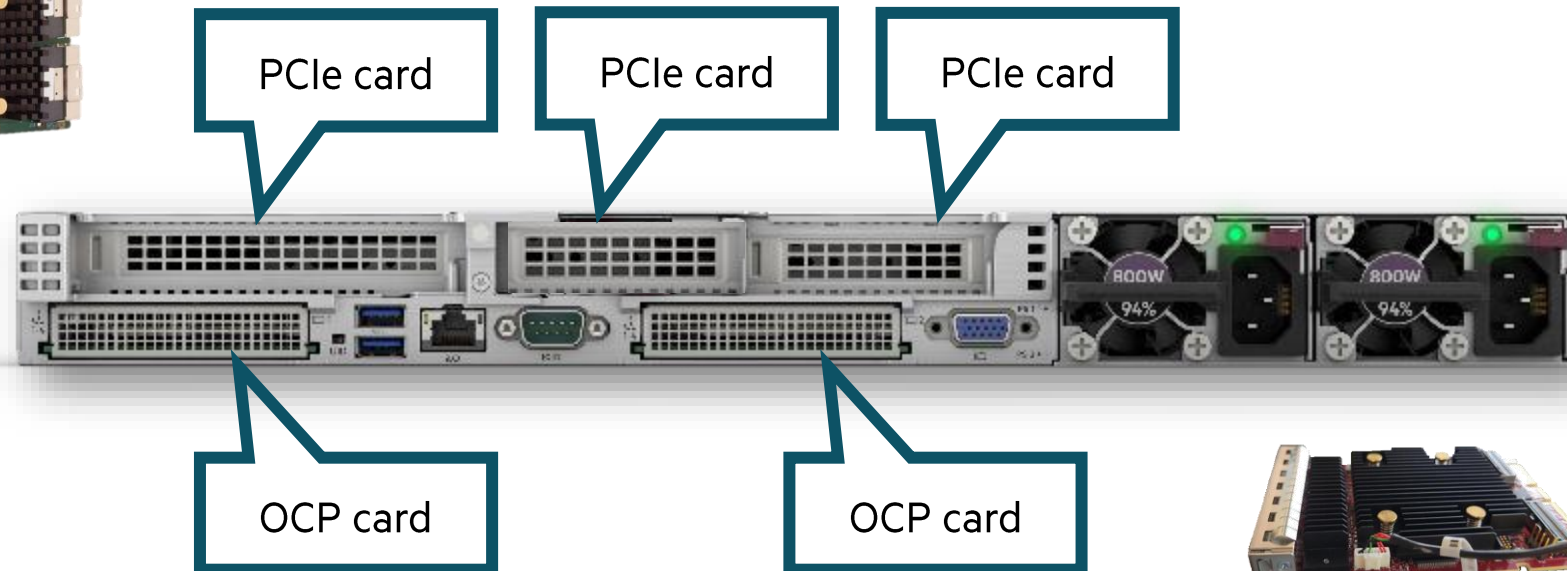
Integrated with iLO6 security and authentication

## Broadcom technology

- Zero, 4GB or 8GB cache models
- **PCIe** and **OCP** form factors
- 8 and 16 lane models

## Microchip technology

- 2GB and 8GB cache models
- **PCIe** and **OCP** form factors
- 8, 16 and 32 lane models



# Platform / GPU qualification plan

	A2	L4	L40	A16	A100	H100
DL320 Gen11		✓	✓	✓		
DL325 Gen11		✓				
DL345 Gen11		✓				
DL360 Gen11	✓	✓				
DL365 Gen11				✓		
DL380 Gen11		✓	✓	✓	✓	✓
DL380a Gen11		✓	✓		✓	✓
DL385 Gen11		✓	✓	✓	✓	✓
DL560 Gen11			✓			✓
ML110 Gen11		✓				
ML350 Gen11		✓	✓	✓		



# HPE server management portfolio positioning

## HPE iLO

Embedded

Embedded Server Management that enables you to securely configure, monitor, and update your HPE server.



## HPE OneView

On-premises

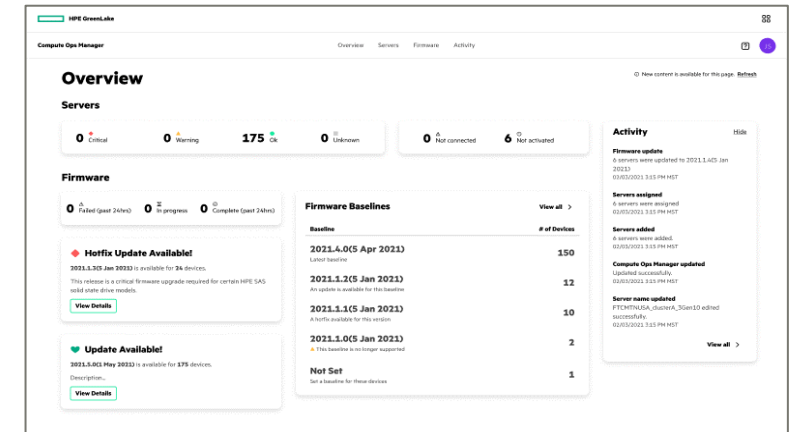
Management software that provides composable solutions across compute, storage, and networking, including HPE Synergy.



## HPE GreenLake for Compute Ops Management (COM)

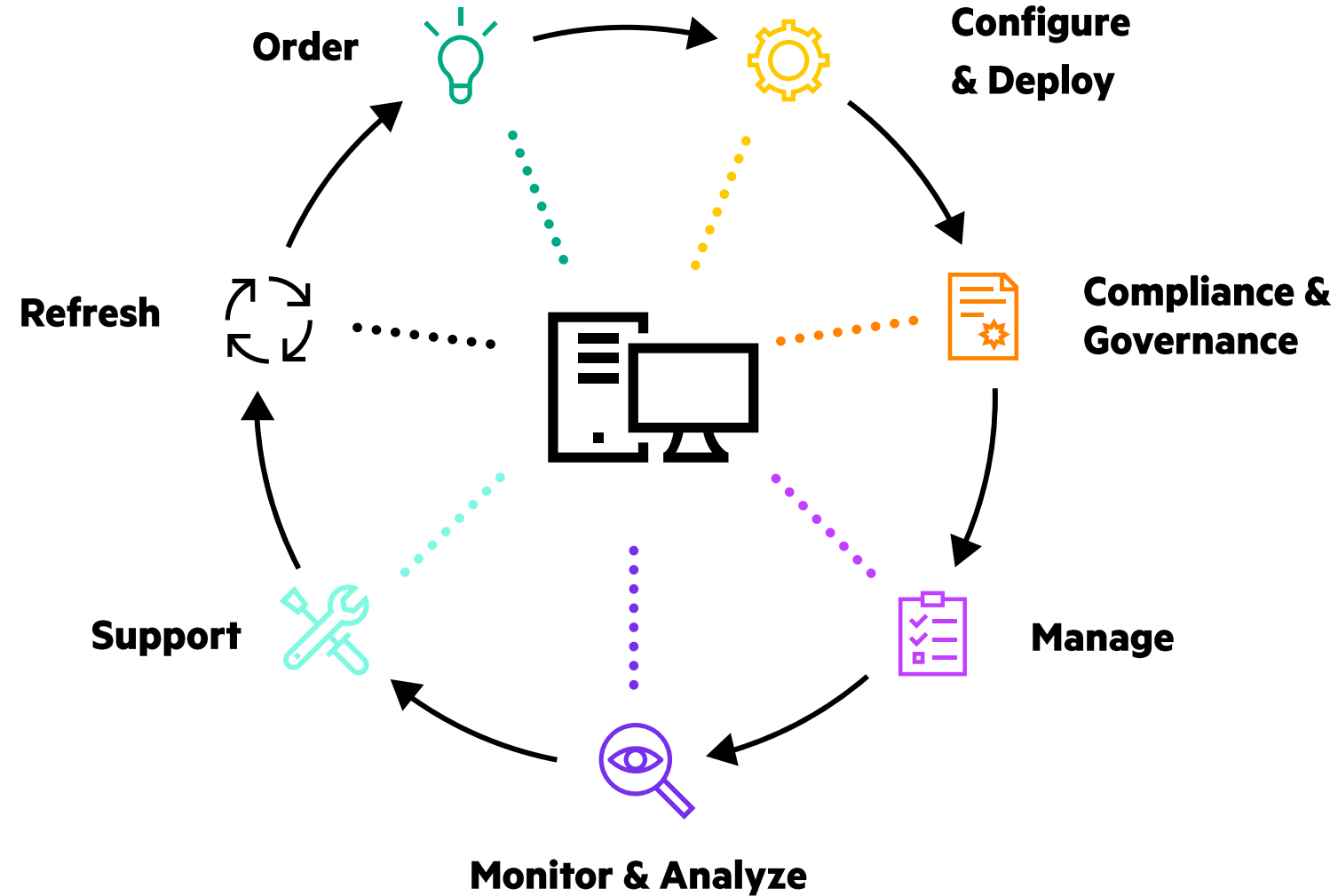
SaaS

Lifecycle management for all your servers, from edge to cloud, delivered as a secure SaaS application, continuously managed and improved by HPE.





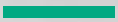
# COM vision: manage the entire lifecycle through a single unified console





**Hewlett Packard**  
Enterprise

**Thank You**



Geert Kuijken, Enterprise Architect



# Upcoming events

**30/3**

**YrCloud: het moderne cloud-driven datacenter  
in uw multicloudstrategie**

**19-20/4**

**Cybersec Europe, Brussels Expo**

**20/4**

**Healthcare Day**

[www.inetum-realdolmen.world/nl/events](http://www.inetum-realdolmen.world/nl/events)



## Contacteer ons via:

- [products@inetum-realdolmen.world](mailto:products@inetum-realdolmen.world)
- Uw vertrouwde contactpersoon bij Inetum-Realdolmen

**inetum**   
realdolmen  
Positive digital flow

**inetum.world**

FRANCE | SPAIN | PORTUGAL | BELGIUM | SWITZERLAND | LUXEMBOURG | ENGLAND |  
POLAND | ROMANIA | MOROCCO | TUNISIA | SENEGAL | CÔTE D'IVOIRE | ANGOLA |  
CAMEROON | USA | BRAZIL | COLOMBIA | MEXICO | RP OF PANAMA | PERU | CHILI |  
COSTA RICA | DOMINICAN REPUBLIC | ARGENTINA | SINGAPORE | UAE

