



**Hewlett Packard
Enterprise**

SERVERY HPE PROLIANT V ROCE 2020



Jiří Císař

Presales

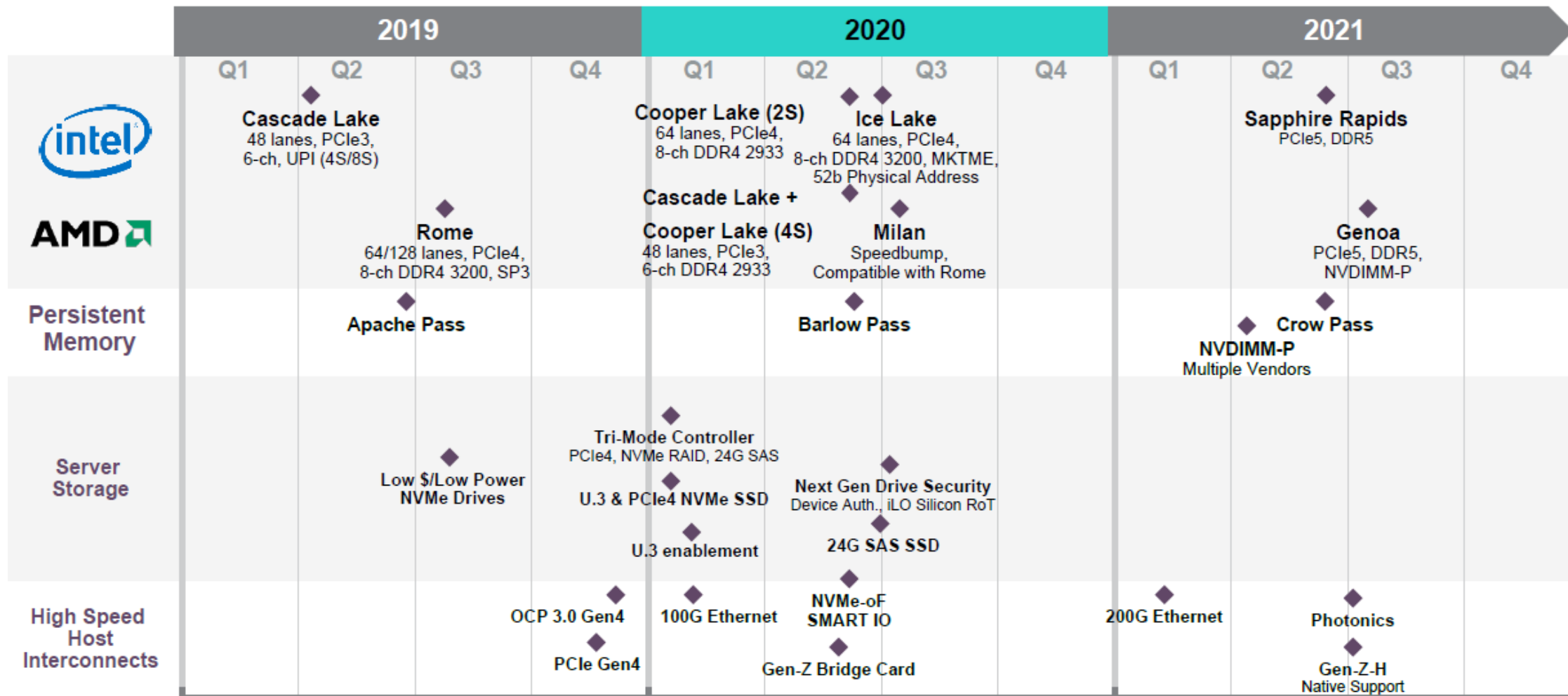
jiri.cisar@hpe.com



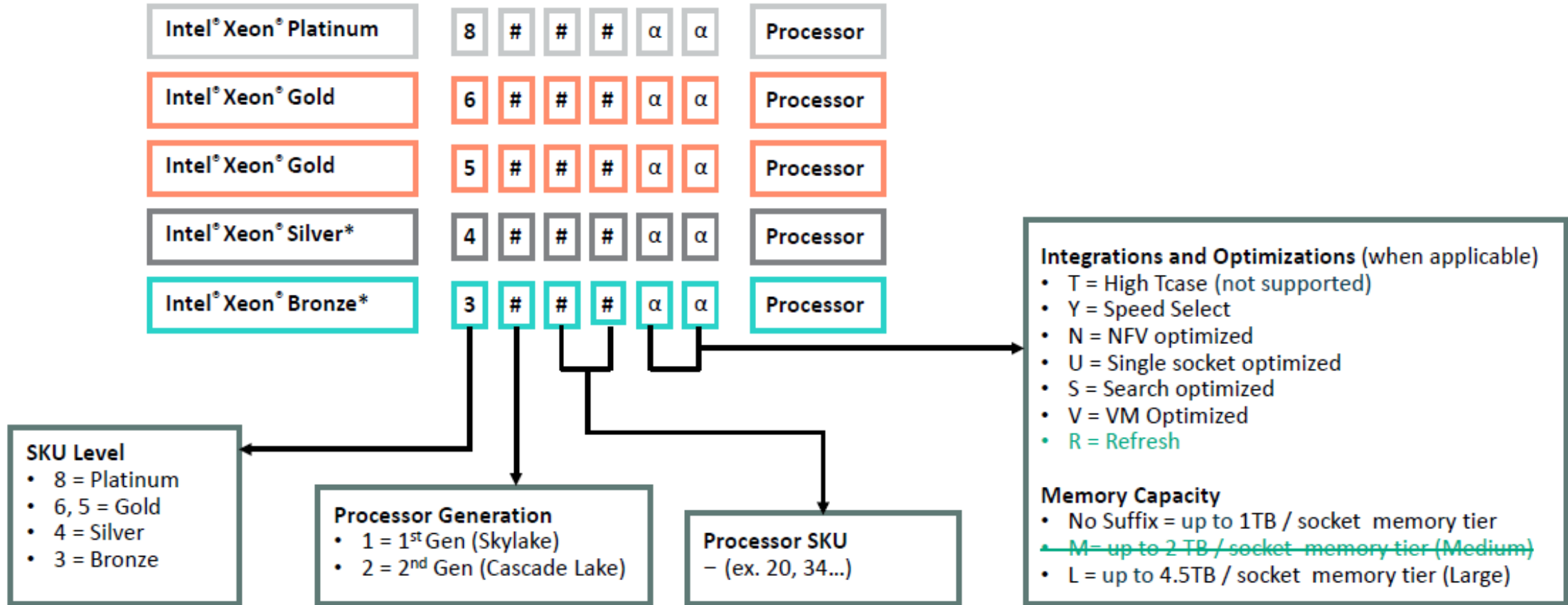
AGENDA

- Rozvoj procesorů a paměťových technologií
- Novinky v infrastruktuře HPE Synergy
- Přehled rackmount serverů HPE ProLiant
- Systémy HPE Apollo pro uchovávání dat

TECHNOLOGICKÁ ROADMAPA LEDEN 2019



INTEL CASCADE LAKE PROCESORY



2ND GEN INTEL XEON SCALABLE PROCESSOR

PORTFOLIO ENHANCEMENT

Processor Number	Cores	Base Clock Speed (GHz)	Turbo Boost (GHz)	Cache (MB)	TDP (W)	Intel Optane Persistent Memory Support	Pricing (RCP)
Xeon Gold 6258R	28	2.7	4.0	38.5	205	Yes	\$3,950
Xeon Gold 6256	12	3.6	4.5	33	205	Yes	\$3,900
Xeon Gold 6250	8	3.9	4.5	35.75	185	Yes	\$3,400
Xeon Gold 6248R	24	3.0	4.0	35.75	205	Yes	\$2,700
Xeon Gold 6246R	16	3.4	4.1	35.75	205	Yes	\$3,286
Xeon Gold 6242R	20	3.1	4.1	35.75	205	Yes	\$2,529
Xeon Gold 6240R	24	2.4	4.0	35.75	165	Yes	\$2,445
Xeon Gold 6238R	28	2.2	4.0	38.5	165	Yes	\$2,612
Xeon Gold 6230R	26	2.1	4.0	35.75	150	Yes	\$1,894
Xeon Gold 6226R	16	2.9	3.9	22	150	Yes	\$1,300
Xeon Gold 6208U	16	2.9	3.9	22	150	Yes	\$989
Xeon Gold 5220R	24	2.2	4.0	35.75	150	Yes	\$1,555
Xeon Gold 5218R	20	2.1	4.0	27.5	125	Yes	\$1,273
Xeon Silver 4215R	8	3.2	4.0	11	130	Yes	\$749
Xeon Silver 4214R	12	2.4	3.5	16.5	100	Yes	\$694
Xeon Silver 4210R	10	2.4	3.2	13.75	100	Yes	\$501
Xeon Silver 4210T	10	2.3	3.2	13.75	95	No	\$554
Xeon Bronze 3206R	8	1.9	1.9	11	85	No	\$306

CASCADE LAKE REFRESH CENY

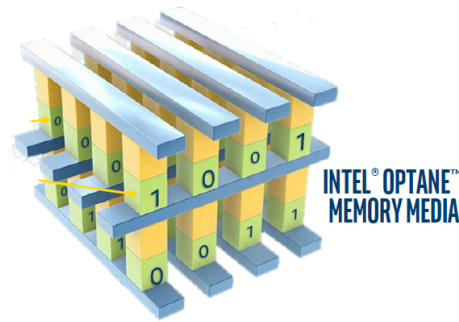
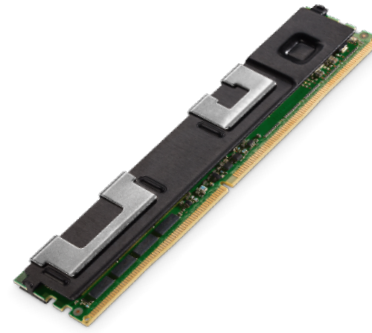
- Intel Xeon-Gold 6230 (**2.1GHz/20-core/125W**)
 - P02502-L21 Intel Xeon-G 6230 FIO Kit for DL380 G10 75 642,00 Kč
- Intel Xeon-Gold 6230R (**2.1GHz/26-core/150W**)
 - P24468-L21 Intel Xeon-G 6230R FIO Kit for DL380 G10 75 280,00 Kč
- Intel Xeon-Gold 5218R (**2.1GHz/20-core/125W**)
 - P24466-L21 Intel Xeon-G 5218R FIO Kit for DL380 G10 51 514,00 Kč
- Intel Xeon-Gold 5218 (2.3GHz/16-core/125W)
 - P02498-L21 Intel Xeon-G 5218 FIO Kit for DL380 G10 49 394,00 Kč

HPE PERSISTENT MEMORY POSTAVENÉ NA INTEL OPTANE DC PMEM

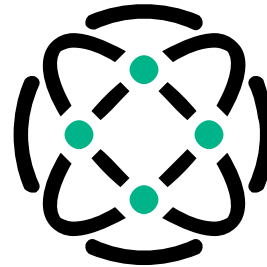
DRAM vlastnosti

Performance comparable to DRAM at low latencies

- Data is volatile
- DRAM is used as a cache; installed in specific ratios



3D XPoint™ Technology



SSD vlastnosti

Data persistence with higher capacity than DRAM

- Data is persistent
- DRAM is used as main memory

OPTANE IS UNIQUE



REVOLUTIONARY MATERIAL

Most significant memory and storage advancement
in the last 20 years



BIT ADDRESSABLE

Every memory cell can be
individually addressed



WRITE IN PLACE

Set or reset data as needed,
no need to erase media

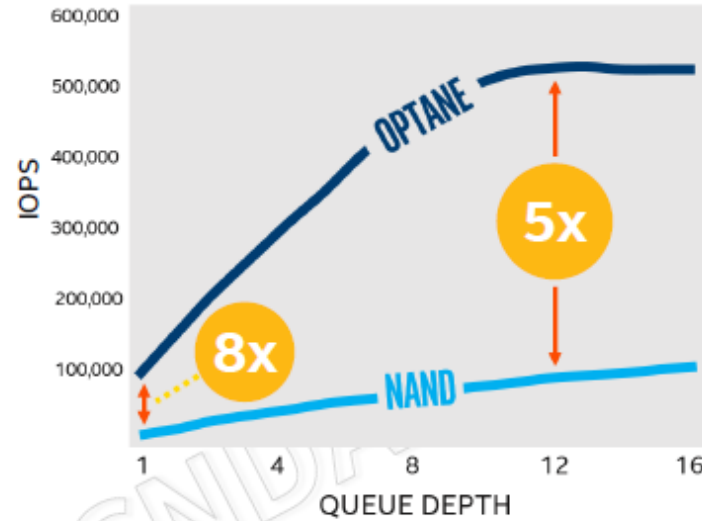


ULTRA-LOW LATENCY

...together delivering
extremely fast media

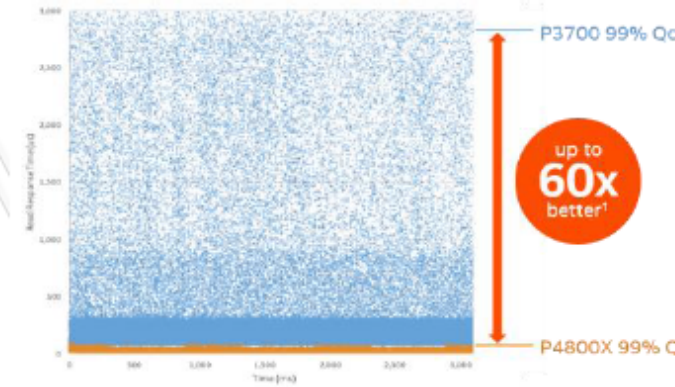
HIGH PERFORMANCE

4K 70/30 RW PERFORMANCE AT LOW QUEUE DEPTH

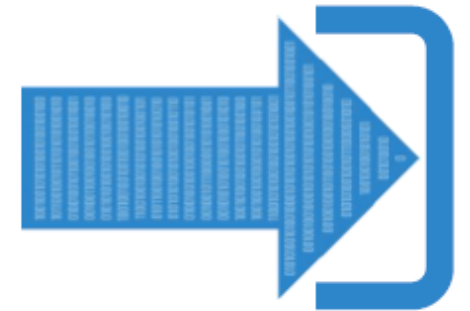


- ... for random read, write and mixed
- ... at low queue depths & under load
- ... even at small capacity points

PERFORMANCE CONSISTENCY



HIGH ENDURANCE



OPTANE IS NOT NAND

HPE PERSISTENT MEMORY OPERAČNÍ REŽIMY

- **App Direct mode**

- HPE Persistent Memory modules function as persistent memory

- **Memory mode**

- HPE Persistent Memory modules function as volatile system memory while DRAM capacity operates as a cache
- requires symmetrical DIMM and HPE Persistent Memory module population under each memory controller

- **Mixed mode**

- Some HPE Persistent Memory module capacity functions as volatile memory and the remainder serves as persistent memory. All DRAM capacity operates as a cache.

HPE Persistent Memory module capacity ¹	HPE Persistent Memory module configuration	DIMM capacity ¹	DIMM configuration	Ratio
768 GB	6 x 128 GB	96 GiB	6 x 16 GiB	8:1
		192 GiB	6 x 32 GiB	4:1
		384 GiB	6 x 64 GiB	2:1 ²
		768 GiB	6 x 128 GiB	1:1 ²
1.5 TB	6 x 256 GB	96 GiB	6 x 16 GiB	16:1
		192 GiB	6 x 32 GiB	8:1
		384 GiB	6 x 64 GiB	4:1
		768 GiB	6 x 128 GiB	2:1 ²
3 TB	6 x 512 GB	96 GiB	6 x 16 GiB	32:1 ³
		192 GiB	6 x 32 GiB	16:1
		384 GiB	6 x 64 GiB	8:1
		768 GiB	6 x 128 GiB	4:1

¹ Capacity per processor

² Not recommended; no benefit from caching

³ Not recommended

HPE PERSISTENT MEMORY

Hardware

Manufacturer	HPE
Model	ProLiant DL380 Gen10
CPU	48 CPUs x Intel(R) Xeon(R) Gold 6240R CPU @ 2.40GHz
Memory	383.66 GB
Persistent Memory	1.48 TB
Virtual flash	
Networking	
Hostname	

DL380PMEM - Storage

Datstores Adapters De

New datastore Increase c

Name

- datastore1
- PMemDS-017507c3-f032-6643

DL380PMEM - Storage

Datstores Adapters Devices **Persistent Memory**

Refresh Search

ID	Capacity	Free	Health
0x1	126 GB	0 B	Normal
0x111	126 GB	0 B	Normal
0x21	126 GB	0 B	Normal
0x101	126 GB	0 B	Normal
0x11	126 GB	0 B	Normal
0x121	126 GB	0 B	Normal
0x1001	126 GB	0 B	Normal
0x1111	126 GB	0 B	Normal
0x1021	126 GB	0 B	Normal
0x1101	126 GB	0 B	Normal
0x1011	126 GB	0 B	Normal
0x1121	126 GB	0 B	Normal

12 items

HPE PERSISTENT MEMORY CENY

- 835804-B21 Intel Optane 128GB PMem 100 for HPE 37 498,00 Kč
- 835807-B21 Intel Optane 256GB PMem 100 for HPE 108 097,00 Kč
- 835810-B21 Intel Optane 512GB PMem 100 for HPE 435 879,00 Kč

- P00926-B21 HPE 64GB 4Rx4 PC4-2933Y-L Smart Kit 41 687,00 Kč
- P00928-B21 HPE 128GB 8Rx4 PC4-2933Y-L 3DS Smart Kit 102 007,00 Kč

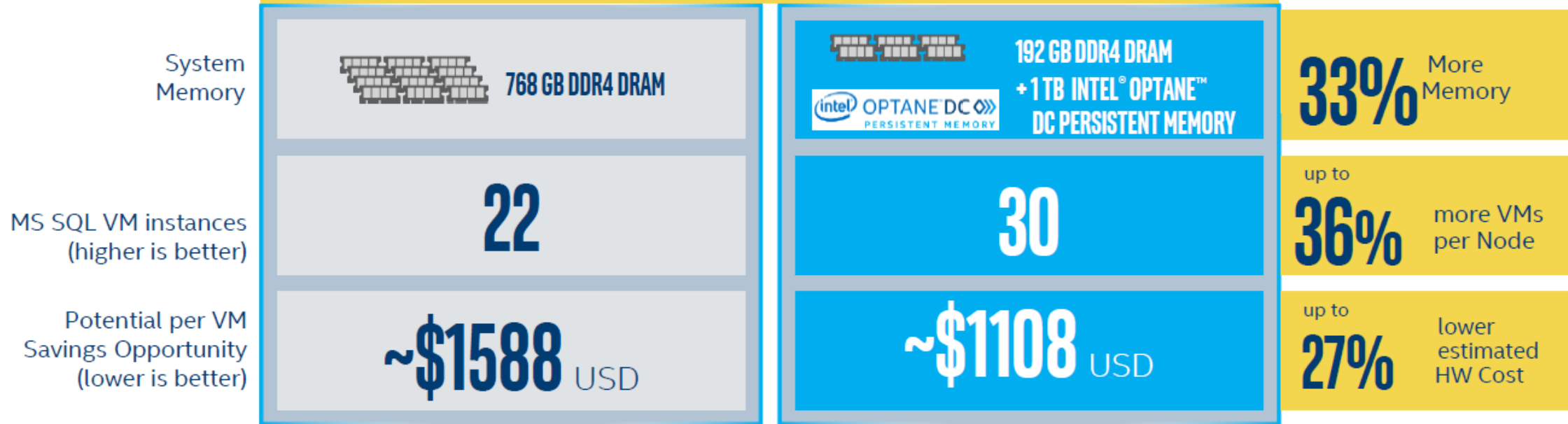
- Alternativa k DRAM
- Zvětšení velikosti RAM
- Konsolidace workloadů
- Řešení IO úzká místa
- Recovery
- High speed storage

UPGRADE SQL

MULTI-TENANT VIRTUALIZATION CONSOLIDATION UPGRADE



WORKLOAD - OLTP CLOUD BENCHMARK - INCREASE VMs PER NODE



CPU: Intel® Xeon® Platinum 8276 Processor

MEMORY: 768 GB DDR4 DRAM Memory







VM Config: 4VPs, 32GB Memory, 60GB DB size & SLA <= 500ms

CPU: Intel® Xeon™ Platinum 8276 Processor

MEMORY: 192 GB DDR4 DRAM Memory + 1 TB DCPMM

VM Config: 4VPs, 32GB Memory, 60GB DB size & SLA <= 500ms

VMWARE ESXI

	DDR4 DRAM ONLY	DDR4 DRAM +  MEMORY MODE	
DO MORE	 768 GB DDR4 DRAM 152 VMs	 192 GB DDR4 DRAM  +1 TB INTEL® OPTANE® DC PERSISTENT MEMORY 190 VMs	up to 33% more memory ¹ 25% more VMs per node ^{1,2}
SAVE MORE	~\$80 USD	~\$69 USD	up to 14% lower estimated HW cost per VM
	 CPU: 2x Intel® Xeon® Gold 6252 Processor MEMORY: 768 GB DDR4 DRAM Memory	 CPU: 2x Intel® Xeon® Gold 6252 Processor MEMORY: 192 GB DDR4 DRAM Memory + 1 TB Intel® Optane™ DC Persistent Memory	

VMWARE VSAN S OPTANE SSD

- 4 nodový vSAN cluster s DL380 Gen10 servery
 - 2x 18-core Intel Xeon Gold 6154, 384GB RAM
 - 6x NVMe SSD Capacity
 - 2x NVMe SSD Cache, alternativa 2x Optane SSD Cache

IOPS

higher is better

Configuration with six NAND NVMe SSDs + two Intel Optane NVMe SSDs

35.18%
more IOPS



Configuration with NAND NVMe SSDs only



Throughput (MB/s)

higher is better

Configuration with six NAND NVMe SSDs + two Intel Optane NVMe SSDs

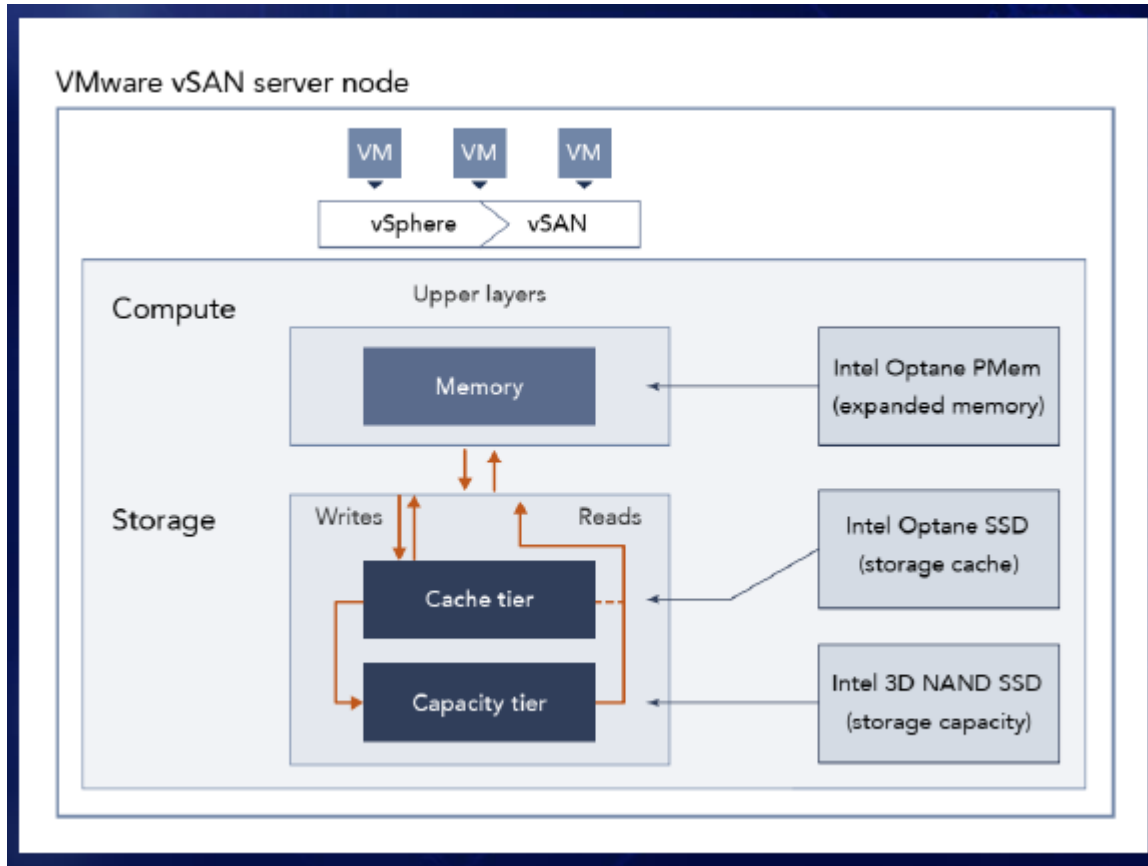
34.71%
more MB/s



Configuration with NAND NVMe SSDs only

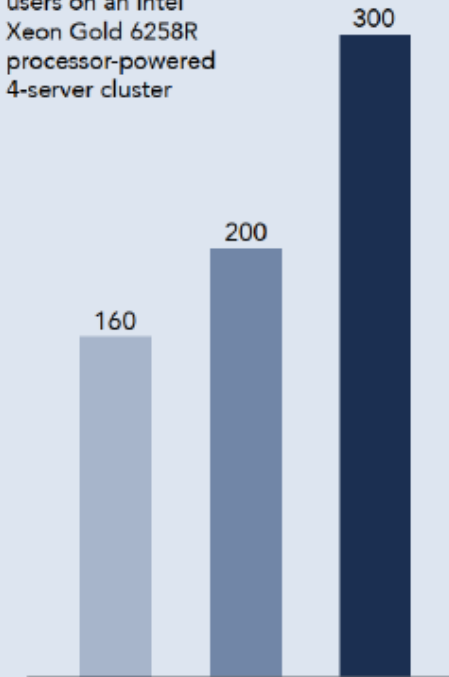


VMWARE HORIZON 7 S VSAN



Supported up to **87% more** virtual desktop users

Number of VDI users on an Intel Xeon Gold 6258R processor-powered 4-server cluster

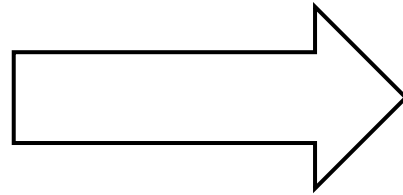


- with 384GB DDR DRAM
- with 512GB Intel Optane PMem + 96GB DDR DRAM
- with 1,024GB Intel Optane PMem + 192GB DDR DRAM

HPE BLADY A SYNERGY



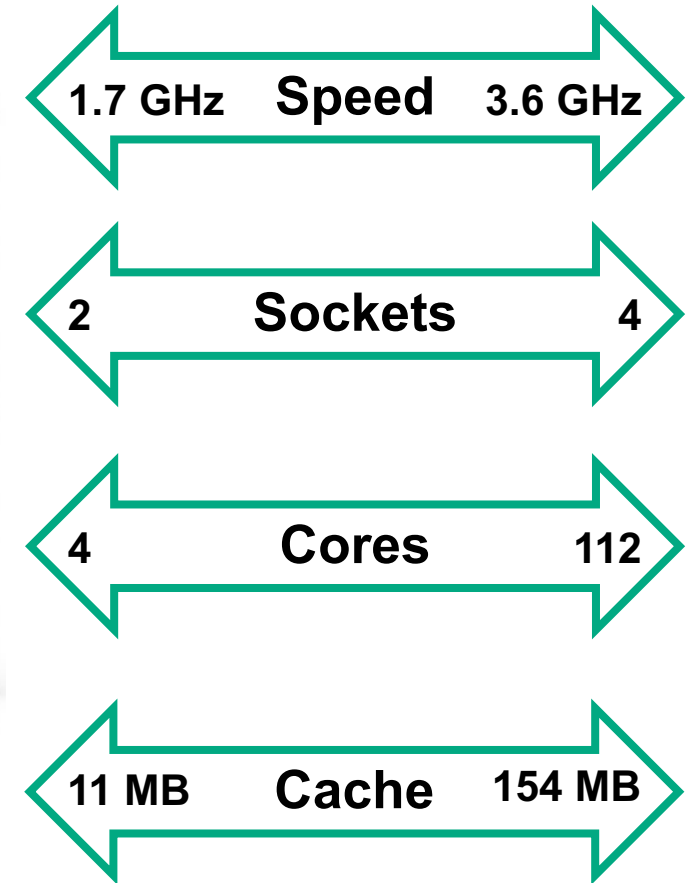
HPE BladeSystem c7000



HPE Synergy

HPE SYNERGY SY 480 & SY 660 GEN10

- Škálovatelné od 1 do 2 nebo od 2 do 4 procesorů Intel Xeon Scalable první a druhé generace
- Podpora pro persistentní paměti
- Podpora pro 3 (6) IO adapterů
- Umožňují nasazení SAS/SATA SSD i NVMe disků



SYNERGY INOVACE PRO MANAGEMENT

Synergy 12000 Frame

Composer2



Poskytuje nativní management pro vytvoření softwarově definované infrastruktury využitím compute, storage a network zdrojů



Výkon
Bezpečnost
Konektivita

4-port FLM



Řídí a monitoruje stav jednotlivých prvků Synergy framu

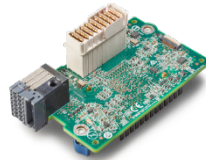
- Napájení a chlazení
- Health status
- Inventura komponent

a propojuje více framů do jednoho logického celku

SYNERGY INOVACE - VIRTUAL CONNECT SE 100GB F32



Méně NIC, HBAs & switchů
Nižší cena
Nižší příkon



Flex-50
50 Gb Pipe

FlexNIC 1A

FlexHBA 1B

FlexNIC 1C

FlexNIC 1D

FlexNIC 1E

FlexNIC 1F

FlexNIC 1G

FlexNIC 1H

1Gb Service Console

16Gb FC Storage

10Gb VM Network

4Gb VMotion

5Gb Network 1

5Gb Network 2

5Gb Network 3

5Gb Network 4

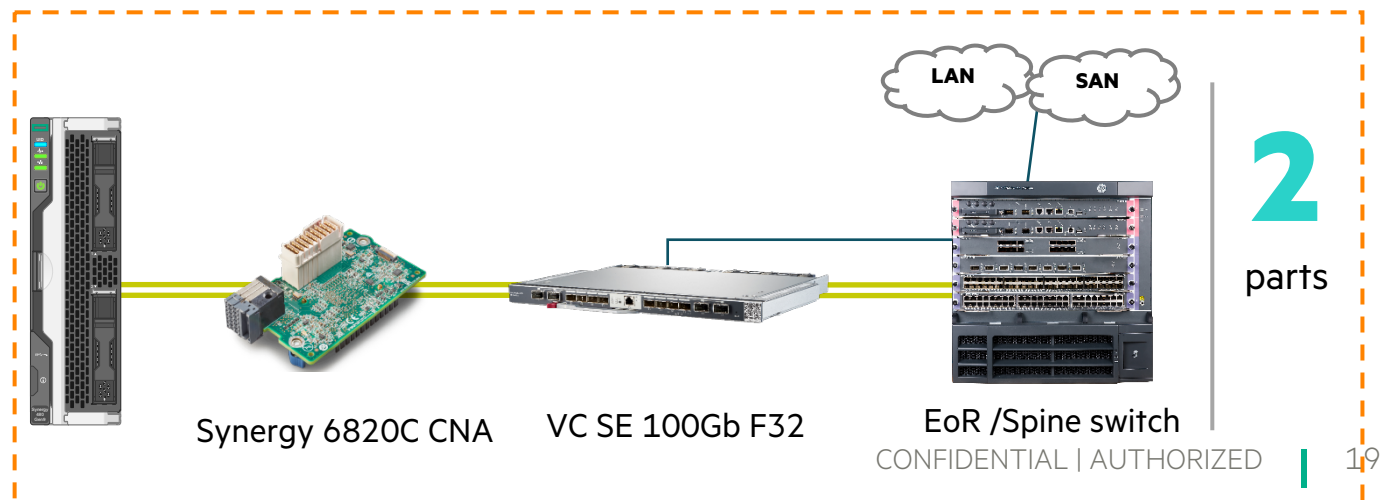


Rozdělí 2 x 25/50Gb porty na 8 fyzických funkcí per port

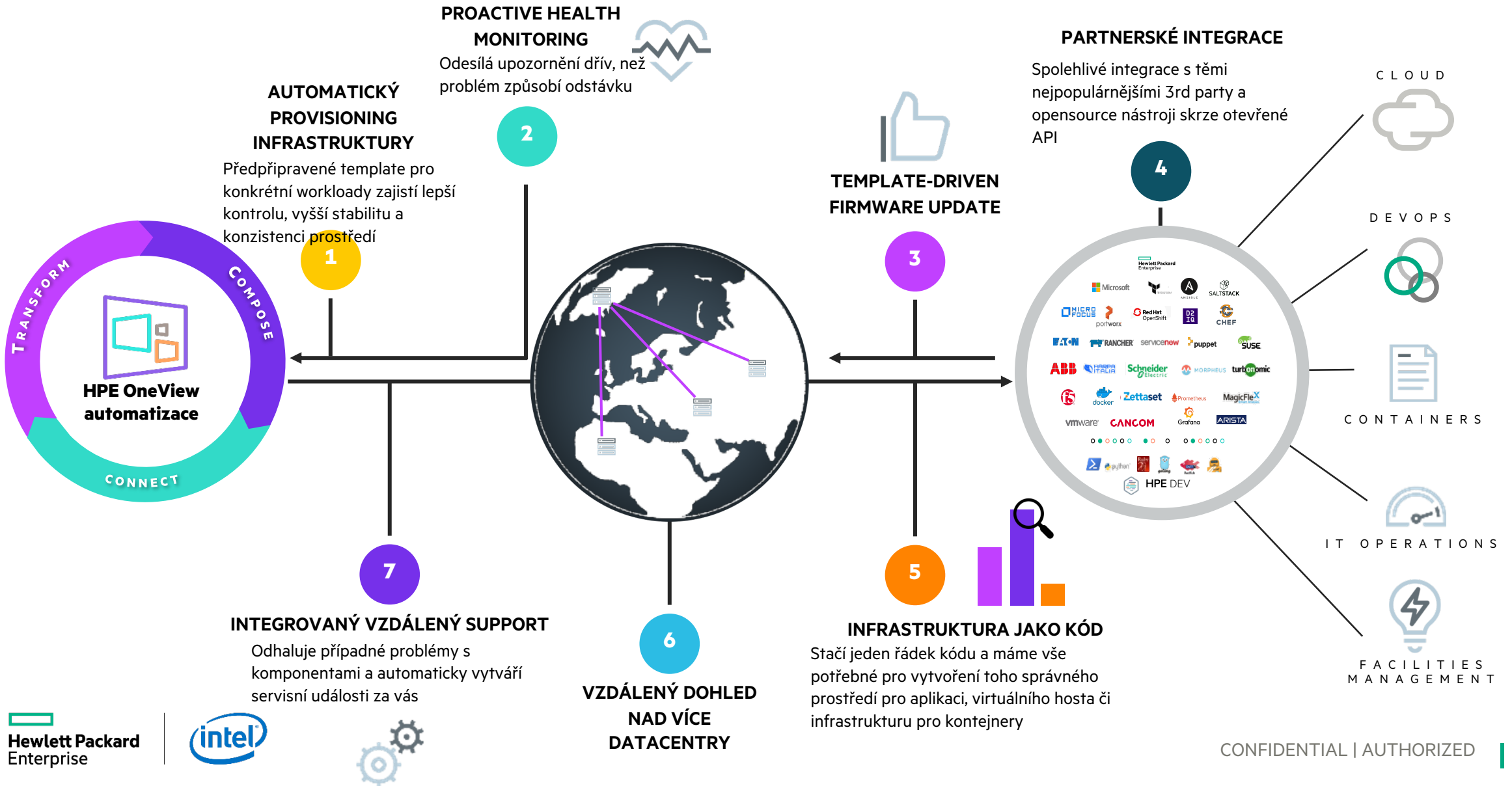
Podporuje síťové technologie RoCE, iWARP a je NVMe-oF ready

Umožňuje dynamické změny pásma

Konverguje IO uvnitř framu



MOŽNOSTI AUTOMATIZACE DÍKY SOFTWARE-DEFINED INFRASTRUKTUŘE



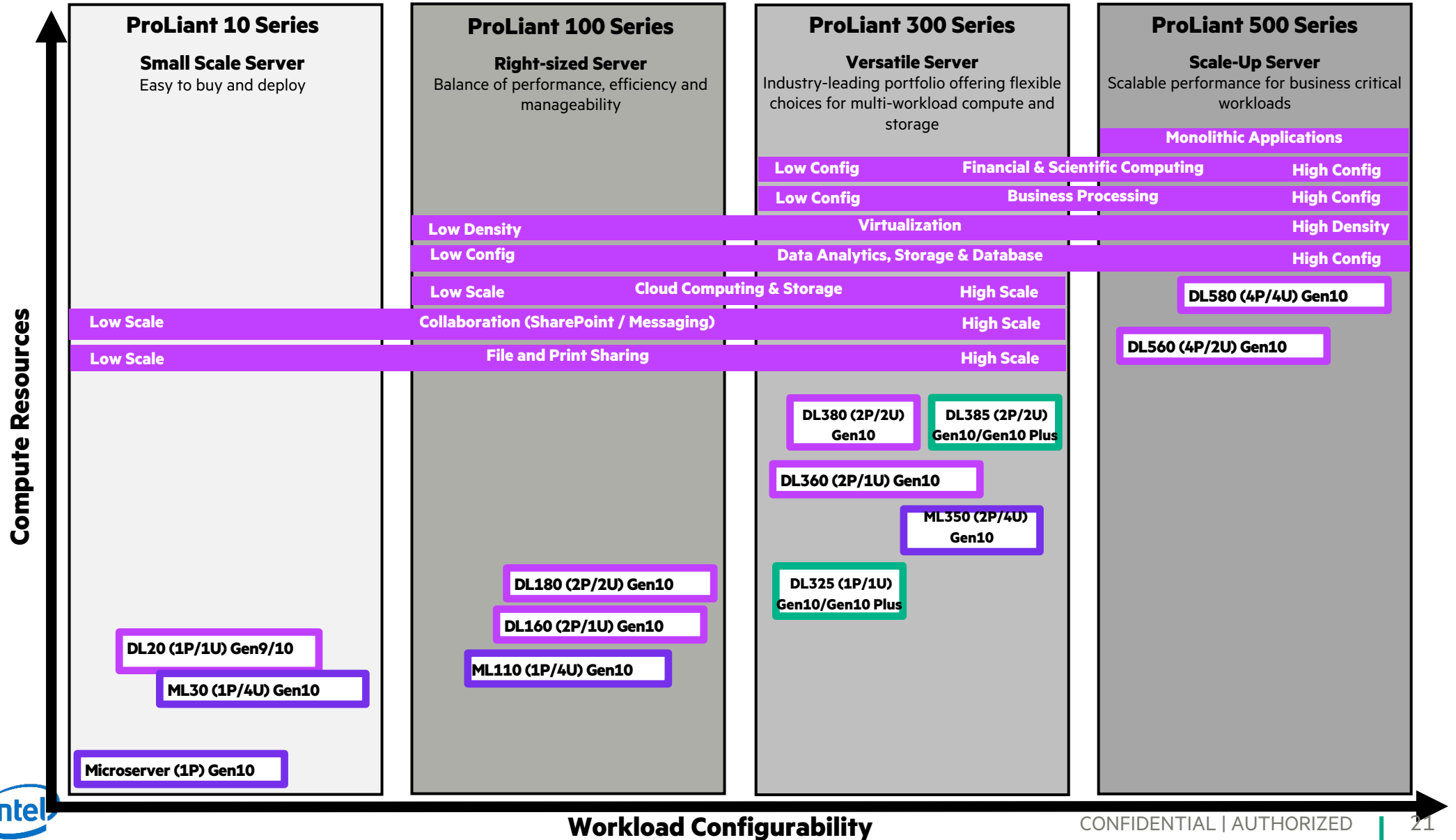
HPE PROLIANT POZICOVÁNÍ SERVERŮ

Key:

Intel Rack (DL)

Tower (ML)

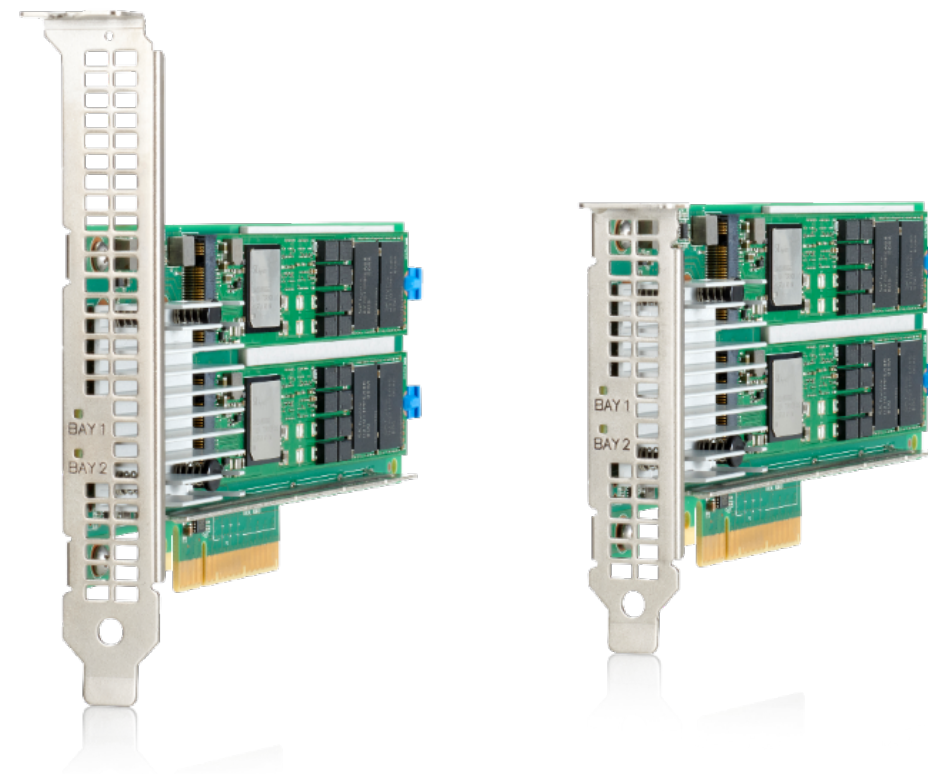
AMD Rack (DL)



HPE NS204I-P OS BOOT DISK PRO PROLIANT RACK, TOWER, & APOLLO

Gen10 and
Gen10 Plus

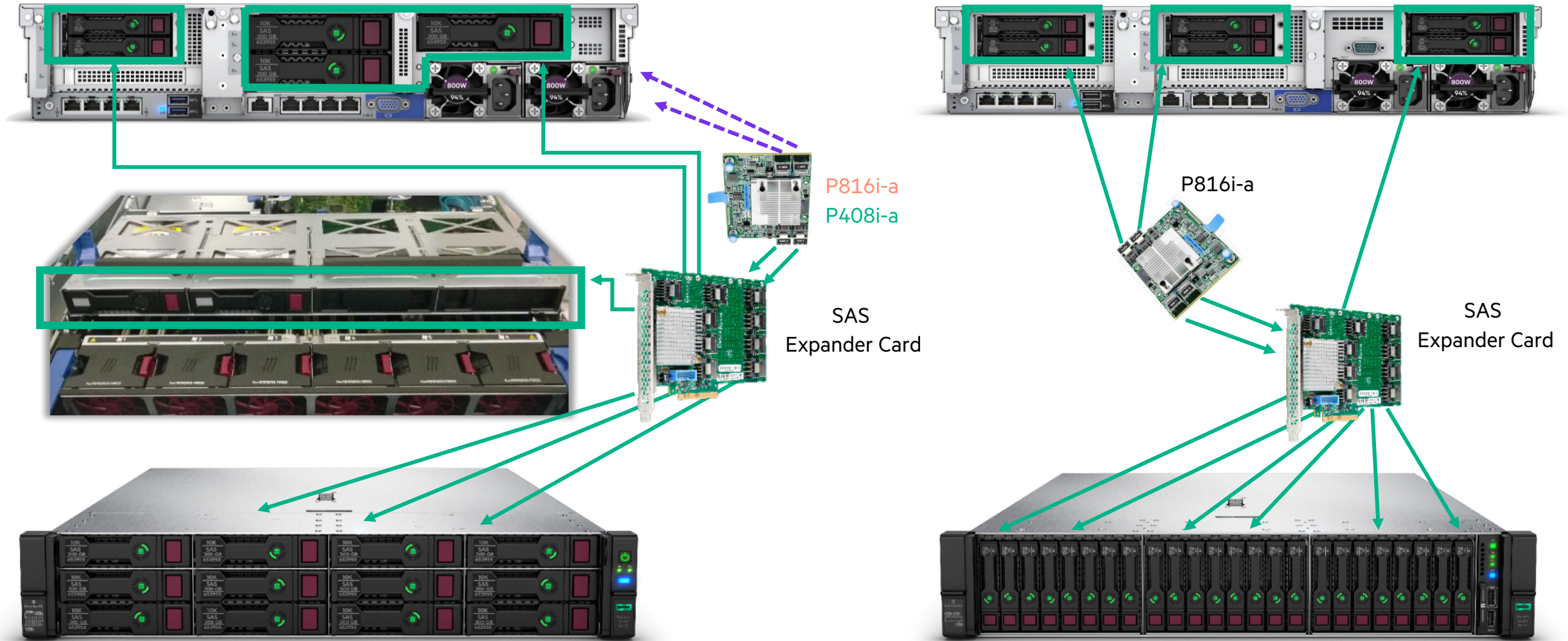
- Separátní redundantní storage pro boot OS
- Dedikovaný hardware RAID 1 via RAID on Chip v jednom PCIe slotu
- 2x 480GB M.2 NVMe SSD (power loss protection a error correction na desce)
- NVMe technologie je až 4x rychlejší než SATA
- Plug n' Play, nevyžaduje konfiguraci
- Nativní VMware, Microsoft, Linux OS in-box NVMe driver



CO V SERVERECH PRODÁVÁME NEJVÍCE



DL380 UMÍME NAPLNIT DISKY



HPE APOLLO PURPOSE-BUILT PORTFOLIO FOR HPC, BIG DATA, AND AI

Advisory, Professional, Operational Services | HPE GreenLake Flex Capacity | Hybrid HPC

Supercomputing / Enterprise / Commercial HPC

HPE SGI 8600



Liquid cooled, petaflop scale for HPC and AI

HPE Apollo 6000 Gen10



Air-cooled, HPC at rack scale

HPE Apollo 2000 Gen10



The bridge to enterprise scale-out architecture

HPE Apollo sx40



Max GPU capacity and performance with lower TCO

Emerging

HPE Apollo 6500 Gen10



Enterprise platform for accelerated computing

HPE Apollo 70



HPC cluster ready Arm based server

HPE Apollo 35



Best AMD performance in dense HPC platform

Storage

HPE Apollo 4200 Gen10 (2U / 28 LFF or 54 SFF)



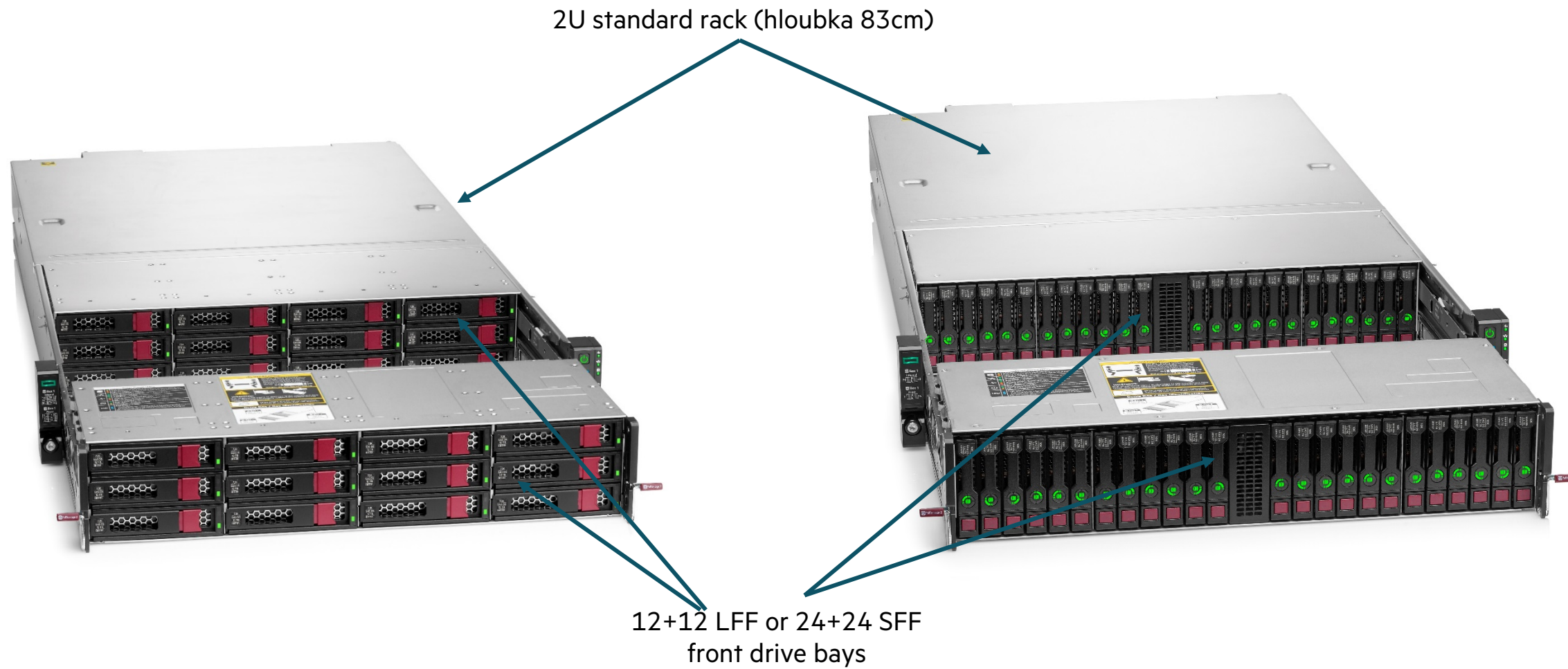
Purpose-built for data analytics and as enterprise bridge to scale-out storage

HPE Apollo 4510 Gen10 (4U / 1 node x 60 LFF)



Purpose-built for object storage

HPE APOLLO 4200 GEN10 SERVER



HPE APOLLO 4200 GEN10 KONFIGURACE ZADNÍ DISKOVÉ POZICE

- Konfigurace 1
 - Blank
 - 5x low-profile PCIe sloty
- Konfigurace 2
 - 4x LFF SAS/SATA rear drive
 - 5x low-profile PCIe sloty
- Konfigurace 3
 - 2x SFF rear drive + 2x full height-half length PCIe sloty
 - 4x low profile PCIe sloty
- Konfigurace 4
 - 6x SFF rear NVMe
 - 5x low-profile PCIe sloty
- Konfigurace 5
 - 6x SFF rear SAS/SATA
 - 5x low-profile PCIe sloty



APOLLO 4200 GEN10 PŘÍKLADY NASAZENÍ

Workload-optimized architektura

Big Data analytics

- Density-optimized platform
- Hyperscale in reduced footprint
- Highest level of performance and efficiency
- NVMe support for metadata and caching



Scale-out software defined storage

- Software delivered on industry-standard hardware
- Scale affordably and accommodate PBs of data
- Architectural flexibility with scale-up and scale-out solutions



Backup and archive

- Compatible with multiple backup and archive applications
- Converged scale-out storage for backup and archive



Density-optimized storage

- Space and cost savings due to density optimized infrastructure
- Plug-and-play integration in existing data center for reduced implementation time



A JAK TO VYCHAZÍ CENOVĚ?

- DL380 a D3000
 - P19719-B21 HPE DL380 Gen10 24SFF NC CTO Svr 51 636,00 Kč
 - Q1J10A HPE D3710 Enclosure 74 822,00 Kč

- *P19718-B21 HPE DL380 Gen10 12LFF NC CTO Svr 43 410,00 Kč*
- *Q1J09A HPE D3610 Enclosure 74 822,00 Kč*

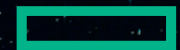
- H8QN6E HPE 3Y FC NBD DL380 Gen10 SVC 22 257,00 Kč
- U4XY6E HPE 3Y FC NBD D2600 DISK ENC SVC 37 914,00 Kč



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 - U4XY6E HPE 3Y FC NBD D2600 DISK ENC SVC 37 914,00 Kč
- Apollo 4200
 - P07246-B21 HPE Apollo 4200 Gen10 48SFF CTO Svr 104 148,00 Kč
 - *P07244-B21 HPE Apollo 4200 Gen10 24LFF CTO Svr 96 719,00 Kč*
 - HM6P5E HPE 3Y FC NBD Apollo 4200 Gen10 SVC 30 342,00 Kč





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DĚKUJI

