

차세대 HCI 인프라를 위한 New PowerEdge Technology

- 1. PowerEdge Portfolio Overview
- 2. Industry Enabled Technology
- 3. Dell Enabled Technology

PowerEdge Server Portfolio

Purpose-built to address evolving customer needs

- For Datacenter Core, Mainstream, Acceleration/Storage/Modular, Optimized
- For Datacenter Scale
- For Edge

Core

Acceleration-Optimized



Modular



C6620

Mainstream



R7615

R6615



R660



R7625



R6625



R860



T560

Mainstream Optimized



R760xs



R660xs

Edge



XR8000



XR5610



XR7620



XR4000



EGW5200



EGW3200

Scale

Cloud Service Providers



HS5620

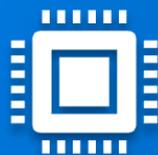


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Key New Technologies

Driven the complete transition of .Next Infrastructure

Industry Enabled Technologies Overview



Next Generation Intel & AMD Processors

- Intel 5th Gen Xeon (Emerald Rapids)
 - ✓ Up to 64 cores/CPU*
 - ✓ 17% performance increase over Ice Lake
- AMD 4th Gen EPYC (Genoa Family)
 - ✓ Latest 5nm technology with up to 96 high-performance “Zen 4” cores and up to 128 high-performance “Zen 4c” cores
 - ✓ 1.5X & 1.25X the density and power over Milan



Memory: DDR5

- DDR5 (4800MT/s)
 - ✓ Latest DRAM technology with higher speed & bandwidth
 - ✓ Greater efficiency with 2 channels per DIMM
 - ✓ Improved RAS features with on-die ECC
 - ✓ Lower power
 - ✓ Enhanced telemetry for temperature reporting and systems management



PCIe Gen5 Capability

- Doubles throughput compared to PCIe Gen4
 - ✓ Benefits NVMe drives, GPUs, and some networking cards



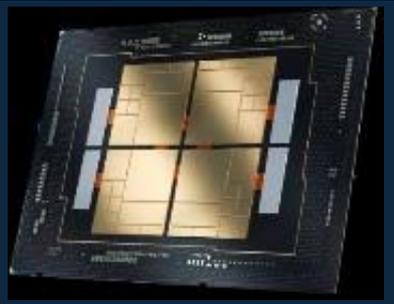
EDSFF E3.S NVMe Gen5

- E3.S form factor will be introduced with PCIe Gen5 NVMe drives
 - ✓ Benefits density, thermals, and improved packaging in space constrained servers
- Double the performance over NVMe Gen4

*Max 60 cores for 4S CPUs, max 56 cores for 2S CPUs

New Intel® Xeon® Processor – 5th Gen, Emerald Rapids

Intel® Xeon®
Scalable
Processors



Up to 17% performance increase for customers focused on raw performance



Performance

Increased core counts with up to 64 cores



Memory

Memory speed improvement up to 5600MT/s



Bandwidth

UPI 2.0 with up to 20GT/s inter-socket bandwidth



Security

Enhanced security features with TDX



Power

Improved power efficiency with Optimized Power Mode 2.0 (OPM)



Cache

Larger shared cache on some platinum SKUs

Dell focuses on offering best performance/TCO, optimizing the Intel EMR CPU selection in relation to the server portfolio positioning

New AMD® EPYC® Processor – 4th Gen, Genoa / Genoa-X / Siena / Bergamo

1. More cores

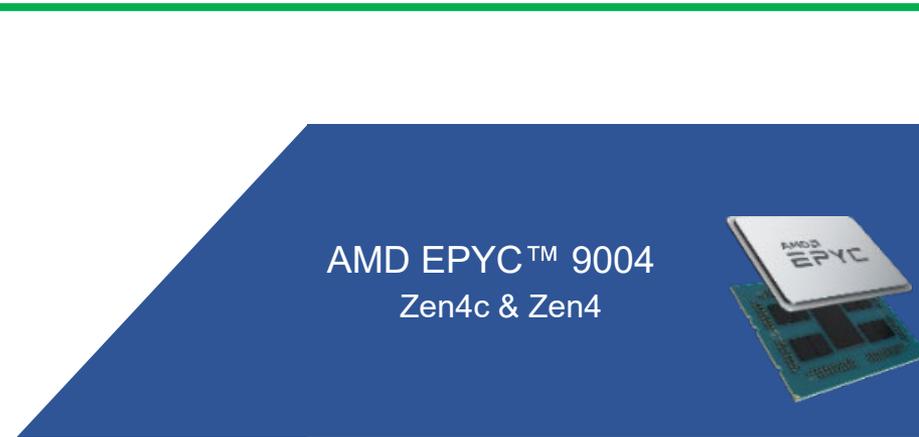
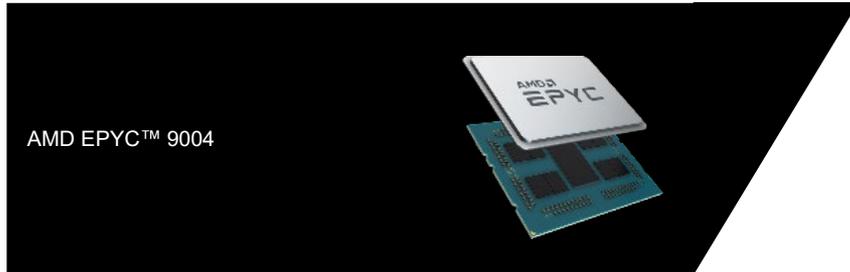
Delivers up to 80% generational performance improvement, 50% more core count over previous generation with up to 96 cores with Zen 4

2. Faster Memory

50% faster performance using DDR5 memory to fulfill your workload performance needs

3. More bandwidth

Faster throughput using PCIe Gen5 with up to 128 lanes to accommodate different workloads concurrently



1. More cores

With Zen 4c “Bergamo”, 100% more core count over previous 8003 generation, Up to 128 SMT-capable (Simultaneous Multithreading) supported and up to 96 cores with Zen 4 with 3D V-Cache

2. Faster Memory

AMD “Bergamo” highest Thread Density for highest HPL/FLOP performance and with up to 128C focused on perf/watt. 2.5X-3.9X improvements on key cloud native workloads

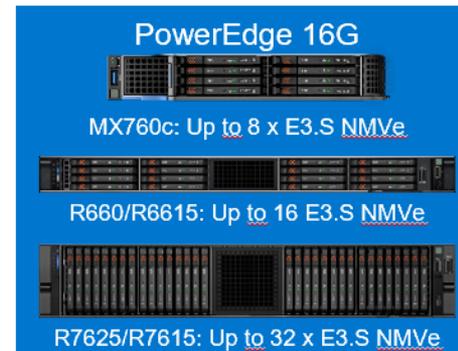
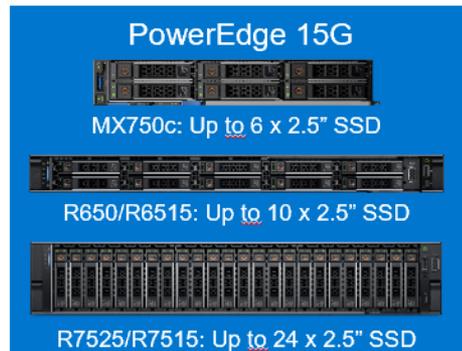
3. More bandwidth

AMD “Genoa-X” >1GC of L3 Cache providing highest Perf/Core
Focused on highly cache bound workloads, relieves memory bandwidth pressure and reduces latency

EDSFF and E3.S, a form factor optimized for SSDs and the future of Server Storage

- EDSFF is a new family of form factors optimized for Flash storage devices designed to support high frequency interfaces like PCIe Gen5 and Gen6
- PowerEdge will utilize the E3.S form factor and it will be the launch vehicle for PCIe Gen5 NVMe
- E3.S is roughly half the size of a 2.5" SSD benefitting density, thermals, and improved packaging in space constrained servers
- E3.S SSDs will have the same Serviceability and Manageability as our current 2.5" SSDs

(EDSFF E3.S T2 will not be supported)



Increased Performance

- Supports PCIe Gen5;
 - 100% increase in Sequential Reads, 62% increase in Sequential Writes
 - 60% improvement in Random Reads, 33% improvement in Random Writes

Greater Storage Density

- 60% increase on 1U and 33% increase on 2U

Accelerate insight and innovation with Dell's GPU portfolio

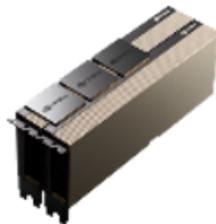
- Accelerate demanding AI/ML, HPC, data analytics workloads for faster value extraction and collaboration for VDI
- Drive enhanced workload outcomes with greater insights, inferencing and visualization

Brand	GPU Model	GPU Memory	Max Power Consumption	Form-factor	2-way Bridge	Recommended workloads
PCIe form-factor						
NVIDIA	A2	16 GB GDDR6	60W	SW, HHHL, or FHHL	N	Telco and Edge
NVIDIA	A16	64 GB GDDR6	250W	DW, FHFL	N	VDI
NVIDIA	A30	24 GB HBM2	165W	DW, FHFL	Y	AI Training and Inferencing
NVIDIA	A40, L40	16 GB GDDR6	300W	DW, FHFL	Y, N	Media and Entertainment, Multi
NVIDIA	L4	24 GB GDDR6	72W	SW, HHHL, or FHHL	N	AI Inferencing, VDI
NVIDIA	L40S	48 GB GDDR6	350W	DW, FHFL	N	M&E, AI Training and Inferencing
NVIDIA	H100	80 GB HBM3	310-350W	DW, FHFL	Y	HPC, AI Training and Inferencing
AMD	MI210	64 GB HBM2e	300W	DW, FHFL	Y	HPC
Intel	Max 1100	48 GB HBM2e	300W	DW, FHFL	Y	HPC, AI Training
Intel	Flex 140	16 GB GDDR6	75W	DW, FHFL	N	AI Inferencing
SXM or OAM form-factor						
NVIDIA	HGX H100	80 GB HBM3	700W	SXM w/ NVLink	n/a	HPC, AI Training and Inferencing
AMD	MI300X*	192 GB HBM3	750W	OAM W/ Infinity Fabric	n/a	HPC, AI Training and Inferencing
Intel	Max 1550	128 GB HBM2e	600W	OAM W/ Xe Link	n/a	HPC, AI Training and Inferencing

PCIe Adapter



PCIe with 2-way Bridge



4-way SXM / OAM Baseboard



8-way SXM / OAM Baseboard



Dell's Innovation & Speciality

Accelerate & Soar your service value

Dell enabled Technologies Overview



Next Gen HWRAID (PERC12)

- New gen controller with 2X better performance over PERC11 and 4X better than PERC10
 - ✓ Supports all drive interfaces: SAS4, SATA & NVME
 - ✓ x16 connectivity to devices to take full advantage of PCIe Gen5 throughput



System Cooling & Efficiency

- PowerManager & Smart Cooling
- High Power Optimized Airflow chassis design to maximize air cooling capabilities
 - ✓ Support for XCC/HBM in air-cooled chassis
- Optional CPU direct liquid cooling (DLC) solutions



BOSS-N1

- Segregated RAID controller for OS with secure UEFI boot that is rear facing and hot-pluggable
 - ✓ Enterprise-class 2 x M.2 NVMe devices with strong endurance and high quality that provide increased performance over BOSS-S1 with SATA drives



Data Processing Unit (DPU)

- SmartNIC with hardware accelerated networking and storage that enables customers to save CPU cycles
 - ✓ Improved security, running workloads and security software on different CPUs ("air gap")
 - ✓ Offload hypervisor, networking stack, and storage stack to the DPU making them OS independent



System Management

- Seamless integration of new 16G servers into your existing processes and tool set
- Complete iDRAC9 support for all components
 - ✓ PERC12, BOSS N-1, PCIe Gen5 devices, UEFI Secure Boot, Smart Cooling, DPU's, and more



Security

- TLS 1.3 with FIPS certification, SEKM 2.0 with support for NVMe drives and VxRail
- End-to-end threat management with Zero Trust approach
 - ✓ Silicon-based platform root of trust, multi-factor authentication (MFA), inventory and platform component tracking during delivery, tamper protection during shipping

Next Generation PowerEdge RAID Controller

Better & Faster Outcomes

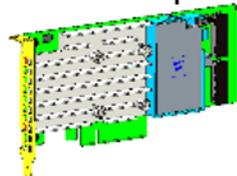
2X better performance over PERC11 – 4X better over PERC10

Supports entire New PowerEdge 16G

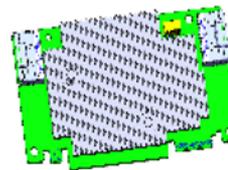
- H965e External controller will provide support for new 24Gb SAS JBODs

New Offer	Comment
PERC12 - H965i Adapter - Rack/Tower Servers	SAS/SATA or NVMe
PERC12 - H965i 'Front' - Rack Servers	SAS/SATA or NVMe
PERC12 - H965i MX - MX760C	SAS/SATA or NVMe

H965i Adapter



H965i Front



H965i MX



New Boot Optimized Storage Solution (BOSS)



- **RAS Features**

Reliability: Enterprise-Class M.2 NVMe SSDs (2 x 80mm)

Read Intensive (1DWPD), 480GB/960GB & 1920GB(QNS)

Accessibility: Rear Facing (Monolithic)

Serviceability: Full Hot-Plug Support (Monolithic)

- **Hardware RAID 1 (2 drives) & RAID 0 (1 or 2 drives)**

Marvell 88NR2241-B NVMe RAID Controller

Supports UEFI Boot only

Secure Firmware Update; Online

SED FIPS Support – LKM and SEKM Support

The latest Integrated SMART COOLING Technology

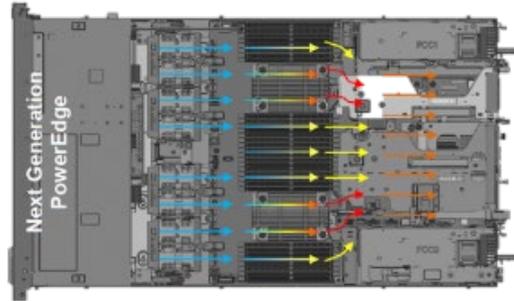
1. Optimized Design



2. Smart Cooling

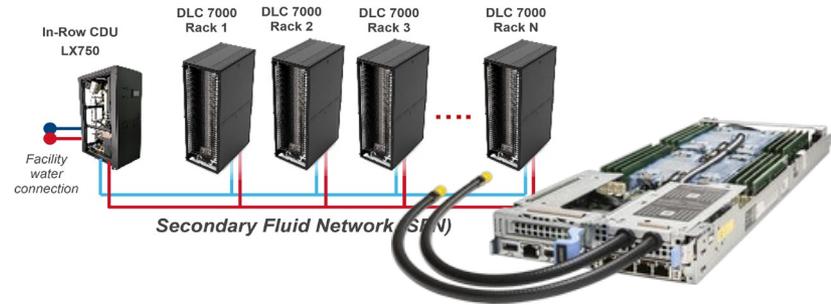


3. Solution Choices



Air Flow Optimization

Maximizing air cooling capabilities of the chassis



Direct Liquid Cooling

DLC solution & support offerings from directly Dell Technologies

	Air cooling	Air + Supplemental	Direct Liquid Cooling (DLC)	Immersion
Cooling Solution Options				
Main usage model	<ul style="list-style-type: none"> Low to Mid-density racks Up to ~15kW/rack 	<ul style="list-style-type: none"> Mid to High-density racks Up to ~30kW/rack 	<ul style="list-style-type: none"> Systems with high TDP parts High-density racks, up to ~80kW/rack 	<ul style="list-style-type: none"> Limited/no air cooling available High-density racks, or high TDP parts
Typical Cost Adder	NA	+	++	Single phase (1P): +++ Two-phase (2P): ++++

Anywhere HCI Infrastructure - Edge



Intel 4th Gen Xeon CPUs
GPU support, AC/DC PSUs



MIL 810H, NEBS Level 3
Filtered Smart Bezel, Lockable Bezel



Less than 19" depth (<500mm)
Front-service I/O & 2/4-post rackability



VM Capabilities, Server OS & iDRAC
ProDeploy & ProSupport

Monolithic

- 472mm chassis 2U, 2S Intel® Xeon® Scalable Processors
- Supports 2 x 300W GPUs for AI at Edge
- GPU and CPU-optimized configurations to handle multitude of edge-use cases
- -5C to 55C operating temperature

XR7620



XR5610



- 463mm chassis 1U, 1S Intel® Xeon® Scalable Processor
- Right-sized for on-site dedicated workloads
- Telco-optimized configuration with time & sync card available
- -5C to 55C operating temperature

Multi-node

- 2U multi-node with Intel® Xeon® D
- Dell shortest-depth server at 350mm
- Nano witness-node allows for VM-cluster in single box
- Rackable, stackable, and wall-mountable for ultimate deployment flexibility
- -5C to 55C operating temperature

XR4000r/z, XR4000w, XR4510c, XR4520c



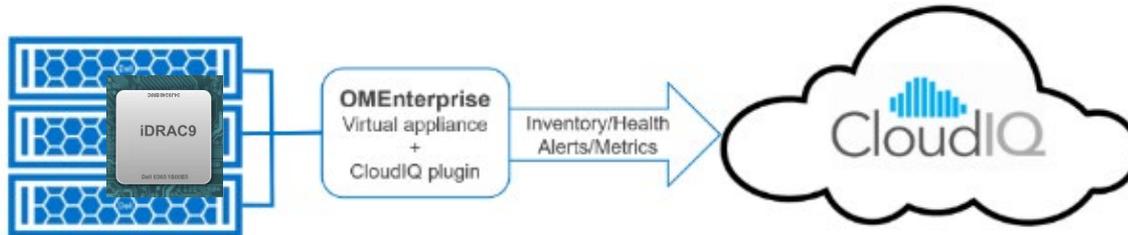
XR8000r, XR8610t, XR8620t



- 2U multi-node with 1S Intel® Xeon® Scalable with optional vRAN boost up to 4 nodes per chassis
- -20C to 65C operating temperature for select configurations
- Telco-optimized for DU and CU RAN deployments
- Extensible to multitude of enterprise edge use cases

System Management & Performance Analysis

Layers of System Management



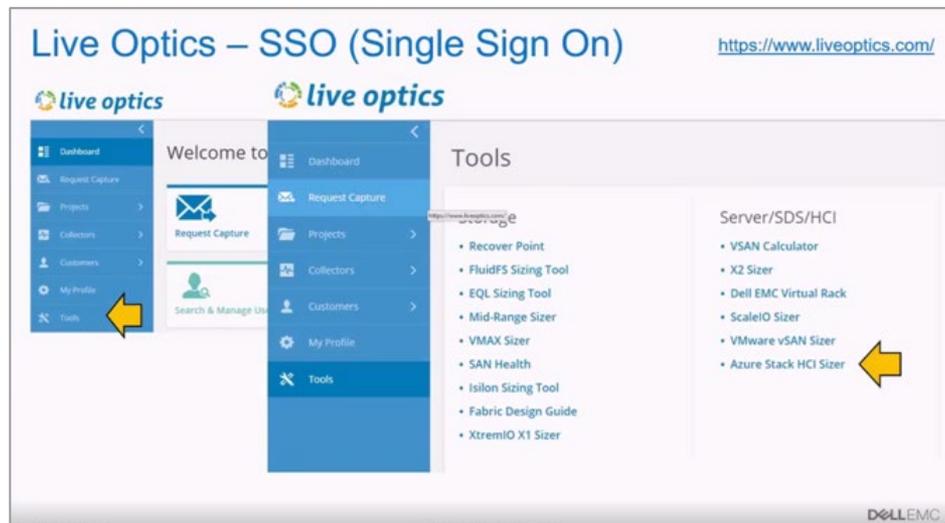
iDRAC - Advanced, agent-free local and remote server administration

Open Manage Enterprise -A simple-to-use, one-to-many systems management console

Cloud IQ – One cloud-based portal for monitoring, analytics & alerts for Intelligent Infra Insight

Live Optics Host-based performance collector

Capture, collect, and analyze performance information from various operating systems



Designed to be used in both small and large IT environments

Allows users to request project preparation and analysis to view analytic performance metrics in the project they create

Simply 3 Steps

- 1) Download the software
- 2) Run the collector
- 3) Create/view your project

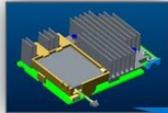
OEM Solutions' Engineering Capabilities

OEM CS

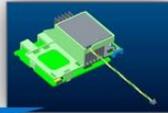
OEM PG

OEM RCI

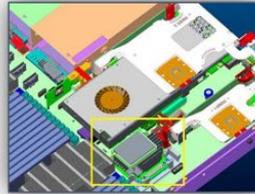
Old Bracket and PERC Heatsink:



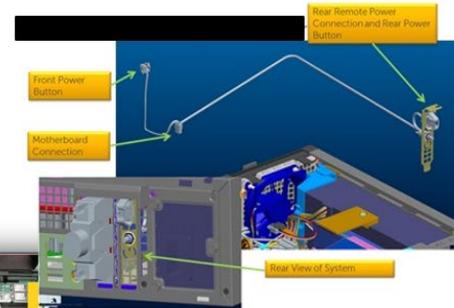
Proposed New Bracket & PERC Heatsink:



New solution inside the system:



Electrical Modification



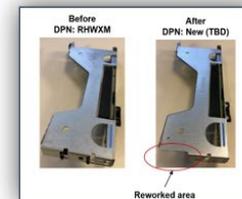
Custom Bezel/Badge



System BIOS/IDM Customization



Mechanical Modification



Thank You

ABLECLOUD 

All about data & cloud