



REFURBISHED ENTERPRISE IT HARDWARE • DOHA, QATAR

PRODUCT DATA SHEET

Dell EMC PowerEdge R640 Server

1U two-socket rack server • 2nd Gen Intel® Xeon® Scalable processors • Up to 7.68 TB memory • Up to 10 NVMe or 12 × 2.5" drives

2 × 28

cores — dual Intel® Xeon® Scalable, 1st or 2nd Gen

24 DIMM

slots — up to 3 TB DDR4 at 2933 MT/s, 7.68 TB with Optane PMem

10 NVMe

direct-attach 2.5" drives, or 12 × 2.5" / 4 × 3.5" bays

3 × x16

PCIe Gen3 slots plus dedicated PERC and rNDC slots

1+1

hot-plug PSUs, 495 W to 1600 W, Platinum/Titanium

iDRAC9

Lifecycle Controller, Redfish API, Quick Sync 2, System Lockdown

Tested • Configured to order • 1-year ServerDove warranty • 1-day delivery across Qatar

sales@serverdove.com | +974 5521 2108 | www.serverdove.com

Contents

About ServerDove and this data sheet	3
Overview and New Technologies	4
Technical Specification Summary	6
Chassis, Ports and Security	8
Processors and Chipset	10
Memory	13
Storage	15
Networking and PCIe Expansion	17
Power, Thermal and Acoustics	18
Rack Rails and Operating Systems	20
Dell EMC OpenManage Systems Management	21
Additional Specifications and Environmental	22
Where to Buy — ServerDove	24

Technical content in this document is taken from the Dell EMC PowerEdge R640 Technical Guide (Rev. A08, June 2021) and the PowerEdge R640 Spec Sheet. ServerDove supplies this server refurbished, tested and configured to order.

About ServerDove and this data sheet

ServerDove Trading & Services is a Doha-based supplier of refurbished enterprise IT hardware, specialising in Dell PowerEdge and HPE ProLiant servers, enterprise storage, networking equipment, workstations and server components. We serve businesses across Qatar and the wider Middle East with reliable, cost-effective infrastructure for virtualisation, private cloud, databases, software-defined storage, HPC and general-purpose compute.

Every Dell PowerEdge R640 we sell is professionally inspected, tested and certified before dispatch. Servers are configured to order — choose processors, memory, drive backplane, PERC controller, network daughter card, risers and power supplies — and are delivered ready to rack, with optional installation and operating-system deployment.

This data sheet reproduces the technical detail of Dell's own R640 documentation so that you can size, configure and compare the R640 with confidence.

Why buy from ServerDove

- Refurbished, tested and certified Dell PowerEdge hardware at a fraction of new-system cost
- 1-year (365+ day) hardware warranty on every server and component; extended cover up to 3 years
- Configure-to-order builds with burn-in testing, Windows Server or VMware installation
- Genuine Microsoft licences supplied digitally through an authorised vendor
- Rack installation and on-site setup across Qatar; bulk and project pricing
- 1-day delivery across Qatar on orders over QAR 300
- Spare parts, drives, memory, PERC controllers and NICs kept in stock

Dell PowerEdge R640 at a glance

1U / 2S

dual-socket, 1U rack platform for dense scale-out data-centre computing

7.68 TB

maximum memory with Intel® Optane™ DC persistent memory and LRDIMMs

76.8 TB

maximum front storage (10 × 2.5") plus 15.36 TB in the rear 2 × 2.5" bays

48 lanes

PCIe 3.0 per CPU; up to 3 UPI links at 11.2 GT/s between processors

8 fans

hot-plug, fully redundant cooling; 10 °C to 35 °C standard, Fresh Air to 45 °C

3 GPU

single-width accelerators (NVIDIA T4) or one FPGA

Overview and New Technologies

The Dell EMC PowerEdge R640 is a general-purpose platform expandable up to 7.68 TB of memory, up to twelve 2.5-inch drives and flexible I/O options. It handles demanding workloads such as virtualisation, dense private cloud, high-performance computing (HPC) and software-defined storage. The R640 is the ideal dual-socket, 1U platform for dense scale-out data-centre computing, combining density, performance and scalability to optimise application performance and data-centre density.

Key features

- 2nd Generation Intel® Xeon® Scalable processor family with up to 28 cores and two threads per core
- Up to six DDR4 memory channels with two DIMMs per channel per CPU and 24 DIMMs (DDR4 RDIMM, LRDIMM, NVDIMM-N and DCPMM)
- PCI Express 3.0 expansion slots with up to 48 lanes per CPU
- Networking technologies including Ethernet, InfiniBand, OCP and Omni-Path (OPA)
- NVMe cache pool with either 2.5" or 3.5" drives for data storage; Dell EMC Ready Nodes for vSAN
- Cyber-resilient architecture: secure component supply chain, cryptographically signed firmware, Secure Boot, iDRAC9 System Lockdown and System Erase

New technologies on the PowerEdge R640

2nd Generation Intel® Xeon® Scalable processor	Embedded PCIe lanes for improved I/O performance; Intel Deep Learning Boost; up to 28 cores per socket.
Intel® C620 series chipset	Intel Lewisburg chip; two-chip platform (CPU and PCH).
2933 MT/s DDR4 memory	Twenty-four 288-pin DIMMs; two DIMMs per channel for single- and dual-rank DIMMs, one or two DIMMs per channel for quad-rank DIMMs.
Intel® Optane™ DC persistent memory	Up to 6 per CPU socket (12 in a 2S configuration); 256 GB and 512 GB modules at 1866–2666 MT/s; up to 6.14 TB (7.68 TB with DCPMM plus LRDIMM).
iDRAC9 with Lifecycle Controller	Embedded systems management with hardware and firmware inventory and alerting, data-centre-level power monitoring and faster performance.
2.5-inch PCIe SSD	Up to ten CPU direct-attach PCIe (NVMe) SSDs.
LCD bezel	LCD control panel embedded in the front bezel for easy access and management.

PowerEdge R640 compared with the previous-generation R630

Feature	PowerEdge R640	PowerEdge R630
Processors	1st/2nd Gen Intel Xeon Scalable	Intel Xeon E5-2600 v3 / v4
Chipset	Intel C620	Intel C610
Memory	24 × DDR4 RDIMM/LRDIMM; 12 × NVDIMM + 12 × RDIMM; 12 × DCPMM + 12 × RDIMM or LRDIMM	24 × DDR4 RDIMM/LRDIMM
Chassis	Modular storage design: 4-, 8-, 10-drive and 10-NVMe chassis	Three separate chassis (8, 10 and 24 drives)
Front drive bays	Up to 10 × 2.5" (up to 8 or 10 NVMe), max 76.8 TB, or 4 × 3.5" SAS/SATA, max 64 TB	8 or 10 × 2.5" SAS/SATA (NVMe up to 4); 24 × 1.8" SATA
Rear drive bays	Up to 2 × 2.5" SAS/SATA/SSD/NVMe, max 15.36 TB	—

PCIe SSD	Up to 10 CPU direct-attach	Up to 4 via PCIe bridge card
RAID controllers	S140, HBA330, H330, H730, H730P, H740P, H840P, 12 Gbps SAS HBA (external)	S130, H330, H730, H730P, H830 (external)
Risers / PCIe slots	Up to 2 riser connectors; up to 3 × PCIe Gen3 x16/x16/x16	Up to 3 riser connectors; up to 3 × PCIe Gen3 x16/x8/x16
Embedded NIC (NDC)	4 × 1 GbE; 2 × 10 GbE + 2 × 1 GbE; 4 × 10 GbE; 2 × 25 GbE	Broadcom 5730 / 57800, Intel I350 / X540
Power supplies	495 W, 750 W, 1100 W, 1600 W Platinum; 750 W Titanium; 1100 W –48 VDC; HVDC variants	495 W, 750 W, 1100 W AC; 1100 W DC
Remote management	iDRAC9	iDRAC8
Fans	Up to 8 (1 × 6 type)	Up to 7 (2 × 3 type)
IDSDM / vFlash	Combined IDSDM and vFlash module	IDSDM
BOSS	M.2 SATA boot module	—
PERC	Mini-PERC 10	Mini-PERC 9
iDRAC Direct front port	Micro-USB	USB Type-A

Technical Specification Summary

Form factor	1U rack
Processor	Up to two 2nd Generation Intel® Xeon® Scalable processors (1st Generation also supported), up to 28 cores per processor
Internal interconnect	Up to 3 Intel Ultra Path Interconnect (UPI) links; up to 11.2 GT/s
Chipset	Intel® C620 series
Memory	24 DDR4 DIMM slots; RDIMM, LRDIMM, NVDIMM and DCPMM (12 NVDIMM or 12 DCPMM maximum); speeds up to 2933 MT/s; registered ECC DDR4 only. Maximum: 1.53 TB RDIMM · 3 TB LRDIMM · 192 GB NVDIMM · 6.14 TB DCPMM (7.68 TB with LRDIMM)
I/O slots	Up to 3 × PCIe Gen3 x16 slots plus a dedicated PERC slot and a dedicated rNDC (network daughter card) slot
Storage controllers	Internal: PERC S140 (software RAID SATA/NVMe), PERC H330, H730, H730P, H740P, H750 (adapter), HBA330, HBA350i (adapter). External: PERC H840, 12 Gbps SAS HBA, HBA355e (adapter, non-RAID)
Internal boot	Boot Optimised Storage Subsystem (BOSS): hardware RAID 2 × M.2 SATA SSDs 240 GB or 480 GB; Internal Dual SD Module (IDSDM) with vFlash
Drive bays	Front: up to 10 × 2.5" SAS/SATA/NVMe (up to 8 NVMe) max 76.8 TB, or 10 × 2.5" NVMe max 64 TB, or 8 × 2.5" SAS/SATA/NVMe, or 4 × 3.5" SAS/SATA max 64 TB. Rear: up to 2 × 2.5" SAS/SATA/NVMe max 15.36 TB. Optional DVD-ROM or DVD+RW
Accelerators	Up to 3 single-width GPUs (NVIDIA T4) or up to 1 FPGA
Embedded NIC (rNDC)	4 × 1 GbE · 2 × 10 GbE + 2 × 1 GbE · 4 × 10 GbE · 2 × 25 GbE
Power supplies	495 W Platinum · 750 W Platinum · 750 W Titanium · 750 W Mixed Mode AC Platinum · 1100 W Platinum · 1100 W -48 VDC · 1600 W Platinum · 750 W 240 HVDC and 1100 W 380 HVDC (China/Japan only). Hot-plug with 1+1 redundancy
Cooling	Up to 8 hot-plug fans with full redundancy
Front ports	1 × dedicated iDRAC Direct micro-USB · 1 × USB 2.0 · 1 × USB 3.0 (optional; not on 4 × 3.5" or 10 × 2.5" chassis) · 1 × video
Rear ports	1 × dedicated iDRAC network port · 1 × serial · 2 × USB 3.0 · 1 × video (VGA)
Video	Integrated Matrox G200 with iDRAC9; 2 × VGA
Embedded management	iDRAC9 with Lifecycle Controller, iDRAC Direct, iDRAC RESTful API with Redfish, Quick Sync 2 wireless module (optional), IPMI 2.0
Bezel	Optional LCD bezel or security bezel
Security	TPM 1.2/2.0, TCM 2.0 optional · cryptographically signed firmware · Secure Boot · Silicon Root of Trust · secure erase · System Lockdown (iDRAC Enterprise or Datacenter)
Operating systems	Canonical Ubuntu Server LTS · Citrix Hypervisor · Microsoft Windows Server LTSC with Hyper-V · Oracle Linux · Red Hat Enterprise Linux · SUSE Linux Enterprise Server · VMware ESXi

Dimensions (incl. bezel)	Height 42.8 mm (1.69") · width 482.0 mm (18.98") · depth 808.5 mm (31.8") · weight 21.9 kg (48.3 lb)
--------------------------	--

Chassis, Ports and Security

Chassis options

The R640 uses a modular storage design with four front chassis variants. The system consists of the planar subsystem with control panel, SAS backplane, storage card, riser card, VGA port and Storage Enclosure Processor (SEP) with 4-, 8- or 10-drive backplane, 10 × NVMe backplane and 2 × rear backplane.

Chassis	Front bays	Backplane	Rear bays	Notes
4 × 3.5"	4 × 3.5" SAS/SATA	3.5" (x4) SAS/SATA	Optional 2 × 2.5" (reduces PCIe slots to 1)	Max 64 TB front; front USB 3.0 option not available
8 × 2.5"	8 × 2.5" SAS/SATA/NVMe	2.5" (x8) SAS/SATA/NVMe	Optional 2 × 2.5"	Shorter chassis (757.75 mm to PSU handle)
10 × 2.5"	10 × 2.5" SAS/SATA with up to 8 NVMe	2.5" (x10) SAS/SATA/NVMe	Optional 2 × 2.5" SAS/SATA	Max 76.8 TB front; front USB 3.0 option not available
10 × NVMe	10 × 2.5" NVMe direct-attach	2.5" (x10) NVMe	Optional 2 × 2.5"	Max 64 TB NVMe

Back panel

The back panel provides access to the I/O connectors for embedded and add-in devices: networking (rNDC), video, serial, USB, system ID and the dedicated iDRAC management port. Most add-in PCIe cards are accessible through the back panel, which is also the location of the two power supply bays. Back-panel layouts are offered with 3 PCIe slots, 2 PCIe slots, or 1 PCIe slot plus 2 × 2.5" rear drives.

Internal layout

The chassis design is optimised for easy access to components and efficient cooling. The R640 supports up to 24 DIMMs, two processors, hot-plug redundant fans, system board and hard-drive bays, with one, two or three PCIe expansion risers depending on configuration.

Ports and connectors

Front	1 × iDRAC Direct micro-USB · 1 × USB 2.0 · 1 × USB 3.0 (optional module; not available on 4 × 3.5" or 10 × 2.5" configurations) · 1 × video · optional LCD bezel
Rear	1 × dedicated iDRAC9 1 GbE management port · 1 × serial · 2 × USB 3.0 · 1 × VGA · rNDC network ports · system ID button/LED
Internal	1 × USB 3.0 · iSDM/vFlash slot (proprietary PCIe x1, USB 3.0 interface) · BOSS M.2 module slot · 4 × NPIO on-board PCH SATA connectors
USB	Rear and internal ports support USB 3.0; front ports support USB 2.0. The optional front USB 3.0 module moves the internal USB port closer to the chassis front.

Security features

Security feature	Description
Cover latch	A tooled latch integrated in the top cover secures it to the system.
Bezel	Optional metal bezel with a lock to prevent unauthorised access to drives. The QuickSync NFC bezel enables iDRAC QuickSync management from the front using an NFC-capable device and the OpenManage Mobile app (factory-only option).
TPM	Trusted Platform Module (1.2 or 2.0; TCM 2.0 for China) generates and stores keys, protects and authenticates passwords and creates and stores digital certificates.
Power-off security	The BIOS can disable the power-button function.
Cryptographically signed firmware	Firmware packages are signed and verified; Secure Boot protects the boot chain; Silicon Root of Trust anchors the platform.
System Lockdown	iDRAC9 Server Lockdown mode prevents unauthorised or malicious configuration and firmware changes (requires iDRAC Enterprise or Datacenter licence).
System Erase	Quickly and securely wipes all data from storage media, including hard drives, SSDs and system memory.
Secure supply chain	Secure component supply chain to protect the server from factory to data centre.

Processors and Chipset

The PowerEdge R640 features the performance, value and power efficiency of the 2nd Generation Intel® Xeon® Scalable processor family (1st Generation processors are also supported). Key capabilities:

- **Higher per-core performance** — up to 28 cores per socket for compute-intensive workloads across compute, storage and network usages
- **Greater memory bandwidth and capacity** — six memory channels per CPU (versus four in the previous generation), 50% more bandwidth
- **Expanded I/O** — 48 lanes of PCIe 3.0 per processor for I/O-intensive workloads
- **Intel Ultra Path Interconnect (UPI)** — up to three links per CPU, improving inter-processor bandwidth
- **Intel AVX-512** — one fused multiply-add (FMA) unit; SKUs supporting Advanced RAS enable a second FMA unit
- **Security without compromise** — near-zero encryption overhead with enhanced hardware mitigations
- **Intel Deep Learning Boost (VNNI)** — inference acceleration within the CPU

Supported processors

All processors listed for the R640 in the Dell EMC Technical Guide. ServerDove can supply any of these as part of a configured server or as an upgrade kit.

2nd Generation Intel® Xeon® Scalable processors (Cascade Lake)

Intel Xeon model	Family	Speed (GHz)	Cache (MB)	UPI (GT/s)	Max memory (MT/s)	Cores	Turbo	TDP
8280L	Platinum	2.7	38.5	10.4	2933	28	Turbo	205 W
8280M	Platinum	2.7	38.5	10.4	2933	28	Turbo	205 W
8280	Platinum	2.7	38.5	10.4	2933	28	Turbo	205 W
8276L	Platinum	2.2	38.5	10.4	2933	28	Turbo	165 W
8276M	Platinum	2.2	38.5	10.4	2933	28	Turbo	165 W
8276	Platinum	2.2	38.5	10.4	2933	28	Turbo	165 W
8270	Platinum	2.7	35.75	10.4	2933	26	Turbo	205 W
8268	Platinum	2.9	35.75	10.4	2933	24	Turbo	205 W
8260L	Platinum	2.4	35.75	10.4	2933	24	Turbo	165 W
8260M	Platinum	2.4	35.75	10.4	2933	24	Turbo	165 W
8260Y	Platinum	2.4	35.75	10.4	2933	24/20/16	Turbo	165 W
8260	Platinum	2.4	35.75	10.4	2933	24	Turbo	165 W
8253	Platinum	2.2	22	10.4	2933	16	Turbo	125 W
6258R	Gold	2.7	38.5	10.4	2933	28	Turbo	205 W
6248R	Gold	3.0	35.75	10.4	2933	24	Turbo	205 W
6246R	Gold	3.4	22	10.4	2933	16	Turbo	205 W
6242R	Gold	3.1	27.5	10.4	2933	20	Turbo	205 W
6240R	Gold	2.4	35.75	10.4	2933	24	Turbo	165 W
6238R	Gold	2.2	38.5	10.4	2933	28	Turbo	165 W
6230R	Gold	2.1	35.75	10.4	2933	26	Turbo	150 W
6230	Gold	2.1	27.5	10.4	2933	20	Turbo	125 W

6226R	Gold	2.9	22	10.4	2933	16	Turbo	150 W
6226	Gold	2.7	19.25	10.4	2933	12	Turbo	125 W
6222V	Gold	1.8	27.5	10.4	2400	20	Turbo	115 W
6209U	Gold	2.1	27.5	—	2933	20	Turbo	125 W
6208U	Gold	2.9	22	—	2933	16	Turbo	150 W
5222	Gold	3.9	16.5	10.4	2933	4	Turbo	105 W
5220R	Gold	2.2	35.75	10.4	2667	24	Turbo	150 W
5220	Gold	2.2	24.75	10.4	2666	18	Turbo	125 W
5218R	Gold	2.1	27.5	10.4	2667	20	Turbo	125 W
5218	Gold	2.3	22	10.4	2667	16	Turbo	125 W
5217	Gold	3.0	11	10.4	2666	8	Turbo	125 W
5215	Gold	2.5	13.75	10.4	2666	10	Turbo	85 W
4216	Silver	2.5	22	9.6	2666	16	Turbo	100 W
4215R	Silver	3.2	11	9.6	2400	8	Turbo	130 W
4215	Silver	2.5	11	9.6	2666	8	Turbo	85 W
4214R	Silver	2.4	16.5	9.6	2400	12	Turbo	100 W
4214	Silver	2.2	16.5	9.6	2666	12	Turbo	85 W
4210R	Silver	2.4	13.75	9.6	2400	10	Turbo	100 W
4210	Silver	2.2	13.75	9.6	2400	10	Turbo	85 W
4208	Silver	2.1	11	9.6	2666	8	Turbo	85 W
3206R	Bronze	1.9	11	9.6	2400	8	No Turbo	85 W
3204	Bronze	1.9	8.25	9.6	2666	6	Turbo	85 W

1st Generation Intel® Xeon® Scalable processors (Skylake)

Intel Xeon model	Family	Speed (GHz)	Cache (MB)	UPI (GT/s)	Max memory (MT/s)	Cores	Turbo	TDP
8180M	Platinum	2.5	38.5	10.4	2667	28	Turbo	205 W
8180	Platinum	2.5	38.5	10.4	2667	28	Turbo	205 W
8176M	Platinum	2.1	38	10.4	2667	28	Turbo	165 W
8176	Platinum	2.1	38	10.4	2667	28	Turbo	165 W
8170M	Platinum	2.1	36	10.4	2667	26	Turbo	165 W
8170	Platinum	2.1	36	10.4	2667	26	Turbo	165 W
8168	Platinum	2.7	33	10.4	2667	24	Turbo	205 W
8164	Platinum	2.7	33	10.4	2667	26	Turbo	205 W
8160M	Platinum	2.1	33	10.4	2667	24	Turbo	150 W
8160	Platinum	2.1	33	10.4	2667	24	Turbo	150 W
8158	Platinum	3.0	24.75	10.4	2667	12	Turbo	150 W
8156	Platinum	3.6	16.5	10.4	2667	4	Turbo	105 W
8153	Platinum	2.0	22	10.4	2667	16	Turbo	125 W
6138	Gold	2.0	27.5	10.4	2666	20	Turbo	125 W
6130	Gold	2.1	22	10.4	2666	16	Turbo	125 W

6126	Gold	2.6	19.25	10.4	2666	12	Turbo	125 W
5122	Gold	3.6	16.5	10.4	2400	4	Turbo	105 W
5120	Gold	2.2	19.25	10.4	2400	14	Turbo	105 W
5118	Gold	2.3	16.5	10.4	2400	12	Turbo	105 W
5117	Gold	2.0	19.25	10.4	2400	10	Turbo	105 W
4116	Silver	2.1	16	9.6	2400	12	Turbo	85 W
4114	Silver	2.2	13.75	9.6	2400	10	Turbo	85 W
4112	Silver	2.6	8.25	9.6	2400	4	Turbo	85 W
4110	Silver	2.1	11	9.6	2400	8	Turbo	85 W
4108	Silver	1.8	11	9.6	2400	8	Turbo	85 W
3104	Bronze	1.7	8.25	9.6	2133	6	No Turbo	85 W

Speciality SKUs

Type	Processor	Frequency	Cores / threads
Speed Select Technology – Performance Profile (-Y)	8260Y	2.40 / 2.50 / 2.70 GHz	24/48 · 20/40 · 16/32
	6240Y	2.60 / 2.80 / 3.10 GHz	18/36 · 14/28 · 8/16
	4214Y	2.20 / 2.30 / 2.40 GHz	12/24 · 10/20 · 8/16
Search optimised (-S)	5220S	2.70 GHz	18/36
Single socket (-U)	6212U	2.40 GHz	24/48
	6210U	2.50 GHz	20/40
	6209U	2.10 GHz	20/40
VM density optimised (-V)	6262V	1.90 GHz	24/48
	6222V	1.80 GHz	20/40

Chipset — Intel® C620 series

- ACPI power management logic support, revision 4.0a
- PCI Express Base Specification revision 3.0
- Integrated Serial ATA host controller, up to 6 Gb/s on all ports
- xHCI USB controller with SuperSpeed USB 3.0 ports
- Direct Media Interface; Serial Peripheral Interface and Enhanced SPI
- Flexible I/O — high-speed I/O signals configurable as PCIe root ports, PCIe uplink, SATA/sATA or USB 3.0
- General-purpose I/O; Low Pin Count interface, interrupt controller and timer functions
- System Management Bus specification version 2.0
- Integrated clock controller and real-time clock controller
- Integrated 10/1 Gb Ethernet and 10/100/1000 Mbps Ethernet MAC
- Intel Rapid Storage Technology Enterprise; Intel Active Management Technology and Server Platform Services
- Intel Virtualization Technology for Directed I/O; Intel Trusted Execution Technology
- JTAG boundary scan; Intel Trace Hub for debug

Memory

The PowerEdge R640 supports up to 24 DIMMs. Depending on the processor, memory speeds of up to 2933 MT/s with one DIMM per channel and 2666 MT/s with two DIMMs per channel are available, with flexible configurations from 8 GB minimum to 7.68 TB maximum. Each CPU has 12 DIMM slots organised in six channels (two DIMMs per channel); for best performance populate all channels equally with 6 or 12 DIMMs per CPU.

DIMM types

RDIMM	Registered DIMM — higher capacity options and advanced RAS features; the most commonly used type, offering the best mix of frequency, capacity and rank choices.
LRDIMM	Load-Reduced DIMM — maximum capacity beyond RDIMM at higher power; a buffer reduces memory loading to a single load on all DDR signals.
DCPMM (Intel® Optane™ DC persistent memory)	Large, affordable memory capacity; Memory Mode works with any application on a compatible OS, App Direct Mode adds persistence for supporting applications. Used with RDIMMs or LRDIMMs, up to 6 DCPMMs per CPU; 128 GB, 256 GB and 512 GB modules; no battery required.
NVDIMM-N	Non-volatile DIMM combining NAND and DRAM to retain data through power loss, crash or shutdown; requires an external 12 V battery power bank; used with RDIMMs.

Intel Optane DC persistent memory modes

Trait	Memory Mode	App Direct Mode
Application support	Any application	Application must support App Direct Mode
DRAM	Used as cache; not available as system memory	Both DCPMM and DRAM available as system memory
Persistence	No	Yes

Memory operating modes

Performance optimised (Optimizer) mode	Prioritises performance; standard ECC only.
Memory mirroring	Two adjacent channels write the same data; if one channel fails the other continues. Halves usable capacity.
Fault resilient memory	Dell-patented technology working with VMware ESXi to provide a fault-resilient zone that protects virtual machines from memory faults.
Memory sparing	Single- or multi-rank spare mode reserves one or two ranks per channel; correctable errors are moved to the spare rank while the OS runs.

Memory speed and CPU support

CPU family	DIMM type	Ranks	Capacities	Speed (MT/s)
Intel Xeon Scalable (1st Gen)	RDIMM	1R / 2R	8 GB, 16 GB, 32 GB	2666

2nd Gen Intel Xeon Scalable	RDIMM	1R	8 GB	2666
2nd Gen Intel Xeon Scalable	RDIMM	2R	16 GB, 32 GB, 64 GB	2933
Intel Xeon Scalable (1st Gen)	LRDIMM	4R / 8R	64 GB, 128 GB	2666
2nd Gen Intel Xeon Scalable	LRDIMM	8R	128 GB	2666
2nd Gen Intel Xeon Scalable	DCPMM	—	128 GB, 256 GB, 512 GB	2666
1st or 2nd Gen Intel Xeon Scalable	NVDIMM	1R	16 GB	2666

Maximum capacities

DIMM type	Module	Single processor	Dual processors
RDIMM	8 GB – 64 GB	Up to 768 GB	Up to 1.53 TB
LRDIMM	64 GB – 128 GB	Up to 1.5 TB	Up to 3 TB
NVDIMM-N	16 GB (6 per CPU)	96 GB	192 GB
DCPMM + DRAM	128 GB – 512 GB (6 per CPU)	Up to 3.84 TB	Up to 6.14 TB (7.68 TB with LRDIMM)

Storage

The PowerEdge R640 provides scalable storage with a choice of internal and external storage controllers, drive types, chassis and backplanes. Express Flash PCIe (NVMe) SSDs and the PERC H740P and H840 RAID controllers provide substantially accelerated performance compared with previous generations.

PERC controller offerings

Performance level	Controller and description
Entry	PERC S140 — software RAID for SATA and NVMe (on-board SATA ports not accessible when a mini-PERC is installed)
Value	HBA330 internal 12 Gbps SAS HBA (non-RAID) · PERC H330 · 12 Gbps SAS HBA external
Value performance	PERC H730P
Premium performance	PERC H740P internal · PERC H840 external RAID
Also supported	PERC H750 (adapter), HBA350i (adapter), HBA355e (external adapter, non-RAID)

Supported drives

SAS / SATA	Up to 4 × 3.5" hot-swap HDDs, or 2.5" SSDs/HDDs in hybrid carriers in the 3.5" bays · up to 8 × 2.5" hot-swap HDDs/SSDs · up to 10 × 2.5" hot-swap HDDs/SSDs · optional 2 × 2.5" rear bays
NVMe SSD	375 GB, 1.6 TB, 3.2 TB, 3.84 TB and 6.4 TB 2.5" devices; up to 10 CPU direct-attach NVMe drives (max 64 TB) or 8 NVMe within the 10-bay SAS/SATA chassis
Typical capacities	2.5" SAS 12 Gb 10K/15K 300 GB – 2.4 TB · 2.5" SAS/SATA SSD 240 GB – 7.68 TB · 3.5" SAS/SATA 7.2K 1 TB – 16 TB · self-encrypting (SED FIPS) options
Maximum storage	Front 76.8 TB (10 × 2.5") or 64 TB (4 × 3.5" or 10 × NVMe); rear 15.36 TB (2 × 2.5")

Boot Optimised Storage Subsystem (BOSS)

BOSS is a hardware RAID controller with a limited feature set that presents M.2 SATA SSDs (240 GB or 480 GB) as non-RAID disks or a single RAID 1 volume. It boots the server to a full OS without consuming hot-plug drive slots and lets data drives run in pass-through mode behind an HBA.

IDSDM and vFlash

The Internal Dual SD Module (IDSDM) and vFlash card are combined into a single module in a dedicated slot at the back of the chassis (a Dell EMC-proprietary PCIe x1 slot using a USB 3.0 interface). Options: vFlash only, IDSDM only, or vFlash + IDSDM. IDSDM microSD cards are supported at 16 GB, 32 GB or 64 GB; vFlash is 16 GB. A write-protect switch is built on to the module. IDSDM requires an iDRAC Enterprise licence; ESXi is the supported OS for IDSDM boot.

Optical and tape

Optical drives	Internal DVD-ROM or DVD+RW (via NPIO connector)
-----------------------	---

Tape	No internal tape; external RD1000 USB, external LTO-5/6/7/8 6 Gb SAS drives, and 114X, TL1000, TL2000, TL4000 and ML3/ML3e libraries with LTO-5 to LTO-8 6 Gb SAS or 8 Gb FC drives
External storage	External USB tape products · NAS software stack · 12 Gb MD-series JBODs via external HBA

Networking and PCIe Expansion

The R640 offers balanced, scalable I/O with integrated PCIe 3.0 expansion slots. Dell EMC Network Daughter Cards (rNDC) let you choose the right network fabric without using a PCIe slot — select speed, technology, vendor and options such as switch-independent partitioning to share and manage bandwidth on 10 GbE connections.

Network daughter card options

- 4 × 1 GbE (Broadcom or Intel)
- 2 × 10 GbE + 2 × 1 GbE
- 4 × 10 GbE (BASE-T or SFP+)
- 2 × 25 GbE (SFP28)
- Additional PCIe adapters: 10/25/40/100 GbE, InfiniBand, Intel Omni-Path and Fibre Channel HBAs

PCIe risers

The system board has one standard PCIe connector and four Speededge connectors, plus one x8 PCIe Gen3 slot dedicated to the storage controller (CPU 1) and one x8 PCIe Gen3 slot dedicated to the NDC (CPU 1).

Riser	Slot	Height	Length	Link	Processor
Riser 1A (right)	Slot 2	Low profile	Half length	x16	CPU 1
	Slot 1	Low profile	Half length	x16	CPU 1
Riser 1B (right)	Slot 1	Low profile	Half length	x16	CPU 1
Riser 2A (left)	Slot 3	Low profile	Half length	x16	CPU 2
Riser 2B (left)	Slot 2	Full height	3/4 length	x16	CPU 2

Riser 2 options require the second processor. Configurations with 2 × 2.5" rear drives provide one PCIe expansion slot.

Accelerators

Up to 3 single-width GPUs (NVIDIA T4) or up to 1 FPGA, subject to riser and thermal configuration.

Power, Thermal and Acoustics

Power supply units

The R640 supports up to two hot-swappable AC or DC power supplies with 1+1 redundancy, auto-sensing and auto-switching. Dell Energy Smart PSUs dynamically optimise efficiency while maintaining availability and redundancy, with 1% power-monitoring accuracy.

PSU	Class	Max heat dissipation	Frequency	Voltage	Current
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100–240 V AC auto-ranging	6.5 A – 3 A
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC auto-ranging	10 A – 5 A
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200–240 V AC auto-ranging	5 A
750 W Mixed Mode AC	Titanium	2902 BTU/hr	50/60 Hz	100–240 V AC auto-ranging	10 A – 5 A
750 W Mixed Mode DC (China)	Platinum	2902 BTU/hr	—	240 V DC	5 A
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC auto-ranging	12 A – 6.5 A
1100 W DC	—	4416 BTU/hr	—	–(48–60) V DC	32 A
1100 W HVDC (China/Japan)	Platinum	4100 BTU/hr	—	200–380 V DC	6.4 A – 3.2 A
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC auto-ranging	10 A

Heat dissipation is calculated from the PSU wattage rating. The system is also designed to connect to IT power systems with a phase-to-phase voltage not exceeding 230 V.

Power management tools

Right-sizing	Enterprise Infrastructure Planning Tool (EIPT) calculates hardware power consumption, power infrastructure and storage (Dell.com/calc).
Industry compliance	80 PLUS, Climate Savers and ENERGY STAR.
Power capping	OpenManage Power Center and iDRAC9 Enterprise set a power limit for the server.
Active power management	Policy-based management of power and thermal levels at system, rack or data-centre level; hot-spare PSUs; thermal control of fan speed.

Thermal

Thermal management delivers optimised cooling at the lowest fan speeds across ambient temperatures from 10 °C to 35 °C and into extended (Fresh Air) ranges, reducing fan power and overall system power. Up to eight hot-plug fans with full redundancy.

Acoustics

Dell EMC engineers for sound quality as well as sound power and pressure. For reference: 45 dBA is comparable to whispering or a normal living room, 35 dBA to a quiet office and 30 dBA to a quiet library; 60 dBA is conversation level and 75 dBA a data-centre environment. Sound levels rise with higher populations or utilisation; full metrics are in the Dell Enterprise Acoustics white paper.

Rack Rails and Operating Systems

Rack rails

Two rail types are offered: sliding rails (ReadyRails II, B6) allow the system to extend fully out of the rack for service and are available with or without the cable management arm (CMA); static rails (ReadyRails, B4) support a wider variety of racks including 2-post (Telco) racks but do not support in-rack serviceability or the CMA. Both support tool-less mounting in 19-inch EIA-310-E square-hole and unthreaded round-hole 4-post racks, and tooled mounting in threaded-hole racks (screws not included; sliding-rail screw heads must be 10 mm or less).

Rail	Type	4-post square	4-post round	4-post threaded	2-post flush	2-post centre	Adjustable range (mm)	Rail depth (mm)
B6 ReadyRails II	Sliding	Yes	Yes	Yes	No	No	630–883 square · 616–876 round · 630–897 threaded	714 (845 with CMA)
B4 ReadyRails	Static	Yes	Yes	Yes	Yes	Yes	608–879 square · 594–872 round · 604–890 threaded	622

Supported operating systems

- Canonical® Ubuntu® Server LTS
- Citrix® Hypervisor / XenServer
- Microsoft® Windows Server® LTSC with Hyper-V
- Oracle® Linux
- Red Hat® Enterprise Linux
- SUSE® Linux Enterprise Server
- VMware® ESXi®

For specific versions and interoperability see Dell.com/OSsupport. ServerDove can pre-install Windows Server or VMware ESXi on servers purchased with drives, and supplies genuine Microsoft licences digitally.

Dell EMC OpenManage Systems Management

Dell EMC OpenManage helps IT administrators deploy, update, monitor and manage servers effectively in physical, virtual, local and remote environments, in-band and out-of-band (agent-free). The key tools are the embedded iDRAC9 with Lifecycle Controller and the one-to-many OpenManage Enterprise console, integrated with frameworks from VMware, Microsoft, Ansible and ServiceNow.

iDRAC9 with Lifecycle Controller	Embedded in every PowerEdge server; deploy, update, monitor and maintain with no additional software, independent of OS or hypervisor. iDRAC Direct front port, RESTful API with Redfish, optional Quick Sync 2 wireless module, 8 GB or 16 GB vFlash upgrade, Server Lockdown mode (Enterprise/Datacenter licence).
Server and chassis managers	Integrated Dell Remote Access Controller (iDRAC) · iDRAC Service Module (iSM)
Dell EMC consoles	OpenManage Enterprise · OpenManage Enterprise Power Manager plug-in · Dell EMC Repository Manager (DRM) · OpenManage Mobile (OMM) · OpenManage Power Center
Automation enablers	OpenManage Ansible Modules · iDRAC RESTful APIs (Redfish) · Standards-based APIs (Python, PowerShell) · RACADM CLI · GitHub scripting libraries
Integrations with third-party consoles	OpenManage Integrations with Microsoft System Center · OpenManage Integration for VMware vCenter (OMIVV) · OpenManage Ansible Modules · OpenManage Integration with ServiceNow · BMC Truesight
Connections for third-party consoles	IBM Tivoli Netcool/OMNIBus and Network Manager IP Edition · Micro Focus Operations Manager i · OpenManage Plug-in for Nagios Core and XI
Update utilities	Dell System Update (DSU) · Repository Manager (DRM) · Update Packages (DUP) · Server Update Utility (SUU) · Platform Specific Bootable ISO (PSBI)
Standards	IPMI 2.0 compliant; SMBIOS 2.7; Redfish

Support technologies (for systems under Dell contracts)

SupportAssist	Automated proactive and predictive technology that detects issues, creates cases and alerts before they become critical; included with all Dell support plans.
TechDirect	Self-dispatch of replacement parts, technical support requests, API integration and Dell certification training.
ProSupport / ProSupport Plus	Dell EMC hardware and software support with next-business-day or four-hour mission-critical response; ServerDove provides its own warranty and hardware support for refurbished units — see Where to Buy.

Additional Specifications and Environmental

Chassis dimensions

Measurement	4 × 3.5" and 10 × 2.5" chassis	8 × 2.5" chassis
Width, slam-latch outer surfaces	482.0 mm	482.0 mm
Chassis base width	434.0 mm	434.0 mm
Width, slam-latch inner surfaces	431.6 mm	431.6 mm
Height (chassis bottom to top of cover and latch)	42.8 mm	42.8 mm
Depth, bezel to rear wall	769.66 mm	718.89 mm
Depth, bezel to rear wall (PCIe area)	787.96 mm	737.19 mm
Depth, bezel to rear PSU handle	808.51 mm	757.75 mm
Depth, front plate to rear wall	755.82 mm	705.05 mm
Depth, front plate to rear PSU handle	794.67 mm	743.91 mm
Front plate to slam-latch rear surface (rail mating)	22.0 mm	22.0 mm
Rail nut centres from front plate	115.86 / 292.86 / 469.86 / 660.86 mm	65.09 / 242.09 / 419.09 / 610.09 mm
Weight (maximum, with bezel)	21.9 kg (48.3 lb)	21.9 kg (48.3 lb)

Video specifications (Matrox G200 with iDRAC9)

Resolution	Refresh	Horizontal frequency	Pixel clock	Rear panel	Front panel
1024 × 768	60 Hz	48.4 kHz	65.0 MHz	Yes	Yes
1280 × 800	60 Hz	49.7 kHz	83.5 MHz	Yes	Yes
1280 × 1024	60 Hz	64.0 kHz	108.0 MHz	Yes	Yes
1360 × 768	60 Hz	47.71 kHz	85.5 MHz	Yes	Yes
1440 × 900	60 Hz	55.9 kHz	106.5 MHz	Yes	Yes
1600 × 900	60 Hz	55.54 kHz	97.75 MHz	Yes	Yes
1600 × 1200	60 Hz	75.0 kHz	162.0 MHz	Yes	Yes
1680 × 1050	60 Hz	64.7 kHz	119.0 MHz	Yes	Yes
1920 × 1080	60 Hz	67.158 kHz	173.0 MHz	Yes	No
1920 × 1200	60 Hz	74.556 kHz	193.25 MHz	Yes	No

Environmental specifications

Operating temperature	10 °C to 35 °C (50 °F to 95 °F) continuous, no direct sunlight, for altitudes below 950 m (3117 ft). Certain configurations may require reduced upper limits; performance may be affected above the limit or with a faulty fan.
Expanded (Fresh Air) operation	Continuous 5 °C to 40 °C at 5–85% RH, 29 °C dew point; ≤1% of annual operating hours –5 °C to 45 °C at 5–90% RH.
Temperature de-rating	Up to 35 °C: –1 °C per 300 m above 950 m • 35–40 °C: –1 °C per 175 m above 950 m • 40–45 °C: –1 °C per 125 m above 950 m
Storage temperature	–40 °C to 65 °C (–40 °F to 149 °F); maximum gradient 20 °C/h
Relative humidity	Operating 10% to 80% with 29 °C maximum dew point; storage 5% to 95% with 33 °C maximum dew point, non-condensing
Altitude	Operating 3048 m (10,000 ft); storage 12,000 m (39,370 ft)
Vibration	Operating 0.26 Grms at 5–350 Hz; storage 1.88 Grms at 10–500 Hz for 15 min
Shock	Operating six 6 G pulses up to 11 ms; storage six 71 G pulses up to 2 ms
Particulate contamination	ISO Class 8 per ISO 14644-1 (95% upper confidence limit); MERV11 or MERV13 filtration; air free of conductive dust and zinc whiskers; corrosive dust deliquescent point below 60% RH
Gaseous contamination	Copper coupon corrosion <300 Å/month (class G1, ANSI/ISA 71.04-1985); silver coupon corrosion <200 Å/month (ASHRAE TC9.9)

Standards compliance

Standard	Specification
ACPI	Advanced Configuration and Power Interface v2.0c
Ethernet	IEEE 802.3-2005
HDG	Hardware Design Guide v3.0 for Microsoft Windows Server
IPMI	Intelligent Platform Management Interface v2.0
DDR4 memory	DDR4 SDRAM specification (JESD79-4)
PCI Express	PCI Express Base Specification rev. 2.0 and 3.0
PMBus	Power System Management Protocol v1.2
SAS	Serial Attached SCSI v1.1
SATA	Serial ATA rev. 2.6; SATA II, SATA 1.0a extensions rev. 1.2
SMBIOS	System Management BIOS reference specification v2.7
TPM	Trusted Platform Module specification v1.2 and v2.0
UEFI	Unified Extensible Firmware Interface v2.1
USB	Universal Serial Bus rev. 2.0

Where to Buy — ServerDove



Request a quote or configure your Dell PowerEdge R640

Talk to our team or request a custom configuration. We respond during business hours (Doha, Qatar) and typically reply instantly on WhatsApp.

ServerDove Trading & Services

Office 7, Floor 2, Building 216,
Street 330, Zone 43
Doha, Qatar

Sales: sales@serverdove.com

Support:

support@serverdove.com

Call / WhatsApp: +974 5521 2108

Web: www.serverdove.com

Dell PowerEdge R640 listings:
serverdove.com/collections/dell-poweredge-r640

ServerDove warranty

All hardware and components supplied by ServerDove are covered by the ServerDove 1-year (365+ day) warranty; any defective part is replaced at our cost. Cover includes motherboard, processors, memory and DIMM slots, RAID controller and battery, PCIe risers and NICs, hard drives and power supplies. Extended warranties of up to 3 years are available on request. Claims: email support@serverdove.com with your order number and a brief description of the issue. Software or application support is not covered; ServerDove supports Windows Server or VMware installation on servers purchased with drives from us.

Services from ServerDove

- **Configure a server** — processors, memory, drives, PERC, NDC and power supplies matched to your workload, assembled and burn-in tested
- **Installation services** — rack installation and on-site setup across Qatar; Windows Server or VMware installation
- **Bulk orders** — project and volume pricing for system integrators, data centres and enterprises
- **Hardware support and warranty** — 1-year (365+ day) warranty with extended cover up to 3 years; replacement parts at our cost
- **Spares and upgrades** — DDR4 RDIMMs and LRDIMMs, PERC H730P/H740P controllers and batteries, BOSS cards, SAS/ SATA/NVMe drives, rNDC and PCIe NICs, risers, fans and power supplies
- **Delivery** — 1-day delivery across Qatar on orders over QAR 300

About ServerDove

ServerDove is a trusted supplier of refurbished enterprise IT hardware, specialising in Dell PowerEdge servers, HPE ProLiant servers, enterprise storage, networking equipment, workstations and server components. Based in Doha, Qatar, we serve businesses across the Middle East with reliable, cost-effective IT infrastructure solutions. Our mission is to make enterprise-grade technology accessible by providing professionally tested and certified refurbished servers and hardware at competitive prices. Every product undergoes thorough inspection, testing and quality assurance to ensure performance and reliability in production environments. We work with organisations of all sizes, including SMBs, enterprises, system integrators and government entities.

Related products at serverdove.com

Dell PowerEdge R740 · R440 · R650 · R750 · R630 · R730 · R620 · T440 · HPE ProLiant DL360 Gen10 · DL380 Gen10 · DL380 Gen9 · ML350 Gen10 · Dell Precision and HP Z-series workstations · Cisco, Fortinet and Palo Alto networking · SAS, SATA and NVMe drives · server memory and processors.

Source and trademarks

Technical content in this data sheet is reproduced from the Dell EMC PowerEdge R640 Technical Guide (Regulatory Model E39S, Rev. A08, June 2021) and the Dell EMC PowerEdge R640 Spec Sheet, published by Dell Inc. Specifications and supported options are subject to change; configuration of refurbished units varies — confirm your exact build with a ServerDove sales representative before ordering. Dell, Dell EMC, PowerEdge, PERC, iDRAC and OpenManage are trademarks of Dell Inc. or its subsidiaries. Intel, Xeon and Optane are trademarks of Intel Corporation. Microsoft and Windows are trademarks of Microsoft Corporation. VMware is a trademark of Broadcom Inc. NVIDIA is a trademark of NVIDIA Corporation. ServerDove Trading & Services is an independent supplier of refurbished hardware and is not affiliated with or endorsed by Dell Technologies. Document SD-DS-R640 · September 2026 · © 2026 ServerDove Trading & Services. All rights reserved.