

Selling New Dell EMC PowerEdge Servers with 2nd Gen AMD EPYC Processor



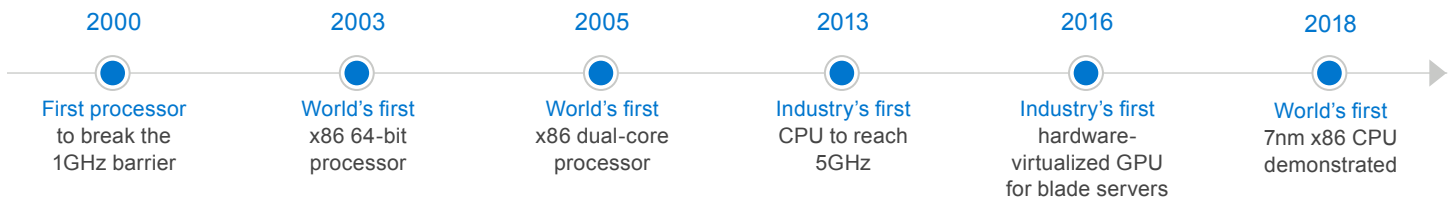
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1 Build trust by establishing AMD as an innovation leader



Your customers should feel confident choosing Dell EMC PowerEdge servers based on leading-edge AMD processors. This year, AMD celebrates its 50 years of innovation with a long list of industry firsts.



With 2nd Gen EPYC Processors, AMD has introduced the world's highest performing x86 processor. Today, the world's most demanding cloud environments run AMD EPYC Processor with more than 50 AMD EPYC cloud instances:



Today's AMD EPYC Processor is the second generation of the world's first high-performance x86 7nm CPU, based on AMD "Zen" architecture. Future processors based on AMD "Zen 3" and "Zen 4" architectures are planned by AMD and on the Dell EMC roadmap through 2022.

2 Communicate the key benefits of Dell EMC PowerEdge

New Dell EMC PowerEdge servers powered by 2nd Gen AMD EPYC Processors continue to deliver the scalable business architecture, intelligent automation, and integrated security of previous and current PowerEdge systems.

Dell EMC OpenManage advancements simplify infrastructure management and automation across the PowerEdge portfolio with leading software and public cloud technology partners:

-  **Simple**
Intuitive and easy-to-use tools that drive out complexity of infrastructure management
-  **Efficient**
Accelerating infrastructure management while providing Infrastructure as Code (IaC) support for orchestration
-  **Available**
Creating “always on” environments that are highly resilient



3 Introduce the 2nd Gen AMD EPYC Processor



Performance Leadership

Groundbreaking core counts, memory bandwidth, and I/O throughput deliver the best performance, performance/dollar, and performance/watt for the most demanding workloads.

- 61% more virtual machines on SPECVIRT[®]_SC2013¹
- World record performance on VMARK[®] w/VSAN^{™2}
- World record performance on SPECPOWER^{®3}



Security Leadership

Advanced security features with a silicon-embedded secure processor that helps organizations take control while minimizing risks to critical assets.

- **Secure root of trust technology:** monitors whether the initial BIOS software is booted without corruption
- **Secure Memory Encryption (SME):** makes it possible to encrypt the contents of main memory with only a change in BIOS settings
- **Secure Encrypted Virtualization (SEV):** helps protect confidentiality by encrypting each virtual machine with a unique key that is known only to the processor



Exceptional Value

One-socket 2nd Gen AMD EPYC Processor-powered servers outperform many two-socket servers, transforming data center economics. Improved TCO is a direct result of:






- Fewer processors
- Fewer servers
- Less power consumption
- Lower licensing costs
- More VMs in a 1U

Architecture Leadership

New AMD Infinity Architecture delivers performance, scale, efficiency, and enhanced security features.

- **Efficiency**
First 7nm server processors with energy and NUMA enhancements
- **Throughput**
First PCIe[®] 4 x86 server processors offer leading I/O and memory bandwidth⁴, enabling enterprise applications to more rapidly transfer processed data from CPU to storage or network
- **Performance**
~2x performance increase⁵ and up to 4x theoretical floating-point operations (FLOPS)⁶ compared to previous generations, further enhancing performance of compute-intensive applications like HPC

4 Sell new one- and two-socket Dell EMC PowerEdge servers powered by 2nd Gen AMD EPYC

				
R6515	R7515	R6525	R7525	C6525
Single-socket 1U rack server offers peak performance and excellent TCO	Highly scalable 2U rack server delivers performance and outstanding TCO	Highly configurable 1U rack server delivers outstanding balanced performance for dense compute	Highly adaptable 2U rack server brings powerful performance and flexible configuration	Compute-dense server sled accelerates data center performance to tackle diverse HPC applications
1S RACKS		2S RACKS		C-SERIES
		EMERGING WORKLOADS		
MULTI-CLOUD				

Accelerated Performance

New Dell EMC PowerEdge servers take full advantage of 2nd Gen AMD EPYC capabilities to address compute and bandwidth-intensive applications. These new servers:

- Set world records for virtualized database performance⁷ and SAP SD benchmark⁸
- Offer substantial performance improvements for a variety of workloads, including HPC, databases, and VDI

Effortless Management

Dell EMC OpenManage Enterprise and the iDRAC enable users to easily manage servers, OS, and hypervisors from a single screen, anywhere in the world, significantly reducing deployment and update times.

Integrated Security

The integrated security protects the infrastructure and delivers investment protection with these innovative features:

- **OpenManage Secure Enterprise Key Manager** and **AMD Secure Memory Encryption (SME)** secure data at rest
- **iDRAC** and **OpenManage Enterprise** maintain enterprise-wide security with automated firmware and compliance drift detection
- 509 unique keys - **Secure Encrypted Virtualization (SEV)**

Efficient TCO

Powerful, 2nd Gen AMD EPYC single-socket designs are capable of workloads that otherwise require two sockets, resulting in significant hardware and software cost savings.

¹ A 2P EPYC 7702 powered server has SPECvirt_sc2013 score of 5451.2 and 305 VMs, https://www.spec.org/virt_sc2013/results/res2019q3/virt_sc2013-20190726-00122-perf.html as of August 7, 2019. The next highest score is a 2P Intel Platinum 8180 server with a score of 3376 and 189 VMs, https://www.spec.org/virt_sc2013/results/res2017q4/virt_sc2013-20171017-00098perf.html as of July 28, 2019. SPEC® and SPECvirt® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

² Results as of 8/7/2019 using VMmark® 3.1 vSAN. AMD 7702 score of can be found at <https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/vmmark/2019-08-07-HPE-ProLiant-DL325Gen10.pdf>. Product available Aug 7, 2019. The next highest score with an Intel 6152, can be found at, <https://www.vmware.com/products/vmmark/results3x.0.html>. VMware VMmark 3.x results can be found at <https://www.vmware.com/products/vmmark/results3x.html>.

³ 2P AMD EPYC™ 7702 server scored 18,051 overall ssj_ops/watt on SPEC Power® 2008 with the Microsoft Windows® Datacenter 2019 OS, as published at https://www.spec.org/power_ssj2008/results/res2019q3/power_ssj2008-20190716-00982.html, which is higher than all other Windows publications on the SPEC® website as of 7/27/2019. SPEC® and SPEC Power® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

⁴ EPYC™ 7002 series has 8 memory channels, supporting 3200 MHz DIMMs yielding 204.8 GB/s of bandwidth vs. the same class of Intel Scalable Gen 2 processors with only 6 memory channels and

supporting 2933 MHz DIMMs yielding 140.8 GB/s of bandwidth. $204.8 / 140.8 = 1.454545 - 1.0 = .45$ or 45% more. AMD EPYC has 45% more bandwidth. Class based on industry-standard pin-based (LGA) X86 processors.

⁵ Results as of 8/7/2019 using SPECrate(R)2017_int_base. The EPYC 7742 2P score is 682 on the SPECrate®2017_int_base, <https://spec.org/cpu2017/results/res2019q3/cpu2017-20190722-16242.html>. EPYC 7601 2P score of 304 results at <http://spec.org/cpu2017/results/res2019q2/cpu2017-20190411-11817.pdf>. $682 / 304 = 2.24$ or 2.2x the integer performance for the EPYC 7742. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

⁶ Based on standard calculation method for determining FLOPS.

⁷ 1P TPCx-V is a single-socket performance world record on Dell EMC PowerEdge 7515 with AMD EPYC™ 7742 CPU. Benchmark tested and validated with www.tpc.org as of Sept. 17, 2019.

⁸ 2P SAP SD is a two-socket performance world record on Dell EMC PowerEdge R6525 AMD EPYCTM 7742 CPU. Benchmark tested and validated with www.sap.com as of Sept. 17, 2019, certification number 2019047. Source: www.sap.com/benchmark.



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