

March 15, 2021



# AMD EPYC™ 7003 Series CPUs Set New Standard as Highest Performance Server Processor

- New AMD EPYC processor extends per socket performance leadership and best per core performance<sup>1\*\*</sup> with new “Zen 3” cores and modern security features–
- Partners including AWS, Cisco, Dell Technologies, Google Cloud, HPE, Lenovo, Microsoft Azure, Oracle Cloud Infrastructure, Supermicro, Tencent Cloud and others grow EPYC processor ecosystem to an expected 400 cloud instances and 100 new OEM platforms by end of 2021–

SANTA CLARA, Calif., March 15, 2021 (GLOBE NEWSWIRE) -- At a digital event, [AMD](#) (NASDAQ: AMD) announced the new AMD EPYC™ 7003 Series CPUs, which includes the AMD EPYC 7763, the world’s highest-performing server processor<sup>2\*</sup>. The new EPYC 7003 series processors help HPC, cloud and enterprise customers do more, faster, by delivering the best performance of any server CPU with up to 19% more instructions per clock<sup>3</sup>.

“With the launch of our 3<sup>rd</sup> Gen AMD EPYC processors, we are incredibly excited to deliver the fastest server CPU in the world. These processors extend our data center leadership and help customers solve today’s most complex IT challenges, while substantially growing our ecosystem,” said Forrest Norrod, senior vice president and general manager, Data Center and Embedded Solutions Business Group. “We not only double the performance over the competition in HPC, cloud and enterprise workloads with our newest server CPUs, but together with the AMD Instinct GPUs, we are breaking the exascale barrier in supercomputing and helping to tackle problems that have previously been beyond humanity’s reach.”

## AMD EPYC Processors, Powering the Modern Data Center

Available immediately, AMD EPYC 7003 Series Processors have up to 64 “Zen 3” cores per processor and introduce new levels of per-core cache memory, while continuing to offer the PCIe® 4 connectivity and class-leading memory bandwidth<sup>4</sup> that defined the EPYC 7002 series CPUs. 3<sup>rd</sup> Gen AMD EPYC processors also include modern security features through [AMD Infinity Guard](#), supporting a new feature called Secure Encrypted Virtualization-Secure Nested Paging (SEV-SNP). SEV-SNP expands the existing SEV features on EPYC processors, adding strong memory integrity protection capabilities to help prevent malicious hypervisor-based attacks by creating an isolated execution environment. You can read more about new 3<sup>rd</sup> Gen AMD EPYC features [here](#).

All these features and capabilities combine to help drive faster time to results and improve business outcomes for HPC, cloud and enterprise customers.

- **For HPC customers** that demand the most throughput computing capabilities to do more simulations in a given time period, or use bigger data sets or more complex models, AMD EPYC 7003 Series processors enable faster time to discovery with more I/O<sup>5</sup> and memory throughput, and powerful “Zen 3” cores that deliver up to twice the performance for HPC workloads compared to the competition<sup>6</sup>.
- **For cloud providers** who need compute density and security capabilities, AMD EPYC 7003 Series processors offer the highest core density<sup>7</sup>, advanced security features and up to twice the integer performance compared to the competition<sup>8</sup>.
- **For the enterprise**, where performance and time to value are critical to support the new “work from anywhere” environment, AMD EPYC 7003 Series processors help improve efficiency, and deliver value and performance. The new processors increase transactional database processing by up to 19%<sup>9</sup>, improve Hadoop big data analytic sorts by up to 60% with 61% better price to performance than the competition<sup>10</sup>, and offer superior performance for flexible Hyperconverged Infrastructure - all of which help CIOs turn data into actionable insights faster.

## Partners Using AMD EPYC 7003 Series Processors

The AMD EPYC processor ecosystem is expected to grow significantly by the end of 2021 with more than 400 cloud instances using all generations of EPYC processors and 100 new server platforms using 3<sup>rd</sup> Gen EPYC processors. AMD EPYC 7003 Series processor-based solutions are available now through numerous OEMs, ODMs, cloud providers and channel partners around the world.

- [AWS](#) – [will add the](#) AMD EPYC 7003 series processors to its core Amazon EC2 instance families later this year.
- [Cisco](#) – [introduced](#) new Cisco Unified Computing System™ (Cisco UCS®) rack server models with AMD EPYC 7003 Series Processors designed to support modern hybrid cloud workloads.
- [Dell Technologies](#) – announced the all new PowerEdge XE8545 server with AMD EPYC 7003 series CPUs, and the company will support the new processors within its PowerEdge server portfolio.
- [Google Cloud](#) – announced AMD EPYC 7003 series processors will power a new compute optimized VM, C2D, and an expansion of the existing general purpose N2D VM later this year. Google Cloud Confidential Computing will be available on both C2D and N2D.
- [HPE](#) – announced it will double the lineup of AMD EPYC processor powered solutions, using the AMD EPYC 7003 series processors in new HPE ProLiant servers, HPE Apollo systems and HPE Cray EX supercomputers.
- [Lenovo](#) – added ten [Lenovo ThinkSystem Servers and ThinkAgile HCI solutions built on 3<sup>rd</sup> Gen EPYC processors](#), and achieved more than 25 new world records across a broad set of industry-standard benchmarks in workload areas.
- [Microsoft Azure](#) – announced multiple new virtual machine offerings powered by AMD EPYC 7003 series processors. [Azure HBv3 virtual machines](#) for HPC applications are generally available today, and [Confidential Computing virtual machines](#) that utilize the full security features of the new AMD EPYC 7003 series processors are in private preview.
- [Oracle Cloud Infrastructure](#) – announced it is extending its flexible virtual machine and bare metal compute offerings with the new E4 platform based on 3<sup>rd</sup> Generation

## AMD EPYC Processors.

- [Supermicro](#) – introduced the AMD EPYC 7003 series processor in its Supermicro A+ single and dual socket family of Ultra, Twin, SuperBlade®, Storage and GPU Optimized Systems.
- [Tencent Cloud](#) – [announced](#) the new Tencent Cloud SA3 server instance, powered by the 3<sup>rd</sup> Gen AMD EPYC processors.
- [VMware](#) – [announced](#) its latest release of VMware vSphere 7 which is optimized to take advantage of AMD EPYC processors virtualization performance, while supporting the processors' advanced security features, including SEV-ES for both virtual machine based and containerized applications.

You can visit the [3<sup>rd</sup> Gen AMD EPYC processor launch page](#) to view more content from these and other partners about how they will utilize the leadership performance and capabilities of the new AMD EPYC 7003 series processors. You can also visit the [AMD EPYC partner quote page](#), to see global partner support of the processors.

## AMD EPYC 7003 Series Processor SKU Table

Model #	Cores	Threads	Base Freq (GHz)	Max Boost Freq (up to GHz <sup>11</sup> )	Default TDP (w)	cTDP Min (w)	cTDP Max (w)	L3 Cache (MB)	DDR Channels	Max DDR Freq (1DPC)	PCIe® 4	1Ku Pricing
7763	64	128	2.45	3.50	280	225	280	256	8	3200	x128	\$7,890
7713	64	128	2.00	3.675	225	225	240	256	8	3200	X128	\$7,060
7713P	64	128	2.00	3.675	225	225	240	256	8	3200	X128	\$5,010
7663	56	112	2.00	3.50	240	225	240	256	8	3200	x128	\$6,366
7643	48	96	2.30	3.60	225	225	240	256	8	3200	x128	\$4,995
75F3	32	64	2.95	4.00	280	225	280	256	8	3200	x128	\$4,860
7543	32	64	2.80	3.70	225	225	240	256	8	3200	x128	\$3,761
7543P	32	64	2.80	3.70	225	225	240	256	8	3200	X128	\$2,730
7513	32	64	2.60	3.65	200	165	200	128	8	3200	x128	\$2,840
7453	28	56	2.75	3.45	225	225	240	64	8	3200	x128	\$1,570
74F3	24	48	3.20	4.00	240	225	240	256	8	3200	x128	\$2,900
7443	24	48	2.85	4.00	200	165	200	128	8	3200	x128	\$2,010
7443P	24	48	2.85	4.00	200	165	200	128	8	3200	X128	\$1,337
7413	24	48	2.65	3.60	180	165	200	128	8	3200	X128	\$1,825
73F3	16	32	3.50	4.00	240	225	240	256	8	3200	x128	\$3,521
7343	16	32	3.20	3.90	190	165	200	128	8	3200	x128	\$1,565
7313	16	32	3.00	3.70	155	155	180	128	8	3200	X128	\$1,083
7313P	16	32	3.00	3.70	155	155	180	128	8	3200	X128	\$913
72F3	8	16	3.70	4.10	180	165	200	256	8	3200	x128	\$2,468

## Supporting Resources

- Watch the AMD EPYC 7003 Series [keynote](#)
- Visit the [AMD EPYC 7003 Series Processor Launch Page](#)
- Learn more about the [AMD EPYC 7003 Series Processors](#)
- Read more about the ecosystem partners supporting [AMD EPYC™](#)
- Follow AMD on [Twitter](#)

## About AMD

For more than 50 years AMD has driven innovation in high-performance computing, graphics and visualization technologies — the building blocks for gaming, immersive platforms and the data center. Hundreds of millions of consumers, leading Fortune 500 businesses and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work and play. AMD employees around the world are focused on

building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) [website](#), [blog](#), [Facebook](#) and [Twitter](#) pages.

#### CAUTIONARY STATEMENT

This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as the features, functionality, performance, availability, timing and expected benefits of AMD products including the AMD EPYC™ 7003 Series processors and expected ecosystem partners and products, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this press release are based on current beliefs, assumptions and expectations, speak only as of the date of this press release and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation's dominance of the microprocessor market and its aggressive business practices; global economic uncertainty; the loss of a significant customer; the impact of the COVID-19 pandemic on AMD's business, financial condition and results of operations; the competitive markets in which AMD's products are sold; quarterly and seasonal sales patterns; market conditions of the industries in which AMD products are sold; the cyclical nature of the semiconductor industry; AMD's ability to adequately protect its technology or other intellectual property; unfavorable currency exchange rate fluctuations; the ability of third party manufacturers to manufacture AMD's products on a timely basis in sufficient quantities and using competitive technologies; expected manufacturing yields for AMD's products; the availability of essential equipment, materials or manufacturing processes; AMD's ability to introduce products on a timely basis with features and performance levels that provide value to its customers; AMD's ability to generate revenue from its semi-custom SoC products; potential security vulnerabilities; potential IT outages, data loss, data breaches and cyber-attacks; uncertainties involving the ordering and shipment of AMD's products; AMD's reliance on third-party intellectual property to design and introduce new products in a timely manner; AMD's reliance on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components; AMD's reliance on Microsoft Corporation and other software vendors' support to design and develop software to run on AMD's products; AMD's reliance on third-party distributors and add-in-board partners; the impact of modification or interruption of AMD's internal business processes and information systems; compatibility of AMD's products with some or all industry-standard software and hardware; costs related to defective products; the efficiency of AMD's supply chain; AMD's ability to rely on third party supply-chain logistics functions; AMD's ability to effectively control the sales of its products on the gray market; the impact of government actions and regulations such as export administration regulations, tariffs and trade protection measures; AMD's ability to realize its deferred tax assets; potential tax liabilities; current and future claims and litigation; the impact of environmental laws, conflict minerals-related provisions and other laws or regulations; the impact of acquisitions, joint ventures and/or investments on AMD's business, including the announced acquisition of Xilinx, and the failure to integrate acquired businesses; AMD's ability to complete the Xilinx merger; the impact of the announcement and pendency of the Xilinx merger on AMD's business; the impact of any impairment of the combined company's assets

on the combined company's financial position and results of operation; the restrictions imposed by agreements governing AMD's notes and the revolving credit facility; the potential dilutive effect if the 2.125% Convertible Senior Notes due 2026 are converted; AMD's indebtedness; AMD's ability to generate sufficient cash to service its debt obligations or meet its working capital requirements; AMD's ability to repurchase its outstanding debt in the event of a change of control; AMD's ability to generate sufficient revenue and operating cash flow or obtain external financing for research and development or other strategic investments; political, legal, economic risks and natural disasters; future impairments of goodwill and technology license purchases; AMD's ability to attract and retain qualified personnel; AMD's stock price volatility; and worldwide political conditions. Investors are urged to review in detail the risks and uncertainties in AMD's Securities and Exchange Commission filings, including but not limited to AMD's most recent reports on Forms 10-K and 10-Q.

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\*AMD EPYC 7763

\*\*AMD EPYC 72F3

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<sup>1</sup> MLN-057K: Based on SPECrate®2017\_int\_base on 02/20/2021, a server powered by two 8c AMD EPYC 72F3 CPU has a measured estimated score of 176 with a per core score of 11.00 which is a higher per core performance score than any currently posted in any SPEC.org publication. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.

<sup>2</sup> MLN-016: Results as of 01/28/2021 using SPECrate®2017\_int\_base. The AMD EPYC 7763 a measured estimated score of 798 is higher than the current highest 2P server with an AMD EPYC 7H12 and a score of 717, <https://spec.org/cpu2017/results/res2020q2/cpu2017-20200525-22554.pdf>. OEM published score(s) for 3rd Gen EPYC may vary. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.

<sup>3</sup> MLN-003: Based on AMD internal testing as of 02/1/2021, average performance improvement at ISO-frequency on an AMD EPYC™ 72F3 (8C/8T, 3.7GHz) compared to an AMD EPYC™ 7F32 (8C/8T, 3.7GHz), per-core, single thread, using a select set of workloads including SPECrate®2017\_int\_base, SPECrate®2017\_fp\_base, and representative server workloads. SPEC® and SPECrate® are registered trademarks of Standard Performance Evaluation Corporation. Learn more at [spec.org](http://spec.org).

<sup>4</sup> MLN-056: Each AMD EPYC 7003 processor has 8 memory channels. Each Intel Xeon Scalable processor has 6 memory channels.  $8 - 6 = 2 \div 6 = 0.33$  AMD EPYC has 33% more memory bandwidth. Class based on industry-standard pin-based (LGA) X86 processors.

<sup>5</sup> MLN-055: AMD EPYC 7003 CPUs with PCIe4 lanes have 2X the I/O throughput capacity per lane than any Intel Xeon Scalable CPU which use PCIe3. PCIe4 provides 16GB/s of link bandwidth versus PCIe3 with 8Gb/s, <https://pcisig.com/pci-express-delivering-needed-bandwidth-open-compute-project>.

<sup>6</sup> MLN-074K: Based on SPECrate®2017\_fp\_base on 02/20/2021, a server powered by two 64c AMD EPYC 7763 CPUs has a score of 636 a compliant result run on an ThinkSystem

SR665; with Memory: 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R); OS: Red Hat Enterprise Linux release 8.3 (Ootpa); Compiler: C/C++/Fortran: Version 3.0.0 of AOCC. Versus the current highest score Intel Cascade Lake Refresh server with a score of 309 with a 2P Intel Gold 6258R based server, <https://spec.org/cpu2017/results/res2020q3/cpu2017-20200915-23979.pdf>. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.

<sup>7</sup> EPYC-10: AMD EPYC has up to 64c/128t and Intel Scalable has up to 56c/112t, per processor.

<sup>8</sup> MLN-073K: Based on SPECrate®2017\_int\_base on 02/20/2021, a server powered by two 64c AMD EPYC 7763 CPUs has a score of 819 in a compliant result run on an ThinkSystem SR645; with Memory: 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R), OS: SUSE Linux Enterprise Server 12 SP5 (x86\_64) Kernel 4.12.14-120-default; Compiler: C/C++/Fortran: Version 3.0.0 of AOCC. Versus the current highest score Intel Cascade Lake Refresh server with a score of 397 using 2P Intel Gold 6258R, <https://spec.org/cpu2017/results/res2020q3/cpu2017-20200915-23981.pdf>. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information.

<sup>9</sup>MLN-006: HammerDB 4.0 OLTP comparison based on AMD internal testing on Oracle® 19c RDBMS as of 02/01/2021 on a server using 2x AMD EPYC 75F3 versus a server using 2x AMD EPYC 7542 for ~19% more [~1.2x the] performance. TPROC-C: OLTP workload profile in HammerDB derived, from the TPC-C specification using 2000 Warehouses. Results may vary.

<sup>10</sup> MLN-069K: TPC Benchmark Express™ HSpH@3TB comparison based on highest system results published as of 03/12/2021. Configurations: 17-node, 1x AMD EPYC 75F3 (34.52 HSpH@3TB, \$35,615.50/HSpH@3TB, <http://www.tpc.org/5548>, available 3/15/2021, Framework 1 MapReduce) versus 17-node, 2x Intel Xeon Gold 6262V (21.52 HSpH@3TB, \$91,276.91/HSpH@3TB, <http://www.tpc.org/5544>, available 11/09/2020, Framework 2 Spark) for 60% higher [1.6x the] Hadoop Sort throughput performance at 61% better price/performance.

<sup>11</sup> EPYC-18: Max boost for AMD EPYC processors is the maximum frequency achievable by any single core on the processor under normal operating conditions for server systems.

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