PERFORMANCE BRIEF

AMD EPYC™ 7002 SERIES PROCESSORS SET SQL SERVER® PRICE/PERFORMANCE WORLD RECORD ON INDUSTRY STANDARD DECISION SUPPORT BENCHMARK

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Performance Leadership

AMD is committed to industry standard benchmarks. 2nd Gen AMD EPYC 7502P processors set a price/performance world record of $0.34/QphH using SQL Server on TPC Benchmark™ H at the 1 TB scale factor[1]

TPC Benchmark™ H

TPC-H was designed to provide verifiable performance, price-performance and availability metrics for decision support systems that examine large volumes of data, execute queries with a high degree of complexity, and give answers to critical business questions.

Commitment to Industry Standards

AMD is committed to industry standard benchmarks and enabling fair competition. AMD is a proud member of TPC®, SPEC® and other industry standard consortia. These organizations help drive innovation, while giving customers the information they need to make data-driven decisions about their purchases.

Single Socket Servers Change the Economics of the Datacenter

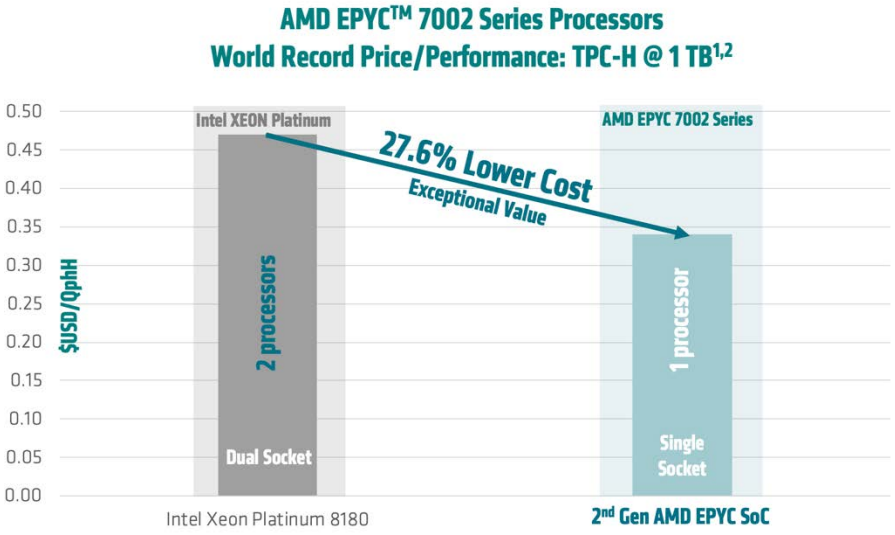
Performance demands are increasing; IT budgets and datacenter space are not. Built on 7nm technology, AMD EPYC™ 7002 Series processors pack more cores and more power into the same space as the previous generation.

Exceptional Scalability

AMD EPYC 7002 Series processors provide high bandwidth between nodes with support for PCIe® Gen 4 enabled network devices. Within node, take advantage of up to 64 cores per socket, including 8 memory channels with speeds up to DDR4-3200[3]. Add incredible floating point and integer compute within each core and the AMD EPYC 7002 Series delivers exceptional performance and scalability for database applications.

2nd Gen AMD EPYC™ Single Socket Server Provides Best Price/Performance Using SQL Server on TPC Benchmark™ H @ 1 TB Scale Factor[1, 2]

The TPC Benchmark™ H (TPC-H) enables direct comparison of different software and hardware solutions for decision support systems. Decision support systems answer critical business questions by examining large volumes of data and executing queries with a high degree of complexity.



The 2nd Gen AMD EPYC processor-based system set a new standard for price/performance with **a world record** benchmark result on TPC-H@1 TB. At $0.34 per QphH, this is the best published price/performance result[1] using SQL Server at the 1 TB scale factor handily beating the previous best result[2] by over 27%, clearly demonstrating how the AMD EPYC 7002 Series processors can help lower total cost of ownership (TCO).

Incredibly high core counts, memory capacity and bandwidth, and massive I/O help enable breakthrough performance and lower cost of ownership for database applications. The results speak for themselves.

Results	Processor	Price/Performance (US$/QphH)	% Better
World record[1]	AMD EPYC™ 7502P	0.34	**27.6%**
Top Intel result[2]	XEON Platinum 8180	0.47	

Innovation Drives Advancement

The AMD EPYC processor represents a completely new approach to supporting the massive processing requirements of the modern datacenter. The second generation of the AMD EPYC™ processor extends AMD's innovation leadership while continuing the philosophy of choice without restriction.

BENCHMARK CONFIGURATION	
Hardware	1 x HPE DL325 with: • 1 x AMD EPYC 7502P SOC (32 Cores) • 8 x 64 GB RDIMM (DDR4) = 512 GB Memory • 2 x 240 GB SSD (OS) • 8 x 1.6 TB NVME drives (Data) • 1 x E208i-a onboard controller
Software	Microsoft® SQL Server 2017 Enterprise Edition RHEL 8.0
Network	1 x HPE FF 5945 25GbE

Unmatched Flexibility

Match core count with application needs without compromising processor features. Built with leading-edge 7nm technology, the AMD EPYC™ SoC offers a consistent set of features across a range of choices from 8 to 64 cores, including 128 lanes of PCIe® Gen 4[3] and 8 memory channels with access to up to 4 TB of high-speed memory. EPYC processors' balanced set of resources means more freedom to right-size the server configuration to the workload.

Confidently Implement Decision Support Systems

The TPC Benchmark™ H (TPC-H) is a decision support benchmark consisting of a suite of business oriented ad-hoc queries and concurrent data modifications. The queries and the data populating the database were chosen to have broad industry-wide relevance.

This benchmark illustrates decision support systems that examine large volumes of data, execute queries with a high degree of complexity, and provide answers to critical business questions. TPC-H evaluates the performance the systems by executing sets of queries against a standard database under controlled conditions. The queries themselves are far more complex than most OLTP transactions and include a rich breadth of operators and selectivity constraints. They also generate intense activity on the database server component of the system under test, and are executed against a database complying to specific population and scaling requirements.

Innovation, Joint Engineering and a Commitment to Open Standards

AMD is proud to continue its long tradition of innovation and commitment to open standards. Coupled with joint engineering with our OEM and software partners, we're proud to demonstrate outstanding performance at significant cost savings.

These results demonstrate how the AMD EPYC SoC is bringing a new balance to the datacenter. Utilizing x86 architecture, the AMD EPYC processor brings together high core counts, large memory capacity, ample memory bandwidth and massive I/O with the right ratios to deliver truly exceptional performance.

LEARN MORE at amd.com/epyc

2nd Gen AMD EPYC Processors: Built with leading-edge 7nm technology, the AMD EPYC™ SoC offers a consistent set of features across a range of choices from 8 to 64 cores, including 128 lanes of PCIe® Gen 4[3] and 8 memory channels with access to up to 4 TB of high-speed memory.

FOOTNOTES

1. AMD EPYC TPC-H @ 1 TB benchmark results using SQL Server are: 743,750 QphH, $0.34 USD per QphH, 8/7/2019 system availability. Full disclosure report available on the TPC website at: http://www.tpc.org/3342
   A listing all TPC-H @ 1 TB results can be found on the TPC website: Click here
2. As of 10/15/2019, best published TPC-H @ 1 TB benchmark results using SQL Server with Intel Xeon processors are: 1,009,065 QphH, $0.47 USD per QphH, 5/21/2018 system availability. Full disclosure report available on the TPC website at: http://www.tpc.org/3331
3. Some supported features and functionality of second-generation AMD EPYC™ processors (codenamed "Rome") require a BIOS update from your server manufacturer when used with a motherboard designed for the first-generation AMD EPYC 7000 series processor. A motherboard designed for "Rome" processors is required to enable all available functionality. ROM-06