June 20, 2017

AMD EPYC™ Datacenter Processor Launches with Record-Setting Performance, Optimized Platforms, and Global Server Ecosystem Support

— Dell, HPE, Lenovo, Mellanox, Samsung Electronics, Supermicro, VMware, Xilinx, and many others form strong global ecosystem for EPYC™ processors —

AMD Launches EPYC for the Datacenter

— Cloud datacenter customers Microsoft Azure and Baidu announce deployments —

AUSTIN, Texas, June 20, 2017 (GLOBE NEWSWIRE) -- AMD (NASDAQ:AMD), and a global ecosystem of server partners, today marked a new era in the datacenter with the launch of AMD EPYC™ 7000 series high-performance datacenter processors. AMD was joined by multiple customers and partners at the global launch event in presenting a wide array of systems, performance demonstrations, and customer testimonials. The innovative, record-setting AMD EPYC design, with up to 32 high-performance “Zen” cores and an unparalleled feature set, delivers greater performance than the competition across a full range of integer, floating point, memory bandwidth, and I/O benchmarks and workloads.

A photo accompanying this announcement is available at https://www.globenewswire.com/NewsRoom/AttachmentNg/afe6e963-d514-4e54-85cb-e652641f2fae

“With our EPYC family of processors, AMD is delivering industry-leading performance on critical enterprise, cloud, and machine intelligence workloads,” said Lisa Su, president and

CEO, AMD. “EPYC processors offer uncompromising performance for single-socket systems while scaling dual-socket server performance to new heights, outperforming the competition at every price point. We are proud to bring choice and innovation back to the datacenter with the strong support of our global ecosystem partners.”

The world’s largest server manufacturers introduced products based on AMD EPYC 7000-series processors at today’s launch, including HPE, Dell, Asus, Gigabyte, Inventec, Lenovo, Sugon, Supermicro, Tyan, and Wistron. Primary hypervisor and server operating system providers Microsoft, Red Hat, and VMware showcased optimized support for EPYC, while key server hardware ecosystem partners Mellanox, Samsung Electronics, and Xilinx were also featured in EPYC-optimized platforms.

Leading Server OEM Platforms

“The EPYC processor represents a paradigm shift in computing and will usher in a new era for the IT ecosystem,” said Antonio Neri, EVP and general manager Enterprise Group, HPE. “Starting with the Cloudline CL3150 and expanding into other product lines later this year, the arrival of EPYC in HPE systems will be welcomed by customers who are eager to deploy the performance and innovation EPYC delivers.”

“As an industry leader, we are committed to driving IT transformation for our customers,” said Ashley Gorakhpurwalla, president, server solutions division at Dell EMC, “Our next generation of PowerEdge servers are the bedrock of the modern data center that are designed to maximize business scalability and intelligent automation with integrated security. The combination of PowerEdge and the AMD EPYC performance and security capabilities will create unique compute solutions for our customers to accelerate workloads and protect their business.”

Cloud Datacenter and Enterprise Customers

Datacenter and cloud service providers also welcomed EPYC to the market today. Members of the “Super 7” datacenter services providers, including Baidu and Microsoft Azure, as well as 1&1, Bloomberg, Dropbox and LexisNexis, all voiced their support at launch.

“As the world’s largest Chinese language search engine and leading AI-Tech company, Baidu prides itself on simplifying a complex world through technology,” said By Dr. Zhang Ya Qin, president of Baidu. “The AMD EPYC processor powered one-socket server can significantly increase our datacenter computing efficiency, reduce TCO and lower energy consumption. We will start deploying with the launch of AMD EPYC and I look forward to our cooperation leading to scaled EPYC adoption this year, and ongoing innovations.”

“We’ve worked to make Microsoft Azure a powerful enterprise grade cloud platform, that helps guide the success of our customers, no matter their size or geography,” said Girish Bablani, corporate vice president, Azure Compute, Microsoft Corp. “To power Azure, we require the most cutting-edge infrastructure and the latest advances in silicon which is why we intend to be the first global cloud provider to deliver AMD EPYC, and its combination of high performance and value, to customers.

Record-Setting EPYC Performance

The excitement around EPYC is driven by multiple record-setting server benchmarks achieved by EPYC-powered one-socket and two-socket systems.

AMD EPYC processors set several performance records, including:

- Two-Socket Server
  - AMD EPYC 7601-based system scored 2360 on SPECint®_rate2006, higher than any other two-socket system score[1]
- One-Socket Server
  - AMD EPYC™ 7601-based system scored 1200 on SPECint®_rate2006, higher than any other mainstream one-socket x86-based system score[2]
  - AMD EPYC 7601-based system scored 943 on SPECfp®_rate2006, higher than any other one-socket system score[3]

All EPYC processors combine innovative security features, enterprise class reliability, and support a full feature-set. An AMD EPYC™ 7601 CPU-based one-socket system shifts expectations for single socket server performance, helping lower total-cost-of-ownership (TCO), providing up to 20% CapEx savings compared to the Intel Xeon E5-2660 v4-based two-socket system[4]. At every targeted price point for two-socket processors, EPYC outperforms the competition, with up to 70% more performance in the eight hundred dollar price band and up to 47% more performance at the high-end of the market of four thousand dollars or more[5].

EPYC Product Overview

- A highly scalable System on Chip (SoC) design ranging from 8-core to 32-core, supporting two high-performance threads per core
- Industry-leading memory bandwidth across the line-up, with 8 channels of memory on every EPYC device. In a two-socket server, support for up to 32 DIMMS of DDR4 on 16 memory channels, delivering up to 4 terabytes of total memory capacity
- Unprecedented support for integrated, high-speed I/O with 128 lanes of PCIe® 3 on every product
- A highly-optimized cache structure for high-performance, energy efficient compute
- AMD Infinity Fabric coherent interconnect linking EPYC CPUs in a two-socket system
- Dedicated security hardware

EPYC Product Lineup

Model	Core / Thread	Base Freq.	Max Boost	TDP
EPYC™ 7601	32 / 64	2.2 GHz	3.2 GHz	180W
EPYC™ 7551P	32 / 64	2.0 GHz	3.0 GHz	180W
EPYC™ 7501	32 / 64	2.0 GHz	3.0 GHz	155/170W
EPYC™ 7451	24 / 48	2.3 GHz	3.2 GHz	180W
EPYC™ 7401P	24 / 48	2.0 GHz	3.0 GHz	155/170W
EPYC™ 7351P	16 / 32	2.4 GHz	2.9 GHz	155/170W
EPYC™ 7301	16 / 32	2.2 GHz	2.7 GHz	155/170W
EPYC™ 7281	16 / 32	2.1 GHz	2.7 GHz	155/170W
EPYC™ 7251	8 / 16	2.1 GHz	2.9 GHz	120W

Additional Resources

- EPYC on AMD.com
- Learn more about the “Zen” x86 core

- Follow AMD datacenter developments on Twitter @AMDServer

Cloud Service Provider Support

Bloomberg

“At Bloomberg, we handle the flow of information for professionals in the capital markets. We look forward to AMD’s leadership in the open standards communities, such as OCP, NVMe, GenZ, and CCIX, to help accelerate the industry-wide adoption of these innovative data center, storage, and interconnect solutions,” said Justin Erenkrantz, head of compute architecture for Bloomberg, the global finance, media and tech company based in New York City. “With higher density and lower latency NVMe storage a primary feature delivered by the AMD EPYC processor, we fully expect to realize the next level of performance and cost efficiency.”

Dropbox

“Dropbox customers expect fast, reliable access to the content they ask us to manage for them and EPYC delivers on those requirements. We have worked closely with AMD during our evaluation of EPYC in our environment and see significant potential in lowering total-cost-of-ownership while improving performance in single-socket designs," said Akhil Gupta, vice president of infrastructure at Dropbox. "Our evaluation systems take advantage of the industry-leading 128 lanes of PCIe on EPYC for storage performance and capacity. Dropbox is exploring deployment options for EPYC later this year, and I believe the future looks bright for the relationship with AMD and EPYC.”

LexisNexis

At LexisNexis® Risk Solutions, we believe in the power of data and advanced analytics for better risk management. As a trusted data analytics provider for organizations seeking actionable insights to manage risks and improve results while upholding the highest standards for security and privacy,” said Flavio Villanustre, vice president, Technology, LexisNexis Risk Solutions, RELX Group. “LexisNexis processes more than 90 million transactions per hour with HPCC Systems®, a proven, open source solution for Big Data. LexisNexis Risk Solutions and AMD have teamed up to optimize the HPCC Systems platform to take advantage of the benefits of thread density, core performance, memory bandwidth and the industry leading 128 lanes of PCIe per socket of the AMD EPYC processor.”

OEM / ODM Support

ASUS

“We recognized early on the significant performance and scalability potential of EPYC for a number of ASUS platforms spanning HPC and virtualization workloads,” said Robert Chin, head of ASUS Server business unit. “As a longtime AMD technology partner, we are thrilled to design EPYC-based products that will transform the datacenter experience and TCO for our customers.”

Gigabyte Technology

"GIGABYTE Technology is committed to pushing design boundaries in the enterprise server market, and with the AMD EPYC CPU we can take the customer experience to the next level

with a single socket solution," said Daniel Hou, vice president, Research & Development, GIGABYTE Technology. "By packing increased performance, memory bandwidth and I/O into a smaller footprint, EPYC will enable us to expand our portfolio and address channel partners and system integrators in new target markets."

Inventec

"Inventec is dedicated to driving innovation in a number of industries by combining AMD CPU and GPU technologies on our platforms, and AMD is a key technology partner for Inventec in the cloud datacenter market," said Jack Tsai, general manager of Inventec EBG. "By integrating the new EPYC CPU into our server portfolio, we can provide a more competitive, scalable and higher performance solution to our worldwide datacenter customers."

Lenovo

"The AMD EPYC processors present unique opportunities for our customers to lower Total Cost of Ownership via an unprecedented balance of cores, memory bandwidth, and I/O. We are excited to collaborate with AMD and several global Hyperscale customers to develop and deploy single socket and dual socket EPYC-based servers," said Paul Ju, vice president and general manager, Lenovo Global Hyperscale Business.

Supermicro

"Supermicro's new generation of server solutions supporting AMD EPYC processors will unlock many opportunities for datacenter customers to leverage these innovative platforms," said Don Clegg, vice president of Marketing and Business Development at Supermicro. "AMD EPYC processors with more cores, more memory bandwidth, and more I/O integrate effortlessly with our Supermicro application-optimized platforms to provide leadership performance per-watt and per-dollar to optimize data center TCO. We are delighted to embrace this opportunity to strengthen and grow our mutually productive technology partnership with AMD."

Tyan

"Tyan has a long history of supporting AMD, and we are excited about the impact the company's return to the datacenter market will have on our customers," said Danny Hsu, vice president of MiTAC Computing Technology Corporation's TYAN Business Unit. "We see major promise for storage and HPC platforms with the EPYC CPU, as well as new possibilities for combined GPU solutions, enabling a wide array of new applications for customers around the globe."

Wistron

"Wistron is glad to work with AMD to provide the most cost-effective all-flash array storage solutions for businesses competing in a constantly changing technology landscape," said Peter Tung, chief operation officer of Enterprise Business Group, Wistron. "The value proposition for AMD's EPYC CPU, particularly in non-volatile memory storage applications, is a major differentiator, and enables datacenter and enterprise customers to achieve high IOPS and throughput storage solutions."

Hardware Partner Support

Mellanox

“In a data-centric world, we need to be able to analyze growing amounts of data and to be able to find data insights in real time. The combination of the unmatched data throughput and capacity of EPYC and the intelligent interconnect solutions from Mellanox will enable our customers and partners to maximize their application performance and overall data center return on investment.” said Michael Kagan, chief technology officer at Mellanox Technologies. “We are happy to be the preferred interconnect solution provider for the AMD EPYC platforms and look forward to continuing to collaborate with AMD and the OEM partners to enable world leading data center platforms.”

Samsung Electronics

"Samsung, in continuing our ongoing collaboration with AMD, has been working to deliver new leading-edge memory and flash storage solutions that will be enhanced by EPYC," said Jim Elliott, corporate vice president, Samsung Semiconductor, Inc. "The industry-leading memory bandwidth and the outstanding I/O capacity delivered by EPYC enable Samsung and AMD to collectively offer an exceptionally high level of performance and efficiency to data center customers. Samsung solutions combined with the power of EPYC are planned for later this year, offering an advanced platform for in-memory database and analytics, High Performance Computing workloads, and more."

Xilinx

“The launch of the AMD EPYC processor signifies an important milestone in the industry,” said Victor Peng, chief operating officer at Xilinx. “Together with Xilinx’s All Programmable devices, the EPYC platform provides outstanding performance when accelerating data center applications. We are also delighted to be working with AMD in furthering open data center standards, such as the CCIX interconnect, to provide the necessary heterogeneous computing solutions for next generation workloads.”

About AMD

For more than 45 years AMD has driven innovation in high-performance computing, graphics and visualization technologies — the building blocks for gaming, immersive platforms, and the datacenter. 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, and Facebook and Twitter pages.

1. Score based on AMD internal testing of 2 x EPYC 7601 CPU in, Supermicro AS-1123US-TR4, Ubuntu 16.04, x86 Open64 v4.5.2.1 Compiler Suite, 512 GB (16 x 32 GB 2Rx4 PC4-2666) memory, 1 x 500 GB SSD. As of May 29, 2017. See www.spec.org for more information. NAP-11

2. Score based on AMD internal testing of 1 x EPYC 7601 CPU in HPE Cloudline CL3150, Ubuntu 16.04, x86 Open64 v4.5.2.1 Compiler Suite, 256 GB (8 x 32GB 2Rx4 PC4-2666) memory, 1 x 500 GB SSD. Comparison excludes Intel Xeon Phi accelerators. As of May 29, 2017. See www.spec.org for more information. NAP-09

3. Score based on AMD internal testing of 1 x EPYC 7601 CPU in HPE Cloudline CL3150, Ubuntu 16.04, x86 Open64 v4.5.2.1 Compiler Suite, 256 GB (8 x 32GB 2Rx4 PC4-2666) memory, 1 x 500 GB SSD. As of May 29, 2017. See www.spec.org for more information. NAP-10

4. Based on cost of 1 x EPYC 7601-based (1 x $2100 AMD 1k price) system with 256 GB (8 x 32GB 2Rx4 PC4-2666) memory (8 x $300), 1 x 500 GB SSD ($165), and chassis costs ($500) for a total system cost of $5,165; compared to 2 x E5-2660 v4-based(2 x $1445) system with 256 GB (8 x 32GB 2Rx4 PC4-2666 running at 2133) memory (8 x $300), 1 x 500 GB SSD ($165), and chassis costs ($500), plus Intel C612 chipset ($54 per ark.intel.com), and additional socket (est. $35), Intel Thermal Solution STS200P - processor heatsink ($34.99 per CDW), 12 FCI/Amphenol 10124677-0001001LF DIMM sockets ($5.18 each per mouser.com), 5 x VRs (est. $3 each), power supply (est. $51), and board, cooling and misc. components (est. $20), for a total system cost of $6,228. NAP-08

5. Based on estimated SPECint®_rate_base2006 scores. 2P Intel Xeon E5 scores other than E5-2699Av4 were derived by AMD from the following ICC compiler-based test results published at www.spec.org, multiplied by 0.575 to convert from the ICC compiler to the GCC-02 v6.1 compiler used for EPYC testing: E5-2698v4=1620, E5-2695v4=1440, E5-2680v4=1270, E5-2650v4=1000, E5-2640v4=865, E5-2630v4=814, and E5-2620v4=683. The following EPYC 2P scores are projections made by AMD labs (measured test data for these pre-production products is not currently available): EPYC 7301=845, EPYC 7281=760, and EPYC 7251=485. All other scores based on AMD internal testing. 2P E5-2699A v4 in Intel Server System R1208WT2GSR scored 943 on 6/5/2017, with Ubuntu 16.04, GCC-02 v6.3, 512 GB (16 x 32GB 2Rx4 PC4-2666 running at 2133), 1 x 500GB SSD. 2P EPYC 7601 in Supermicro AS-1123US-TR4 scored 1390, with Ubuntu 16.04, GCC-02 v6.3, 512 GB (16 x 32GB 2Rx4 PC4-2666 running at 2400), 1 x 500GB SSD. The following EPYC 2P scores tested using AMD's "Ethanol" reference system with Ubuntu 16.04, GCC-02 v6.1, 512 GB (16x32GB 2Rx5 PC4-2667 running at 2400), 1 x 500GB SSD: EPYC 7551=1345, EPYC 7451=1218, EPYC 7401=1120, EPYC 7351=939.

Pricing ranges based on Intel recommended customer pricing per ark.intel.com, and AMD 1Ku pricing.

CAUTIONARY STATEMENT:

This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) including the features, functionality, availability, timing, customer and partner deployment, and expected benefits of AMD EPYC products and AMD's multi-year commitment to delivering multiple generations of high-performance server processors, 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," "intends," "believes," "expects," "may," "will," "should," "seeks," "intends," "plans," "pro forma," "estimates," "anticipates," or the negative of these words and phrases, other variations of these words and phrases or comparable terminology. Investors are cautioned

that the forward-looking statements in this document are based on current beliefs, assumptions and expectations, speak only as of the date of this document 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 may limit AMD's ability to compete effectively; AMD has a wafer supply agreement with GF with obligations to purchase all of its microprocessor and APU product requirements, and a certain portion of its GPU product requirements, from GLOBALFOUNDRIES Inc. (GF) with limited exceptions. If GF is not able to satisfy AMD's manufacturing requirements, its business could be adversely impacted; AMD relies on third parties to manufacture its products, and if they are unable to do so on a timely basis in sufficient quantities and using competitive technologies, AMD's business could be materially adversely affected; failure to achieve expected manufacturing yields for AMD's products could negatively impact its financial results; the success of AMD's business is dependent upon its ability to introduce products on a timely basis with features and performance levels that provide value to its customers while supporting and coinciding with significant industry transitions; if AMD cannot generate sufficient revenue and operating cash flow or obtain external financing, it may face a cash shortfall and be unable to make all of its planned investments in research and development or other strategic investments; the loss of a significant customer may have a material adverse effect on AMD; AMD's receipt of revenue from its semi-custom SoC products is dependent upon its technology being designed into third-party products and the success of those products; global economic uncertainty may adversely impact AMD's business and operating results; the markets in which AMD's products are sold are highly competitive; AMD may not be able to generate sufficient cash to service its debt obligations or meet its working capital requirements; AMD has a large amount of indebtedness which could adversely affect its financial position and prevent it from implementing its strategy or fulfilling its contractual obligations; the agreements governing AMD's notes and the Secured Revolving Line of Credit impose restrictions on AMD that may adversely affect its ability to operate its business; AMD's issuance to West Coast Hitech L.P. (WCH) of warrants to purchase 75 million shares of its common stock, if and when exercised, will dilute the ownership interests of its existing stockholders, and the conversion of the 2.125% Convertible Senior Notes due 2026 may dilute the ownership interest of its existing stockholders, or may otherwise depress the price of its common stock; uncertainties involving the ordering and shipment of AMD's products could materially adversely affect it; the demand for AMD's products depends in part on the market conditions in the industries into which they are sold. Fluctuations in demand for AMD's products or a market decline in any of these industries could have a material adverse effect on its results of operations; AMD's ability to design and introduce new products in a timely manner is dependent upon third-party intellectual property; AMD depends on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components to support its business; if AMD loses Microsoft Corporation's support for its products or other software vendors do not design and develop software to run on AMD's products, its ability to sell its products could be materially adversely affected; and AMD's reliance on third-party distributors and AIB partners subjects it to certain risks. 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 Quarterly Report on Form 10-Q for the quarter ended April 1, 2017.

PR Contact:
Gary Silcott
+1 (512) 602-0889
Gary.Silcott@amd.com

Investor Contact:
Laura Graves
laura.graves@amd.com
+1 (512) 408-749-9467

Source: Advanced Micro Devices