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AMD Redefines the Enthusiast Gaming Experience with Radeon™ RX Vega and Radeon™ Packs

The world's most anticipated gaming card, Radeon™ RX Vega, headlines new Radeon™ Packs, delivering everything you need for the best PC gaming experiences

LOS ANGELES, July 30, 2017 (GLOBE NEWSWIRE) -- SIGGRAPH 2017 -- AMD (NASDAQ:AMD) today formally launched the Radeon™ RX Vega family of GPUs, engineered to be the cornerstone of the world's most advanced and exciting PC gaming platforms. Designed with forward-looking technologies that punch well above their weight, Radeon RX Vega graphics cards mark AMD's return to the enthusiast-class gaming segment and a continuation of the company's calculated strategy to democratize leading technologies, giving more gamers access than ever before.

There are three variants of Radeon RX Vega: Radeon RX Vega ^{64} Liquid Cooled Edition, engineered with 64 compute units[1] to be the most powerful Radeon ever built[2]; the Radeon RX Vega ^{64} with air cooling, and the Radeon RX Vega ^{56}, available starting at just $399 USD SEP.

For a limited time in select regions, AMD and its industry partners are offering Radeon RX Vega purchasers an unprecedented assembly of gamer "must-haves" in new Radeon™ Packs, including deep discounts on select Ryzen™ multi-threaded CPUs and motherboards combos as well as select Samsung displays with Radeon™ FreeSync displays, and two extraordinary AAA game titles – all the ingredients necessary for the best possible PC gaming experience in one of the biggest industry collaborations ever seen.

"The enthusiast gaming experience is defined by high resolutions and a tear-free, buttery smooth 60 frames per second, something that only approximately 600,000 gamers are capable of enjoying today. But there are 4 million more gamers who aspire to enjoy that same enthusiast gaming experience without breaking the bank, and with Radeon RX Vega graphics cards we're working to give them that.[3] The combination of a Radeon RX Vega graphics card, a beautiful FreeSync display, and a high-performance Ryzen CPU and motherboard is everything a gamer needs to enjoy the best possible gaming experience, and with our Radeon Packs, we're delivering all three at a tremendous value. The groundbreaking new features in the 'Vega' architecture, including the High Bandwith Cache Controller, Rapid Packed Math, Next-Generation Compute Units, and Refined Geometry Engine, will ensure that gamers get even more out of their investments as new games take full advantage of them in the weeks and months to come," said Raja Koduri, senior vice president and chief architect, Radeon Technologies Group, AMD.

Radeon RX Vega: The most advanced consumer graphics cards in the world

Radeon RX Vega graphics cards are built on the “Vega” GPU architecture, a direct response to the evolving complexity and visual demands of today’s games. To meet these needs the “Vega” GPU architecture puts pioneering graphics technologies previously reserved for high-end graphics products into the hands of enthusiast gamers everywhere. Bleeding-edge capabilities like Rapid Packed Math, the High Bandwidth Cache Controller and new Geometry and Pixel Engines will help push the performance envelope while gaming in low-level APIs like DirectX® 12 and Vulkan®, giving developers more flexibility in designing the most intricate and beautiful virtual worlds in today’s and tomorrow’s games.

- *Architected for better enthusiast-class gaming* – The Radeon RX Vega represents the most sophisticated GPU architecture ever designed for enthusiast-class gaming. It features next-gen compute units enabling native processing of multiple data-type operations in each clock cycle, and supporting variable data types making for a versatile architecture across workloads, an enhanced geometry engine enabling incredible efficiency in processing complex geometry while delivering more than 200% of the throughput-per-clock over previous Radeon GPU architectures, an optimized pixel engine that improves performance through a “fetch once, shade once” approach, and the world’s most advanced GPU memory architecture consisting of a High Bandwidth Cache composed of 8GB of leading-edge HBM2 memory, doubling the bandwidth-per-pin over the previous generation HBM technology, and delivering 60% more memory bandwidth over GDDR5. Together these advances result in the Radeon RX Vega’s phenomenal computational muscle: up to 13.7 TFLOPS of peak performance to power through even the most demanding games and VR applications.
- *Exceptional premium design* – Radeon RX Vega gaming cards have been impeccably designed with state-of-the-art, premium styling. Select models feature a satin-brushed aluminum shroud, an anodized aluminum backplate, customizable GPU tach meter and iconic LED illumination, and controls for dual vBIOS. Air-cooled versions boast the latest isothermic vapor chamber for maximum heat displacement while the liquid-cooled version features a next-generation cooling design incorporating a high-efficiency pump, zero-bend radius tubing and a Nidec Gentle Typhoon fan for quiet operation.
- *Leading display technologies* – PC gamers expect variable refresh rate to be a standard feature for monitors, and they don’t expect to pay an extra ‘feature tax’ to get it. Radeon RX Vega graphics cards support Radeon™ FreeSync technology, a true leap forward for PC gaming enabling smooth, vibrant HDR gaming[4], 10-bit display support and low-framerate compensation. There are more than 200 FreeSync displays available today, almost seven times more than costlier competing technology. Radeon RX Vega graphics cards support HDMI® 4K60 and DisplayPort™ 1.4[5], enabling high-resolution and high-refresh displays powering experiences such as Radeon™ FreeSync with high-refresh, Ultra HD, ultrawide, and single-cable 5K resolutions.
- *Unmatched capabilities and control with Radeon™ Software* – Radeon Software compliments the sophisticated hardware of the Radeon RX Vega graphics card, enabling the ultimate in performance, features and stability to ensure an exceptional out-of-box experience that will keep getting better. New Radeon Software features launched last week also benefit Radeon RX Vega users. Radeon™ WattMan now enables memory underclocking for more engine headroom, fine-grained power state controls for increased performance or power savings, and auto-overclock and auto-power save features that allow WattMan to automatically adjust GPU power states to your preference.[6] The best capture, stream and sharing software in Radeon™ ReLive is now even better with options for higher bitrate recording at 100 mbps, camera transparency for increased HUD visibility, refined notifications and enhanced audio

controls. And the AMD LiquidVR™ 360 plugin for VR Video Playback is the first GPU-accelerated end-to-end solution for HEVC 4K x 4K VR video playback[7]. Designed for 360 stereoscopic videos, the plugin supports ambisonic audio and is accelerated by the GPU to enable 65% higher frame rates[8], no dropped frames[9], and improve power consumption by 15% during playback.[10]

Radeon Packs: Everything you need for the best experience

A great PC gaming experience comes down to more than just graphics. Serious gamers know that to achieve high resolutions and a buttery smooth 60 frames per second, there are two must-have elements: a beautiful adaptive refresh display for smooth, stutter-free gaming and heightened immersion, a multi-threaded processor to deliver astounding performance on a motherboard that supports these next-generation components. Built around the new Radeon RX Vega graphics cards, Radeon Packs are designed to put all of those technologies at gamers' fingertips, allowing them to make these upgrades much more cost-effectively than were they to buy each component alone to drive silky 60+ frame-per-second 4K gaming in more than 100 popular titles.[11]

Radeon Packs include a $200 discount on the 34" Samsung CF791 curved ultrawide FreeSync monitor, and a $100 discount on select Ryzen™ 7 1800X processor and 370X motherboard combos -- $300 in combined hardware savings. To power the new setup, there are three options for Radeon RX Vega:

- *Radeon Red Pack* – Featuring the Radeon RX Vega [56], an air-cooled card priced at $499 SEP.
- *Radeon Black Pack* – Featuring the Radeon RX Vega [64], an air-cooled card priced at $599 SEP.
- *Radeon Aqua Pack* – Featuring the Radeon RX Vega [64] Liquid Cooled Edition, the most powerful of the Radeon RX Vega graphics cards, priced at $699 SEP.

Along with the Radeon RX Vega graphics card, the discount on the Samsung monitor with Radeon FreeSync and Ryzen CPU+motherboard, each Radeon Pack also includes, in select regions, two highly anticipated games in *Wolfenstein® II: The New Colossus*™ and *Prey*® for free, an estimated $120 value.[12]

For gamers who already have the ideal setup and just want to get their hands on a groundbreaking Radeon RX Vega graphics card, AMD is also offering the Radeon RX Vega [56] on its own, the world's most powerful graphics card under SEP $400, and the Radeon RX Vega [64] air-cooled card priced at SEP $499.

Radeon Packs and Radeon RX Vega graphics cards are expected to be available starting August 14th. For more information on where to buy visit http://radeon.com/RXVega.

Supporting Resources

- See the Radeon RX Vega official launch film here
- Read how the PC gaming ecosystem is behind the new Radeon RX Vega graphics cards on here
- Get all the details on Radeon Packs featuring Radeon RX Vega here
- Become a fan of AMD and Radeon on Facebook

- Follow @Radeon, @AMDRyzen and @AMDGaming on Twitter
- Follow @WeAreRadeon on Instagram

About AMD
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This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) including the features, functionality, availability, timing, pricing and expected benefits of Radeon™ RX Vega and Radeon™ Gaming Packs, 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," "designed," "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.

1. Discrete AMD Radeon™ and FirePro™ GPUs based on the Graphics Core Next architecture consist of multiple discrete execution engines known as a Compute Unit ("CU"). Each CU contains 64 shaders ("Stream Processors") working together. GD-78

2. Radeon RX Vega 64 Liquid Cooled has 13.7 TeraFLOPS of performance while the previous most powerful Radeon graphics card was the Radeon R9 Fury X at 8.6 TeraFLOPS.

3. Based on internal AMD market estimates.

4. HDR content requires that the system be configured with a fully HDR-ready content chain, including: graphics card, monitor/TV, graphics driver and application. Video content must be graded in HDR and viewed with an HDR-ready player. Windowed mode content requires operating system support. GD-96

5. As of June 2017. Product is based on the DisplayPort 1.4 Specification published February 23, 2016, and has passed VESA's compliance testing process (excluding HDR) in June 2017. GD-123

6. Overclocking AMD processors, including without limitation, altering clock frequencies / multipliers or memory timing / voltage, to operate beyond their stock specifications will void any applicable AMD product warranty, even when such overclocking is enabled via AMD hardware and/or software. This may also void warranties offered by the system manufacturer or retailer. Users assume all risks and liabilities that may arise out of overclocking AMD processors, including, without limitation, failure of or damage to hardware, reduced system performance and/or data loss, corruption or vulnerability. GD-106

7. AMD LiquidVR available on Radeon VR Ready Premium Products, which are select Radeon GPUs that meet or exceed the Oculus Rift or HTC Vive recommended specifications for video cards/GPUs. Other hardware (including CPU) and system requirements recommended by Oculus Rift or HTC Vive should also be met in order to operate the applicable HMDs as intended. As VR technology, HMDs and other VR hardware and software evolve and/or become available, these criteria may change without notice. PC/System manufacturers may vary configurations, yielding different VR results/performance. Check with your PC or system manufacturer to confirm VR capabilities. GD-102

8. Testing done by AMD Performance Labs as of July 17, 2017 using Intel i7 5960X CPU (3.0 GHz), 16GB DDR4-2666 Mhz MHz memory with Radeon™ Software Crimson ReLive Edition 17.7.2 and Windows 10 (64bit). PC manufacturers may vary configurations yielding different results. When running the game Alien: Covenant In Utero at 3840x3840 (4K by 4K), the Radeon™ RX 580 (8GB) system with AMD LiquidVR™ 360 SDK ON saw an average of 90 frames per second and the system with AMD LiquidVR™ 360 SDK OFF saw an average of 54.5 frames per second. This results in a 65% increase in frames per second with AMD LiquidVR™ 360 SDK ON. All times an average of 3 test runs. Results are estimates and may vary. Performance may vary based on use of latest drivers. RS-166

9. Testing done by AMD Performance Labs as of July 17, 2017 using Intel i7 5960X CPU (3.0 GHz), 16GB DDR4-2666 Mhz MHz memory with Radeon™ Software Crimson ReLive Edition 17.7.2 and Windows 10 (64bit). PC manufacturers may vary configurations yielding different results. When running the game Alien: Covenant In Utero at 3840x3840 (4K by 4K), the Radeon™ RX 580 (8GB) system with AMD LiquidVR™ 360 SDK ON saw an average of 0 frames dropped and the system with AMD LiquidVR™ 360 SDK OFF saw an average of 179 frames dropped. All times an average of 3 test runs. Results are estimates and may vary. Performance may vary based on use of latest drivers. RS-166

10. Testing done by AMD Performance Labs as of July 15, 2017 using an Intel i7 5960X CPU (3.0 GHz), 16GB DDR4-2666 with Radeon™ Software Crimson ReLive Edition 17.7.2 Mhz and Windows 10 (64bit). PC manufacturers may vary configurations yielding different results. When running the game Alien: Covenant In Utero at 3840x3840 (4K by 4K), the Radeon™ RX 580 (8GB) system with AMD LiquidVR™ 360 SDK ON saw an average of 153W and the system with AMD LiquidVR™ 360 SDK OFF saw an average of 179W. This

results in an 15% decrease in power consumption with AMD LiquidVR™ 360 SDK. All times an average of 3 test runs. Results are estimates and may vary. Performance may vary based on use of latest drivers. RS-163

11. Testing by AMD performance labs, July 10, 2017 on a test system using an Intel Core i7 7700K, 16GB DDR4, Radeon RX Vega 64 air cooled, driver 17.30-170711n. PC manufacturers may vary configurations yielding different results. A wide array (including AAA, Indie, e-sports games) of over 100 games were tested at 3840x2160 resolution at different settings & APIs to average over 60fps. All testing was an average of three test runs. Results may vary based on driver version used. VG-19

12. Games and availability may differ by region. Please check your local etail outlet for more details.

Contact Information
Chris Hook
AMD Communications
512-578-9727
chris.hook@amd.com



Source: Advanced Micro Devices