RADEON VEGA
FRONTIER EDITION

# Radeon™ Vega Frontier Edition

## Built for the Pioneers of the World.

Who are the pioneers? They are the ones who have cured diseases and strengthened our bodies. They work to heal our planet and explore new ones. Harnessing science to fuel creativity, and employing creativity to drive science. They pursue an unwavering path towards their goals. There are no barriers, no compromises. They are the early adopters, the people whose passion is to pursue what is new and different. Their achievements won't be measured in days, weeks or even years. They'll be measured in centuries.

### Empowering Scientists to Explore New Frontiers

The Radeon™ Vega Frontier Edition, combined with our ROCm open software platform, paves the way for pioneers to continue pushing boundaries in fields like AI. Developers can now leverage the power of the "Vega" architecture to do machine learning algorithm development on the Radeon Vega Frontier Edition graphics card before deploying it out to massive servers equipped with Radeon Instinct accelerators.

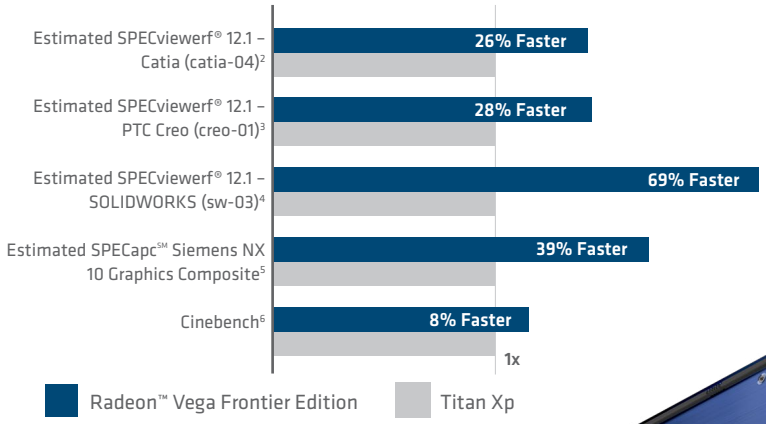
### Harness "Vega" Architecture to Fuel Creativity

From advanced design visualization to photo-realistic rendering and virtual reality (VR), high-end graphics are required to support these increasingly complex workloads. They depend on compute speed and driver reliability more than ever for shorter load and rendering times. Closer partnerships with top software makers helps pair reliability with the raw power offered by the new "Vega" GPU architecture.

### No Barriers. No Compromises.

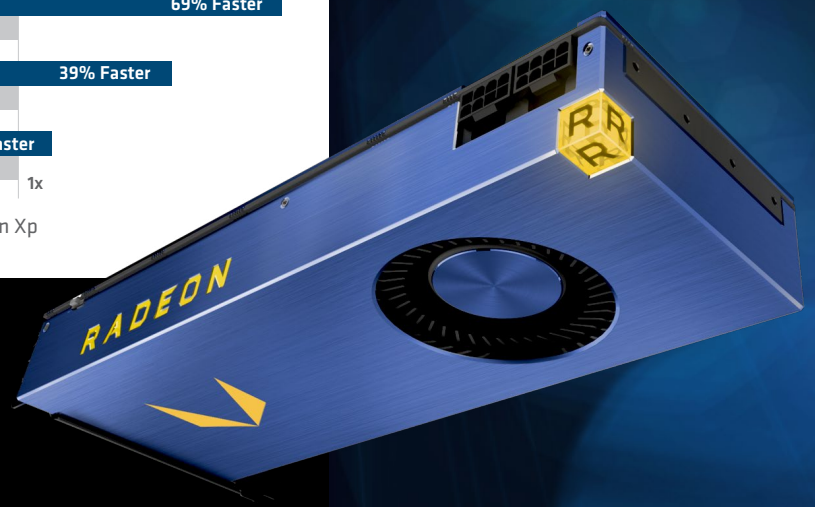
Game development is creatively demanding, time-intensive process and any solution that can streamline game design workflows is an extremely valuable benefit for developers. The Radeon Vega Frontier Edition graphics card will simplify and accelerate game creation by providing a single GPU that is optimized for every stage of their workflow, from asset production, to playtesting, to performance optimization.

### Radeon Vega Frontier Edition vs. Titan Xp*




### Key Specifications:

- GPU Architecture: "Vega"
- Next-Gen Compute Units (nCUs): 64 (4096 Stream Processors)
- Memory Configuration: 16GB High Bandwidth Cache (HBC)
- Memory Bandwidth: 483 GB/s
- Pixel Fillrate: 90 Gpixels/s
- Peak FP32 Compute Performance: 13.1 TFLOPS
- Peak FP16 Compute Performance: 26.2 TFLOPS
- Display Output Connectors: 3x DisplayPort™ 1.4 HBR3/HDR Ready[1], 1x HDMI™ 4K60
- API Support: DirectX® 12.1, OpenGL® 4.5, OpenCL™ 2.0, Vulkan® 1.0
- Form Factor: Dual-slot, full length (10.5") configuration
- Cooling Solution: Air or liquid-cooled versions available




*The Radeon™ Vega Frontier Edition.*
*Empowering a new generation of pioneers*
*to analyze, understand and re-shape our lives.*


| Feature | Benefits |
|---|---|
| NEXT-GEN COMPUTE UNITS | The Next-Gen Compute Units (1nCU = 64 steam processors) provide super-charged pathways for double the processing throughput when using 16-bit data types. This is ideal for image/video processing, ray tracing and artificial intelligence. |
| ENHANCED PIXEL ENGINE | Updated rasterizer technology to improve cache locality and overdraw, enhancing rendering efficiency and leaving more headroom to crank up quality settings while maintaining smooth 3D rendering. |
| REVOLUTIONARY MEMORY ENGINE | The state of the art memory system on Radeon Vega Frontier Edition removes the capacity limitations of traditional GPU memory. Thanks to automatic, fine-grained memory movement controlled by the high bandwidth cache controller, the"Vega" architecture enables creators and designers to work with much larger, more detailed models and assets in real time. |
| EFFICIENT GEOMETRY ENGINE | The new geometry pipe in the "Vega" GPU architecture processes millions of polygons due to its efficient load balancing. The Radeon Vega Frontier Edition offers 2x peak geometry throughput per clock[7] to significantly speed up modelling and design workflows in various rendering engines. Modelling applications will be able to render in real-time heavy 3D models and large scenes. |

## To learn more about Radeon™ Vega Frontier Edition, please visit: **pro.radeon.com/frontier**

"*" Unless otherwise indicated, testing conducted by AMD Performance Labs as of May 12th, 2017 on a test system comprising of Intel E5-1650 v3 @ 3.50 GHz, 16GB DDR4 physical memory, Windows 7 Professional 64-bit, Radeon™ Vega Frontier Edition / NVIDIA Geforce TitanXp, AMD graphics driver 17.20/NVIDIA graphics driver 382.05 and LITEON 512GB SSD. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers.

1. Product is based on the DisplayPort 1.4 Specification published February 23, 2016, and is expected to pass VESA's compliance testing process when available. GD-110
2. Benchmark Application: Estimated SPECViewperf 12.1 catia-04 viewset: Radeon™ Vega Frontier Edition score: 135.78, NVIDIA Geforce TitanXp score: 107.29. Performance Differential: (135.78-107.29)/107.29 = ~26.55% faster performance on Radeon™ Vega Frontier Edition. RPVG-001
3. Benchmark Application: Estimated SPECViewperf 12.1 creo-01 viewset: Radeon™ Vega Frontier Edition score: 83.94, NVIDIA Geforce TitanXp score: 65.20. Performance Differential: (83.94-65.20)/65.20 = ~28.74% faster performance on Radeon™ Vega Frontier Edition. RPVG-002
4. Benchmark Application: Estimated SPECViewperf 12.1 sw-03 viewset: Radeon™ Vega Frontier Edition score: 114.88, NVIDIA Geforce TitanXp score: 67.75. Performance Differential: (114.88-67.75)/67.75 = ~69.56% faster performance on Radeon™ Vega Frontier Edition. RPVG- 003
5. Benchmark Application: Estimated SPECapc Siemens NX 10. Radeon™ Vega Frontier Edition score: 4.08, NVIDIA GeForce Titan Xp score: 2.93. Performance Differential: (4.08-2.93)/2.93 = ~39.25% faster performance on Radeon™ Vega Frontier Edition. RPVG-004
6. Testing conducted by AMD Performance Labs as of May 12th, 2017 on a test system comprising of Intel E5-1650 v3 @ 3.50 GHz, 16GB DDR4 physical memory, Windows 10 Enterprise 64-bit, Radeon™ Vega Frontier Edition / NVIDIA Geforce TitanXp, AMD graphics driver 17.20/ NVIDIA graphics driver 382.05 and Samsung 850 PRO 512G SSD. Benchmark Application: Cinebench. Radeon™ Vega Frontier Edition FPS: 183.28 NVIDIA GeForce Titan Xp FPS: 169.72. Performance Differential: (183.28 -169.72)/169.72 = ~7.99% faster performance on Radeon™ Vega Frontier Edition. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. RPVG-005
7. Data based on AMD Engineering design of Vega. Radeon R9 Fury X has 4 geometry engines and a peak of 4 polygons per clock. Vega is designed to handle up to 11 polygons per clock with 4 geometry engines. This represents an increase of 2.6x. VG-3