



## AMD FirePro Graphics Value Proposition

## THE PROFESSIONAL GRAPHICS MARKET







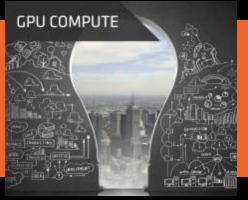




**Traditional Professional Graphics** Markets

New Areas of growth









## AMD FIREPRO™ GRAPHICS LEADERSHIP



RELENTLESS MOMENTUM IN THE PROFESSIONAL GRAPHICS MARKET

Apple Mac Pro

AMD FirePro™ W9100/W8100

Product Leadership































Wolfram Mathematica 9









## AMD FIREPRO™ GRAPHICS: AWARD WINNING PERFORMANCE





**AMD FirePro™ W2100** AMD FirePro™ W4100 AMD FirePro™ W5100 AMD FirePro™ W7100

## AMD FIREPRO™ GRAPHICS: RELIABILITY IS NUMBER ONE



## WHY?

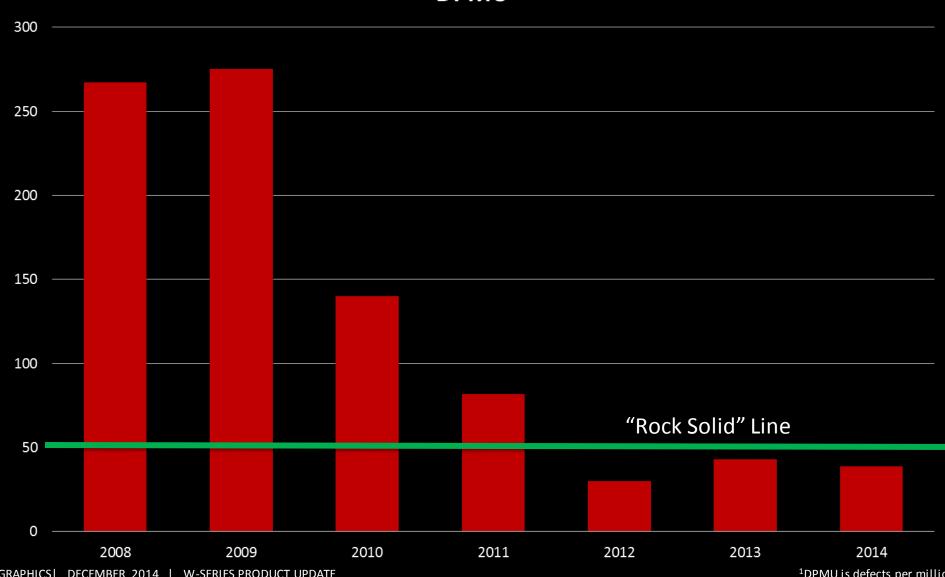
- Your product may depend on it.
- ▶ You job may depend on it.
- Lives may depend on it.



## AMD FIREPRO™ GRAPHICS: "ROCK SOLID" DRIVER







## AMD FIREPRO™ GRAPHICS: STELLAR ISV CERTIFICATION SUCCESS RATE



SIGN OF A ROBUST, STABLE SOLUTION

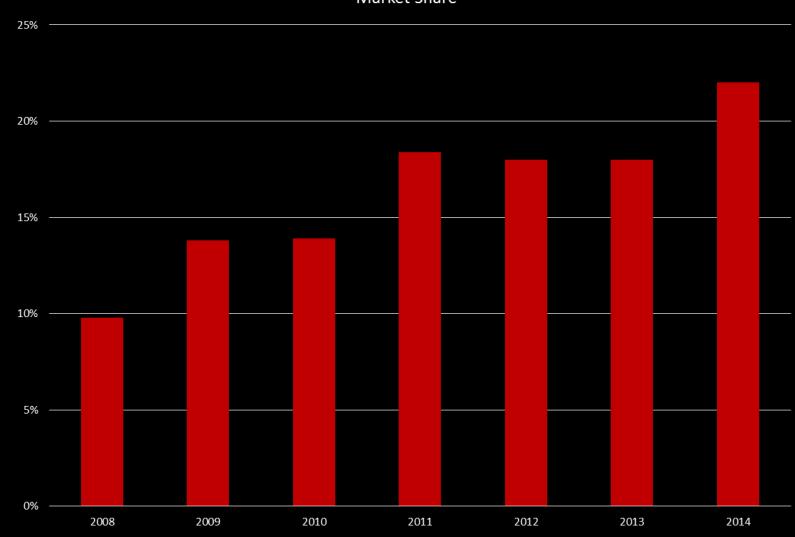


\*For AMD FirePro ™ W5100 graphics. First pass of known applications are applications where AMD has worked with the ISV and has specific test suites used to prepare for certification.

## AMD FIREPRO™ GRAPHICS: MARKET SHARE GROWTH







## WORKSTATION GRAPHICS TOP TO BOTTOM TECHNOLOGY LEADERSHIP



At least 2x more memory

NEXT GEN



GRAPHICS...

Multidisplay 4K leadership

High compute performance

Next gen API support

PCle® 3.0

## THE CORNERSTONE OF VISUAL & HIGH PERFORMANCE COMPUTING



FROM TABLETS & GAME CONSOLES, TO THE MAC PRO, WORKSTATIONS, SERVERS & SUPERCOMPUTERS

Simultaneous Render & Compute

**Energy Efficiency** 

Graphics Core Next

High Performance Compute

## OPENCL™ SUPPORT: 1.2 TODAY, READY FOR 2.0



New features give GPUs more freedom to do the work they are designed to do

## **Shared Virtual Memory**

Enables host and device kernels to directly share complex pointer-based data structures, increasing programming flexibility.

## **Nested Parallelism**

Updated for improved programmability and increased application efficiency.

## **Generic Address Space**

Enables functions to be written without named address spaces which increases flexibility and saves time by eliminating the need for multiple functions to be written.



OpenCL

...Coming Soon



## Product Positioning 4

## REDEFINING WORKSTATION GRAPHICS TOP TO BOTTOM





## AMD FIREPRO™ COMPETITIVE POSITIONING



## AMD FirePro™ W9100

16GB | 2.6 DPFP TFLOPS

VP12: 43.5 | MSRP: \$ 3999

## AMD FirePro™ W8100

8GB | 2.1 DPFP TFLOPS

VP12: 37.6 | MSRP: \$1249

### AMD FirePro™ W7100

8GB | 6x 4K Video Decode

MSRP

VP12: TBA | MSRP: \$799

### AMD FirePro™ W5100

4GB | PCI Express Gen 3

VP12: 22.8 | MSRP: \$399

### AMD FirePro™ W4100

2GB | 6 Displays

VP12: 10.1 | MSRP: \$179

## AMD FirePro™ W2100

2GB | 26W Board Power

VP12: 7.8 | MSRP: \$139

Quadro K6000

12GB | 1.7 DPFP TFLOPS

VP12: 53.4 | MSRP: \$5999

Quadro K5200

8GB | 1.0 DPFP TFLOPS

VP12: 45.2 | MSRP: \$2499

Quadro K4200

8GB | 2x 4K Video Decode

VP12: 35.8 | MSRP: \$1249

Quadro K2200

4GB | PCI Express Gen 2

VP12: 23.3 | MSRP: \$599

Quadro K620

2GB | 4 Displays

VP12: 13.7 | MSRP: \$199

Quadro K420

1GB | 41W Board Power

VP12: 4.9 | MSRP: \$169

## AMD FIREPRO™ COMPETITIVE POSITIONING



## AMD FirePro™ W8100

8GB | 2.1 DPFP TFLOPS

VP12: 37.6 | MSRP: \$1249

## Quadro K4200

8GB | 2x 4K Video Decode

VP12: 35.8 | MSRP: \$1249

### AMD FirePro™ W7100

8GB | 6x 4K Video Decode

VP12: TBA | MSRP: \$799

## Quadro K2200

4GB | PCI Express Gen 2

VP12: 23.3 | MSRP: \$599

### AMD FirePro™ W5100

4GB | PCI Express Gen 3

VP12: 22.8 | MSRP: \$399

## Quadro K620

2GB | 4 Displays

VP12: 13.7 | MSRP: \$199

## AMD FirePro™ W4100

2GB | 6 Displays

VP12: 10.1 | MSRP: \$179

## Quadro K420

1GB | 41W Board Power

VP12:4.9 | MSRP: \$169

### AMD FirePro™ W2100

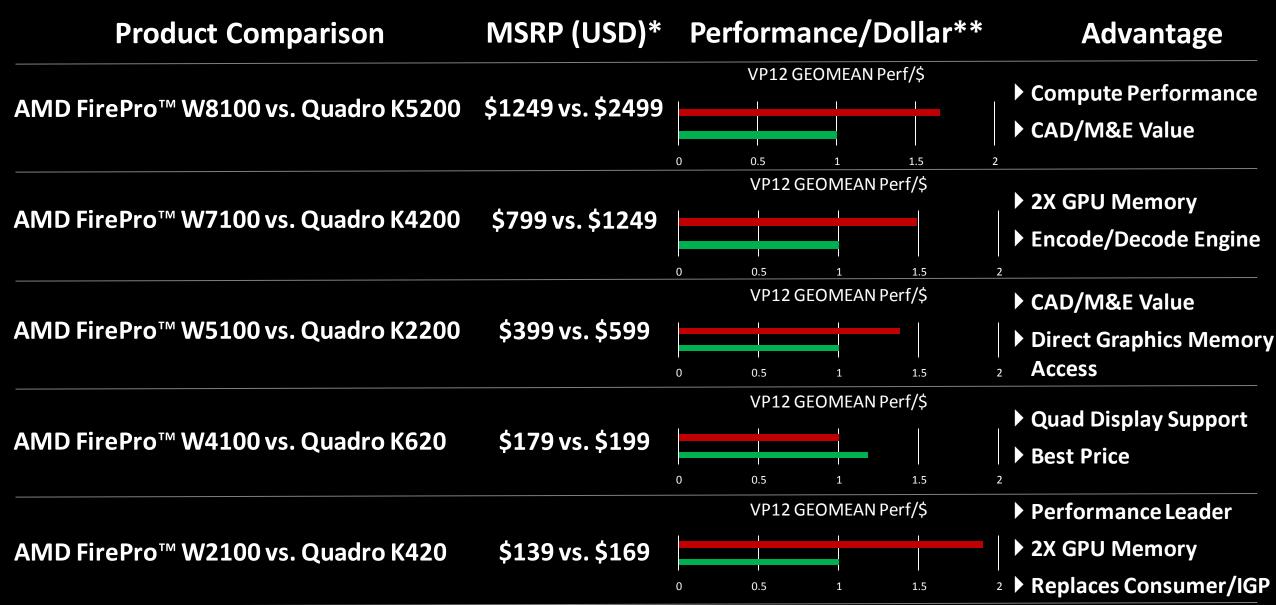
2GB | 26W Board Power

VP12: 7.8 | MSRP: \$139

MSRP

## AMD FIREPRO™ GRAPHICS PRODUCT SUMMARY





<sup>\*</sup>MSRP data collected October 15<sup>th</sup>, 2014.



# AMD FIREPRO\*\* MOST Company of the second sec

**GPU Compute Powerhouse** 

2.6

TFLOPS Peak
Double Precision

**5.2** 

TFLOPS Peak
Single Precision

Up to six

**4K** 

Displays with DisplayPort 1.2

16GB

**GPU Memory** 

Up to

**320** 

GB/s Memory Bandwidth

2816

AMD GCN Stream Processors

## HOW YOU WIN WITH AMD FIREPRO™ W9100 GRAPHICS



## Start building a Supercomputer for

\$3999 WSRP

- Industry leading 16GB GPU memory
- Industry leading double precision floating point performance
- Six display outputs for maximum display flexibility

## **How it Compares**

FirePro™ W9100 VP12: 43.5 \$3999 MSRP

Quadro K6000 VP12: 53.4 \$5999 MSRP Quadro K5200 VP12: 45.2 \$2499 MSRP

Winner! Highest DPFP
Performance and
GPU Memory

High Price, Low DPFP Performance

Compute Performance
Too low

	W9100	K6000	K5200	Advantage
Peak SPFP TFLOPS	5.2	5.2	3.0	FirePro
Peak DPFP TFLOPS	2.6	1.7	1.0	FirePro
GPU Memory	16GB	12GB	8GB	FirePro
PCI Express	3	3	3	1-
Max Displays with DP1.2	6	4	4	FirePro



# AMD FIREPRO\*\* No. 100 Telephone No. 100 Telepho

Flexible Solution for Any Workflow



TFLOPS Peak
Double Precision

TFLOPS Peak
Single Precision

Up to four

**4K** 

Displays with DisplayPort 1.2

8GB

**GPU Memory** 

Up to

320

GB/s Memory Bandwidth

2560

AMD GCN Stream Processors

## HOW YOU WIN WITH AMD FIREPRO™ W8100 GRAPHICS



## Flexible Solution for any Workflow at

\$1249 WSRP

- Great value for CAD & Engineering and Media & Entertainment
- Huge OpenCL compute performance
- 8GB GPU memory for large datasets

## **How it Compares**

FirePro™ W8100 VP12: 37.6 \$1249 MSRP

Winner! Great Value For Any Task Quadro K5200 VP12: 45.2 \$2499 MSRP

High Price, Low DPFP Performance

Quadro K4200 VP12: 35.8 \$1249 MSRP

Compute Performance
Too low

	1				
	W8100	K5200	K4200	Advantage	
SPFP TFLOR	PS 4.2	3.0	2.0	FirePro	
DPFP TFLOR	2.1	1.0	- \	FirePro	
GPU Memo	ry 8GB	8GB	4GB	FirePro	
PCI Expres	ss <b>3</b>	3	2	FirePro	
Max Display with DP1		4	4	FirePro	

MSRP data collected October 15<sup>th</sup>, 2014. See end of "Benchmark" at end of document for SPECviewperf® testing data

THE NEW...

## AMDA

# AMD FIREPRO\*\* 100 AMD FIREPRO\*

Ultimate Engineering and M&E Solution

**12**X

Real-time Transcode Perf Up to

4M

Triangles/s via
GeometryBoost

Up to four

4K

Displays with DisplayPort 1.2

8<sub>GB</sub>

GPU Memory Up to

160

GB/s Memory Bandwidth

1792

AMD GCN Stream Processors

## HOW YOU WIN WITH AMD FIREPRO™ W7100 GRAPHICS



## Ultimate Engineering and M&E Solution at \$799 MSRP

- Similar performance as K4200, unbeatable price
- 2x GPU Memory as competing solutions
- New High Performance Video Encode & Decode Engine

## **How it Compares**

Winner! Great Performance and massive GPU Memory

Quadro K4200 VP12: 35.8 \$1249 MSRP

Price way too high

Quadro K2200 VP12: 23.3 \$599 MSRP

Performance way too low

	W7100	K4200	K2200	Technical Advantage	
Cores	1792	1344	640	FirePro	
Peak Single Precision (TFLOPs)	3.3	2.1	1.3	FirePro	
GPU Memory	8	4	4	FirePro	
PCIe®	3	2	2	FirePro	
Max Displays with DisplayPort 1.2	6	4	4	FirePro	

MSRP data collected October 15<sup>th</sup>, 2014. See end of "Benchmark" at end of document for SPECviewperf® testing data

## AMD FIREPRO™ W7100 VS QUADRO K4200 GRAPHICS MORE MEMORY CAD WORKFLOWS



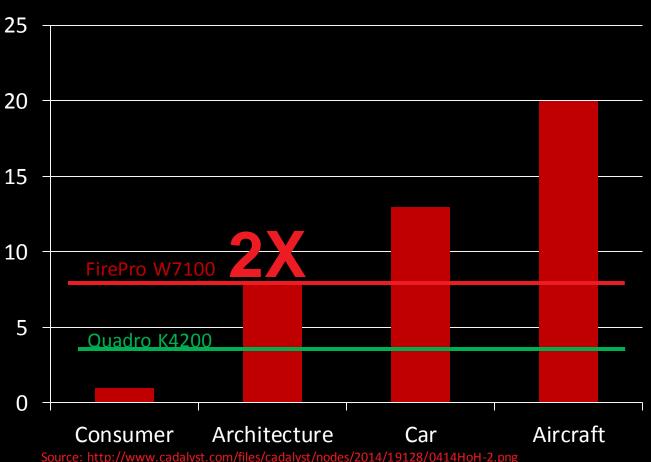


## AMD FIREPRO™ W7100 GRAPHICS WITH 8GB MEMORY



## MORE MEMORY FOR OPTIMIZED CAD WORKFLOWS



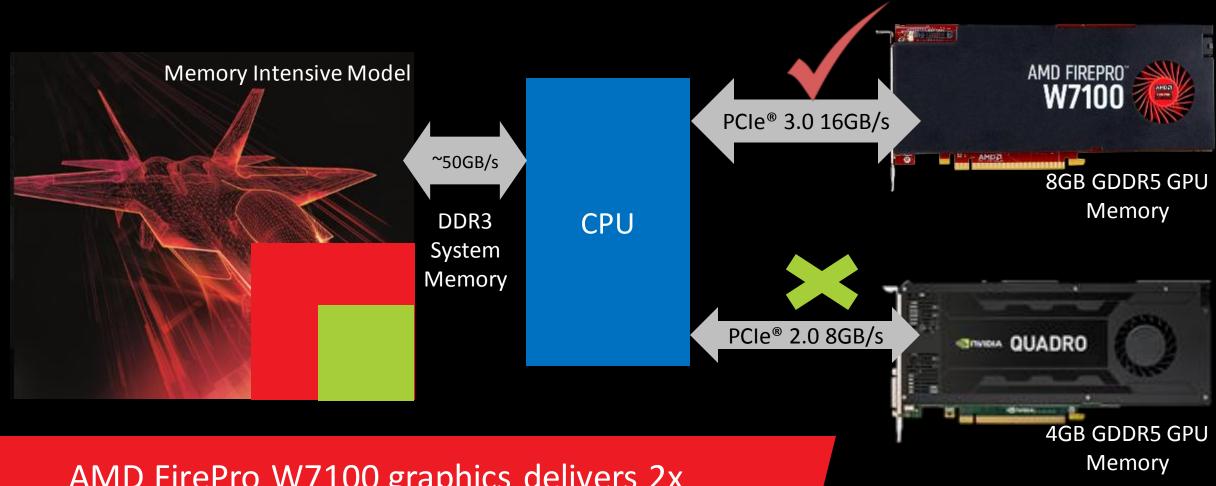


- Features 8GB ultra-fast GDDR5 memory for large dataset support at full performance
  - 2x GPU memory size of Quadro K4200
- Designed for your large datasets, models and assemblies

## AMD FIREPRO™ W7100 GRAPHICS: CLASS LEADING MEMORY PERFORMANCE AMD



PCIe® 3.0 SUPPORT INCREASES CPU TO GPU DATA TRANSFERS



AMD FirePro W7100 graphics delivers 2x memory & 2x host bandwidth vs Nvidia K4200

## AMD FIREPRO™ W7100 GRAPHICS: A MULTIMEDIA POWERHOUSE



ENABLING USERS TO ADVANCE THEIR PROJECTS TO THE NEXT LEVEL

## **▲** HD Multimedia Engines help to boost performance & support for 4K content

Video playback, editing and transcoding

## **Unified Video Decoder**

- Full fix-function decode engine with support for H.264, VC-1, MPEG4, MPEG2 and now MJPEG
- Support for high frame rate 4K content

## **Video Coding Engine**

- Helps to improve H.264 encode performance
- Up to 12x faster than real-time (24FPS) encoding for full HD (1080) video\*
- Support for 4K resolutions

## **Display Engine**

- Supports up to three 4K SST panels at 60Hz
- Two more panels than AMD FirePro™ W7000 graphics





# AMD FIREPRO\*\*

Mid-range powerhouse

**TFLOPS Peak Single Precision**  Up to Triangles/s via GeometryBoost Up to four Displays with DisplayPort 1.2

4GB **GPU** Memory

Up to GB/s Memory Bandwidth

AMD GCN Stream **Processors** 

## HOW YOU WIN WITH AMD FIREPRO™ W5100 GRAPHICS



## The best choice at

- Similar performance as K2200, better price!
- 66% faster than K620 (VP12 Performance)
- Best system-to-GPU and GPU-to-GPU performance with DGMA and PCI Express® 3

## **How it Compares**

FirePro™ W5100 VP12: 22.8 \$399 MSRP

Quadro K2200 VP12: 23.3 \$599 MSRP

Quadro K620 VP12: 13.7 \$199 MSRP

! Sweet spot Price-Performance

Price Too High

Performance Too Low

	W5100	K2200	K620	Technical Advantage
Cores	768	640	384	FirePro
Peak Single Precision (TFLOPS)	1.4	1.3	0.8	FirePro
GPU Memory	4	4	2	FirePro
Memory Bandwidth (GB/s)	96	80	29	FirePro
PCIe <sup>®</sup>	3	2	2	FirePro
Max Displays with DisplayPort 1.2	6	4	4	FirePro



# AMD FIREPRO

In a class of its own

2GB **GPU Memory** 

**Displays with** DP 1.2

Up to four

Watts Max

**GCN Stream Processors** 

Designed for Finance & Medical Imaging

## HOW YOU WIN WITH AMD FIREPRO™ W4100 GRAPHICS



## **Incredible Features** at \$179 USD MSRP

- AMD FirePro W4100 offers an ideal balance between price and features
- Less than half the price vs NVS 510
- More displays than K620
- More technical advantages
- Wide range of certified applications

## **How it Compares**

FirePro™ W4100 VP12: 10.1 \$179 MSRP

**NVS 510** \$399 MSRP Quadro K620 VP12: 13.7 \$199 MSRP

r! Sweet spot **Features** 

Price Too High!

Not Enough Displays

	W4100	NVS 510	K620	Technical Advantage
Cores	512	192	384	FirePro
Memory Bandwidth (GB/s)	64	29	29	FirePro
PCle®	3	2	2	FirePro
Max Displays with DisplayPort 1.2	6	4	4	FirePro

## **ENTRY-LEVEL WORKSTATION USERS**

AMD

MANY CHOICES, BUT ONLY ONE RIGHT SOLUTION





## AMD FIREPRO

Professional Graphics Starts Here



**GPU Memory** 

With DP 1.2

Watts Max Power

2GB 4K 26 320

**GCN Stream Processors** 

Low Profile

Designed for

Finance & Medical Imaging

## HOW YOU WIN WITH AMD FIREPRO™ W2100 GRAPHICS



## The Right Entry **Choice at**

\$139

- 59% faster VP12 vs K420 at lower price
- 2X the GPU memory of the competition
- More technical advantages

## **How it Compares**

FirePro™ W2100 VP12: 7.8 \$139 MSRP

Winner! Excellent Performance and Price

**NVS 315** \$119 MSRP Quadro K420 VP12: 4.9 \$169 MSRP

**Fewer Features** 

Price Too high!

	W2100	NVS 315	K420	Technical Advantage
Cores	320	48	192	FirePro
Peak Single Precision (TFLOPs)	0.403	N/A	0.336	FirePro
PCle <sup>®</sup>	3	2	2	FirePro
Max Displays with DisplayPort 1.2*	2	None	1	FirePro
DisplayPort Outputs	2	None	1	FirePro
GPU Memory (GB)	2	1	1	FirePro

## AMD FIREPRO™ W2100 GRAPHICS



Faster CAD Application Performance\*

## SEEING IS BELIEVING





North America: <a href="http://www.fireprographics.com/experience/us/index.asp">http://www.fireprographics.com/experience/us/index.asp</a>

India: http://experience.amdfireprohub.com/in/

Singapore: <a href="http://experience.amdfireprohub.com/sg/">http://experience.amdfireprohub.com/sg/</a>

Japan: http://experience.amdfireprohub.com/jp/

UK: <a href="http://www.fireprographics.com/experience/uk/index.asp">http://www.fireprographics.com/experience/uk/index.asp</a>

Germany: <a href="http://www.fireprographics.com/experience/de/index.asp">http://www.fireprographics.com/experience/de/index.asp</a>

France: <a href="http://www.fireprographics.com/experience/fr/index.asp">http://www.fireprographics.com/experience/fr/index.asp</a>

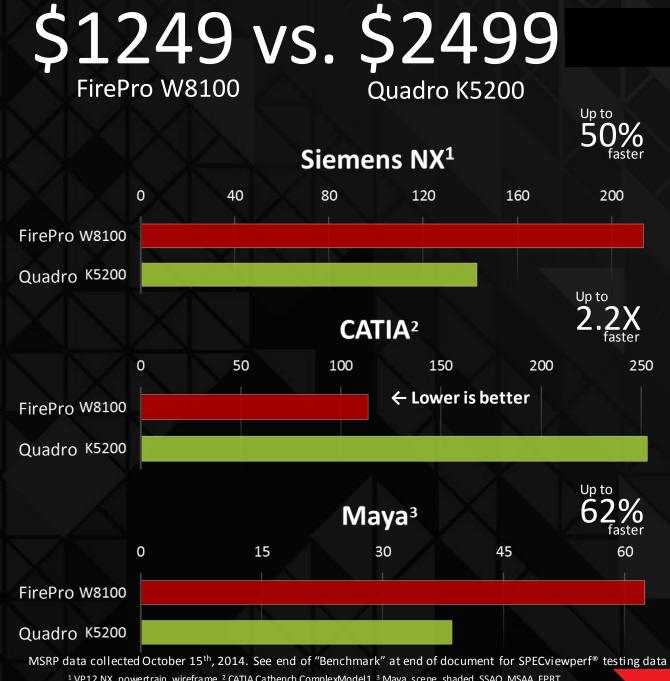


# Benchmark Material 4

# AMD FIREPRO™ W8100 GRAPHICS



Up to 2.2X more performance for professionals at half the price

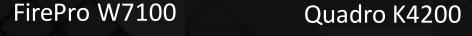


<sup>1</sup> VP12 NX powertrain wireframe, <sup>2</sup> CATIA Catbench ComplexModel 1, <sup>3</sup> Maya scene shaded SSAO MSAA FPRT

# AMD FIREPRO™ W7100 GRAPHICS \$799 vs. \$1249



Outstanding value allows you to increase your productivity



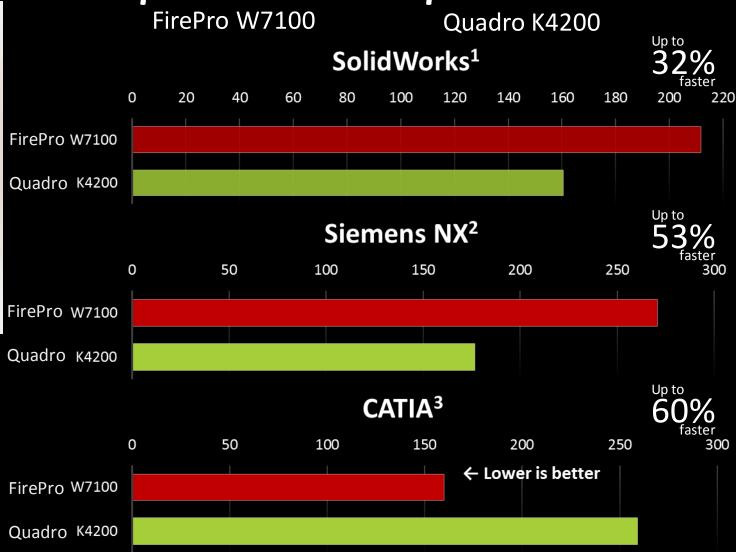
#### **SPECviewperf 12.0.1 GEOMEAN**





# AMD FIREPRO™ W7100 GRAPHICS \$799 vs. \$1249





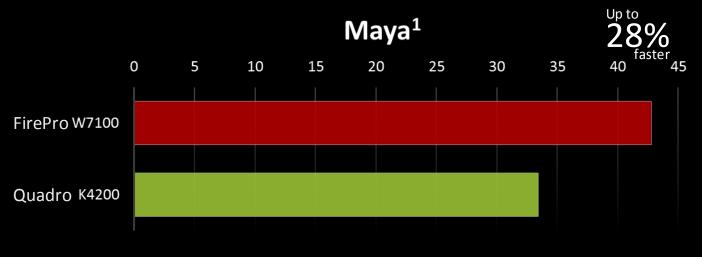
Up to 60% more performance at 2/3 the price for CAD professionals

### AMD FIREPRO™ W7100 GRAPHICS

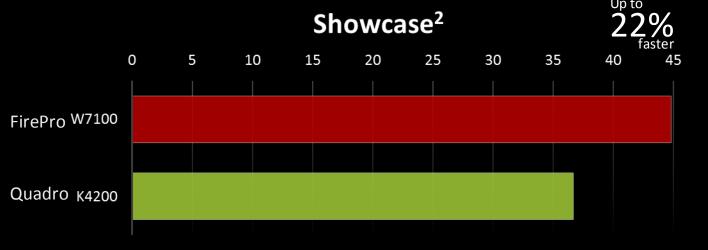


# \$799 vs. \$1249 AMD

FirePro W7100 Quadro K4200



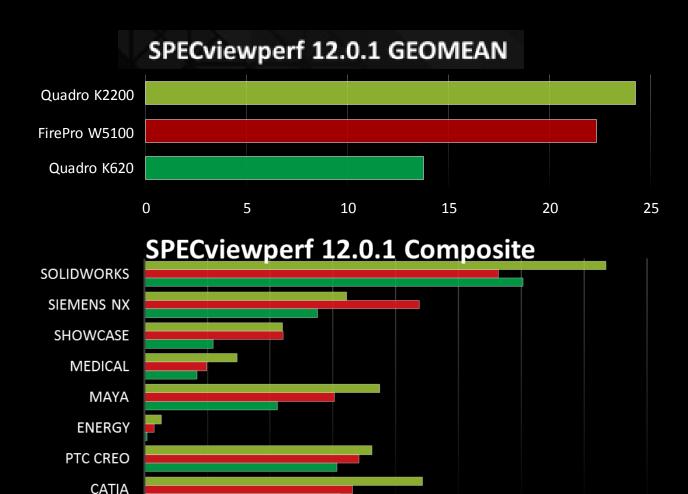
Up to 28% more performance at 2/3 the price for M&E professionals







Enjoy comparable performance at a compelling price point



FirePro W5100

Quadro K620

Quadro K2200

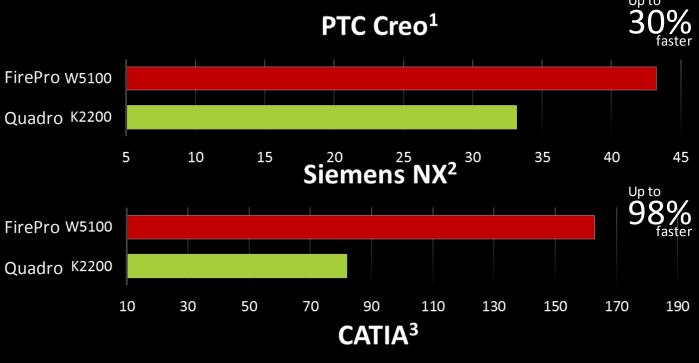
10

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20







Up to 2X more performance at 2/3 the price for CAD professionals



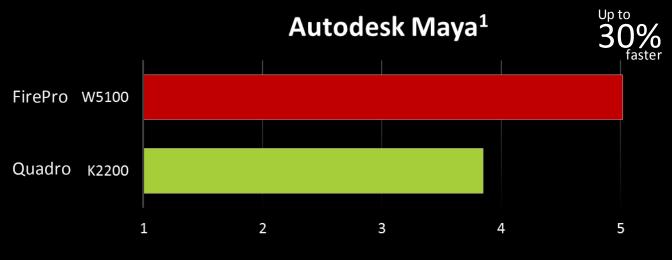
### AMD FIREPRO™ W5100 GRAPHICS



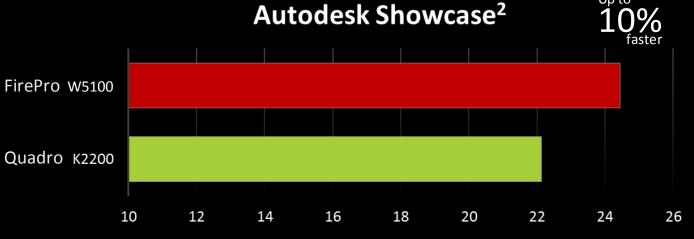




Quadro K2200



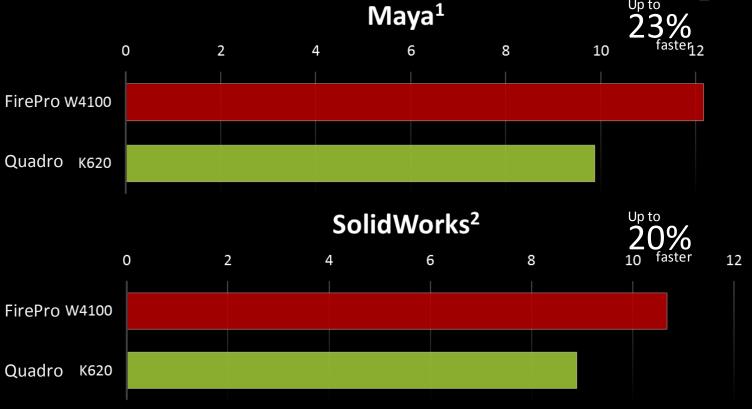
Up to 30% more performance at 2/3 the price for M&E professionals



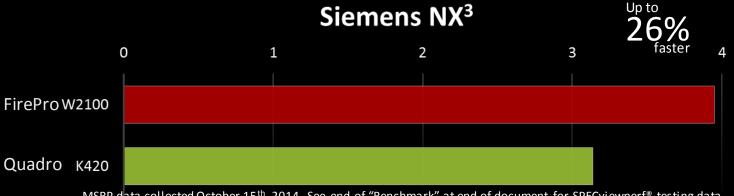
MSRP data collected October 15th, 2014. See end of "Benchmark" at end of document for SPECviewperf® testing data

# AMD FIREPRO™ W4100 GRAPHICS





Up to 26% more performance for professional users



MSRP data collected October 15<sup>th</sup>, 2014. See end of "Benchmark" at end of document for SPECviewperf® testing data

# AMD FIREPRO™ W2100 GRAPHICS \$139 vs. \$169

FirePro W2100

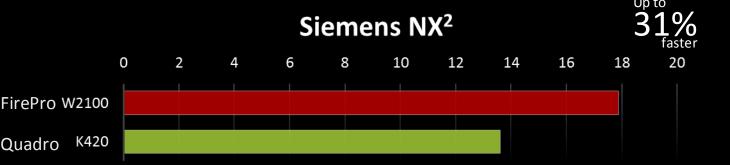
Quadro

Quadro K420

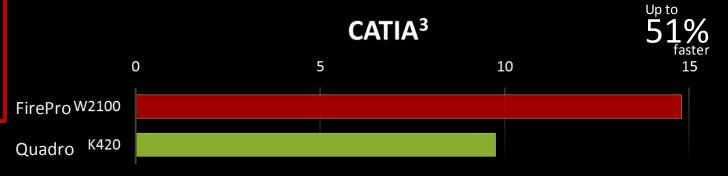
Up to







Entry leader with up to 51% more performance for CAD professionals



# AMD FIREPRO™ W2100 GRAPHICS \$139 vs. \$169



FirePro W2100 Quadro K420

14



**Up to 3X more performance for M&E** professionals

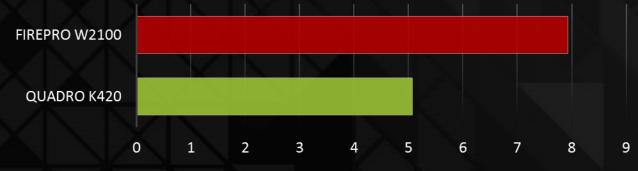




**Delivering 60% more performance** than the competition

# AMD FIREPRO™ W2100 GRAPHICS \$139 vs. \$169 FirePro W2100 Quadro K420

### **SPECviewperf 12.0.1 GEOMEAN**



#### **SPECviewperf 12.0.1 Composite**



# AMD FIREPRO™ GRAPHICS REPLACEMENT RECOMMENDATIONS



Current Nvidia Options	Current AMD Options	Why AMD FirePro Graphics
Quadro K6000	AMD FirePro™ W9100	<ul> <li>Industry leading GPU Memory (16GB)</li> <li>Industry leading compute performance</li> <li>Price leadership</li> </ul>
Quadro K5200	AMD FirePro™ W9100	<ul><li>Performance leadership</li><li>Industry leading features</li></ul>
	AMD FirePro™ W8100	<ul><li>Significant price leadership</li><li>Segment leading compute performance</li></ul>
Quadro K4200	AMD FirePro™ W8100	▶ Significant performance and feature leadership and comparable pricing
49   AMD FIREPRO GRAPHICS  DECEMBER 2014   W-SERIES PRODUC	AMD FirePro™ W7100	<ul><li>Comparable performance</li><li>2X GPU memory</li><li>Significant price advantage</li></ul>

# AMD FIREPRO™ GRAPHICS REPLACEMENT RECOMMENDATIONS



Current Nvidia Products	Current AMD Products	Why AMD FirePro Graphics
Quadro K2200	AMD FirePro™ W7100	▶ Significant performance and feature leadership
Quadro N2200	AMD FirePro™ W5100	▶ Comparable performance and features at 2/3 of the price
Quadro K620	AMD FirePro™ W5100	▶ Outstanding performance and features at a compelling price point
	AMD FirePro™ W4100	<ul><li>Low profile K2000 level performance</li><li>Display leadership</li></ul>
Quadro K420	AMD FirePro™ W2100	<ul><li>Entry performance domination</li><li>Lowest 3D power consumption</li></ul>



#### BENCHMARKING



SPECviewperf® and SPECapc® (composite graphics) tests are designed to test ONLY GPU contributions to application performance. The contribution/dependency/importance of other system hardware such as hard drive, CPU, memory speed, etc, are effectively eliminated and do not impact the test results.

#### **Test System Configuration**

AMD Internal testing. The following system was used for all performance benchmark testing:

- Intel E5-1660 3.30GHz
- 16GB RAM
- Win7 Pro 64-bit SP1
- Drivers: AMD 14.30 (E-0912) for W2100, W4100, W5100, W7100
- **Drivers: AMD 13.352.1014 for W8100, W9100**
- **Drivers: Nvidia 340.66 for all Quadro cards**

# **QUOTES**



#### W9100 Quotes

"Our tests of the FirePro W9100 graphics card leave no doubt that AMD has serious plans about the professional market."

http://www.xbitlabs.com/articles/graphics/display/amd-firepro-w9100.html

"This card rips through 3D calculations like a mini-gun rips through bullets, obliterating lag time, and giving you all the performance you could hope for (provided those 3D instructions are OpenCL)."

http://www.videomaker.com/article/17529-amd-firepro-w9100-review

#### W8100 Quote

"It has to be said that the W8100's purpose, defined on the first page of this story, is achieved perfectly, resulting in a product that's hard for the performance-oriented professional to resist."

http://www.tomshardware.com/reviews/firepro-w8100-workstation-graphics-card,3868-17.html

#### W7100 Quote

"... from a technical perspective the W7100 is the most interesting of the new FirePro cards. Whereas the previous-generation W7000 was based on a second-tier version of AMD's venerable Tahiti GPU, the W7100 gets a brand new GPU entirely, one that we haven't seen before."

http://www.anandtech.com/show/8371/amd-firepro-w7100-w5100-w4100-w2100

#### W2100 Quotes

"Even the entry-level FirePro W2100 comes with 2GB, which should allow CAD users to load up all but the biggest models into GPU memory."

http://www.develop3d.com/blog/2014/08/amd-firepro-cad-W2100-W4100-W5100-W7100-mantle-GPU-compute

"...the W2100 is intended for professionals who require better performance than what a consumer graphics card can offer." Hardware Zone Phillipines

http://www.hardwarezone.com.ph/tech-news-new-amd-firepro-graphics-cards-boast-16gb-gddr5-memory-support-4k-displays

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