AMD FirePro™ GPUs with Dell PowerEdge Servers

The AMD FirePro™ Server GPU Advantage

High Performance Compute

The AMD FirePro™ S9150, S9100, and W9100 GPUs available on select Dell systems are designed for server environments to help accelerate HPC workflows found in academic and government clusters, oil and gas industries, and deep neural networks. Designed for large-scale multi-GPU support, AMD FirePro™ Server GPUs offer exceptional compute performance and performance-per-watt.

AMD STREAM Technology

AMD STREAM Technology powers the ecosystem that enables AMD FirePro server cards to be used for compute-intensive workflows leveraging the massively parallel processing power of AMD FirePro™ GPUs, and to accelerate many applications beyond just graphics. AMD STREAM Technology is composed of fast single- and double-precision compute performance, P2P multi-GPU support, bi-directional PCIe® 3.0 data transfers, and GPU-optimized OpenCL™ libraries such as Bolt C++ Template Library available from developer.amd.com.

Virtualization

AMD FirePro™ S7150 and S7150 x2 Server GPUs are equipped with Multiuser GPU (MxGPU) technology, the industry's first hardware-based virtualized GPU solution that provides enterprise customers with simplicity, security and value for their organization. Easy to set up and use, the MxGPU solution builds on industry standards to provide enhanced security while giving value to organizations who do not need to pay GPU licensing fees when users are added.

AMD MxGPU Technology

Enables consistent, predictable and secure performance from your virtualized workstation with the world's first hardware-based virtualized GPU solution, the AMD Multiuser GPU. This new virtualization solution from AMD can enable users to have workstation-class experiences with full ISV certifications and desktop-like performance.

AMD FirePro™ GPUs for High Performance Compute

AMD FirePro™ S9150 GPU

The most compute-intensive workloads are no challenge for the AMD FirePro™ S9150 server GPU. With support for OpenCL™ 2.0, 16 GB GDDR5 memory, and up to 2.53 TFLOPS of peak double-precision memory, the choice is clear.

AMD FirePro™ S9100 GPU

Purpose-built to tackle compute-intensive workloads, the AMD FirePro™ S9100 GPU delivers up to 2.11 TFLOPS of peak double-precision compute performance, up to 61% more than the K20X2.[1]

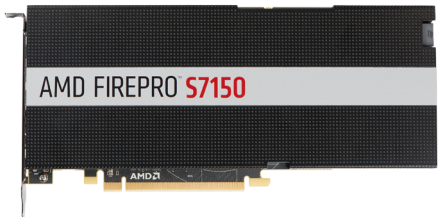
AMD FirePro™ W9100 GPU

Made available for the Dell PowerEdge T630 Tower Server specically, this GPU powerhouse equipped with AMD STREAM Technology delivers all the performance you need for your heavy compute workflow needs.

AMD FirePro™ GPUs for Virtualization

AMD FirePro™ S7150 x2 GPU

The AMD FirePro™ S7150 x2 Server GPU can support up to 32 users per GPU depending on workload, providing users with predictable desktop-like performance and features in a virtualized environment, while giving IT Managers outstanding performance for their dollar.



AMD FirePro™ S7150 GPU

Keep user sessions isolated and secure with the hardware-based Multiuser GPU technology. Achieve cost savings when adding users with AMD's GPU license-free virtualized solution. The AMD FirePro™ S7150 GPU represents an easy and safe way of virtualizing up to 16 users per GPU.

Dell PowerEdge Servers

Dell PowerEdge R730

Optimize and accelerate your workloads

The incredible versatility of the PowerEdge R730 server delivers outstanding functionality in just 2U of rack space. With the combination of powerful processors, large memory, fast storage options, and AMD FirePro™ server GPU support, the R730 performs exceptionally well in a number of demanding environments.

Available with: AMD FirePro™ S9150, AMD FirePro™ S9100, AMD FirePro™ S7150 x2, AMD FirePro™ S7150.

Number of GPUs Supported: Up to 2 Dual-slot GPUs (AMD FirePro™ S9150, S9100, S7150 x2), Up to 4 single-slot GPUs (AMD FirePro™ S7150).

Dell PowerEdge T630 Tower Server

Powerful, efficient, versatile

Drive a wide range of demanding workloads with a flexible server offering powerful, parallel processing capabilities of AMD FirePro™ W9100 professional GPUs, peak 2-socket performance, and huge internal storage capacity.

Available with: AMD FirePro™ W9100, AMD FirePro™ S7150 Active.

Number of GPUs Supported: Up to 4 AMD FirePro™ W9100 or S7150 Active GPUs.

Dell PowerEdge C4130 Rack Server

Accelerate with flexibility and density

Drive the most demanding HPC, data visualization, and rendering workloads with a flexible, dense 1U rack server optimized for up to four AMD FirePro™ server GPUs per rack.

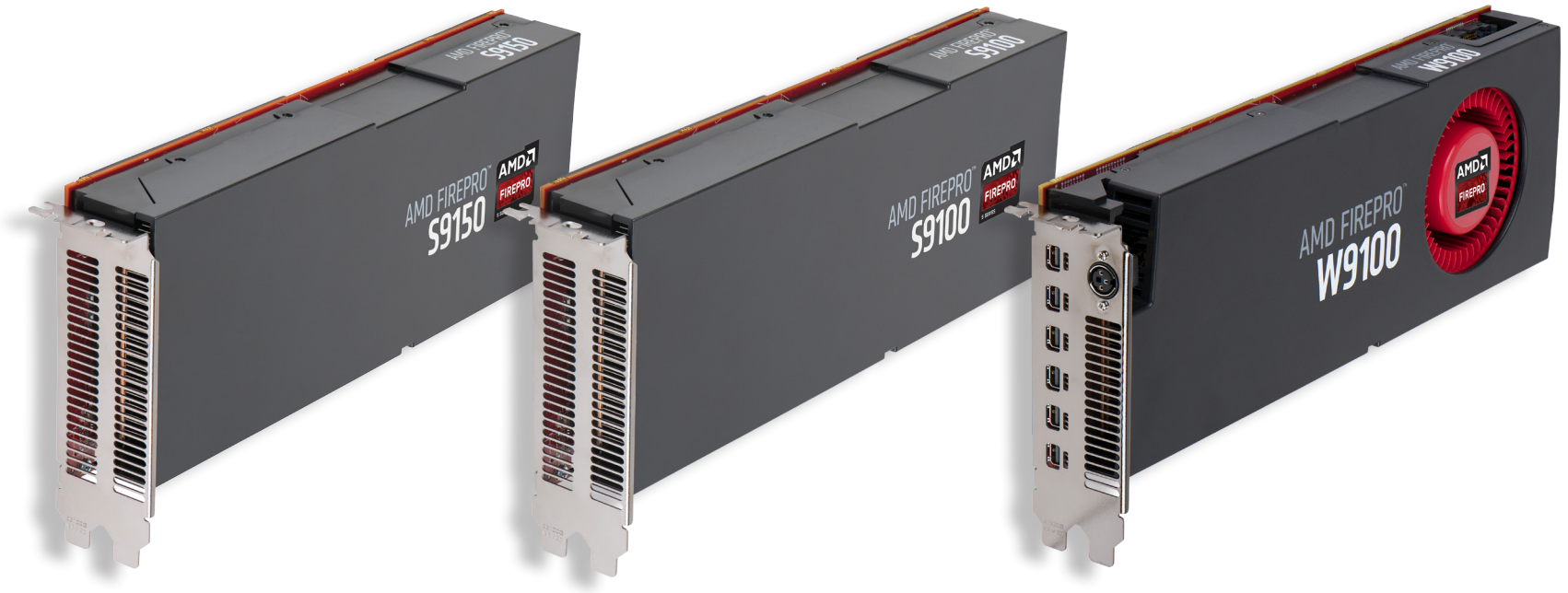
Available with: AMD FirePro™ S9150, AMD FirePro™ S9100, AMD FirePro™ S7150 x2.

Number of GPUs Supported: Up to 4 dual-slot GPUs

Please remember to include the appropriate GPU install kit when GPUs are ordered with a Dell server.

AMD FirePro™ GPUs for High Performance Compute

	AMD FIREPRO™ S9150	AMD FIREPRO™ S9100	AMD FIREPRO™ W9100
AMD STREAM Technology	Yes	Yes	Yes
OpenCL™ 2.0 Support	Yes	Yes	Yes
Peak Single-Precision	5.07 TFLOPS	4.22 TFLOPS	5.24 TFLOPS
Peak Double-Precision	2.53 TFLOPS	2.11 TFLOPS	2.62 TFLOPS
GPU Memory	16GB GDDR5	12GB GDDR5	16GB GDDR5
TDP	235W	225W	275W
PCI Express®	3.0 X16	3.0 X16	3.0 X16



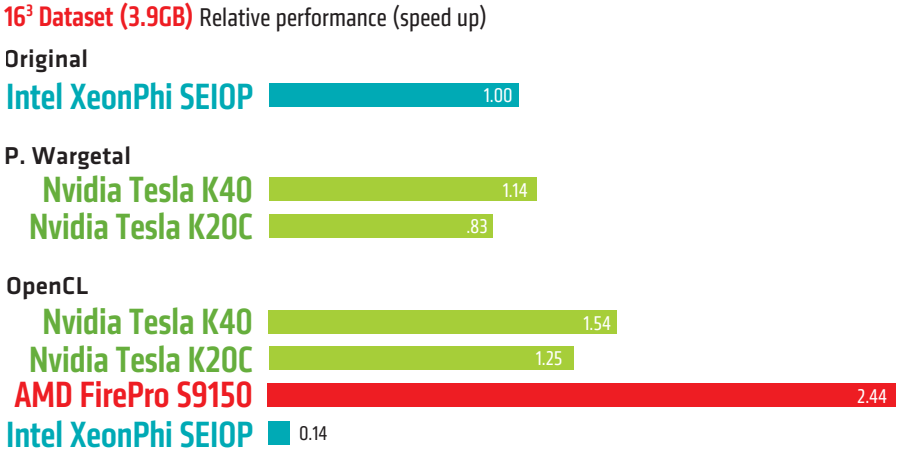
AMD FirePro™ Competitive Advantage for HPC

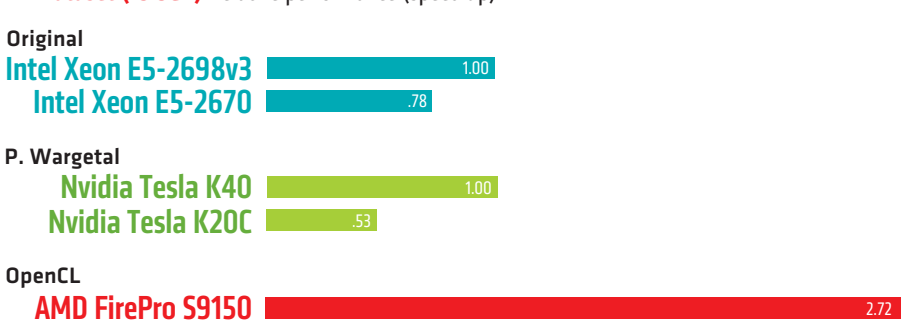
Performance Testing with Large Computational Workloads

SNAP serves as a proxy application to model the performance of the Boltzmann equation, a governing equation for determining the number of neutral particles (e.g. neutrons and gamma rays) in a multi-dimensional phase space. It is used by the Los Alamos National laboratory to mimic large computational workloads.

Below we can see the comparative performance of a number of different processors using the 16^2 dataset, which is 3.9GB in size.

The test was also run with an expanded grid of 243, which increased the footprint to 13.3GB. With 16GB of GDDR5 memory, the AMD FirePro S9150 GPU can load the entire dataset into mem ory, giving it an additional advantage over the Nvidia Tesla K40 (12GB) and Nvidia Tesla K20C (5GB).





Other Key Advantages with AMD FirePro™ GPUs for HPC

	AMD FIREPRO™ S9150	NVIDIA TESLA K40	AMD ADVANTAGE
AMD STREAM Technology	Yes	No	Yes
OpenCL™ 2.0 Support	Yes	No	Yes
Peak Single-Precision	5.07 TFLOPS	4.29 TFLOPS	Yes
Peak Double-Precision	2.53 TFLOPS	1.43 TFLOPS	Yes
GPU Memory	16GB GDDR5	12GB GDDR5	Yes

AMD FirePro™ GPUs for Virtualization

	AMD FIREPRO™ S7150 X2	AMD FIREPRO™ S7150
AMD MxGPU Technology	Yes	Yes
# of Concurrent Users	Up to 32	Up to 16
Hypervisor Support	VMware® ESXi™ 6.0	VMware® ESXi™ 6.0
GPU Memory	16GB GDDR5	8 GB GDDR5
TDP	265W	150W
PCI Express®	3.0 X16	3.0 X16
Form Factor	Full length, dual slot, passively cooled	Full length, single slot, passive or actively cooled
Available on These Dell Models	Dell PowerEdge R730, Dell PowerEdge C4130	Dell PowerEdge R730, Dell PowerEdge T630

AMD FirePro™ Competitive Advantage for Virtualization

	AMD MxGPU	NVIDIA GRID TECHNOLOGY	AMD ADVANTAGE
Virtualization Method	Hardware	Software	Yes
OpenCL™ 2.0 Support	Yes	No	Yes
Predictable Performance	Yes	No	Yes
Dedicated share of local memory for increased security	Yes	No	Yes
Per user GPU Licensing Fee	No	Yes	Yes

1. AMD FirePro™ S9100 max power is 225W and delivers up to 2.11 TFLOPS peak double-precision and up to 4.22 TFLOPS peak single-precision fl oating point performance. Nvidia Tesla K20X max power is 235W and delivers up to 1.31 TFLOPS peak double and up to 3.95 TFLOPS peak single. Visit http://www.nvidia.com/object/tesla-servers.html for Nvidia product specs. FP-109.