

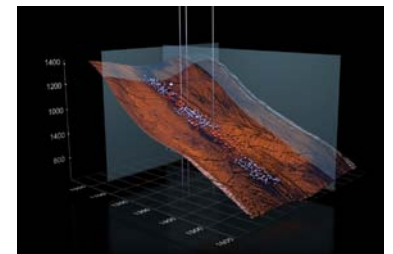


# TESLA™ M-CLASS GPU COMPUTING MODULES ACCELERATING SCIENCE

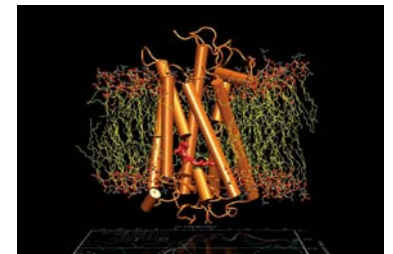
Based on the CUDA™ architecture codenamed “Fermi,” the Tesla™ M-class GPU Computing Modules are the world’s fastest parallel computing processors for high performance computing (HPC). Tesla GPU’s high performance makes them ideal for seismic processing, biochemistry simulations, weather and climate modeling, signal processing, computational finance, CAE, CFD and data analytics.

Accelerate your science with NVIDIA® Tesla™ 20-series GPUs. A companion processor to the CPU in the server, Tesla GPUs speed up HPC applications by 10x. Based on the Fermi architecture, these GPUs feature up to 665 gigaflops of double precision performance, 1 teraflop of single precision performance, ECC memory error protection, and L1 and L2 caches.

The Tesla M-class GPU modules are integrated into GPU-CPU servers from OEMs. This gives data center IT staff much greater choice in how they deploy GPUs, with a wide variety of rackmount and blade systems and with remote monitoring and management capabilities – enabling large data center, scale-out deployments.



OIL & GAS



MOLECULAR DYNAMICS

## TECHNICAL SPECIFICATIONS

	Tesla M2090	Tesla M2070 / M2075	Tesla M2050
Peak double precision floating point performance	665 Gigaflops	515 Gigaflops	515 Gigaflops
Peak single precision floating point performance	1331 Gigaflops	1030 Gigaflops	1030 Gigaflops
CUDA cores	512	448	448
Memory size (GDDR5)	6 GigaBytes	6 GigaBytes	3 GigaBytes
Memory bandwidth (ECC off)	177 GBytes/sec	150 GBytes/sec	148 GBytes/sec

\* Note: With ECC on, 12.5% of the GPU memory is used for ECC bits. So, for example, 3 GB total memory yields 2.625 GB of user available memory with ECC on.

## TESLA M-CLASS GPU COMPUTING MODULE

Features	Benefits
HUNDREDS OF CUDA CORES	Delivers up to 665 Gigaflops of double-precision peak performance in each GPU, enabling servers from leading OEMs to deliver more than a teraflop of double-precision performance per 1 RU of space. Single precision peak performance is over one Teraflop per GPU.
ECC MEMORY ERROR PROTECTION	Meets a critical requirement for computing accuracy and reliability in datacenters and supercomputing centers. Internal register files, L1/L2 caches, shared memory, and external DRAM all are ECC protected.
UP TO 6GB OF GDDR5 MEMORY PER GPU	Maximizes performance and reduces data transfers by keeping larger data sets in local memory that is attached directly to the GPU.
SYSTEM MONITORING FEATURES	Integrates the GPU subsystem with the host system's monitoring and management capabilities such as IPMI or OEM-proprietary tools. IT staff can thus manage the GPU processors in the computing system using widely used cluster/grid management solutions.
L1 AND L2 CACHES AS PART OF THE NVIDIA PARALLEL DATACACHE™	Accelerates algorithms such as physics solvers, ray-tracing, and sparse matrix multiplication where data addresses are not known beforehand.
NVIDIA GIGATHREAD™ ENGINE	Maximizes the throughput by faster context switching that is 10X faster than previous architecture, concurrent kernel execution, and improved thread block scheduling.
ASYNCHRONOUS TRANSFER WITH DUAL DMA ENGINES	Turbocharges system performance by transferring data over the PCIe bus while the computing cores are crunching other data.
FLEXIBLE PROGRAMMING ENVIRONMENT WITH BROAD SUPPORT OF PROGRAMMING LANGUAGES AND APIS	Choose C, C++, OpenCL, DirectCompute, or Fortran to express application parallelism and take advantage of the innovative "Fermi" architecture.

## SOFTWARE AND DRIVERS

- > Software applications page:  
[http://www.nvidia.com/object/vertical\\_solutions.html](http://www.nvidia.com/object/vertical_solutions.html)
- > Tesla M-class GPU computing modules are supported for both Linux and Windows 64-bit
  - Drivers – NVIDIA recommends that users get drivers for M-series products from their System OEM to ensure that driver is qualified by the OEM on their system. Latest drivers can be downloaded from  
<http://www.nvidia.com/drivers>
  - Learn more about Tesla data center management tools at  
<http://www.nvidia.com/object/software-for-tesla-products.html>
- > Software development tools are available at  
[http://www.nvidia.com/object/tesla\\_software.html](http://www.nvidia.com/object/tesla_software.html)

To learn more about NVIDIA Tesla, go to [www.nvidia.com/tesla](http://www.nvidia.com/tesla)