



POPULAR GPU-ACCELERATED APPLICATIONS

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Research: Higher Education and Supercomputing

COMPUTATIONAL CHEMISTRY AND BIOLOGY

Bioinformatics

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
BarraCUDA	Sequence mapping software	Alignment of short sequencing reads	6-10x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 0.6.2
CUDASW++	Open source software for Smith-Waterman protein database searches on GPUs	Parallel search of Smith-Waterman database	10-50x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 2.0.8
CUSHAW	Parallelized short read aligner	Parallel, accurate long read aligner - gapped alignments to large genomes	10x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 1.0.40
GPU-BLAST	Local search with fast k-tuple heuristic	Protein alignment according to blastp, multi cpu threads	3-4x	T 2075, 2090, K10, K20, K20X	Single only	Available now Version 2.2.26
GPU-HMMER	Parallelized local and global search with profile Hidden Markov models	Parallel local and global search of Hidden Markov Models	60-100x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 2.3.2
mCUDA-MEME	Ultrafast scalable motif discovery algorithm based on MEME	Scalable motif discovery algorithm based on MEME	4-10x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 3.0.12
SeqNFind	A GPU Accelerated Sequence Analysis Toolset	Reference assembly, blast, smith-waterman, hmm, de novo assembly	400x	T 2075, 2090, K10, K20, K20X	Yes	Available now
UGENE	Opensource Smith-Waterman for SSE/CUDA, Suffix array based repeats finder and dotplot	Fast short read alignment	6-8x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 1.11
WideLM	Fits numerous linear models to a fixed design and response	Parallel linear regression on multiple similarly-shaped models	150x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 0.1-1

Molecular Dynamics

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
Abalone	Models molecular dynamics of biopolymers for simulations of proteins, DNA and ligands	Simulations (on 1060 GPU)	4-29x	T 2075, 2090, K10, K20, K20X	Single Only	Available now Version 1.8.48
ACEMD	GPU simulation of molecular mechanics force fields, implicit and explicit solvent	Written for use on GPUs	160 ns/day GPU version only	T 2075, 2090, K10, K20, K20X	Yes	Available now
AMBER	Suite of programs to simulate molecular dynamics on biomolecule	PMEMD: explicit and implicit solvent	89.44 ns/day JAC NVE	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 12 + bugfix9
DL-POLY	Simulate macromolecules, polymers, ionic systems, etc on a distributed memory parallel computer	Two-body forces, Link-cell pairs, Ewald SPME forces, Shake VV	4x	T 2075, 2090, K10, K20, K20X	Yes	Available now, Version 4.0 Source only
CHARMM	MD package to simulate molecular dynamics on biomolecule.	Implicit (5x), Explicit (2x) Solvent via OpenMM	TBD	T 2075, 2090, K10, K20, K20X	Yes	In Development Q4/12
GROMACS	Simulation of biochemical molecules with complicated bond interactions	Implicit (5x), Explicit(2x) solvent	165 ns/Day DHFR	T 2075, 2090, K10, K20, K20X	Single only	Available now Version 4.6 in Q4/12
HOOMD-Blue	Particle dynamics package written grounds up for GPUs	Written for GPUs	2x	T 2075, 2090, K10, K20, K20X	Yes	Available now
LAMMPS	Classical molecular dynamics package	Lennard-Jones, Morse, Buckingham, CHARMM, Tabulated, Course grain SDK, Anisotropic Gay-Bern, RE-squared, "Hybrid" combinations	3-18x	T 2075, 2090, K10, K20, K20X	Yes	Available now
NAMD	Designed for high-performance simulation of large molecular systems	100M atom capable	6.44 ns/days STMV 585x 2050s	T 2075, 2090, K10, K20, K20X	Yes	Available now, Version 2.9
OpenMM	Library and application for molecular dynamics for HPC with GPUs	Implicit and explicit solvent, custom forces	Implicit: 127-213 ns/ day; Explicit: 18-55 ns/day DHFR	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 4.1.1

Quantum Chemistry

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
Abinit	Allows to find total energy, charge density and electronic structure of systems made of electrons and nuclei within DFT	Local Hamiltonian, non-local Hamiltonian, LOBPCG algorithm, diagonalization / orthogonalization	1.3-2.7x	T 2075, 2090, K10, K20, K20X	Yes	Available now Since version 6.12
ACES III	Takes best features of parallel implementations of quantum chemistry methods for electronic structure	Integrating scheduling GPU into SIAL programming language and SIP runtime environment	10x Kernels	T 2075, 2090, K10, K20, K20X	Yes	In development
ADF	Density Functional Theory (DFT) software package that enables first-principles electronic structure calculations	Fock Matrix, Hessians	TBD	T 2075, 2090, K10, K20, K20X	Yes	In development
BigDFT	Implements density functional theory by solving the Kohn-Sham equations describing the electrons in a material	DFT; Daubechies wavelets, part of Abinit	5-25x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 1.6.x
CASINO	Code for performing quantum Monte Carlo (QMC) electronic structure calculations for finite and periodic systems	TBD	TBD	T 2075, 2090, K10, K20, K20X	Yes	In development, expected Q4/12
CP2K	Program to perform atomistic and molecular simulations of solid state, liquid, molecular and biological systems	DBCSR (space matrix multiply library)	2-7x	T 2075, 2090, K10, K20, K20X	Yes	In development
GAMESS-UK	Is the general purpose ab initio molecular electronic structure program for performing SCF-, DFT- and MCSCF-gradient calculations	(ss ss) type integrals within calculations using Hartree Fock ab initio methods and density functional theory. Supports organics and inorganics.	8x	T 2075, 2090, K10, K20, K20X	Yes	In development, expected Q4/12
GAMESS-US	Computational chemistry suite used to simulate atomic and molecular electronic structure	Libqc with Rys Quadrature Algorithm, integral evaluation, closed shell Fock matrix construction, Hartree Fock, MP2	1.3-1.6x (Rys) 2.3-2.6x HF	T 2075, 2090, K10, K20, K20X	Yes	Available now
Gaussian	Joint NVIDIA, PGI and Gaussian collaboration. Predicts energies, molecular structures, and vibrational frequencies of molecular systems	TBD	TBD	T 2075, 2090, K10, K20, K20X	Yes	In development
GPAW	Real-space grid DFT code written in C and Python	Electrostatic poisson equation, orthonormalizing of vectors, residual minimization method (rmm-diis)	8x	T 2075, 2090, K10, K20, K20X	Yes	Available now
MOLCAS	Methods for calculating general electronic structures in molecular systems in both ground and excited states	CU_BLAS	1.1x	T 2075, 2090, K10, K20, K20X	Yes	In development
MOLPRO	Used for accurate ab initio quantum chemistry calculations	Density-fitted MP2 (DF-MP2), density fitted local correlation methods (DF-RHF, DF-KS), DFT	1.7-2.3x	T 2075, 2090, K10, K20, K20X	Yes	In development
MOPAC2009	Semiempirical Quantum Chemistry	Pseudodiagonalization, full diagonalization, and density matrix assembling	1.2-3.6x	T 2075, 2090, K10, K20, K20X	No	In development
NWChem	Calculations	Triples part of Reg-CCSD(T), CCSD and EOMCCSD task schedulers	3-10x	T 2075, 2090, K10, K20, K20X	Yes	In development, expected Q4/12
Q-CHEM	Computational chemistry package designed for HPC clusters	Various features including R1-MP2	8-14x	T 2075, 2090, K10, K20, K20X	Yes	Available Version 4.0
TeraChem	Quantum chemistry software designed to run on NVIDIA GPU	Full GPU-based solution . Performance compared to GAMESS CPU version.	44-650x	T 2075, 2090, K10, K20, K20X	Yes	Available now Version 1.5

Materials Science

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
LSMS	Materials code for investigating the effects of temperature on magnetism	Generalized Wang-Landau method	Up to 40x vs. 8-core CPU; scaling to thousands of GPUs	T 2075, 2090, K20, K20X	Yes	Available now in WL-LSMS3
PEtot	First principles materials code that computes the behavior of the electron structures of materials	Density functional theory (DFT) plane wave pseudopotential calculations	6-10x	T 2075, 2090, K20, K20X	Yes	Available now
QMCPACK	Solves the many-body Schrodinger equation for electronic structures using a quantum Monte Carlo method	Main features	Up to 4x vs. 16-core CPU; scaling to thousands of GPUs	T 2075, 2090, K20, K20X	Yes	Available now
Quantum Espresso/PWscf	An integrated suite of computer codes for electronic structure calculations and materials modeling at the nanoscale	PWscf package: linear algebra (matrix multiply), explicit computational kernels, 3D FFTs	2.5-3.5x	T 2075, 2090, K20, K20X	Yes	Available now Version 5.0
VASP	First principles materials code that computes the behavior of electronic structures based on quantum theory	Hybrid Hartree-Fock DFT functionals including exact exchange	2x 2 GPUs vs. 128 CPU cores	T 2075, 2090, K20, K20X	Yes	Available on request

Visualization and Docking Software

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
Amira 5	A multifaceted software platform for visualizing, manipulating, and understanding Life Science and bio-medical data.	3D visualization of volumetric data and surfaces	70x	Q6000	Yes	Available now Version 5.5
Core Hopping	Rapid screening of novel cores to improve drug properties	GPU accelerated application	3.77-5000x	T 2075, 2090, K10, K20, K20X	Yes	Available now
FastROCS	Molecule shape comparison application	Real-time shape similarity searching / comparison	800-3000x	T 2075, 2090, K10, K20, K20X	Yes	Available now
PyMol	User-sponsored molecular visualization system on an open-source foundation	Lines: 460% increase Cartoons: 1246% increase Surface: 1746% increase Spheres: 753% increase Ribbon: 426% increase	1700x	Q6000	Single only	Available now Version 1.5
Molegro Virtual Docker 5	Method for performing high accuracy flexible molecular docking	Energy grid computation, pose evaluation and guided differential evolution	25-30x	T 2075, 2090, K10, K20, K20X	Single only	Available now
VMD	Visualization and analyzing large bio-molecular systems in 3-D graphics	GPU acceleration for computationally demanding analysis and visualization tasks	100-125x Kernels	Q6000	Yes	Available now Version 1.9.x

NUMERICAL ANALYTICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
Jacket for MATLAB (by AccelerEyes)	GPU acceleration for MATLAB (high-level technical computing language)	Support for several hundred of the most commonly used MATLAB functions	2-20x	Q2000 + C2075 Q2000 + T K20	Yes	Available now Version 2011 or later
Mathematica Wolfram	A symbolic technical computing language and development environment	Development environment for CUDA and OpenCL	2-20x	Q2000 + C2075 Q2000 + T K20	Yes	Available now
MATLAB by Mathworks	GPU acceleration for MATLAB (high-level technical computing language)	Support for 200+ of most used MATLAB functions (incl. Signal Processing Toolbox, Communications Systems, etc)	2-20x	Q2000 + C2075 Q2000 + T K20	Yes	Available now Jacket 2.3 or later

PHYSICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
Chroma	Lattice Quantum Chromodynamics (LQCD) codes simulate how elemental particles are formed and bound by the "strong force" to create larger particles like protons and neutrons	Wilson-clover fermions, Krylov solvers, Domain-decomposition	Up to 9x vs. 16-core CPU, scaling to thousands of GPUs	T 2090, K20, K20X	Yes	Available now
GTC	Simulates microturbulence and transport in magnetically confined fusion plasma	Electron push and shift (accounting for >80% of run time)	2-3x 128 GPUs vs. 128 (16-core) CPUs	T 2090, K20, K20X	Yes	Available now
MILC	Lattice Quantum Chromodynamics (LQCD) codes simulate how elemental particles are formed and bound by the "strong force" to create larger particles like protons and neutrons	Staggered fermions, Krylov solvers, Gauge-link fattening	5-6x	T 2090, K20, K20X	Yes	Available now
QUDA	Library for Lattice QCD calculations using GPUs	CUDA supports the following fermion formulations: Wilson, Wilson-clover, Twisted mass, Improved staggered (asqtad or HISQ) and Domain wall	Up to 9x at various scales	T 2090, K20, K20X	Yes	Available now

WEATHER AND CLIMATE FORECASTING

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU **	MULTI-GPU SUPPORT	RELEASE STATUS
ASUCA	Regional atmospheric model	Entire model	12x	T 2075, 2090	Yes	In development
CAM - SE	Global atmosphere model for climate research	Entire model	2x Dynamics	T 2075, 2090, K10, K20	Yes	In development
COSMO	Regional atmospheric model	Entire model	3x Dynamics	T 2075, 2090, K10, K20	Yes	In development
GEOS-5	Global climate model	Entire model	10x Models, 3x Dynamics	T 2075, 2090	Yes	In development
HOMME	Dynamical core for numerical weather prediction model	Dynamical core	3x Kernels	T 2075, 2090, K10, K20	Yes	In development
HYCOM	Ocean circulation model	Dynamical core	2x Kernels	T 2075, 2090	Single Only	In development
MITgcm	Ocean circulation model	Dynamical core	3x Dynamics	T 2075, 2090	Single Only	In development
NIM	Dynamical core for numerical weather prediction model using icosahedral horizontal grid	Dynamical core	7x Dynamics	T 2075, 2090, K10	Yes	In development
WRF	Regional numerical weather prediction model	WSM5, WSM3, Ice Microphysics models	4-6x Models	T 2075, 2090	Single only	Available now Version 3.2
NEMO	Ocean circulation model	Entire model (GYRE config)	5x	T 2075, 2090, K10	Multi-GPU using OpenACC	In development

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Defense and Intelligence

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
DigitalGlobe Advanced Ortho Series	Geospatial Visualization	Image orthorectification	50x	Quadro T 2075, 2090, K10	Yes	Available now
Eternix Blaze Terra	Geospatial Visualization	3D visualization of geospatial data	50x	Quadro	Yes	Available now
Exelis (ITT) ENVI	Geospatial Visualization	Image orthorectification (custom builds only)	70x	T 2075, 2090	Yes	Available now
MrGeo	Geospatial Visualization	Terrain analytics	12-15x	Quadro T 2075, 2090, K10	Yes	Available now
GeoWeb3d Desktop	Geospatial Visualization	3D visualization of geospatial data	Requires GPU	Quadro	Yes	Available now
Incogna GIS	Geospatial Visualization	Image processing on Tesla cloud servers Object recognition	50x	T 2075, 2090	Yes	Available now
Intergraph Motion Video Analyst	Video filters and mosaic'ing - Geo-fuses FMV analytics with intelligence data	Full motion video ortho mosaic processing	5-7x	QF3800 and newer	Single only	Available now
Intuvision Panoptes 3.0	Video Analytics	Object recognition and change detection	12x	Quadro	Yes	Available now
LuciadLightspeed	Toolkit: Geospatial Visualization and Analysis	Geospatial Situational Awareness	75x	Quadro T 2075, 2090	Single only	Available now
MotionDSP Ikena ISR	Real-time Full Motion Video and WAMI enhancement and analytics	Real-time super-resolution-based video enhancement, filtering, mosaicing, video analytics, and transcoding	5-10x	Q6000, C2075	Yes	Available now
Nerve ViD SrX	Video Analytics	Object recognition and tracking	100x	T 2090, K10	Yes	Available now
NerVve Visual Search Solution (NVSS)	Video/Image Live and Forensic Search	Video and Image content search	100x	T 2090, K10	Yes	Available now
OpCoast SNEAK	Electromagnetic signals propagation modeling for complex urban and terrain environments	Ray tracing, DTED and remote sensing inputs	100x and more	T 2075, 2090	Yes	Available now
PCI Geomatics GXL	Geospatial Visualization	Image orthorectification and additional image processing	20-60x	Quadro T 2075, 2090	Yes	Available now

Computational Finance

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Aeon Benfield Pathwise™	Specialized platform for real-time hedging, valuation, pricing and risk management	Spreadsheet-like modeling interfaces, Python-based scripting environment and Grid middleware	40-400x	T 2075, 2090	Yes	Available now
Hanweck Associates	Real-time options analytical engine (Volera)	Real-time options analytics engine	100x	T 2075, 2090	Yes	Available now
Murex MACS Analytics Library	Analytics library for modeling valuation and risk for derivatives across multiple asset classes.	Market standard models for all asset classes paired with the most efficient resolution methods (Monte Carlo simulations and Partial Differential Equations)	40-200x	T 2075, 2090	Yes	Available now
Numerical Algorithms Group (NAG)	Random number generators, Brownian bridges, and PDE solvers	Monte Carlo and PDE solvers	50x	T 2075, 2090	Single only	Available now
RMS	Catastrophic risk modeling for FSI (earthquakes, hurricanes, terrorism, infectious diseases)	Risk analytics	TBD	T 2075, 2090	Yes	In development
Taney ZX Lib (Fuzzy Logic)	Financial analytics and data mining library	Monte Carlo simulations, pricing of vanilla and exotic options, fixed income analytics, data mining	100 - 500x	T 2075, 2090	Yes	Available now
SciComp, Inc	Derivative pricing (SciFinance)	Monte Carlo and PDE pricing models	30-50x (MC) 10-35x (PDE)	T 2075, 2090	Single only	Available now
Xcelerit SDK and Xcelerit Quant	Software toolkit for implementing high performance Monte-Carlo derivative pricing	Monte Carlo simulations, linear algebra, n-body simulations, spectral methods	11-28x dual-M2050 GPU vs dual-Xeon E5620	T 2075, 2090	Yes	Available now

Manufacturing: CAD and CAE

COMPUTER AIDED DESIGN

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
AutoCAD 2013	2D and 3D CAD design, drafting, modeling, architectural drawing, and engineering software. Supports Open GL. Native DWG™ support.	Surface, mesh, and solid modeling tools, model documentation tools, parametric drawing capabilities. Native DWG™ support.	3x	Q 600	Yes	Available now Version 2013
AutoCAD Design Suite	AutoCAD 2013 software, plus tools to create, capture, connect, and showcase designs	2D/3D display of designs, interactive 3D presentation with realistic materials, rendering-ray tracing	2-5x	Q2000	Yes	Available now Version 2013
CATIA V6-Live Rendering	Photorealistic rendering	Interactive. Fully integrated in CATIA V6. Network rendering	3-6x	QK5000, Q6000, C2075	Yes	Available now
Bunkspeed Pro Suite 2012	Easy to use photorealistic rendering software	Iray-based ray-tracing. Animation support. Network rendering	3-6x	QK5000, Q6000, C2075	Yes	Available now
RTT DeltaGen 11.x	Photorealistic rendering used for design	Interactive ray tracing and global illumination. Integration with Siemens TeamCenter. Cluster support	16x	Q6000, C2075	Yes	Available now
RTT DeltaPix	Photorealistic rendering with integration of TeamCenter and RTT formats	Iray based ray-tracing. Support for JT and csb formats	3-6x	QK5000, Q6000, C2075	Yes	Available now Version 1.1
PTC Creo Parametric v2.0	Parametric design solution suite	Anti-aliasing, better lighting and enhanced shaded-with-edges mode	Up to 4x	Q2000 - Q6000	Single only	Available now
Siemens NX 8.5	PLM Life Cycle solution from design to production to service	Design software, NX, and PLM Viewer application, TC Vis.	Up to 4x	Q2000 - Q6000	Single only	Available now

COMPUTATIONAL FLUID DYNAMICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Altair AcuSolve	General purpose CFD flow solver	Linear equation solver	2x	Q6000, C2075 T2090	Yes	Available now Release 1.8a
ANSYS Fluent	General purpose CFD software based on FVM	Radiation heat transfer model, AMG solver (beta)	10x RHT Model, 2x AMG solver (beta)	Q6000, C2075 T 2090	Multi-GPU RHT model, Single GPU Solver	Available now Release 14.5
Autodesk Moldflow	Optimize design of plastic parts and injection molds	Linear equation solver	1.5x	Q2000 - Q6000, C2075	Single only	Available now Release 2013
FEFLO (GMU-Lohner)	General purpose CFD software based on FEM for compressible and incompressible flows	Implicit and explicit solver	2-10x	C2075, T 2090	Yes	In development
FluiDyna Culises for OpenFOAM	Solver library for general purpose CFD software based on FVM	Linear equation solvers	3x Solver	C2075, T 2090	Single Only	Available now Version 1.2
FluiDyna LBultra	General purpose CFD software	Lattice-Boltzmann solver	20x	C2075, T 2090	Yes	Available now Version 2.0
Prometech Particleworks	Fluid simulation for free surface flow like Tsunami, material processing and liquids.	Particle CFD using MPS	4-9x	C2075, T 2090	Yes	Available now Version 3.0
SD++ (SU-Jameson)	General purpose CFD software based on FEM for compressible flows.	Explicit compressible solver	15x	C2075, T 2090	Yes	In development
S3D(Sandia and Oak Ridge NL)	Direct numerical solver (DNS) for turbulent combustion	Chemistry kernel	5x	C2075, T 2090	Yes	In development
Vratis ARAEL	General purpose CFD software based on FVM with OpenFOAM compatibility	Linear equation solvers	3x Solver	C2075, T 2090	Single only	Available now Version 1.0
Turbostream Ltd.	CFD software based on FVM for turbomachinery internal flows	Explicit compressible solver	19x	C2075, T 2090	Yes	Available now Version 2.0
Vratis SpeedIT extreme for OpenFOAM	Solver library for general purpose CFD software	Linear equation solvers	6x Solver	C2075, T 2090	Yes	Available now Version 1.2

COMPUTATIONAL STRUCTURAL MECHANICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Abaqus/Standard	Simulation and analysis tool for structural mechanics	Direct sparse solver	1.5-2.5x	Q6000 T 2075, 2090	Yes	Available now Version 6.12
ANSYS Mechanical	Simulation and analysis tool for structural mechanics	Direct and iterative solvers	2-3x	Q6000, C2075 T 2090	Single only	Available now Release 14.0
Impetus Afea	Predicts large deformations of structures and components exposed to extreme loading conditions	Linear equation solver	10x SPH, 2x Total	Q6000 T 2075, 2090	Yes	Available now
LS-DYNA Implicit	Multiphysics simulation package used	Linear equation solver	3x	Q6000 T 2075, 2090	Yes	Beta available for CentOS Linux
MSC Nastran	Simulation and analysis tool for structural mechanics	Direct sparse solver	1.5x	Q6000 T 2075, 2090	Yes	Available now Version 2013 Alpha
Marc	Simulation and analysis tool for structural mechanics	Direct sparse solver	1.5x	Q6000 T 2075, 2090	Yes	Available now Version 2012
RADIOSS Implicit	Simulation and analysis tool for structural mechanics	Direct and iterative solvers	2-4x	Q6000, C2075 T 2090	Yes	Available now Version 12

ELECTRONIC DESIGN AUTOMATION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Agilent Technologies ADS	Simulation tool for design of RF, microwave and high speed digital circuits	Signal integrity simulation	4-6x	T 2075, 2090	Single only	Available now
Agilent Technologies EMPro	Modeling and simulation environment for analyzing 3D EM effects of high speed and RF/Microwave components	FDTD solver	6x	T 2075, 2090	Yes	Available now
ANSYS Nexxim	Circuit simulation engine for RF/analog/mixed-signal IC design; IBIS-AMI analysis speedup with GPU computing.	AMI analysis	7-15x	Q6000 T 2075, 2090	Single only	Available now
CST Microwave Studio (MWS)	3D EM modeling and simulation	Transient solver	9-20x	T 2075, 2090	Yes	Available now
Delcross Savant	Simulation tool for installed antenna performance and antenna-to-antenna coupling	High-frequency solver	20-50x	T 2075, 2090, K10	Yes	Available now
EMSS FEKO	3D EM modeling and simulation	MoM solver	2x	T 2075, 2090	Single only	Available now, Multi-GPU in 2012
Remcom XFDTD	3D EM modeling and simulation	FDTD solver	30-50x	Q4000 - Q6000 T 2075, 2090	Yes	Available now
SPEAG SEMCAD-X	3D EM modeling and simulation	FDTD solver	100x	Q4000 - Q6000 T 2075, 2090	Yes	Available now
Rocketick RocketSim	Verilog simulation	Verilog simulation	10x	T 2075, 2090	Single only	Available now

Media and Entertainment

ANIMATION, MODELING AND RENDERING

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Autodesk 3ds Max + NVIDIA Iray	3D modeling, animation, and rendering	Iray interactive, photorealistic and physically correct rendering	6-10x	Q2000 - Q6000	Multi-GPU	Available now
Autodesk Maya	3D modeling, animation, and rendering	Increased model complexity, larger scenes	10x	Q4000-6000	Single only	Available now
Autodesk Motion Builder	Character animation and motion capture	Increased model complexity at interactive rates	Real-time	Q4000	Single only	Available now
Autodesk Mudbox	3D Sculpting	Increased model complexity at interactive rates	Real-time	Q2000	Single only	Available now
Cebas finalRender	GPU Renderer	CUDA-based GPU Rendering	10-15x	T 2090	Multi-GPU	Available now
CentiLeo GPU Render	GPU Renderer	CUDA-based GPU rendering	TBD	Q2000	Multi-GPU	Available now
Chaos V-Ray RT	GPU Renderer	CUDA or OpenCL-based GPU Rendering	TBD	Q6000 and Maximus (QXXXX + C2075)	Multi-GPU	Available now
Jawset TurbulenceFD	Physics-based simulation plug in	Maximus supported GPU simulation using CUDA	TBD	Q6000 and Maximus (QXXXX + C2075)	Multi-GPU	Available now
Maxon Cinema 4D	3D modeling, animation, and rendering	Increased model complexity at interactive rates	TBD	Q2000	Single only	Available now
NewTek Lightwave	3D modeling, animation, and rendering	Increased model complexity at interactive rates	TBD	Q4000	Multi-GPU	Available now
Otoy Octane Render	GPU Renderer	GPU Rendering	TBD	Q6000	Multi-GPU	Available now
Pixologic Sculptiris	3D Sculpting	Increased model complexity at interactive rates	2-4x	Q4000	Single only	Available now
Side Effects Houdini	3D modeling, animation, and rendering	Maximus supported GPU simulation using OpenCL	10x	Maximus (QXXXX + C2075)	Multi-GPU	Available now
The Foundry Mari	3D Sculpting	Increased model complexity at interactive rates	TBD	Q2000	Single only	Available now

COLOR CORRECTION AND GRAIN MANAGEMENT

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Adobe SpeedGrade CS6	Color grading	Real-time manipulation of color and light in Lumetri Deep Color Engine. For SDI, supports only NVIDIA Quadro SDI Output	Real-Time	Q4000 - Q6000	Single only	Available now
Assimilate Scratch	Color Grading and Finishing	Accelerated debayering for real-time digital finishing. Supports NVIDIA Quadro SDI Output	Real-Time	Q6000 SDI	Single only	Available now
Blackmagic DaVinci Resolve	Color grading	Real-time de-noising	Real-Time	Maximus (QXXXX + C2075)	Multi-GPU	Available now
Cinnafilm Dark Energy	Application and plug-in for image texture management	Image de-noising and restoration. Simultaneous active and background rendering	Requires Tesla	Maximus (QXXXX + C2075) or up to 8x Tesla GPUs	Multi-GPU	Available now
Digital Vision Nucoda	Color grading	Real-time color correction	TBD	Q6000 SDI	TBD	Available now
Marquise TECH Rain	Color grading	Real-time color correction and NVIDIA Quadro SDI Output	Real-Time	Q6000 SDI	Single only	Available now
QuantelPablo	Color Grading and Finishing	Real-time color correction	Ships with Maximus	Maximus (QXXXX + C2075)	Multi-GPU	Available now
SGO Mistika	Color Grading and Finishing	Real-time color correction	Real-time	Q6000	Single only	Available now
The Pixel Farm PFClean	Image restoration and remastering	CUDA-based acceleration	Requires NV GPUs	Q4000	Single only	Available now

COMPOSITING, FINISHING AND EFFECTS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
ABSoft Neat Video	Video noise reduction plug-in	CUDA-based acceleration	TBD	Q2000	Single only	Available now
Adobe After Effects CS6	Motion graphics and effects	3D ray tracing engine based on NVIDIA OptiX and Global Performance Cache	27x	Q4000 and Maximus (QXXXX + C2075)	Multi-GPU	Available now
Autodesk Flame Premium	Finishing	Real-time effects	Ships with Quadro	Q6000 SDI	Single only	Available now
Boris FX Continuum Complete	Visual effects plug-in	Faster effects	TBD	Q2000	Single only	Available now
Cinnafilm Dark Energy Plug-in	Color management	All features accelerated with CUDA	Requires Tesla	C2070	Multi-GPU	Available now
CoreMelt complete	Visual effects plug-in	Faster effects	TBD	Q2000	Single only	Available now
eyeon Fusion	Effects and compositing	Faster effects	50x	Q4000 and Maximus (QXXXX + C2075)	Single only	Available now
GenArts Monsters GT	Visual effects plug-in	Faster effects	10x	Q4000	Single only	Available now
GenArts Sapphire	Visual effects plug-in	Faster effects	10x	Q4000	Single only	Available now
ROBUSKEY	Chroma keyer plug-in	Faster effects	TBD	Q2000	Single only	Available now
Neat Video Open FX	Video noise reduction plug-in	Faster effects	TBD	Q2000	Single only	Available now
NewBlueFX Video Essentials	Video effects plug-in	Faster effects	6x	Q2000	Single only	Available now
NewBlue Titler Pro	Video titling plug-in	Faster effects	6x	Q2000	Single only	Available now
Pixelan AnyFX	Video effects plug-in	Faster effects	TBD	Q2000	Single only	Available now
Re:Vision Effects	Visual effects plug-in	Faster effects	TBD	Q4000 for Mac	Single only	Available now
Red Giant Effects Suite	Visual effects plug-ins	Faster effects	TBD	Q2000	Single only	Available now
Red Giant Magic Bullet Looks	Color and finishing tools	Faster effects	TBD	Q2000	Single only	Available now
The Foundry HIERO	Shot management, conform and review timeline	Better interactivity	TBD	Q2000	Single only	Available now
The Foundry KRONOS	Retiming and motion blur plug-in for After Effects	Faster effects	TBD	Q4000	Single only	Available now
The Foundry NUKEX	Compositing tools with 3D tracker	Faster effects	TBD	Q4000	Single only	Available now
Video Copilot Optical Flares	Lens flares plug-in for After Effects	Faster effects	TBD	Q2000	Single only	Available now
Video Copilot Twitch	Video effects plug-in for After Effects	Faster effects	TBD	Q2000	Single only	Available now

EDITING

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Adobe Photoshop CS6	Image editing	Over 20 effects for smoother image manipulation in Mercury Graphics Engine	Real-Time	Q600-Q2000	Single only	Available now
Adobe Premiere Pro CS6	Video editing	Mercury Playback Engine for faster video effects and Mercury Transmit for Quadro SDI Output	7-8x	Q2000 and Maximus (QXXXX + C2075)	Single only	Available now
Apple FinalCut	Video editing	Faster effects	TBD	Q4000 for Mac	Single only	Available now
Autodesk Smoke	Editing and Finishing	Faster effects	TBD	Q4000 for Mac	Single only	Available now
Avid Media Composer	Video editing	Faster video effects, unique stereo 3D capabilities	2.5 - 7x	Q4000	Single only	Available now
Grass Valley Edius	Video editing	Faster effects	TBD	Q2000	Single only	Available now
Harris Velocity	Video editing	Faster effects	TBD	Q2000	Single only	Available now
Quantel Qube	Broadcast video editing	Faster video effects, unique stereo 3D capabilities	TBD	Q4000	Single only	Available now
Sony Vegas Pro	Video editing	Faster video effects and encoding	7x	Q600 - Q4000	Single only	Available now

ENCODING AND DIGITAL DISTRIBUTION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Cinnafilm Tachyon	Standards conversion	Video encoding and video processing	Requires Tesla	T 2090	Multi-GPU	Available now
Digimetrics Aurora	Automatd video and audio test and measurment	Video encoding and video processing	TBD	C2075	Multi-GPU	Available now
Elemental Live	Live streaming video processing and encoding	Video encoding and video processing	TBD	C2075	Multi-GPU	Available now
Elemental Server	File-based video processing and encoding	Video encoding and video processing	TBD	C2075	Multi-GPU	Available now
MainConcept CUDA H.264/AVC Encoder SDK	H.264 video encoder	Video encoding and video processing	TBD	Quadro and Tesla	Multi-GPU	Available now
Sorenson Squeeze	Video transcoding application and plug-In	Video encoding and video processing	TBD	Q4000-Q6000 and Maximus (QXXXX + C2075)	Multi-GPU	Available now
Telestream Vantage	Video transcoding and processing	Video encoding and video processing	TBD	C2075	Multi-GPU	Available now

ON-AIR GRAPHICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Avid Motion Graphics	Motion Graphics	Real-time rendering	Real-Times	Q4000	Single only	Available now
Brainstorm Studio	Virtual Sets and motion graphics	Real-time rendering	Real-time	Q5000 - Q6000	Single only	Available now
Chyron HyperX	On-air graphics	Real-time rendering	Real-time	Q4000	Single only	Available now
Chyron LEX	On-air graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now
Harris Inscribe	On-air graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now
Monarch dScript 3D	Virtual sets	Real-time rendering	Real-Time	Q4000	Single only	Available now
Monarch Twister Pro	Virtual Sets and motion graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now
Monarch Virtuoso	Virtual Sets and motion graphics	Real-time rendering	Real-Time	C2075	Single only	Available now
Perceptive Pixel Storyboard	Multi-Touch	Real-time rendering	Real-Time	Q6000	Single only	Available now
Pixel Power Clarity	On-air graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now
RT Software tOG	On-air graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now
Vizrt Viz Engine	On-air graphics	Real-time rendering	Real-Time	Q6000 SDI	Single only	Available now
Wasp Beehive	Virtual Sets and motion graphics	Real-time rendering	Real-Time	Q4000	Single only	Available now

ON-SET, REVIEW AND STEREO TOOLS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
3ality Intellicam	3D stereo camera adjustment	CUDA-based imaging	10x	Q6000 SDI	Single only	Available now
BlueFish 4K Review	Review and approval of 4K content	Real-time	Real-time	Q6000	Single only	Available now
Colorfront On-Set Dailies	Review and approval of 4K content	Real-time	Real-time	Q6000	Single only	Available now
eyeon Dimension	3D stereoscopic workflow	Real-time	Real-time	Q4000	Single only	Available now
Lightcraft Previzion	On-set workflow	Real-time	Real-time	Q6000	Single only	Available now
The Foundry Ocula	3D stereoscopic workflow	Real-time	Real-time	Q5000	Single only	Available now
Tweak RV	Review and approval of 4K content	Real-time	Real-time	Q6000	Single only	Available now

SIMULATION

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
3DAliens Glu3d	SPH fluid simulation	Faster simulation	TBD	Q5000	Single only	Available now
Blastcode Kilton/Megaton	Physics-based simulation plug in	Faster simulation	TBD	Q5000	Single only	Available now
Jawset TurbulenceFD	Physics-based simulation plug in	Faster simulation	TBD	Maximus (QXXXX + C2075)	Multi-GPU	Available now

WEATHER GRAPHICS

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Accuweather Cinemative HD	Weather graphics	Real-time	Real-time	Q6000 SDI	Single only	Available now
Accuweather Storyteller	Weather graphics	Real-time	Real-time	Q600	Single only	Available now
Meteo Earth	Weather graphics	Real-time	Real-time	Q6000 SDI	Single only	Available now
Weather Central Fusion Studio	Weather graphics	Real-time	Real-time	Q5000	Single only	Available now
WSI TrueView Max	Weather graphics	Real-time	Real-time	Q4000 SDI	Single only	Available now

Oil and Gas

APPLICATION	DESCRIPTION	SUPPORTED FEATURES	EXPECTED SPEED UP*	RECOMMENDED GPU**	MULTI-GPU SUPPORT	RELEASE STATUS
Acceleware AxRTM AxKTM	Seismic Processing	RTM, Kirchhoff, control source, electromagnetism, forward modeling	14x	T K10	Yes	Available now
CGGV GeoVation	Seismic Processing	Multiple algorithms (RTM, etc)	Non-disclosed	T K10	Yes	Available now
ffa Geoteric	Seismic Interpretation	Attributes calculations, geobodies extraction	11-13x	Q6000, QK5000, C2075	Yes	Available now
ffa SVI Pro	Seismic Interpretation	Attributes calculations, geobodies extraction	5-20x	Q6000, QK5000, C2075	Yes	Available now
ffa SEA3D Pro	Seismic Interpretation	Attributes calculations, geobodies extraction	5-20x	Q6000, QK5000, C2075	Yes	Available now
GeoStar Seismic Suite	Seismic Processing	Multiple algorithms (RTM, etc)	5-10x	T K10	Yes	Available now
Headwave Suite	Seismic Interpretation	Attributes calculations	10-50x	Q6000, QK5000, C2075	Yes	Available now
HUE HUEspace	Seismic Interpretation	Interpretation platform	10-50x	Q6000, QK5000, C2075	Yes	Available now
OpenGeo Solutions OpenSeis	Seismic Processing	Spectral Decomposition	10x	T K10	Yes	Available now
Panorama Tech	Seismic Processing, Modeling	Multiple algorithms (RTM, etc)	10-50x	T K10	Yes	Available now
Paradigm EarthStudy360	Reservoir Modeling	Attributes calculations	10-40x	Q6000, QK5000, C2075	Yes	Available now
Paradigm Echos RTM	Seismic Processing	RTM algorithm	14x	T K10	Yes	Available now
Paradigm SKUA	Reservoir Modeling	Faults, Horizons and Flow Simulation Grid	5-40x	Q6000, QK5000, C2075	Yes	Available now
Paradigm VoxelGeo	Seismic Interpretation	Attributes calculations	10-40x	Q6000, QK5000, C2075	Yes	Available now
Roxar RMS	Reservoir Modeling	Multi GPU capabilities via HUEspace	10x or greater	Q6000, QK5000, C2075	Yes	Available now
Seismic City Prestack Interpretation	Seismic Processing	Attributes calculations	10x	T K10	Yes	Available now
Schlumberger Visage	Geomechanics	GPU-enabled solver	10-20x	Q6000, QK5000, C2075	Yes	Available now
SpectraSeis	Seismic Processing	Full elastic wave-equation imaging and analysis of microseismic fracture data	28x	T K10	Yes	Available now
Stoneridge Technologies GAMPACK	Reservoir Simulation	GPU Algebraic MultiGrid Package	6-12x	T K20X	Yes	Available now
Terraspark Insight Earth	Seismic Interpretation	Horizon orientation attributes; automated fault extraction.	10x or greater	Q6000, QK5000, C2075	yes	In development Fall 2012
Tsunami RTM	Seismic Processing	RTM algorithm	5x	T K10	Yes	Available now
WesterGeco Omega2 RTM	Seismic Processing	Multiple algorithms (RTM, etc)	Non-disclosed	T K10	Yes	Available now

For more information on GPU-accelerated applications please visit, www.NVIDIA.com/TeslaApps

* Expected speedups are highly dependent on system configuration. GPU performance compared against multi-core x86 CPU socket. GPU performance benchmarked on GPU supported features and may be a kernel to kernel performance comparison. For details on configuration used, view application website. Speedups as per NVIDIA in house testing or ISV's documentation .

** Q=Quadro GPU, T=Tesla GPU. NVIDIA recommended GPUs for this application. Please check with developer / ISV to obtain certification information.

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