

*"Running electromagnetic simulations with SEMCAD X using NVIDIA hardware empowers faster processing times by factors of 25 or more, applying a level of complexity which nobody dreamed of, even two years ago. NVIDIA's and Acceleware's solutions have opened completely new worlds for computational electromagnetics."*

# AxFDTD™

## FINITE-DIFFERENCE TIME-DOMAIN



### Applications

- Antenna design
- Optics
- Connectors
- Filters, waveguides, and couplers
- Circuits
- EMC testing
- MRI coils
- SAR analysis
- Metamaterials
- Printed Circuit Board
- Low Frequency Design

### AxFDTD Specifications

- Materials: Dielectrics, Lumped Elements, Dispersive Materials
- Boundaries: PEC, CPML, Higdon, Mur, Sine/Cosine (Periodic)
- Excitation: Hard, Resistive, Gaussian Beam, Planewave/Periodic
- Subgridding: Local Mesh Refinement
- Loss Metals (SIBC)
- Multi-core CPU-only and GPU enabled

Finite-difference time-domain (FDTD) is a widely used computation modelling technique that models problems dealing with electromagnetic wave interactions.

FDTD modelling applications range from the analysis and optimization of antenna (for radio, television, and radar), to the design of microwave circuits and the influence of electromagnetic fields on the human body (wireless communications devices, digital interconnects, and biomedical imaging/treatment), to visible light (photonic crystals, nanoplasmonics, and biophotonics).

### Maximize Your Engineering Time

Acceleware's FDTD libraries provide an accelerated computational engine for computer aided engineering. Acceleware's software integrated with GPU hardware can enable simulations to be completed over 35 times faster. Accelerated simulations run from 1500 to 5000 Mcells/s compared to non-accelerated standard multi-core workstation speeds ranging from 20 to 200 Mcells/s. Using Acceleware's acceleration libraries will help to maximize the value of your simulation tools and engineering time.

### Customized FDTD Simulations

For customized FDTD simulations, Acceleware's libraries are available for purchase with a software development kit (SDK). The SDK features include:

- Matlab support
- Windows and Linux support
- Documentation
- Examples and benchmarks

## Features and Benefits

### GPU Enabled Solver

- Increased computational speed
- Reduced power consumption
- Increased cluster density
- Radically increased price/performance

### Production Ready

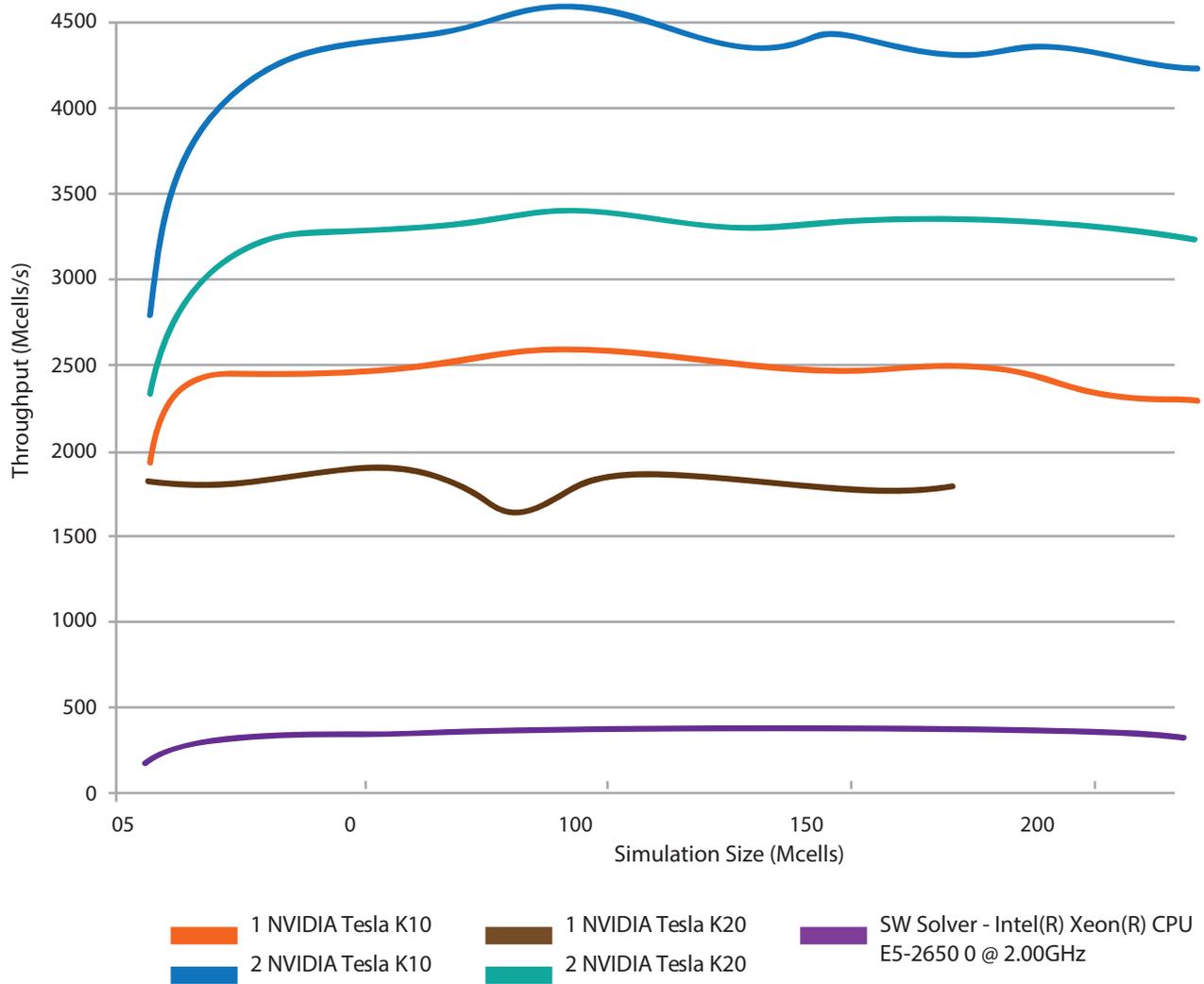
- Established product
- Optimized computational grid
- CPU and GPU enabled
- Efficient scaling for large volumes

### High-level Library

- C API integrates into any workflow
- Focus on high-level electromagnetics
- HPC implementation
- Customizable for proprietary technology

## AxFDTD GPU Performance

NVIDIA K1 and K20 FDTD Performance  
Cubic Growth, Absorbing Boundaries,  
No Observations



## Learn More About AxFDTD™

Contact us today to discuss the benefits and applications of AxFDTD.

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