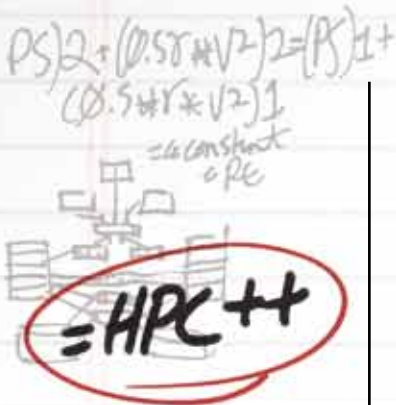


LY PRODUCTIVE HIGH PERFORMANCE COMPUTING



PARTNER PROFILE

ANSYS, Inc. is the designer of engineering simulation solutions that are used in a broad spectrum of global industries. ANSYS, Inc., founded in 1970, develops and globally markets engineering simulation software and technologies that are widely used by engineers and designers in turbo machinery, aerospace, automotive, and electronics, among other industries. Ansoft high-performance EDA software, part of the ANSYS, Inc. product portfolio, is based on more than 25 years of research and development from the world's leading experts in electromagnetics, circuit, and system simulation. Ansoft solutions allow engineers to refine, validate, and optimize electronic designs including cell phones, integrated circuits, printed circuit boards and power electronics. ANSYS and its global network of channel partners provide sales, support, and training for customers in over 40 countries throughout the world.

High Performance Computing Capabilities with ANSYS HFSS

The ANSYS HFSS High Performance Computing (HPC) options enable efficiency, productivity, and accessibility with Windows HPC Server 2008

CHALLENGE

To accurately simulate the real-world electromagnetic behavior of electronic components and electrical systems requires the use of complex mathematical algorithms. Analysis of the most complex and sophisticated systems may require long computation times that a typical computer cannot run in a timeframe that is demanded in today's market.

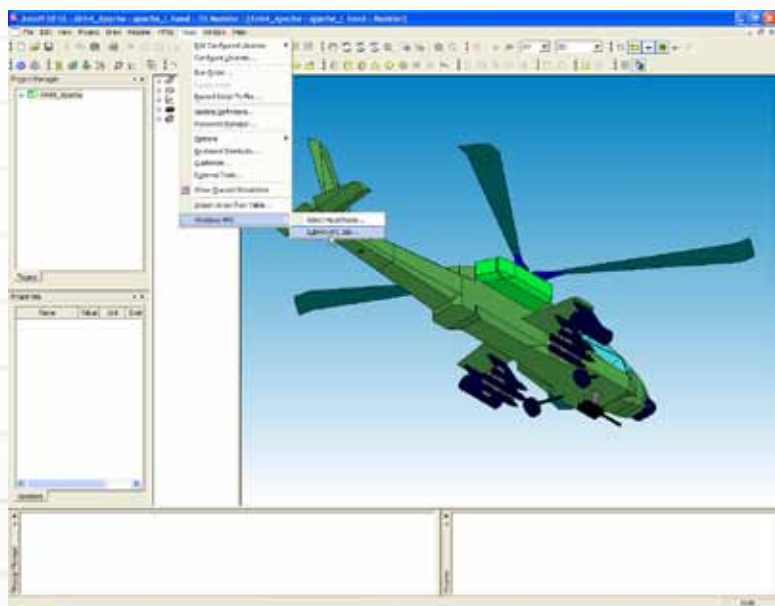
SOLUTION

In order to address this challenge, ANSYS High Frequency Structure Simulator (HFSS™) has made dramatic additions to its capability in the area of large and complex system analysis. Engineers today use multi-core computers that are often connected to other machines over high speed networks. In many cases a typical user has an enormous amount of computer power available to them. To take advantage of these resources, ANSYS HFSS now has two new HPC solution

options: Distributed Solve Option (DSO) and the new Domain Decomposition Method (DDM). Both are designed to make efficient use of multi-core and networked nodes.

ANSYS HFSS

ANSYS HFSS is the industry-standard simulation tool for 3D full-wave electromagnetic field simulation. ANSYS HFSS provides E- and H-fields, currents, S-parameters and near and far radiated field results. Intrinsic to the success of ANSYS HFSS as an engineering design tool is its automated solution process where users are only required to specify geometry, material properties, and the desired output. ANSYS HFSS will then automatically generate an appropriate, efficient, and accurate mesh for solving the problem using the proven finite element method. With ANSYS HFSS, the physics defines the mesh; the mesh does not define the physics. Using ANSYS HFSS in your design flow reduces engineering costs, mitigates risk, and reduces time to market.



Building a 900 MHz simulation of monopole antenna mounted on the underside of a helicopter displaying surface currents on airframe and overlaid far field gain pattern



The power of ANSYS HFSS comes from many research and development innovations. These breakthroughs have made ANSYS HFSS the most widely used software for solving 3D full-wave electromagnetic field simulations.

- Tangential vector basis functions enabled the highly accurate finite element method for electromagnetic field solution
- Transfinite element method for fast and accurate multi-mode S-parameter extractions
- Automatic mesh generation and adaptive refinement for reliable, repeatable and efficient results

WINDOWS HPC SERVER 2008

Windows HPC Server 2008 brings the value of an integrated HPC solution and a productive development environment to customers for whom HPC has been out of reach in the past. Windows HPC Server 2008 helps enable organizations to:

- Improve productivity of systems administration and cluster interoperability by dramatically simplifying the overall deployment, administration, and management over the entire system lifetime, while ensuring interoperability with existing systems infrastructure.
- Rapidly develop HPC applications using Visual Studio® 2008, which provides a comprehensive parallel programming environment. In addition to supporting standard interfaces such as Message Passing Interface (MPI), OpenMP, and Web

services, Windows HPC Server 2008 also supports third-party numerical library providers, performance optimizers, compilers, and debugging toolkits.

- Seamlessly scale from workstation to cluster by allowing end users to harness the power of distributed computing through a familiar Windows-based desktop environment without requiring specialized skills or training.

WORKING TOGETHER

ANSYS HFSS has three very powerful features that allow users to take advantage of Windows HPC Server 2008. The options include a multiprocessing option for speeding up matrix solutions on a single machine, a distributed solve option for distributing simulations that include a sweep over multiple cores and/or nodes, and a domain decomposition method for splitting large simulations into smaller pieces and simulating each separately. These new and enhanced features allow users to take advantage of Windows HPC Server 2008 to simulate large and often time consuming problems in a highly efficient manner.

For example, with ANSYS HFSS running on Windows HPC Server 2008, the distributed solve option removes the need to do a frequency sweep by running each simulation of the behavior of a device over many different frequencies separately. Instead, all the simulations can run in parallel on compute nodes. This provides the information needed to the engineer all at once, and the time needed for a frequency sweep shrinks exponentially.

BENEFITS

With Windows HPC Server 2008, ANSYS HFSS offers top-notch simulation performance and efficiency:

- Multiple simulation options allow organizations to pick and choose when and how to run single simulations using the collective compute nodes for the memory needed, or running multiple simulations in symphony with each node providing the space needed for each simulation.
- The highly accessible graphical user interface enables users to select computer addresses for analysis distribution.
- Availability of space in HPC computing means quicker time-to-market for organizations. Products can be simulated before production, and therefore produced within a shorter timeline without sacrificing quality assurance.

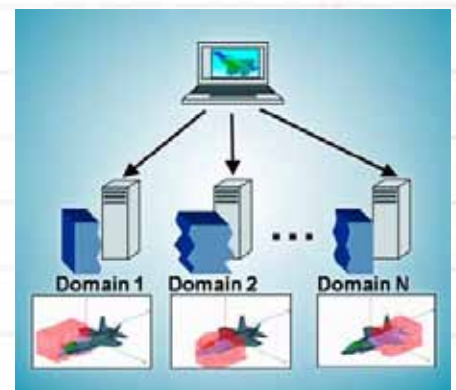


Illustration of a simulation running in parallel on multiple compute nodes

FURTHER INFORMATION

For more information about Windows HPC Server 2008 and HPC, please visit <http://www.microsoft.com/hpc>

For more information about ANSYS HFSS, please visit <http://www.ansys.com>