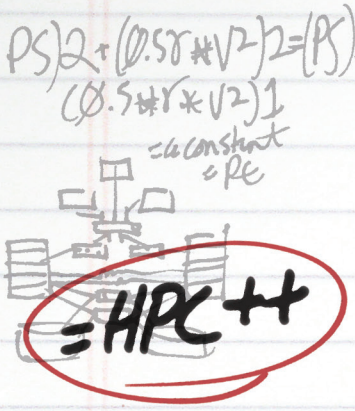
HIGHLY PRODUCTIVE HIGH PERFORMANCE COMPUTING



ANSYS FLUENT: IMPROVING THE SPEED AND ACCURACY OF ENGINEERING SIMULATION WITH WINDOWS® HPC

"As engineering simulations become more detailed and sophisticated, customers using workstations are looking to move up to HPC to improve performance, meet tight project schedules, and get better products to market faster."

Kyril Faenov, general manager of HPC at Microsoft

PARTNER PROFILE

ANSYS, Inc., founded in 1970, develops and globally markets engineering simulation software and technologies widely used by engineers and designers across a broad spectrum of industries. ANSYS FLUENT® Computational Fluid Dynamics (CFD) software is an integral part of the computer-aided engineering (CAE) environment.

OVERVIEW

Understanding the behavior of liquids and gases is crucial to engineers who need to predict and improve the performance of new designs or processes. Engineering organizations around the world rely on ANSYS FLUENT software to gain this understanding through computer simulation. CFD simulation is focused on predicting and improving the performance of new designs or processes, reducing time to market, and reducing overall engineering costs.

SITUATION

To yield reliable results and impact engineering decisions, a CFD simulation must be sufficiently detailed. CFD simulations have extremely high computer memory requirements, ranging from a few gigabytes (GB) to hundreds of GB of RAM. Memory requirements for CFD continue to increase as ANSYS FLUENT customers increase the amount of detail in their simulation models to more accurately predict the behavior of their product design or engineering process.

Increasing detail can have a corresponding increase on the turnaround time for computation, but customers need detailed flow modeling capabilities without increasing their time to market or exceeding budget expectations.

Cluster computing provides a great way to help reduce turnaround time and enables bigger, more detailed, and accurate simulations.

"If you try to process highly detailed CFD simulations on a single CPU, you may have to wait hours, days, or even weeks for your results. Parallel processing enables simulation to deliver high-fidelity insight into product performance, within the timeframe required for engineering decision making. High Performance Computing is therefore highly strategic technology for our customers."

Barbara Hutchings, Director of Strategic Partnerships at ANSYS, Inc.

Typical HPC solutions can be costly and complex. Customers need an HPC solution that meets performance objectives for engineering simulations, while still being easy to deploy, use, and manage.

SOLUTION

Windows® HPC Server 2008 combines the power of a 64-bit Windows Server® platform with rich, out-of-the-box functionality to help improve the productivity, and reduce the complexity, of an HPC environment.

"The combination of ANSYS CFD and Windows HPC Server 2008 enhances cluster computing as an option for our customers who need more HPC capacity in order to expand the role of simulation in their engineering process — allowing engineers to work with larger data sets and perform more high-fidelity analyses."

Paul Galpin, Chief Fluids Technologist, ANSYS, Inc.

ANSYS FLUENT

ANSYS FLUENT is the CFD solver of choice for broad physical modeling capabilities needed to model flow, turbulence, heat transfer, and reactions for industrial applications ranging from air flow over an aircraft wing to combustion in a furnace, from bubble columns to oil platforms, from blood flow to semiconductor manufacturing, and from clean room design to wastewater treatment plants. Advanced solver technology provides fast, accurate CFD results, flexible moving and deforming meshes, and superior parallel scalability. User-defined functions allow the implementation of new user models and the extensive customization of existing ones. Providing multiple choices of solver options, ANSYS FLUENT delivers optimum solution efficiency and accuracy for a wide range of engineering problem solving.

ANSYS FLUENT running on the Windows HPC Server 2008 operating system yields excellent parallel scaling combined with outstanding support for highly scalable parallel processing on clusters.

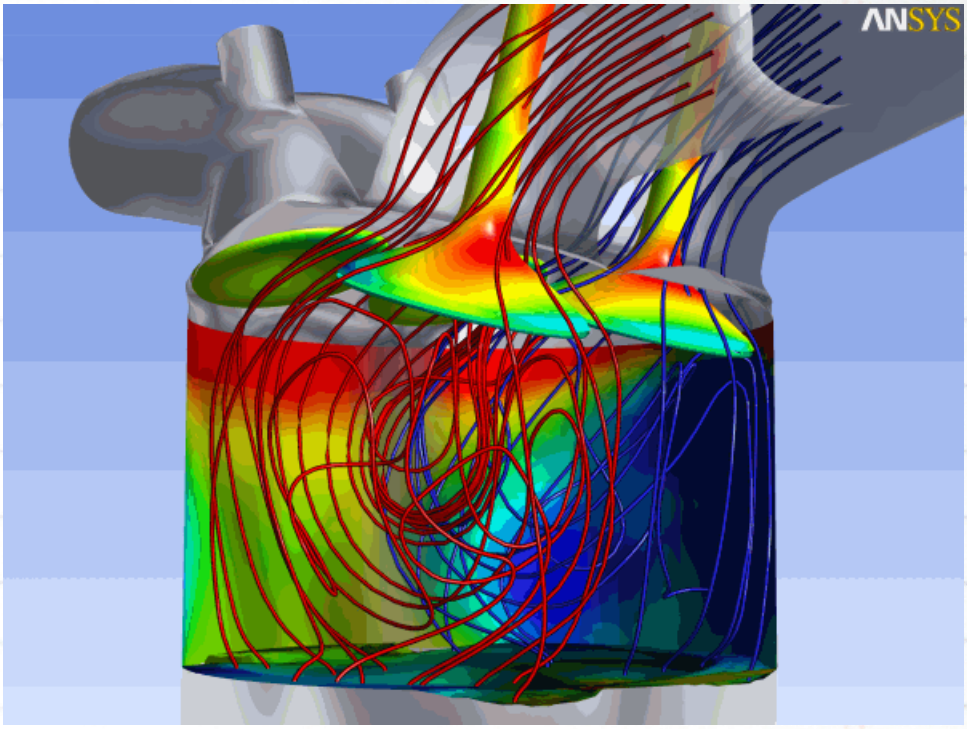
Microsoft

Windows® HPC Server 2008

WINDOWS HPC SERVER 2008

Windows HPC Server 2008 enables adoption of HPC and helps increase productivity by providing numerous end-user, administrator and developer features and tools including:

- A rich and interoperable end-user experience scaling from the desktop application to the clusters
- Microsoft management tools that you can utilize to centrally manage the Windows Server infrastructure, including full support for command-line interfaces for administrators
- Familiar development tools such as the native parallel debugger in Microsoft Visual Studio® can be used to develop and troubleshoot parallel programs, including support for standard interfaces such as Message Passing Interface (MPI), OpenMPI, and Web Services



ARCHITECTURE

The Windows HPC Server 2008 head node controls and mediates all access to the cluster resources, acts as the single point of management, deployment, and job scheduling for the cluster, and can failover to a backup head node in the case of failure.

Windows HPC Server 2008 uses the existing corporate infrastructure and Microsoft Active Directory® Domain Services for security, account management, and Operations management using tools such as Systems Center Operations Manager 2007.

BENEFITS

ANSYS FLUENT software running on the Windows HPC Server 2008 operating system provides customers with increased computing power on industry-standard processors.

More detailed and accurate simulations. The increase in computing power allows ANSYS FLUENT customers to solve more complex and detailed CFD simulations.

Improved productivity and product quality. Faster than before time-to-insight means that engineers spend much less time waiting for computation results, improving productivity and ultimately improving product quality.

Utilize existing Windows expertise and IT investments. Windows-based HPC helps ensure that you can fully utilize your existing Windows-based expertise and IT investments.

Affordable, accessible, full-featured HPC. Windows HPC Server 2008 brings simple deployment, operation and IT interoperability to HPC at a price point that allows companies to successfully deploy HPC applications.

Scalable, highly secure HPC. Windows HPC Server 2008 provides the scalability of Windows Server 2008, and includes support for Windows Server 2008 security features.

FURTHER INFORMATION

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

For more information about ANSYS FLUENT, please visit http://www.ansys.com