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Intelligent Light Pioneers High Performance Cloud-Enabled CFD

Agreement with R Systems gives FieldView™ users flexible, affordable capacity to maximize productivity and results

Rutherford, N.J. (November 17, 2010) – Intelligent Light is enabling computational fluid dynamics on the cloud, announcing an agreement to make FieldView™, its market-leading CFD post-processing software, available on the cloud computing capability offered by R Systems, a leader in HPC resources on demand.

Providing immediate access to flexible computing capacity, the arrangement gives FieldView users the ability to scale up using parallel processing or scale out with concurrent batch processing to meet capacity needs during peak loads, special projects, or tight deadlines. FieldView's client-server architecture enables data to remain on the cloud while interactive work is performed from the user's desktop. In addition, any CFD users who compute on the R Systems cloud can access FieldView for post-processing.

"Everyone is talking about cloud computing, but very few people are talking about successfully using it for CFD simulation," says Steve Legensky, founder and general manager of Intelligent Light. "Our arrangement with R Systems securely and efficiently addresses the challenges that large, complicated datasets can pose on the cloud. Our intention is to enable engineers and researchers to use FieldView-based post-processing as an integral part of the infrastructure of a cloud-based CFD workflow."

"R Systems' high performance computational resources combined with Intelligent Light's FieldView post-processing software provides clients an innovative tool suite for maximum productivity. We see FieldView as an key enabler for CFD users wishing to leverage cloud-based resources," states Brian Kucic, R Systems' business principal. "R Systems is pleased to partner with leading independent software vendors (ISVs) such as Intelligent Light to help increase widespread adoption of HPC resources."

Testing the process

In order to test the viability of CFD post-processing on the cloud, Intelligent Light launched a pilot study, selecting R Systems as the cloud provider. The study, a wind turbine aerodynamics problem with more than 40 cases, encompassed both steady cases for power generation and unsteady cases for wake propagation. The resulting 1.4 terabytes of data were post-processed by FieldView on the cloud in both parallel and concurrent batch modes using FieldView client-server operation. The data remained on the cloud machine in all cases and was remotely accessed from a laptop. With 77,000 core hours of computation, the results proved that cloud-enabled CFD is not only possible, but valuable in terms of time and cost savings.

Accurate 'pay as you go' answers

Legensky believes reliable remote post-processing is a critical component of CFD in the cloud. "Post-processing is the critical time when decisions get made," he says. "It's really the most important time in engineering – raw data has become something actionable, something you can learn from. One of FieldView's greatest strengths is its ability to quickly get users from data to decisions.

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“With relatively inexpensive HPC cloud resources and the flexibility and capabilities of FieldView, users can get the exact answers they need on a ‘pay as you go’ basis,” he continues. “We’re removing the barriers of cost, infrastructure, and specialization and leveling the CFD playing field for all users.”

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Automation, batch keys to efficiency

The advent of HPC may mean that ever larger datasets can be run, but without a highly efficient, automated post-processing workflow, “you’re exposing yourself to a data tsunami,” Legensky says. “You can compute really big solutions in client-server or local modes, but if you have to read the whole file every time, or have too much data to handle, you’re losing valuable time. Automation and data management are key.”

FieldView’s feature set allows users to easily bridge the gap from interactive to fully automated and reliable batch post-processing. Earlier this year Intelligent Light introduced FieldView Batch Packs, which enable the use of multiple instances of FieldView on an HPC server for concurrent processing at a fraction of the cost of standard FieldView licenses. Concurrent batch processing reduces turnaround time and enables high throughput for transient simulations, both key to streamlining the CFD workflow. Batch operation will be supported on the R Systems cloud service.

Reaping the benefits

The power of a highly efficient CFD workflow is readily apparent in Formula 1 at Red Bull Racing, where more than 80% of the team’s aerodynamic design is driven through CFD and FieldView. With thousands of cores running concurrently, the team’s results files are massive. While in general post-processing can take twice the time of a single solver run, nearly 90% of Red Bull Racing’s post-processing tasks are automated via batch processing. Every morning, engineers receive automatically generated FieldView PDF reports with animations, allowing them to focus on results, not the process itself. A detailed [case study](#) is available at www.ilight.com.

Technology, Teamwork, Trust: About Intelligent Light

For more than 25 years, Intelligent Light has been solving the toughest engineering challenges faced by manufacturing and research organizations around the world. The company’s flagship FieldView™ family of products combines true ease-of-use with the industry’s most sophisticated CFD post-processing and large-data visualization capabilities. Intelligent Light’s Applied Research Group conducts pure research on the cutting edge of CFD while customizing and delivering real-world solutions to customers in industries such as aerospace, automotive, general manufacturing and turbomachinery. Intelligent Light drives CFD simulation for increased productivity, faster answers, deeper insight and maximum return on investment. Visit www.ilight.com for more information.

Fast, Flexible, Freedom: About R Systems

R Systems provides technical expertise and optimized HPC cluster resources to the commercial and academic research communities. R Systems’ objectives focus on providing fast and flexible HPC implementation, leaving users with the freedom to manage their core objectives. Supported by expert technical staff, users avoid tedious systems management, making every project a value-added experience.

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R Systems' agnostic approach to OS, hardware, and software ensures that a custom solution will match user requirements and expectations. This results in productive throughput while saving time and reducing cost. Visit www.rsystemsinc.com for more information.

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