OSC Relies on **NVIDIA® Quadro® Plex 2200 S4** Servers to Provide Remote Interactive Visualization for Ohio's Academic and Industry Researchers.

For over 20 years, the Ohio Supercomputer Center (OSC) has proven itself as an innovator and leader helping Ohio's research universities and private industry to be in the forefront of computational research. Today's scientific research generates an enormous volume of 3D data, which in turn must be explored, analyzed and communicated; as a result, OSC has experienced a dramatic increase in demand for advanced visualization resources. In response to its clients' growing need for even greater computational capacity, OSC recently integrated multiple NVIDIA Quadro Plex 2200 S4 servers into its "lights out" operation room at the State of Ohio Computing Center. These dedicated multi-GPU visual computing solutions will allow Ohio's academic and industry researchers to visualize and interact remotely, for the first time, with extremely large models from their classrooms or labs.

- Glenn IBM 1350 Cluster

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- Don Stredney, Director of OSC's Interface Lab

Based in Columbus, Ohio, OSC provides supercomputing, research and educational resources to thousands of users including corporations, universities, hospitals, state agencies, the military and the National Institutes of Health. The center requires tremendous amounts of memory, speed and programmability to deliver the volume of realistic and effective images its clients demand. The Nationwide Children's Research Institute, for example, is using OSC resources for its cancer identification work, the Ohio State University Medical Center's Department of Biomedical Informatics is tracking the spread of the H1N1 influenza virus, and other researchers at Ohio State's College of Pharmacy are investigating treatments for neurological diseases. In addition, medical students and veterinary students are drawing on OSC's resources to deliver real-time, interactive 3D computer simulations to learn anatomical relationships and surgical procedures. Training in a virtual environment has proven to be a safer and more effective way for students to learn fundamental techniques.

Mindful of its clients' growing needs and wishing to remain ahead of the curve, OSC made the decision to further improve its already impressive advanced visualization capabilities by installing multiple NVDIA Quadro Plex 2200 S4 servers to power the visualization nodes associated with its supercomputer, the IBM Cluster 1350. OSC can now use these GPU nodes for remote and batch visualization as well as for GP/GPU computing.

OSC is particularly excited about the new remote capabilities of its upgraded cluster because these will allow a much broader range of clients to take advantage of advanced visualization. Researchers will be able to access the cluster remotely from their classrooms, labs, or even from their homes using thin "client" computers. The heavy processing and computational analysis is done remotely by the centralized GPU cluster. Ohio's academic and industry researchers can solve highly complex challenges such as those involving real-time ray tracing and interactive volume rendering, using the power of a supercomputer straight from their desktop: "Now, numerous faculty, staff, and students will have access to this unique architectural environment to expand current course work as well as conduct research in the areas of extremely large-scale image processing, molecular dynamics, data mining, scientific and information visualization," said Don Stredney, Director of OSC's Interface Lab. "This new technology will optimize how scientists and researchers interact with the visualization of their data by delivering on-demand advanced visualization."

NVIDIA Quadro Plex 2200 S4 servers were chosen by OSC because they deliver massive computational power: 16GB memory, CUDA parallel computing processor (960 parallel processing cores), and 64 bit floating point support. "The NVIDIA Quadro Plex S4 servers are ideally suited for powering batch operations such as scientif-

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ic and information visualizations as well as supporting rendering farms. OSC chose the Quadro Plex solutions for their optimized support of CG, GLSL, CUDA and OpenCL. This will allow OSC to further explore both interactive volume rendering of extremely large data sets, and additional uses in remote visualization," said Stredney. In addition, the Quadro Plex S4 servers provide the necessary features for efficient integration into the IBM 1350 cluster including: system monitoring, thermal control and fault notification

- Glenn IBM 1350 Cluster

JRTI, a company specializing in the delivery of innovative and cost effective solutions, collaborated with OSC on building the new visualization nodes as well as upgrading their existing visualization cluster. According to James River Technical, Inc. CEO Leo Iantosca, "JRTI worked closely with the OSC to identify the optimal solution for their needs. The NVIDIA Quadro Plex units are uniquely qualified due to both the GPU compute and visualization capabilities that they deliver. We're excited to have collaborated with our partner PNY to provide this unique solution."

In addition to building the visualization nodes, OSC upgraded the BALE (Blueprint for an Advanced Learning Environment) Interface Lab GPU cluster with multiple NVIDIA Quadro Plex 2200 D2 systems. Offering 8 GB frame buffer memory and g-sync capabilities, the Quadro Plex D2 is an ideal solution to power OSC's large display stereo projection system. The center is also using the quad buffered stereo feature of NVIDIA Quadro FX 5800 by PNY graphics boards to enhance the experiences of viewers who are using applications that require stereo viewing. "Once again OSC is leading the way in advanced visualization. By using the NVIDIA Quadro Plex systems to offer remote interactive advanced visualization, OSC is providing Ohio's academic and industry researchers with the high performance computational resources they need to break new ground in a variety of disciplines." said Jeff Medeiros, Director of Marketing, PNY Technologies, Inc.

About PNY Technologies, Inc.

Established in 1985, PNY Technologies®, Inc. is a leading supplier and marketer of NVIDIA® Quadro® by PNY Technologies professional graphics solutions. The company also offers a full line of high-end memory upgrade modules, flash media, USB flash drives, portable hard drives and flash peripherals. Headquartered in Parsippany, N.J., PNY maintains facilities in North America, Europe and Asia.

For more information, please visit www.pny.com.

About Ohio Supercomputer Center

The Ohio Supercomputer Center (OSC) is a catalytic partner of Ohio universities and industries, providing a reliable high performance computing and high performance networking infrastructure for a diverse statewide/regional community including education, academic research, industry, and state government. Funded by the Ohio Board of Regents, OSC promotes and stimulates computational research and education in order to act as a key enabler for the state's aspirations in advanced technology, information systems, and advanced industries.

For more, visit www.osc.edu

About JRTI

James River Technical, (JRTI) delivers (HPC) solutions to the Academic, Government, and Commercial marketplaces. JRTI has delivered HPC solutions to a diverse customer base over the last 10 years. JRTI is focused on delivering HPC solutions that provide the most cost effective path to research discovery and insight. JRTI's coverage model serves clients throughout North America.

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*Images courtesy of Ohio Supercomputer Center