Durham University and DiRAC's New NVIDIA InfiniBand-Powered Supercomputer to Accelerate Our Understanding of the Universe

NVIDIA HDR InfiniBand to Speed UK Cosmology Research, Complex Simulations of the Cosmos

NVIDIA today announced that Durham University's new COSMA-8 supercomputer — to be used by world-leading cosmologists in the UK to research the origins of the universe — will be accelerated by NVIDIA® HDR InfiniBand networking.

Hosted by the Institute for Computational Cosmology of Durham University on behalf of the DiRAC HPC facility, COSMA 8 will become the centerpiece of the DiRAC Memory Intensive service. It will allow scientists to advance our understanding of astronomy and particle physics using large-scale simulations. Scientific exploration of dark matter, dark energy, black holes and how galaxies and other structures in the Universe have formed will be advanced by the extreme performance of COSMA 8 and InfiniBand, the world's only fully offloadable, In-Network Computing interconnect.

DiRAC is a distributed computing facility comprising four deployments across the UK, with systems designed to meet various high performance computing needs within the scientific community. It provides a variety of compute resources that match machine architectures to the different algorithm designs and requirements of the research problems they are tackling.

Based on Dell EMC PowerEdge C6525 servers with AMD EPYC processors, the COSMA 8 supercomputer will be accelerated by HDR 200Gb/s InfiniBand networking with In-Network Computing engines, providing the highest level of performance and scalability to accelerate memory-intensive scientific applications. COSMA 8 utilizes a full non-blocking fat tree topology to enable the best performance to each node in the system.

"COSMA 8 is aiming to model the entire universe, over time, from the big bang to today. It will allow humankind to continue advancing our understanding of where we came from and our place in the cosmos, using larger-scale simulations than ever before," said Alastair Basden, technical manager for the DiRAC Memory Intensive Service at Durham University. "The massive scale of these simulations relies on the bandwidth only InfiniBand can deliver to make this research possible. It's one example of how DiRAC and Durham University continue to advance the field of supercomputing through their ongoing collaboration with NVIDIA."

The use of InfiniBand in DiRAC's COSMA 8 complements other NVIDIA collaborations with Durham University, including ongoing research to explore and utilize the benefits and advanced features of NVIDIA BlueField® data processing units for a multitude of applications and use cases.

"NVIDIA accelerates the most data-intensive workloads in the world and our ongoing collaboration with Durham University and DiRAC continues to push the boundaries of pioneering supercomputing research," said Gilad Shainer, senior vice president of networking at NVIDIA. "Our collaboration on developing the next generation of supercomputing architecture will enhance research capabilities and be the cornerstone of future systems."

In November, NVIDIA announced its next generation of NDR 400G InfiniBand, that will give scientific researchers the fastest networking performance available to take on the world's most challenging problems.

About NVIDIA
NVIDIA's (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market and has redefined modern computer graphics, high performance computing and AI. The company's pioneering work in accelerated computing and artificial intelligence is reshaping trillion-dollar industries, such as transportation, healthcare and manufacturing, and fueling the growth of many others. More information at https://nvidianews.nvidia.com/.

Certain statements in this media alert including, but not limited to, statements as to: NVIDIA-powered supercomputers accelerating our understanding of the universe; NVIDIA HDR InfiniBand speeding and accelerating research and simulations and what it will allow and advance; the benefits and performance of our products and technologies, including InfiniBand and NVIDIA BlueField data processing units; the performance of the COSMA 8 supercomputer; what COSMA 8 is aiming to model and what it will allow; Durham University and NVIDIA advancing supercomputing; Durham University and NVIDIA's collaborations, its impacts and what it will enhance; NVIDIA accelerating the most data-intensive workloads; and NVIDIA NDR 400G InfiniBand giving researchers the fastest networking performance to take on the world's most challenging problems are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and

technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

Alex Shapiro
Enterprise Networking
1-415-608-5044
ashapiro@nvidia.com