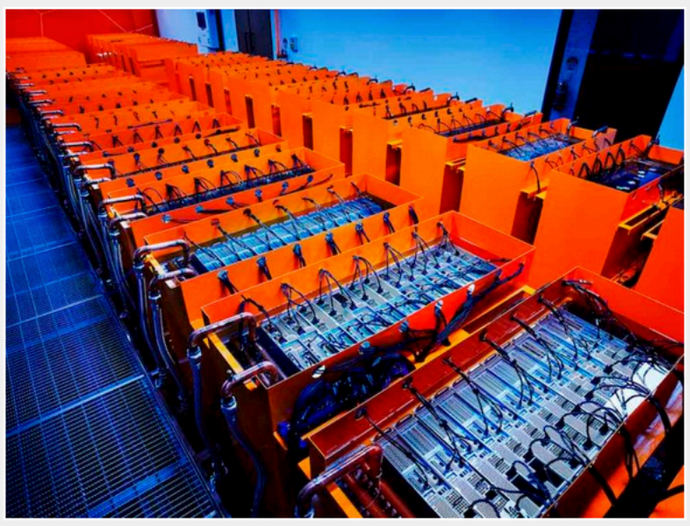
Mellanox Powers Massive HPC Cloud Service for DownUnder Geosolutions

March 6, 2019 by staff | Leave a Comment



Today DownUnder GeoSolutions (DUG) announced that the company has chosen leading Ethernet supplier Mellanox Technologies to supercharge their massive exascale-focused HPC facility.

> *DUG's ambitious cloud service, DUG McCloud, is tailored specifically to the geophysics community and is currently being built at Skybox Houston. Described as the world's most powerful supercomputer, the facility will be 250 single-precision petaflops when fully installed. The vast, geophysically-configured machine, housed in a purpose-built exascale data centre, will have the power, room, and plans in hand to expand beyond an exaflop, as demand increases.*

Highlights include:

- This level of compute power requires a high performance, reliable, and resilient network capable of delivering >10Gb/s of low-latency bandwidth per server to over 40,000 compute nodes.
- To help accelerate the geophysics community's research, development, and production, Mellanox is creating and deploying a unique "multi-host" adapter.
- This state of the art technology, created exclusively for DUG, allows four servers to use a single 50Gb/s network connection, with each node able to burst to over 30Gb/s.
- The sophisticated design uses Mellanox's SN2700 32 port 100Gb/s Ethernet switches, achieving greater throughput while reducing overall switch count.

> *DUG McCloud is a great example of how innovative design and out of the box thinking can drive a huge leap in supercomputer price/performance, compute efficiency, and power efficiency," said Amir Prescher, senior vice president business development and end user sales, Mellanox Technologies. "Utilizing multi-host technology achieved significant cost savings with the number of switches reduced by 50% and rack cabling reduced by 75%. The combination of powerful compute nodes, Mellanox best-in-class, end-to-end 100G Ethernet fabric and professional services, and DUG's sophisticated models creates a truly world-class geophysical exploration platform. Best of all the cloud service delivery and consumption model allows customers to benefit from a truly world-leading super computer without the need for a super CAPEX budget."*

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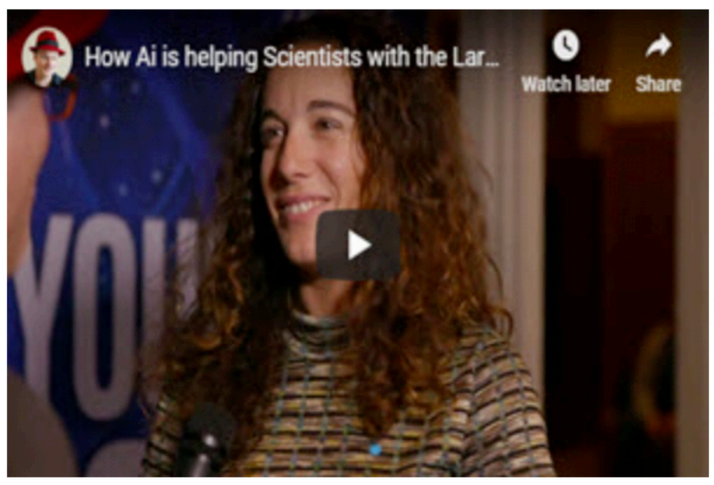

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INDUSTRY PERSPECTIVES

Video: Why InfiniBand is the Way Forward for AI and Exascale

In this video, Gilad Shainer from the InfiniBand Trade Association describes how InfiniBand offers the optimal interconnect technology for AI, HPC, and Exascale. "Tthrough AI, you need the biggest pipes in order to move those giant amount of data in order to create those AI software algorithms. That's one thing. Latency is important because you need to drive things faster. RDMA is one of the key technology that enables to increase the efficiency of moving data, reducing CPU overhead. And by the way, now, there's all of the AI frameworks that exist out there, supports RDMA as a default element within the framework itself." [READ MORE...]

WHITE PAPERS

In-Network Computing and Next Generation HDR 200G InfiniBand

With the exponential growth of data that needs to be analyzed and the data resulting from ever-more complex workflows, the need for faster data movement has never been more challenging and critical to the worlds of High Performance Computing (HPC) and machine learning. Mellanox Technologies is once again moving the bar forward with the introduction of and end-to-end HDR 200G

Mellanox's multi-host NIC and high bandwidth fabric is a perfect solution for DUG's network requirements," said Dr Matthew Lamont, DUG's Managing Director. "The higher local bandwidth on offer greatly enhances DUG's Full Waveform Inversion code, delivering to oil and gas clients refined, high-resolution velocity models for imaging and characterization.

Mellanox SN2700 Switch

> *The efficient fabric design of Mellanox's components complements DUG's drive to deliver the most cost-effective data centre ever created. The reduced switch count, NICs, and cabling help deliver a power usage effectiveness (PUE) under 1.05 – without compromising on performance. This is significantly better than the PUE of recognized "green" data centres around the world. An industry-recognized measure of energy efficiency, PUE is a ratio of the total amount of energy used by a data centre, compared to the energy used by equipment such as lighting or cooling. A PUE of 1.00 (100% useful work, 0% overhead) is ideal.*

"We like to call DUG McCloud the greenest cloud service in the world," says Dr Lamont.

InfiniBand product portfolio. Download the new white paper, courtesy of Mellanox, that explores in-network computing and the benefits of the switch from 100G to 200G Infiniband.