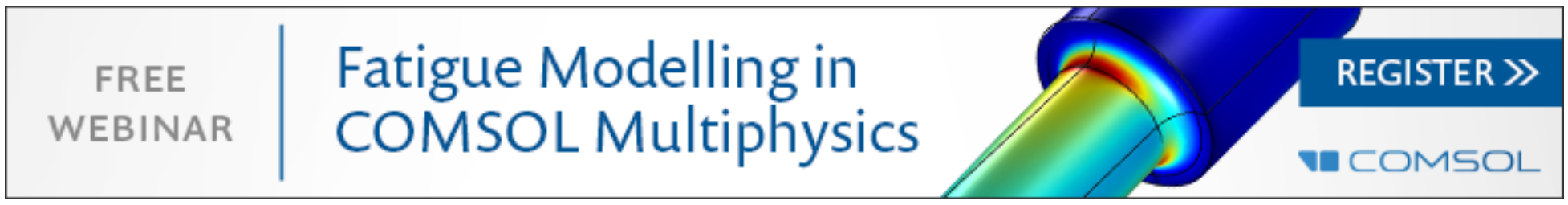

Interconnect technology improves data centre efficiency at CERN

Written by: Caroline Hayes (/site/contact-eureka.aspx?
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IDT's low-latency RapidIO interconnect technology will be used for data analysis at CERN

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In a three-year arrangement, IDT's low-latency RapidIO interconnect technology will be used for data analysis at CERN

Integrated Device Technology (IDT) has announced a three-year collaboration with the European Organization for Nuclear Research (CERN) to use RapidIO technology to help improve data acquisition and analysis in some of the world's most advanced fundamental physics research.

Widely used for 4G basestations, its low-latency RapidIO products can enable real-time data analytics and data management for high-performance computing (HPC) and data centres.

Massive volumes of data are collected by the experiments on CERN's Large Hadron Collider (LHC), the world's largest and most powerful particle accelerator. Teams from IDT and CERN will use the technology to improve the quality and timeliness of this data collection, as well as the initial analysis and reconstruction work at the experiments' data farms and the CERN Data Centre.

The LHC produces millions of collisions every second in each detector, generating approximately one petabyte of data/second. RapidIO technology provides a low-latency connection between clusters of computer processors, increasing the speed of movement of data.

The fifth phase of the CERN openlab partnership will be experiments exploring the possibility of moving from custom-built hardware and backplanes to fully programmable heterogeneous computing with low-latency interconnect between large clusters of processors. The RapidIO 20Gbit/s interconnect products will be used in the first stage of the collaboration with an upgrade path to RapidIO 10xN 40Gbit/s technology in the future as research progresses.

"This CERN collaboration is about enabling programmable real-time, mission-critical data analytics," said Sailesh Chittipeddi, IDT's vice president of Global Operations and CTO. "Since the job spans multiple processors, the interconnect between them has to be ultra-low latency, and our technology. . . .is ideally suited to CERN's real-time interconnect needs."

Because of the volume of real-time data CERN collects, current implementations are done in custom-built ASIC hardware. Using algorithms implemented in hardware, the data is sampled, and only 1% is selected for further analysis.

"The bottleneck for better data acquisition, selection and analytics is superior real-time interconnect," said Alberto Di Meglio, head of CERN openlab. "Our collaboration with IDT to develop a RapidIO-based computing architecture should help solve CERN's real-time data filtering problem, enabling us to select and utilize more meaningful events from the LHC and improve efficiency of analytics in our data center monitoring and operations."

The collaboration is based on industry standard IT form factor solutions suitable for deployment in HPC clusters and data centres. Engineers will use heterogeneous servers based on specifications from RapidIO.org that are targeted towards the Open Compute Project High Performance Computing initiative that IDT co-chairs.

The computing platform used for the collaboration is based on commercially available RapidIO-enabled 1U heterogeneous servers capable of supporting industry-standard servers, GPU, FPGA and low-power 64bit System on Chips (SoCs), as well as top-of-rack RapidIO switches available from Prodrive Technologies.

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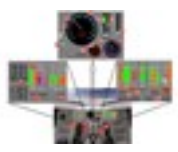

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