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FPGA Datacenters – The New Supercomputer

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The emergence of Cloud Computing has resulted in an explosive growth of computing power, where even moderately-sized datacenters rival the world's most powerful supercomputers in raw compute capacity.

Microsoft's Catapult project has augmented its datacenters with FPGAs (Field Programmable Gate Arrays), which not only expand the compute capacity and efficiency for scientific computing, but also allows for the creation of customized accelerated networks for communicating between compute nodes.

In this talk, I will describe the architecture of Microsoft's Catapult system, the results that we have achieved with compute offload, network acceleration, and even machine learning, and look toward areas where FPGAs can usher in unprecedented performance and efficiency on scientific computing workloads.

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