



数据驱动 存储创新


2017企业存储技术峰会·北京站

2017 ENTERPRISE STORAGE TECHNOLOGY SUMMIT BEIJING

2017.01.18 · 北京东方美爵酒店

主办方

日知录技术社区



新存储时代的计算机架构演进

- 李炫辉，绿芯半导体系统科技有限公司副总裁

硬件技术与软件技术发展的相互促进

计算: CPU, GPU, Google TPU, FPGA...

通信: 100Gb, PCIe, QPI, NVlink, OpenCAPI...

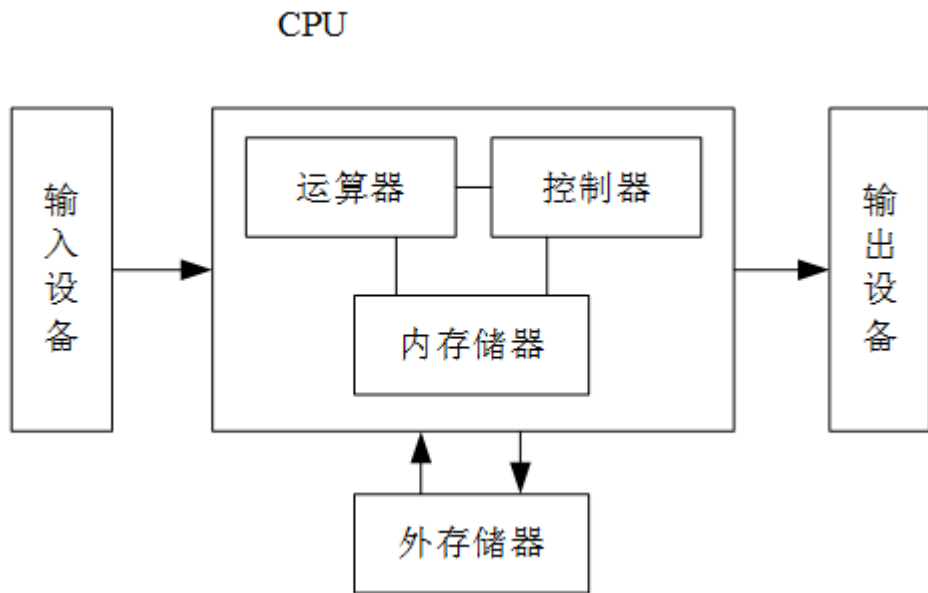
存储: NAND, 3D XPoint, PCM, RRAM, MRAM...

云计算, 大数据, 内存计算, 软件定义,
机器学习, 人工智能, 物联网, AR/VR...

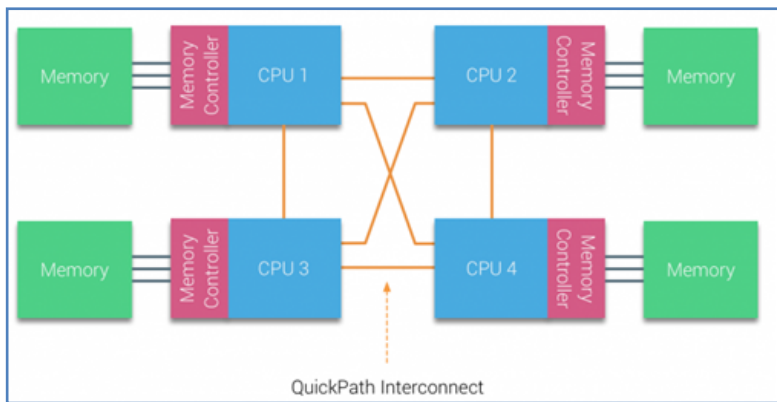
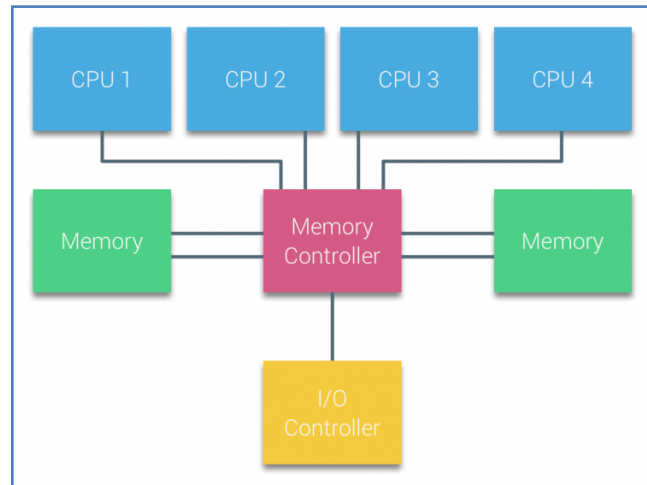
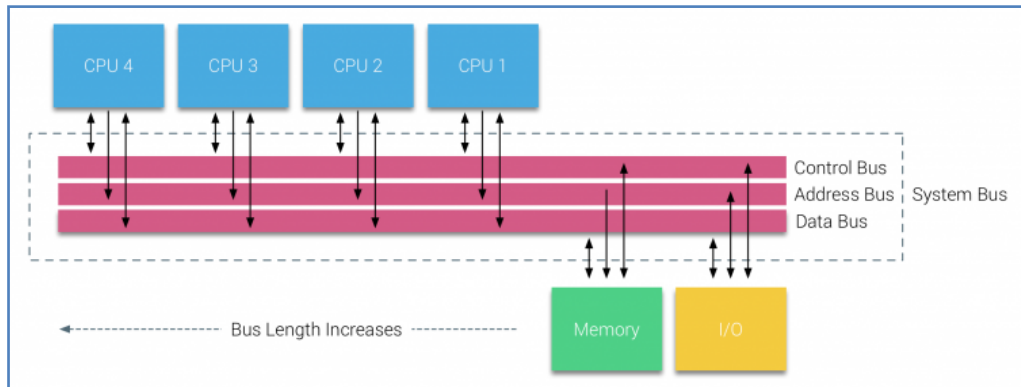
硬件: 性能和效率----稳定成熟

软件: 应用与功能----快速迭代

冯·诺依曼体系架构



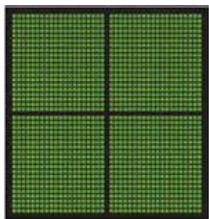
当前计算架构演进



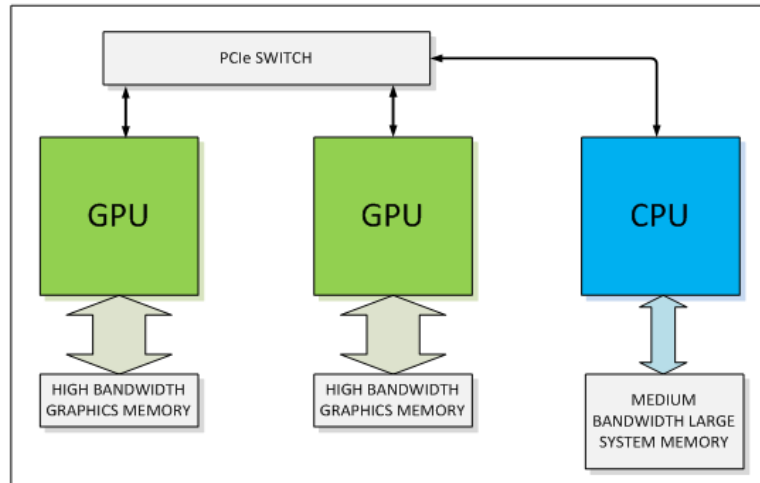
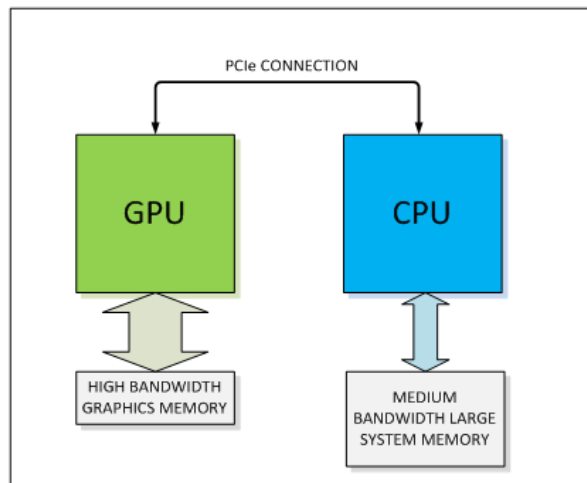
CPU+GPU计算架构



CPU
MULTIPLE CORES



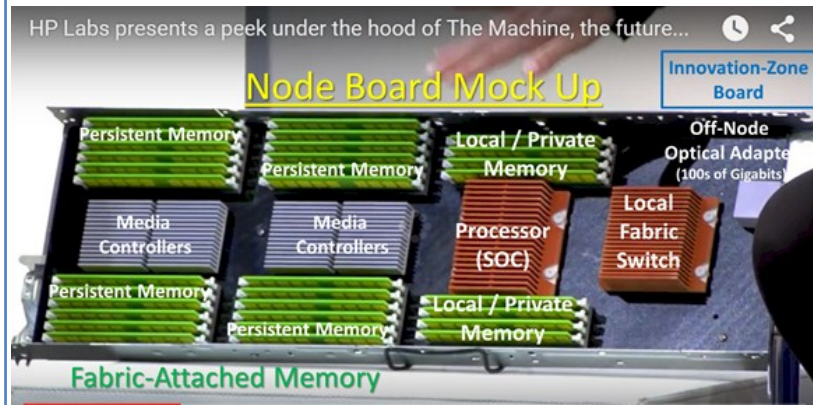
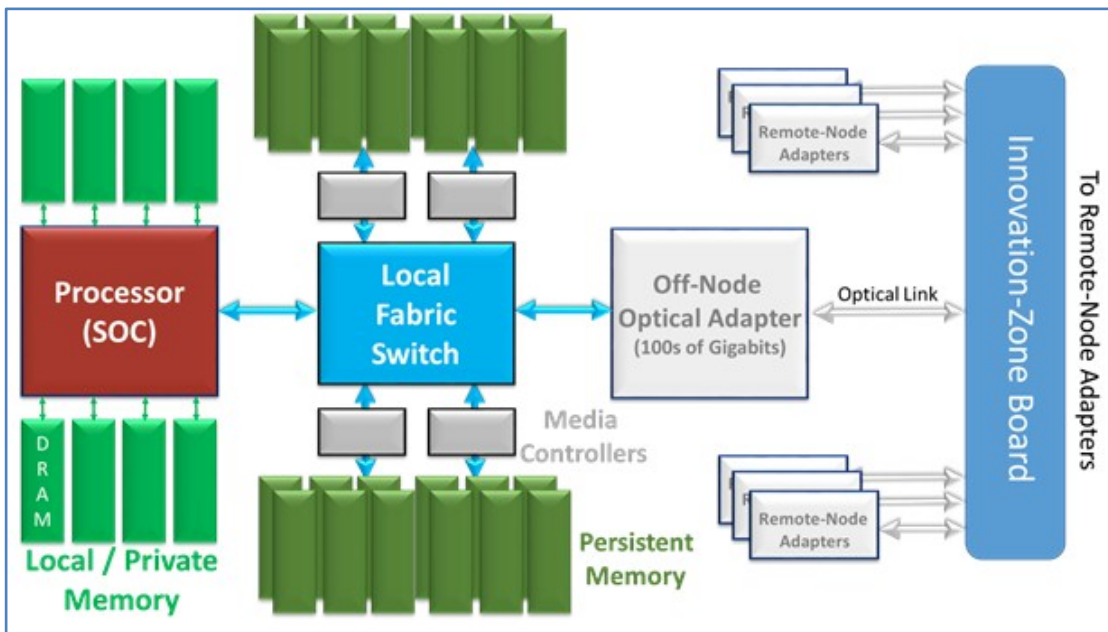
GPU
THOUSANDS OF CORES



新存储时代的挑战

- 数据量爆炸式快速增长----存储效率
- 数据库发生革命式改变----处理能力
- 机器学习、无人驾驶、人工智能----大数据支撑下的专业化计算

存储器驱动的计算架构



Azure with FPGA

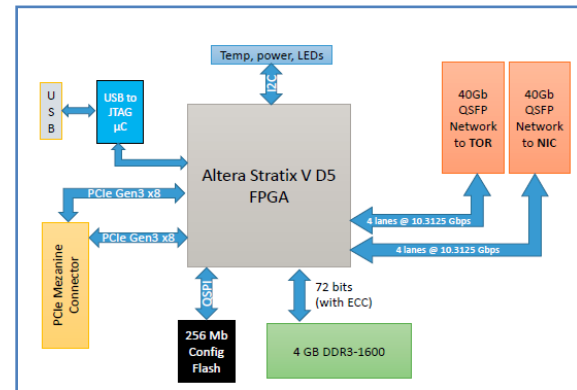
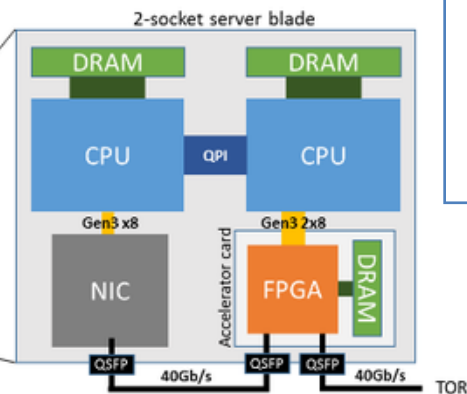
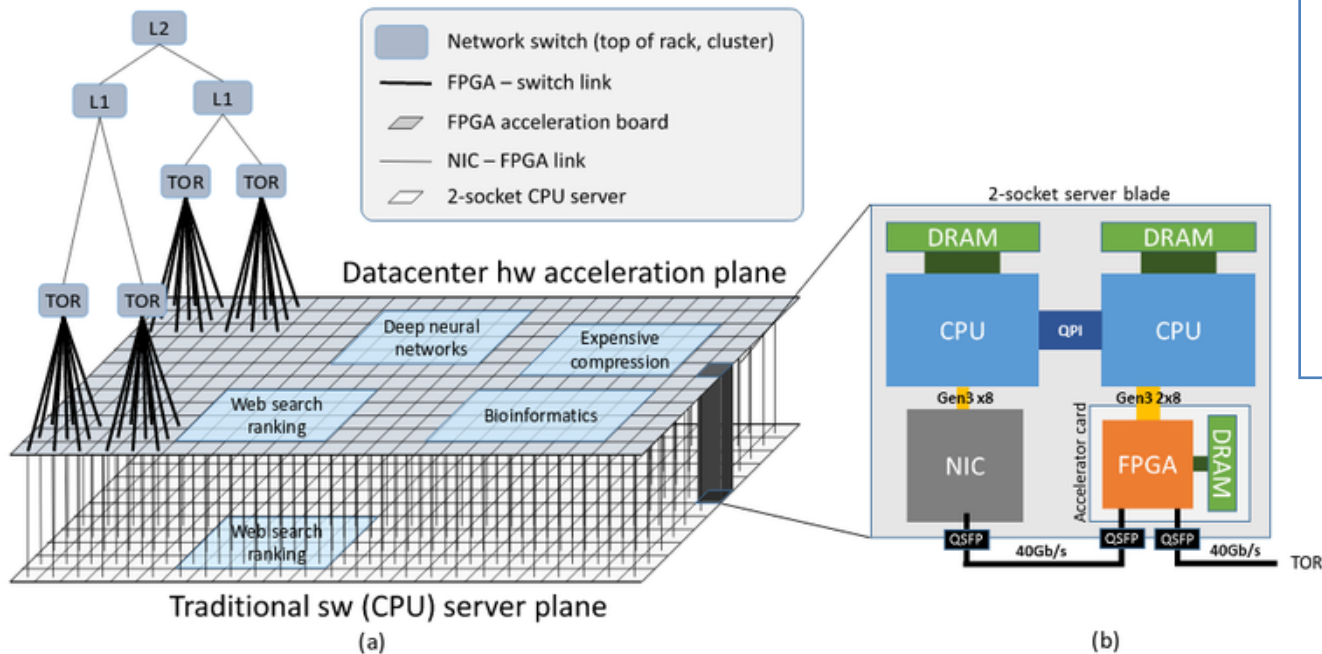
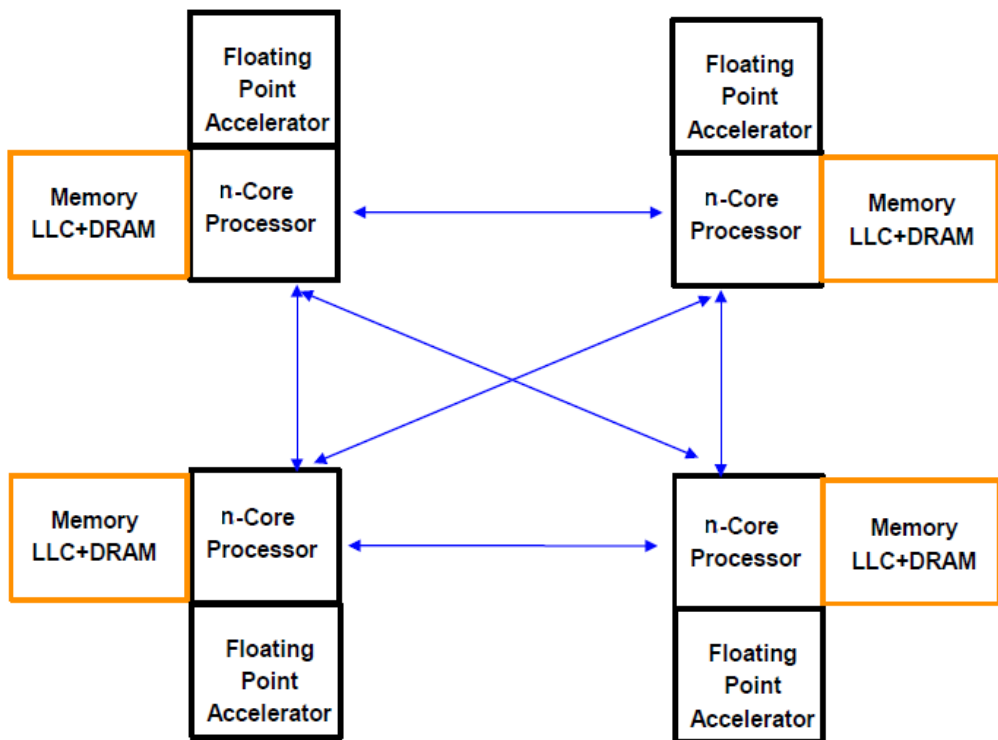
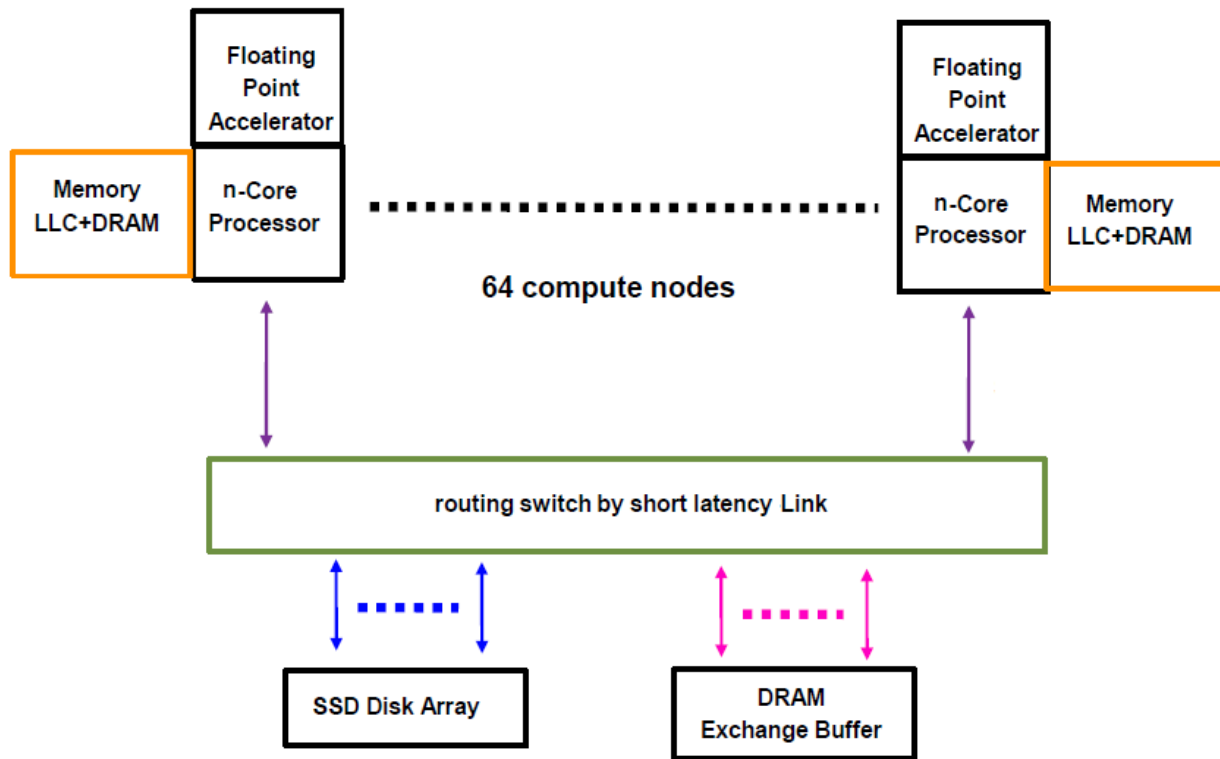


Fig. 1. (a) Decoupled Programmable Hardware Plane, (b) Server + FPGA schematic.

面向存储加速设计的多核多处理器NUMA计算架构



面向大数据计算的分布式集群架构



谢 谢