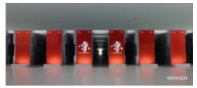
Two Tracks for Future Large Systems

Tianhe-2 (NUDT): TH-IVB-FEP
Intel Xeon E5-2692 12 C 2.2 GHz
TH Express-2
Intel Xeon Phi 31S1P

Titan (Cray): Cray XK7
AMD Opteron 6274 16C 2.2 GHz
Cray Gemini
NVIDIA K20x

Sequoia (IBM): BlueGene/Q
Power BQC 16C 1.6 GHz



K computer (Fujitsu)
SPARC64 VIIIfx 2.0 GHz
Tofu

Mira (IBM): BlueGene/Q
PowerPC A2 16C 1.6 GHz

Piz Daint (Cray): Cray XC30
Intel Xeon E5-2670 8C 2.6 GHz
Cray Aries
NVIDIA K20x

Edison (Cray): Cray XC30
Intel Xeon E%-2695v2 12C 2.4 GHz
Aries

Many Core

- 10's of thousands of nodes with millions of cores
- Homogeneous cores
- Multiple levels of memory – on package, DDR, and non-volatile
- Unlike prior generations, future products are likely to be self hosted

Cori at NERSC

- Self-hosted many-core system
- Intel/Cray
- 9300 single-socket nodes
- Intel® Xeon Phi™ Knights Landing (KNL)
- 16GB HBM, 64-128 GB DDR4
- Cray Aries Interconnect
- 28 PB Lustre file system @ 430 GB/s
- Target delivery date: 2016

Aurora at ALCF

Retargeted
Exascale (2021)
+ Machine Learning

- Self-hosted many-core system
- Intel/Cray
- Intel® Xeon Phi™ Knights Hill (KNH)
- Target delivery date: 2018

Hybrid Multi-Core

- CPU / GPU Hybrid systems
- Likely to have multiple CPUs and GPUs per node
- Small number of very fat nodes
- Expect data movement issues to be much easier than previous systems – coherent shared memory within a node
- Multiple levels of memory – on package, DDR, and non-volatile

Summit at OLCF

- Hybrid CPU/GPU system
- IBM/NVIDIA
- 3400 multi-socket nodes
- POWER9/Volta
- More than 512 GB coherent memory per node
- Mellanox EDR Interconnect
- Target delivery date: 2017