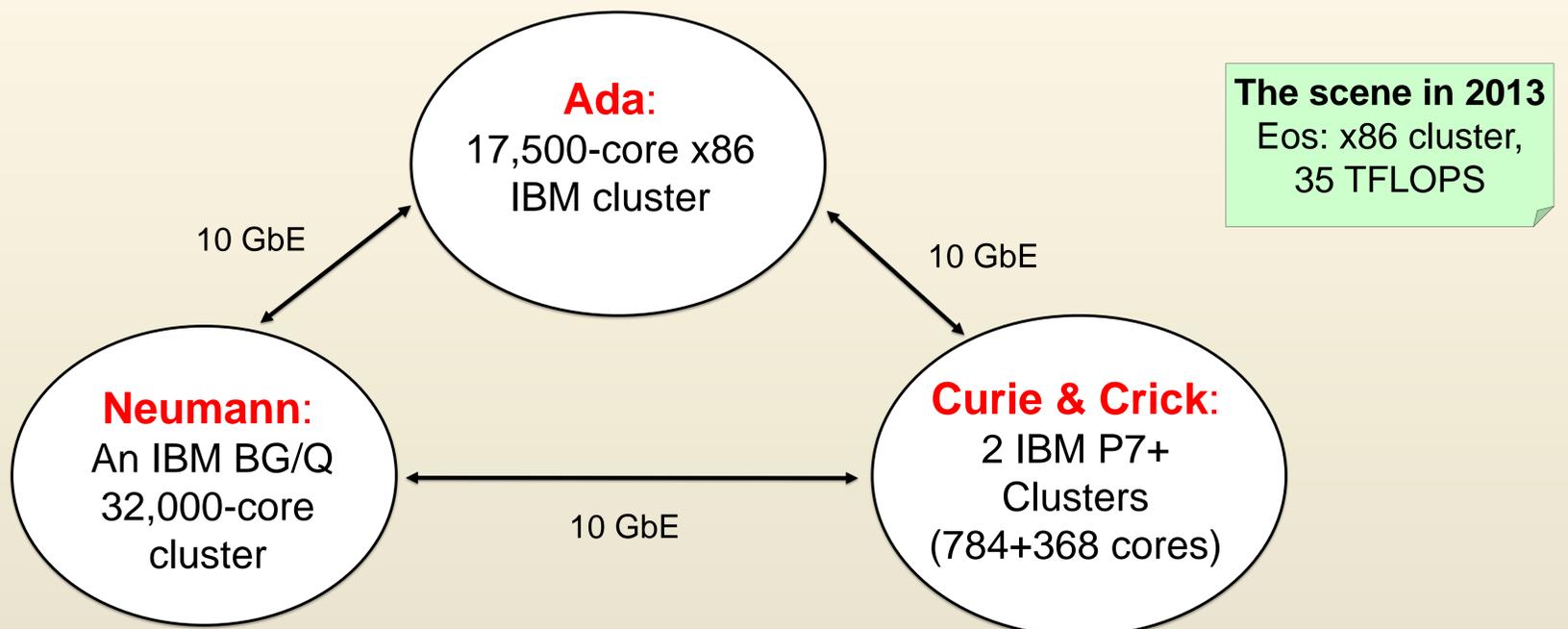
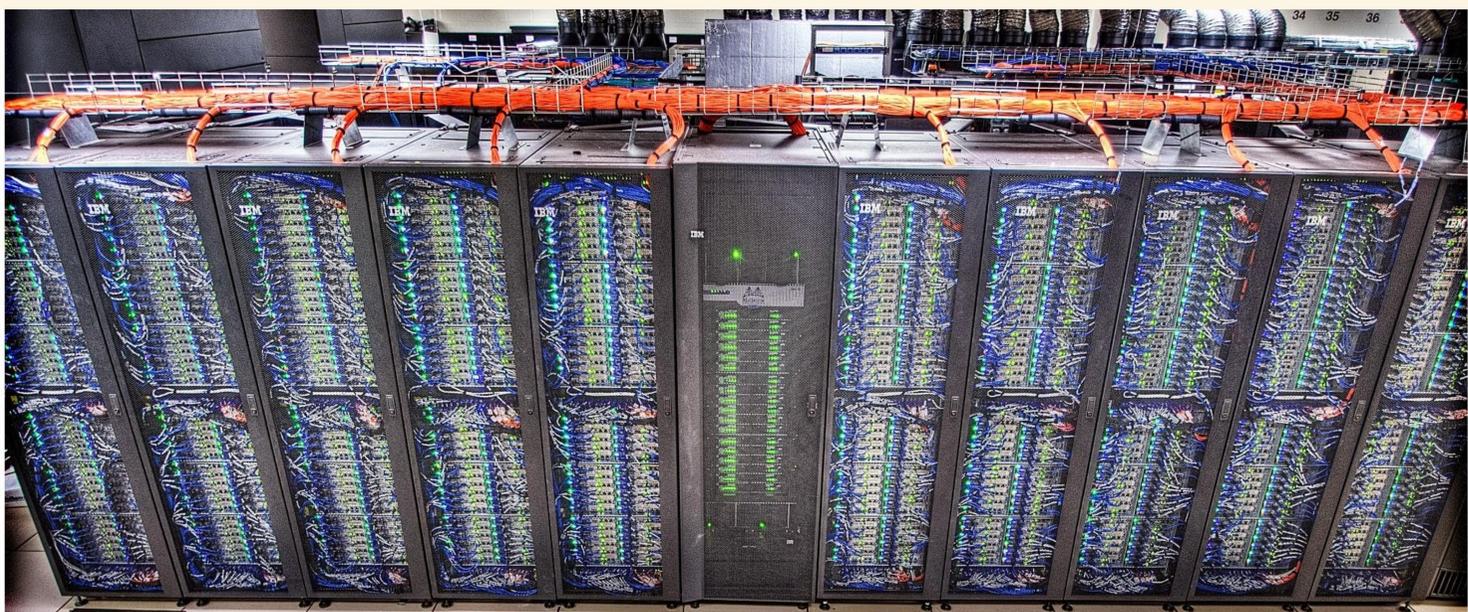


New 800-TFLOP Hardware



Ada: A 860-node IBM x86 Cluster



A 17,500-core system, with 845 20-core nodes equipped with the INTEL 10-core 2.5GHz IvyBridge processor. The other 15 nodes are 1TB and 2TB memory, 4-processor SMPs configured with the INTEL 10-core 2.7GHz Westmere processor. 30 nodes have 2 GPUs each and 9 have 2 Phi coprocessors. The interconnecting fabric is based on the Mellanox SX6536 IB core switch (the middle rack in the graphic above).

Curie : 49-node POWER7+ cluster

1 7R2 20-Node Rack



For Special HPC Codes & Applications

IBM 7R2 Node Characteristics

- 16-core (2 8-core Power7+ processors) 4.2GHz; 537GFLOPS; 32 nm fabrication
- 256 GB memory; 68GB/s per processor socket; L3 80MB/processor
- 10GbE port (link to Wehner Core 10G/40G switch)
- 4 x 600GB 10K rpm SAS (local disk)
- REDHAT ENTERPRISE LINUX FOR PWR ; GPFS Client; IBM Compilers, ESSL, LSF (batch)
- Target areas: applications & codes requiring fast memory and fast cpus

Recruiting 4 New Analysts in 2015

- Who possess HPC skills & backgrounds in
 - Bioinformatics & Genomics;
 - Big Data Analytics;
 - Scientific (and remote) Visualization;
 - Web Technologies;
 - Applied Mathematics;
 - Physical Science: engineering; physics; chemistry; geoscience

By priority analysts with these skill needed

Neumann: The 2048-node Blue Gene Q (BG/Q) Cluster



32768-core, 419 TFLOPS, Massively Parallel, interconnected in 5D Torus topology

Node: 16 compute 1.6 GHz PowerA2 cores;
 1 core for system calls; 1 core for spare
 16 GB of DDR3 memory
 204.8 GFLOPS (1.6 GHz * 8 Flop/s * 16)

1 I/O drawer per rack: 8 I/O nodes with 1 QDR IB link (via the torus interconnect) for every 2 compute nodes. Smallest job is 128-way

Shared Mass Storage 2: 2 PB of GSS26 connects to the I/O drawers via 16 IB connections thru 2 QDR/FDR10 IB switches

4 Front End Nodes: 4-core 3.6 GHz POWER7+ processor, 32 GB RAM, 2 600 GB SAS Drives

OS: Compute Node Kernel (CNK) runs on all compute nodes; a lightweight kernel, similar to Linux, supporting a large subset of its system calls

LoadLeveler (batch); IBM XL and GNU compilers; Engineering & Scientific Library (ESSL)

Crick : 23-node POWER7+ cluster

1 7R2 20-Node Rack



For Big Data Analytics Cluster (with Storage-rich Nodes)

IBM 7R2 Node Characteristics

- 16-core (two 8-core Power7+ processors) 4.2GHz; 537GFLOPS; 32 nm fabrication
- 256 GB memory; 68GB/s per processor socket; Shared (on-chip) L3 80MB per processor
- 10GbE port (link to Wehner Core 10G/40G)
- 4 x 600GB 10K rpm SAS (local disk)
- EXP24S + 24 x 600GB (14.4TB) 10K rpm SAS drives
- REDHAT ENTERPRISE LNX FOR PWR; GPFS Client
- Special Software: IBM InfoSphere BigInsights, Data Explorer Resource; Query Routing for InfoSphere Data Explorer; etc
- Target Areas: Big Data Analytics; Genomic Analysis, Breeding Simulation, mining historical data; Map Reduce; etc