



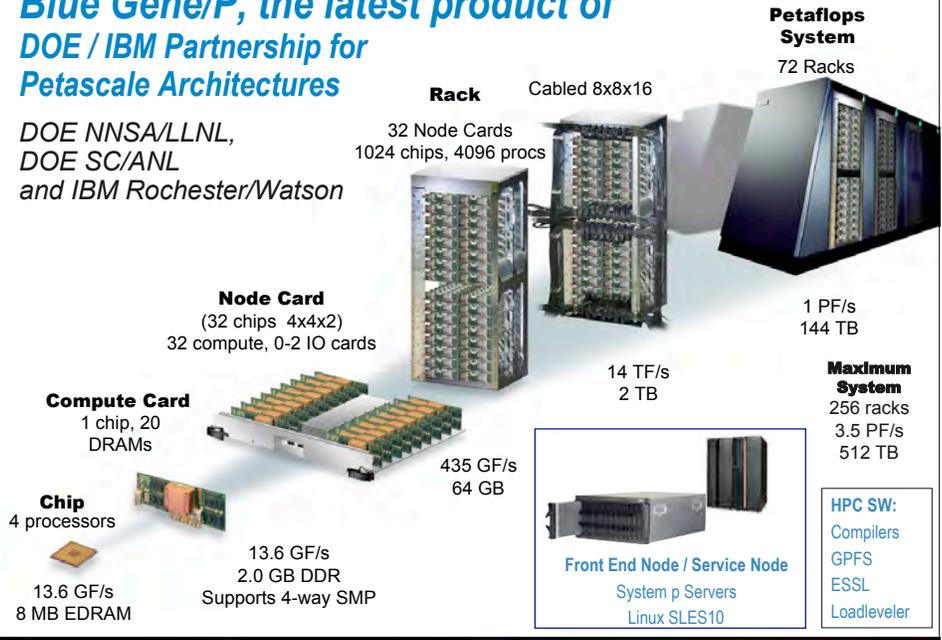
Argonne Leadership Computing Facility Upgrade Status and Plans



Argonne Leadership
Computing Facility

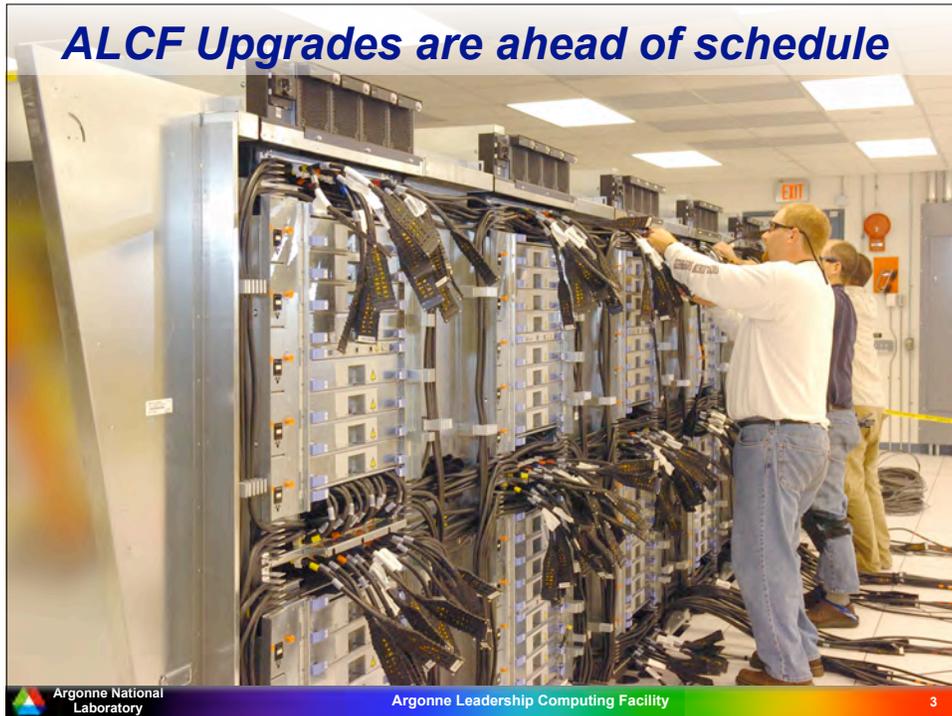
Blue Gene/P, the latest product of DOE / IBM Partnership for Petascale Architectures

DOE NNSA/LLNL,
DOE SC/ANL
and IBM Rochester/Watson

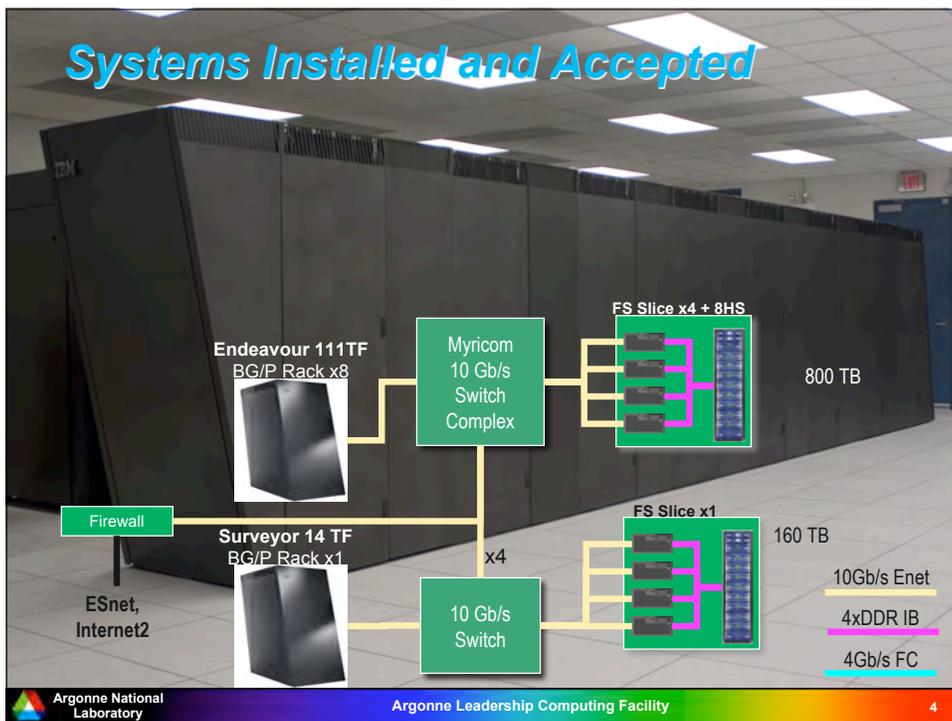


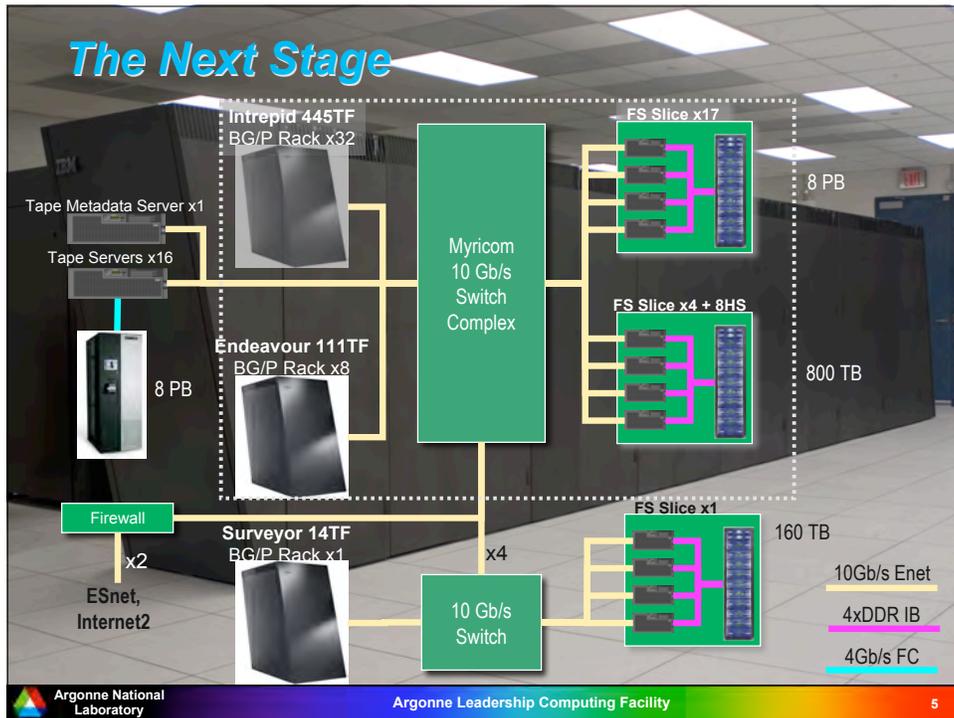
Argonne Leadership Computing Facility

ALCF Upgrades are ahead of schedule



Systems Installed and Accepted





Computing Power vs. Power to Computer

- Blue Gene/P is the most efficient petascale system
- Linpack at 3 W/gflops sustained
- ALCF can directly measure power to BG/P



Stepping Up to Blue Gene/P

Familiar HPC environment

- IBM XL Compilers - xlf, xlc
- IBM GPFS home file system
- IBM blade servers for compilation
- Standard MPICH message passing
- Fast collectives and barriers

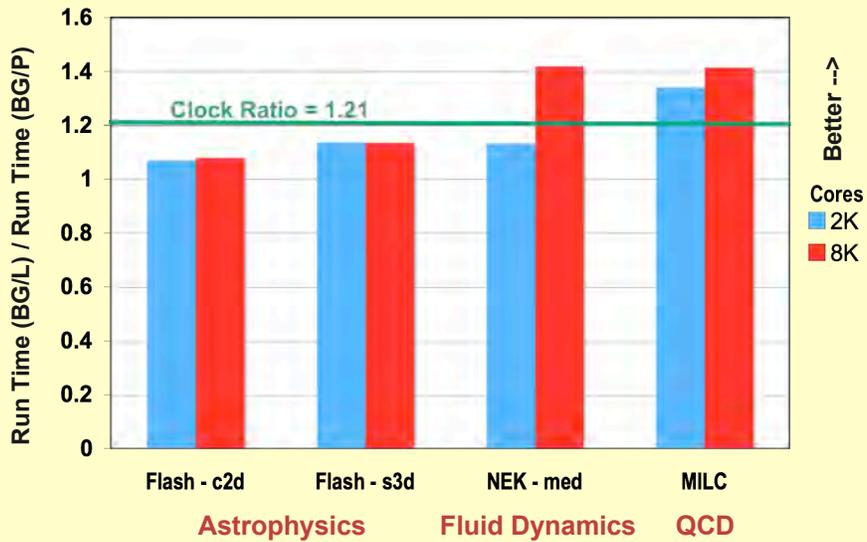


- Often an easy step from large clusters and other high end systems

New BG/P features broaden applicability and increase performance

- Quad core SMP processors
 - 3 execution modes (SMP, Dual, Virtual Node)
 - More performance counters
 - Node-to-node DMA
 - OpenMP + pthreads support
 - Python support
 - Improved compiler optimization
 - Faster I/O channels
 - Compute Node Linux
- BG/P continues the extraordinary system balance familiar to BG/L

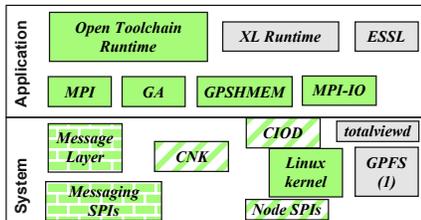
Applications Thrive on Quad Core Blue Gene/P BG/P vs. BG/L at scale with equal numbers of cores



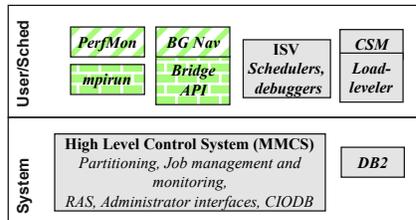
Most Blue Gene/P Software will be Open Source

- An extraordinary resource for R&D at petascale and beyond
- IBM will release the following components in 2008
- Argonne will host and support the open source communities

I/O and Compute Nodes



Service Node/Front End Nodes



- Key**
- New open source reference implementation licensed under CPL.
 - New open source community under CPL license. Active IBM participation.
 - Existing open source communities under various licenses. BG code will be contributed and/or new sub-community started.
 - Closed. No source provided. Not buildable.

- Notes:**
1. GPFS does have an open build license available which customers may utilize.



DOE INCITE Program *Innovative and Novel Computational Impact on Theory and Experiment*

- **Solicits large computationally intensive research projects**
 - To enable high-impact scientific advances
- **Open to all scientific researchers and organizations**
 - Scientific Discipline Peer Review
 - Computational Readiness Review
- **Provides large computer time & data storage allocations**
 - To a small number of projects for 1-3 years
 - Academic, Federal Lab and Industry, with DOE or other support
- **Primary vehicle for selecting principal science projects for the Leadership Computing Facilities**

Contacting ALCF *Getting started is easy*



ALCF Home

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Startup Accounts

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