



## Good, Better and Best Cray CX1 Configurations for ANSYS® Applications March 2010

### Cray CX1™ Supercomputer Customer Benefits

The Cray CX1 system is purpose-built for users who want to focus on their mission – not on managing the complexities of high performance computing (HPC). Easy to configure, install and manage, the Cray CX1 product makes the power of HPC available to a broad range of users, regardless of budget constraints, HPC expertise or access to sophisticated infrastructure.

Designed to operate in an open office environment, the Cray CX1 system moves the “supercomputer” out of the datacenter to the office environment. It operates off standard office power, implements active noise suppression to reduce ambient noise levels, and comes in a small footprint that allows you to deploy HPC wherever you need it. The Cray CX1 supercomputer can be easily configured, allowing you to mix and match blade types including compute, visualization, storage, and GPU accelerator blades to match your computational requirements. It also comes with the Linux and/or Microsoft® Windows® HPC Server 2008. Networking is handled by a Gigabit Ethernet switch that comes standard, or additionally through a DDR InfiniBand switch.

The Cray CX1 supercomputer provides the perfect upgrade path for ANSYS users who have outgrown their workstations and need access to the power of parallel ANSYS applications.

### Good, Better and Best Configurations for ANSYS Applications

A Cray CX1 system is a cluster with up to eight blades and dedicated networks. Each blade has two Intel® processors. The cluster can be configured with either Windows HPC Server 2008 or Linux operating systems. Various choices are available for processor performance, memory size, storage and networks. One blade would be designated as the “head node” or “login node” and may have different properties than the remaining blades or “compute nodes.”

With ANSYS in mind and the ANSYS FLUENT®, ANSYS CFX®, and ANSYS Mechanical™ applications in particular, we describe three configurations for “good,” “better,” and “best” performance, keeping in mind that system cost increases commensurate with performance.

- **Good:** Eight compute blades with two 2.4 GHz Intel® Xeon® E5640 “Westmere” processors, eight cores per blade (64 cores total), 12 GB RAM per blade, DDR InfiniBand network

- **Better:** Eight compute blades with two 2.66 GHz Intel® Xeon® X5650 “Westmere” processors, 12 cores per blade (96 cores total), 24 GB RAM per blade, DDR InfiniBand network
- **Best (1 TFLOPS peak performance):** Eight compute blades with two 2.93 GHz Intel® Xeon® X5670 “Westmere” processors, 12 cores per blade (96 cores total), 48 GB RAM per blade, DDR InfiniBand network

### Specialty options

1. If local high performance **visualization** is required, remove two compute blades and replace with one double-wide compute/visualization combination blade.
  - For **good** visualization, choose the NVIDIA® Quadro® FX 3800 graphics card
  - For **better** visualization, choose the NVIDIA Quadro FX 4800 graphics card
  - For **best** visualization, choose the NVIDIA Quadro FX 5800 graphics card – ideal for running ANSYS Workbench™ and obtaining stunning graphics output without moving data to another system
2. If local **high performance I/O** and **large local storage** are required, remove two compute blades and replace with one double-wide compute/storage combination blade.
  - Storage unit has four storage drives controlled by an LSI 3 GB/s RAID controller
  - Either SSD storage drives or HDD storage drives are available.
  - SSD storage is fastest
  - HDD storage is the most economical and has the largest capacity
  - ANSYS Mechanical application often benefits from large, fast local storage
  - SSD storage significantly improves the performance of the ANSYS Mechanical application when solving problems that do not fit entirely within local RAM
3. If a very **large memory** blade is required for the head node/login node:
  - Increase memory to 96 GB RAM
  - Combine with a visualization option for a very high performing pre- and post-processing blade; remaining six blades provide up to 72 high performance cores purely for computation

### Contact Cray for more information

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