



CRAY CX1000

For HPC users who strive to be on the cutting edge, the Cray CX1000™ series delivers uncompromised performance utilizing the most important HPC architectures of the next decade, all from the company that knows supercomputing the best

What computationally intensive problems will you be asked to solve tomorrow? Next week? What tools do you need to ensure you are at the forefront of high performance computing?

Cray is proud to announce the Cray CX1000 system – a dense, power efficient and supremely powerful rack-mounted supercomputer that allows you to leverage the latest Intel® Xeon® processors for:

- Scale-out computing using dual-socket Intel Xeon 5600s (Cray CX1000-C)
- Scale-through (GPU) computing leveraging NVIDIA Tesla® modules (Cray CX1000-G)
- Scale-up computing with SMP nodes built on Intel's QuickPath Interconnect (QPI) technology offering "fat memory" nodes (Cray CX1000-S)

High(brid) Performance Computing - The Cray CX1000 redefines HPC by delivering hybrid capabilities through a choice of chassis, each delivering one of the most important architectures of the next decade. While hybrid architectures often compromise individual capabilities in the quest for multi-purpose flexibility, the Cray CX1000 system doesn't. Each of the Cray CX1000's technologies is best-of-class and can be mixed-and-matched in a single rack, creating a customized hybrid computing platform to meet a variety of scientific workloads.

Cray CX1000-C

Compute-based Cray CX1000-C chassis includes 18 dual-socket Intel Xeon 5600 blades with an integrated 36-port QDR InfiniBand switch and a 24-port Gigabit Ethernet switch – all in 7U. With support for Windows® HPC Server 2008 or Red Hat Linux via the Cray Cluster Manager, the Cray CX1000-C system provides outstanding support for ISV applications as well as dual-boot capability for ultimate application flexibility. The Cray CX1000-C system maintains Cray's "Ease of Everything" approach by incorporating blades, switches and cabling all within a single chassis. The result is an easy-to-install system with compelling capabilities for scale-out high performance computing.

Cray CX1000-G

GPU-based Cray CX1000-G chassis delivers nine double-width, dual-socket Intel Xeon 5600 blades, each incorporating two NVIDIA Tesla GPUs. Cray CX1000-G systems allow users to maximize GPU performance with its unique architecture by eliminating I/O bottlenecks – an industry first. These 7U systems include an integrated 36-port QDR InfiniBand switch and a 24-port Gigabit Ethernet switch. The Cray CX1000-G system is the best solution to your density limitations by offering 18 NVIDIA Tesla GPUs in a 7U form factor. Combining Intel Xeon 5600 performance with NVIDIA Tesla-based acceleration offers true hybrid computing options.

Cray CX1000-S

The SMP-based Cray CX1000-S server is offered in two configurations, offering up to 128 Intel Xeon 7500 series processors and 1 TB of memory in a 6U system. The Cray CX1000-SC compute node is made up of uniquely designed 1.5U "Building Blocks", each housing 32 cores interconnected using Intel QPI. The Cray CX1000-SM management node is a 3U server with four Intel Xeon 7500 series processors (32 cores) and up to 256 GB of memory.

The Cray CX1000 product is available in standard configurations with a choice of front-to-back (room-assisted) cooling or an optional water-cooled door allowing for greater density and cooling efficiency. Additionally, each system can be tailored to your unique workload, whether you need scale-out, scale-up, accelerated computing technologies or a combination.

Each Cray CX1000 system delivers performance and flexibility in a form factor that paradoxically makes them easy to install and manage. Both InfiniBand and Ethernet are delivered through the chassis backplane, resulting in no external cables to interconnect the system nodes. A small powerful cluster can be delivered through one Cray CX1000-C chassis, a head node and two cables (one InfiniBand and one Ethernet). Expansion is equally simple, making Cray CX1000 systems both powerful and easy to implement.

Your success in delivering results is based on talent and tools. And choosing a Cray CX1000 system as your HPC platform gives you the tools you need to get to those results quickly, accurately – and at a price point you'll find surprisingly attractive!

High(brid) Performance Software

The Cray CX1000 system supports both Windows® HPC Server 2008 and Linux®, and allows a dual-boot environment so jobs can be loaded, on demand, with the preferred operating system. Cray offers Red Hat or Centos Linux on the Cray CX1000 product, controlled through the Cray Cluster Manager (powered by Platform™). The Cray Cluster Manager is a powerful system providing a combination of cluster management, scheduling software (Platform LSF), MPI and dual boot capability (Platform Adaptive Software).

Cray's strong support for both Windows HPC Server as well as Linux means users can select from the widest possible range of industry-standard HPC solutions from ISVs and key tools vendors.

The Cray CX1000 product therefore truly represents a system without compromise – allowing you to go where you need to in your hardware selection (scale up, scale out or scale through) as well as in your software selection (Windows, Linux or both).

Cray CX1000 Water-cooled Door

Cray addresses data center cooling issues with an innovative option – a water-cooled door. Affixed to the back of the Cray 42U x 19" cabinet, the water-cooled door removes heat right next to the source. This active cooling system reduces heat in the data center by extracting the heat at the rack level. By driving the hot air through the water-cooled door, the air effectively exits the rack at the same temperature it entered. In addition to saving on air-conditioning the water-cooled door features active water flow and fan rotation speed monitoring, adjusting air and water circulation to actual cabinet and room temperature, minimizing power consumption. The water-cooled door offers a cost-efficient alternative to an air-conditioning installation or complements an existing system.

Cray anticipates that for one- to three-chassis configurations the air-cooled option (supported by air conditioning) will be adequate. However, for three-chassis systems and up, the water-cooled door represents a highly effective option that will reduce hot spots and greatly increase the efficiency of the data centers cooling system.

- Eliminate hot aisles, reducing MTBF
- 77% energy savings compared to air conditioning

Cray High(brid) Performance Computing!

Cray CX1000 systems feature:

- Optimization and simplification of the compute node for HPC
- Integration of several compute nodes and first-level interconnect
- Flexible structure for communication and I/O networks for the closest fit with customer requirements

Cray CX1000 systems leverage:

- New-generation Intel Xeon 5600 series processors with Intel QPI technology
- InfiniBand network connection through an integrated 36-port Quad Data Rate (QDR) switch
- Flexible storage: local HDD, local SSD and/or diskless blades
- NVIDIA Tesla GPU acceleration
- Large memory, many processor "fat node" capability—Coming Soon!

Cray CX1000 systems deliver:

- Improved performance through enhanced compute node efficiency, reduced latency, higher communication and I/O throughput
- Denser scaling with water-cooled door option
- Reduced cost of ownership from fewer components, better integration, reduced installation time, improved upgradeability, power efficiency
- Enhanced reliability from less cabling



