

## Convey Cluster Framework 1600



The Convey Cluster Framework 1600 gives the datacenter a breath of fresh air—increasing performance while reducing power, space, and cooling requirements.

If you're an IT manager or a CIO/CTO trying to squeeze more performance out of your jam-packed datacenter, then you're probably the one feeling squeezed. Your engineers are demanding more power, but your datacenter is already overflowing. And as you cram in more hardware, it's getting hotter by the day – requiring more money to cool and maintain the systems. You're on the hot seat...literally.

Convey Computer Corporation can help you improve performance while cooling down your datacenter. Convey has introduced a groundbreaking hybrid-core technology that increases application performance and saves money in power and maintenance costs. By circumventing the power restrictions of today's commodity processors, Convey is achieving order of magnitude performance increases.

Just a few Convey HC-1™ or Convey HC-1<sup>ex</sup>™ systems can replace racks of commodity servers in your datacenter, providing you with more performance with less hardware, cabling, and heat. The Convey Cluster Framework 1600 (CCF1600) provides easy to use, application-specific acceleration and cost-savings—all while giving you a little breathing room.

### **DON'T SWEAT IT**

Convey's hybrid-core computing is based on an asymmetric architecture that combines the economies and programmability of industry standard processors

with the performance and efficiency of a hardware-based, application-specific design. In the past, attempts to leverage multi-core processors or asymmetric hardware-based solutions have been difficult to integrate and deploy. Not so with Convey systems.

The world's first hybrid-core computers, the Convey HC-1 and HC-1<sup>ex</sup>, employ a highly parallel coprocessor that augments the capabilities of a commodity processor with processing elements optimized for performance-critical operations. Instructions executed by the coprocessor appear as extensions to the x86 instruction set; applications can contain both x86 and coprocessor instructions in a single instruction stream. The Convey systems dramatically increase performance, yet are simple to program and easy to deploy.

Convey servers, based on the industry-standard Linux operating system, are easy to deploy and incorporate into your data center. To smooth acquisition, deployment, and maintenance, the cluster framework consists of standard building blocks of 4, 8, and 16 server nodes. In addition, the framework can be configured with the following options:

- Open-source software from the Open Fabrics Alliance (OFA), including OpenFabrics Enterprise Distribution (OFED™) for Linux
- Standard Gigabit Ethernet or Infiniband switches
- Utility nodes for login, administration and/or file services

*The World's First Hybrid-Core Computer.*

# Convey Cluster Framework 1600



THE CONVEY CLUSTER FRAMEWORK INTEGRATES EASILY INTO EXISTING CLUSTERS



### Operating System

UTILITY NODES	Preloaded CentOS 5.x
CONVEY HC-1 NODES	Preloaded ConveyOS (CentOS 5.x base)
CONVEY HC-1 <sup>EX</sup> NODES	Preloaded ConveyOS (CentOS 5.x base)

### Interconnect

STANDARD	Dual GbE Ethernet OpenFabrics Enterprise Distribution (OFED™) OpenMPI for ConveyOS
OPTIONAL	Dual Port Mellanox® x4 QDR Infiniband

### Job Scheduling

Nodes are x86 and Linux compatible and fit seamlessly into Linux-based clusters

### GOING WITH THE FLOW

The Convey hybrid-core nodes provide application-specific acceleration for large HPC-class problems. The Convey nodes appear as standard Linux-based x86 node resources to traditional job schedulers, allowing you to easily schedule jobs and/or workflows to fit the right hardware to the right problem. Users can dynamically request hybrid-core resources for stand-alone processes, or as part of a heterogeneous, multi-process environment using MPI.

For example, a typical genome assembly workflow involves heuristic filtering of the full sequence data set to find likely locations for more accurate alignment. The alignment step involves a highly compute-intensive algorithm, which is greatly accelerated using the hybrid-core architecture of the Convey systems. Conversely, the data filtering portion of the workflow can be solved as a classic scale-out problem that executes well on a cluster of commodity servers. Employing this type of heterogeneous cluster can result in hundreds of times reduction in the execution time of the entire workflow.

### GET COOL AND GO GREEN

To quench the never-ending thirst for greater performance, datacenters all over the world are packed beyond capacity with commodity servers that cost more to maintain than to buy. The answer to more performance at less cost is to buy differently—instead of buying more of the same.

In a typical application environment, the CCF1600 helps reduce floor space, datacenter power consumption, and total cost of ownership (TCO)<sup>1</sup>:

- Reduces floor space by 86%
- Reduces data center watts by 91%.
- Reduces 3-year TCO by 75%.
- Reduces 3-year TCO with power rebate 82%

Not only does power savings mean you are saving money, you are also helping to save the environment.

So get off the hot seat and relax. The Convey CCF1600 makes it easy for you to increase the performance of your datacenter while cutting power consumption and saving maintenance costs. The CCF1600 gives you more for less.

<sup>1</sup> Based on HC-1 nodes. "Convey Computer™ Corporation Ships to First Customer: University of California, San Diego," June 23, 2009.

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