Liquid Cooling Intel's Top500 Cherry Creek Supercomputer Live on the Show Floor at SC13

The Challenge

This HPC cluster was to fit in 2 standard racks using Supermicro form-factor (Fat Twin Chassis system) and needed to operate fully loaded, on the exhibition floor at SC13. As a conference showcase system, there was no ability to access any facility liquid to help remove the heat load. Intel's goal was to use off-the-shelf IT equipment, software, and cooling to deploy a HPC cluster, in less than 90 days, that would rank on the Top500 and Green500.

The Solution

CoolIT installed a standard Rack DCLC AHx35 CDU solution equipped with dual left and right Rack Manifolds that were positioned on the front of each rack to manage the front i/o server architecture. Consisting of Passive Coldplate Loops that are mounted directly to the Intel E5-2697V2 processors & Intel Xeon Phi 7120p co-processors, the AHx35 allows the processor heat to be directly absorbed into circulating liquid which then efficiently transports the heat to a liquid-to-air heat exchanger mounted on top of the rack.

HPC Setup

- CoolIT Rack DCLC™ AHx35 CDU (no facility water)
- Supermicro FatTwin™ (4-node GPU front I/O)
  - 28 servers per rack
- Intel® Xeon® Processors and PHI Coprocessors
  - Featured 9,936 cores

Results

- Achieved peak performance of 131.2 TFLOPS
- Cluster consumed only 74.25kW of total power
- Ranked #41 on Green500 list
- Ranked #400 on Top500 Supercomputers list
- Cluster housed at SWITCH data center for UNLV

> "Working with CoolIT Systems to integrate their innovative direct contact liquid cooling solution was critical to deploying the Cherry Creek cluster, even in an environment that doesn't have the cooling capabilites of a data center."
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> **Joe Curley, Director of Marketing, Intel Technical Computing Group**

For more information on how CoolIT Systems custom Rack DCLC™ solutions can enable higher rack densities, reduce energy costs and maximize compute performance, contact sales@coolitsystems.com.

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