



# **Product of the Day: SuperComputing 2004 Product Spotlight - Ciara Technologies Linux Cluster with 19,440 Intel Processors**

By Vendor Written

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**Product: VXR-3DT - Linux Cluster**

**Manufacturer: Ciara Technologies**

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## **Another Performance Barrier Is Going to Be Broken by a Linux Cluster**

The recent jump from 35 teraflops to over 70 teraflops as the computing standard for supercomputers is like breaking the 10 second barrier for the 100m dash, a breakthrough. The race to be the fastest is a friendly competition amongst rivals throughout the world. The previous standard held by NEC is the Earth Simulator Center in Japan with 35.86 teraflops (trillions of calculations per second). Linux on commodity base INTEL hardware is the formula that is driving these new speed records. ([www.top500.org](http://www.top500.org) [2])

Ciara Technologies, a provider of servers and supercomputer clusters, announced the availability of the VXR-3DT. at the SuperComputing 2004 show in Pittsburgh on November 8. The VXR-3DT is a high-end computer architecture that can scale from 16 up to 19,440 IntelExtended Memory 64 Technology Xeon processors while providing more than 140 TeraFLOPS of computing power with integrated InfiniBand interconnect. (IBM's Blue Gene rate the fastest by the Top500 is rated at 70.72 Teraflops)

The VXR-3DT gives users access to an extreme high-performance computing (HPC) solution that offers a very competitive price/performance ratio. This is possible due to the architecture of VXR-3DT being built from commodity off-the-shelf hardware and networking components as well as incorporating the Linux operating system. The system is scheduled for general availability in late 2004.

"Today, many businesses are building their own Linux clusters using off-the-shelf components", said Patrick Scateni, VXR-3DT Co-creator and Director of Business Development for Ciara Technologies. "The problem is, how do you maintain and support these clusters once operational? With the VXR-3DT, we've taken all the guesswork out of high-performance computing as a result of the reliability. You don't need an army of technicians on standby. When a problem occurs you merely replace and switch the defective component without ever taking the system off-line or losing any data. It's that simple."

The VXR-3DT nodes are a 100 percent commodity-based building block with dual-rail 12x InfiniBand distributed fabric and InfiniBand natively attached RAID storage. The nodes are interconnected through high-speed, low-latency 12x InfiniBand network in a 3D Torus, Dual Rail Architecture providing more than 3GB/s of I/O fabric bandwidth per node, with no single point of failure in the entire system.

Ciara Technologies partnered with industry heavy weights such as Raytheon IIS, Intel, Engenio and, Mellanox who have expertise in high-end High Performance Computing systems, microprocessors, modular storage systems and InfiniBand interconnect solutions. Raytheon Intelligence and Information Systems in Garland, Texas, has developed the integrated, topology-aware cluster management suite, while Ciara in Montreal, Canada, conducted the hardware design and integration for the VXR-3DT hardware components. Ciara will manufacture and sell the cluster systems under a license agreement with Raytheon. Raytheon will sell and integrate these systems for its federal and defense clients.

VXR-3DT is an ideal solution for markets that require access to affordable HPC power including; virtual prototyping, signal processing, financial services, data mining, petro-chemical and pharmaceutical research, bio technologies, bio engineering, genomic research, image processing, high-end video editing, post-production and academic or governmental organizations looking to conduct "pure" research.

Product highlights on the VXR-3DT include the following:

- 100% commodity Linux cluster delivered and supported by leading industry veterans
- Unique Linux cluster architecture with dual-rail 12x InfiniBand distributed fabric
- InfiniBand natively attached RAID storage
- No single point of failure anywhere in system
- Processor per Rack - 160
- Initial Processor Speed (GHz)- 3.6
- Type of Memory - DDR2 400 ECC/Reg
- Memory per CPU - 16 GBytes
- Total CPUs - 19,440
- Total Memory 311 TBytes
- Total Storage Capacity (Max. I/O BW) - 650 TBytes

- Compute Rack (Max.) -132
- System Performance Linpak Rmax (TFlop/s)- 140
- System Performance Estimated Linpak Rpeak (TFlop/s) - 108
- Maximum I/O Bandwidth (1300 I/O Ports) - 2.6 TBytes/s
- Maximum Fabric Bandwidth (18x15x18) - 3.9 TBytes/s
- Surface for Compute System (Square/feet) - 2,240

"The VXR-3DT is a significant breakthrough because it helps bring fault tolerant, extreme scalability and ease of use high performance computing to the masses," said Richard Libby, HPC Technical Marketing Engineer for Intel Corp. "Intel's involvement with Ciara demonstrates the type of innovation that's possible when pooling market expertise across various disciplines. With VXR-3DT the sky is the limit in terms of high performance computing architectures and research possibilities."

## Links

[1] <http://www.ciara-tech.com>

[2] <http://www.top500.org>

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