SOLUTION BRIEF
Intel® Cluster Ready
NetEffect™ Server Cluster Adapters
Clustercorp Rocks+®

THE SIMPLER PATH TO LEADING-EDGE CLUSTERS:
10GbE iWARP DEPLOYMENT MADE SIMPLE WITH ROCKS+®

Organizations seeking to deploy high-performance computing clusters now have the means to reduce cost and risk. Intel® Cluster Ready solutions based on Clustercorp Rocks+® and 10GbE iWARP-enabled NetEffect™ Server Cluster Adapters from Intel deliver a simplified approach to selecting, deploying, and operating clusters.

The solutions achieve excellent performance over Ethernet fabrics using low-latency iWARP technology while also benefiting from fast provisioning and robust management. Automated software installation and centralized updating help achieve efficiencies throughout the solution life cycle, and passing application and management traffic over a single fabric simplifies the network topology, further reducing costs.

High Performance and Simplicity from Low-Latency iWARP Technology

Because Ethernet networks are ubiquitous, high manufacturing volumes help make them extremely cost effective. While that advantage alone makes the use of Ethernet fabrics for high-performance computing cluster traffic very attractive, there were two primary challenges.

First, this era of high-performance multicore servers creates the need for network bandwidth higher than 1 Gigabit (1GbE is standard on most servers today). Fortunately, the broad availability of 10GbE network components provided a solution.

Second, standard Ethernet cannot meet the stringent network-latency requirements of cluster computing applications. That challenge is addressed by iWARP, which specifies standard extensions to TCP/IP for effective RDMA (Remote Direct Memory Access) transport. NetEffect Server Cluster Adapters from Intel implement iWARP technology to enable high performance on a standards-based, cost effective Ethernet fabric:

- **Low latency** is delivered to standard Ethernet by means of iWARP, providing an RDMA-over-Ethernet solution.
- **Standards-based operation** is enabled with an open source RDMA software stack for iWARP provided by the OpenFabrics Alliance[1].
- **Broad compatibility** is achieved through the use of existing Ethernet network equipment and pervasive management tools and expertise.

The use of iWARP technology in the solution stack from Intel Cluster Ready and Clustercorp enables high-performance computing implementations to realize the cost effectiveness of Ethernet fabrics, without modifying existing networks or equipment. Moreover, the continuing pace of innovation in Ethernet technology allows these networks to readily benefit from advances such as Data Center Bridging, low-latency switches, and enhancements to IP security.

The use of a single fabric to support both application and management traffic helps reduce the complexity of the solution. Using 10GbE also allows a smaller number of cables to support network bandwidth requirements relative to using GbE, simplifying the cable infrastructure even further. As a result, the solution as a whole helps to lower the likelihood of cabling errors, and it is very efficient with regard to equipment and operating costs.

Streamlined Provisioning and Management from Clustercorp Rocks+®

Clustercorp Rocks+ is a suite of middleware components that support iWARP and integrate the server hardware, Linux* operating system, and application software into a coherent whole. This approach dramatically simplifies deployment and management of cluster infrastructure, and also provides a full complement of integrated tools. It offers a number of capabilities that help ensure smooth operation and fast, low-risk cluster implementation:

- **Pre-packaged software components** are provided by Clustercorp Rocks+ Rolls for a single-source, seamless software stack.
- **Streamlined installation** accelerates deployment with automated compute-node provisioning.
- **Centralized management** from the head node includes automatic configuration and monitoring to maintain cluster health.

Simplified Operation from Intel® Cluster Ready

With products based on the Intel Cluster Ready Linux architecture, you get the computing power you require without the hassle. The Intel Cluster Ready architecture makes it easier to select, spec, deploy, and maintain a cluster so you can focus more on your work and not the cluster. Get the benefits of increased productivity while minimizing complexity and support.

Organizations can rapidly implement cluster infrastructure, with low risk and dependable results:

- **Pre-validated solutions** have been rigorously tested to ensure component interoperability.
- **Reduced complexity** allows end-customers to focus on their business needs instead of technology.
- **Simplified support** is enabled by Intel® Cluster Checker, a self-diagnostics tool, that helps keep clusters running smoothly.

Collaboration between Intel and the rest of the high-performance computing ecosystem provides a robust portfolio of solutions. Intel Cluster Ready offerings based on Clustercorp Rocks+ and 10GbE iWARP-enabled NetEffect Server Cluster Adapters from Intel are an excellent example. This pre-validated combination of building blocks conforms to best practices established by the Intel Cluster Ready Specification and has been designed to run properly without additional configuration on certified server hardware.

By simplifying the path to high-performance, cost-effective clusters, Intel and Clustercorp provide a well-marked path for end-customers. Intel Cluster Ready offers organizations an expertly engineered solution that delivers cutting-edge infrastructure while minimizing in-house effort and risk.

10GbE iWARP-enabled NetEffect™ Server Cluster Adapters from Intel set new standards in networking performance, power efficiency, and operational simplicity

Learn more:

www.intel.com/go/ethernet | www.intel.com/go/cluster | www.clustercorp.com

[1] www.openfabrics.org

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