

Intel® Cluster Ready— Making HPC Simpler

Boost productivity. Solve tough challenges. The Intel® Cluster Ready program makes it simpler to capture the power of high-performance computing.

Program Brief

Intel Cluster Ready
High-Performance
Computing



“Appro’s Intel® Cluster Ready certified solutions address the need of cluster deployment simplification to achieve faster and more accurate time-to-results.”

*– Daniel Kim,
CEO, Appro*

High-performance computing (HPC) is a key differentiator and productivity engine for business. With the Intel® Cluster Ready program, businesses can exploit the power of high-performance computing more rapidly, easily, and cost-effectively.

Developed collaboratively with hardware and software vendors, the Intel Cluster Ready program makes it simpler to buy, deploy, and manage an HPC cluster. Intel Cluster Ready helps ensure application and component interoperability—from the minute you first power up the cluster through the lifetime of the system.

And, with an Intel Cluster Ready system powered by the new Intel® Xeon® processor 5500 series, you can unleash even more parallel processing performance. Simulate, analyze, and visualize more complex models faster, and accelerate your data-intensive applications—all in a smaller, denser, and more energy-efficient footprint. The net impact: Faster time to value, lower total cost of ownership (TCO), and greater business impact.



Why Intel Cluster Ready?

- **Find the right configuration, right away.** Intel Cluster Ready takes the complexity out of purchasing an HPC cluster. Choose a certified Intel Cluster Ready system and reduce the time and risk of selecting a collection of independent hardware components for your applications. Certified Intel Cluster Ready systems have been thoroughly tested to ensure component interoperability.
- **Know that it works.** With a certified Intel Cluster Ready system and registered Intel Cluster Ready applications, you can be confident that all the components will work together, right out of the box. Software tools such as Intel® Cluster Checker help ensure those components continue to work together, delivering a high level of quality and low TCO over the course of the cluster's lifetime.
- **Solve new problems.** Capitalize on the power of an Intel processor-based HPC cluster to enhance productivity and solve new problems. Intel Cluster Ready helps you realize HPC benefits faster by ensuring application and system interoperability.

Appro GreenBlade™ System and Intel Cluster Ready Accelerates Small to Mid-sized HPC Deployments

- **Simplification**—Appro's Intel Cluster Ready certified platforms help bridge the gap between the application layers to the cluster solution infrastructure.
- **Confidence**—The Intel Cluster Checker Software is shipped with each certified solution, providing the customer with the confidence that the cluster platform and software will work together.
- **Productivity**—Intel Cluster Checker software enables a fast deployment and maintenance of the cluster using an automated and systematic method to ensure the system is operating as expected, allowing more time to use the cluster for its intended purpose.
- **Quality**—Appro verifies each Intel Cluster Ready solution functions at expected levels and provides the standard interface that enables running registered applications.

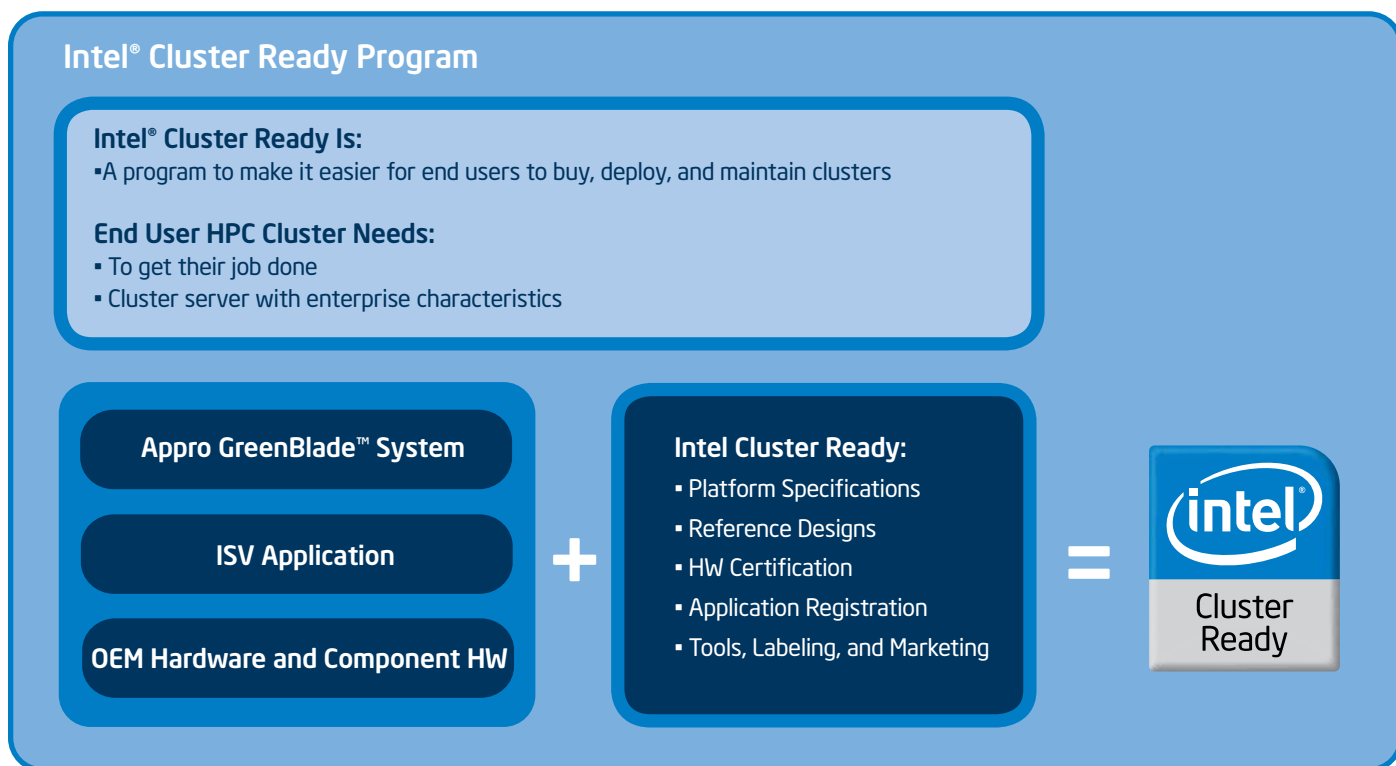


Figure 1. Intel teamed up with leading hardware and software vendors to make it easier to buy, deploy, and maintain HPC clusters—and exploit the high performance of Intel® processor-based high-performance computing.

Game-Changing HPC Application Performance

Intel® Xeon® processor 5500 series vs. Intel Xeon processor 5400 series

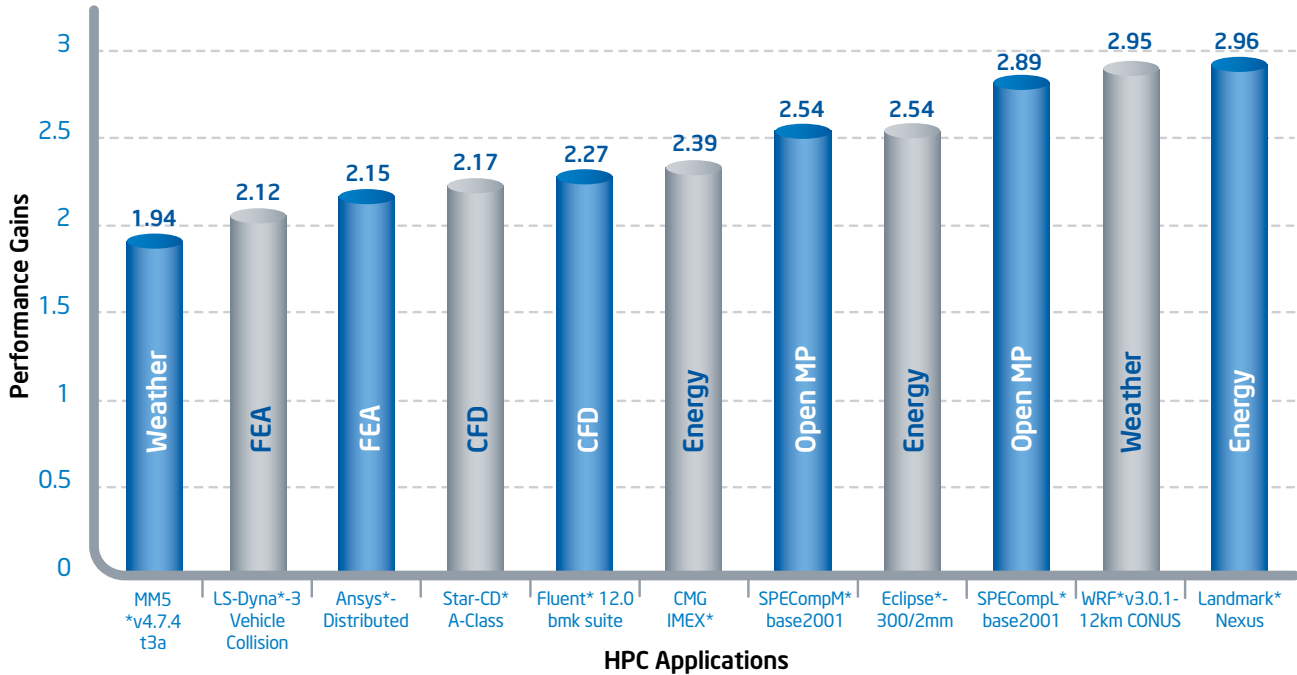


Figure 2. Performance gains using the Intel® Xeon® processor 5570 series compared with the Intel Xeon processor 5482 series on HPC applications. Results published, submitted, or approved on March 30, 2009.

Industry Cooperation to Accelerate HPC Use

Built and Tested for Interoperability

To lay a foundation for interoperable HPC clusters, Intel teamed up with leading HPC vendors and defined the Intel Cluster Ready Specification. This specification—which includes requirements for hardware, software, manageability, and functionality—provides a common basis for building clusters and registering applications for HPC.

The Intel Cluster Ready Specification helps ensure that each cluster component conforms to industry standards or, if no standard exists, best-of-class practices. Intel provides the specification to hardware vendors, software vendors, and systems integrators so they can build certified Intel Cluster Ready clusters and develop registered Intel Cluster Ready applications.

By creating a common basis for clusters, the Intel Cluster Ready Specification helps you maintain interoperability while customizing a cluster to meet your specific needs. Choose from a variety of hardware and software components that conform to the specification, both when you first deploy the cluster and as your requirements change. And enjoy the assurance that certified clusters are built according to the Intel Cluster Ready Specification and rigorously tested for component interoperability.

Appro GreenBlade System and Intel Cluster Ready

Appro GreenBlade™ System is a flexible, modular, energy-efficient computing platform for scaling out high-capacity computing—starting from small up to mid-size deployments. It delivers a complete start-up package offering performance-density, energy-efficiency, and the best savings for business growth. Together with the Intel Cluster Ready certification, this flexible blade server system provides a stable HPC solution building block for faster and more accurate time-to-results. It offers the confidence that the infrastructure and software will work together with industry-specific applications for a fast and cost-effective implementation. Intel Cluster Ready helps HPC users align their technology more closely with their business goals.

“Appro delivers the GreenBlade System offering an optimal combination of Intel’s multi-core technology, advanced cluster tools, and Intel Cluster Ready certification to enable unprecedented cluster performance and energy-efficiency.”

—John Lee, VP of Advanced Technology Solutions, Appro

Registered, Validated Applications

Registered Intel Cluster Ready applications have been validated on a certified Intel Cluster Ready cluster. To register an application, Intel or a participating vendor demonstrates that the software can run real-world workloads successfully on a certified cluster. When the software passes the test, Intel issues the Intel Cluster Ready registration to the software vendor and posts the application version and requirements on a public Web page.

Because registered applications are developed to run on clusters with the same base specification, you can run multiple registered applications on the same certified Intel Cluster Ready cluster without having to rebuild the software stack or reconfigure the hardware. Run different applications on different days. By taking advantage of this enhanced flexibility, you can optimize your HPC resources and enhance productivity without adding costs or complexity.

Ready to Grow

Systems integrators have created reference designs or recipes with certified Intel Cluster Ready clusters and registered software. When you need to expand your HPC infrastructure or deploy a cluster for another business group, you can use the appropriate recipe to create an exact copy of your cluster. Because the new system is Intel Cluster Ready, you can be confident that hardware and software will work together as they should.



Figure 3. Appro GreenBlade™ System

Simpler Management

Intel Cluster Checker is an essential software management tool that helps make sure system components continue to work together over the cluster's lifetime. Provided free with all certified Intel Cluster Ready clusters, Intel Cluster Checker analyzes the cluster's configuration to be certain it remains within certification. If a software update causes software conflicts or a cable comes loose, Intel Cluster Checker identifies the problem quickly and provides detailed diagnostic information.

Use Intel Cluster Checker to reduce the time spent troubleshooting and minimize the need for specialized support skills. Run Intel Cluster Checker regularly to enhance system reliability and ensure optimal performance.

Learn more. Visit www.intel.com/go/cluster to see which applications are Intel Cluster Ready and where to buy a certified Intel Cluster Ready system.

For more information about Appro products and solutions, visit www.appro.com and see for yourself how Intel® Cluster Ready certified solutions from Appro can benefit your business.

Tap into the power of high performance computing and get more out of your Intel Cluster Ready system. Join ClusterConnection.com, a resource for the Intel Cluster Ready community.

*Intel internal measurement (Feb. 2009). STREAM-Triad benchmark. Red Hat Enterprise Linux® Server 5.3. Intel® Xeon® processor E5472, 3.0 GHz, 2x6MB L2 cache, 1600MHz system bus, 16GB memory (8x2GB FB DDR2-800) vs. Intel Xeon processor X5570, 2.93 GHz, 8MB L3 cache, 6.4QPI, 24GB memory (6x4GB DDR3-1333).

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