Groundbreaking HPC Performance, Made Simple

Achieve groundbreaking, energy-efficient performance with Intel® Cluster Ready HPC systems equipped with the Intel® Xeon® processor 5500 series and Clustercorp Rocks+* software

Product Brief

Intel® Cluster Ready

Intel® Xeon® processor 5500 series

Clustercorp Rocks+*

High-Performance Computing

By choosing Intel® Cluster Ready systems equipped with the new Intel® Xeon® processor 5500 series and running Clustercorp Rocks+* software, you can achieve groundbreaking, energy-efficient application performance while simplifying the process of buying, deploying, and operating a high-performance computing (HPC) cluster. Clustercorp Rocks+ software helps hardware vendors accelerate the time to market for certified Intel Cluster Ready clusters based on the new Intel® microarchitecture. Clustercorp Rocks+ also helps you, the end user, take full advantage of the new microarchitecture by giving you all the tools you need to optimize your application, all in a single distribution. Select a certified Intel Cluster Ready system and Clustercorp Rocks+ to experience breakthroughs in performance while gaining the confidence that everything will work together, right out of the box.

Intel Cluster Ready—It All Works Together

The Intel Cluster Ready program makes it simpler than ever to select, deploy, and operate an HPC cluster. Reduce the complexity and eliminate the risk in buying an HPC cluster by choosing a certified Intel Cluster Ready system and registered Intel Cluster Ready applications.

Certified clusters are designed according to the Intel Cluster Ready Specification and then rigorously tested during the development and manufacturing process with Intel® Cluster Checker software, ensuring that the system operates as specified on delivery. Registered Intel Cluster Ready applications have been validated to load easily and run correctly on certified Intel Cluster Ready clusters. Selecting certified clusters and registered applications gives you the confidence that hardware and software components will work together, just as they should.

Once your cluster is installed, you can use Intel Cluster Checker to ensure continued high-quality operation of your certified Intel Cluster Ready system. Provided free with all certified Intel Cluster Ready systems, Intel Cluster Checker is more than a development tool. It can be run in "wellness" mode to help administrators and end users diagnose problems quickly and make sure components continue to work together over the lifetime of the cluster.

Clustercorp Advantages

Clustercorp Rocks+ includes the middleware (or "glue") that holds the certified Intel Cluster Ready hardware, registered Intel Cluster Ready software, and the Linux* operating system together across the cluster. Whether you are moving up from a workstation to a deskside system or deploying a large-scale infrastructure, Clustercorp Rocks+ can help you reduce the time and money you spend choosing, installing, and managing your HPC solution.

Choose

Clustercorp Rocks+ helps simplify the selection and acquisition of all the software components you need to build a complete HPC software stack. In the past, you might have purchased an operating system, system monitoring application, workload manager, and other

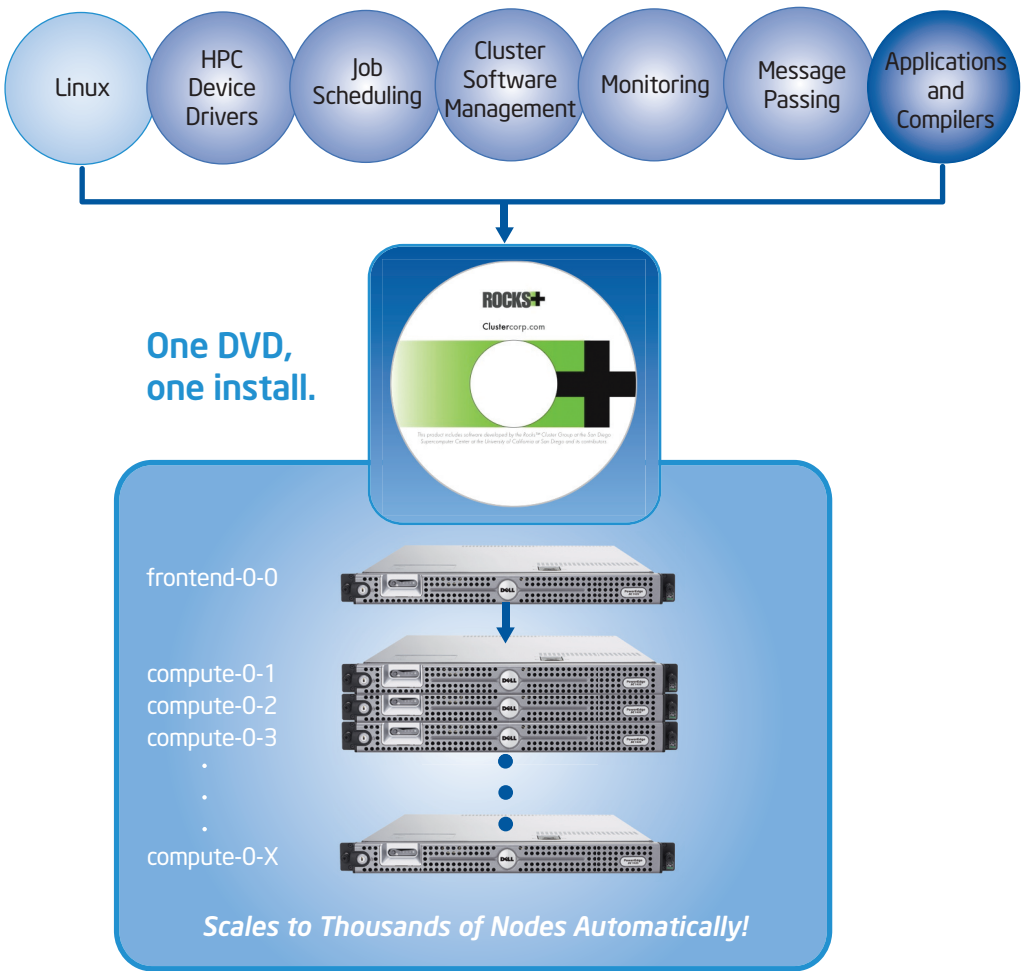

Figure 1. Clustercorp Rocks+ simplifies deployment with a holistic distribution and automated installation of the head node. Network-boot compute nodes for automatic provisioning.

components from separate vendors. Now you can select Clustercorp Rocks+Rolls (prepackaged software components) to get all the software you need from a single source. By choosing your complete software stack through Clustercorp, you can be assured that all of the components will work together seamlessly.

Deploy

Clustercorp Rocks+ also provides an automated software installation process to accelerate your time to solution. Simply check boxes to select the software you need to install; Rocks+ compiles those packages into a holistic distribution and automates the installation of the head node. Once that installation is complete, just network-boot (PXE-boot) the compute nodes for automatic provisioning, and you are ready to work.

Manage

Clustercorp Rocks+ makes ongoing management easy. Cluster administrators manage the entire cluster from the head node. If a compute node needs an update, Rocks+ pings the head node, and the head node automatically reprovisions the compute node. Newly added compute nodes are configured automatically—with a single command—without the need for complex administrator assistance.

Clustercorp Rocks+ also helps maintain ongoing Intel Cluster Ready certification. The Intel Cluster Ready Roll automatically establishes a user account to run Intel Cluster Checker software. Intel Cluster Checker runs wellness checks to identify and diagnose problems quickly, helping to ensure that hardware and software components continue to work together, delivering high quality and a lower total cost of ownership over the cluster's lifetime.

Clustercorp Accelerates Time to Market for Hardware Vendors

Clustercorp Rocks+* can help dramatically simplify and accelerate the Intel® Cluster Ready certification process for hardware vendors. Clustercorp provides each vendor with a single Rocks+ distribution, including the Intel Cluster Ready Roll, to help ensure that all software packages that the vendor wants to offer with the cluster will work together seamlessly, right away. Accelerate your time to market and ship fully compliant Intel Cluster Ready systems in high volume with Clustercorp Rocks+. For more information, visit www.clustercorp.com/hardware/.

Clustercorp

Intel® Xeon® Processor 5500 Series Accelerates STAR-CCM+ by 90 Percent

CD-adapco STAR-CCM+ computational fluid dynamics (CFD) software can achieve up to 90 percent better performance running on HPC clusters equipped with the Intel® Xeon® processor 5500 series compared with the previous-generation Intel® architecture. Users can run simulations in nearly half the time, accelerating design cycle time and enabling them to explore more design alternatives.

Because STAR-CCM+ is a registered Intel® Cluster Ready application, users can deploy it on any certified Intel Cluster Ready cluster and be assured of hardware and software compatibility right out of the box. Clustercorp Rocks+* further simplifies deployment and management of the cluster with automated software configuration and provisioning. With Intel Cluster Ready and Clustercorp Rocks+, STAR-CCM+ users can focus on engineering instead of cluster management. For more information, visit www.cd-adapco.com/products/STAR-CCM_plus.

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Groundbreaking Performance for Your Intel Cluster Ready System

Select certified Intel Cluster Ready systems equipped with the Intel Xeon processor 5500 series and running Rocks+ to achieve outstanding, energy-efficient application performance in a dense HPC cluster. This new Intel® microarchitecture provides dynamic management of cores, threads, cache, interfaces, and power to deliver intelligent, energy-efficient performance on demand. It also provides more than three times the memory bandwidth per node compared with the previous-generation dual-socket architecture, enabling you to unleash memory-bound applications.[1] And by generating more instructions per clock cycle plus more power states and faster transitions between states than the previous-generation architecture, the Intel Xeon processor 5500 series delivers the highest system-level performance per watt—and per meter—of any Intel microarchitecture.

HPC systems based on the Intel Xeon processor 5500 series are establishing new performance plateaus for applications in manufacturing, energy, life sciences, financial services, digital

Clustercorp Rocks+Rolls

Clustercorp Rocks+* is a complete HPC cluster software stack, including everything from the operating system to a modular applications-level environment. All software is deployed with a single DVD to create a turnkey solution.

Clustercorp Rocks+Rolls provides an expanded solutions layer that transforms the leading open source cluster distribution into a production-ready cluster operating system. Select prepackaged Rolls for access to all the software components you need to build a complete, interoperable HPC software stack.

Select the Intel® Cluster Ready Roll to deploy a turnkey Intel Cluster Ready software stack. Choose the Intel® Developer Roll for a full set of the latest Intel® software development tools.

For more information about Clustercorp Rocks+, visit www.clustercorp.com and www.clustercorp.com/rolls/.

content creation, and more. Adopt Intel Cluster Ready systems with the new microarchitecture to increase your total HPC application performance by up to three times without having to increase the power and cooling support for your data center.[2] Create, explore, analyze, and visualize more information—faster than ever before.

Easy Integration

The Intel Cluster Ready program and Clustercorp Rocks+ make it easy to take advantage of the impressive performance gains offered by the new Intel Xeon processor 5500 series. Hardware vendors are building certified Intel Cluster Ready clusters equipped with the new microarchitecture to help ensure that your software will run on the new microarchitecture without requiring extensive software development or time-consuming changes to system components.

In addition, Clustercorp Rocks+ has been updated to run seamlessly on the new architecture. Rocks+ supports the latest version of Red Hat Enterprise Linux*, which has been validated for the Intel Xeon processor 5500 series. The Rocks+ Intel Cluster Ready Roll also has been updated with the latest version of Intel Cluster Checker and Intel® software development tools, which include new runtime components for the new microarchitecture.

The microarchitecture itself supports easy application portability. By running your multi-threaded application on this microarchitecture, you can accelerate your code as-is. Memory-bound applications will benefit immediately from the dramatic increase in available memory bandwidth.

To further optimize your applications for this and future Intel microarchitectures, you can use the full array of Intel software development tools included on the Clustercorp Intel Developer Roll. Intel tools can help you take full advantage of the new capabilities of the Intel Xeon processor 5500 series while enabling you to easily port code between clusters. With Intel software tools, you can also scale your application forward so the work you do today will help you realize immediate gains for tomorrow's Intel-based platforms.

Boost Productivity and Solve New Problems Today

Whether you are planning your first steps into HPC or looking to migrate to the latest Intel microarchitecture, the Intel Cluster Ready program and Clustercorp Rocks+ software can make the transition painless. Simplify the process of buying and configuring HPC software and hardware components. Accelerate deployment so you can reduce the time to productivity. And experience the outstanding, energy-efficient performance of the Intel Xeon processor 5500 series to solve new problems today.

Intel Cluster Ready, Clustercorp Rocks+, and the Intel Xeon processor 5500 series—groundbreaking HPC performance is now within your reach.

For more information about the Intel® Cluster Ready program, visit www.intel.com/go/cluster.

[1] Intel® Xeon® processor 5500 series compared with Intel Xeon processor 5400 series.

[2] Comparison based on running typical HPC applications on systems equipped with the Intel® Xeon® processor 5500 series versus the Intel Xeon processor 5400 series.

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