

## Intel and IBM Rational: Achieving an Optimal Configuration Management Solution

When an industry-leading configuration management tool runs on an outstanding platform, the result is an ultimate solution. By running the IBM Rational ClearCase\* solution on a server based on the latest Intel® Xeon® processor 5500 series, IBM Rational ClearCase delivers performance-optimized results on Intel platforms in virtualized environments.

### IBM Rational ClearCase Server

IBM Rational ClearCase is an industry-leading solution that provides sophisticated control and workspace management, plus parallel development support and build auditing to improve developer productivity in the following ways:

- Uses a flexible out-of-the-box model based on proven best practices
- Supports a wide range of environments and platforms that connect diverse teams
- Offers transparent real-time access to files and directories
- Scales to any size team—from small workgroups to distributed enterprise teams
- Includes sophisticated branching and graphical merge tools that enable concurrent access to files



### Need for a Virtualized Solution

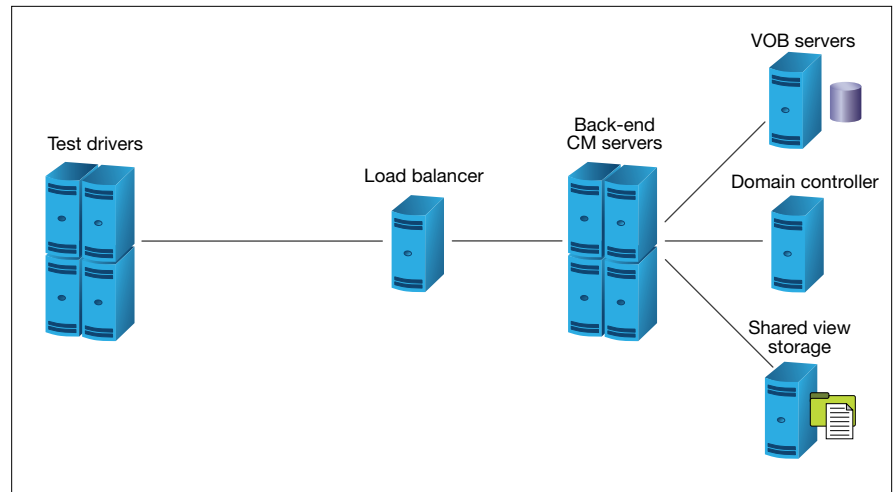
Virtualization has transformed business by generating more value from physical servers than ever before—accomplishing more with less. Virtualized servers make the most of their underlying hardware. Through virtualization, one physical host consolidates the software elements of multiple traditional server operating systems, applications, and data—and runs them all simultaneously.

The Intel Xeon processor 5500 series introduces a new microarchitecture that adheres to the concept of “intelligent performance.” This set of capabilities enables the platform to adapt dynamically to the workload with measures such as increasing the processor speed and engaging Intel® Hyper-Threading Technology to add to throughput when needed.

The IBM Rational Change Management (CM) Server\* is a unified application server used by both the IBM Rational ClearCase Remote Client rich client platform and the IBM Rational ClearQuest® Web client. It leverages the performance, security, and scalability of the IBM WebSphere Application Server\*. Using the test configuration shown in Figure 1, the Intel Xeon processor 5500 series-based systems host the multiple virtualized CM servers. With this configuration, Intel Xeon processor 5500 series-based servers provide enough processing power to support up to 800 users simultaneously and meet a service-level agreement response time requirement of less than three seconds.<sup>1</sup> These multiuser scalability test transactions were executed at a rate of 15 transactions per hour per user in a realistic developer workload scenario. Before the release of



## Intel and IBM Rational: Achieving an Optimal Configuration Management Solution



**Figure 1.** Intel Xeon processor 5500 series–based systems can host multiple virtualized CM servers.

IBM Rational ClearCase version 7.1 and the Intel Xeon processor 5500 series, only 200 co-located users were supported on a single physical server with no support for hardware virtualization. The new solution can now support a 400 percent increase in the number of concurrent users with the help of virtualized software running on next-generation Intel Xeon processor 5500 series–based servers.

*“Enterprise environments can support a consolidated, virtualized infrastructure by using the Intel Xeon processor 5500 series platform, where customers can deploy on a lower-cost, centralized, lower-power solution with reduced TCO.”*

— **Mike O’Rourke**

Vice President  
Rational Product Development

The innovative combination of IBM Rational ClearCase version 7.1 and the Intel Xeon processor 5500 series has helped achieve extremely high scalability and performance. With the Intel Xeon processor 5500 series, IBM Rational ClearCase now supports virtualized server configurations that can serve a large number of concurrent users over a wide area network, reducing overall total cost of ownership (TCO) and improving scalability and performance.

### **Intel Xeon Processor 5500 Series: The Ultimate Solution for Enterprises**

The combination of the Intel Xeon processor 5500 series and IBM Rational ClearCase delivers high scalability to end users. As a result, enterprises can consolidate several back-end CM servers to support their growing demands—cutting down on both initial equipment expense and ongoing costs to run and maintain the infrastructure. Among other advantages, customers get a variety of benefits that expand the positive impact of virtualization in their day-to-day operations.

IBM Rational ClearCase Server also takes advantage of the performance features of the Intel Xeon processor 5500 series: hyper-threading and next-generation Intel® Virtualization Technology (Intel® VT) features. Next-generation Intel

## Intel and IBM Rational: Achieving an Optimal Configuration Management Solution

*“Intel and the IBM Software Group have a long-standing relationship working together to optimize numerous IBM software solutions to run best on Intel-based server platforms. Intel and IBM look forward to bringing greater value-add to mutual customers via our complementary efforts.”*

—**Christos Georgiopoulos**  
General Manager  
Developer Relations Division  
Software and Services Group  
Intel Corporation

VT features deliver real-world, high-virtualization performance on Intel® 64 architectures through support for huge pages, improved paravirtualization and virtualized I/O drivers, and better use of physical memory. Businesses now find dramatic success in virtualizing even their most demanding, mission-critical workloads such as enterprise-scale databases, enterprise resource planning (ERP) applications, and online transaction processing (OLTP) implementations.

The following table shows upcoming virtualization trends:

Next-Generation Intel Virtualization Technology <sup>2</sup> Features	Real-World Benefits to IBM Rational Customers
<b>Intel Virtualization Technology FlexMigration<sup>3</sup>:</b> Enables live migration within virtualization pools constructed of both new and older servers	Increased efficiency in larger virtualization pools, as well as investment protection for an existing infrastructure
<b>Intel Virtualization Technology for Directed I/O<sup>4</sup>:</b> Allows a virtual machine to have exclusive access to an I/O device, without emulated device drivers	Less performance overhead speeds up data movement for demanding workloads
<b>Intel Virtualization Technology for Connectivity:</b> Allows more efficient sharing of network connectivity among virtual workloads	Improves the overall scalability of a virtualized infrastructure

In short, the next-generation Intel Xeon processor 5500 series delivers Intel VT features that enable greater performance and efficiency and the pooling of multiple generations of resources.

### Learn More

Virtualization of even the most mission-critical workloads has become mainstream in today's data centers, as organizations realize the benefits virtualization offers in terms of server consolidation, cost savings, and increased flexibility.

IBM Rational ClearCase–based solutions built on Intel Xeon processor 5500 series–based servers deliver an intelligent foundation for the future of business computing.

- More about Intel Xeon processors: [www.intel.com/xeon](http://www.intel.com/xeon)
- More about IBM Rational products and services: [www.ibm.com/rational](http://www.ibm.com/rational)
- More about IBM Rational ClearCase Performance: [www.ibm.com/developerworks/rational/performance](http://www.ibm.com/developerworks/rational/performance)

## Intel and IBM Rational: Achieving an Optimal Configuration Management Solution

<sup>1</sup> **Source:** IBM internal measurements. Any performance data contained herein was determined in a controlled environment and is preliminary. Therefore, the results obtained in other operating environments might vary significantly. Users of this document should verify the applicable data for their specific environment.

<sup>2</sup> **Source:** Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM), and applications enabled for virtualization technology. Functionality, performance, or other virtualization technology benefits will vary depending on hardware and software configurations. Virtualization technology-enabled BIOS and VMM applications are currently in development.

<sup>3</sup> Backward-compatibility for live virtual machine migration also exists with current dual-core Intel® microarchitecture products (Xeon 5100 and Xeon 3000) and forward-compatibility exists with future dual- and multi-core processors. Contact your preferred VMM vendor for support requirements.

<sup>4</sup> Requires operating system and VMM support.

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit <http://www.intel.com/performance/resources/limits.htm> or call (U.S.) 1-800-628-8686 or 1-916-356-3104.

Intel® Virtualization Technology requires a computer system with an enabled Intel processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance, or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

Intel® Hyper-Threading (HT) Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. For more information, including details on which processors support HT Technology, see <http://www.intel.com/technology/platform-technology/hyper-threading/index.htm>.

Intel® Turbo Boost Technology requires a platform that includes a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your platform manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see <http://www.intel.com/technology/turboboost>.

Intel products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications. All dates and products specified are for planning purposes only and are subject to change without notice.

Information in this document is provided in connection with Intel® products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Intel's terms and condition of sale for such products, Intel assumes no liability whatsoever, and Intel disclaims any express or implied warranty, relating to sale and/or use of Intel products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right. Unless otherwise agreed in writing by Intel, the Intel products are not designed nor intended for any application in which the failure of the Intel product could create a situation where personal injury or death may occur.

IBM, Rational, ClearCase, ClearQuest, and System x are registered trademarks of International Business Machines Corporation in the United States, other countries, or both.

Java is a registered trademark of Sun Microsystems, Inc. in the United States, other countries, or both.

\*Other names and brands may be claimed as the property of others.

Copyright © 2009 Intel Corporation. All rights reserved. Intel, the Intel logo, Intel Xeon, Intel Core, and VTune are trademarks of Intel Corporation in the U.S. and other countries.

Copyright IBM Corporation 2009. All rights reserved.

RAW14146-USEN-00

