

FOR IMMEDIATE RELEASE

Hitachi, Ltd.

Red Hat K.K.

**Hitachi Develops World's First Technology^{*1}
to Enable Running Multiple Instances of Virtualization
Software on a PC Server and Provides Highly Reliable and
Efficient Virtualization Solutions Together with Red Hat**

Running multiple instances of Red Hat Enterprise Linux and its standard virtualization technology, Kernel-based Virtual Machine, on top of Hitachi's logical partitioning feature Virtage enables the new cloud environment with inter-tenant isolation

Tokyo, September 13, 2012 --- Hitachi, Ltd. (TSE: 6501, "Hitachi") and Red Hat K.K. ("Red Hat"), a wholly owned subsidiary of Red Hat, Inc. today announced that Hitachi has developed a technology that allows running multiple instances of server virtualization software on a PC server for the first time in the world and it started providing highly reliable and efficient virtualization solutions collaborating with Red Hat's technology for virtualization and cloud computing.

Specifically, Hitachi has added new functions to its logical partitioning ("LPAR"^{*2}) feature Virtage^{*3}, which is available on Hitachi's BladeSymphony^{*4} server line, and confirmed that the new Virtage is able to stably run multiple instances of server virtualization software on top of LPARs. This is feasible for multi-tenant^{*5} style cloud computing environments because it can isolate the effects of load level fluctuation and faults between tenants by assigning an isolated LPAR for each tenant and running server virtualization software (hypervisor^{*6}) on each LPAR, and it allows integrating multi-tenant systems into a server efficiently.

Hitachi and Red Hat have finished formal verification of Red Hat Enterprise Linux, including its integrated Kernel-based Virtual Machine ("KVM") virtualization technology^{*7}, running on top of Hitachi's Virtage^{*3}, running on the BladeSymphony server line. As a result, Red Hat has designated Hitachi's BladeSymphony server line as an officially certified Red Hat Enterprise Linux environment, including its KVM hypervisor.

Hitachi will start selling server blades with Red Hat Enterprise Linux with KVM Virtage installed from September 14 for Japanese market.

Furthermore, Hitachi establishes a “Red Hat Enterprise Linux with KVM on LPAR Solution Center,” which will offer evaluation environment and pre-sales consultation. Hitachi plans to develop new virtualization solutions using the products and services through this center’s activity.

*1 As of September 13, 2012, as server logical partitioning feature with production level supports, based on Hitachi’s investigation.

*2 LPAR (Logical PARTitioning): logically created server resources comprising logical processors, memory and IO devices.

*3 Virtage is registered trademark in Japan.

*4 BladeSymphony is registered trademark in Japan. BladeSymphony uses Intel® Xeon® processors.

*5 Multi-tenant: Style of systems where single system is shared by multiple customers or group of users.

*6 Hypervisor: A core piece of virtualization software that controls and monitors virtual machines.

*7 Red Hat Enterprise Linux’s KVM hypervisor is same technology as used in Red Hat Enterprise Virtualization.

In order to meet the strong interest in today’s companies to reduce total cost of ownership, many IT users are turning to server virtualization to consolidate their systems. This trend is especially strong in evolving cloud computing environments, where server virtualization is regarded as indispensable. In private cloud systems, where virtual machines (“VMs”) belonging to multiple divisions or departments are often mixed on a single server, it is essential to maintain VM performance regardless of variation in load, and to have a high level of security between VMs to isolate them from potential failures in other VMs. For this reason, system administrators often choose to deploy a new physical server for different group of users, even when the server still has capacity for additional VMs.

Hitachi first introduced the logical partitioning feature, Virtage, for its BladeSymphony server line in 2006, leveraging Hitachi’s experience in mainframe virtualization combining with hardware based virtualization assistance feature Intel® Virtualization Technology. Virtage is widely used in enterprise systems for its near hardware level stability.

Red Hat has been leading virtualization technology with its KVM development and providing high-quality commercial support for KVM via Red Hat Enterprise Linux and Red Hat Enterprise Virtualization. While taking full advantage of being contained in the Linux kernel^{*8} code base, KVM keeps evolving by utilizing the latest Linux technology, such as adapting to new hardware and memory management. KVM in conjunction with the Red Hat Enterprise Linux or Red Hat Enterprise Virtualization platforms is also useful to attain affordable and reliable virtualization environments.

*8 A core piece of software inside operating system.

Today's announcement allows Virtage users to utilize both Hitachi LPAR's near hardware level stability and isolation, and Red Hat Enterprise Linux with KVM's high performance, industry-leading virtualization features and high-level Linux compatibility. Red Hat Enterprise Linux with KVM on LPAR addresses the problem of security and isolation in multi-tenant VM services environments, reducing the need for additional server platforms and lowering power consumption.

In addition, because the size of the LPAR resource can be varied on demand within the server hardware, the possibility is opened for a totally new style of cloud service based on hosting Red Hat Enterprise Linux with KVM environment within virtualized hardware of optimized size.

Today, Hitachi established the "Red Hat Enterprise Linux with KVM on LPAR Solution Center," located inside the Hitachi Harmonious Competence Center in Tokyo, to promote the new system configurations and to encourage potential users. This center will work primarily with cloud service providers to create high-density and highly energy efficient cloud platforms by providing Red Hat Enterprise Linux with KVM on LPAR environments for evaluation, demonstrating the advantage and offering technical consultation. Evaluation opportunities are also open to software vendors who are interested in the solutions.

Hitachi and Red Hat plan to continue working together and aim to offer more sophisticated solutions and services by combining both companies' advantages. Furthermore, Hitachi and Hitachi Data Systems Corporation, a wholly owned subsidiary of Hitachi, plan to jointly develop solutions that will utilize Red Hat Enterprise Linux with KVM on LPAR technology to meet customer requirements in the global marketplace.

Comment from Partner

Kosuke Hirano, Cloud Computing Business Unit, Intel K. K.

"Intel welcomes Hitachi and Red Hat's announcement on their new virtualization solution. Intel is delighted that Intel has also contributed to this accomplishment through Intel® Virtualization Technology. Intel strongly believes that this solution opens a new era of cloud computing. Intel keeps trying to realize cloud environment with higher efficiency and higher security."

About Virtage

Virtage is the Hitachi's original server logical partitioning feature available on BladeSymphony server line. It offers high performance and highly reliable logical server environment just like physical servers, and hence suitable for enterprise use.

About Red Hat Enterprise Linux with KVM

Red Hat Enterprise Linux integrates the Kernel-based Virtual Machine (KVM) hypervisor, which is also integrated into the Linux kernel. KVM is an open source-based technology that was first unveiled in October 2006 and then incorporated to Linux kernel within months. It was developed by Qumranet, which was acquired by Red Hat in September 2008. Since then, KVM has been evolving by adapting to new processors and devices and incorporating features such as large-size memory management. Red Hat Enterprise Linux with KVM also holds the leading 2-socket, 4-socket and 8-socket benchmark scores on the industry-standard, vendor-independent SPECvirt_sc2010 virtualization benchmark, and is now widely employed in many public and private cloud environments.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 320,000 employees worldwide. Fiscal 2011 (ended March 31, 2012) consolidated revenues totaled 9,665 billion yen (\$117.8 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, industrial, transportation and urban development systems, as well as the sophisticated materials and key devices that support them.

For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

About Red Hat, Inc.

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to reliable and high-performing cloud, Linux, middleware, storage and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As the connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT. Learn more at <http://www.redhat.com>.

About SPECvirt_sc2010

SPEC[®], SPECvirt[™], and SPECvirt_sc[®] are trademarks or registered trademarks of the Standard Performance Evaluation Corp. (SPEC). Reported leadership in the SPECvirt_sc2010 benchmark reflects results published on as of September 1, 2012. For more information and the latest SPECvirt_sc2010 results visit http://www.spec.org/virt_sc2010/.

Trademarks

Intel, Intel logo and Intel Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Red Hat, Inc., Red Hat, the Shadowman logo and JBoss are registered trademarks of Red Hat, Inc. in the U.S. and other countries. Linux is a registered trademark of Linus Torvalds.

Red Hat Forward-Looking Statements

Certain statements contained in this press release may constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements provide current expectations of future events based on certain assumptions and include any statement that does not directly relate to any historical or current fact. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: risks related to delays or reductions in information technology spending; the effects of industry consolidation; the ability of the Company to compete effectively; uncertainty and adverse results in litigation and related settlements; the integration of acquisitions and the ability to market successfully acquired technologies and products; the inability to adequately protect Company intellectual property and the potential for infringement or breach of license claims of or relating to third party intellectual property; the ability to deliver and stimulate demand for new products and technological innovations on a timely basis; risks related to data and information security vulnerabilities; ineffective management of, and control over, the Company's growth and international operations; fluctuations in exchange rates; and changes in and a dependence on key personnel, as well as other factors contained in our most recent Quarterly Report on Form 10-Q (copies of which may be accessed through the Securities and Exchange Commission's website at [www.sec.gov](#)), including those found therein under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations". In addition to these factors, actual future performance, outcomes, and results may differ materially because of more general factors including (without limitation) general industry and market conditions and growth rates, economic and political conditions, governmental and public policy changes and the impact of natural disasters such as earthquakes and floods. The forward-looking statements included in this press release represent the Company's views as of the date of this press release and these views could change. However, while the Company may elect to update these forward-looking statements at some point in the future, the Company specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the Company's views as of any date subsequent to the date of this press release.

#

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
