IBM

ORACLE

IBM System x and BladeCenter with Oracle VM for Oracle solutions

Delivering a dynamic infrastructure for your Oracle solution deployments

Virtualized Oracle solution environments affordably deployed on IBM System x and BladeCenter servers

Easily managed, flexible, and efficient virtualization delivered by Oracle VM

Oracle VM Templates offering pre-configured software images streamlining the installation process

IBM System x and BladeCenter for a dynamic infrastructure

To adapt and succeed in today's dynamic business environment, you need a dynamic IT infrastructure. To be dynamic means to be continually focused on:

• infrastructure efficiency and reducing costs

• responsiveness to the business and improving service

• effectively managing risk to ensure security, scalability and availability

A dynamic infrastructure is smart—it takes advantage of the intelligence gained across the network and throughout your business to help you compete and excel.

Reduce costs

In today's financial climate, reducing costs is the top priority for chief intelligence officers (CIOs) – not just driving down costs overall, but using IT resources more efficiently. This imperative requires not just incremental improvements in savings or cost reductions, but dramatic improvements in total cost of ownership – leveraging:

• standardization

• alternative service delivery models

• energy efficiency

• virtualization

• consolidation

System x® and BladeCenter® servers and tools are designed with improved efficiency and cooling to lower costs by reducing energy usage in your datacenter. System x and BladeCenter servers can help cut costs with technologies that not only increase performance per watt, but also help plan and control their power usage. And by consolidating and virtualizing on IBM System x and BladeCenter servers, you can increase the utilization of hardware and decrease the number of physical assets in your datacenter, potentially saving you money.

Improve service

Your business faces increasingly savvy customers and a proliferation of agile competitors. To build a smarter planet and win in today's fast-paced business landscape, you need to transform your service delivery models to achieve superior, differentiated delivery of goods and services. Smarter service delivery requires:

• comprehensive visibility into the full breadth of business and IT assets that support services

• effective control over those assets as well as the business processes they enable

• extensive automation of these processes so that services can be delivered more reliably and economically

Combining open, industry standards with deep business experience and renowned research capabilities, the IBM X-Architecture® blueprint equips System x and BladeCenter servers with innovative technology, such as IBM Systems Director 6.1, making IT simpler and more reliable. These capabilities can help support growth – both of your business and your datacenter.

Manage risk

Global expansion, emerging technologies and the rising volume and sophistication of new threats have increased the demand for improved security and resiliency measures for businesses of all sizes. By enhancing security and resiliency, IT becomes more responsive and better prepared to meet the needs of the business. Critical risk reduction issues include:

• infrastructure security and resiliency

• information and data protection

• regulatory compliance

Proactive, secure, integrated tools provided by System x and BladeCenter—for tracking and deploying assets, optimizing performance and even enabling remote maintenance—provide a single, secure, consistent interface to manage your IT. An intelligent system design that includes multiple layers of redundancy, memory protection and advanced availability tools provides the critical resiliency you need.

IBM System x enterprise servers are the ideal platform for highly consolidated, virtual server environments running today's business-critical applications—like database processing, customer relationship management and enterprise resource planning. With multiple workloads running on the same server, performance remains important but reliability and availability become more critical than ever. IBM System x enterprise servers are built with eX4 technology, which include a unique chipset and other advanced capabilities that give you higher throughput and exceptional reliability.

The philosophy regarding IBM System x rack and tower-based servers is "innovation comes standard." Some server vendors view uni- and two-socket servers as commodities, using off-the-shelf components to produce cookie-cutter servers with no added value. Instead, IBM X-Architecture system design begins with standard parts and adds innovation to create something more practical: outstanding dual- and quad-core performance, high availability, scalability, power efficiency and proactive manageability.

By integrating servers, storage and networking, IBM BladeCenter is helping companies in every industry sweep complexity aside. The blades contain all the necessities to run an application—processors, memory, I/O and storage. The chassis contains shared redundant power, shared hot-swap cooling, DVD, integrated Ethernet, storage, switching and consolidated powerful management. Its innovative, open design offers a true alternative to today's sprawling racks and overheated server rooms. So toss your cables. You have nothing to lose but complexity.

The growth of virtualization

Virtualization is a term that is being cast about by many vendors today, but where is virtualization technology adoption occurring? According to IDC[1] the geography where this growth is the strongest is in the Americas. Clearly, the need to tighten the IT budget is leading customers to look at how to leverage newer Intel® processors and memory capacity to consolidate workloads – especially their Oracle workloads.

Oracle VM

Oracle VM is server virtualization software that fully supports both Oracle and non-Oracle applications, and delivers more efficient performance. Backed by Oracle's world-class support organization, customers now have a single point of enterprise-class support for their entire virtualization environments, including Oracle Database, Oracle Fusion Middleware, Oracle Applications, and Linux®, which, as well as all Oracle products, are certified with Oracle VM.

The virtualization platform for your enterprise server workloads

You are facing the challenges of a rapidly expanding data center—increased operating costs, inefficient resource utilization and an appetite for real estate. But any solution also has to increase your flexibility, meet your price/performance needs, and make applications easier to deploy, manage, and support.
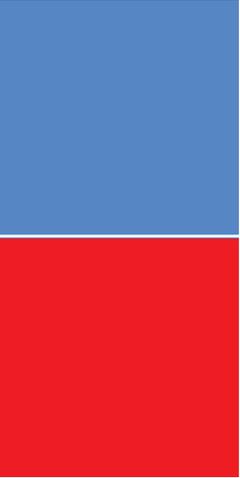
Oracle VM delivers:

- **Leading performance** – Low-overhead architecture with the Xen hypervisor provides scalable performance under increasing workloads to meet the most aggressive performance requirements.

- **Latest hardware support** – Leverage the new hardware features from Intel Xeon® and AMD Opteron™ processors for higher performance and more efficient power management.

- **Faster software deployment with Oracle VM Templates** – Download and import pre-configured virtual machines containing pre-installed Oracle enterprise applications or other software to get up and running in hours not weeks.

- **Rapid virtual machine (VM) provisioning and cloning** – Sparse file support in OCFS2 enables significantly faster virtual machine provisioning and cloning; allow users more control over data allocation, improving performance and storage efficiency.

- **Secure Live VM Migration** – Completely eliminate service outages associated with planned maintenance or scale up your resources quickly by migrating running VMs to other servers over Secure Sockets Layer (SSL) links without interruption.

- **High availability** – Reliably and automatically restart failed VMs on other servers in the server pool after unexpected server- or individual VM outage. A new, server pool master auto-failover feature eliminates any single point of failure for virtualization management.

- **Automatic or manual server pool load balancing** – Guest VMs are automatically placed on the server with the most resources available in the pool at start-up, or can be started within a user-designated subset of servers.

- **Virtual CPU scheduling priorities and caps per VM** – Control access to CPU between multiple VMs to align with your IT and business priorities.

- **Virtual Machine I/O resource management** – Set bandwidth cap for each virtual network interface and prioritize the virtual disks.

- **Linux and Microsoft® Windows® support** – Linux and Windows guest operating systems are supported.

- **Official certification based on real-world testing** – Certification is supported for use with the most sophisticated enterprise workloads under real-world conditions.

- **Virtualization and management: zero license costs, zero license keys** – This includes Oracle VM Manager for centralized, browser-based management of your resource pools.

- **Sub-capacity pricing** – This feature offers the ability to define hard partitions on a server and then only license the processor sockets assigned to that partition helps reduce license fees.

- **Affordable, full-stack enterprise-class support** – Oracle offers worldwide support for the entire virtualization environment and workloads together.

Integrated server virtualization and management

Consisting of Oracle VM Server, open source server software, and an integrated Web browser-based management console, Oracle VM Manager, Oracle VM provides an easy-to-use, feature-rich graphical interface for creating and managing virtual server pools, running on x86 and x86-64 processor-based systems throughout the enterprise.

Users can create and manage VMs that exist on the same physical server but that can behave independently, with each VM having its own virtual CPUs, network interfaces, storage, and operating system.

Oracle VM supports the following guest operating systems (both 32-bit and 64-bit):

- **Both paravirtualized (PV, or virtualization aware) and hardware-virtualized kernels**
  - Red Hat Enterprise Linux 4 and 5
  - Oracle Enterprise Linux 4 and 5

- **Hardware-virtualized kernels only (virtualization support in hardware – Intel VT or AMD-V required)**
  - Red Hat Enterprise Linux 3 (32-bit PV drivers also available)
  - Windows 2008 SP1, Windows Vista, Windows 2003, Windows XP Pro (32-bit and 64-bit PV drivers available)
  - Windows 2000

Customers should feel confident running Oracle VM based solutions with all IBM System x and BladeCenter products. IBM continues to work closely with Oracle to provide unique and significant proof points that demonstrate the unique value these solutions bring to customers.

Oracle VM Templates

Oracle VM Templates provide an innovative approach to deploying a fully configured software stack by offering pre-installed and pre-configured software images. Use of Oracle VM Templates eliminates the installation and configuration costs, and reduces the ongoing maintenance costs helping organizations achieve faster time to market and lower cost of operations. Oracle VM Templates for many key Oracle products and third party applications are available for download, including Oracle Applications, Oracle Fusion Middleware, and Oracle Database, below is a partial list (a complete list is available at: oracle.com/technology/products/vm/templates):

- Oracle Siebel (CRM) SIA 8.1.1 and 8.0

- Oracle PeopleSoft HCM 9.1 and PeopleTools 8.50.02

- Oracle's JD Edwards EnterpriseOne 9.0 Update 1 and JD Edwards EnterpriseOne Tools 8.98 Update 2

- Oracle E-Business Suite 12.1.1

- Oracle WebLogic Server 10*g* Release 3

- Oracle Business Intelligence Enterprise Edition 10.1.3.4

- Oracle Application Server 10*g* Release 3 WebCenter

- Oracle Identity Management 10*g* Release 2

- Oracle Fusion Middleware Service Oriented Architecture (SOA) 10.1.3.4 and 10.1.3.3

- Oracle Database 11*g* and Oracle Database 10*g* Release 2

- Oracle Real Application Clusters (RAC) 11*g* Release 1

IBM System x, Oracle VM and JD Edwards EnterpriseOne benchmark test

The IBM Oracle International Competency Center (ICC) was the first to execute a certified JD Edwards EnterpriseOne benchmark running on the new Intel Xeon 5500 series processors. This benchmark configuration included the IBM System x3650 M2 which was partitioned using Oracle VM. The environment was installed using the Oracle VM Templates for JD Edwards EnterpriseOne to facilitate a rapid installation. Oracle's robust "Day in the Life" (DIL) test kit was used to generate the simulated user workloads.

The tests were run with JD Edwards EnterpriseOne 9.0 in a virtual machine with Oracle VM 64-bit hypervisor and 64-bit paravirtualized Linux guest operating system. The web server virtual machine used Oracle Application Server 10*g* Release 3 and the database server ran Oracle Database 11*g*.

Oracle's DIL kit is a suite of 17 test scripts that exercises representative transactions of the most popular JD Edwards EnterpriseOne applications including Supply Chain Management, Supplier Relationship Management, Human Capital Management, Customer Relationship Management, and Financial Management. This complex mixture of applications also includes Advanced Pricing, Verity, Vertex and batch workloads to more closely reflect customer environments.

Figure 1 shows the CPU utilization for each of the three Oracle virtual machines for the four tests that were run. The Oracle virtualized database was allocated two cores, the JD Edwards EnterpriseOne virtual machine (the JD Edwards EnterpriseOne logic server) was allocated two cores, and the web server virtual machine with OAS was allocated three cores. The CPU utilization for the three virtual machines scaled almost linearly as the number of users increased from 100 to 1000. The weighted average user response time for these tests ranged from 0.21 seconds for the 100 user test to 0.29 seconds for 1000 user test, well below the benchmark guideline of 1.0 second response time.
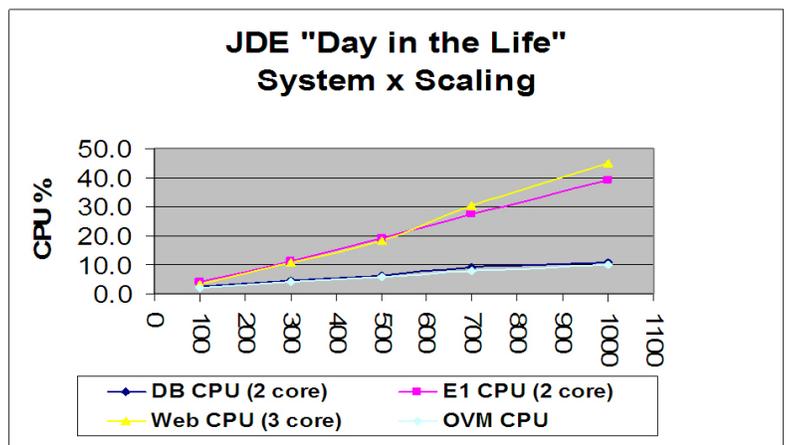

Figure 1 – JD Edwards EnterpriseOne CPU % utilization with Oracle VM and Linux on the x3650 M2

Sizing Oracle VM systems

IBM and Oracle working together have developed a capacity-estimation capability to aid in designing an optimal configuration for each specific Oracle VM environment. A detailed sizing estimate customized for your environment should be obtained from the IBM Techline Solution Sizing Team, accessible through your IBM or IBM Business Partner representative. You can download a questionnaire to start the sizing process from:
ibm.com/erp/sizing

The IBM and Oracle alliance

Since 1986, IBM and Oracle have partnered to create smart, serious innovation that's helping shift the world. More than 100 000 joint customers benefit from the strength and stability of the Oracle and IBM alliance, which offers technology, applications, services, and hardware solutions that mitigate risk, boost efficiency, and lower total cost of ownership.

IBM's service organization, IBM Global Business Services, is an Oracle Certified Advantage Partner and has a proven track record with more than 5000 experienced professionals who have completed more than 7500 Oracle projects. IBM and Oracle continually enhance the alliance to ensure they are helping companies respond quickly to constantly shifting market conditions and client demands. This is accomplished through the delivery of industry-specific hardware and software solutions, optimized to the client's environment.

For more information

To find out more about joint solutions from IBM and Oracle, please contact an IBM sales representative at 1-866-426-9989, or visit us at:
ibm.com/solutions/oracle

For more information about the IBM System x family, visit:
ibm.com/systems/x

For more information about the IBM BladeCenter offerings, visit:
ibm.com/systems/bladecenter

For more information about Oracle VM, visit:
www.oracle.com/us/technologies/virtualization

For more information about Oracle VM Templates, visit:
www.oracle.com/technology/products/vm/templates

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