BUILDING THE VIRTUAL ENTERPRISE
A RED HAT WHITEPAPER
As an IT shop or business owner, your ability to meet the fluctuating needs of your business while balancing changing priorities, schedules, and costs is a constant struggle. With current macro economic concerns and increasing competitive demands, “doing more with less” is the ultimate business goal. Concerns over IT’s ability to proactively provide services to the business balanced against appropriate investment remain key to technical and budgetary decisions.

As business leaders, you must weigh many important IT questions. What infrastructure investments will result in the best ROI for your business? How can you drive your business without disrupting existing solutions? What implementations will survive the next round of technology and business changes, and also accelerate in value for your business?

WHERE ARE YOU TODAY?

Your datacenter is heterogeneous today. From mainframe to PC hardware platforms. From Windows to Linux servers and desktop solutions. You have a diverse collection of applications and hardware that make up the operational heartbeat of your business. You invest in solutions from multiple vendors as a point of leverage and as a protection against lock-in and system failures. You cannot afford to waste existing investments.

While your IT budget continues to be squeezed, you continue to be flooded with new business requests. Budgets are often at best flat—typically declining by over 5 percent per year. And nearly 75 percent of spending goes to infrastructure and application maintenance, leaving few resources for fostering desperately needed innovation. You must plan your future investments wisely.

Your datacenter also has vintages of legacy investment, including vintages of hardware and vintages of applications. This inventory of diverse platforms and technologies is part of your operational framework and must be part of any future infrastructure.

You are using both open source and closed source technologies today. According to Gartner, Open Source Software (OSS) accounted for 13 percent of the $92.7 billion software market in 2006, and 80 percent of all commercial software products will include some open source by 2010. OSS is now a bedrock component of a majority of the infrastructure software you use, so you must embrace this shift with the right technologies and vendors.1

Given these complexities, you need to work seamlessly with existing investments to advance your IT services without disrupting business-flow revenue streams. What you don’t need is another vendor selling you on the next “new” technology, insisting that entirely new systems are necessary—a big gamble with your limited spend.

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HOW DO YOU TAKE
YOUR INFRASTRUCTURE TO THE NEXT LEVEL?

You need an agile, flexible infrastructure that can support existing and future applications and processes without costly upgrades and migrations. As your business is built on a breadth of technologies and platforms, all future infrastructure choices must be able to work in diverse, evolving environments. The right platform must offer the broadest range of application support, deployment options, and diverse hardware support while also providing operational flexibility, performance, security, and stability.

Enabled by the continued evolution of systems and software, virtualization should be considered as a core component of your future IT infrastructure.

Virtualization is certainly not new. From the early days of both the mainframe and open source, virtualization has allowed architects and administrators to take physical resources and apply them to multiple problems at the same time. Today, with virtualization enabled on cost-effective, high-performance operating systems, compute networks, and storage infrastructures, the benefits can reach many facets of your business.

The challenge is to implement a virtualization infrastructure:

- without adding complexity
- without excessive lock-in
- while keeping costs low
- without disrupting your business
- while leveraging as many existing resources as possible

HISTORY OF MAINSTREAM VIRTUALIZATION

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To efficiently grow your business, you'll need the best-performing, agile, and open architecture to provide the frictionless ability to preserve the investments already made, add to today's investments, and plan for future needs.

Red Hat provides today's most comprehensive set of virtualization capabilities, with a focus on delivering the virtual enterprise of tomorrow. From datacenter to desktop, from physical to virtual machines, Red Hat Enterprise Linux is certified across a thousand hardware platforms and thousands of applications. And—soon—from services to the cloud. No other IT provider addresses the complete stack in the open and authentic way that Red Hat naturally operates.

**MEETING THE NEEDS OF THE VIRTUAL DATACENTER TODAY**

Red Hat accelerates the time-to-market for existing and new infrastructure components. Red Hat already delivers an expanding set of virtualization solutions that include management, provisioning, migration, high availability, virtual appliances, servers, and storage. With Red Hat’s expansion into the Virtual Desktop Infrastructure (VDI) space, you can now use virtualization in every aspect of your infrastructure more cost-effectively.

The foundation of the stack is the operating system and its ecosystem. Virtualization is fast becoming an integral component of the operating system, requiring a complete infrastructure incorporating hardware, applications, management tools, and a hypervisor. Application support, the operating system, virtualization, and hardware must be closely linked in order to assure application availability, maximum flexibility, and performance.
Red Hat's reputation as the leading open source operating system provider is directly applicable to its position as the leading virtualization provider in many ways:

- **Virtual and physical capabilities** – From deployment to management, Red Hat Enterprise Linux gives you the ability to efficiently use and manage, in tandem, both bare-metal hardware and virtual infrastructure.

- **A strong ecosystem** – With over 3,000 applications and more than 1,000 hardware platforms certified, Red Hat has experience with an exceptionally wide variety of platforms and applications. With virtualization, ecosystem partners must work together even more collaboratively to best serve customers. As a world-wide presence, Red Hat cooperatively resolves software conflicts between the application, storage, the network, hardware, and the operating system. Red Hat’s deep ecosystem relationships allow businesses to accelerate the adoption of virtualization confidently.

- **Performance-focused** – Red Hat knows what it means to be an infrastructure provider to big business. Whether running millions of transactions in an hour or managing file and print servers, every application must perform in the most efficient and deterministic manner possible to keep businesses running. Virtualization of these applications’ infrastructure also means that they must perform as good as, or better than before. Red Hat’s strong operating system and middleware engineering focus is crucial to achieving this high performance in virtualized environments.

With experience as the leading Linux provider in the datacenter, Red Hat also recognizes the importance of heterogeneity and its role in today’s business world. In early 2007, Red Hat delivered an integrated commercial virtualization solution in Red Hat Enterprise Linux 5, providing a platform with rich virtualization features like live migration, clustering, and support for Linux and Microsoft® Windows guests. Red Hat’s virtualization has deployed in areas that were previously considered off-limits to virtualization, such as high-performance database and ERP systems, mission-critical production workloads, and time- and latency-sensitive trading applications.

**WHAT’S NEXT: VIRTUAL ENTERPRISES**

But how do you build agility into your enterprise going forward? How do you respond to changing business imperatives at a larger scale? How will these changes impact future iterations of your business processes?

You do this by moving virtualization beyond the single machine, application, platform, or project. Making virtualization part of the foundation of your IT infrastructure provides the ability for architectures to respond to new business demands and react to immediate service needs.

Red Hat is focused on building you simpler solutions that abstract away much of the underlying innovative technology churn. This will enable you to be more agile and allow you to better match your IT infrastructure investments with your business. With a comprehensive virtualization solution, Red Hat is better positioned than ever to provide the solutions you need by delivering reliable, open source virtualization from the datacenter to desktop, across physical and virtual deployment models, from Windows to Linux.
• **Simpler**

Red Hat virtualization solutions eliminate the need for you and our application partners to build, test, certify, and support applications on a new virtual platform in addition to the operating system. This also makes it easier and faster for our hardware partners to deliver new technology, so you can realize the advantages of virtualization and can transform your entire IT infrastructure and applications.

While our partners benefit from simpler certification, you benefit from being able to choose which applications, what hardware, and how each is deployed.

• **Abstracted**

Red Hat created the industry’s first open standard for virtualization-specific management, allowing interoperability between management applications and hypervisors. This standard, LIBVIRT, has been widely adopted in the industry. This allows you to adopt best-of-breed management applications, as well as underlying virtualization technology. Open standards prevent lock-in by a single vendor and offer architects the flexibility to select the best management tools for your environment. It also offers the ability to use these tools with the most suitable virtualization platform.

This abstraction is now enabling many management application vendors you may already work with to participate in the evolution of the next-generation virtual machines and architectures. Before, this is where you were relegated to a long wait on the sidelines.

• **Comprehensive**

Red Hat strives to transform the virtualization market and drive comprehensive virtualization technology and management solutions into every system. From servers to desktops. On both Linux and Windows. Red Hat can now deliver what virtualization-only vendors cannot: a comprehensive solution integrated with the operating system that can drive down IT costs while simultaneously enhancing the flexibility and responsiveness of IT infrastructure.
Red Hat’s solution components include:

- The industry’s leading open source operating system, Red Hat Enterprise Linux, with built-in virtualization
- An embedded hypervisor that supports all major operating systems
- A consistent management platform for both virtual and physical systems, uniting servers, desktops, storage, and networks
- A defining cloud and grid management solution
- Advanced, high-speed inter-application messaging
- High-availability clustering solutions
- Integrated security infrastructure

Every ancillary support infrastructure for your enterprise requires realignment within a new virtualized enterprise. The core assets of compute, identity, and storage must be integrated in a way that permits reuse in virtual architectures, without disrupting current service.

Red Hat has extensive experience dealing with service-driven architectures for enterprise applications, and is now focused on extending the capabilities of all assets of an IT infrastructure to the virtual enterprise.
As an example, with Red Hat’s keen focus on identity, policy, and auditing, Red Hat is finding ways to manage the new evolution of the virtual infrastructure, making automation part of the core platform. Virtual directory infrastructure will allow directories like Microsoft’s Active Directory and open standards directories to link across heterogeneous components, from server to desktop to service provider.

These solutions will leverage the power of the open source innovation model, which permits the delivery of new capabilities faster, more reliably, and with greater security and stability. All of the components of these solutions will also be delivered within an open framework to help promote plug-and-play compatibility with your existing infrastructure and third-party software.

Red Hat believes that – within two years – the majority of servers will have embedded virtualization capabilities through a combination of hardware and software. It is important to you, our partners, and the development community that this critical part of IT infrastructure is based on open source. Open source provides high standards of security, stability, and performance and couples these benefits together with the rapid rate of innovation that has come to be expected from the open source development model.

Red Hat will continue to address the growing demand for virtualization in the enterprise with complete and comprehensive solutions. From infrastructure to management, from server to desktop, and with our robust, certified ecosystem, Red Hat enables an agile, flexible infrastructure that can support existing and future applications.

Ultimately, the virtual enterprise will look at resources not as physical assets but as services provided to the business. Simple and comprehensive virtualization solutions will result in clouds of resource which contain the sum value of all IT components and can provide infinitely varied combinations of them on-demand, securely to every application and every user. This ultimately realizes the promise of computing as a utility.

Red Hat’s differentiated and comprehensive solutions portfolio for the virtual enterprise enhances the opportunities for enterprises to improve the productivity and reduce the cost of IT infrastructure.

**Red Hat will be there with you delivering solutions to build the virtual enterprise.**

For more information on how Red Hat can help you make the move to a virtual enterprise, please visit us on the web – [http://www.redhat.com/rhel/virtualization/](http://www.redhat.com/rhel/virtualization/).