IBM Managed Hosting—virtualized managed firewall and load balancing services.

*Dedicated networking services performance.*

*Shared economics.*
Introduction

For CIOs and corporate security officers, it is becoming increasingly difficult to address the challenges associated with matching technical systems, capabilities and resources with evolving business needs in an ever-changing economic climate. Many of the challenges are related to the limited flexibility and high cost of using dedicated devices, along with the associated costs and complexities of firewall and load balancing solutions—which have traditionally been considered to be the only reliable way to maintain the performance and security required for key business applications and processes.

In recent years, hosting solution providers began developing cheaper, “pooled” alternatives to the “dedicated” model. However, most initial offerings that have sought to take advantage of the cost-efficiencies made possible through pooling resources have failed to address issues such as subscribers’ concerns related to getting the paid-for, contracted service level. Customers have also raised numerous technical concerns associated with pooled firewall and load balancing devices, including security, performance and upgrade risks. And with corporate leadership mandating information technology (IT) budget reductions—and customers and internal users still needing the highest possible service and security levels—many IT decision-makers are looking for better ways to allocate IT funds while addressing technical concerns.

IBM Managed Hosting can now deliver firewall and load balancing solutions in support of the IBM e-business on demand™ initiative, encompassing a new generation of utility computing offerings designed to help your company better match IT spending with business needs. By integrating business and technical processes across the enterprise—using a scalable, flexible, security-rich and cost-effective means of delivery—e-business on demand can help your organization respond quickly to internal and external business drivers. The on demand managed firewall and load balancing solutions from IBM offer the
security features and manageability of a dedicated device with the flexibility and lower cost of a pooled solution. Delivered with the help of innovative pooled devices that separate individual companies’ applications and resources in “virtual racks” that function independently of one another, these solutions help solve security, performance and upgrade challenges while providing accurate tracking of service usage for service level agreements (SLAs).

### e-business on demand—a new way of acquiring IT capabilities

Marking a milestone in outsourcing, e-business on demand enables businesses to create a new computing environment in which everything—infrastucture, business processes, applications and services—can be acquired over the network on demand as a service, using flexible, usage-based pricing. The advent of utility computing has created an enormous potential for your company to streamline and enhance business and technology processes. A good utility computing solution can help you respond more quickly and easily to customer demands, market opportunities and external threats. Through our e-business on demand initiative, IBM is leveraging our vision, technology and global reach to lead the delivery of utility computing and position your company for the next generation of e-business.

e-business on demand is an entirely new approach to and way of thinking about technology delivery. Not only does it provide an innovative way to develop and manage the IT infrastructure and better integrate core systems with suppliers, customers and employees, it also helps you develop the flexibility to sense and respond to core constituents’ needs and offer products and services that are customized dynamically and delivered in real time. It’s about providing employees, suppliers and partners with fast access to the information and insights necessary to do a better job. Ultimately, to operate as a true on demand business, your utility-computing-based operating environment will need to be integrated, open, virtualized and autonomic.

---

**Highlights**

**e-business on demand enables businesses to acquire IT capabilities—including infrastructure, business processes, applications and services—over the network on demand as a service using flexible, usage-based pricing.**

**e-business on demand can help businesses develop the flexibility to sense and respond to their core constituents’ needs and offer products and services that are customized dynamically and delivered in real time.**
Virtualized managed firewall and load balancing services

Getting started with e-business on demand
IBM e-business on demand provides a range of flexible packaged service options to help your company begin building an on demand operating environment today, using the utility computing model. These services include the following offerings:

- Managed firewall services—Manages and allocates firewall resources, delivering appropriate capacity to applications and services
- Managed load balancing services—Manages and allocates load balancing resources, delivering appropriate capacity to each server.

Meeting a host of management challenges
Few companies today have the luxury or desire to handle every aspect of their e-business infrastructure, and although firewall and load balancing capabilities are indispensable to day-to-day operations, they also add resource-draining complexity and expenses to the IT environment.

With security being a top priority for today’s IT departments, firewalls are essential components of the overall IT infrastructure. Firewalls also create challenges on a number of levels. First, there are the costs, which range from excessive, recurring firewall capital costs (including hardware and software), to stifling maintenance and operational costs. Whenever new applications are added to the IT environment, new firewall equipment must be added to support the applications, including expensive firewall software in addition to redundant boxes that go unused most of the time. Once the boxes are in place, the ongoing maintenance of these appliances, with their individual management systems and proprietary protocols, can quickly lead to overstretched budgets.
Firewall configuration and management complexity can also negatively impact your organization in other ways. The cost and complexity of adding a firewall may stifle innovation, because it makes decision-makers reluctant to implement newly developed applications. Implementations can take more than a month to order, cable and install the equipment. And, in addition to consuming large amounts of scarce funds, firewalls also eat into the valuable time of key IT staff. Furthermore, finding qualified security experts can be difficult, and retaining them is expensive. According to a survey of its readers' needs for IT skills in early 2003, Earthweb.com found that 45 percent of respondents were in frequent need of security help, so it's reasonable to assume that the skills shortage won't be subsiding in the near future.

Not only do firewalls absorb valuable time of key IT staff, finding qualified security experts can be difficult and retaining them is expensive.

An e-business on demand firewall infrastructure solution approach allows businesses to gain access to critical firewall capacity on demand, at a reduced cost.

Many of these challenges can be alleviated, however, by implementing an e-business on demand firewall infrastructure. Using this firewall solution approach, you gain access to critical firewall capacity on demand, at a reduced cost.

Given its nature, load balancing is also a good candidate for managed services. With load balancing solutions, the challenges are related to flexibility, scalability and performance issues in addition to costs. Traditionally, to manage dramatic Web site traffic fluctuations and optimize site performance, enterprises have deployed expensive dedicated load balancing devices and software. And while the devices provide a mission-critical capability, their actual usage is limited and their scalability in the face of e-business growth is restricted. Additionally, maintenance and expansion of load balancing devices requires downtime, and load balancing solutions can take a month or longer to order, cable and install, so maintaining servers without affecting overall Web site performance can be difficult.
In contrast, implementing an e-business on demand managed load balancing solution can help your company alleviate these issues by shifting the load balancing workload from dedicated devices to an e-business on demand service infrastructure capable of delivering the necessary load balancing capacity. The result is that you can realize the same performance and customization benefits of a dedicated solution, but typically achieve them at a lower cost.

IBM Managed Hosting services can help you build an on demand operating environment today with e-business on demand managed firewall and managed load balancing solutions. Our services can help bring standardization and scalability to these critical and traditionally expensive technical areas, while lowering total costs and increasing flexibility to meet changing business requirements.

Tackling objections to pooled services
Inevitably, when you begin evaluating services that use pooled network appliances, a number of technical concerns arise, including:

- **Security**—Applications using a pooled appliance have traditionally had the same configuration, which meant that companies essentially shared risks as well.
- **Performance**—On traditional pooled appliances, problems with one application could adversely affect the performance of other applications.
- **Upgrade-related risks**—Because they evolve at different rates, upgrading applications in a pooled environment has traditionally been challenging.

While many of the applications running on a particular appliance may be working fine, just one application requiring an upgrade can necessitate a new, reconfigured and retested appliance.\(^2\)
Another concern is related to monitoring. Previous versions of pooled services have lacked tools that you could use to monitor service usage and determine if you were receiving the level of service for which you paid.

With these concerns in mind, IBM used the e-business on demand computing model to create Managed Hosting firewall and load balancing services. In developing the solution architecture and choosing the technology platform on which to run the managed solutions, we have categorically addressed each of these concerns. The service infrastructure does pool resources to increase manageability and decrease costs, but it also provides the same protection and performance of dedicated firewalls and load balancing devices by using a virtual service architecture—a technology platform that allows full provisioning among customers and other IBM utility services. The services also address billing concerns by providing you with around-the-clock monitoring, as well as daily performance-based utilization reports that can be accessed online.

**Extending virtualization to firewall and load balancing solutions**

During the last decade, the quick growth and evolution of e-business in a rapidly expanding economy led to a host of self-perpetuating technical challenges. To keep up with customer demands, business growth and the latest trends, IT departments found themselves in constant need of additional computing power and capacity. In response, most companies simply added additional hardware to their environments, and although the hardware helped meet demands, it also added complexity. At the same time, businesses also modified applications for different uses. For example, one vendor notes that “an application that once served a handful of employees with a dumb terminal was modified to face the world and equipped with multiple tiers of servers, with software Web servers, application servers, and databases plus proprietary code, all of which are secured and accelerated network-based appliances.” When the rapid business growth began to slow, companies found themselves saddled with unnecessary equipment and difficult-to-manage environments.
Toward virtualization

IT vendors, in turn, developed various solutions to help their customers’ IT departments better manage the dynamic nature of e-business. A response to the need for rapid growth capacity was creating “capacity on demand” offerings, which provide customers with solutions that contain excess computing capacity up front, which isn’t paid for until it is used. It offers a more cost-effective but less time-consuming alternative to traditional methods of upgrading. On the other hand, to address unchecked growth, IT vendors offered server consolidation solutions, such as reducing the number of servers by replacing several smaller servers with a few larger servers to increase processing efficiency and manageability. While both of these solutions are good responses to symptoms of business growth and contraction, neither provides an efficient, ongoing means of responding to today’s issues related to firewall and load balancing.

With e-business on demand, IBM has taken yet another solution, virtualization, and expanded it into a new model of service delivery. And unlike capacity on demand and consolidation solutions, e-business on demand provides a way to dynamically scale and contract processing power and applications on the fly, with virtually no downtime or service interruptions. Virtualization has typically been applied only to storage and, more recently, computing processor solutions; however, given recent technology developments, it can now provide an efficient, cost-effective and security-rich means of delivering network services.

With respect to storage, according to whatis.com, virtualization can be defined as “the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console.” The benefits of storage virtualization typically include gaining the ability to dynamically add storage devices to the network and to dynamically reassign storage volumes across network devices.
As with storage, server virtualization helps businesses replace physical Web, database and application servers with a more manageable, cost-effective solution. For example, IBM Managed Hosting - Linux virtual services can provide highly scalable virtual processing power that is delivered using a reliable, powerful IBM @server® zSeries® mainframe. And by virtualizing and consolidating servers, companies can reduce floor space, power, labor and management costs while increasing processing flexibility and scalability.

The advent of new technologies has been essential to expanding virtualization from storage to servers and now to networking services. However, to offer a viable virtual networking service delivery model with the capacity to support the performance and security features of a dedicated device, while providing the economic benefits of a pooled solution, networking service offerings must go beyond simply consolidating multiple network devices onto a single platform. They must also do the following:

- **Virtualize not just the appliance, but the entire network topology, connecting multiple appliances in a virtual configuration that can be developed based on standard networking rules**
- **Duplicate the security features and performance characteristics of dedicated appliances and prevent problems affecting one customer from affecting other customers’ performance or compromising their security**
- **Consolidate features for network security and performance**
- **Support multiple applications and businesses.**

The advent of new technologies has been essential to expanding virtualization from storage to servers and now to networking services.
The benefits of properly executed virtual dedicated networking services can resonate throughout the IT department and the business as a whole. By moving various capabilities, such as firewall and load balancing, to on demand services, you can gain rapid access to a dynamic, highly scalable environment. The e-business on demand architecture makes it easy to change and scale services, as well as to modify the topology and configuration, through the ability to almost instantly provision or change Internet Protocol (IP) services.

An innovative firewall and load balancing service delivery model
With the incorporation of virtualization features into IBM Managed Hosting service offerings, the line between dedicated devices and dedicated resources on a single platform has been blurred. Unlike previous services that used pooled networks, our new virtualized service offerings can support predefined SLAs, providing each user guaranteed system resources. And because each virtual rack is a separate entity from the other virtual racks contained in the system, they can run different applications using distinct rules.

Shared economics, dedicated resources
Managed firewall and load balancing offerings are based on a virtual service architecture, which integrates the hardware and software of diverse firewall and/or load balancing configurations into single unified systems with shared economics. The virtual service architecture includes a switch from Inkra Networks, called the Inkra 4000 Virtual Services Switch, which is designed to enable the separate provisioning of customers and services.
The Inkra 4000 Virtual Service Switch was designed to deliver virtualized IP services for multiple dedicated clients simultaneously using virtual racks, which are analogous to a physical rack of network equipment. The platform helps enable the following capabilities:

- **Arbitrary service combinations in independent network topologies**
- **Separation, fault isolation and dedicated resources for all virtual racks**
- **Multi-gigabit wire-speed service processing capabilities**
- **Zero-downtime service upgrades**
- **Scalable architecture (that can independently scale processing, I/O and services without any downtime)**
- **High availability**
The e-business on demand services infrastructure resides in IBM e-business Hosting Centers, enabling you to remove firewall and load balancing appliances and networking equipment from your hosting spaces. Control of the firewall and load balancing capabilities, however, remains in-house. This is possible with the help of customized firewall filtering and rule-setting features. These solutions are part of the growing portfolio of IBM e-business on demand offerings and can be acquired together or separately depending on your business needs.

Flexible, usage-based offerings

The services are offered at a committed bandwidth level based on estimated throughput and capacity requirements. Because the services are billed based upon actual usage, they help address the cost and availability concerns of traditional dedicated firewall and load balancing solutions. Moreover, they can be scaled easily—by adding bandwidth—rather than purchasing additional hardware and software. Upgrades can also be made without costly downtime or business disruptions. Operations personnel can simply add, remove, configure or upgrade services on the fly—and changes take effect promptly. And because the services include built-in redundancy and around-the-clock monitoring of performance and resource allocation, availability can be optimized.

Since virtual-rack partitions replicate the security and resource allocation features of separate physical appliances, they also alleviate the risks common to traditional pooled services. Your company can retain the flexibility to control the rules for its firewall and load balancing solutions, so you can continue to customize rules according to changing business needs. Additionally, denial of service (DoS) attacks, traffic spikes or server problems in one company’s virtual rack do not impact other applications within the same architecture.
A comprehensive answer

Overall, services from IBM that support the e-business on demand initiative can help address firewall and load balancing challenges on almost every key front. In terms of cost and complexity, they reduce the amount of equipment that must be deployed, which helps you save money and control the number of appliances in the IT environment. At the same time, these services help improve firewall and load balancing flexibility, scalability and performance by providing committed resource levels, with the option to upgrade on demand. And when you require additional capacity, the transition times are virtually instantaneous.

The skills dilemma is also solved. IBM Global Services has a wealth of security and load balancing experts on standby around the clock, every day of the year, to help ensure that IBM Managed Hosting services can address unforeseen challenges. You no longer need to search for hard-to-find technical help, and can instead focus on optimizing the allocation of existing skills for critical business needs. And all of the features and benefits of managed firewall and load balancing services can be obtained for less than what the equivalent traditional device would cost.

Service foundations

IBM Managed Hosting solutions have been a long time in the making. They are based on open standards and incorporate our e-business skills and experience, industry know-how and technology leadership. And not only do they provide the infrastructure on which to run selected capabilities, Managed Hosting solutions are also backed by one of the world’s leading service organizations, which is well equipped to help businesses manage e-business complexity while reducing risk and responding to changes.
Highlights

IBM e-business and industry expertise
IBM has helped more than 5,000 customers implement their e-business strategies. We complement our vast e-business experience with in-depth industry knowledge that spans all major sectors.

IBM e-business Hosting Centers
All IBM hosting solutions share the same solid foundation: fully redundant data centers with multiple Tier-1 network connections and enhanced security features to keep businesses' Web sites up-and-running. As part of a state-of-the-art global network that stretches across the globe, each IBM e-business Hosting Center provides high-speed Internet access, “burstable” bandwidth capacity and around-the-clock services.

Multiplatform support
IBM supports multiple hardware platforms, including servers from IBM, Compaq, Hewlett-Packard and Sun Microsystems, and the majority of standard operating systems.

Summary
With traditional firewall and load balancing solution options, the juggling act of reducing IT environment costs and complexity while trying to improve the services inevitably led to performance or service-related sacrifices. There were simply too few options for matching firewall and load balancing capacity with fluctuating demands without making significant modifications to the IT environment. IBM Managed Hosting offers flexible, scalable firewall and load balancing solutions that help provide the economic benefits of pooled solutions along with the confidence that comes with having dedicated devices.
With the help of the virtual service architecture and the innovative Inkra 4000 Virtual Services Switch, IBM can not only deliver predefined service levels—it can also provide ways for your business to easily track usage and even scale capacity on demand as computing needs change.

What’s more, the managed firewall and managed load balancing solutions are backed by a highly qualified and committed staff that is among the best in the industry. The people of IBM Global Services are available around the clock to provide proactive monitoring and problem response to assist you with potential challenges.

Moving forward, e-business on demand is beginning to provide a smarter, more efficient way to run e-business infrastructures. As a part of this new e-business vision and strategy, managed firewall and load balancing solutions from IBM Managed Hosting are unlike most service offerings on the market today. And no matter where your company is in its e-business journey, these solutions can provide a good first step toward creating an on demand operating environment.

For more information
To learn more about IBM e-business on demand, IBM Managed Hosting solutions, and managed load balancing and managed firewall services, contact your IBM sales representative, or visit:

ibm.com/services