# F5 and Microsoft Solution Guide

Virtualization solutions to optimize performance, improve availability, and reduce complexity

## Features

>> Seamless integration of F5 PRO-enabled Management Pack with Microsoft System Center Virtual Machine Manager 2008 R2 for automated control

>> Load balancing for high availability and application performance

>> Online migration of virtual machines

>> Network spike monitoring in the virtual machine monitor console, eliminating bottlenecks before they happen

>> Continual optimization benefits with the reduced costs of virtualization

# Unlock the Power of Virtualization with F5 and Microsoft Solutions

Giving users seamless access despite spikes in demand is critical to business success. But to work productively, and to maximize the use of all available hardware capacity and share it across applications, virtualized environments need more than just the basic infrastructure of Microsoft's Windows Server 2008 R2 for effective server consolidation. They need a network that is intelligent and flexible enough to handle the advanced features of that new infrastructure.

With F5® and Microsoft's tightly coupled integration efforts, unleashing your application's full capacity has never been more powerful or accessible. The joint virtualization solution provides a comprehensive and dynamic infrastructure so you get the agility to adapt to varying business demands.

The result: you experience lower costs and improved performance, all without losing the manageability and familiarity of your current IT environment.

## Decrease costs of deploying and managing applications

All the benefits of Application Delivery Controllers (ADCs) apply whether deployed physically or virtually. By offloading CPU-intensive operations like SSL encryption from virtual machines, F5 solutions help you free up server resources to achieve maximum utilization and consolidation.

# Server and Data Center Consolidation

## Reduce hardware, power, and facility costs

### THE CHALLENGE

One of the most compelling advantages of virtualization is building greater efficiency. Within data centers of all sizes, hardware capacity is underutilized. With the introduction of hypervisor technologies such as Microsoft Hyper-V 2008 R2, operating systems and applications can be abstracted away from hardware resources such as CPU, RAM, and NICs and allocated on demand. Further, by making this extra capacity available to more than one application at a time, companies can scale down their hardware infrastructure, consolidate their operations, and consequently save on space and power costs.

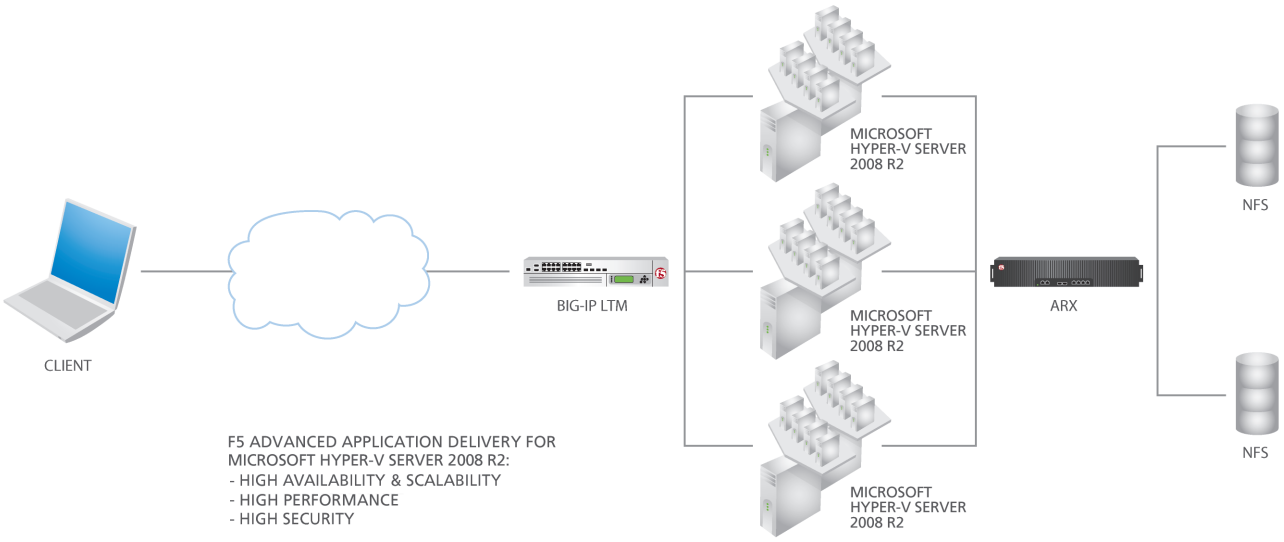
But consolidation is only part of the story.

As virtualized environments expand, storage can become an issue. When the number of files increases, so does the size of the shared storage pool. As a result, file management becomes more complex, storage bottlenecks often appear, and storage costs increase.

You truly benefit from a virtualization strategy if performance and availability are maintained along with resource consolidation. Load balancing and traffic management solutions need to be in place to maintain application performance and availability.

## Key benefits

- Maximize the performance of existing hardware resources
- Improve application performance by offloading CPU-intensive tasks
- Increase availability through advanced load balancing in data centers
- Optimize file storage infrastructure and reduce costs




## THE SOLUTION

F5 solutions effectively sit in front of application servers on virtual machines and optimize connections, route traffic, and load balance when resources become constrained. F5 BIG-IP® Local Traffic Manager™ (LTM) offloads many of the functions that place CPU and memory strain on virtual machines, such as Secure Sockets Layer (SSL) transactions and caching and compression. Offloading these functions onto a purpose-built device can free up to 25 percent of general server resources, enabling servers to operate more efficiently while also increasing server capacity.

Organizations can address their unique storage challenges by taking advantage of intelligent file virtualization with F5 ARX® devices. ARX abstracts the virtual file location from the physical storage location. This enables transparent and automated policy-based allocation across different storage tiers. The files that need high performance sit on Tier 1 and the files that don't sit on Tier 2. This can reduce the requirement for expensive Tier 1 storage by up to 80 percent.

# Data Center Automation

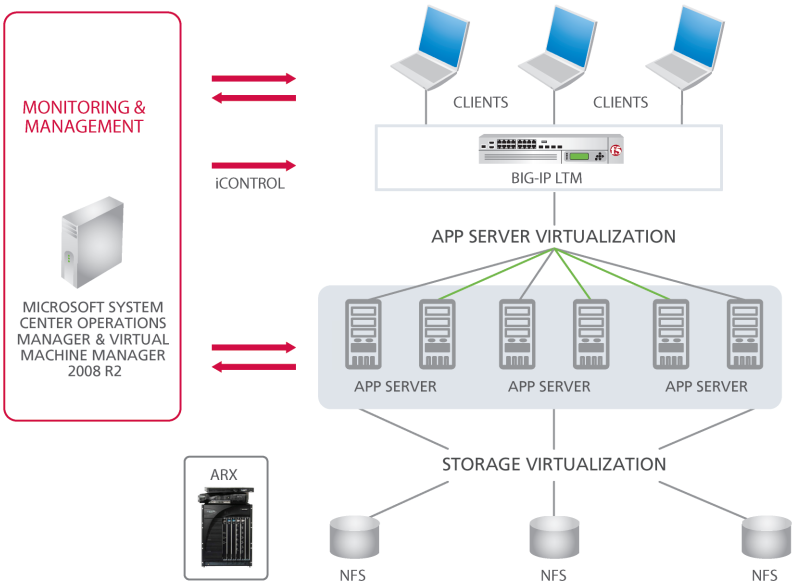
## Automate your Application Delivery Network

### THE CHALLENGE

Unexpected spikes in application traffic volumes can wreak havoc on availability. And, as the number of virtual machines increases, so too can the amount of time required to manage them. The provisioning of new virtual servers is not entirely handled by virtualization solutions, because most network reconfigurations are still manual. As a result, it can take IT staff quite some time to expand the virtual environment, and manual errors can lead to system failures and avoidable performance issues.

## Key benefits

- Increase network response to the virtualized environment speed
- Reduce management complexity
- Improve IT staff efficiency with automated systems
- Minimize manual configuration errors




## THE SOLUTION

F5 solutions greatly simplify network deployment, management, and maintenance tasks through automation. The F5 PRO-enabled Management Pack for Microsoft System Center Virtual Machine Manager 2008 R2 enables two-way communication between F5 BIG-IP® devices and Virtual Machine Manager 2008 R2 via the F5 iControl® API. This feature-rich API is available as a .NET assembly or as a set of Windows PowerShell commandlets enabling IT administrators to quickly and easily adjust the network to changing application conditions, both within a data center and across data centers. For example, when new virtual machines are provisioned, BIG-IP LTM automatically adds those new servers to its load balancing pool and begins directing traffic to them. BIG-IP LTM is intelligent enough to wait until the virtual machines are responsive before sending traffic. At the same time, BIG-IP devices know when virtual machines, or entire data centers, are overloaded or unavailable and reroutes traffic accordingly. With built-in intelligence and seamless integration with Virtual Machine Manager 2008 R2, BIG-IP devices can respond to fluctuating traffic loads without manual intervention.

As another example, BIG-IP® Global Traffic Manager™ (GTM) can automatically detect the geographic location of users when requests come into a virtualized environment operated across multiple data centers. It then serves up the applications from the data center closest in location to the user, to deliver the highest possible performance levels. It can also deliver traffic from the most cost-effective location, depending on different SLAs. Similarly, BIG-IP LTM can identify and distinguish between different "classes" of users. For example, requests from high-priority users can be managed from a higher performance server pool than used for standard users. This and other similar functions enable optimal use of application resources.

# Business Continuity

## Protect your business and minimize application downtime

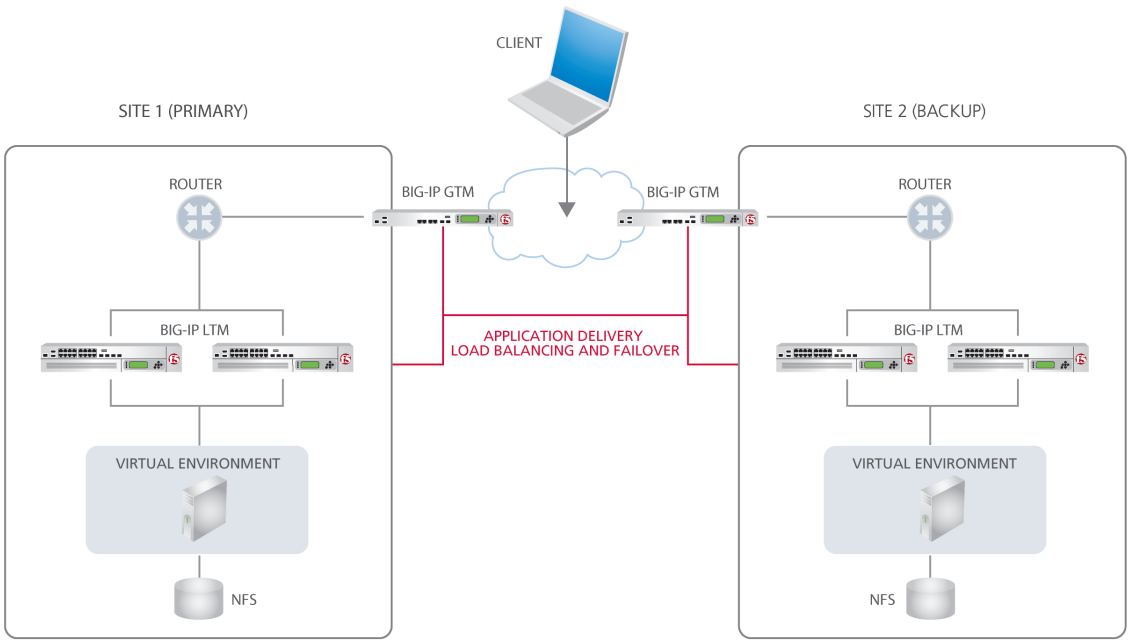
### THE CHALLENGE

Businesses cannot afford to be without their core applications and web-based services. When systems go down, organizations need their applications to remain up and running no matter what. In traditional IT environments, it is very difficult to move an application from one data center to another or even from one server to another. To compensate, many companies bring in more hardware which also increases the cost.

Virtualized environments provide the ability to package applications into a single file and reboot that file on another server in a matter of seconds. Virtualization also enables IT to easily create and test their disaster recovery plans without taking down production environments. As a result, virtualization provides a more cost-effective, flexible, and reliable alternative to traditional disaster recovery solutions.

## Key benefits

- Load balance across data centers
- Maximize application availability and minimize the impact of downtime
- Increase the speed of large data backups




BIG-IP PRODUCTS SUPPORT
- AT THE DATA CENTER LEVEL
- AT THE SERVER LEVEL
- AT THE VIRTUAL MACHINE LEVEL

## THE SOLUTION

BIG-IP GTM is deployed as part of a virtualized environment to effectively load balance between data centers. Depending on application load and performance, it automatically redirects traffic to an alternative data center when a site-wide incident occurs. When a second data center is not available, BIG-IP GTM diverts core applications to external, third-party servers. Sometimes referred to as the cloud, this shared, virtualized server facility can provide a cost-effective and flexible option for disaster recovery.

To improve the transfer of data between data centers, organizations can also take advantage of BIG-IP® WAN Optimization Module™ (WOM). This enables large volumes of data to be transferred from a source to a target data center more quickly. The F5 solution performs compression and deduplication on data transfers, reducing the overall volume of data that needs to be sent. Transferring less data decreases bandwidth requirements and mitigates the effect of latency.

Organizations can deploy BIG-IP LTM to prevent core applications from becoming unavailable due to hardware failure. BIG-IP LTM constantly measures application response time and seamlessly redirects traffic from the faulty device to other virtualized servers in the environment with no interruption in application availability.

# Virtual Desktops

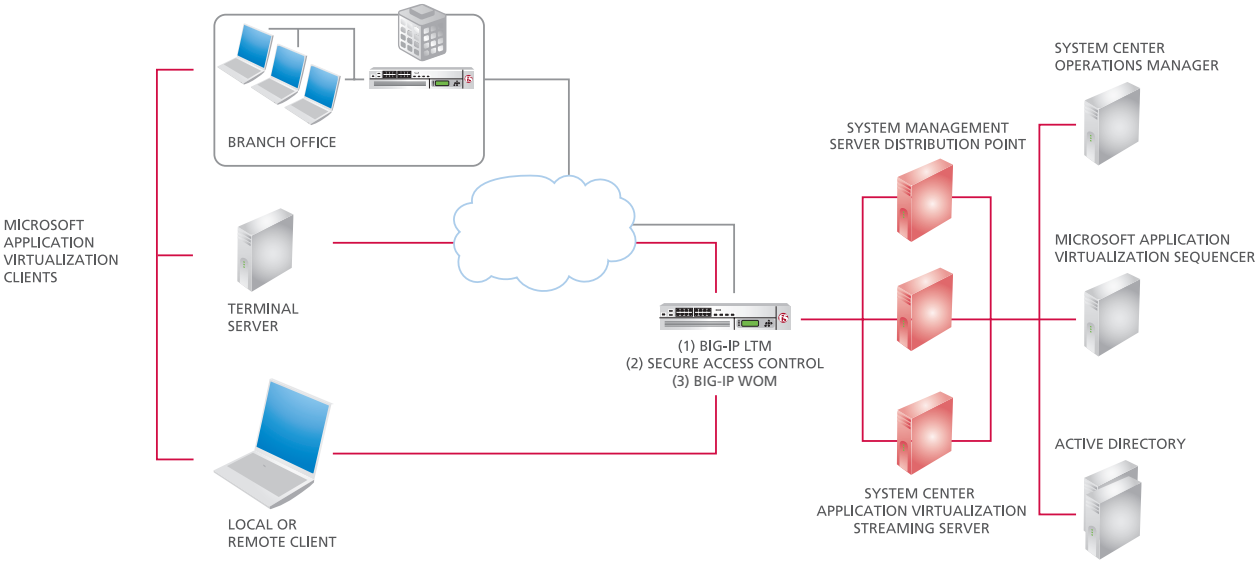
## Provide a consistent, secure user experience with high application availability

### THE CHALLENGE

In recent years, many companies have elected to replace their desktop PCs with simple client terminals and give users access to centrally stored applications and services over the LAN or WAN. In addition to the hardware cost savings, these virtual desktop solutions are easier and more cost-effective to manage and secure. For such a solution to succeed, however, users expect the same performance from virtual PCs as traditional PCs. If high network latency exists (as it often does in remote client deployments), users will experience sluggish performance. In addition, scaling the centralized connection servers can be expensive. Finally, connections must be secure, but without imposing too much CPU load on the connection servers.

## Key benefits

- Provide high-quality service for users
- Optimize WAN bandwidth
- Reduce the cost of large virtual desktop deployments by minimizing the number of servers required
- Ensure network and application security




## THE SOLUTION

F5 solutions can improve the performance of virtual desktop machines by accelerating WAN connections. BIG-IP WOM maximizes available bandwidth and accelerate the transmission of protocols such as Remote Desktop Protocol to ensure consistently high performance for users. Within the data center, BIG-IP LTM serves as a connection broker and provides very high-performance SSL termination and compression to offload a large percentage of the load from the desktop servers. This improves the overall system's scalability at a greatly reduced cost. Additionally, F5 solutions address security challenges by ensuring high endpoint security prior to login. F5 BIG-IP® Edge Gateway™ performs pre-logon checks on the endpoint device prior to allowing the logon sequence to begin. It also provides a broad range of authentication mechanisms, including two-factor schemes and various back-end directory services. This solution enforces Active Directory Group policies on any remote device and improves availability.

# Application Virtualization

## Ensure high performance for applications

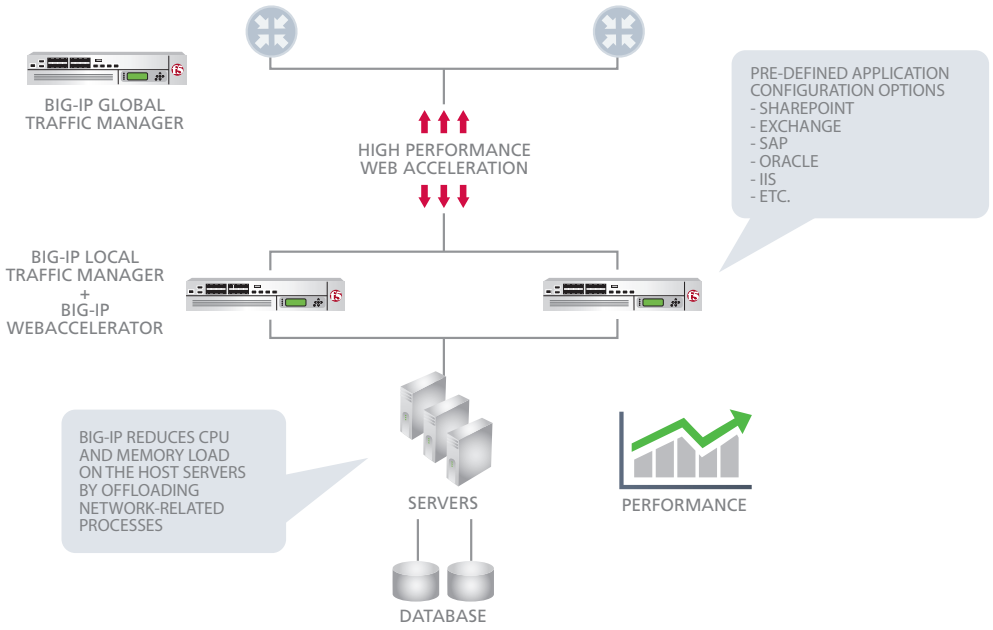
### THE CHALLENGE

Enterprise applications, such as Microsoft Exchange Server, Office Communications Server, and Microsoft SharePoint Server are critical for day-to-day operations. But they can also be a source of inefficiency. In traditional IT environments, these applications can require large numbers of servers, not all of which are fully employed.

By migrating enterprise applications to a virtualized environment, organizations have the opportunity to consolidate their hardware requirements and reduce the associated power, management, and maintenance costs. Virtualization technologies are primarily focused on the operating systems layer—not the applications layer. Therefore, when organizations decide to pursue a virtualization strategy, they need to take steps to ensure that the new environment does not adversely affect application performance.

## Key benefits

- Reduce the risks associated with implementing an application virtualization strategy
- Minimize hardware and power costs by maximizing the density of virtual machines
- Optimize performance and application availability for users
- Maximize the return on investment of a virtualization strategy




## THE SOLUTION

F5 minimizes application-specific network risks when moving to a virtualized platform by providing solutions that are optimized for specific applications and accompanied by comprehensive, predefined profiles within BIG-IP devices. Often deployed in traditional IT infrastructures, these pre-defined profiles are just as beneficial in virtualized environments. Using these application templates can lead to a 90 percent reduction in inputs, thereby reducing configuration time and data entry errors.

# Cloud Computing

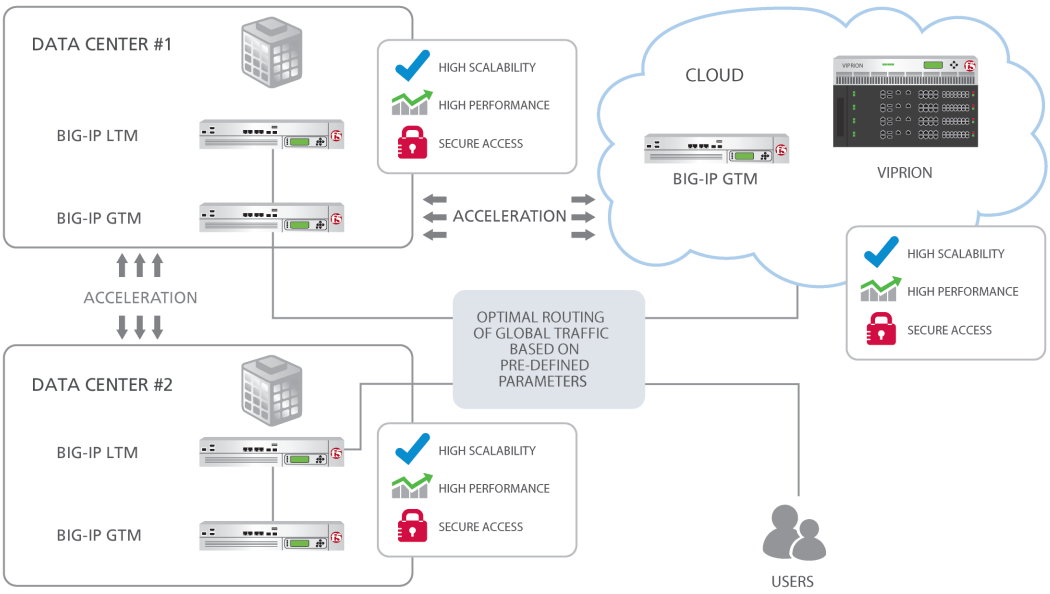
## Deliver reliable web-based services

### THE CHALLENGE

At a time when data volumes are increasing at an unprecedented rate and application traffic can spike unpredictably, many people are looking for new solutions that will give them access to additional capacity. Cloud computing is one such solution. Offered by a growing number of IT service providers, cloud computing is a virtualized IT environment that gives organizations access to additional server capacity, on demand.

## Key benefits

- Ensure consistently high performance and availability
- Protect internal resources with tight application and network security
- Expand the ability to scale and deliver added capacity on demand
- Improve WAN performance between data centers




## THE SOLUTION

BIG-IP GTM improves application performance across internal and external shared cloud services. The solution determines how well a particular data center is operating before sending traffic to it. BIG-IP Edge Gateway authenticates and authorizes user access, provides SSL termination, performs encryption, and accelerates performance over the WAN. In addition, using a combination of BIG-IP GTM and BIG-IP LTM, organizations can control authentication and authorization processes in the local data center while still running applications in the cloud. This provides ownership and audit trails of users and their access while leveraging external application resources.

# F5 and Microsoft Solutions for Virtualized Environments

## Maximize the benefits of virtualization with F5 solutions

### F5 PRO-enabled Management Pack for Microsoft System Center

- Integrates current performance and health metrics of BIG-IP devices
- Supports PRO-enabled resource provisioning
- Improves application performance and delivers a better user experience
- Saves administrative time and operating costs

### BIG-IP Local Traffic Manager

- Balances traffic to virtual servers or from virtual desktops
- Offloads processing-intensive activities like SSL termination, caching, or compression to reduce the strain on virtual machines and increase their capacity
- Includes a suite of security services that bolster network and application security
- Offers industry-leading layer 7 intelligence and many automated features for easier management

### BIG-IP Global Traffic Manager

- Directs traffic intelligently among virtual machines located at multiple data centers
- Redirects traffic automatically in the event of a disaster at one data center
- Provides a single framework for managing all application services across multiple sites

### ARX Series

- Provides a single storage solution for virtualized environments
- Provisions new storage for virtualized environments quickly and easily
- Removes the need to allocate large amounts of storage and distributes virtual machine files across multiple physical devices
- Enables non-disruptive data migrations, automated storage tiering, and optimal backup

## BIG-IP WAN Optimization Module

- Accelerates the transfer of files and speeds up data replication between data centers
- Reduces bandwidth usage with compression and data deduplication
- Reduces infrastructure costs
- Provides configurable site-to-site encryption using SSL

## BIG-IP Edge Gateway

- Provides policy-based, secure access to virtualized applications
- Ensures end-to-end data protection
- Performs pre-logon inspections, user machine authentications, and other measures to ensure secure user access from any location
- Supports up to 40,000 concurrent users on a single appliance

## BIG-IP® WebAccelerator®

- Optimizes the performance of virtualized web applications for remote desktops over the WAN
- Addresses performance issues commonly associated with browsers and web application platforms
- Improves WAN content delivery by locating content closer to users
- Increases the speed and reduces the cost of web applications in virtualized environments

## VIPRION®

- Meets the needs of the most demanding virtualized environments
- Scales on demand
- Allows blades to be removed and added without disrupting applications
- Includes multi-layered redundancy to reduce the likelihood of downtime

# Create a dynamic virtual infrastructure with Microsoft and F5

## Windows Server 2008 R2 Hyper-V

- Consolidates multiple server roles as separate virtual machines running on a single physical machine, running multiple, different operating systems in parallel and leveraging 64-bit computing
- Enables the migration of virtual machines from one physical computer to another, or adds or removes storage, while the virtual machine is still running
- Leverages physical computer hardware with greater processor support and deeper physical hardware support

## Microsoft System Center

- Manages physical and virtual information technology environments across data centers, client computers, and devices
- Works in tandem with F5 solutions to provide a dynamic virtual infrastructure

## System Center Virtual Machine Manager 2008

- Creates a straightforward and cost-effective solution for unified management of physical and virtual machines
- Provides resource optimization for dynamic and responsive management of a virtual infrastructure
- Consolidates underutilized physical servers
- Provides rapid provisioning of new virtual machines by leveraging the expertise and investments in Microsoft Windows Server technology

## System Center Operations Manager

- Provides service management for a Windows infrastructure
- Works seamlessly with Microsoft software and applications, helping organizations increase efficiency while enabling greater control of the IT environment

## System Center Data Protection Manager 2007 (DPM)

- Helps IT professionals manage their Windows Server infrastructure
- Delivers continuous data protection for Microsoft application and file servers to a seamlessly integrated secondary disk and tape solution on the DPM server
- Enables rapid and reliable recovery through advanced technology for enterprises of all sizes

## System Center Configuration Manager 2007

- Comprehensively assesses, deploys, and updates servers, clients, and devices—across physical, virtual, distributed, and mobile environments

Use the search function on **f5.com** to find more resources on the F5 and Microsoft virtualization solution.

To learn more about the F5 PRO-enabled Management Pack, visit F5's online user community, **devcentral.f5.com**, and search on Microsoft virtualization.

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