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F5 Strategic Guides: **Virtualization**

## Improving Performance and Managing Complexity

**Optimize Your Virtual Network and Storage.  
Maximize Your Virtualization Investment.**

## Improving Performance and Managing Complexity

Managing virtual machines (VMs)—and all of their associated components within the data center—can be surprisingly difficult for many businesses, resulting in time lost, project delays, performance issues, and lack of insight.

This guide provides a brief overview of the management challenges you may experience when implementing virtualization, and explores solutions for ensuring that the virtual environment is always secure, fast, and available.

### Challenge: Management Complexity

Managing VMs as part of a complete management solution can be a struggle. This includes managing both the VMs themselves, as well as all parts of the data center, as one delivery unit. The hypervisor and the host system are two new components that are not part of existing data center management solutions; it is critical to be able to manage these devices and understand their impact on performance. What's more, built-in management tools for VM platforms only manage the virtual resources and do not take external information into account.

Throughout all areas of the data center, managing VMs as part of the complete management solution is a challenge in two areas:

- **The addition of two new components that need to be managed: the hypervisor and the host system.** Neither one of these devices exist in the physical server world and are not part of existing data center management solutions, but they do have a major impact on the performance of VMs. Managing these devices and acquiring insight into their performance differences is critical.
- **Managing VMs, the application network, and the storage network together.** Many VM platforms include built-in management tools, some of them highly sophisticated, such as VMware's Virtual Server. While these tools do provide essential management tasks, such as live migration of virtual guests from one host to another, they don't take into account any external information. For example, VMware Distributed Resource Scheduler (DRS) can invoke a VM live migration based on the CPU and memory constraints of the host, but it doesn't look at the internal network (virtual switch) or the external network (physical host port).

### Solution: Create a True Application Delivery Network

By managing VMs, the application network, and the storage network together, your organization can dynamically provision resources, simplify administration, and free up IT resources. F5 BIG-IP® devices and F5 ARX® file virtualization solutions help manage the virtual infrastructure by focusing on the application and storage networks. The F5 deployment guides for VMware and Microsoft virtual platforms help make BIG-IP® Local Traffic Manager™ (LTM) hypervisor-aware, providing direct integration between F5 solutions with F5 iControl® API and the VMware vCenter and Microsoft System Center APIs. This means you can dynamically provision resources by integrating information from the network and the VMs, which enables your business to create and manage an Application Delivery Network focused on the applications.

**Key Benefits:** Unified virtual data center management, service virtualization

### About the F5 Virtualization Guide Series

To ensure your virtualization solutions reach their full potential, it is critical that the underlying network and data storage be capable of handling the added stresses of a virtual server infrastructure. F5 solutions enable the environment to adapt to these demands, ensuring high availability, maximizing resources to reduce data center costs, and improving application performance. This F5 Strategic Guide series will show you how to address these challenges so your business can get the most out of its investments.

### Challenge: Advanced Virtualization Features Go Untapped

New virtual platforms include many advanced networking technologies, such as software switching and support for VLAN segmentation. However these features are localized and isolated to the VM platforms. They are not integrated with the rest of the Application Delivery Network because there is no sharing of information directly between VMware or Hyper-V and the network. And in some DRS or VMotion deployments, the current networking infrastructure might be unable to support live migration or virtual software switching.

Often, these new platforms may have problems integrating with existing application and storage networks, requiring a redesign of the data center from the ground up in order to implement one virtualization technology.

While many enterprise storage networks include technologies for data replication that span multiple geographic data centers, VM migration tools are often limited to local storage groups. VMware DRS and VMotion are unable to migrate live machines outside of the local storage domain unless additional storage virtualization tools are implemented between VMware vCenter and the physical storage.

**74% of the IT professionals recently surveyed are currently virtualizing mission-critical apps.**

Source: F5 Customer Survey, November, 2008

### Solution: Integrate the Application Network and VM Platforms for Policy and Information Sharing

Direct integration between application networks and VM platforms enables your organization to get the most out of those platforms while reducing costs and management duties. The F5 deployment guides for VMware ESX/vCenter and Microsoft Hyper-V/System Center help make F5 BIG-IP LTM hypervisor-aware. They provide instructions for direct integration between BIG-IP LTM with iControl and the VMware Center and Microsoft Systems Center API, enabling BIG-IP devices to feed networking and application information to the respective VM management platforms. iControl integration also enables configuration and policy information to be shared between BIG-IP LTM and the management platforms, allowing configuration changes to be automatically passed between the application network and those platforms.

**Key Benefits:** Full functionality and performance of VM platforms, complete flexibility

## Take a Closer Look

To learn more about the other network and data storage challenges that can accompany the implementation of virtualization, make sure you read all the other guides in this series. Simply go to <http://info.f5.com/virtualizationguides/> to download them directly or send an email to us at [virtualization-guides@f5.com](mailto:virtualization-guides@f5.com). You can also call us at 888-88BIGIP (888-882-4447).

### The other guides in the series include:

#### Virtualization Guide #1

Seven Key Challenges You Can't Ignore

#### Virtualization Guide #2

Maximizing Resources and Reducing Data Center Costs

#### Virtualization Guide #3

Ensuring High Availability of Virtual Solutions

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