Optimizing Applications in a Virtualized Infrastructure

Moving to a virtualized and more agile data center infrastructure can reduce CapEx and OpEx, and streamline application deployment and delivery. Moving applications from dedicated hardware resources to virtualized software, however, can also increase resource constraints and negatively affect application performance and availability on the network. F5® offers multiple products and solutions that address application optimization and availability for virtualized infrastructure.

Virtualized Applications and the Network

Analyst firm Nemertes Research reports that "49.4 percent of enterprise applications and 45.6 percent of mission-critical applications now run on virtual servers."* There's no question that enterprises are embracing the cost savings and agility of virtual machines and servers; however, as more and more applications are moved to virtual platforms, other considerations become more critical for IT. Provisioning new machines, managing resources, and ultimately creating an agile orchestration and provisioning become projects that require integration with the entire IT infrastructure. This can lead to heightened resource management and application performance challenges.

One key benefit of a virtual infrastructure is its flexibility. Once core parts of the data center have been virtualized, the infrastructure's capabilities begin to expand beyond what's available in a physical infrastructure. The ability to scale infrastructure in real time based on resource demand is not easily achievable with physical infrastructure. But the ability to scale is also one of the challenges of virtualized infrastructure: as application services begin to rely on abstracted resources, computing and networking resources can rapidly become depleted and negatively affect application performance.

Highly tuned application optimization tools—both in computing and networking resources—typically only focus on the application data and ignore the rest of the delivery system: the virtual platform, the virtual and physical networks, and the behavior differences between applications running in a physical environment and those running in a virtual environment.

F5's Application Delivery Network (ADN) and optimization solutions integrate directly with virtual platforms and focus on optimizing applications and the network within the virtual infrastructure. This level of integration allows deep application awareness and optimization to be applied at the virtual platform level, drastically increasing application performance.

Key features

- **Multi-Hypervisor Support**— Integrates with multiple virtual platform solutions

- **Service Offloading**—Allows more efficient application resource utilization

- **Application Availability**— Monitors application availability using application-aware health checks

- **Virtualized ADN**—Provides holistic Application Delivery Networking solutions for virtualized infrastructure
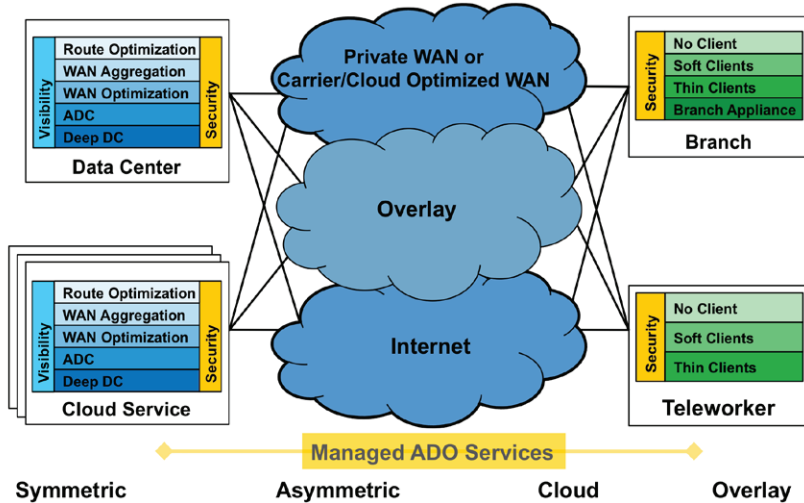
Key benefits

- **Flexible Deployment Models**— Tunes application optimization and availability solutions for virtualized environments

- **Support for Virtual and Physical Infrastructure**—Optimizes Application Delivery Networking infrastructure for physical and virtual machines

- **Efficient Resource Management**—Utilizes virtualized resources for applications more efficiently

- **Integrated Platform Management**—Manages virtual and physical networks together as one cohesive Application Delivery Network

F5 offers the following solutions for application delivery and optimization within a virtualized infrastructure:

- **Application awareness and virtual platform integration**—F5 ADN solutions optimize the application based on how it's delivered over the network to the user. In a virtual environment, that application delivery model changes based on abstract computing resources and the virtual network. F5 products integrate with major virtual platforms to allow application availability and user connection decisions based on how the application is responding in the virtual environment and over the virtual network.

- **Service offloading**—SSL and compression are examples of resource-intensive services that can be offloaded from servers onto the network for much more efficient processing. F5 products remove the burden of inefficient processing by leveraging their purpose-built ASICs so the application can focus on core services.

- **Application availability and monitoring**—F5 products such as BIG-IP® Local Traffic Manager™ (LTM) accommodate virtualized environments by making availability and optimization decisions based on direct communication with the applications, either actively or passively. As applications become constrained, the BIG-IP device routes users to the most available application instances as the virtual platform makes new resources available.

Applications running in a virtualized infrastructure don't need to know that they are virtualized; however it is essential that the application optimization and delivery systems are aware of it. This information enables F5 BIG-IP platforms to offer holistic and specific optimization solutions for the virtualized infrastructure. Moving applications to a virtualized environment can lower costs and increase efficiency, but only if those applications can be managed throughout the entire delivery process, from the virtual infrastructure to the user.

*Nemertes Research, "Application Delivery for Virtualized Infrastructure" (DN1349), Jan 2010.

Learn more

For more information about F5 virtual infrastructure solutions, please consult the following resources or use the search function on f5.com.

Product page

BIG-IP Local Traffic Manager VE

Solution pages

Maximize the benefits of your virtualization efforts

Keep control over your applications and data in any cloud environment

Datasheets

BIG-IP Modules

BIG-IP LTM VE Product Overview

White papers

Creating a Hybrid ADN Architecture with both Virtual and Physical ADCs

How to Optimize Virtual Desktop Infrastructure Deployments with F5 BIG-IP

Optimizing virtual data center infrastructure.
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