HOW TO OPTIMIZE VIRTUAL DESKTOP INFRASTRUCTURE DEPLOYMENTS WITH F5 BIG-IP

By Alan Murphy

Centralized management helps improve efficiency, but delivering desktop images over a network can incur cost, security, and latency trade-offs. Application delivery platforms from F5 Networks such as F5® BIG-IP® devices connected to virtualized Dell™ PowerEdge™ servers help organizations deploy a virtual desktop infrastructure designed to simplify management and reduce costs.

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Deploying and managing desktop computers, especially remote desktop computers, can be costly and time-consuming. As a result, many organizations are transitioning to a virtual desktop infrastructure for their client environments to help centralize management and reduce costs. In a virtual desktop infrastructure, desktop images are offloaded to data center servers and distributed to clients over the network using these virtual environments, enabling centralized management of desktop images without compromising the end-user experience. By avoiding the burden of deploying individual desktop images, a virtual desktop infrastructure can help dramatically increase manageability while contributing to reduced total cost of ownership across the enterprise desktop environment.

But first, IT decision makers must resolve concerns about reduced performance and availability, which are common concerns of virtual desktop infrastructure deployments that can frustrate end users and lead to diminished productivity. In particular, the intensified network and server demands of a virtual desktop infrastructure may increase application latency and reduce application availability, especially over wide area network (WAN) and other remote connections. As a result, concerns about application performance, especially in large-scale environments, may prevent some organizations from achieving the potential benefits of virtual desktop infrastructure technology.

F5 Networks helps organizations prepare their IT environments for a successful virtual desktop infrastructure deployment by offering a range of application delivery solutions. When combined with scalable virtual machine (VM) host platforms such as Dell PowerEdge servers, this application delivery system helps organizations dramatically enhance the performance and availability of their enterprise virtual desktop infrastructure deployments, enabling them to take advantage of the benefits of reduced costs, simplified management, and enhanced security while still offering a robust and familiar end-user experience.

ENHANCING DESKTOP SECURITY AND MANAGEABILITY

Traditional enterprise desktop deployments can be costly to manage and difficult to secure. For example, in a typical non-virtualized environment, desktop computers must be managed individually. As a result, tasks such as image deployment and ongoing administration of application updates and security patches can be costly and cumbersome. Because IT

organizations often do not have consistent access to or control over end-user desktops, maintaining security and ensuring regulatory compliance can be difficult as well. For example, in a traditional nonvirtualized desktop environment, failure to prevent users from adding unauthorized applications or other content to their desktops can result in compromised enterprise security and violations of regulatory legislation such as the Health Insurance Portability and Accountability Act (HIPAA).

By enabling centralized control of desktop images, a virtual desktop infrastructure is designed to eliminate many of the problems associated with desktop management without compromising a robust, familiar user experience. For example, because desktop images are stored centrally rather than on individual desktops, administrators can easily deploy images, updates, and patches without needing to manually service individual end-user devices. Centralized management also allows IT organizations to easily identify and remove unauthorized applications or content, which helps simplify enterprise security and regulatory compliance tasks.

Desktop virtualization technology can be deployed in several ways. Typically, the entire desktop image is offloaded to centralized servers and virtualized. In this case, application and desktop processing happens on the servers with specialized platform software, such as VMware® View, delivered over the network, and the proprietary client application performs only graphics processing and other user interface functions. Alternatively, a virtual desktop infrastructure may be deployed over the Web. In this case, centrally stored desktops are accessed through a Web browser. Another option is to virtualize individual applications rather than the entire desktop, which allows the desktop image to remain on the end-user device while certain individual applications are stored on centralized servers and run remotely.

OPTIMIZING VIRTUAL DESKTOP INFRASTRUCTURE DEPLOYMENTS

Although the move to a virtual desktop infrastructure can deliver tremendous benefits, IT organizations must address the potential risks of reduced application performance and availability that can frustrate end users and compromise worker productivity. Because a virtual desktop infrastructure can send large amounts of data over WAN and other remote connections, limitations in network bandwidth and performance are key considerations for organizations considering this type of infrastructure.

Network-induced problems are highly pronounced when data is transferred outside an organization firewall, over congested links, or through access from an autonomous network. Also, load on VM servers running virtualized desktops can negatively impact the performance and availability of those virtual desktop images because processing desktop graphical user interfaces is I/O intensive. Overall, concern about potential performance degradation, especially in large-scale environments, is one of the main reasons why IT organizations may hesitate to adopt a virtual desktop infrastructure.

To help enterprises meet the additional network and server requirements imposed by a virtual desktop infrastructure, F5 Networks offers easy-to-deploy solutions designed to mitigate limitations of WAN connectivity and deliver scalability and performance for VM servers. F5 BIG-IP Local Traffic Manager™ (LTM) systems provide load balancing and traffic management functions that enhance the performance and availability of VMs when using a virtual desktop platform such as VMware View (see Figure 1). Key capabilities of BIG-IP LTM include the following:

- **Load balancing:** BIG-IP LTM is designed to load balance traffic and workloads across VMs to help maximize availability and performance. For example, in a VMware View virtual desktop infrastructure deployment, BIG-IP LTM can monitor the health of VMware View connection servers and balance the workload based on the status of individual connections. BIG-IP LTM can also make load-balancing decisions based on response times.
- **Client connection persistence:** BIG-IP LTM manages client connection persistence based on unique sessions, which can be a more robust approach than persistence based on the typical source IP address. For example, in a VMware View virtual desktop infrastructure deployment, if users are accessing virtual desktops through a Web proxy, BIG-IP LTM can distribute and maintain the connections among

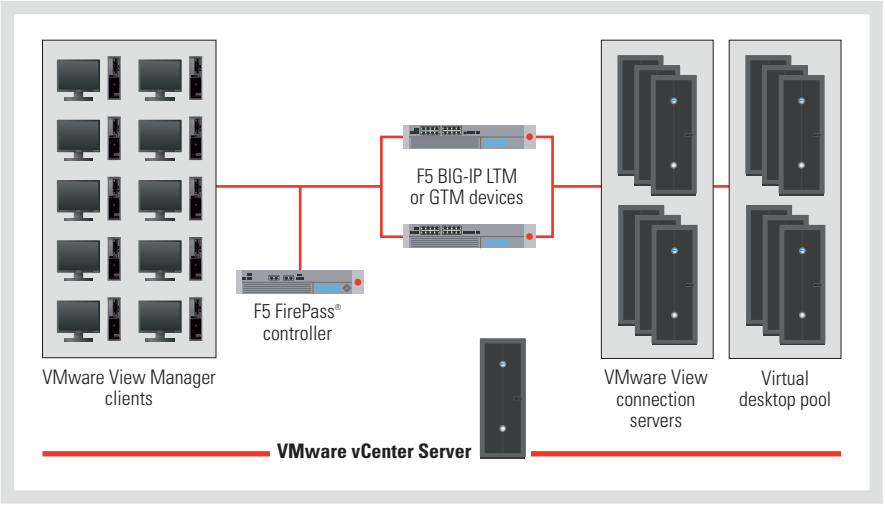

Figure 1. *Traffic management services and load balancing in an F5 and VMware View environment*

> "Many organizations are transitioning to a virtual desktop infrastructure for their client environments to help centralize management and reduce costs."

the VMware View connection servers rather than sending the following connections from that proxy server to a single connection or security server.

- **Secure Sockets Layer (SSL) processing:** SSL processing can place a large burden on VM servers, especially during logon procedures. BIG-IP LTM can offload SSL processing from VM servers, helping free the servers to optimize delivery of virtual desktop infrastructure functionality.
- **Compression:** BIG-IP LTM can provide asymmetric compression to the client for traffic such as JavaScript and HTML, and can offer symmetric compression in architectures with symmetric local traffic managers, such as a BIG-IP LTM device in the data center and a BIG-IP LTM device in the remote office.
- **Data deduplication:** BIG-IP LTM with the BIG-IP WebAccelerator™ module can perform data deduplication in asymmetric deployment architectures, helping to decrease the overall amount of data that needs to traverse the WAN and enhance user experience.
- **Rapid deployment template:** BIG-IP LTM includes an application template specific to VMware View, which provides administrators with a wizard-like interface to rapidly configure and deploy BIG-IP LTM with VMware View. This template helps simplify the deployment process, minimize the risk of configuration errors, and reduce the administrative costs of deployment.
- **User-level service-level agreement (SLA):** Different categories or groups of users may have different service levels in terms of importance and performance; for example, users in an engineering group may have a higher priority for performance than call center employees. With BIG-IP LTM, user connections from the engineering group can be routed to a dedicated pool of desktop VMs, whereas call center users would be routed to general, lower-performing desktop VMs. This approach helps ensure organizations can meet different SLAs for different groups of users.

In addition, F5 Networks offers BIG-IP Global Traffic Manager™ (GTM) systems, which enhance application performance and availability through intelligent routing between data centers. BIG-IP GTM is designed to route incoming virtual desktop infrastructure traffic to the highest-performing data center depending on the location, link conditions, and data center conditions for end users. Intelligent routing helps ensure that clients can access their virtual desktops irrespective of the availability of any single data center.

F5 application delivery devices are designed to work with a range of virtual desktop infrastructure architectures, including VMware View and Microsoft® Virtual Desktop Infrastructure (VDI) technologies, along with application virtualization solutions such as VMware ThinApp and Microsoft Application Virtualization (App-V). F5 platforms are also designed to deliver excellent application performance at all levels of scale, from small deployments to large-scale deployments, and to work seamlessly with VM server infrastructures based on Dell PowerEdge servers. Additionally, F5 Networks offers application templates that help streamline and simplify deployment for a range of virtual desktop infrastructures, including those based on VMware View and VMware ThinApp.

PREPARING THE IT ENVIRONMENT FOR A VIRTUAL DESKTOP INFRASTRUCTURE

Virtual desktop infrastructures have the potential to deliver tremendous benefits to enterprise IT organizations. By centralizing control of enterprise desktops, a virtual desktop infrastructure helps organizations dramatically increase manageability and security and decrease total cost of ownership. Application delivery solutions from F5 Networks help organizations prepare their network and storage infrastructures for the increased load introduced by a virtual desktop infrastructure, helping ensure that end users experience the performance and availability they have come to expect from their desktops.

Alan Murphy is the technical marketing manager for management and virtualization solutions at F5 Networks. Alan provides strategic counsel on the F5 product suite to customers, prospects, and analysts through evaluation and analysis of current technical market trends and the competitive virtualization and security landscape. He has over 15 years of experience in IT, including UNIX® systems administration, systems and data security, and incident response, and holds GIAC Certified Incident Handler (GCIH) and Red Hat Certified Engineer® (RHCE®) certifications.

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