



F5 White Paper

# Optimizing VMware View VDI Deployments with F5

F5 BIG-IP Local Traffic Manager optimizes VMware View deployments between offices to create a user experience on par with local desktops.

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## Introduction

Corporate desktop usage and management has long been a necessary evil for IT groups. Most employees need full desktops and there are usually multiple types of desktops required for different business units: XP for accounting, Mac for creative design, Vista for sales and people in the field, Linux for technical staff, and so on. This multi-level matrix of who needs what can be a major management headache on its own. When you add the support of all the different desktop needs on top of that, and supporting some of those desktops remotely on laptops, desktop management can quickly consume most of your IT management budget and time.

Virtual Desktop Infrastructure (VDI) solves two of these major management headaches: location and standardization. VDI is a technology that virtualizes the user desktops and stores and runs those desktops in the data center. Rather than have individual desktop and laptop machines in the field running localized operating systems, VDI deployments keep the desktops in the data center and stream them down to each individual user machine. In theory, the user experience is the same and users don't notice that their desktop is now being streamed over the network from a central location.

VDI also helps solve the standardization problem: business groups that each have their own desktop needs can be clustered together in the data center and managed as an individual group. When all the XP machines for accounting need a new piece of software, for example, the software can be batch-installed to each desktop in the data center overnight and then delivered to users the next morning when they log into their virtual desktop. This eliminates the need for IT staff to visit each local system or push software installs down through remote tools and force the user to reboot during the business day.

Virtual platform providers such as VMware and Microsoft bundle VDI solutions as part of their virtual server platforms in the data center. Companies can now deploy and manage virtual servers and virtual desktops at the same time and in the same place. Integrating virtual servers and virtual desktops cuts down on management time and costs because IT can manage these two virtual technologies as one solution.

One area where virtual servers and virtual desktops differ, however, is how they rely on and use the Application Delivery Network, both in usage and complexity. Virtual servers are typically focused on pushing small bits of data over the network: web pages, application data, and connection data. Virtual desktops, however, send much more GUI-based application data across the network.



The strain placed on network resources by VDI is apparent from first deployment and is exacerbated in large-scale and remote-deployment architectures. Due to the unique placement of VDI—as the user’s primary daily work tool—users immediately see VDI performance issues. When a user’s desktop moves from a physical machine under the desk to the data center, the user experience becomes paramount; a poor VDI deployment will result in IT being flooded with “My desktop is too slow” calls. Before VDI, those calls were typically spawned by old or sluggish hardware. VDI moves the cause of the sluggishness to the network, placing the responsibility for a good user experience solely on the network backbone.

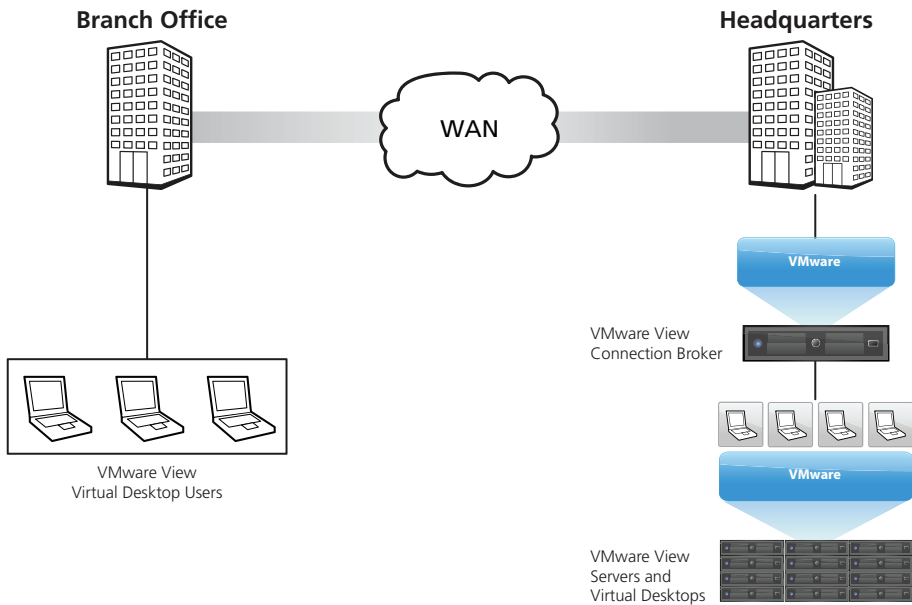
## Solving VDI Networking Challenges

Although VDI presents new challenges to your application delivery network, it’s still an application at its core, albeit a rather large and complex application. Streaming VDI images over the network to users can be managed and optimized in the same way any application in the data center can, using BIG-IP® Local Traffic Manager™ (LTM)—the F5 Application Delivery Controller—with network optimization modules.

### Deploying VDI Over the WAN

The primary technical challenge facing any large application delivery architecture over long network lengths is latency. This is most apparent in WAN connections, where the enterprise doesn’t control some part of the delivery network. LAN deployments, in contrast, can be controlled down to the switch and cable layers, giving IT granular management of application delivery and the ability to fine-tune the network for specific application needs. WAN links don’t provide this luxury. An enterprise can’t control the baseline latency introduced in routing data across the United States from the East Coast to the West or across the Pacific Ocean.

Latency issues are a critical management challenge when deploying VDI for remote users, especially when there are multiple users in a single branch office all pulling their virtual desktops from a centralized network at headquarters. Not only do these users have to deal with latency over the WAN, they’re also competing with each other (and other application traffic) over the same network connection, and typically all at the same time, such as everyone powering on their virtual desktop at 8:00 a.m.



**VDI users located at a branch office.**

## Optimized VDI Traffic

The best solution for latent WAN links isn't to replace the link, it's to replace, or optimize, the data that's traversing the WAN links. A city may not be able to replace a major highway but it can focus on traffic management across the highway. The same principles apply to WAN optimization: traffic management of the data before it hits the WAN is the key to improved user experience.

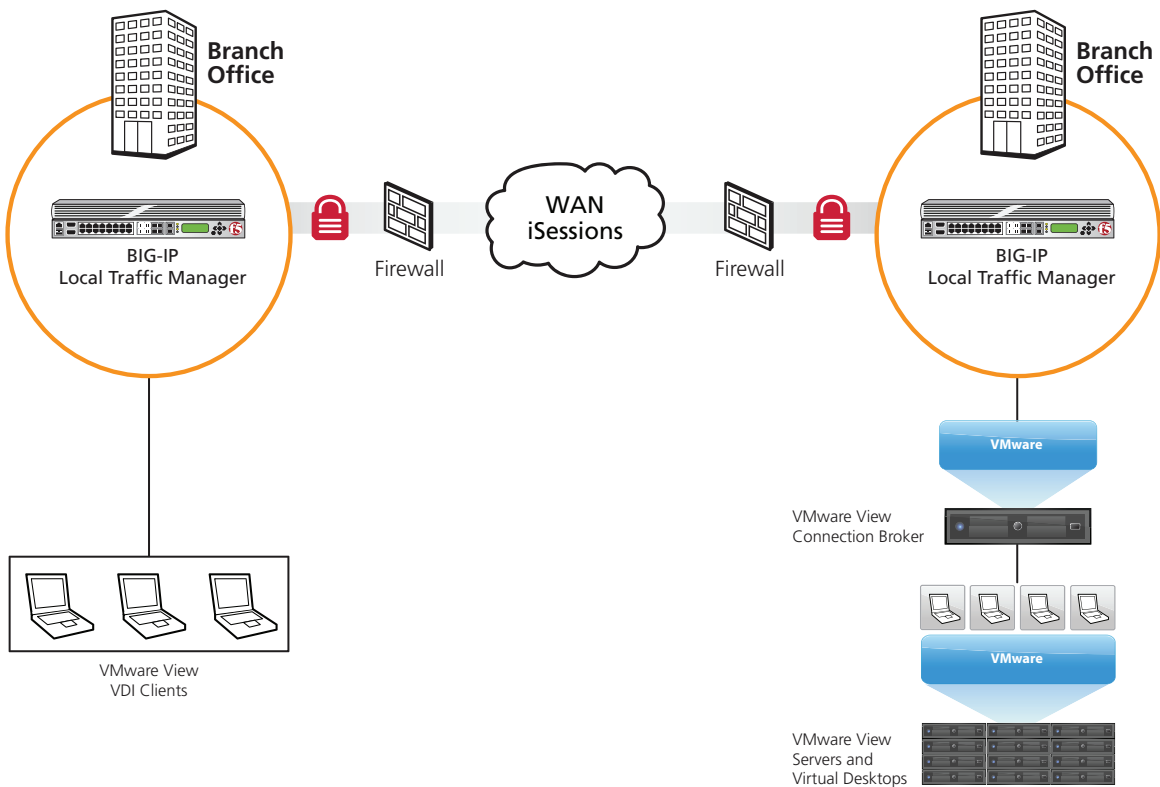
F5 BIG-IP® integrated WAN optimization services optimizes application traffic before it's deployed across the WAN. As a feature in BIG-IP LTM, BIG-IP integrated WAN optimization services work in conjunction with application acceleration and optimization tools—such as iSessions™, a branch-to-branch optimized and secured private tunnel with SSL offloading—to manage application optimization, acceleration, and security of all traffic into and out of the VDI application service. In addition, BIG-IP integrated WAN optimization services include de-duplication technology that keeps redundant data from traversing the WAN as part of a symmetric deployment. The power of BIG-IP LTM with iSessions and BIG-IP integrated WAN optimization services delivers a complete end-to-end WAN optimization solution for VDI.

## Results: A Better VDI User Experience

The optimal VDI deployment with BIG-IP LTM is a symmetric deployment: BIG-IP devices sit at the edge in both the headquarters and branch office data center.



This enables BIG-IP LTM to terminate all VDI application traffic at both ends of the WAN link, routing all traffic through a secure and optimized iSessions tunnel. This architecture also supports user connection management, SSL offload, and load balancing of the VDI sessions at the same time as optimization over the iSessions tunnel is occurring.

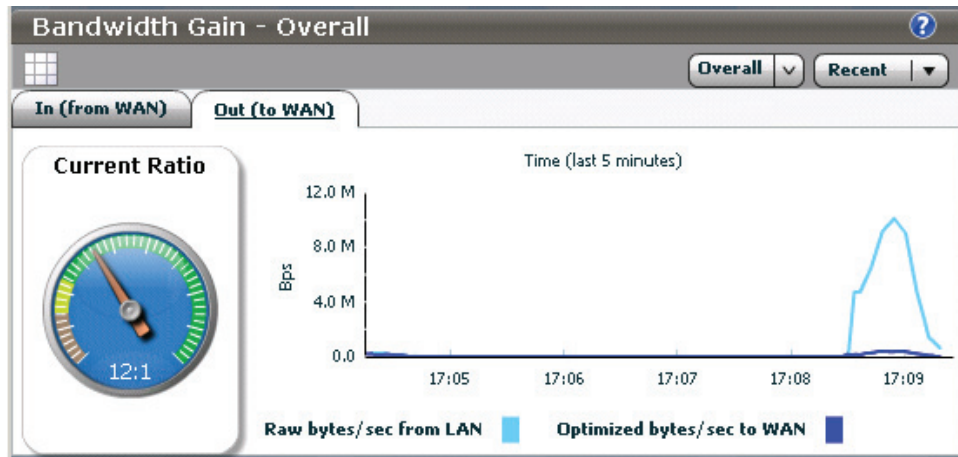


**F5 BIG-IP LTM deployed between branches to manage and optimize VDI traffic.**

Virtual desktop application traffic shows a 4:1 performance gain when BIG-IP LTM is deployed at the edge and terminates each end of the WAN link, using iSessions between branches. When this is coupled with BIG-IP integrated WAN optimization services, there is a 12:1 performance boost. These numbers are derived from the amount of data BIG-IP LTM routes between devices over the WAN compared to the amount of data that VMware View sends over the LAN. For every 12 Mb of data VMware View drops on the LAN destined for the client, BIG-IP integrated WAN optimization services and iSessions reduce the amount of actual data needed to



redraw the virtual desktop to 1 Mb. The user experience doesn't decline; **in fact it drastically improves**. BIG-IP integrated WAN optimization services are only sending necessary and non-redundant application data to the client and then optimizing it.



**F5 BIG-IP LTM dashboard showing performance gains of LAN vs. WAN VDI traffic.**

Using VDI between branches significantly improves the user experience because the graphics-heavy data arrives faster. There's less data to send, and the data that is sent is packaged and optimized for the particular WAN link in use.

One of the primary reasons BIG-IP LTM can reduce the amount of data passed between VMware View clients and the View connection broker is the transport protocol used between View clients and the server: HTTP/S. All desktop data is sent back and forth over the WAN over HTTP/S rather than using another protocol such as native RDP. This enables BIG-IP LTM to offload SSL termination from the connection broker—a massive performance increase in itself—and optimize the HTTP protocol as it traverses the WAN between branches. BIG-IP LTM sends the HTTP connection back to the connection broker on the LAN, which distributes the connection to the appropriate VDI virtual machine. HTTP optimization and SSL termination, coupled with the additional user and connection management, load balancing for connection brokers, and VDI application health, completes the end-to-end application delivery optimization solution with BIG-IP LTM and BIG-IP integrated WAN optimization services.

## Conclusion

Although VDI is simply another application that enterprises are pushing in and out of their data centers over the WAN, it's an atypical application that carries with it greater overhead that can affect the user experience. VDI will help IT departments consolidate and optimize remote desktop management, but they need to spend time focusing on optimizing and controlling the WAN connections between the VDI client (user) and the VDI broker (server) between branches. Any bumps in the WAN will translate to a bad user experience for the remote VDI user and a support call to IT.

F5 BIG-IP LTM helps reduce the impact on the WAN from VDI by working with VMware's client and server components and optimizing the connection between users and their VDI virtual machines. When deployed in a branch scenario, BIG-IP LTM, iSessions, and BIG-IP integrated WAN optimization services can control the amount of data that is passed back and forth between the branches, removing redundant application data and optimizing unique data for the client desktop. WAN deployments shouldn't limit the functionality and benefits of VDI, and the support burden that VDI helps alleviate shouldn't be shifted to the network team. By working with VMware technology and proxying all VDI application traffic, BIG-IP LTM can help make your VDI deployment a success and keep the user experience on par with a local desktop.

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