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HELPING BUSINESS THRIVE ON TECHNOLOGY CHANGE

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Moving IT From Application Deployment To Application Delivery

A Guide to Application Delivery for
IT Infrastructure Operations Managers

Spotlight: Windows Applications
(Part three in a series of four)

*A commissioned study conducted by Forrester Consulting on
behalf of Citrix Systems*

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Application Delivery Definition

"Application delivery" is the process of getting applications from the data center to the user as efficiently as possible. "Application delivery infrastructure" refers to the technology components that enable this efficiency across any network. A comprehensive application delivery infrastructure includes technologies that improve performance, availability, and security without compromising flexibility. Specifically, this includes components like application accelerators, desktop and application virtualization, application firewalls, secure remote access, WAN optimization, and performance monitoring.

Executive Summary

In most organizations, responsibility for the success of Windows client/server applications generally falls to someone in an IT infrastructure operations role, including server operators, system administrators, or even IT managers. Regardless of the exact title, this role has changed dramatically over the last few years. Five years ago, most IT infrastructure directors focused on basic hardware and application maintenance and measured their success with factors like application availability and server utilization. Today is a different story. While these skills are still important, IT infrastructure directors are now increasingly held accountable for things like business continuity plans, regulatory compliance, and security. In fact, Forrester found that improving business continuity plans and ensuring data security now represent the top two concerns.

To address these emerging application requirements, we recommend a twofold approach:

- **Invest in a flexible application delivery infrastructure.** IT infrastructure managers today are faced with a host of emerging requirements in areas like data security, compliance, disaster recovery, and business continuity preparedness. Many of these issues can be tied back to people and process, not technology. Furthermore, this is exacerbated by project teams that hard-code applications to the underlying infrastructure requirements, creating severe business limitations the moment one of those requirements changes. For Windows client/server applications, the answer lies in application delivery infrastructure that incorporates technologies — like presentation virtualization (next-generation server-based computing), server virtualization, and application virtualization — that are flexible enough to solve the same problems, regardless of how often requirements change. IT operations has a single policy-driven infrastructure that provides the necessary security, performance, and flexibility needed to address these concerns.
- **Collaborate with other application delivery owners.** The goal is simple: allow any user to connect to any app with a great user experience and the right level of security. Unfortunately, traditional organizational silos often prevent this goal. Unlike other operations groups, IT infrastructure operations are generally highly in tune with applications and their associated business processes. The problem? Their operational application delivery responsibility is typically limited to client/server applications with very little insight into the rest of the organization's applications. When IT infrastructure operations collaborates with the network and desktop groups, which typically own Web applications and desktop environments, they can more easily share best practices and leverage components that are common across all applications, such as WAN optimization and app performance monitoring.

From Utilization To Performance: Why IT Operations Must Focus On Business Efficiencies

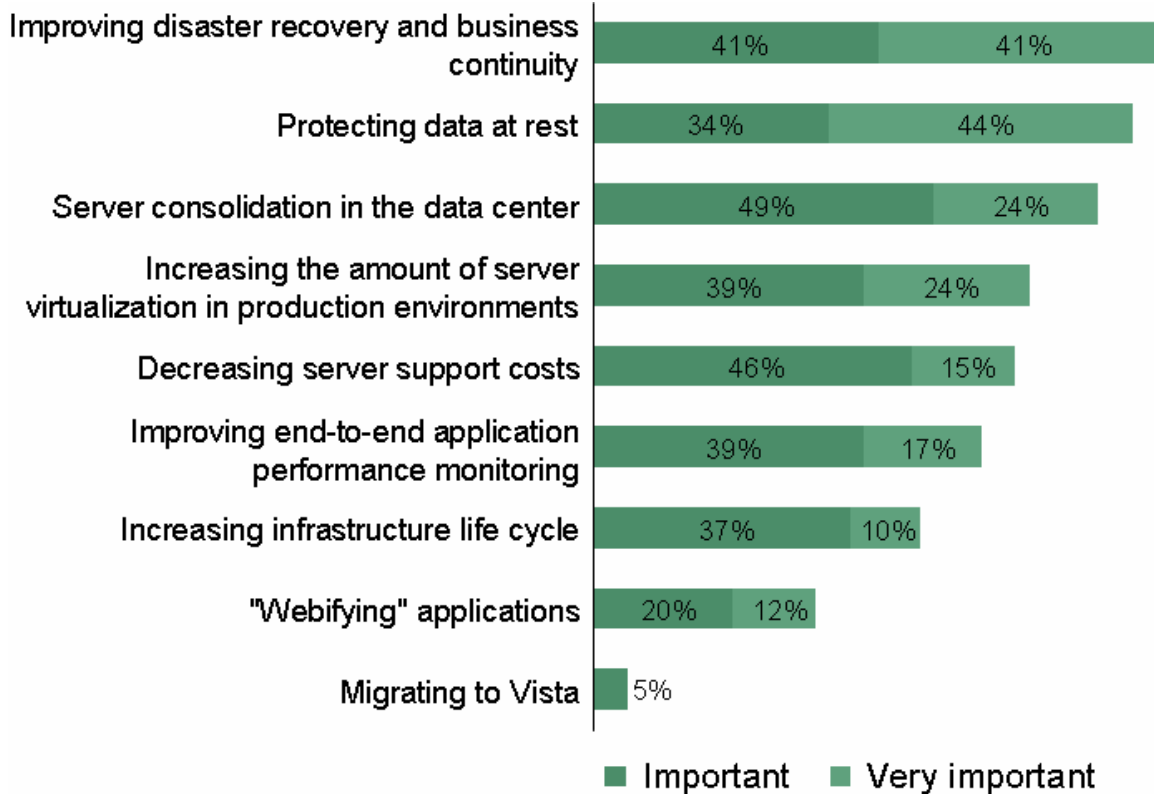
As part of a study commissioned by Citrix, Forrester Consulting recently conducted a survey of IT decision-makers in charge of infrastructure and server operations. Almost half of respondents feel that when it comes to solving IT problems, their jobs are mostly reactive. Why? Their jobs have always consisted of firefighting — problem-solving on misbehaving applications, or fixing broken upgrades and hardware failures. This has made it impossible for them to focus on more proactive IT initiatives, such as webifying applications. However, the role of the IT operations director is changing. To be successful, these individuals must begin to focus on business requirements, such as introducing business continuity plans, securing corporate data, and driving down costs of legacy IT infrastructure, or they risk continuing their endless cycle of break-fix support, making them unable to keep up with new business initiatives.

IT Infrastructure Operations Decision-Makers Prioritize Security And Business Continuity Initiatives

The changing business climate requires the IT operations group to focus more on delivering application services to the business. This means that IT operations managers must stop focusing on tactical technical issues like CPU utilization and instead focus on building broader architectural flexibility and redundancy into their application delivery infrastructure — all with higher data security. To do this, IT operations managers must (see Figure 1):

- **Improve business continuity and disaster recovery capabilities.** As the business becomes more reliant on IT to run day-to-day activities, IT must be equipped to handle any workforce disruption. This means that IT must be prepared to extend application access to users in the face of any type of disaster regardless of location. It is therefore no surprise that 82% of surveyed server operations directors reported that improving business continuity and disaster recovery (BC/DR) preparedness is an important initiative — making it the No. 1 priority for 2007.
- **Focus on the security of the data.** In today's environments, most security threats are sophisticated, focused attacks with business data as the primary target. Since applications are the main conduit to sensitive data, they are increasingly the focus of these attacks. IT operations managers are now tasked with designing a secure server architecture that protects the applications and data that reside on their servers. As a result, more than three-fourths of IT infrastructure managers listed data security as an important initiative for 2007.
- **Enhance server utilization through consolidation and virtualization.** The relationship between applications and servers is in transition. IT infrastructure managers, who once tightly coupled applications to server resources, are now spending their time on server consolidation and virtualization efforts. The goal? To lower the operational costs associated with server farms, while also laying the foundation for BC/DR initiatives. This is why 73% of responding server managers cited server consolidation and 63% cited server virtualization as important 2007 priorities.
- **Reduce support costs and improve application performance monitoring.** As applications increase in complexity, so do the costs of server support and monitoring. IT directors struggle with tasks like patch and configuration management, QA testing, application migration, and server performance monitoring. So it's no surprise that 61% and 56% of surveyed IT directors cited decreasing server support costs and improving end-to-end application performance monitoring as important 2007 initiatives, respectively.

Figure 1: Disaster Recovery Improvements Top The 2007 IT Operations Priority List



Base: 34 IT operations decision-makers

Source: A phone survey of 153 IT decision-makers and influencers across North America, Europe, and Asia-Pacific in March 2007 commissioned by Citrix and conducted by Forrester Consulting.

How Application Delivery Helps IT Infrastructure Operations

Does this sound familiar? You are spending millions of dollars supporting a legacy client/server application and it's still sluggish. On top of that, your servers are all running with only 20% utilization and your FTE to server ratio is unsustainable. Your users are complaining about slow performance as the cause of their lack of productivity. It's got to be a server problem, right? Unfortunately, it's not that simple; server and application performance is a complicated matter. Data bases, middleware platforms, storage, networks, and servers are all critical components.

However, there's an emerging technology solution that helps. Forrester refers to it as application delivery infrastructure. We define this as:

Technologies that streamline the connection of any user to any application by minimizing deployment burdens, reducing management costs, optimizing performance, and increasing security.

Application Delivery Shifts The Emphasis From Deployment To Delivery

Most IT organizations talk about “deploying” applications. Unfortunately, this model does not keep pace with the business’ needs in today’s increasingly dynamic world. Deploying an application means you make a bunch of assumptions about the application, who will need it, and how it will be accessed. Unfortunately, the moment something changes in your environment, things start to break because the underlying infrastructure is hard-coded to your initial assumptions. To change this pattern, IT infrastructure leaders should stop “deploying” applications and instead put their focus on building “delivery” infrastructure that can handle any application, regardless of how often the business changes.

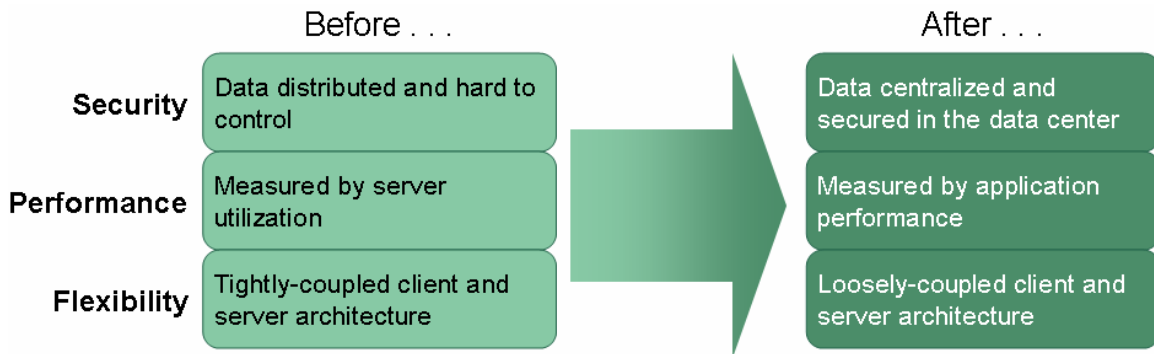
Application delivery *isn't* about throwing more MIPS at the problem. Instead it's a combination of solutions that bridges that gap between users and their client/server and Windows applications. It is the platform that provides the necessary abstraction layer between the application interface and the underlying server and middleware environment, making the overall delivery infrastructure far more flexible to accommodate change.

Focusing on application delivery infrastructure means IT operations doesn't need to focus on server availability, which is often a red herring anyway. Instead, they can concentrate on delivering applications to users, regardless of the underlying network. Put simply, application delivery helps IT managers shift the emphasis from task-based deployment to on-demand delivery.

When it comes to delivering Windows applications, best practices generally involve many infrastructure components, which include presentation virtualization, application virtualization, server load balancing, and sophisticated monitoring tools. Application delivery infrastructure provides a flexible, policy-driven platform to coordinate these components. From the perspective of Windows client/server applications, application delivery infrastructure provides (see Figure 2):

- **Security.** Changing business requirements mean that IT managers need to more tightly control and secure their applications and data. Application delivery provides users secure access to client/server applications that are located on central servers in the data center. And, because the data never leaves the data center, data security and regulatory compliance are far easier to accomplish.
- **Performance.** Increasingly complex applications mean that the IT operations group must guarantee performance across any server architecture. Using technologies like presentation virtualization for Windows apps can dramatically improve end user performance. This also means that performance metrics and monitoring tools should be centered directly on the application — not the underlying infrastructure.
- **Flexibility.** Centralizing applications in the data center takes the rigid requirements of today's Windows applications and abstracts them from the end user. This puts the control back into the hands of IT, enabling them to easily deliver applications to users regardless of location, device, or network. Technologies like application virtualization bring additional flexibility by allowing users to access the latest version of any approved application on-demand. This gives IT full control over all Windows applications while actually improving user flexibility at the same time.

Figure 2: Application Delivery Provides Better Security, Performance, And Flexibility



Source: A study commissioned by Citrix Systems and conducted by Forrester Consulting.

Application Delivery Infrastructure Addresses Emerging IT Operations Requirements

Focusing on application delivery infrastructure allows IT organizations to transform application servers from a single-function hardware resource to an on-demand delivery system (see Figure 3). For the IT operations manager, it means cost effectively:

- **Increasing business continuity preparedness.** A well-designed application delivery system will start by incorporating next-generation global server load balancing of mission critical applications. If a disaster strikes a given area, the application delivery system seamlessly redirects users to another data center. Centralizing Windows application clients in the data center and using technologies like presentation virtualization and application virtualization will further guarantee application availability regardless of user location.
- **Rethinking the way you secure your applications and data.** Today, applications and data are typically secured either in silos on a user's PC or on multiple servers around the world. Desktop and server managers try to keep up by deploying security software and managing security settings in an attempt to protect applications and their associated data in all locations, an increasingly difficult task. When IT stops trying to control all the variables and instead focuses on application delivery, security becomes inherent, allowing IT to easily maintain applications while also keeping corporate data under lock and key in the data center.
- **Consolidating server infrastructure while maintaining application performance.** Server virtualization and consolidation efforts are keeping server managers up at night for fear that a single application could bring down all applications on that box. In addition, consolidated servers means that some users are now farther away from their applications and that slower performance will be inevitable. A well-designed application delivery infrastructure will provide IT with specific monitoring tools for the end-to-end application experience. This not only increases visibility but also provides the relevant information needed to reduce the operational costs of troubleshooting and maintaining application performance. An end-to-end app delivery infrastructure will also incorporate presentation virtualization, data compression, load balancers, and WAN optimization technologies that improve performance for users not located at the corporate headquarters.

Figure 3: Application Delivery Addresses Emerging IT Operations Requirements

Emerging requirement	How application delivery helps
New business continuity plans require faster time to recover from disasters	Global load balancers and server-centric computing allow easy delivery of applications to any user at any time
Data security concerns are forcing IT to react	Avoids applying additional technology to every new security concern
Server virtualization is providing new levels of consolidation	Allows IT consolidation without sacrificing application performance
Traditional metrics, like server utilization, aren't sufficient for business' needs	Provides monitoring and measurement of more relevant metrics, like app performance
Pressure to "Webify" existing applications	Extends the life cycle of Windows applications and allows smooth migration to the Web

Source: A study commissioned by Citrix Systems and conducted by Forrester Consulting.

The Dos And Don'ts Of Application Delivery

It's important to make sure you have a consistent architectural approach so you can ensure end-to-end security, performance, and flexibility. We recommend that you:

- **Do include other areas of IT early and often.** IT and server ops groups have always been involved in traditional client/server application rollouts. However, they are generally left in the dark when it comes to other application decisions. This lack of collaboration will drive the biggest wedge into any application delivery strategy. Communication with other IT operations and architecture groups will allow server managers to learn more about end user pains and network resource constraints. Bringing all of these groups into application delivery discussions will enable the organization to find a solution that meets both user and IT needs.
- **Do implement the underpinning technologies . . .** Many companies have already started down the application delivery path. In fact, 66% of IT infrastructure managers are either rolling out or have already deployed products such as Citrix Presentation Server or Microsoft Terminal Services to improve the delivery of Windows-based applications. In addition, 29% are either rolling out or have already deployed user performance monitoring tools. While this is a good start, you need to look at these solutions as part of a comprehensive end-to-end infrastructure, including virtualization, global server load balancing, and WAN optimization.
- **. . . But don't just default to your standard management and middleware vendors.** It is important to distinguish between your infrastructure vendors: those that focus on the management of the hardware and software, those that focus on connecting software components, and those that focus on application delivery. Although these can be one in the

same, we don't recommend it; separate core competencies are involved. When looking to application delivery, look to vendors that are focused on applications and have a track record for increasing flexibility, performance, and visibility across servers, applications, and users.

Conclusion

Today's IT infrastructure managers are living a Catch-22. Ninety-five percent of them are being told to deliver applications with the best possible performance, but at a low cost; locked down with a high level of security, but always available. To do this, IT operations must adopt new technologies — like presentation and server virtualization, load balancers and accelerators, WAN optimization, and application and user performance monitoring — that are all tied together in a single policy-driven application delivery system. This application delivery infrastructure allows server managers to securely deliver Windows-based applications to any corporate or non-corporate user, consolidate server infrastructure while still maintaining high performance, and improve business continuity and disaster recovery preparedness. This results in not only reduced operational costs for IT, but more importantly creates a flexible architecture for delivering applications and their associated data to any user on-demand.

Appendix

Research Methodology

In March 2007, Forrester Consulting conducted a phone survey of 153 IT decision makers and influencers across North America, Europe, and Asia-Pacific as part of a study commissioned by Citrix Systems. In this survey:

- Fourteen percent of respondents were senior-most decision makers in the company, 27% were executives in IT, and 59% were managers or directors of IT that report to an executive in IT.
- Twenty-nine percent of respondents had authority over all of IT, 27% had authority over IT infrastructure and server operations, 22% had authority over desktop or client services operations, and 22% had authority over network architecture.
- One hundred and one respondents were from North America (US and Canada), 27 were from Europe (UK, Germany, and France), and 25 were from Asia-Pacific (China).
- Four percent of respondents were from enterprises that had 500 to 999 employees, 58% had 1,000 to 4,999 employees, 19% had 5,000 to 19,999 employees, and 19% had 20,000 employees or more.
- Thirty-six percent of respondents were from companies with revenues less than \$500 million, 11% were from companies with revenues of \$500 million to \$1 billion, 22% were from companies with revenues of \$1 billion to less than \$10 billion, and 11% were from companies with revenues greater than \$10 billion. Twenty percent of respondents did not disclose company revenues.
- Respondents represented a broad range of industries.