White Paper

The End of Application Deployment

Virtualised Applications Streamline, Secure and Manage Your Business

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Executive Summary

Hundreds, even thousands, of applications serve as the lifeblood of each of today's distributed global enterprises – at use in more places and in more ways than ever before. To deal with the growing complexity and cost of application deployment, maintenance and performance, organisations are looking for solutions to streamline, secure and manage delivery of their most business critical applications.

In the process, these organisations are finding that traditional application deployment is just not up to the challenge. Instead, new approaches to application delivery are needed to address the changing world of business, where an increasingly dynamic workforce – whether employees, outsourced, or partners – must have access to applications at anytime and anywhere around the world.

Fast emerging as the solution of choice is a virtualised application delivery model, which delivers only an application's "interactive" components to the end user while the application itself, whether Windows®, Web, or UNIX-based, remains in the data centre. This highly flexible approach enables organisations to quickly and cost-effectively deliver all of their business critical applications with security and control dramatically superior to traditional application deployment. Organisations have seen vast improvements in many key business arenas including branch office productivity, mergers and acquisitions, outsourcing, carbon footprint rollbacks and regulatory compliance.

Introduction

Globalisation, security and compliance place greater demands on application availability and management.

Today's business is on the move. The enterprise is undergoing rapid global expansion into the emerging markets and beyond. The workforce is now categorically distributed and mobile – working from remote offices, the road, home, wherever. And outsourcing is further extending organisational reach.

With this movement comes an associated vulnerability. Security becomes ever more important, and elusive. It's not easy to control and protect corporate assets and resources, like business-critical data, when they exist outside of company constraints. If customer financial information is compromised, for example, a single security breach can cost millions of dollars not to mention priceless consumer confidence. Without ironclad business continuity safeguards in place to deal with acts of war, nature or otherwise, one failed system can bring an entire organisation to its knees.

Concurrently, greater mandates for corporate accountability and regulatory compliance – with the Sarbanes-Oxley Act, HIPAA and the European Union Data Protection Directive, for example – are driving organisations to improve the tracking and management of corporate data. Toward this end, most organisations are embracing IT centralisation and consolidation in attempt to enhance corporate control while curbing IT and operating costs.

As a result, applications are tasked to take up the business slack outside of corporate headquarters. More and more applications – in kind, in number and in size – are chartered with carrying out key business functions and transactions. Meanwhile, these bigger applications – now processing richer data types and larger files – are becoming more complex to manage, update and maintain.

Nevertheless, these critical applications must be ready and in top form on demand – wherever, whenever and however they're needed – regardless of application type, network bandwidth demands or operating system. The same application at use in a networked field office in Kuala Lumpur must also be available off-line en route from LAX to London's Heathrow Airport, during a midnight power blackout or over WiFi on a laptop at Starbucks. Also, this all has to take place without any risk or compromise to the business information that is so hard at work.

Traditional application deployment can't meet the needs of today's distributed enterprises.

Traditional application deployment, which entails installing, supporting and maintaining an application on each individual computing device – whether PC, laptop or other mobile unit – can't begin to deliver on this mandate. Enterprise-wide deployment, for example, involves a stepped rollout with considerable QA, beta testing and end user training. Further support and maintenance requires extensive IT personnel, hardware and network resources. And ultimately, all application data lives on the device unless directed toward a shared network.

Many organisations have been lulled into accepting the limitations of application deployment approaches and its endless cycle of updates, patches and security fixes. However, when scaled to thousands of computing devices and almost as many applications, already resource-strapped IT organisations have finally reached the breaking point. Let's take a more detailed look at some of the drawbacks of traditional application deployment:

Inefficient Application Delivery

Application deployment is simply inefficient. Just consider what it takes to configure each device, operating system and maybe even browser. If no two devices are alike – and they aren't – it's not hard to imagine the labor and resources required to deploy for every different scenario or how the resulting duplication of efforts undermines instead of supports IT.

Lack of synchronisation is another big problem. By the time all the kinks are worked out for a Phase I deployment, for example, a new version or upgrade is made available, and you're back to square one. Also, inherent conflicts between versions, file overwrites and registration data, for example, further complicate deployment.

Poor Data and Application Security and Management

Deployment's inefficiency extends to security, where it's difficult to keep provisions up to date on a per device basis. Data at large in the enterprise is rarely as protected or backed up as it needs to be, especially by remote workers using laptops, mobile devices or home computers. A lost or stolen laptop poses an uncomfortably high security risk. Even the best-intentioned security implementations can't fully protect data that is outside of company parameters, as is more often the case with an increasingly mobile workforce.

Compromised Performance

Traditional deployment just can't keep up with performance demands. User productivity relies on the speed and efficiency of deployment. Anything that requires dedicated resources – whether it's bandwidth, people, hardware or money – stands in the way of optimal application performance. If there's lag time between application need and implementation, if end user transition and training is particularly cumbersome or if bandwidth demands can't be met over burdened networks, then performance and business suffers.

Spiraling IT Costs and Infrastructure

Application deployment is an expensive, IT-intensive undertaking contributing to spiraling costs at a time when IT budgets are feeling the squeeze. To roll out, support, maintain, upgrade and secure enterprise applications often requires duplicating IT efforts that can't be leveraged across the organisation. IT costs are further taxed by the additional computing resources – whether hardware or network – that are needed to run the latest applications at acceptable performance.

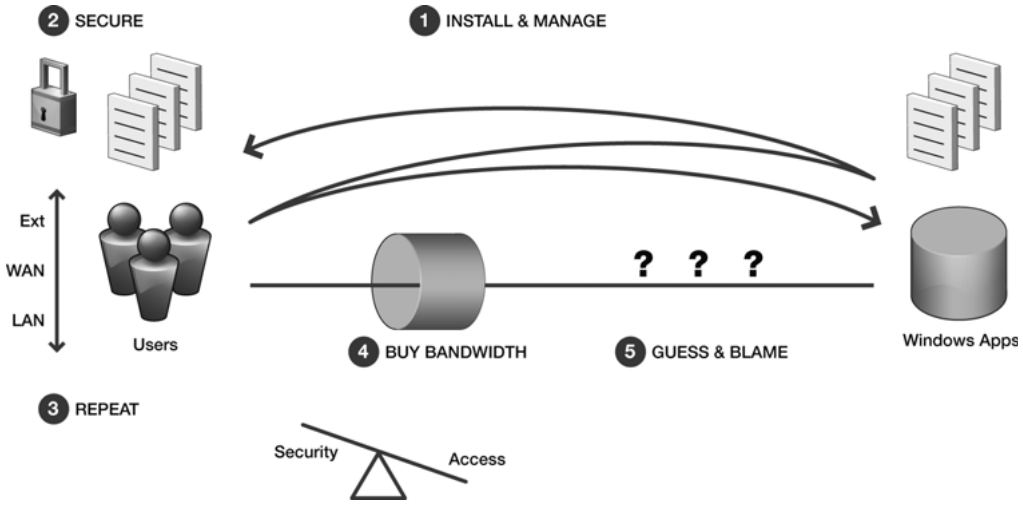
Organisations must rethink how they interact with their applications.

Organisations that have embraced new technologies and practices to adapt to the changing business landscape now must rethink their relationship to their applications. It's no longer practical, or necessary, for full applications – complete with all their inherent data and code – to travel great distances and drain limited resources taking up space on a user device that can't be fully protected or easily supported and maintained. It's not enough to improve deployment – who needs a better fax machine? – something entirely new and different needs to take its place. And that something is virtualised application delivery.

Global investment bank Lehman Brothers set out to deploy a new financial application to increase transactions and streamline trades. Time to market was of the essence. However, IT had to install, beta test, configure the backend, provide ironclad security and then figure out how best to deploy, train and support users across the company. After six months, only 25% of users were on the new system when a new version with marked performance gains became available. IT then had to patch existing users and start from scratch with the new system for the rest of the company, putting Lehman Brothers months behind schedule.

View the complete case study at **[http://www.citrix.com/English/aboutCitrix/caseStudies/caseStudy].**

Traditional Application Deployment



Traditional application deployment leads to duplication of IT efforts and an endless cycle of updates, patches and security fixes – and ultimately to spiraling IT costs and lost business opportunity.

Virtualised Application Delivery

Deliver a great application experience but not the application.

Virtual application delivery moves into the modern world by delivering, not deploying, only what's needed for interaction with the application by the user when, where and while its needed. Virtualised applications separate the use of the application from where the application is housed and maintained, enabling the user to enjoy full application functionality without having to actually have the application on the computing device. In other words, the application experience, but not the application. The application, as well as all of its associated data, are safely back at the data centre under complete corporate and IT control.

How it works: The user gains access through a simple network login to connect with the application's interface - whether it's Windows, Web, or UNIX-based. The application actually runs on servers in the secure data centre, along with its data. The user doesn't even know it, as it just looks like another icon and Window on their desktop. If the user needs to work offline, or if the application requires the desktop's local computing horsepower, the application can also be streaming and virtually run on the desktop in a secure sandbox. Again, the user is unaware. IT always maintains the application and business data in the data centre – where all implementation, management and security measures take place from a centralised location.

This is a complete departure from deployment in that the application never gets downloaded to the user's device so none of deployment's inherent problems are brought along. Instead, the user and IT experience are dramatically changed for the better:

Delivery is fast, easy and efficient.

Because an application lives at the data centre and delivered over the network, it need only be installed and configured once on the server(s) to easily scale to thousands of user devices. Initial implementation takes a fraction of the time. Updates, patches and security fixes are quickly and uniformly rolled out across the enterprise in minutes or hours, instead of weeks or months – and with significantly fewer IT staff and resources. As only the latest application version gets virtually delivered, conflicts between applications or with desktop operating systems are easily addressed and eliminated from the user experience.

Performance is greatly improved.

Speed and efficiency leads to greater availability and performance. When application delivery is independent of user device, operating system and location, nothing stands in the way of application access. The application looks and feels like it's running on a local machine, only better. Architected to take the best approach, built-in application performance monitoring that helps optimise performance and avoid network bottlenecks through increasing IT visibility and decreasing problem resolution times.

Applications and business data are under complete control.

Centralisation enables tight security and control. With applications back at the data centre, and not scattered throughout the enterprise, it's much easier to keep an eye on applications, and their related data. The host server dynamically updates each session, ensuring that all information is current and accounted for while also simplifying security and compliance efforts. Without the need for extensive testing to certify applications, regulatory compliance is greatly facilitated. Also, the ability to place limitations on application use and dissemination gives IT an added layer of control.

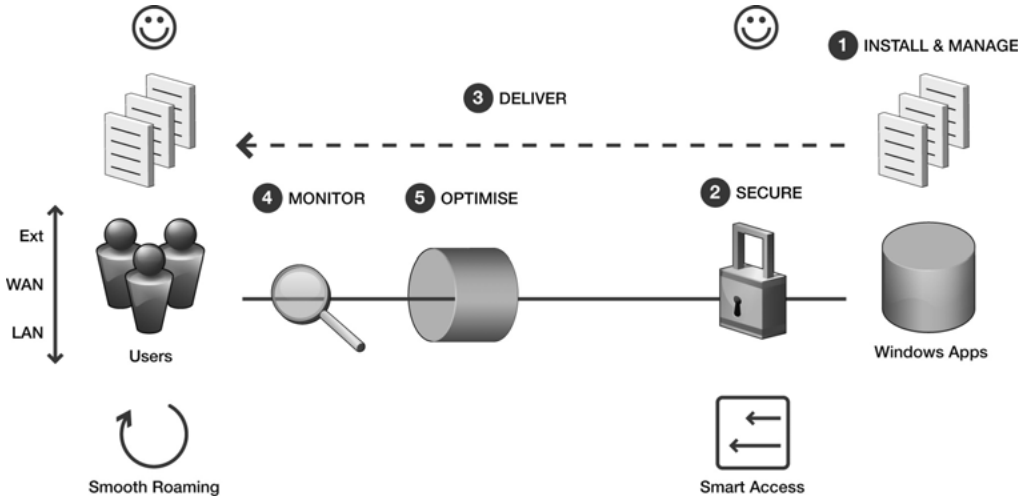
IT costs and infrastructure are dramatically reduced.

The centralised approach of application delivery significantly reduces IT cost and infrastructure. Duplicated IT efforts are eliminated; a problem gets fixed once on the server(s) and it's solved for the entire organisation. There is much less need for field support or large deployment teams. Application delivery is also light on endpoint resources – it doesn't demand much from the user device or the network, cutting back on hardware refreshes and added bandwidth expense.

4 Easy Steps To Application Delivery

1. Install applications within the data centre
2. Assign applications to users
3. Enable transparent application access
4. Patch, update, maintain applications centrally

Virtualised Application Delivery



A virtualised application delivery system can dramatically improve the application experience for both the end user and its IT stewards by cost effectively and efficiently streamlining, securing and managing business applications.

A Closer Look At Virtualisation

Isolation makes it work better together.

Application virtualisation relies on "isolation" technologies, or what is sometimes referred to as "sandboxing," to circumvent deployment (i.e., children playing in their own sub-sandboxes with their own toys won't fight over toys with other children in their own sub-sandboxes in the larger sandbox). Applied, virtualisation abstracts applications from the host operating system to run on any device as well as share resources with conflicting applications. The application guts are isolated on the host, while the code necessary for interaction is dynamically coupled and reassembled on the fly for the best on-demand user experience.

Virtualising applications requires two kinds of virtualisation technology to be at work in order to accommodate all of today's user work scenarios: server-side and client-side (also referred to as "application streaming") virtualisation. With both technologies integrated in a single solution, virtualised applications automatically select the best application delivery method based on user profile, application type and physical location.

Server-side Virtualisation

Server-side virtualisation is what typically comes to mind when referring to application virtualisation – whereas the application is stored at the data centre and abstracted from the user device. Because a small auto-updating virtualisation client runs on the user's computing device, and not the client application, users can use the application from nearly any device (home PC, PDA, kiosk) that can connect to the host server in the data centre. The only requirement is a network connection.

Client-side Virtualisation (or "Application Streaming")

Client-side virtualisation, on the other hand, enables the same level of access and control without the need for a network connection. The application is temporarily isolated on the user device while off-line, and then automatically synchronised with the data centre once a network connection has been re-established. In this case, the user device behaves like the server.

This is ideal for use on an airplane, for example, or with business productivity tools that don't carry sensitive business information and therefore serve no purpose being stored on a centralised server. Control is still maintained at the data centre; off-line users are compelled to reconnect to the network on a periodic basis to keep updated on registration licenses and the like.

After 9/11, Lehman Brothers relocated its World Trade Center offices to temporary office space across the river in New Jersey. Because Lehman's business-critical applications were hosted on a server and delivered virtually, over 1,000 employees were up and running faster than it took to set up the telephone system.

View the complete case study at **[http://www.citrix.com/English/aboutCitrix/caseStudies/caseStudy.asp?storyID=7110].**

The dramatic impact of virtual application delivery can be leveraged across the enterprise.

The advantages of virtual application delivery reverberate throughout the enterprise, streamlining many organisational imperatives. Here are some of the key areas where virtualised applications can make a dramatic difference:

Business Continuity

Planned or unplanned, system outages can cripple productivity, especially when key business applications aren't readily available. Virtual and network-based delivery enables workers to access their applications from any Web-enabled device as though it's business as usual. With multi-site deployments, users are transparently redirected to an available site, if necessary. All the while, valuable business information remains protected. And disaster recovery won't entail time-consuming and costly desktop rebuilds.

Regulatory Compliance

Complying with government or industry regulations is close to impossible without centralised control over corporate data. Audits take up a lot of time and money unless key data is close at hand. Virtualised applications keep important business information at the data centre where it is quickly, securely and dynamically synchronised with online and off-line access. Change management for Sarbanes-Oxley Act compliance, for example, is greatly simplified as IT doesn't need to test upgrades and patches for silo conflicts to ensure applications stay in compliance.

Remote Office Access

Virtualised applications readily provide users at remote offices secure application access without having to deploy IT support and resources to those distant locations. With centralised management, IT can troubleshoot problems on the data centre server – shadowing user sessions, for example, to track movement and errors. This saves considerable time and money while ensuring remote office applications work at peak performance.

Mergers and Acquisitions

Virtualised applications enable rapid application interchange for faster business integration immediately after a merger or acquisition. With no need to reconfigure and redeploy applications, users quickly become incorporated into the organisation. The transition is painless: Just supply new users with their network login, and they're in business. Any necessary training can be easily supplied over a Webinar.

Going Green

Virtualised applications are all about conserving resources – doing much more with less. The thin client approach requires less power consumption than supporting full applications, as applications running on servers require fewer processing cycles. Server-side virtualisation displaces power consumption from the desktop to the data centre where it can be managed more effectively. Power and cooling costs are kept low and footprint can be reduced by as much as 50% or more.

Conclusion

The time has come to replace traditional application deployment with virtualised application delivery.

Today's dynamic business environment demands application delivery, and not deployment, to ensure the security, performance and availability of its most important business applications. Traditional application deployment no longer meets the needs of the modern distributed enterprise where workforce mobility and corporate control must go hand in hand.

Virtualised application delivery can dramatically improve the application experience for both the end user and its IT stewards by cost-effectively and efficiently streamlining, securing and managing business applications. The right solution will support organisational initiatives including business continuity, remote office, regulatory compliance, workforce integration and energy conservation. Look for these characteristics:

- Comprehensive application delivery using both client- and server-side virtualisation
- Ability to virtualise the entire desktop
- Transparent end user experience
- Anytime, anywhere delivery with support for any operating system
- Full control of corporate applications and data
- Painless updates, patches and security fixes
- Full IT and management visibility into the user experience

Find out how Citrix can improve the delivery of your business-critical applications.
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