TSplus White Paper

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Years ago, people expected to use programs and data only seated at terminals attached to the computer the programs resided on. Remote access was rare and reserved for a privileged few. Now everyone demands access to everything from anywhere, at any time of day or night using Internet.

To support this new way of living, some applications are being re-written in new languages like Java. Alas, as we know from our experience, old programs just don't go away. "Who'd have guessed software was immortal?" These older programs are definitely not "Web enabled", and many run on system incompatible with each other and with newer systems.

What is it ?

Who can afford to rewrite all this older software from a whole new viewpoint?

Windows applications in particular display a very poor performance with remote access, forcing people who need them elsewhere to use expensive remote control solutions, or, if they have the money and the technical expertise, Windows Terminal Server and Citrix MetaFrame.

It would seem, then, most of us won't be enjoying the benefits of "Web enablement" for a rather long time.

But not so! Some have solutions that Web enable legacy applications, and with no reprogramming. The first, and the most comprehensive of these solutions, is **TS*plus***.

By adding a system running **TS*plus*** to your network, applications running on your Windows XP, 2008/2012, W7, W8 or W10 all become available on any computing device that has an HTML5 web-enabled browser.

Faced with continued difficult economic realities and reduced budgets, Information Technology departments are searching for ways to derive additional value from their investments in existing Windows software applications.

Organizations are looking to lower their Total Cost of Ownership (TCO) and accelerate their Return on Investment (ROI), yet still provide cost-effective, responsive access to applications for an increasingly mobile and distributed user base.

Likewise, Independent Software Vendors (ISVs) have heavily invested in traditional Windows applications and have a pressing need to Web-enable these applications in order to stay competitive, expand their markets, and generate additional revenues under difficult market conditions. Reduced revenues and increasing time-to-market pressures mean that ISVs cannot usually afford the time and money it would take to reengineer their applications in order to create native Web-based solutions.

A cost-effective alternative for both of these market segments is to centrally deploy existing applications via Application Publishing or Cloud Computing solutions.

With Application Publishing, mission-critical applications can be deployed, managed and supported from a centralized server and accessed by heterogeneous PCs and other mobile devices – without the need to rewrite the applications. Application Publishing, Web-enabled and Cloud Computing solutions have proven to be a reliable way to reduce the complexity and cost of enterprise computing, while increasing overall efficiency.

This paper will review the business challenges faced by the enterprise and the ISV, review the various alternatives for application publishing and Cloud Computing solution, compare the pros and cons of Web-based vs. Web-enabled applications, and review the leading solutions available on the market today.

Accessible on any browser, anywhere on your network - or from anywhere in the world over the Internet. Even more surprising is how affordable all this can be. This TSplus technology of Web enablement is the most economical way to roll out your established applications to any remote location.

Business Challenges

Corporate IT departments and ISVs alike are faced with a number of business challenges relating to today's tight economic conditions.

Lowering Total Cost of Ownership

PC application software has grown dramatically in size and complexity in recent years. As a result, the cost of supporting and maintaining PC desktops has increased substantially. With IT budget pressures showing no real signs of easing up in the near future, IT departments today recognize that the total cost of ownership for the traditional distributed PC – taking into account the recurring cost of technical support, administration and user down time – has become unacceptably high.

Serving Remote and Mobile Users

Today, remote and mobile users make up the fastest growing segment of computer users. Freed from the constraints of the traditional office, these users expect to access corporate information and applications from anywhere in the world, any time of day, from virtually any type of device.

Instant communications among employees, customers, suppliers, and other strategic partners – no matter where they are – is becoming increasingly critical. With the rise in popularity of Internet connected laptop computers – and the emergence of wireless devices (iPhone, iPAD, Android…) – users can choose from a wide selection of cheaper, simpler and more convenient devices for handling corporate and personal information.

The challenge for IT and ISVs is how to quickly and cost-effectively extend existing applications to this new class of user, given current fiscal constraints.

Deriving Additional Value of Existing Investments

IT has evolved over the past 50 years from being technology centric to user-driven. Now, IT must transition from being a cost center to a value center in order to gain visibility and added funding within the enterprise. According to a research report from Robert Frances Group: “Traditionally, IT has been viewed as overhead versus a revenue-generating business unit such as sales…Now, IT executives are realizing that if there is not a shift in thinking and an ability to demonstrate the tangible business value contributed by IT services, their departments will be further

scrutinized, and their budgets continually reduced."

One important way for IT departments to show their value to the enterprise is to derive additional benefits from existing application investments. Giga Information group reports that most enterprises have dozens if not hundreds of traditional Windows applications.

Providing Enterprise-Wide, Cross-Platform Application Access

Most enterprises contain a diverse collection of desktop computers, each with its own particular operating system, processing power and connection type. Windows desktops are the most prominent, but even here, different versions of Windows do not always support the same application. This is particularly true with custom applications. Also, UNIX desktops can frequently be found in engineering departments. t. Add to this the growing popularity of Linux, with Mac desktops often populating the marketing department, and the cross-platform access problem becomes ever more complex.

By extending these applications to additional employees – as well as new users such as customers and partners – these users will have the resources they need to contribute to the company's bottom line. By quickly and cost-effectively reaching new audiences, the enterprise will profit from new revenue opportunities – and will be well positioned to take advantage for future economic upswings.

Consequently, it is becoming increasingly difficult to provide universal desktop access to business-critical applications across the entire enterprise. As a result, some organizations have resorted to desktop emulation software, new hardware or costly application reengineering in order to provide universal desktop access. However, most organizations today do not have the luxury of such open-ended spending.

Evaluating the alternatives

To meet these critical challenges and extend an existing application to corporate networks and the Web, two alternatives are available to the IT departments or the ISV:

1. Reengineer the application for each of the different Windows application and create a native Web-based solution.
2. Web-enable the application and publishing it via a centralized, server-based solution.

While the first option may have been viable in the go-go days of the 1990s, given today's budget realities, it leaves the remaining question: "Which is better: Web-based or Web-enabled?"

Web-Based vs. Web-Enabled Deployments

At first glance, rewriting the application for the Web may seem to be the desirable alternative – and currently some companies are following this route. Rewriting the application as a Web-based solution lets the enterprise or ISV preserve the application branding and the relationship with the end-users.

However, reengineering an existing, stable application with an existing installed base is hardly the best solution. This method can be a very costly undertaking – a serious problem in times of limited IT spending.

Rewriting an application also has the potential for introducing instability and added complexities into an otherwise stable program. What's more, rewriting applications for the Web can mean introducing a static front-end to the application, sacrificing the rich interactive experience users have come to expect. This in turn usually leads to the need for additional user training to learn the new software interface. The greatest problem, however, may be the very long development and quality assurance time that re-engineered applications take – sometimes delaying the solution for years.

Web-enabled solutions, on the other hand, can be deployed without the need to rewrite or even modify existing applications. Instead, the application runs on a central web

server and is published over the corporate network or the Internet to remote devices such as terminals, PCs, workstations, notebooks, wireless devices, and systems configured with minimal memory.

The Benefits of Web-Based Application Publishing is a reliable, fast and efficient way to publish applications while reducing the complexity and cost of enterprise computing. The application itself executes completely on the server, guaranteeing high application performance for all users, including those accessing over low-bandwidth connections.

Giga Information Group concludes: “Although Web-based computing has captured the mindset of developers and the market, the tremendous installed base of Windows client applications cannot be converted all that quickly...”.

Web-enabling will continue to have broad appeal as organizations attempt to simplify their IT environments.

Alternatives solutions for web-enabled deployments

Application Publishing

Many enterprises and ISVs have determined that the fastest, most cost-effective solution involves Web-enabled application publishing. Two of the more well-known solutions in this market segment are Microsoft

Windows Remote Desktop Services and Citrix Metaframe.

Windows RDS is a restrictive solution that provides multi-user remote access Windows applications. Based on ActiveX, it does not support UNIX, Mac or Java clients. Windows RDS remotes a new session of the Windows operating system for each new user, which can consume more system resources per server and lead to decreased scalability.

The licensing of Remote Desktop Services is also restrictive. Users are typically licensed per user or device. This can lead to substantially higher costs for environments incorporating a large number of occasional users. Windows Terminal Services supports only limited concurrent license scenarios and can be expensive to implement.

Citrix MetaFrame, on the other hand, is a highly complex, high-level, costly solution that introduces an entirely new level of application management infrastructure and complexity that must be deployed, monitored and maintained.

This solution is not for everyone, and can be overkill for many applications. It typically requires additional user training, as well as added IT administrative resources. Citrix layers on top of Windows Terminal Services, which means it is subject to some of the same restrictions inherent in Windows Remote Desktop Services.

Furthermore, Citrix requires the licensing of both Windows RDS and Citrix.

Due to these complexities and shortcomings, many IT departments and ISVs have expressed a desire for a solution that falls somewhere in between the extremes of Windows Remote Desktop Services and Citrix MetaFrame. They report that what they really need is an application-centric, cost-effective solution that

allows them to easily and quickly publish applications to the corporate network or the Web without added complications.

Such a simplified solution is available in the form of **TS*plus***.

The Application Publishing Market

A recent market study by Giga Information Group predicts continued market growth and vitality for the Application Publishing market segment. Giga cites the technology's ability to help enterprises immediately extend existing investments in traditional applications, reduce IT management costs, and eliminate the need to reengineer applications in order to create native Web based deployments. According to Giga:

"Although pressure to reduce spending has led companies to carefully evaluate all IT investment decisions, Application Publishing can drive significant cost savings for application deployment and management, especially in distributed

environments. Remote workers, telecommuters and mobile workers can benefit significantly by gaining access to desktop applications from a wide range of devices and connectivity options."

Application publishing solutions can drive significant savings and benefits with a Return on Investment (ROI) of 25 to 45% compared to traditional distributed desktop environments in the following areas, according to Giga :

1. **Remote access to rich Windows applications**, particularly from non-company-owned equipment (i.e., from partner and customer locations).

2. **Deployment of existing Windows applications** in a distributed environment, particularly where IT resources at remote sites are scarce.

3. **Mobile applications access** from wireless laptops, tablet PCs, iPhone, iPAD and other devices that can display application screens.

Benefits of Server-Based Application Publishing

Improved Management and Control:

- All users run the same version of the identical application
- Mission-critical information remains secure on a central server behind the corporate firewall
- Application upgrades occur simultaneously from a central location
- Potential software bugs and viruses can be quarantined on affected servers

- Provides very fast time-to-market

Reduced Costs :

- Elimination of reengineering costs
- Elimination of support travel time and related expenses
- Reduced hardware requirements (memory, processor speeds, etc.) for remote desktop configurations
- Standardized application deployment saves money on software licenses

User Benefits :

- Instant access to applications from any platform
- Retrieve mission-critical information from anywhere
- Zero or near-zero client footprint

A Secure Solution

TS*plus* transmissions are fully encrypted using the industry best practice and technology standards. What's more, your applications and mission-critical data remain secure on the server behind your corporate firewall. Only the application's user interface is transmitted to client devices. The TSplus client makes it easy to Web-enable Windows applications for secure, cross platform deployment to local and remote users everywhere.

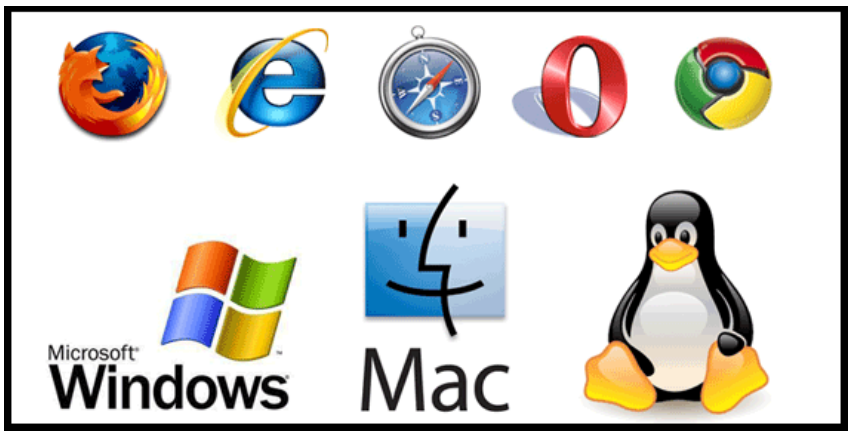
Cross Platform Server Technology

Just install TSplus on any Windows system and you will be able to access

your windows applications through Linux, MAC, IPAD, Android devices, and Windows PCs.

TSplus Corporate Edition Summary :

- Multiple concurrent sessions on all Operating Systems from XP to W10.
- Application Control, Universal Printer, RemoteApp
- A fully customizable Web Portal with SSH Secured Tunneling, Port Forwarding and HTML5.
- IPhone/iPad/Android Access
- Load Balancing and fail-over
- And much more to fulfill expectations of the most demanding users.



Features at a Glance

- Provides 32- and 64-bits Windows application access from virtually any platform.
- Publishes or Web-enables existing applications in 15 minutes or less.
- Retains 100% of the application's features, functions, and branding.

- Provides Windows, Linux, and Mac OS X native clients.
- Provides HTML5 client for Mobile users on Apple iOS and Google Android.
- Provides Internet Explorer, Mozilla Firefox, Google Chrome, and Apple Safari browser Web Access Portal.
- Offers a cost-effective alternative to Citrix or Microsoft Remote Desktop Services.
- Provides high-performance access and complies with RDP protocol, even over low-bandwidth connections.
- Offers SSL security (up to 2048-bit AES).
- Supports smart card document signing and authentication clients.
- Includes Client Keyboard Input Method Editor (IME), allowing users to switch keyboard languages on the fly while running a TS***plus*** session.
- Provides enterprise-ready Corporate Gateway.

TSplus Corporate Gateway

For larger enterprise environments, **TS*plus*** Corporate Gateway can be deployed to provide a high-availability, secure gateway to multiple **TS*plus*** hosts. Features include load balancing and clustering of servers, Microsoft Active Directory integration, and centralized management tools, allowing your company to scale to larger and more flexible deployments using a single solution.

TS*plus* Corporate Gateway provides administrators with controls to monitor and manage clusters of TSplus Hosts supporting thousands of users and the ability to assign **TS*plus*** hosts to users or groups.