

Smart client technology: The integration of Web-based and desktop solutions

Prepared by Prophix





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Introduction

A major portion of today's technology relies on the power of the Web and related technologies, where users access data remotely. However, Web-based applications have their limits; for example, bandwidth consumption and high server load. The decision to utilize the best deployment technology has been an ongoing issue amongst IT decision makers—whether to deploy a web-based application (thin client) or a desktop application (a thick client). The introduction of smart client technology has proven that applications can utilize the best of both deployments.

Overview of thick and thin clients

Thick client

The thick client provided the first intuitive, easy-to-learn user interface. A thick client, also known as a fat client, is a computer in client-server architecture networks, which typically provides rich functionality independently of the central server. It is often characterized by the ability to perform many functions without a connection and by its requirement to install a desktop application. However, some businesses steer away from such applications because of their deployment and maintenance requirements.

Pros and cons of a thick client

- Pros: rich user experience, intuitive, easy to learn and use
- Cons: heavy footprint, tough to deploy, DLL hell

Thin client

On the other hand, Web-enabled clients, also known as thin clients, are computers in a client-server architecture network, where the server handles all the significant processing. Many thin client devices run only on Web browsers or remote desktop software. The thin client has been favored because of factors such as its ease of deployment and lower hardware costs. However, more than one-third of IT decision makers from mid-sized and large enterprises who have Web-enabled their core applications report migrating some applications back to a more client-server-like rich user interface. Usability issues hamper productivity. With the introduction of smart client technology, end-users obtain a highly-functional, easy-to-use application, with the ability to centrally-control the application's deployment and security.

Pros and cons of a thin client

- Pros: extended application reach, simple deployment
- Cons: poor user experience, no integration



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Smart client vs. browser applications

Capability	MS Office	Browser-based applications	Smart client applications
Internet	No	Yes	Yes
Installation	Setup.exe	None	ClickOnce via URL
User Interface (UI)	Great UI	Low quality UI	Great UI
Security	Secure, trusted	Secure, not trusted	Secure, trusted
Speed / Performance	Fast	Slow (reload UI with every click)	Fast
Data	Local data / unconstrained	Centralized data / flat (lists)	Centralized data / relational (forms)
Versions / updates	Version headaches	No versions	Auto versions / updates
Exploits local CPU	Full CPU	Display-only	Full CPU (highly scalable)
Web server	N/A	Powerful / expensive server	Standard / inexpensive server
Development cost	Expensive	Expensive	Inexpensive (3-5x lower cost)
Users	Business	Consumers + business lite	Business heavy (B2B)
Integration	Server only	Server only	Server and local PC (desktop office)
Offline computing	Yes	No or pay extra	Yes
Bandwidth	N/A	Med-high	Low (minimal)
Scalability	N/A	Server- and user-dependent	Server-dependent
Standards based	No	Yes	Yes

**Smart client is the cost-effective way to manage your business-to-business needs for data management. Smart client combines the best of desktop office applications with the best capabilities of the Internet and browser-based applications: end-users get a highly-functional, high performance, easy-to-use application, with centralized control of application deployment and security.



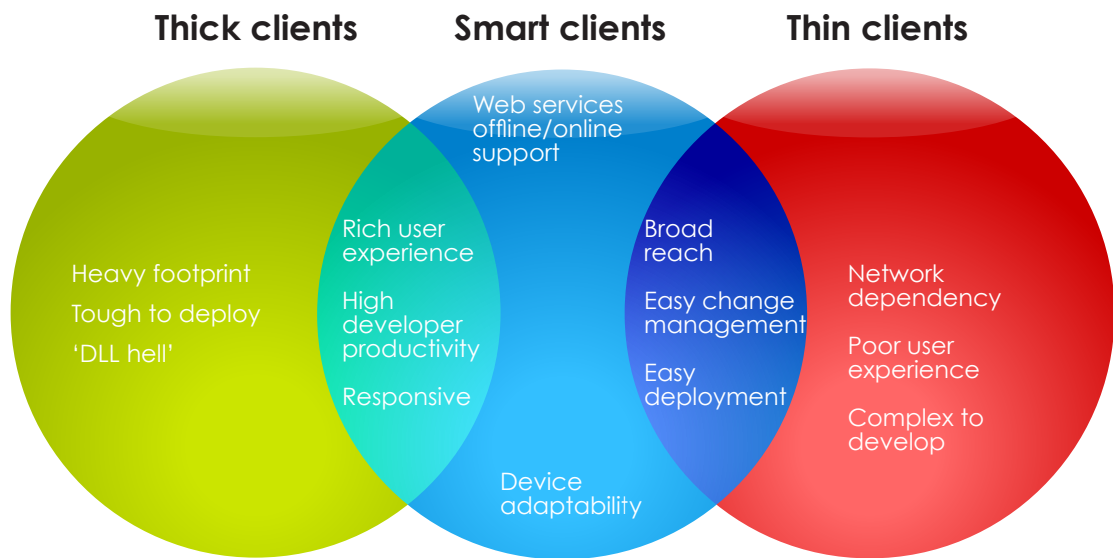
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The solution: Smart client technology

Software from Prophix utilizes the best of both deployments by implementing a smart client application—an application that is 'occasionally connected' and mobile, with powerful computing capabilities. With smart clients, businesses can take advantage of opportunities to distribute information, streamline business procedures, and provide better control over operations.

Smart client applications bridge the gap between Web applications and desktop applications. They provide the benefits of a web application (such as leveraging the Internet and offering remote access to data) while still providing a look and feel inherent to desktop applications and taking advantage of local computing resources.





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Overview of the Smart client

A smart client application combines the following ingredients to provide a responsive, rich, and compelling experience to its end users:

- **Use of local resources and rich user experience.** Smart client applications come in many shapes and sizes with varying degrees of functionality. One trait that all smart client applications share is an ability to exploit local resources such as hardware for storage, processing, or data capture such as compact flash memory, CPUs, and scanners. Smart client solutions offer hi-fidelity end-user experiences by taking full advantage of all that the Microsoft Windows platform has to offer. Smart client applications live on your PC, laptop, tablet PC, or smart device.
- **Connected.** Smart client applications are able to readily connect to and exchange data with systems across the enterprise or the Internet. Web services allow smart client solutions to utilize industry standard protocols such as XML, HTTP, and SOAP to exchange information with any type of remote system. Visual Studio, the .NET framework and the .NET compact framework make consuming Web services easier than ever.
- **Intelligent deployment and updates.** In the past, traditional client applications have been difficult to deploy and update. It was not uncommon to install one application only to have it break another. Issues such as 'DLL Hell' made installing and maintaining client applications difficult and frustrating. The release of Visual Studio 2005 and the .NET framework 2.0 offered simplified smart client deployment and updating capabilities known as ClickOnce.

ClickOnce makes deploying a Windows Forms-based application as easy as deploying a web application. With ClickOnce, running a Windows Forms application is as simple as clicking a link in a web page. For administrators, deploying or updating an application is simply a matter of updating files on a server, with no need to individually touch every client.

ClickOnce applications are fundamentally low impact. Applications are completely self-contained and installed per user, meaning no administrator rights are required. Users don't have to worry about a ClickOnce application breaking other applications.

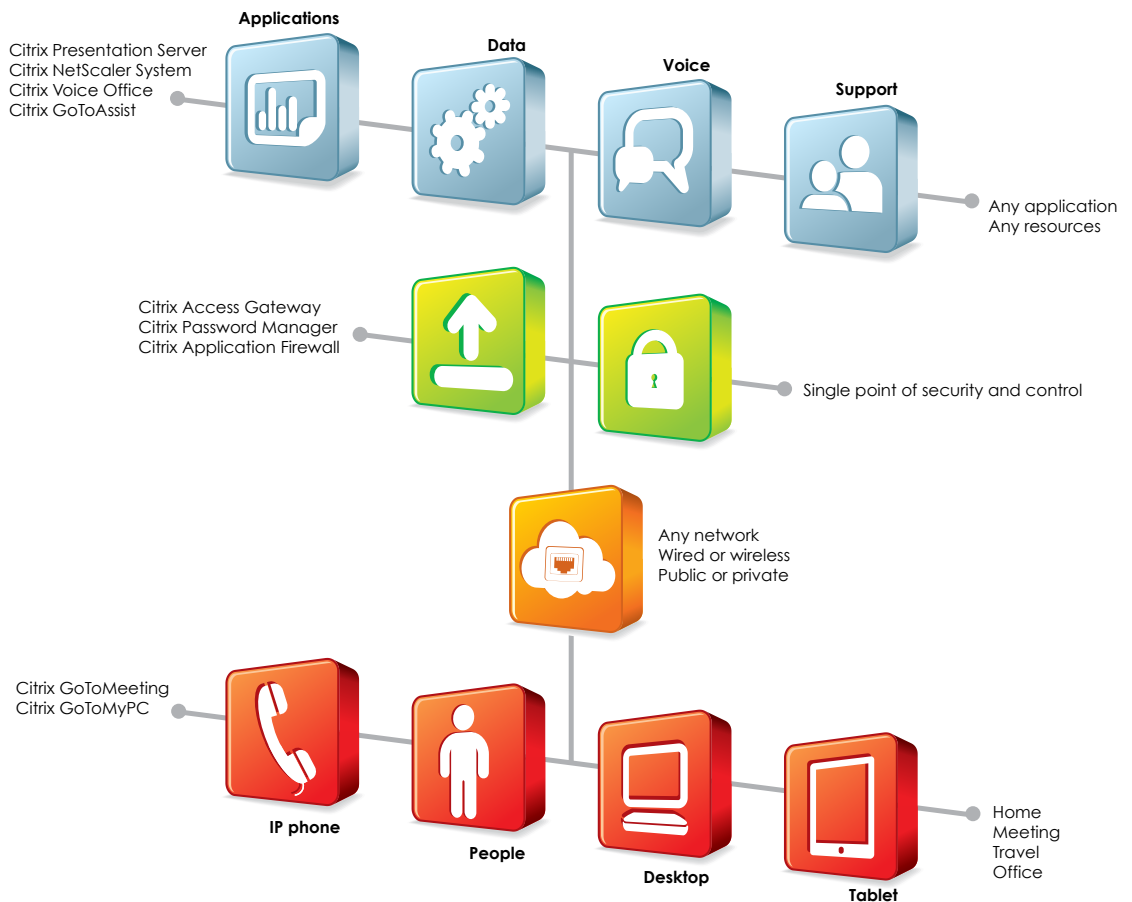


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Citrix environments

Deploying Prophix's smart client technology in a Citrix environment offers a fully Web-enabled application. Citrix Presentation Server, built on top of the Windows Terminal Services platform, is a remote access/application publishing product that allows people to connect to applications available from central servers. One advantage of applications using Presentation Server is that it lets people connect remotely, from anywhere outside of their corporate networks. For example, the Microsoft Remote Desktop Protocol is based on Citrix technology. Citrix utilizes advanced virtualization technology to take traditional browser-based or thin client applications to the next level. Citrix Presentation Server 4.5 aims to be a complete solution for delivering applications to a broad range of users. Applications can be run on the server or streamed to the client for better and wider support of end users and applications, giving IT shops a single solution for application management.



Feature comparison chart: Thin client vs. smart client

Feature	Thin/Web client	Prophix smart client	Explanation
Rich user interface	Limited. Generally ties the application to a single browser	Yes	Prophix smart client end users get the traditional power, functionality, and speed of Microsoft desktop applications – drag and drop, click to son, daughter screens that update while scrolling lists, drill-down screens, etc. – without delay.
Fast and reliable	Very limited	Yes	Prophix smart client with Citrix: applications are simply installed on a Citrix server and made available to groups of users using Active Directory permissions. Citrix technology ensures that the applications behave nearly identically to how they would if they were installed locally.
Easy integration with local applications	Yes, but requires Java Applets or Active X controls	Yes	The smart client exploits local processing and resources to manage multiple concurrent connections to information sources and delivers the performance needed for OLAP-based calculations that Prophix performs.
Real-time shared data	Yes	Yes	Prophix smart client with Citrix: because of the low bandwidth requirements, as opposed to most thin-client applications, performance is consistently as good as or better than running software locally when using Prophix.
Real-time calculations	Slow	Yes	Smart client applications use standard Internet protocols, standard languages, standard database back-ends, and run in a standard Windows environment, so connecting to other applications on your desktop is simple and straightforward.
Offline capability	No	Yes	Everyone works off the same complete and up-to-date set of central data. Information can be easily shared with customers and suppliers as desired.
High performance, low bandwidth, and high latency environments	No	Yes	In a thin client database, connectivity is not maintained. A connection needs to be established to the database every time a change is committed or the screen is refreshed. Application performance may suffer as this puts a very heavy load on the database server. Also, users may lose the work in progress if the user hits the back or forward buttons.
Multi-threaded	No	Yes	In the current product version, an Internet connection is required to utilize the Prophix smart client; however, offline capabilities exist to access Prophix data. Prophix supports the use of offline reports and data entry templates for users who do not have direct access to the corporate network or who do not have Prophix installed on the machine.
Easy deployment	Yes	Yes	Only data is sent, as needed, between the client and server. Intelligent data caching further improves application performance.
Little or zero IT support	Yes	Yes	Prophix smart client with Citrix: Citrix Presentation Server only transmits mouse clicks and screen updates over the network, requiring very little bandwidth (as low as 30k per user). Users will see an immediate improvement in the performance of Prophix over the WAN.
Deployment to a wide variety of clients with varying capabilities	Yes, but may require a single browser	Yes	Prophix smart client takes advantage to split the application into multiple threads to improve application performance.
	Yes	Yes	All users automatically use the same application version. Upgrades are incremental, seamless, and performed automatically as needed. This reduces the time to deploy. Can easily be rolled back without effort. Prophix uses ClickOnce deployment technology, which makes deployment as simple as updating files on a server and clicking a link in a webpage.
	Yes	Yes	End users can efficiently use central data with their desktop PCs without special configuration or connectivity requirements.
	Yes	Yes	Prophix can be deployed on any platform that supports the .NET framework.



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About Prophix

Prophix Software is a leading developer of innovative performance management solutions designed to automate financial and operational processes, making companies more profitable and reducing their risks. Thousands of finance leaders in nearly one hundred countries use Prophix to empower their organizations and gain valuable insight into business performance.

Prophix and its partners deliver superior value by combining high-end functionality with low cost-of-ownership and fast implementations. With powerful and adaptable solutions built entirely on the Microsoft SQL Server stack, Prophix streamlines budgeting, planning, reporting, consolidation, and more.



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