



## White Paper

GUI Virtualization and Web Integration Solution for  
.Net, Delphi and ActiveX

# 1. Introduction

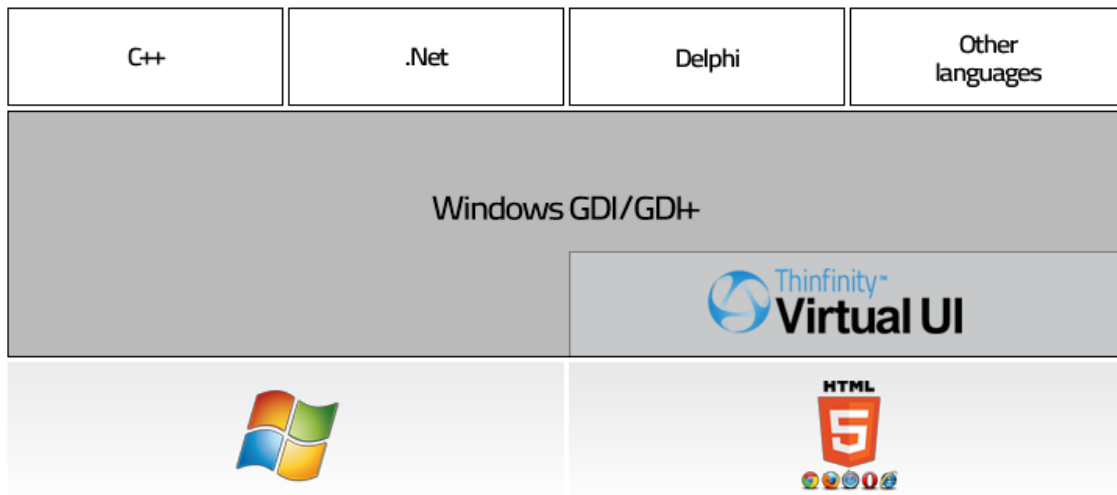
Thinfinity® VirtualUI™ empowers developers who are confronted with a need for deep modernization of existing Windows-based apps with a dual-approach tool: **instant GUI remoting** and **full web integration**.

Thinfinity® VirtualUI™ is a development solution that:

- Transforms existing Windows-based applications into dual-platform (desktop/web) ones.
- Enables the integration of those Win32/Win64 apps into a web environment, allowing them to seamlessly interact with resources available in the cloud.

**With Thinfinity® VirtualUI™ you can:**

- Instantly create dual-platform Windows/HTML5 Apps built in .Net, Delphi, Visual C++, Visual Basic or others.
- Enable full web integration to Windows apps, by adding two-way interaction between the application and the web page.
- Deliver applications instantaneously as cross-browser, cross-device web apps.
- Immediately upgrade and modernize Windows applications.
- Expand application availability to reach a wider user base.
- Deliver your software to customers as a managed service on the cloud.
- Dramatically reduce the Total cost of ownership (TCO), by slashing IT costs and simplifying administration.



## 2. Techonology

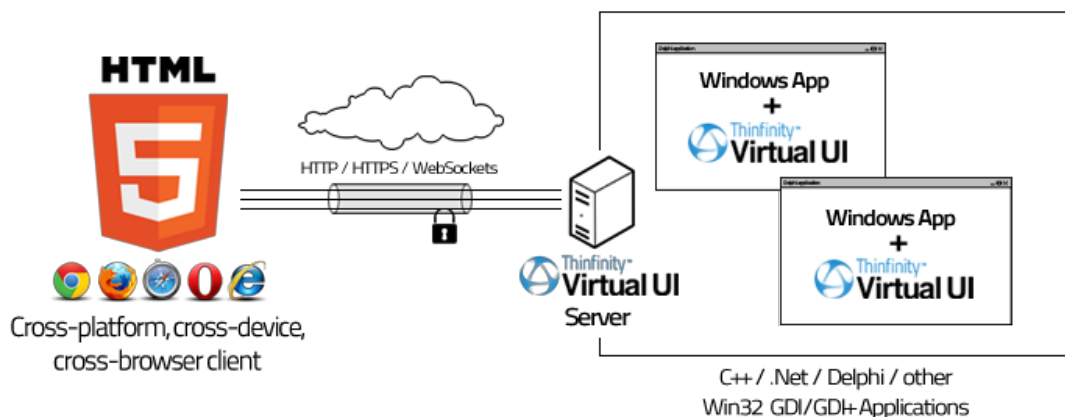
### 2.1 Architecture

Thinfinity® VirtualUI™ is composed of:

- **Server and Client Software**

1. Thinfinity® VirtualUI™ Server is an http(s)/websockets server that communicates with the Windows app through the Thinfinity VirtualUI SDK libraries, taking the GDI/GDI+ redirection commands to the web browser.

2. Thinfinity® VirtualUI™ Javascript Client is the responsible for the actual drawing on the web-browser canvas and interacting with the end-user mouse and keyboard events.



- **Server and Client SDK**

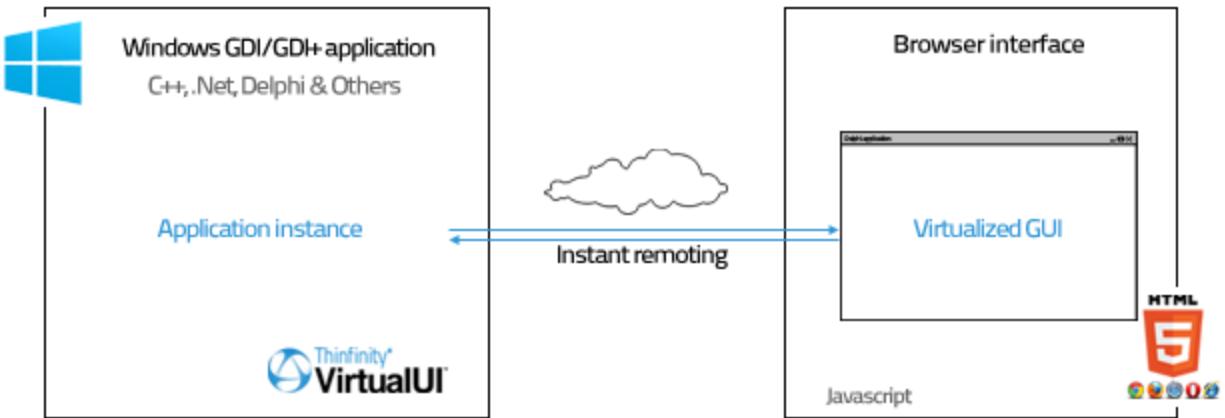
3. Thinfinity® VirtualUI™ Remoting SDK is a set of libraries that plugs into the developer's programming framework to redirect Windows calls and drawing commands to the remote HTML5 canvas.

4. Thinfinity® VirtualUI™ JsRO is an object remoting framework devised to ease the integration between the windows application and the web.

## 2.2. Instant Remoting and GUI Virtualization

### Instant GUI Virtualization

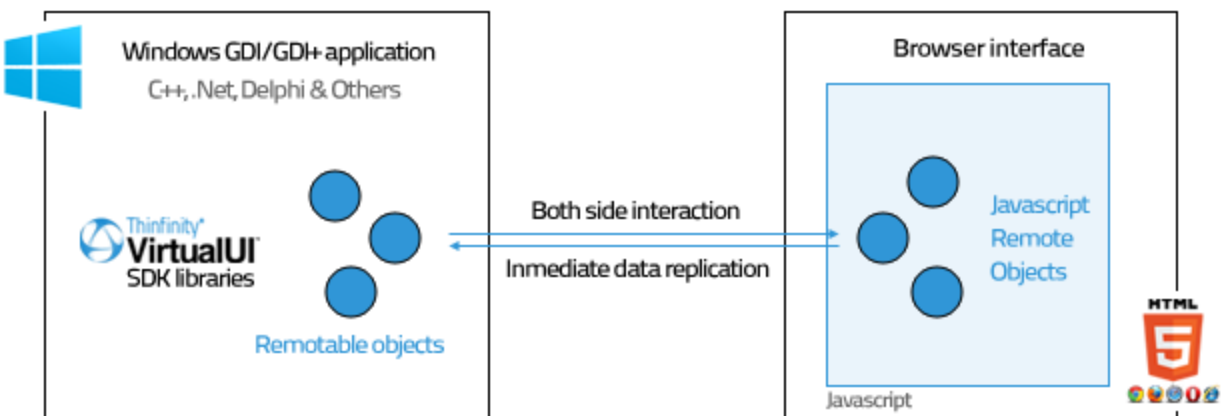
Simply by adding Thinfinity® VirtualUI™ library to the source project and then typing in a single line of code, in-house applications are available for instant remoting from any modern web browser, on any OS and device.



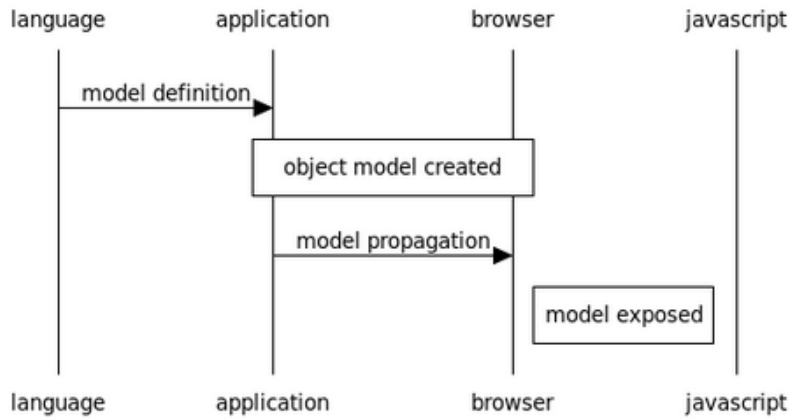
While the instance runs in a Thinfinity® VirtualUI™ Server, the virtualized GUI is shown on the web browser, connected through WebSockets with fallback to AJAX.

### Windows and Web Integration

The interaction between the application and the web page can be increased by making small changes in the application that will allow you to expose application data to the browser side and viceversa.

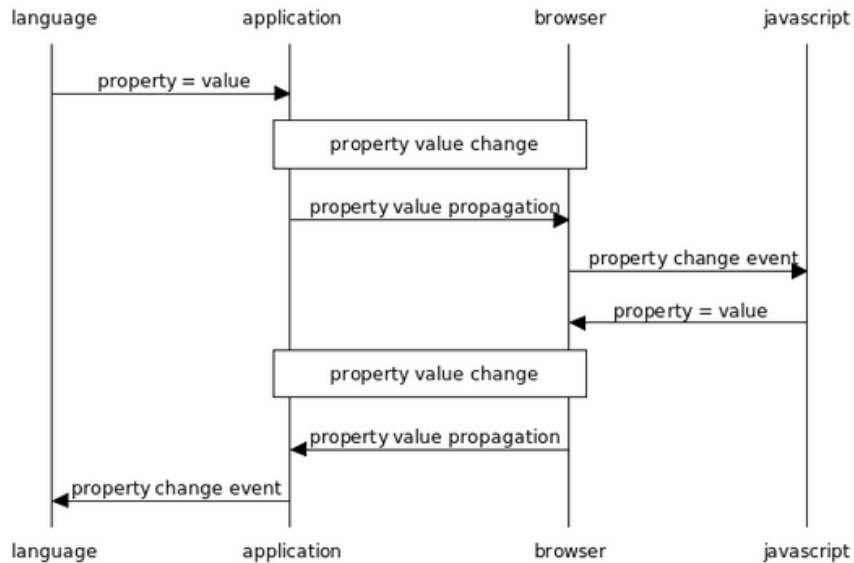


This is achieved by using the **Javascript Remote Objects** framework (jsRO) included in Thinfinity® VirtualUI™. It allows you to create remotable server objects, with their properties, methods and events mirrored to the web as native javascript objects, enabling both-side interaction and immediate data replication:



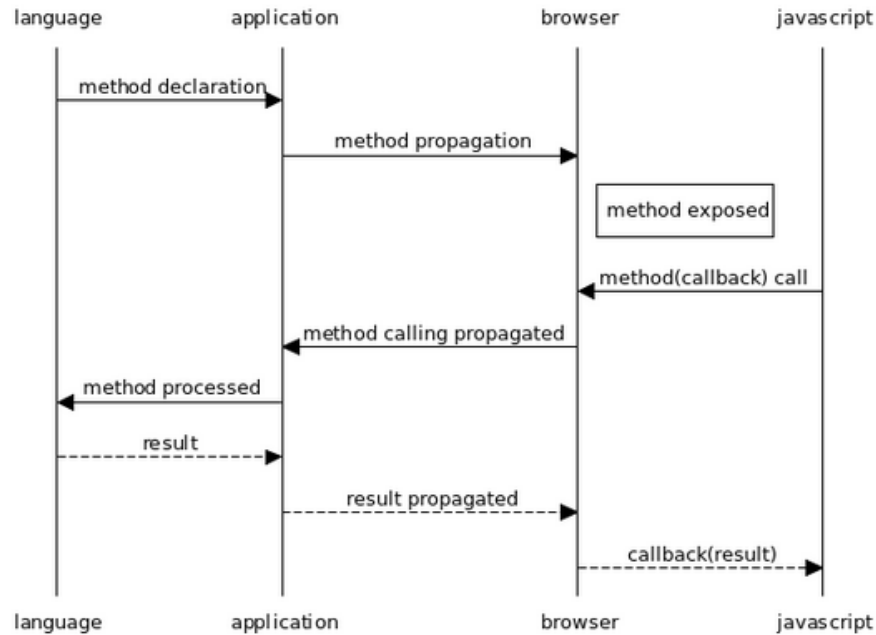
## Object Properties

The jsRO object properties are synchronized in both the application and the browser side. When a property value changes on one end it is spread to the other, firing an event handler that lets you take an action, if necessary.



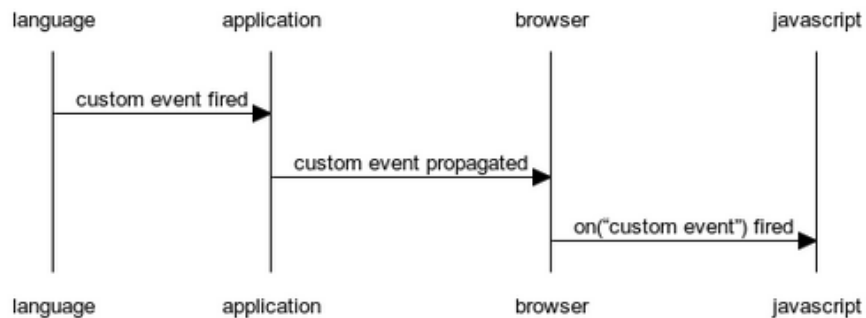
## Remote methods

When a remote method is called on the browser side, its method handler callback is called on the application. Additionally, the returned result value can be processed by a javascript callback.



## Remote events

Remote events allow developers to submit non-visual changes from the application to the javascript side. When the application fires an event, it is transmitted to the browser, enabling the javascript to receive and process it.



## 3. Requirements

These are the requirements for each component of the Thinfinity® VirtualUI™ architecture:

### Development machine

- Operating Systems:
  - Microsoft Windows 7 32bit / 64bit
  - Microsoft Windows 8 32bit / 64bit
  - Microsoft Windows Server 2012 32bit / 64bit
- A development environment
  - Microsoft Visual Studio
  - Delphi 5 to XE7
  - Microsoft Visual Basic
  - PowerBuilder
  - other
- The application project must use GDI or GDI+ calls. .NET WPF projects are not supported yet.

### Server machine

- Microsoft Windows 8 32bit / 64bit
- Microsoft Windows Server 2012 32bit / 64bit

### End-user machine

- Any operating system and/or device with a HTML5-compliant Web Browser
- Any modern Web Browser (HTML5-compliant) such as IE10/11, Chrome, Safari, Firefox, Opera, etc.

## 4. Conclusion

Thinfinity® VirtualUI™ allows developers to:

- Instantly upgrade and modernize Windows-based applications.
- Create dual-platform Windows/HTML5 applications effortlessly, by adding only one line of code to their existing projects built in .Net (WinForms), Delphi, Visual C++ and others.
- Fully integrate their Windows application into a web application using the *Javascript Remote Objects (jsRO)* framework included in Thinfinity® VirtualUI™.
- Expose application data to the browser side and vice versa, adding interaction between the application and the web page.
- Inspect and interact from the browser with the remotable objects created in their application, using *VirtualUI Development Lab*.
- Expand applications' availability by delivering them normally on a Windows environment, or by installing them on a Thinfinity® VirtualUI™ Server environment to be accessed remotely from any HTML5-compliant Web browser.
- Reduce dramatically the total cost of ownership (TCO), by slashing IT costs and simplifying administration, avoiding costly virtualization/remoting solutions.

### Complete Reference:

Find the complete reference on the **Thinfinity® VirtualUI™** Guide under the links:

### Product Page:

<https://www.cybelesoft.com/Thinfinity/VirtualUI/>

### Online Manual:

<http://www.cybelesoft.com/helps/thinfinity/virtualui>

### Demo Tutorial:

<http://cybelesoft.com/blog/integrate-your-delphi-application-with-the-web-tutorial/>