

Thin Client Technology

What is a Thin Client?

A thin client is a computer or terminal that is used to present a Graphical User Interface (GUI) to a user as if the applications are installed locally. In simplistic terms the users are actually presented with a series of images from a centralised server (or server farm) and those images behave just like the underlying applications themselves to the extent that the user may not be aware that they are not accessing the software directly.

Thin client technology has facilitated global technology access for a number of years, and enables organisations to facilitate remote access to systems without the overhead of installation management and heavy network overheads

Well known vendors who provide thin client technology include Citrix, VMWare and Microsoft.

The Challenges for Robotic Process Automation

Robotic Process Automation (RPA) relies on a model of the target application in order to interface with the various visual components, such as edit boxes, tables and buttons. With a thin client application, there is no underlying model, as the user is simply seeing an image of the target system.

With this in mind there are two approaches that can be considered where end users typically interact with applications via thin client technology:

- **Deploy Blue Prism on the Target Environment** - By installing Blue Prism into the target environment it is possible to configure the robots to communicate with the applications through conventional approaches which will both speed up development time and reduce process run times. Consideration will still need to be given to how the robots will be initialised and this should be confirmed as part of the implementation project.
- **Use Surface Automation** - This is best suited to situations where it is not appropriate to deploy Blue Prism into the environment where the line of business applications reside. In this model the robots interact with a series of images rather than the technology layer that underpins the respective applications. To resolve this, thin client automations require that the applications be abstracted (or de-constructed) into a virtual model against which the robots can perform activities.

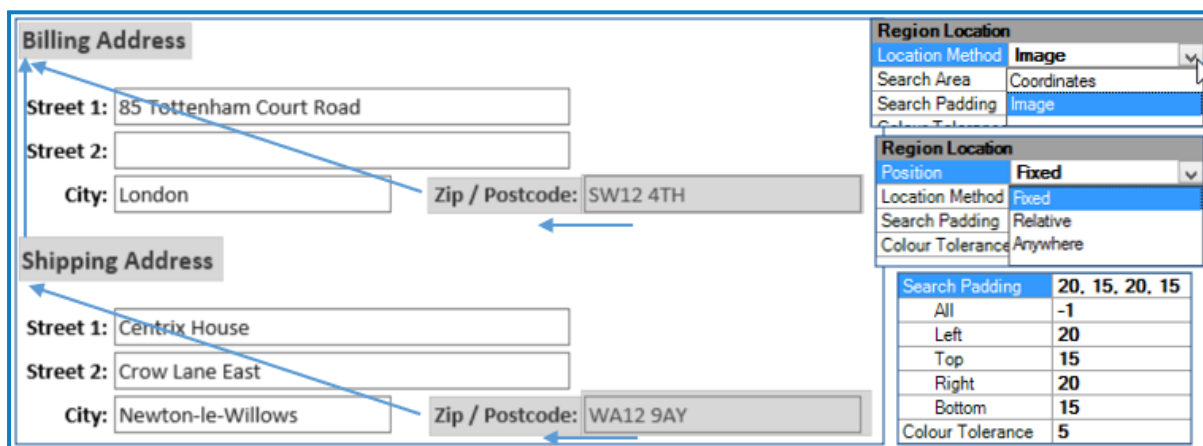
This data sheet focuses on the features provided for projects where Surface Automation is selected as the appropriate method for interacting with third-party applications.

Creating the Model

Blue Prism provides a specific module and technology platform targeted at making thin client interfacing robust, scalable and accurate - our region editor enables flexible reference points to be mapped and anchored relative to the application's model, not the user's desktop.

The Region Editor

In order to create the model, Blue Prism's Region Editor is used to create reference points anchored within the parent window, and the developer is prompted to describe their behavior, for example as regions, images, lists or grids of information. Once defined, how the element is searched for at run-time can also be specified. For example, regions defined as images can be searched for anywhere within the target application, within a defined area (with optional search padding) or via an anchor relationship to a related region.



Blue Prism can then interact with these regions in different ways – selecting them, entering data into them or verifying that they have not changed since configuration. Regions which have been set to use a co-ordinates based location method are intended for use with elements that contain dynamic content such as text, check boxes and combo-boxes. Image based regions are best used with elements with static content such as labels, icons and buttons.

Reading Data

Reading from an application rendered using thin client technology also requires an innovative approach.

Unlike applications that are running on the user's machine, application data is inaccessible using traditional approaches because what you see is simply an image of a remote application.

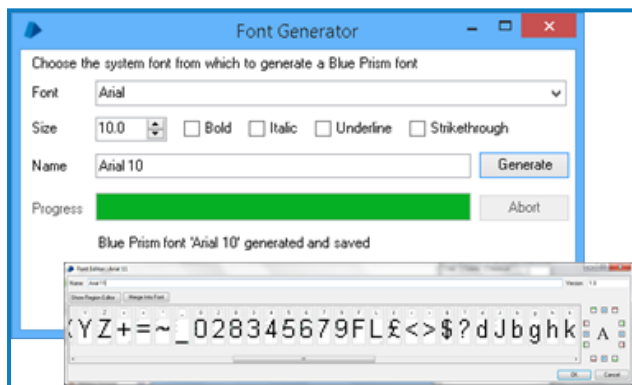
Two specialist Surface Automation approaches are provided to allow Blue Prism to precisely map the textual content displayed on-screen into data that can be read, manipulated, used as reference points and stored.

Character Recognition

Identifies the fonts used by the thin client system and generates a number of font algorithms that are used to precisely map the characters.

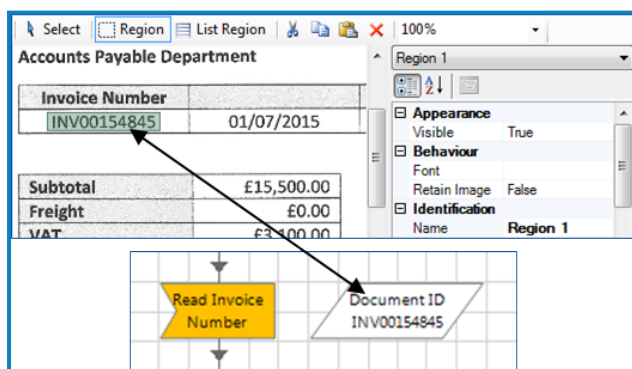
In order to interact with thin client technologies it is necessary that ClearType (font smoothing) is disabled on the session.

Due to the reduced bandwidth requirements, this configuration is typical of many thin client deployments.



Optical Character Recognition

An OCR engine is available within Blue Prism for situations where it is not appropriate to use the native character recognition engine to interact with on-screen text including scenarios such as where smoothed-text is enforced. The functionality leverages pattern matching and complex, language-based text recognition making it also suitable for interacting with scanned, or otherwise-restricted, copies of electronic documents.



Shared Clipboard

The shared clipboard should also be enabled and available to the virtual worker as it allows additional integration options.

Extended Features and Benefits

- Visual pattern matching techniques are used to identify key user interface elements such as buttons, tables, lists, icons, drop-downs, edit fields, etc.
- The use of different UI elements as anchor points means that a flexible, contextual approach can be taken to dynamically generated user interfaces, e.g. inferring the location of an edit field from an adjacent label.
- Visual references to key UI elements can be captured and retained in Blue Prism in the form of images. Where, for example, the sequence of icons on a toolbar changes, Blue Prism automations can adapt by searching for a reference icon of interest within a defined portion of the screen.
- Edge detection techniques are used to differentiate one portion of the user interface from another. For example, where pop-up windows appear to display messages.
- RGB colour variances can be specified for images in the Region Editor. This allows for tolerance in the values at run-time if the quality of the image has been degraded due to artefact compression.

Training and Accreditation

Interfacing with thin client technologies requires specific knowledge and skills and a specially designed training module is available from Blue Prism focused specifically on best practice techniques.

Disciplines such as design, development, testing and on-going support and maintenance are included in the accreditation pack, empowering developers to approach this particular type of implementation with the skills required to implement a robust, accurate and extensible framework for robotic automation.