



User Guide Part 4

Application Designer

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1 Overview

1.1 HMI Designers

1.1.1 Mimic Designer

Design once view in Windows Thick Client or HTML 5 enabled browser
Screens are saved into the Data Model in the Status Server
Zero deployment required
Limited code behind capabilities
Screens viewable in the Model Browser
Screens embeddable into 3rd party applications using WPF StatusRuntimeControl
Supports Custom WPF controls

1.1.2 Application Designer

High performance
Unlimited extensibility with full .NET code behind in C# or Visual Basic with intellisense
Screens compiled into a .NET assembly and viewed by a Windows Thick Client
Automated screen scheduling for digital signage and other applications
Supports Custom WPF controls

This document outlines the design and creation of graphical interfaces using the Status Enterprise Application Designer. The Mimic Designer is discussed in Part 3 – Mimic Designer

For more information, frequently used terms, definitions and abbreviations, please see Part 1 – Overview and Concepts.

1.2 General

As with the Mimic Designer, the Application Designer is used to create screens (mimics) with graphics and user interface controls, and attach those graphics and controls to data in the Object Model with data bindings. Unlike the Mimic Designer, the Application Designer creates mimics as Visual Studio .NET projects that can be modified and extended using Visual Basic or Visual C#. This allows users to extend the functionality of the application to meet any possible custom requirements of usability and functionality.

2 Shared Technology with the Mimic Designer

The user experience in working with the Application Designer is extremely similar to that of the Mimic Designer. Much of the technology used in the Mimic Designer is the same technology used in the Application Designer.

In order to reduce the amount of documentation and avoid duplication, the documentation for the Application Designer will only discuss what is different from the Mimic Designer. In general, the graphics editing and data binding experience is identical. Mimic creation and deployment is different.

The Documentation for the Mimic Designer is located in Part 3 – Mimic Designer

2.1 What is the Same

- Adding Controls
- Document Tree
- Toolbox
- Property Panel
- Resources Panel
- Preview Window
- Activity Log
- Icons – for graphic editing
- Keyboard Shortcuts
- Data Binding
- Graphic Design Capabilities

2.2 What is Different

- Creates a Project of Mimics instead of editing Mimics individually
- Projects are compiled into a .NET assembly, they are not stored in the data model of the Status Enterprise Server
- Screens are higher performance than Mimic Designer
- Application Designer Projects are viewed by Windows thick client only
- Application Designer has extensive .NET code behind capabilities with C# or Visual Basic
- No HTML 5 support with Application Designer

3 Project Creation

3.1 Getting Started

When the Application Designer is first opened, you will be presented with the Status Server Login dialog. You can login using the default settings or configure them to your liking. For more information on Status Server login settings, see Part 1 – Overview and Concepts.

The screenshot shows the 'Status Server Login' dialog box. It has a title bar with the text 'Status Server Login' and a close button. The dialog is divided into several sections:

- Login:** Contains two text input fields. The 'Username' field contains the text 'Administrator'. The 'Password' field is empty.
- Advanced Settings:** A section header with an expand/collapse arrow.
- Authentication Settings:** Contains two checkboxes: 'Log on as current user' (unchecked) and 'Anonymous Login' (unchecked).
- Server Information:** Contains a text input field for 'Endpoint Url' with the value 'opc.tcp://WS50-PC:62542/StatusEnterprise' and a browse button (three dots).
- Certificate:** Contains a text input field for 'Certificate' and a browse button (three dots).
- Security Settings:** A section header with a collapse arrow.
- Misc Settings:** A section header with a collapse arrow.

At the bottom right of the dialog, there are two buttons: 'Connect' and 'Cancel'.

Figure 1 - Login Dialog

3.2 Creating a Project in the Application Designer

A Mimic created in the Mimic designer is saved as a single .xaml document, in the Application Designer we create a project. These projects can contain many mimics.

To create a project, select New Project from the File menu or click on the <New Project> icon.

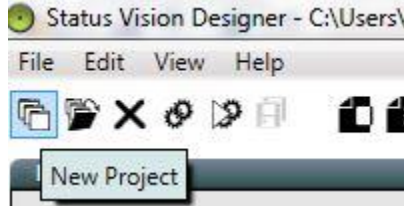


Figure 2 - New Project Icon

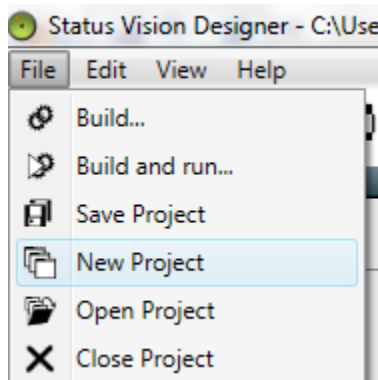


Figure 3 - New Project Menu Item

The New Project dialog box will appear, giving you a choice of scripting languages upon which to build the project. Choose either Visual Basic or Visual C#. Name your project and choose a location where you would like it to be saved. Projects are saved on your local machine, projects saved on the network are not supported.

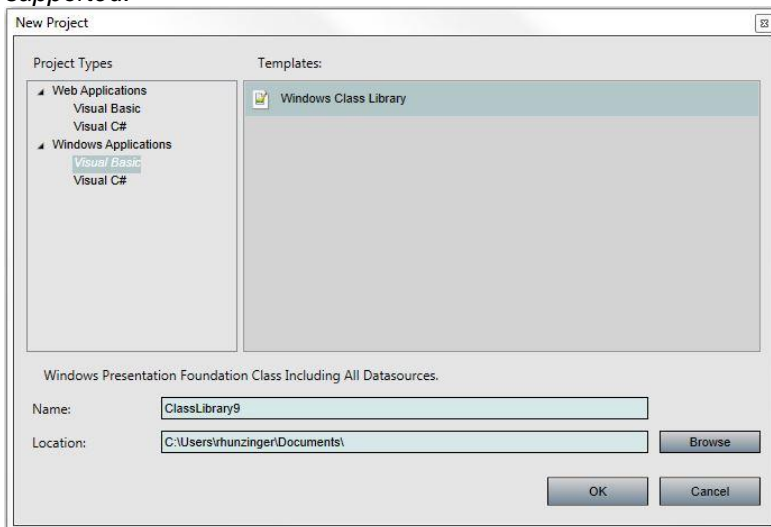


Figure 4 - New Project Dialog

The Project Tree will appear in a panel to the right, containing a collapsible hierarchical list of all files associated with the current project.

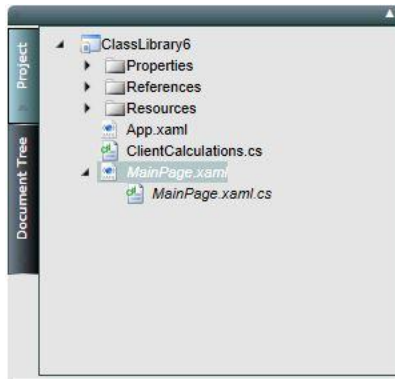


Figure 5 - Project Tree

The XAML (Extensible Application Markup Language) documents contain the user interface description of each screen in the project, these are the Mimics. The .cs and .vb. files are for code-behind and do not need to be edited unless you want to extend your application. The MainPage.xaml file is the main page for the application. Double click on MainPage.xaml to reveal a visual design surface on which to create your graphics.

The MainPage is normally used to navigate to different screens in your project.

3.3 Toolbar Icons

The Application Designer toolbar provides a number of icons for performing common tasks quickly and easily. Some icons are related to file management, while others are for manipulating graphics. Some icons are contextual and may be grayed out at certain times. If an icon is not grayed out, hovering your mouse cursor over it will reveal a Tool Tip to indicate the icon's purpose.



Figure 6 - Application Designer Toolbar

3.3.1 File Management Icons

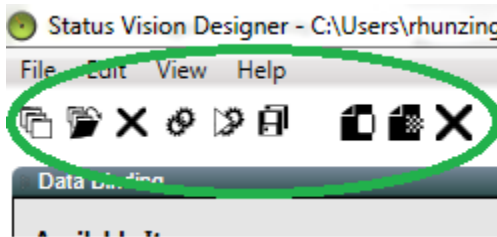


Figure 7 - Application Designer Project and File Management Icons

The icons grouped on the far left of the toolbar are used to provide various file management functions:









-  **New Project** – click this icon to create a new project
-  **Open Project** – click this icon to open a previously created project
-  **Build** – click this icon to build the current project
-  **Build and Run** – click this icon to build the current project and open it in Runtime
-  **Save Project** – click this icon to save the current project
-  **Export XAML** – click this icon to export the raw XAML that describes your mimic
-  **Export Raster** – click this icon to export your mimic as an image
-  **Close** – click this icon to close the mimic currently on your design surface

Figure 8 - New Project and File Icons

3.4 Saving a Project

To save your Project in Application Designer, you can either select Save Project in the file menu or click on the <Save Project> icon on the toolbar.

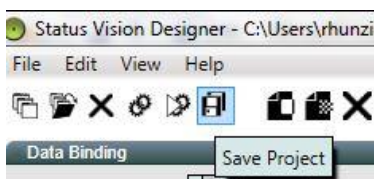


Figure 9 - Project Save Icon

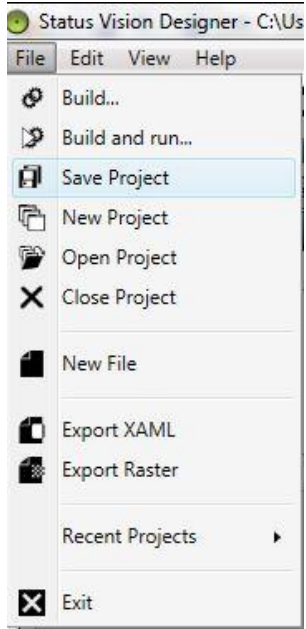


Figure 10 - Save Project Menu Item

You can also use the keyboard shortcut Ctrl + S to save. Whichever option is chosen, Application Designer will save your project in the location and under the name specified when the project was first created.

4 Mimic Creation

4.1 MainPage

When a project is created, one mimic is created by default. This mimic is the MainPage mimic. It is used for navigating to other mimics in your project. It is a regular mimic, not a template.

4.2 Creating a Mimic

To create a new mimic in the project, right click on the project in the Project Tree and select 'Add New' or from the Menu select <File><New File>.

The first dialog to be displayed allows you to create a regular mimic or a mimic template. If creating a mimic template, you will need to also select the Type that the mimic will be associated with.

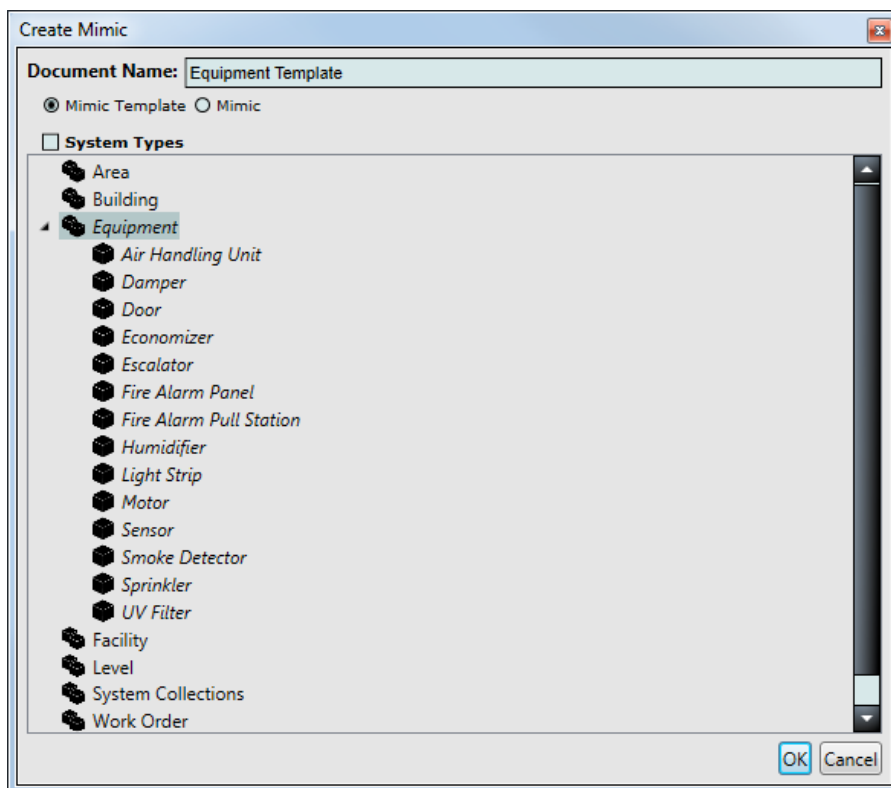


Figure 11 - Create Mimic Dialog

After you select your mimic type, a dialog box will be displayed where you will select the size and type of canvas for your mimic.

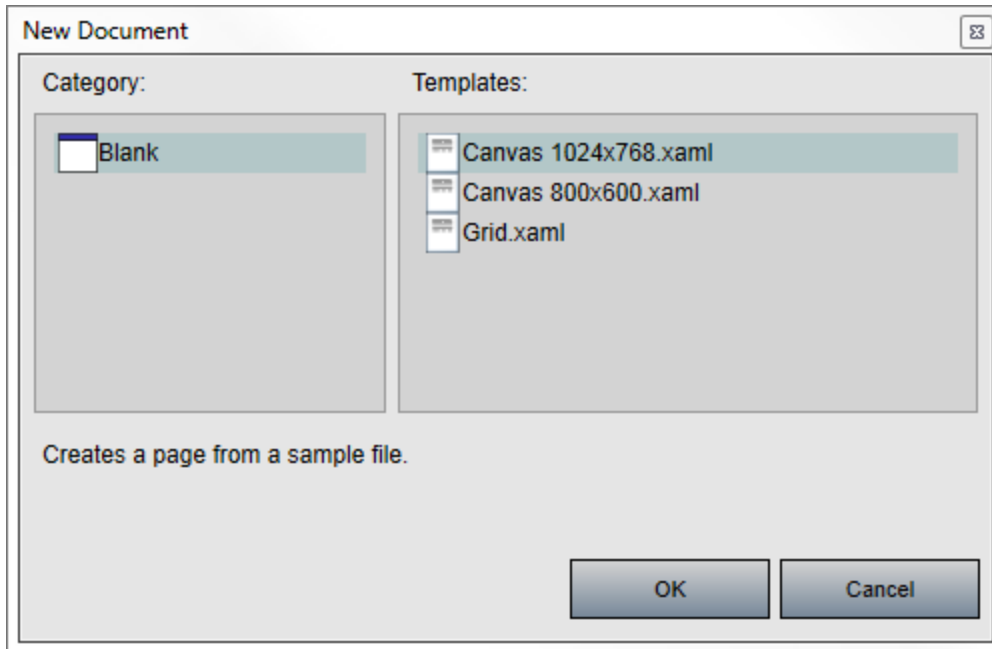


Figure 12 - Select Document Type Dialog

Your mimic is now created and you can begin to add controls to the design surface.

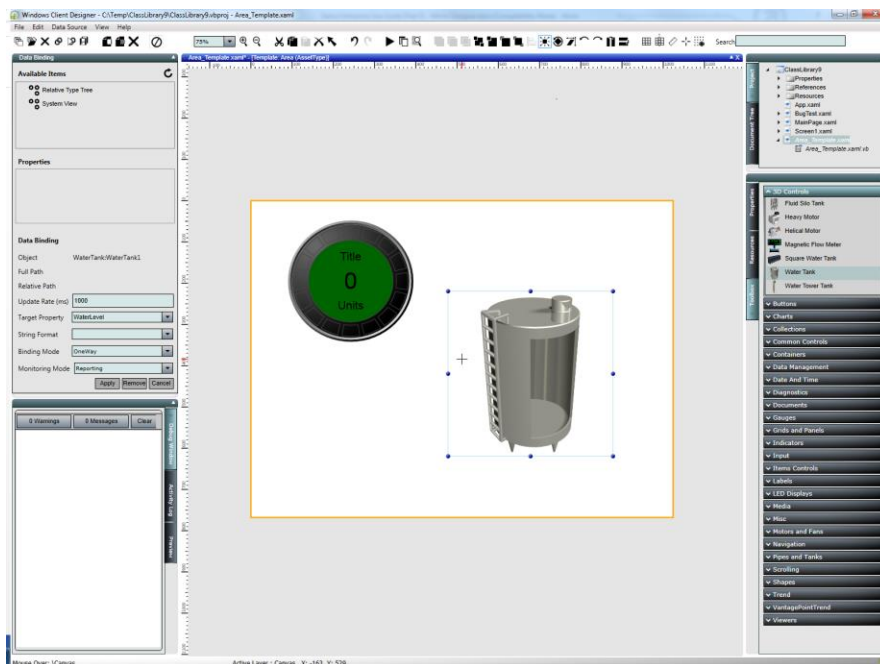


Figure 13 - Screen Shot New Mimic

4.3 Data Binding

If your mimic is a regular mimic, you will be able to bind to assets through the System View in the assets tab.

If your mimic is a template, you will normally bind to properties through the Relative Type Tree, this will allow your bindings to work with any object that matches the template type. Bindings through the System View are fixed, and always tied to one particular asset.

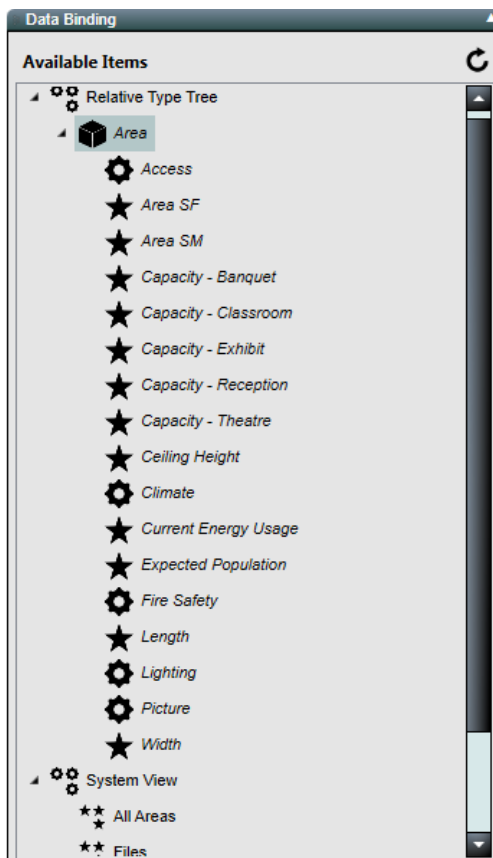


Figure 14 - Data Binding Panel in the Designer

4.4 Building and Test Running a Project

To Build and run your project, select the Build and Run icon from the toolbar.

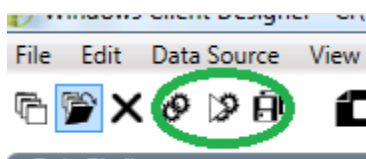


Figure 15 - Build and Run Icons

Your project will be compiled and the Application Client that hosts your project will be started. If you have a mimic up on the screen, the mimic will be displayed. Mimics that are templates will not have any data in test run, because they have not been associated with an asset. Regular mimics will display data. If you have no mimics open in the designer when you start test run, the application will prompt you for a screen to open.

5 Deploying a Status Enterprise Application

5.1 Using the Application Runtime

Windows projects created using the Status Application Designer are compiled as a .NET assembly that is hosted by the Application Runtime when deployed. The workflow is as follows:

Create a Status Application.

Compile your project into a .NET assembly using the Application Designer.

Create a runtime configuration file using the Application Runtime Configuration Utility. Use your .NET assembly in that configuration.

Start the Application Runtime and load the configuration file.

5.2 Project Files

The files for your project are located in the directory you specified when your project was created, these files are only needed to open and edit your project.

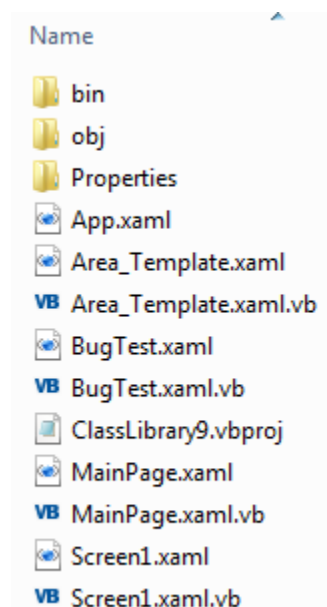
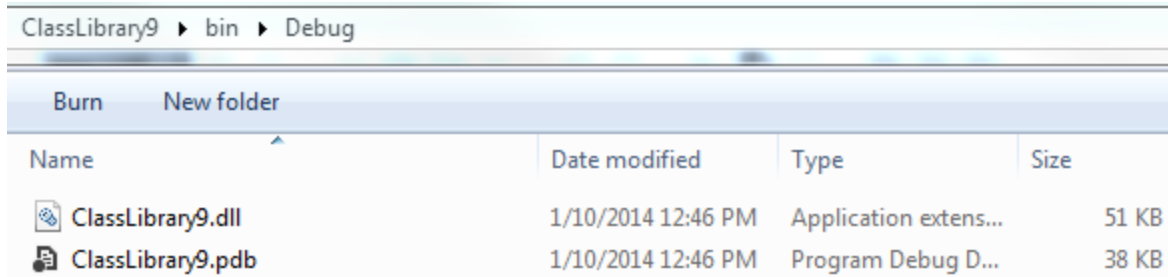


Figure 16 - Application Project Files

The compiled .NET assembly containing your application and mimics is located in the bin directory (application assembly).



Name	Date modified	Type	Size
ClassLibrary9.dll	1/10/2014 12:46 PM	Application extens...	51 KB
ClassLibrary9.pdb	1/10/2014 12:46 PM	Program Debug D...	38 KB

Figure 17 - Output files generated when building a project.

5.3 Creating a Deployment Configuration File

Start the Application Runtime Configuration Utility. Select the application assembly that was output from the Application Designer when your project was compiled, and the mimic that you would like to have displayed when the runtime starts.

Other options that can be configured under the Startup tab include:

Title – The title that will be displayed on the title bar of the window.

Window Height – A fixed window height that will be used if 'Is Full Screen Enabled' is unchecked.

Window Width – A fixed window width that will be used if 'Is Full Screen Enabled' is unchecked.

Window Position – Determines the placement of the window on your screen if 'Is Full Screen Enabled' is unchecked.

Is Full Screen Enabled – Determines whether the runtime client will open your project in full screen mode.

Stretch Background – Stretches the background of the project to cover the entire client space.

Autosize – If selected, will wrap your project in a viewbox so that the content will scale when you resize the window.

Disable Windows Key – If selected, the runtime client cannot be minimized or closed by the Esc key. The only way to close the client is by pressing Control-Alt-Delete and stopping the client process. If you are using a remote desktop, press Control-Alt and End to end the process.

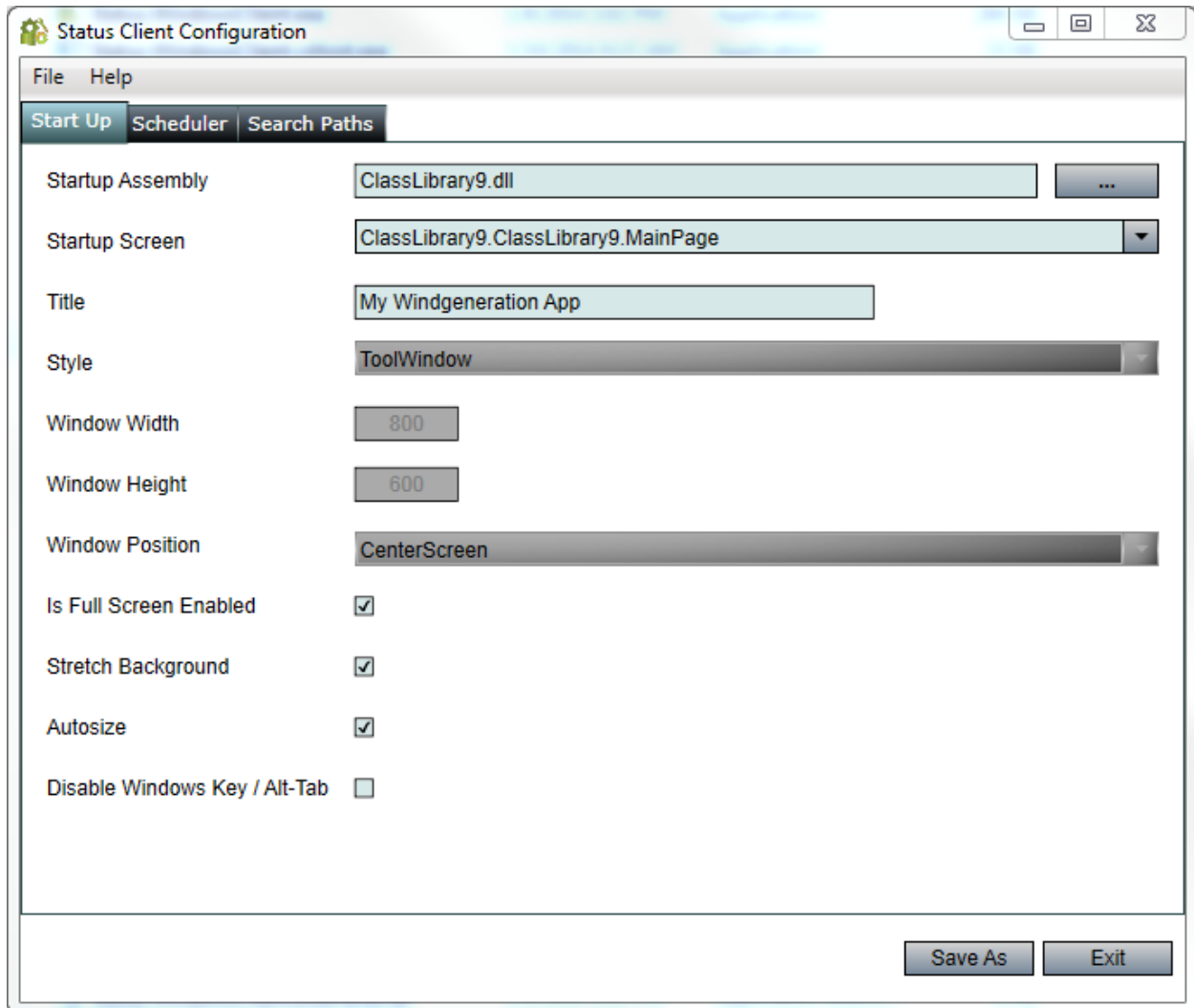


Figure 18 – Application Runtime Configuration Dialog

You can also use the scheduler tab to have the runtime cycle screens automatically. The Scheduler allows you to configure the Application Runtime to cycle through specified screens at a pre-determined time interval. This can be useful for digital signage applications or any other application where a series of screens should be displayed according to a scheduled program.

If you are linking to content in other application assemblies published from the Application Designer using Navigation controls, the paths of these additional assemblies will need to be added to the list of Search Paths. When navigating to a screen in another assembly, Status uses these search paths to resolve the location of the specified assembly. Select the <Search Paths> tab to reveal this option.

Save your config file, it is often a good idea to save it with your application assembly.




Name	Date modified	Type	Size
 ClassLibrary9.dll	1/10/2014 12:46 PM	Application extens...	51 KB
 ClassLibrary9.pdb	1/10/2014 12:46 PM	Program Debug D...	38 KB
 StatusClientConfig.xml	1/2/2014 3:35 PM	XML Document	2 KB

Figure 19 - Config file saved with the project assemblies.

5.4 Running the Application Runtime

Start the Application Runtime, it will prompt you for your configuration file. Select the file you saved above.

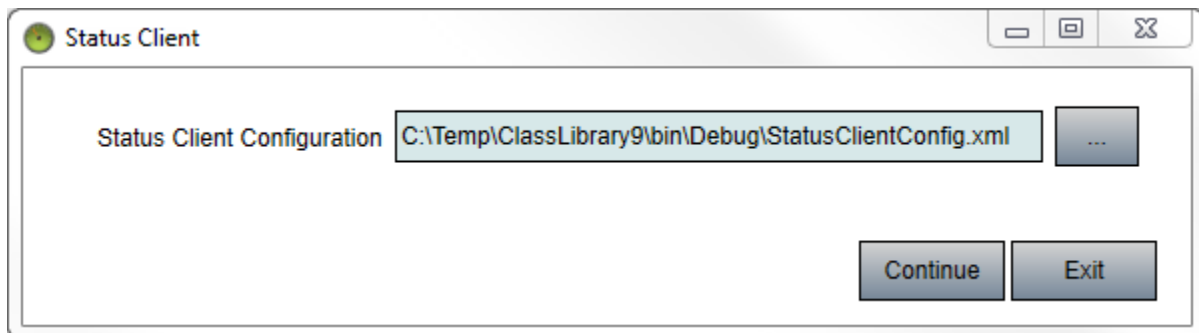


Figure 20 - Select Configuration File Dialog Box

Select 'Continue' and the Application Runtime application will load your assembly. The Application Runtime will open either the screen you designated as your main screen or the first screen configured in the Scheduler.

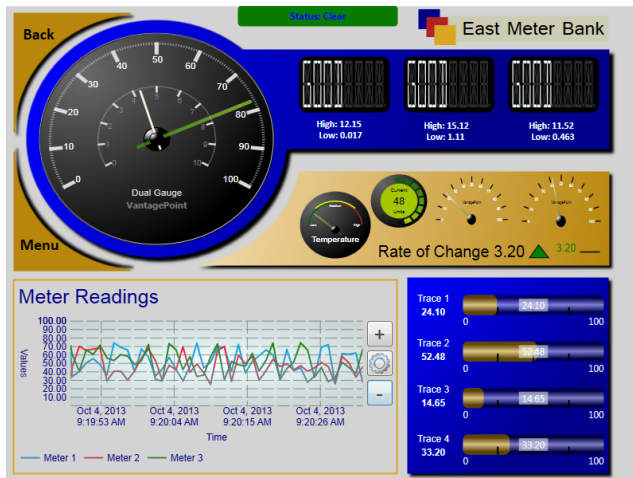


Figure 21 - Status Application in the Application Runtime

If you have configured data bindings, your screens in runtime will be updated with live data. Any navigation controls you have placed on your screen will be active, allowing you to navigate between any of the screens that were included during the mimic design.

5.5 Deploying to other Machines

In order to publish your screens to other users, the users will start the Application Runtime on their machines, they will need only your application assembly and configuration file in order to run the project. Application assemblies and the corresponding configuration files can be placed on a network share.

6 Additional Information and Support

For more information in using Status Enterprise, please visit us at www.scadauniversity.com. This will give you access to instructional videos, documentation and our online forum. You can also email B-Scada support at support@b-scada.com.



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