

# Report

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## I. Introduction

Geographic Information System(GIS) and maps designed for the Web as such: Google Maps, Google Earth are now very popular and demanding ever-improved application experiences. Moreover, the Web-based GIS applications go beyond the single platform. The current Web technology is expected not only to deliver the user experience, but also required a tool to enable the user deliver the content quickly and support multiple browsers and platforms. ArcGIS API for Microsoft Silverlight is that kind of tool.

The primary purpose of API for Microsoft Silverlight is to make it simple to create a rich mapping with GIS functionality for Desktop and Web applications.

To understand deeply about how to adding maps and GIS functionality to Silverlight applications, It is beneficial to understand about the ArcGIS and Microsoft Silverlight.

### **What is ArcGIS?**

ArcGIS is a system that lets you easily author data, maps, globes, and models on the desktop and serve them for use on a desktop, in a browser, or in the field via mobile devices, depending on the needs of your organization. If you are a developer, ArcGIS gives you a tool for building your own application. You can use ArcGIS API for JavaScript or Microsoft Silverlight to build high-performing, engaging web applications that incorporate GIS mapping, editing and geoprocessing functionality.

### **What is Microsoft Silverlight?**

Microsoft Silverlight is a powerful tool for creating and delivering rich Internet applications and media experiences on the web.

### **The ArcGIS for Microsoft Silverlight**

The API provides components to display maps that support multiple map projections, both dynamic and cached (tiled) map services. This tool also allow to

draw the graphics on top of the map(e.g., multipoint, polyline, polygon, symbols, attributes). For example, a graphic resource could be used to hold polygons drawn by a user or display features that satisfy a user-defined query. Often times, GIS web applications need to include geospatial functionality that goes beyond simple map display and interaction. For these sorts of functional needs, the API provides a set of task classes to perform common GIS tasks. These classes allow you easily write application-specific code to extract information from ArcGIS Server services and present that information to your users. For instance, an appliance repair company could use geoprocessing task to generate drive-time polygons to estimate the total length of services call.

The API includes the following tasks:

- **Query:** gets features from map services that satisfy attribute queries.
- **Identify:** gets features from map services that intersect a location.
- **Find:** gets features from map services that contain a particular value in their attributes.
- **Address locator:** gets the location of an address (geocode) or the address of a location (reverse geocode).
- **Network Analysis:** calculates routes and display graphical results and directions.
- **Geometry:** performs geometric operations such as buffering, projecting calculating areas and lengths, and simplifying.
- **Geoprocessing:** does complex GIS analysis by executing geoprocessing models that have been published as geoprocessing services.

## Installation

Requirements:

For the ArcGIS API for Microsoft Silverlight, the following items are required:

- At a minimum, install the following Microsoft products to build ArcGIS Silverlight applications:
  - Visual Studio:
    - [Visual Studio 2010](#) or [Visual Web Developer Express 2010](#)
    - [Silverlight 4 Tools for Visual Studio](#) (add-on)
      - Only Silverlight Version 4 is supported
    - [Expression Blend 4 SDK for Silverlight](#) (also included with [Expression Blend 4](#))
      - Necessary for behavior and Silverlight support
  - Expression Blend:
    - [Expression Blend 4](#)

- Included with Expression Studio editions
- Other products such as [Deep Zoom Composer](#) and the [Silverlight Toolkit](#) are not required for use with the ArcGIS Silverlight/WPF API, but they do offer significant design and development benefits.

## Practice Example

### Creating a map:

To begin, you need to create a Silverlight application in Visual Studio, then do the following steps:

1. Add a reference to the ESRI.ArcGIS.Client.dll in your application.
2. In XAML, add an XML namespace that references the ArcGIS schema for Silverlight/WPF. This schema enables the use of classes and components in the ESRI.ArcGIS.Client, ESRI.ArcGIS.Client.Behaviors, and ESRI.ArcGIS.Client.Toolkit assemblies. The value after the XML namespace attribute "xmlns" defines the namespace identifier you'll use to reference controls these assemblies. In this case the identifier is "esri".

```
<UserControl x:Class="SilverlightApplication.MainPage"
xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
xmlns:esri="http://schemas.esri.com/arcgis/client/2009"
```

3. Optionally, remove the Width and Height attributes in the user control that define the page. This will allow the page contents to fill the browser window.
4. Add the Map control element to a container element in the page. In this example the container is a Grid. Use the ESRI.ArcGIS.Client namespace identifier "esri" to define the namespace that contains the Map control. Give the Map control a unique name using the "x:Name" attribute.

```
<Grid x:Name="LayoutRoot" Background="White">
<esri:Map x:Name="MyMap" >
</esri:Map>
</Grid>
```

5. Add an **ArcGIS Server tiled map service layer** to the map. The map contains a collection of layers referenced by the Layers property. In XAML you can modify the contents of the Layers property using property element syntax. This means you can specify the property name as a child element (for example, Map.Layers) and include the appropriate contents. In this case the appropriate content is a ArcGISTiledMapServiceLayer element which will enable you to reference an

ArcGIS Server cached map service. Define the Url to the map service endpoint and include a unique id for the layer.

```
<esri:Map x:Name="MyMap" >
<esri:Map.Layers>
  <esri:ArcGISTiledMapServiceLayer ID="StreetMapLayer"
    Url="http://server.arcgisonline.com/ArcGIS/rest/services/ESRI_StreetMap_W
orld_2D/MapServer" />
</esri:Map.Layers>
</esri:Map>
```

6. Define a startup extent for the map. Use attribute syntax to define the Extent property on the map. The attribute value is a comma-delimited set of four numbers specifying the min x, min y, max x, and max y values.

```
<esri:Map x:Name="MyMap" Extent="-120, 20, -100, 40" >
```

7. Compile and run your application.



For more examples of using ArcGIS SilverLight, go to:

<http://help.arcgis.com/en/webapi/silverlight/samples/start.htm#Map>