Getting Started with the ArcGIS Server Web APIs

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Agenda

• Overview of Web mapping
• ArcGIS APIs for
  – JavaScript
  – Flex
  – Silverlight/WPF
• Sample Viewers
• How to choose an API
• Resources
Expectations for a Web map have changed

- Consumer mapping sites have raised the bar
- “One-size fits all” Web map will not work
ArcGIS Server

- ArcGIS Desktop
- ArcGIS Server
- ArcGIS Online

Web GIS
- ArcGIS Explorer
- Desktop GIS
- Mobile GIS

Author → Publish → Use

The Web as a GIS platform
ArcGIS Server Development Options

- JavaScript
- Flex
- Silverlight
- Web ADF

- REST
- SOAP

ArcGIS Server
ArcGIS Server REST API

- Simple server-side interface
  - Requests to REST API via HTTP protocol
- ArcGIS APIs utilize REST communication interface
  - REST stands for Representational State Transfer
- Internet browser as a command line

**Base URL**

```
http://sampleserver1.arcgisonline.com/ArcGIS/rest/services/Portland/Portland_ESRI_LandBase_AGO/MapServer/
```

**Operation**

![Operation](image)

**Coordinates of bounding box**

```
bbox=-122.6,45.459,-122.595,45.460
```

**Format of response**

```
&file=image
```
Demonstration

ArcGIS Services Directory

Folder: /

Current Version: 9.31

View Footprints In: Google Earth

Folders:
- Demographics
- Elevation
- Reference
- Specialty
Functionality of ArcGIS APIs

• Mapping
  – Mash up map services from different ArcGIS Servers
  – Intuitive and fast map navigation

• Querying
  – What is here? Water towers
  – Where are water towers? Here, here, and there

• Advanced GIS
  – Routing
  – Geoprocessing services:
    • Spatial reporting, data extraction, and many others
ArcGIS Server API for JavaScript™

Collection of JavaScript classes

- Does not require Web application server (IIS, Apache/Tomcat)
- Compatible with all Web browsers
- No plug-in
- Develop in a text editor
ArcGIS API for Flex™
Collection of Action Script classes

- Popular development environment
- Flash Player installed on most computers
- Cross-browser compatibility
- Develop in IDE (Adobe Flex Builder 3)
ArcGIS API for Microsoft Silverlight™/WPF™

- Growing in popularity
- Silverlight plug-in included in Windows OS and applications
- Cross-browser compatibility
- Develop in IDE (Visual Studio, Visual Web Developer, Expression Blend)
Demonstration

Build A Web Map

ArcGIS Resource Centers

JavaScript API Samples

Samples Overview

These samples demonstrate how to use various features in the ArcGIS JavaScript API. Each sample page contains a live demo, a description of what happens in the sample, and the source code. Watch a video that shows how you can copy the code from the samples to run them on your machine.

The samples are ranked by relative complexity using one, two, or three stars. If you're just learning the ArcGIS JavaScript API, you will be able to better understand the samples if you start with the one star samples and work your way up. In many cases you can extend or combine the samples to create a starting point for your own applications. Watch a video to see how this is done.

The samples use services from the ESRI sample servers (sampleserver1 and sampleserver2) and ArcGIS Online. You can use the services from the ESRI sample servers in your own test applications as you learn the API. You can also use ArcGIS Online layers in your applications. See the ArcGIS Online home page for terms of use.
## Web map customization options

<table>
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<tr>
<th></th>
<th>ArcGIS Web ADF</th>
<th>ArcGIS API for JavaScript</th>
<th>ArcGIS API for Flex</th>
<th>ArcGIS API for Silverlight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Web interfaces</strong></td>
<td>SOAP</td>
<td>REST</td>
<td>REST</td>
<td>REST</td>
</tr>
<tr>
<td><strong>Execution</strong></td>
<td>Client and server side</td>
<td>Client side (pure browser)</td>
<td>Client side (browser and Flash player)</td>
<td>Client side (browser and Silverlight player)</td>
</tr>
<tr>
<td><strong>Development</strong></td>
<td>Visual Studio or NetBeans</td>
<td>Any text editor or Aptana, Visual Web Developer, etc.</td>
<td>Flex Builder or text editor with Flex SDK compiler</td>
<td>Visual Studio or Visual Web Developer</td>
</tr>
<tr>
<td><strong>Languages</strong></td>
<td>.NET (C#, VB.NET) or Java</td>
<td>JavaScript and HTML</td>
<td>MXML and ActionScript</td>
<td>.NET (C#, VB.NET) and XAML</td>
</tr>
</tbody>
</table>
Sample viewers for ArcGIS Server

- Configurable solutions
  - No programming necessary
- Extendable
- Modern-looking
- Available now for JavaScript and Flex APIs
- Strong community of users

...20,000+ downloads!
Configuring the sample viewer

No coding required

- Includes an XML configuration file
- Make changes to the configuration file in a text editor (e.g., Notepad)
  - Point to your data
  - Customize or remove widgets
Extend the sample viewer

*No coding required*

- Find additional sample code and widgets at the Resource Center
- Download and add them to your application
  - Same configuration process as sample viewer
Demonstration

Sample viewers
Industry-focused templates

- Solving common challenges
- Fostering communities of interest
- Starting point for your solutions

- Templates include
  - Geodatabase and basemap
  - Editing tools
  - Web-based operations dashboard
  - Mobile data collection
Choosing an ArcGIS API development kit

• Three options:
  – ArcGIS API for JavaScript
  – ArcGIS API for Flex
  – ArcGIS API for Silverlight

• Applications have different look and feel

• Similar GIS functionality
  – Mapping, querying, advanced GIS
Consideration: Your preferred development platform

- **ArcGIS API for JavaScript**
  - Many free IDEs available (Aptana, Notepad++, TextPad)
  - Good choice for existing ArcIMS JavaScript coders

- **ArcGIS API for Silverlight**
  - Uses Visual Studio or Expression Blend
  - Good choice for existing Microsoft developers

- **ArcGIS API for Flex uses Flex Builder**
  - Good choice for Flash developers
Consideration: Browser plug-ins and compatibility

• Flex and Silverlight utilize browser plug-ins
  – Both are commonly used by websites
  – Consider if your clients are allowed to install

• JavaScript does not require a plug-in
  – Consider browser compatibility issues
  – Refrain from using browser-specific JavaScript
  – Leverage Dojo framework
Consideration: Basemaps from Bing or Google Maps

- All three APIs support Bing basemaps
- ArcGIS JavaScript extensions for Bing Maps and Google Maps API
  - Utilize Bing or Google Maps viewer
Consideration: Look-and-Feel

• Have you looked at existing user sites?
• Do you like the Sample Viewer style?
• Have you talked to others who made this decision?
Get started!

- **ArcGIS Resource Centers**
  - Getting started videos
  - Sample Viewer downloads
  - Templates
  - Samples code

- **RUG Technical Sessions**
  - ArcGIS Server - Best Practices for Creating Web Maps (Thu 8:30-10:00)
  - ArcGIS Server - The Road Ahead (Thu 10:30-12:00)

- **Training**
  - Introduction to ArcGIS Server (2 days)
  - Building Web Maps using ArcGIS API for JavaScript (2 days)
  - ArcGIS Server Web Administration for Microsoft .NET (3 days)