



## **Developers' Guide**

### **Framework**

**Version 2.0.3.1**

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## 10 Appendices

### 10.1 Configuration

On occasions it may become necessary to alter some of the default values provided by 51Degrees.mobi in the web.config file. This chapter explains all the configuration sections, Handlers and Modules used by 51Degrees.mobi Framework. The Log and Redirect sections used by the Foundation are documented within the [Foundation User Guide](#) which should be read in conjunction with this chapter.

#### 10.1.1 Migrating from Previous Versions

Users of the Foundation project, or versions of Framework prior to 1.2, should remove the fiftyOne/wurfl section from any existing configuration files as it is no longer the recommended data source for device data.

The detection module, if running versions of .NET other than v4, should be changed to use the Framework rather than the Foundation assembly. The following module;

```
<add name="DetectorModule"
type="FiftyOne.Foundation.Mobile.Detection.DetectorModule, FiftyOne.
Foundation" />
```

would be changed to;

```
<add name="DetectorModule"
type="FiftyOne.Framework.Mobile.Detection.DetectorModule,
FiftyOne.Framework" />
```

enabling faster performance and automatic device data updates.

Configuration can be provided in the **web.config** file or can alternatively be provided via the **51Degrees.mobi.config** contained in the App\_Data folder for easier management and separation of configuration across components.

#### 10.1.2 Enabling Mobile Profiles

To enable MobileProfile feature to persist any type of data the following set of configurations has to be applied in the web.config.

1. Profile section configuration
2. Profile Module configuration
3. Cryptographic configuration
4. Database configuration

All these elements need to be configured for Mobile Profiles to operate.

If you do not wish to use MobileProfiles remove the configuration sections 1 to 3 from the above list.

##### 10.1.2.1 Profile section configuration

The `fiftyOne/profile` element of the web.config file controls the database used to persist Mobile Profile data, how often data is automatically removed, how data is shared amongst applications and if view state should be persisted to the Mobile Profile. Table 1 contains details of the attributes supported.

Element	Attribute	Mandatory	Description
profile	applicationName	No	<p>Identity of the web application with which data will be stored. It is required to differentiate the data of multiple mobile web applications using the same database.</p> <p>The default value “/” can be used in user instance mode. For WebFarm production environments a unique value must be provided.</p>
	connectionStringName	No	<p>The name the connection string element of the <a href="#">connectionStrings</a> section of the web.config uses to access the mobile profile database.</p> <p>If connection string is to SQLEXPRESS User instance then the database creation will occur automatically.</p> <p>If connection string is an SQL Server then the MobileProfile database SQL script has to be installed using the tool <b>fiftyOne_regsq.exe</b> provided with the Framework in the installation directory. The identity of the worker process used by mobile web application must be granted dataread and datawrite access to the database.</p>
	persistViewState	No	<p>If set to true the viewstate will be persisted in the database instead of being sent to the web browser in a hidden field.</p> <p>Default Value: false</p>
	retentionPeriod	No	<p>Specifies the number of days that need to elapse since the last interaction for a unique mobile device to be removed from persistent storage. If not specified mobile profiles are never removed automatically and may need to be removed manually.</p> <p>Default value: 7</p>

Table 1 - Profile web.config element

### 10.1.2.2 Profile Module configuration

Mobile Profile requires a module to be included in the collection of modules used by the mobile web application. The module is responsible for retrieving and storing profile data in the database during the request processing lifecycle. The Profile Module is responsible for tracking Mobile Profile Ids in a cookie called .51DP.

Note: If the browser does not support cookies the Mobile Profile will not be available.

### 10.1.2.3 Cryptographic configuration

This configuration section details are used by MobileProfile to generate Mobile Profile IDs.

See Table 2 for attributes available with the `crypto` element.

Element	Attribute	Mandatory	Description
<code>crypto</code>	<code>Encryption</code>	No	Valid values:  None    no encryption is used.  DES     use DES encryption. If empty the machine key will be used (see <a href="#">machineKey</a> ) .  3DES    Use 3DES symmetric encryption with the symmetric key provided.  RSA     use RSA asymmetric encryption with the Crypto section.  Default value:DES
	<code>symmetricKey</code>	No	A value used to encrypt and decrypt data when a symmetric algorithm is specified in the <code>encryption</code> attribute.
	<code>publicKey</code>	No	If RSA is used the public key file.  Default value: <code>~/App_Data/PublicKey.xml</code>
	<code>privateKey</code>	No	If RSA is used the private key file.  Default value: <code>~/App_Data/PrivateKey.xml</code>
			If both <code>publicKey</code> and <code>privateKey</code> files do not exist a new pair of files will automatically be generated.

Table 2 - Crypto web.config element

### 10.1.2.4 Database configuration

When a new mobile web application is created and run for the first time a developer Mobile Profile database will be created in the App\_Data folder if one has not been manually configured.

Changing the name or location would throw runtime exception `MobileProfileException`. The default value of `connectionString` configuration will address to this database. Any change to the default `connectionString` would also cause the runtime exception `MobileProfileException`. The limitation with the `SQLEXPRESS` is the maximum size to which it can grow, which is up to 4 GB.

It is possible to configure the SQL Server database as MobileProfile database by creating the database with the choice of database name but the `connectionString` configuration value has to be set appropriately to address to this database. However, the database should have the MobileProfile scripts installed, which should be done

using fiftyone\_regsq.exe available as part of 51D toolkit. The tool can be used with the required parameters as mentioned below.

*Command Line*

```
fiftyOne_regsq.exe -S server -D database -E windows authentication or -U
username -P pwd
```

The parameter -E integrated authentication or -U username and -P password has to be used.

When the mobile profile is used with multiple web application instances, such as a production environment using web farming or web gardening configurations, the SQL Server database should be configured for scalability and performance.

### 10.1.3 fiftyOne Sections

#### 10.1.3.1 ClientIds

This section needs to be included to enable shortIds to be used for controls in HTML. The section is optional and can be removed.

Element	Attribute	Mandatory	Description
clientIds	syncFile	No	The file to be used for sharing include resource information. Should be placed on a shared network location when used with web farms. Default value: <code>~/App_Data/ClientIds.dat</code>

#### 10.1.3.2 Compression

Controls the level of compression applied to different components of the page.

Element	Attribute	Mandatory	Description												
compression	Mode	Yes	<table border="0"> <tr> <td>PageResponseOnly</td> <td>Compress only Page output (response) stream contents.</td> </tr> <tr> <td>PageStateOnly</td> <td>Compress only the Page state (ViewState + ControlState).</td> </tr> <tr> <td>PageResponseAndState Only</td> <td>Compress Page output (response) stream and PageState.</td> </tr> <tr> <td>PageIncludesOnly</td> <td>Compress only the Page includes like Js &amp; Css not images.</td> </tr> <tr> <td>PageResponseAndIncludesOnly</td> <td>Compress only Page output (response) stream and Page includes.</td> </tr> <tr> <td>Full</td> <td>Compress all.</td> </tr> </table> <p>Default value: Full</p>	PageResponseOnly	Compress only Page output (response) stream contents.	PageStateOnly	Compress only the Page state (ViewState + ControlState).	PageResponseAndState Only	Compress Page output (response) stream and PageState.	PageIncludesOnly	Compress only the Page includes like Js & Css not images.	PageResponseAndIncludesOnly	Compress only Page output (response) stream and Page includes.	Full	Compress all.
PageResponseOnly	Compress only Page output (response) stream contents.														
PageStateOnly	Compress only the Page state (ViewState + ControlState).														
PageResponseAndState Only	Compress Page output (response) stream and PageState.														
PageIncludesOnly	Compress only the Page includes like Js & Css not images.														
PageResponseAndIncludesOnly	Compress only Page output (response) stream and Page includes.														
Full	Compress all.														

### 10.1.3.3 Detection

Framework version 1.2 onwards removes a mandatory requirement to include the wurfl section from the configuration. A more efficient data format and update process has been introduced improving performance up to 9 time compared to Foundation and prior versions of Framework. Additionally an optional an automatic daily update to device data is provided.

New projects created using Framework version 1.2 will automatically use Framework detection and not Foundation. Projects created in versions prior to 1.2 should remove the wurfl section from the configuration file to automatically benefit for improved performance and automatic device data updates.

The following entirely optional element and attributes should be used.

Element	Attribute	Mandatory	Description
detection	autoUpdates	No	When set to True allows the Framework process to monitor 51Degrees.mobi for device data updates, automatically download them, and immediately use the new data. Default value: True.
	deviceDataFile	No	The location of the device data file used by Framework. If used with autoUpdates set to True the identity of the worker process must be able to write to the file location. Default value: ~/App_Data/DeviceData.dat
	newDetailsUrl	No	Gets the URL to send new device information to. Default value: http://devices.51degrees.mobi/new.ashx
	newDetails	No	Determines the level of detail recorded for new devices and the associated HTTP request. Valid values are: <ul style="list-style-type: none"> <li>• minimum - only the wap profile and useragent are recorded.</li> <li>• maximum - all the HTTP headers are recorded.</li> </ul> Default value: minimum

### 10.1.3.4 Image

Controls caching, quality and synchronization settings for images.

Element	Attribute	Mandatory	Description
image	syncFile	No	The file to be used for sharing include resource information. Should be placed on a shared network location when used with web farms. Default value: ~/App_Data/Images.dat
	jpegQuality	No	The quality % to apply to output jpegs. Higher values produce better better results but larger file sizes. Default value:100
	gifQuality	No	The quality % to apply to output jpegs. Higher values produce better better results but larger file sizes. Default value:80
	pngQuality	No	The quality % to apply to output jpegs. Higher values produce better better results but larger file sizes. Default value:80
	cacheability	No	Sets Cache-Control response header to control the resource caching location.

Element	Attribute	Mandatory	Description
			Default value: <code>System.Web.HttpCacheability.Public</code>
	<code>maxAge</code>	No	Duration (in mns) the resource will be cached before it expires. Default value:60

### 10.1.3.5 Includes

Controls caching and synchronization settings for CSS and JavaScript includes.

Element	Attribute	Mandatory	Description
<code>includes</code>	<code>syncFile</code>	No	The file to be used for sharing include resource information. Should be placed on a shared network location when used with web farms. Default value: <code>~/App_Data/Includes.dat</code>
	<code>cacheability</code>	No	Sets Cache-Control response header to control the resource caching location. Default value: <code>System.Web.HttpCacheability.Public</code>
	<code>maxAge</code>	No	Duration (in mns) the resource will be cached before it expires. Default value:60

### 10.1.3.6 Locate

Configure application wide settings for MaxMind location database. This configuration section is only required if the location control is in use.

Element	Attribute	Mandatory	Description
<code>locate</code>	<code>geoCity</code>	No	The file name for the MaxMind geo city lite database. Default value: <code>~/App_Data/GeoLiteCity.dat</code>
	<code>geoRegion</code>	No	The file name for the MaxMind region file. Default value: <code>~/App_Data/GeoRegion.txt</code>
	<code>geoCityUpdateUrls</code>	No	Specify URLs that can be used to automatically updated the MaxMind geo city lite database.
	<code>geoRegionUpdateUrls</code>	No	Specify URLs that can be used to automatically updated the MaxMind region file.

### 10.1.3.7 Maps

Provides application wide configuration information for the Map control. This configuration section is only required if the map control is in use.

Element	Attribute	Mandatory	Description
<code>maps</code>	<code>googleKey</code>	No	The google key provided for your web site or host address. Refer to the google documentation location <a href="http://code.google.com/apis/maps/signup.html">http://code.google.com/apis/maps/signup.html</a> to obtain a free key. Needed only if the Google Map control is to be used.
	<code>bingMapsKey</code>	No	The Bing Maps key provided for your web site or host address. Visit <a href="https://bingmapsportal.com">https://bingmapsportal.com</a> to obtain a free key. Needed only if the BingMaps control is to be used.

Element	Attribute	Mandatory	Description
	<code>providerUrl</code>	No	<p>Url of the map provider to access the static map image/information. Ensure the url is from the actual provider and xxxKey is from the same provider. Default Url used are <code>http://maps.google.com/maps/api/staticmap</code> &amp; <code>http://dev.virtualearth.net/REST/v1/Imagery/Map/</code> for GoogleMap and BingMaps respectively.</p> <p>Default value: <code>http://maps.google.com/maps/api/staticmap</code></p>

### 10.1.3.8 Messages

Configures default error message rules to replace the ASP.NET standard exception messages.

Element	Attribute	Mandatory	Description
messages	<code>genericErrorMessage</code>	No	rather than displaying IIS/.NET's default error page a mobile friendly page is presented. The text of this attribute will appear as the main body of the message. If redirection is enabled the value of <code>mobileHomePageUrl</code> will be used for the associated link. If not then the default home page for the web site will be used.
	<code>errorImageUrl</code>	No	Url of custom image to display on the generic error message page.
	<code>onErrorReturnUrl</code>	No	Url of the web page to return from the generic error message page.

### 10.1.3.9 Themes

The `property` attribute is evaluated to determine the value associated with the current request. The `method` is then used to compare this result for the current request to the `value` provided. If the result is positive either further child theme elements are evaluated or the `applyTheme` value is returned.

Element	Attribute	Mandatory	Description
theme	<code>applyTheme</code>	No	The theme to apply if no child elements are specified.
	<code>method</code>	Yes	<p>The method to use when comparing the value return from the <code>property</code> attribute for the current request with the <code>value</code> attributes value. Valid values are:</p> <ul style="list-style-type: none"> <li>Equals                      The value of the property must match the filter exactly.</li> <li>Contains                    The value of the property must contain the filter.</li> <li>GreaterThan                The filter and value must both relate to a number and the</li> </ul>

Element	Attribute	Mandatory	Description
			<p>property value must be greater than the filter value.</p> <p>LessThan The filter and value must both relate to a number and the property value must be less than the filter value.</p> <p>Regex The filter is a regular expression and the IsMatch property will be used to determine a match.</p> <p>LessThanOrEqualTo Filter and value must both relate to a number and the property value must be less than or equal to the filter value.</p> <p>GreaterThanOrEqualTo Filter and value must both relate to a number and the property value must be greater than or equal to the filter value.</p>
	property	Yes	The name of the property from the <a href="#">HttpBaseCapabilities</a> class exposed via <a href="#">HttpRequest.Browser</a> , or the <a href="#">WURFL capability</a> to use when evaluating the element. If using WURFL capabilities ensure the capability has been configured to be loaded when the WURFL device database is parsed. For more information read the capabilitiesWhiteList documentation in the <a href="#">Foundation User Guide</a> .
	Value	Yes	The value to compare using the matching method.

## 10.1.4 Handlers

IIS6 specifies [HttpHandlers](#) within the `system.web` element of the web.config file. IIS 7.x specifies [Handlers](#) in the `system.webServer` element. To ensure smooth operation the web.config file must match the IIS version being used.

### 10.1.4.1 Image Handler

The following handler must be present to use 51Degrees.mobi image controls.

*Web.config - IIS 6 and Visual Studio*

```
<add verb="GET" path="P.axd" type="FiftyOne.Framework.Image.ImageHandler,
FiftyOne.Framework" validate="false"/>
```

*Web.config - IIS 7.X*

```
<add name="51Degrees.mobi Image" verb="GET" path="P.axd"
type="FiftyOne.Framework.Image.ImageHandler, FiftyOne.Framework"/>
```

### 10.1.4.2 Includes Handler

The following handler must be present to use 51Degrees.mobi.

*Web.config - IIS 6 and Visual Studio*

```
<add verb="GET" path="I.axd"
type="FiftyOne.Framework.Mobile.Includes.IncludesHandler,
FiftyOne.Framework" validate="false"/>
```

*Web.config - IIS 7.X*

```
<add name="51Degrees.mobi Includes" verb="GET" path="I.axd"
type="FiftyOne.Framework.Mobile.Includes.IncludesHandler,
FiftyOne.Framework"/>
```

## 10.1.5 Modules

IIS6 specifies [HttpModules](#) within the `system.web` element of the web.config file. IIS 7.x specifies [Modules](#) in the `system.webServer` element. To ensure smooth operation the web.config file must match the IIS version being used.

### 10.1.5.1 Profile Module

The following module must be present to use 51Degrees.mobi mobile profiles.

*Web.config - IIS 6 and Visual Studio*

```
<add name="MobileProfile"
type="FiftyOne.Framework.Mobile.Profile.ProfileModule,
FiftyOne.Framework"/>
```

*Web.config - IIS 7.X*

```
<add name="51Degrees.mobi Mobile Profile"
type="FiftyOne.Framework.Mobile.Profile.ProfileModule,
FiftyOne.Framework"/>
```

## 10.2 Install Files

Following are the list of items copied/created by the 51Degrees.mobi Framework installation in the target machine.

### Folders

The application folder default to *Program Files\51Degrees.mobi\Framework*. The following files or groups of files are stored in this location.

File(s)	Description
Templates\VS2008	Visual Studio 2008 project and file type templates.

File(s)	Description
Templates\VS2010	Visual Studio 2010 project and file type templates.
References\FiftyOne.Foundation.dll	51Degrees.mobi Foundation DLL.
References\FiftyOne.Framework.dll	51Degrees.mobi Framework DLL.
51DConfig.xsd	Schema definition file related to 51Degrees.mobi custom configuration sections of web.config.
Docs\Readme.rtf	Contains details displayed in the last steps of the installation process.
Docs\Developers Guide.pdf	Copy of this document. PDF document containing guidance on how to use 51Degrees.mobi Framework features.
EULA\EULA.pdf	A copy of the End User Licence Agreement (EULA) agreed by the user during the installation process.
EULA\LGPL.pdf	A copy of GNU License used by the Framework implementation.
EULA\MaxMindLicense.pdf	A copy of Open Data License related to MaxMind GeoLite Country and GeoLite City information usage for Location control features.
Tutorials Folder	Contains the PDF version of tutorial on using the 51Degrees.mobi Framework product features.
Help Folder	Contains files related to HTML Help on 51Degrees.mobi Framework APIs.
GAC\FiftyOne.Framework.TemplateKit.dll	Contains wizards used when projects are created.
fiftyOne_regsql.exe	Install / uninstall command line executable for the Mobile Profile database.
Framework.lic	File containing the license key provided during installation. Can be updated manually.

### Registry

The following registry is updated to store the location of the framework installation directory so that the above files can be used by Visual Studio wizards when new projects are created.

**HKEY\_LOCAL\_MACHINE\Software\51Degrees.mobi\Framework\InstalledDir**

## 10.3 Automatic Upgrades

New device database's are released every 4 to 6 weeks to support new mobile handsets. Additionally 51Degrees.mobi release minor upgrades every 4 to 8 weeks. Upgrading existing projects to support these new files has been a common issue reported by customers.

Version 1.1 will prompt to automatically upgrade any project not containing the most recent installed version of 51Degrees.mobi when the solution or project is opened in Visual Studio. A dialogue box similar to the one in Figure 1 will be shown. All projects eligible for upgrade will be displayed.

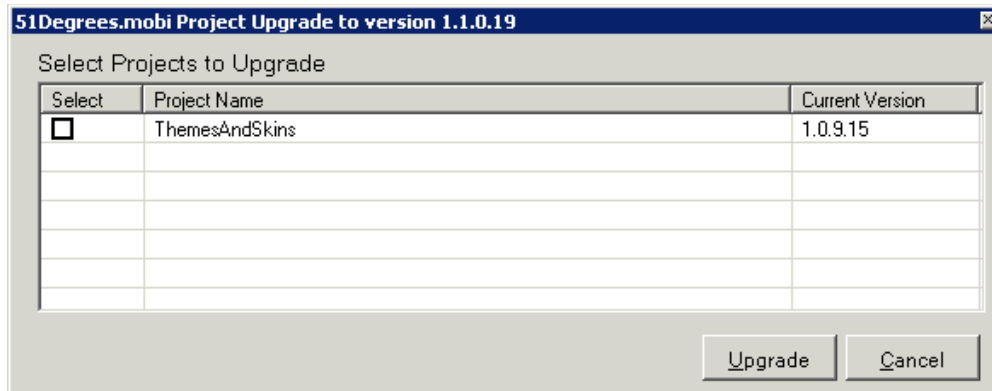


Figure 1 - Project Upgrade Dialogue

Only check projects that should be upgraded.

The automatic upgrade process will perform the following actions:

- Replaces DLLs in the project's bin folder with the latest versions.
- Upgrades project references to use the new DLL versions.
- Adds new Themes to the App\_Themes folder.
- If the project contains a configuration file that differs to the default one a second prompt will display asking if the configuration should be reset to the new default.
- Replace mobile device data files in the App\_Data folder.