Geocortex® | by Latitude Geographics®

Getting Started with Geocortex Essentials

Course Workbook

Revision 10.0

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1. Architecture and Installation

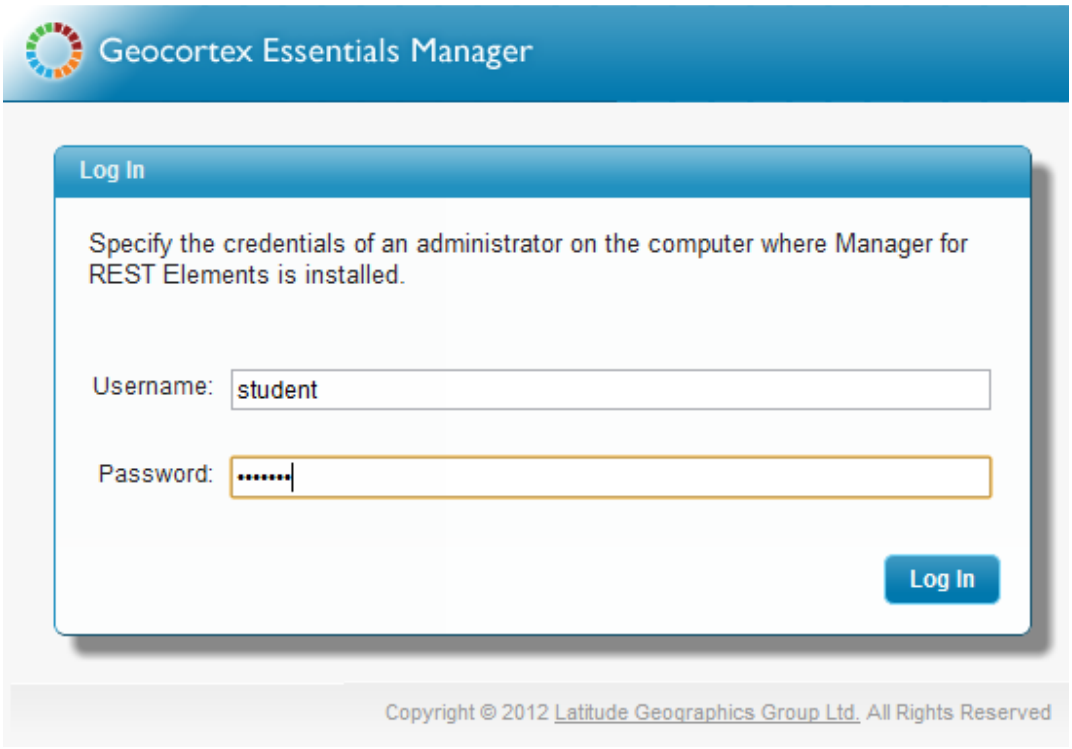
Learn about the Geocortex Essentials Architecture, exploring demo site functionality, and how to install a Geocortex Viewer for Silverlight.

1.1 Add the Geocortex Viewer for Silverlight to the Charlotte Demo Site

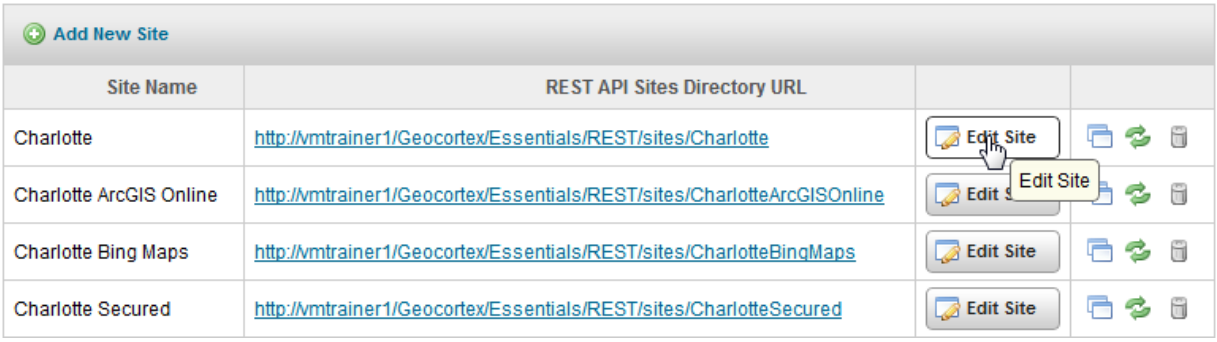
The site configuration publishes a REST endpoint. The viewer interprets the REST interface and presents it in a user friendly manner. One or more viewers must be added to a single site by the user. Learn how to add the Geocortex Viewer for Silverlight to the Charlotte demo site by following this exercise.

1. In Windows, click **Start | Latitude Geographics | Geocortex Essentials | REST Elements | Geocortex Essentials Manager** to Open the Geocortex Essentials Manager

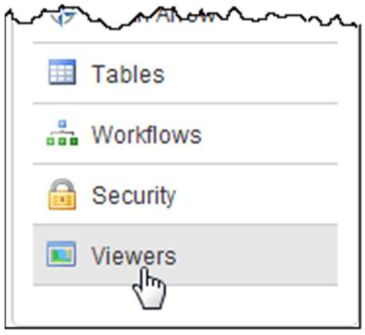
2. In the Geocortex Essentials Manager browser window that appears, enter the Username and Password provided by your instructor and click **Log In**.
   The Windows account Student is a member of the administrators group on the local machine. Any account that has administrators group has access to the Geocortex Essentials Manager.



3. Click the **Edit Site** button for the Charlotte demo site.
   Four demo sites are installed with the product as examples and can be removed by clicking on the site's Delete icon in Manager.



4. To add a Viewer to the site, first click **Viewers** in the sidebar on the left side of the window.
   The sidebar allows you to navigate between configurable elements of the site.



5. Next, click **Add Viewer** to open the Create New Viewer window.

6. Create a Display Name for the Viewer.
   Each Viewer must have a unique name across all sites in this instance of Geocortex Essentials.

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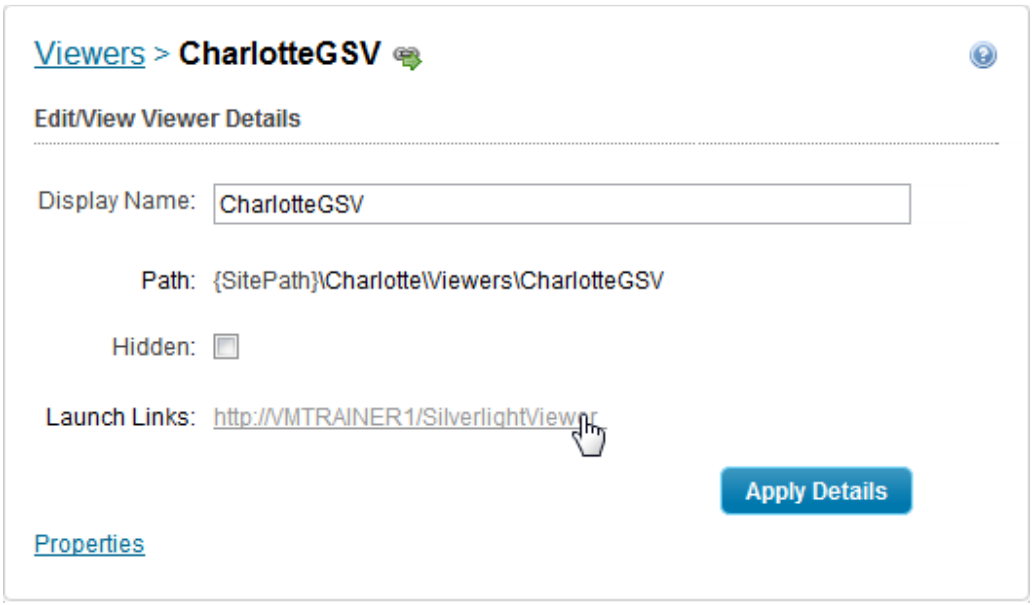
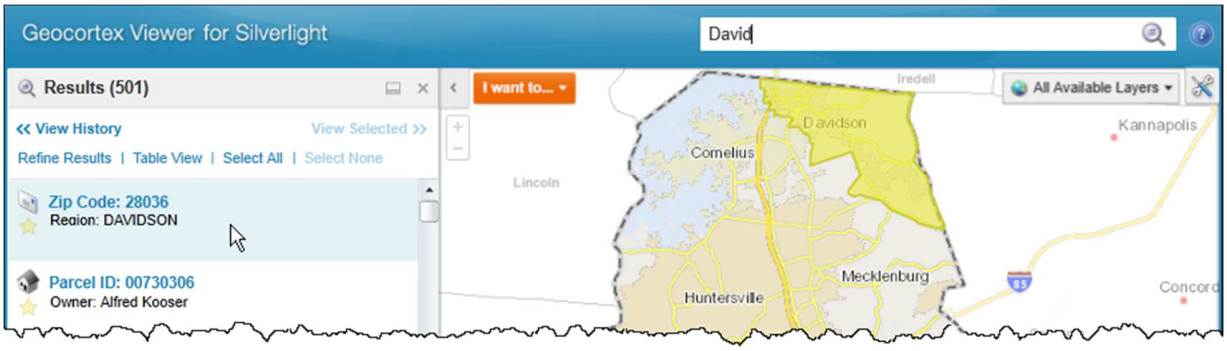
7. Select **Viewer for Silverlight** as the Template, and then click **OK**.
   All templates installed by the Post Installer will be listed.

8. In the Viewer for Silverlight page, click the Launch Link to open the Geocortex Viewer for Silverlight in a new web browser window.

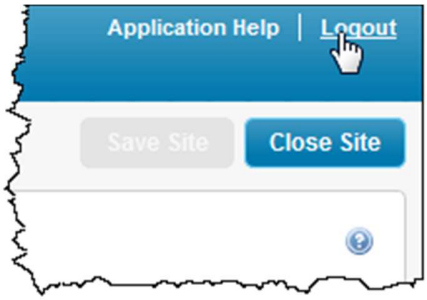


9. Once the viewer finishes launching, enter a search term (eg. David) into the Global Search Bar at the top right of the window.

10. Click one of the results that appears on the left side of the browser window to see more detailed information about that record.



If still open, return to Geocortex Essentials Manager and click the **Logout** link at the top right corner of the window.
As the next lesson will change the site using the Post Installer, any open Manager window should be closed to prevent any loss of unsaved configuration.



1.2 Upgrade the Geocortex Viewer for Silverlight

Latitude frequently releases new versions of the Viewers. It is good practice to keep your environment up to date. This lesson explores how to upgrade viewers added to one or more already-configured Geocortex Essentials sites.

1. In Windows, click **Start | Latitude Geographics | Geocortex Essentials | Post Installation Configuration** to open the Post Installer window.

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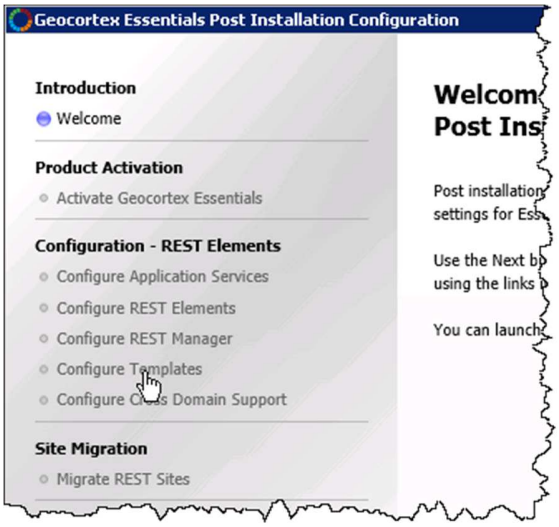
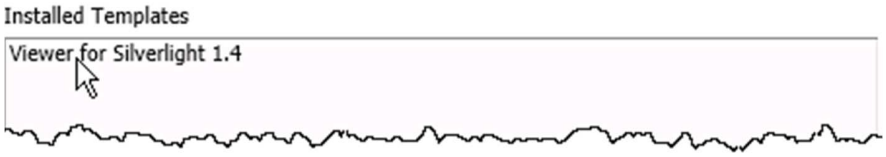
2. In the Post Installer window, click **Configure Templates** in the sidebar.
   We need to remove the old viewer, and replace it with a new one. We can skip the other steps as the complete post installer was already run for the training environment.

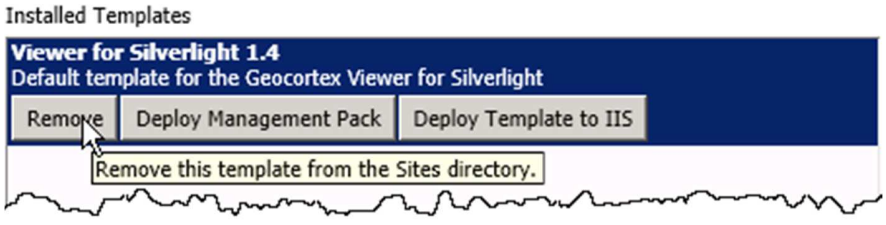


3. Select your current Geocortex Viewer for Silverlight to show the management buttons.



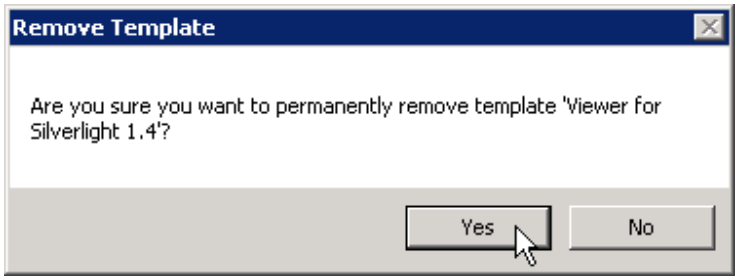
Geocortex Viewers should only be installed once per instance, even across different versions. Remove any existing versions of the same viewer before installing the latest. Keeping multiple versions in a single instance will result in inconsistent and unpredictable configurations and is not supported.

4. Click **Remove** to delete the old version of the Geocortex Viewer for Silverlight so you may add the new version.
   A Remove Template confirmation window will appear.



Removing the installed template does not delete the Viewer for Silverlight files deployed into the inetpub directory or remove its associated virtual directory. You can remove these manually once your new viewer is running properly. Keeping a back-up of your viewer deployment and the sites folder allows you to recover from any potential mistakes and roll-back to the previous version without issue.

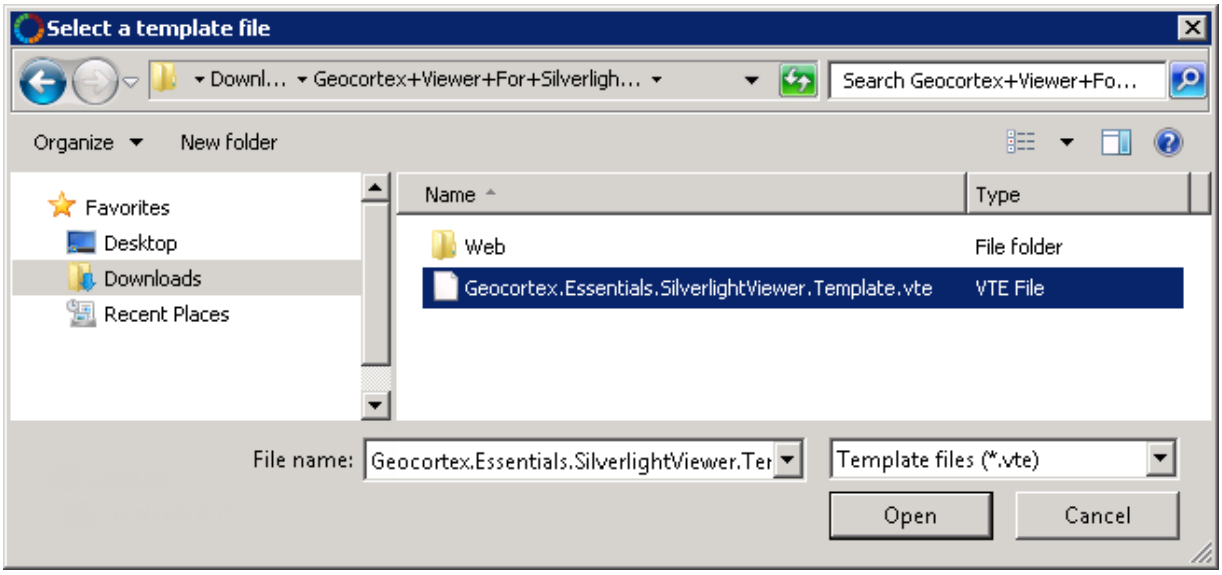
5. In the Remove Template window, click **Yes** to confirm you want to remove the Viewer.
   Any site configuration against this viewer will remain. This only removes the template from the list of available viewers in the manager.



6. In the Post Installer window, click **Add** to begin adding the new Geocortex Viewer for Silverlight.
   The Select a template file window appears

7. The most recent version of the Geocortex Viewer for Silverlight (.vte file) may be found in the Downloads folder (or where the instructor specifies). In the Select a template file window, navigate to this location unless otherwise specified.

8. Select the new .vte file and click **Open**.
   The Add Template window appears to guide how this template will be deployed into the instance of Geocortex Essentials.



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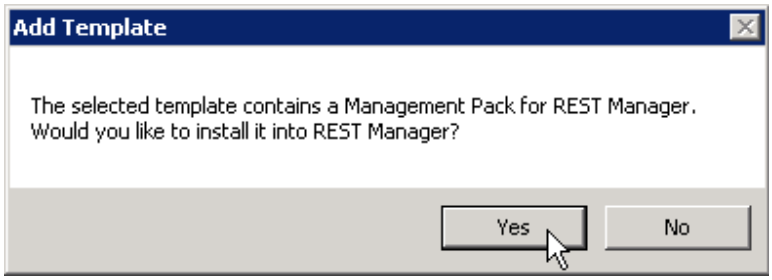
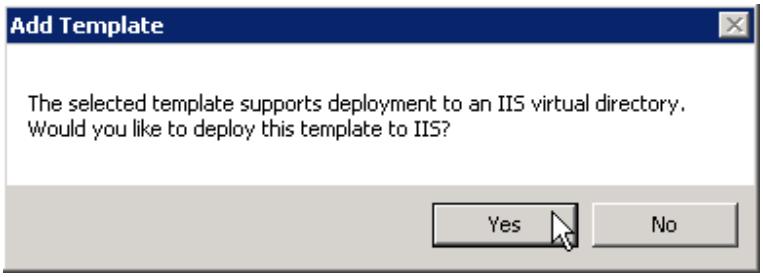
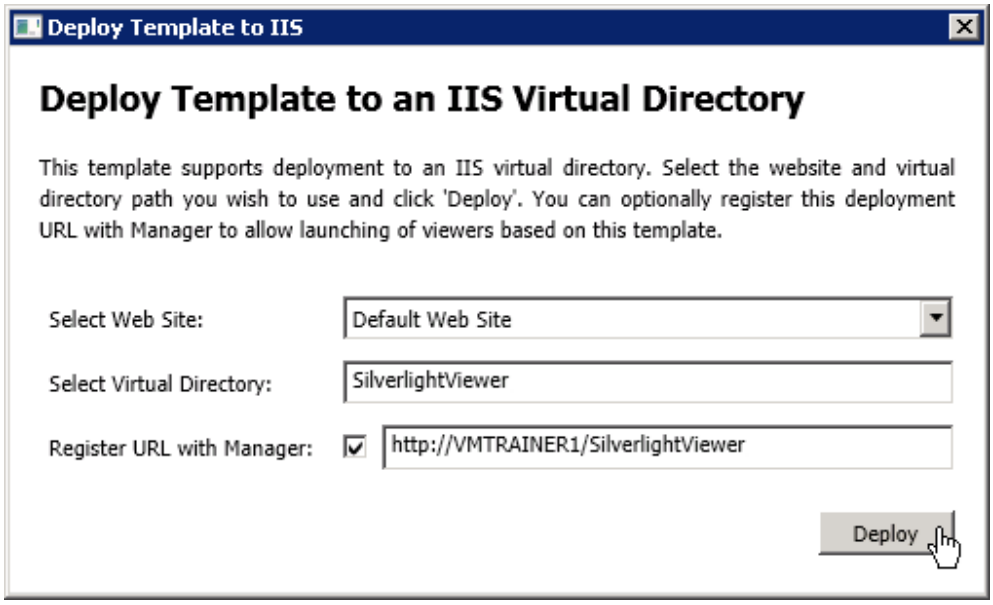
9. In the Add Template window, click **Yes** to install the Management Pack for REST Manager.
   The Management Pack allows Essentials to make changes to the viewer configuration (in this case Viewer.xml) files.



10. In order to use the Viewer for Silverlight, it must be deployed into at least one IIS virtual directory. Deploying the template to an IIS virtual directory allows the Geocortex Viewer for Silverlight to be accessed through the web server.
    In the Add Template window, click **Yes** to deploy the template to IIS.
    The Deploy Template to IIS window appears.



11. In the Deploy Template to IIS window, use the default settings and click **Deploy**.
    The viewer is deployed in the Web Site. The virtual directory is created in the web site chosen and becomes part of the URL to open Geocortex Essentials. Registering the URL with Manager allows for links in Essentials Manager to appear and open sites using this template.



As the Virtual Directory name becomes part of the URL, you should consider making this short and straightforward so it is easier for users to access the site.

12. Click **Finish** to finalize installing the latest version of the Geocortex Viewer for Silverlight.

13. With the latest viewer available, we must upgrade any existing viewer configurations in manager. Open the Geocortex Essentials Manager, and then open the Charlotte demo site.

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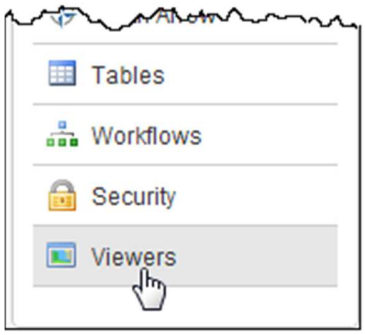
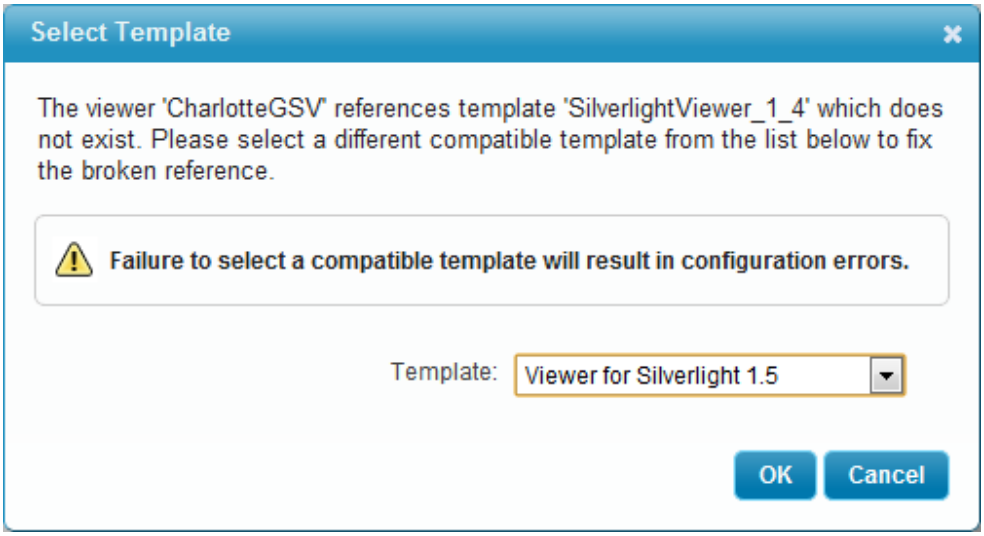
14. To upgrade viewer configurations associated with the old template, click on **Viewers** in the sidebar.

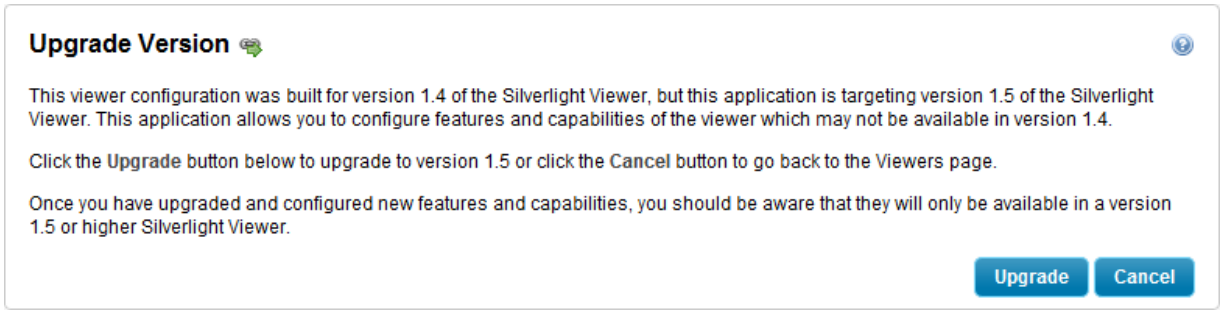


15. Next, click the edit icon to the right of the old Viewer to select the upgraded template.

16. Then, select the upgraded Geocortex Viewer for Silverlight template and click **OK**.



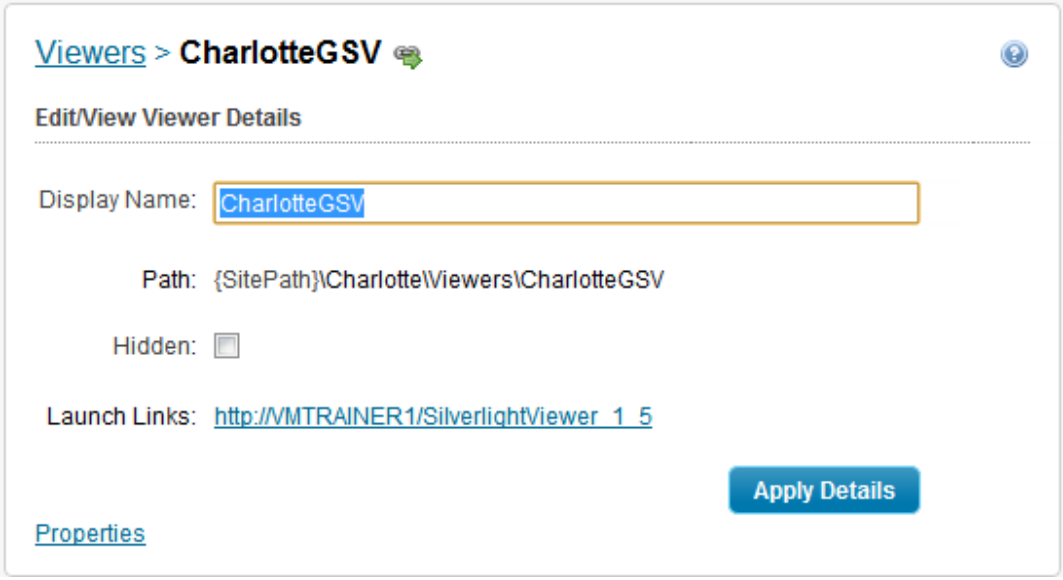
17. Read the Upgrade Version warning and click **Upgrade**.
    Upgrading the viewer configuration will take your existing configuration and move it into a file compatible with the newest version of the template.



In production or development environments, backing up your site and viewer configuration is recommended so that you can return to the old configuration if necessary. The easiest way to do this is to copy the Geocortex Sites folder and all subfolders.

Never make backups inside the Sites folder itself.

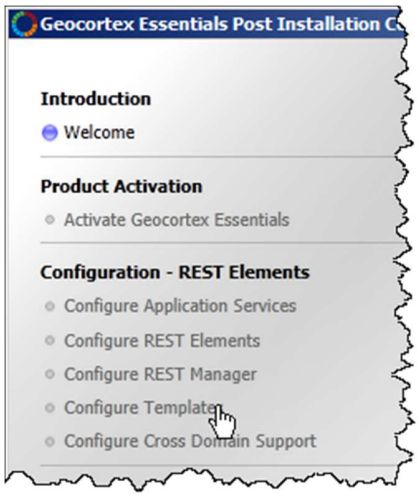
Once the viewer has been upgraded, the Viewers page appears. This tells you the upgrade is complete and was successful.



18. Click **Apply Details** then **Save Site**.

1.3 Deploy HTML5 Viewer Template

1. Open the Post Installer and select **Configure Templates** from the sidebar.



2. To deploy the HTML5 Viewer Template, click **Add**.
   The Select a template file window appears.

3. In the Select a template file dialog, navigate to the downloads folder (unless otherwise instructed) and select the HTML5 Viewer .vte file. Then, click **Open**.
   The Add Template dialog appears.

4. In the Add Template dialog, click **Yes** to install the management pack in REST Manager.
   Another Add Template window appears.

5. In the Add Template dialog, click **Yes** to deploy the template to IIS.
   The Deploy Template to IIS window appears.

6. In the Deploy Template to IIS dialog, click **Deploy** to create the Virtual Directory and register the URL with Manager and deploy the viewer in the web site.
   The Virtual Directory window appears.

7. To confirm the deployment to IIS, click **OK** in the Virtual Directory window.

8. To complete the deployment of the Viewer for HTML5 template, click **Finish** in the Post Installer window.

1.4 Configure and Deploy HTML5 Proxy

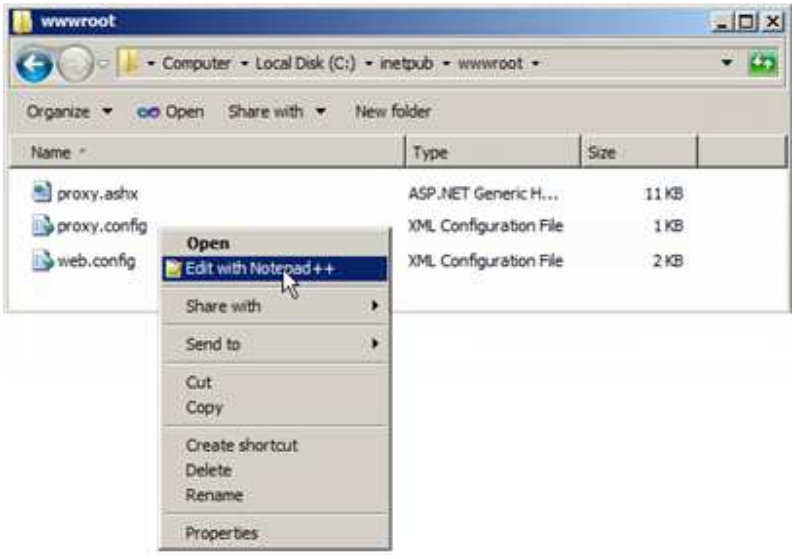
The Viewer for HTML5 requires a proxy to be placed in the wwwroot folder to allow feature editing as well as workflow deployment.

1. The proxy comes as part of the Viewer for HTML5 download, which is located in the downloads folder.
   Open the downloads folder and then open the HTML5 Viewer folder.

2. In the Html5 Viewer folder, there is a Viewer.zip file. This file contains the proxy.
   Extract the Viewer.zip file within the HTML5 Viewer folder.

3. In the Viewer folder you just extracted, copy the **proxy.ashx**, **proxy.config**, and **web.config** files and paste them into **C:\inetpub\wwwroot**.
   The proxy.ashx file forwards requests to an ArcGIS Server REST resource. The proxy.config file lists the server urls for the services that the proxy will forward to. Finally the web.config denotes the proxy as a .NET application, allowing all sites with HTML5 viewers to use the same proxy.

4. Once you have copied the files into the wwwroot folder, you must edit the proxy.config file to list the urls for the ArcGIS servers and/or services used in your site.
   Edit the proxy.config file by right clicking it and selecting a text editor from the menu.



5. The proxy.config file is currently configured so that requests are only forwarded to the listed servers. To allow the HTML5 Viewers of any of your sites to proxy to any server, change `<ProxyConfig mustMatch="true">` to `<ProxyConfig mustMatch="false">`.

6. Save the file and close the text editor.

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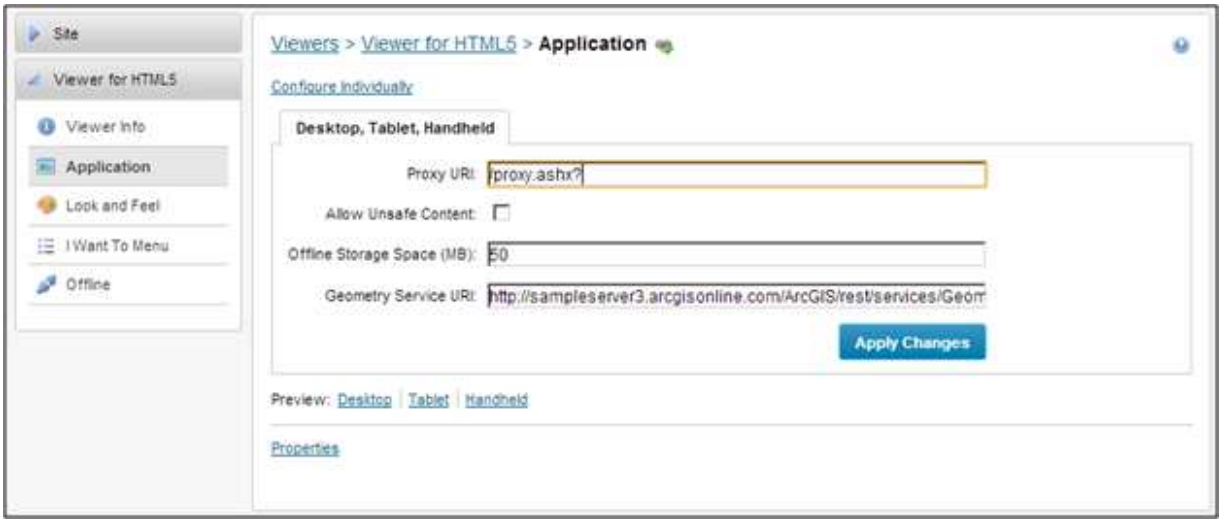
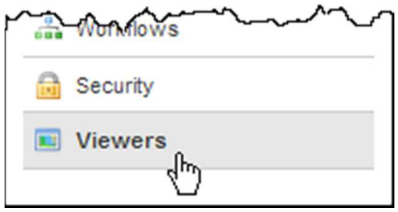
7. By default, the Viewer for HTML5 expects to find the proxy.ashx file in the wwwroot folder. If you deploy the proxy files to another location, you will need to configure the path in the viewer management pack.
   Add the Viewer for HTML5 to the Charlotte site and select **Application** from the Viewer Sidebar to see the proxy URI listed.



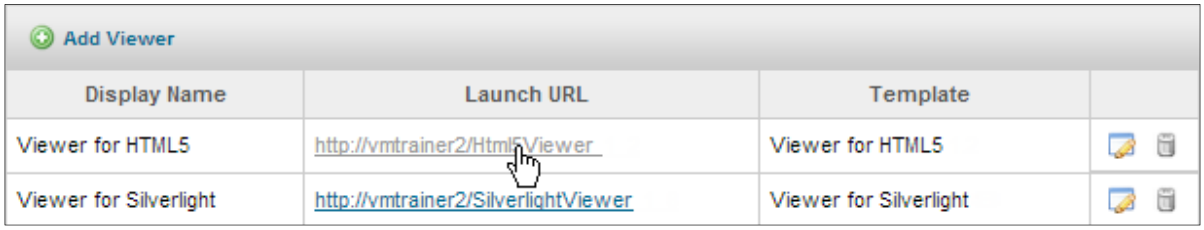
1.5 View the HTML5 Shells

There are three shells that make up the Viewer for HTML5. These shells include a desktop, tablet and handheld model. Each of these shells is configured to best display on a different mobile device.

1. In Essentials Manager, select **Viewers** from the Site navigation bar.

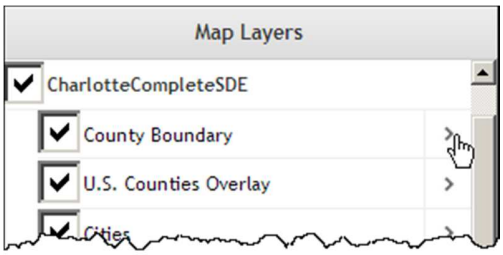


2. A single launch URL is listed for the Viewer for HTML5. By default, this url launches the desktop shell.
   Click the default launch URL to open the desktop shell.

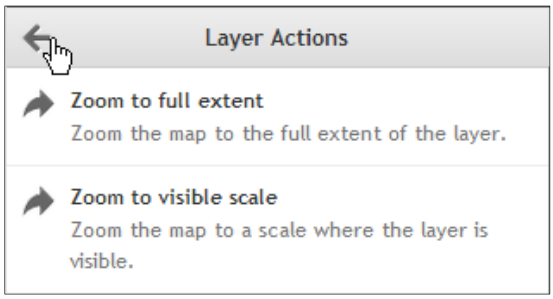


3. The Desktop shell has a similar interface as the Viewer for Silverlight.
   Click the arrow at the top left of the map window to open the Layer List.

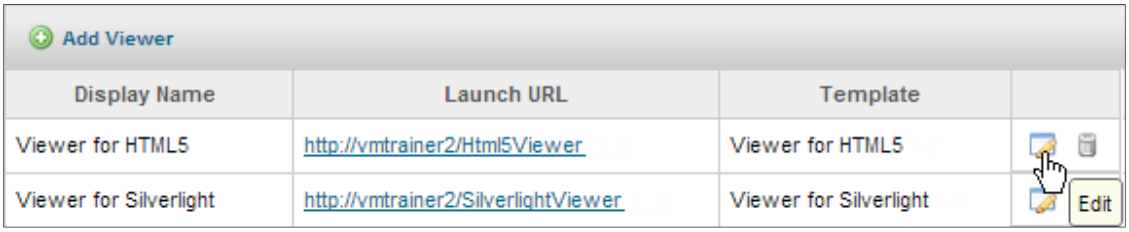
4. View any of the actions you can perform on a layer, such as zooming to the layer's extent, by clicking the arrow to the right of a layer name.
   A Layer Actions list appears in the sidebar.



5. Click the back button in the Layer Actions list to return to the layer list.



6. To see what the other HTML5 shells look like, close the desktop shell, and then in Essentials Manager, click the Edit icon for the Viewer for HTML5.



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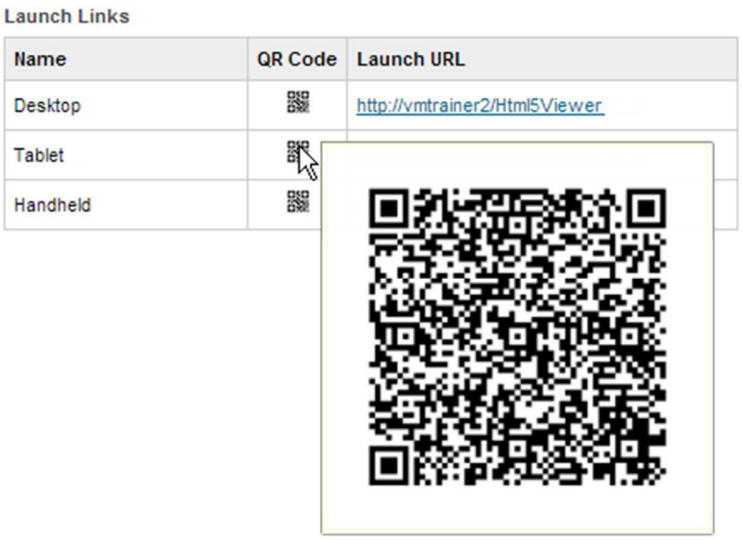
7. The three launch urls, along with corresponding QR codes are listed on the Viewer Info page. Hover over a QR code to show an enlarged version to scan.

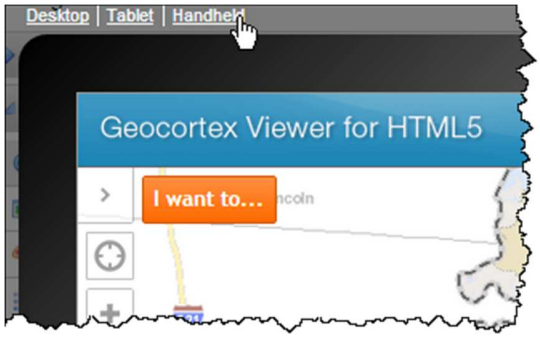
Your device needs to be on the same network as the viewer to see the site.



8. From the Viewer Info page, as well as any of the other management pack pages for the Viewer for HTML5, you can open a preview window that allows you to view and interact with the application as if you were using one of the three devices.
At the bottom of the page, click the **Tablet** preview link to see what the map looks like when displayed on a tablet device.

Similar to if you were to launch a web browser window, you must Apply Changes for your changes to appear in the previews.

9. You can toggle between previews by selecting another shell hyperlink listed in the top left corner of the preview window.
   Select the **Handheld** preview.



10. Notice the layout of the shell has been optimized for the small display area. To open the layer list, select the layer icon in the top right of the handheld screen. The layer list in this shell takes up the whole screen for better usability.

11. Close the preview window by clicking **Close** at the top right of the preview window.

1.6 (Optional) Run MSI Installer

Multiple instances of Geocortex Essentials can be installed on one server. Each new instance must be configured using the Setup Wizard as well as the Post Installation Configuration tool.

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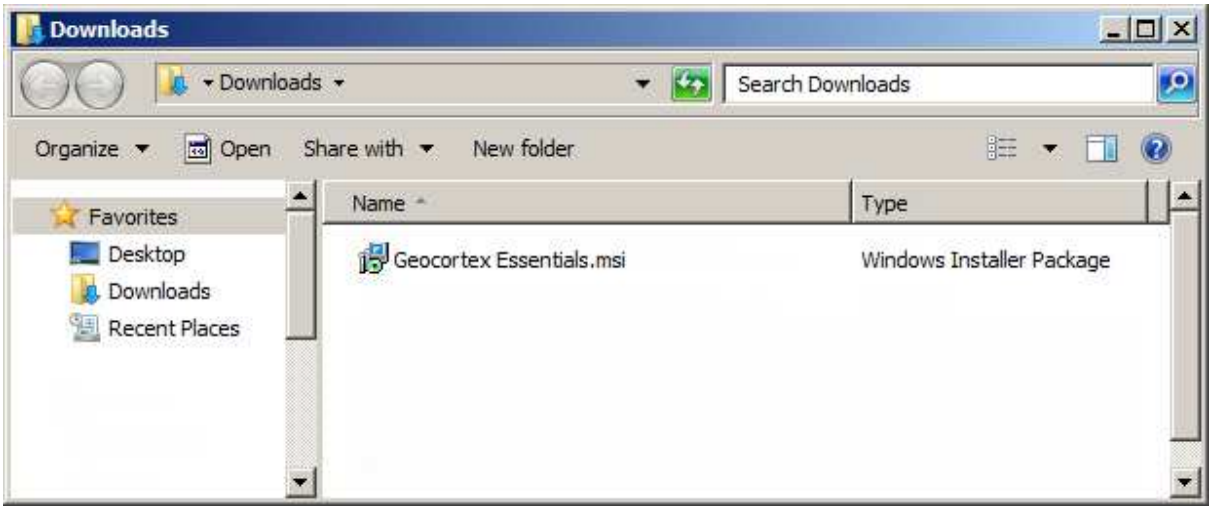
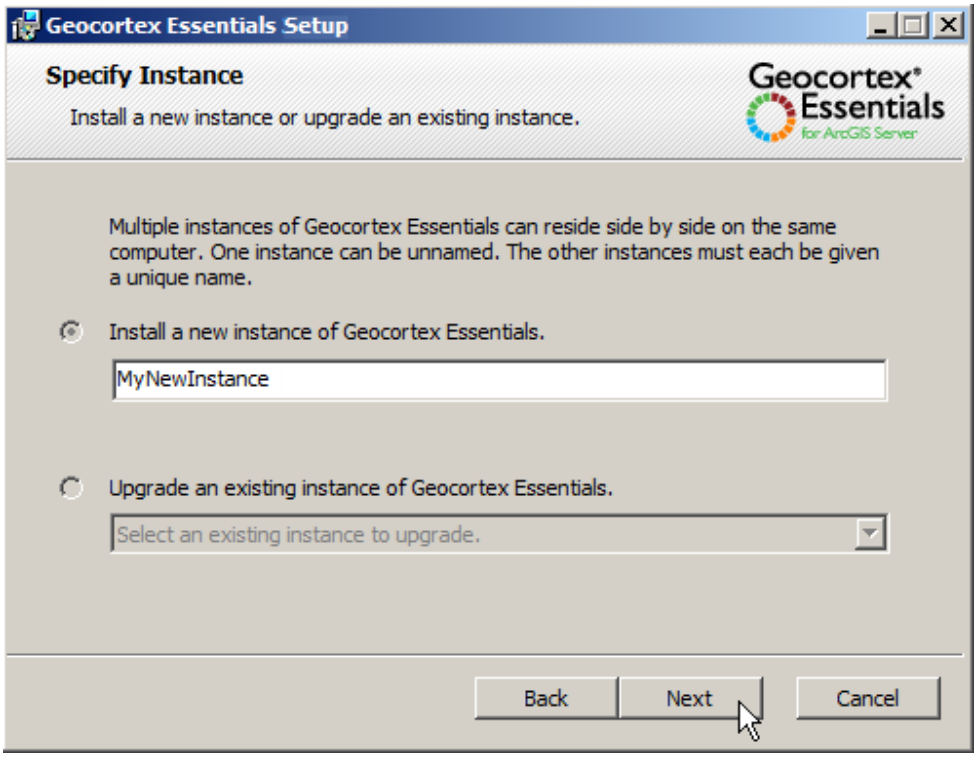
1. The latest Microsoft installer file (.msi) for Geocortex Essentials is pre-loaded on your training machine. Unless instructed otherwise, open the Downloads folder and double click on the .msi file. The Geocortex Essentials Setup Window appears.



2. To begin installing a new instance of Geocortex Essentials, click **Options**.

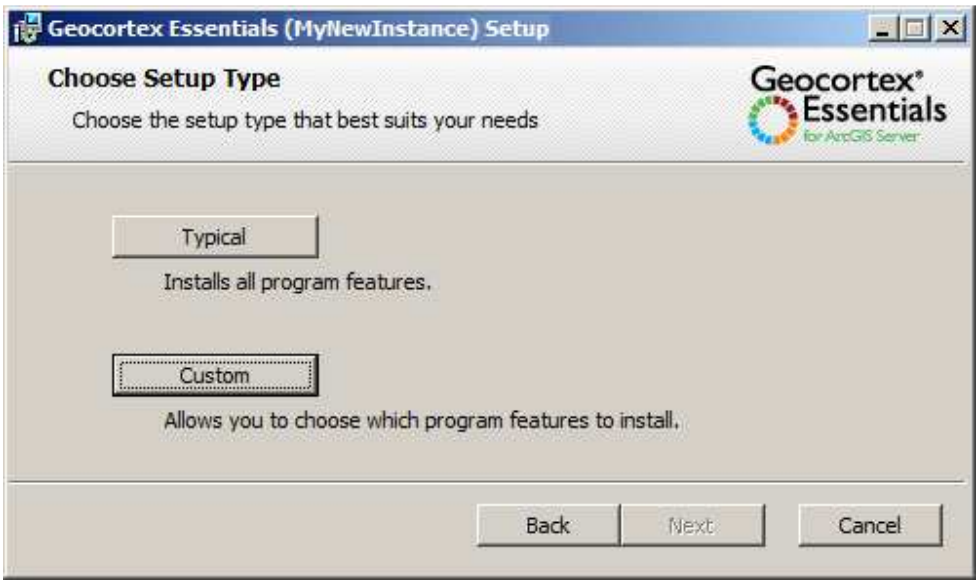
3. Each instance requires a unique name. Name your instance and then click **Next**. The installer restarts and returns to the main page. Click **Next** again.
   The installation process is identical for the default instance or a named instance, except your instance name appears in the title bar and the welcome title.



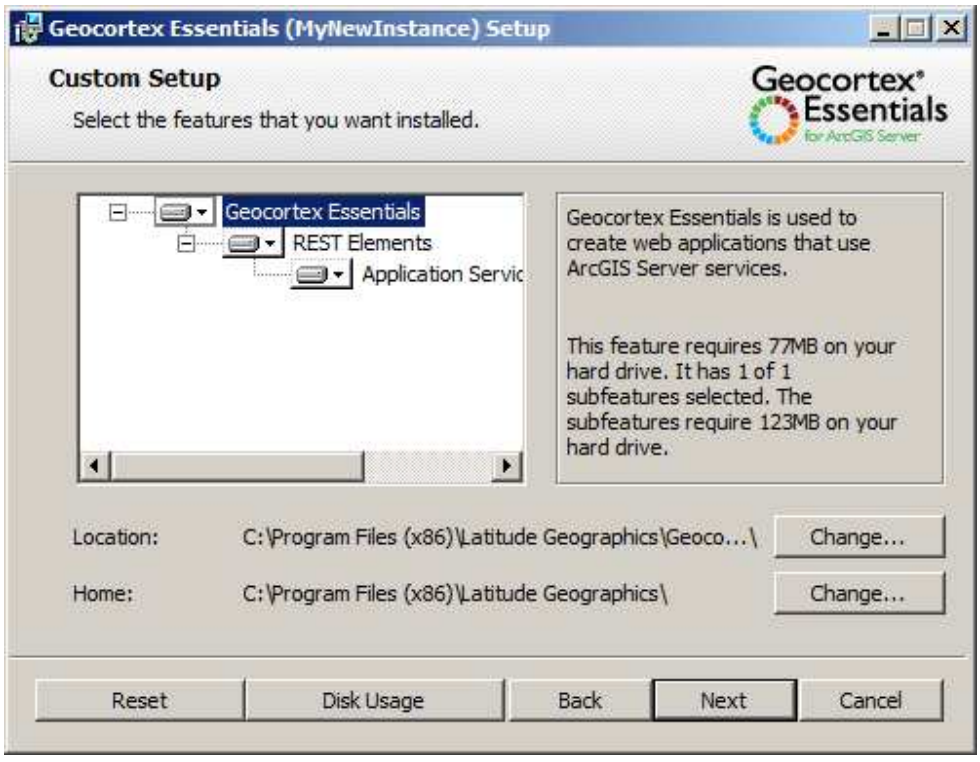
As the instance name becomes part of the virtual directory file path for both REST Elements and REST Manager, do not include any spaces or invalid characters.

4. Accept the terms in the License Agreement and then click **Next**.

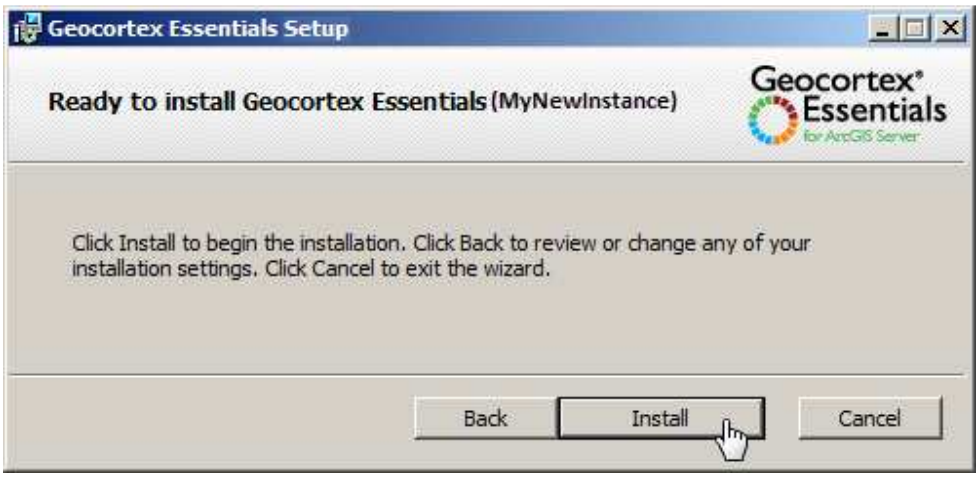
5. Select a **Custom** installation to define which program features to install.



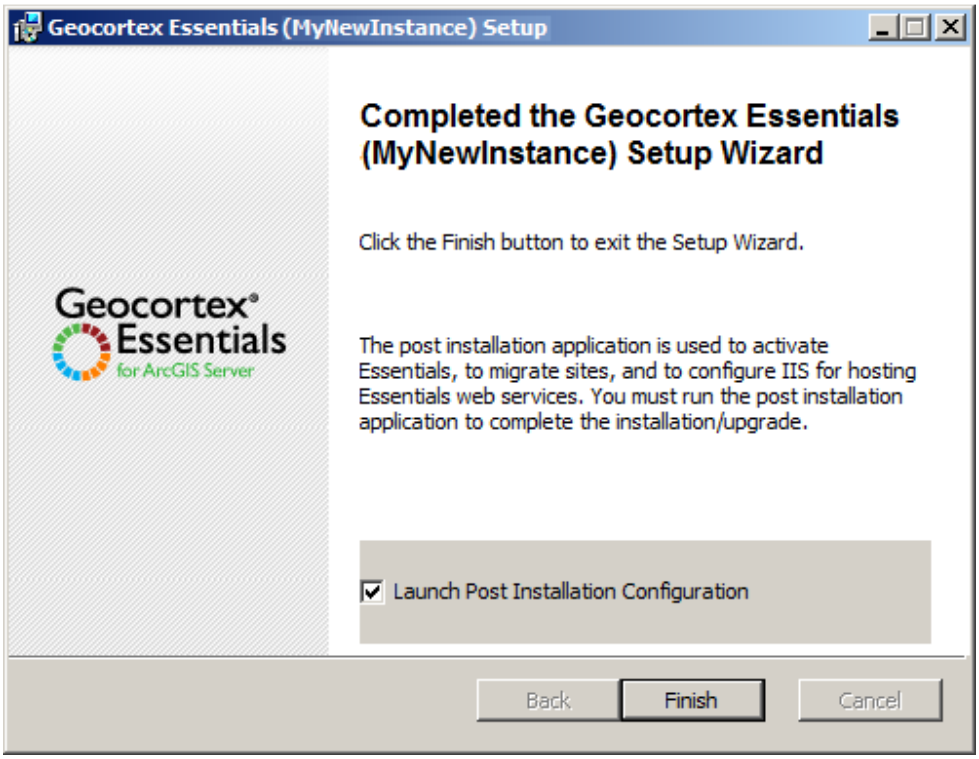
6. In this course, we will not be making any changes to the typical install. Click **Next** without making any changes.



7. To begin the installation, click **Install**.



8. When the installation is complete, click **Finish** to launch the Post Installation Configuration application.
   The Post Installation Configuration window appears.



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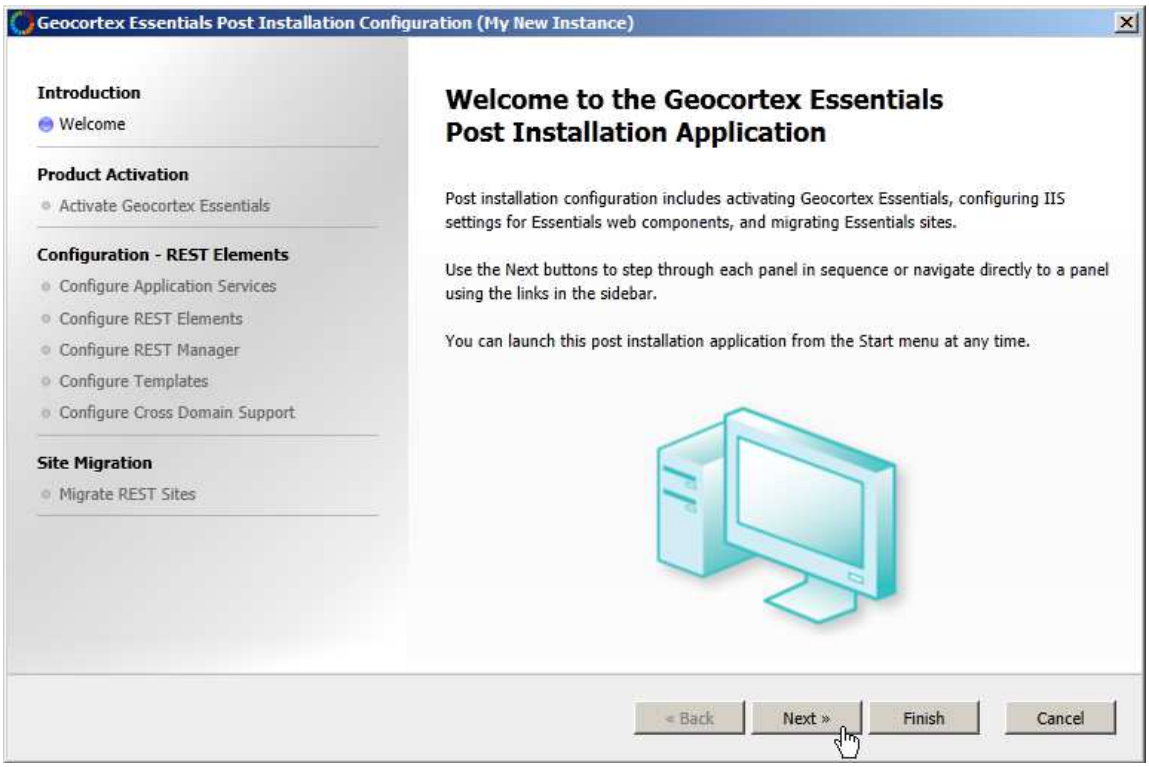
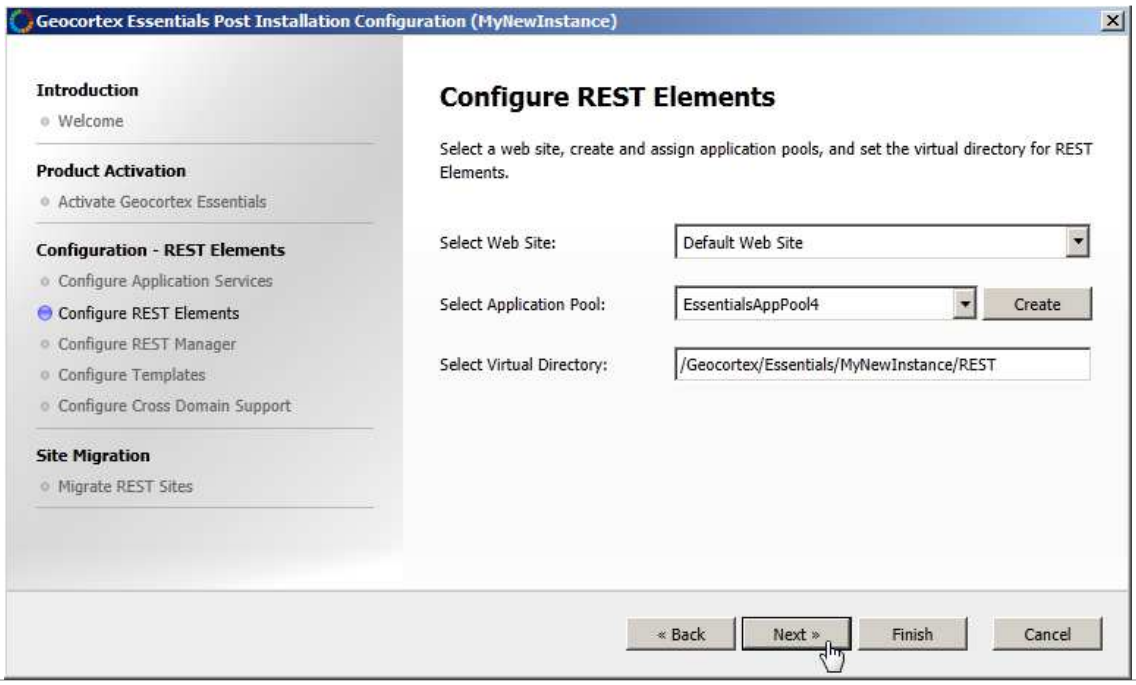
9. On the Welcome page of the Post Installation Application, click **Next**.



10. On the Activate Geocortex Essentials page, click **Next**.
    Geocortex Essentials offers a trial period that will run in demonstration mode during training.

11. To register this instance of Essentials with the Applications Services on the local machine, click **Register,** and then click **Next**.
    The applications services server holds the sites directory which stores the application configuration (.xml files). This installation has everything self-contained, so the application services server name is the name of the machine you are using.

12. Use the default settings for Configure REST elements and then click **Next**.
    The REST elements configuration allows you to define where the program publishes the rest endpoint. The IIS Web server, virtual directory and application pool are all specified. Instances have their own sub-virtual directory, so the defaults for each instance will have no effect on others installed.



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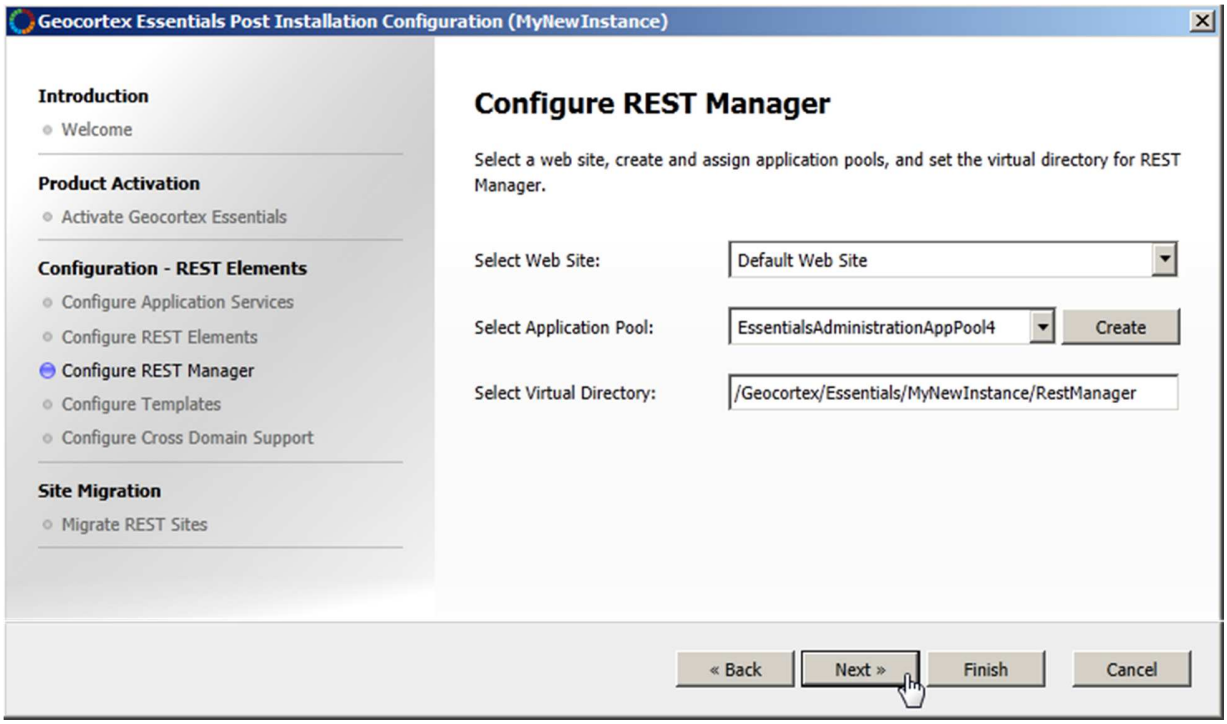
13. To configure the REST Manager, use the default settings, and then click **Next**.
    The Rest Manager is provided as a program to author, manage and create sites and its associated configuration. The Rest Manager by default is placed into a separate application pool from the main REST interface website.



14. **Add** the Viewer for Silverlight and HTML5 templates to the new instance. These viewer templates are made available by the instructor on your training server. Click **Next** to continue.

15. The cross domain support should have been configured by your instructor, as indicated by the confirmation for each. Click **Next** if the files are confirmed to exist.

16. This is a new installation and not a migration, so there is nothing to migrate. Click **Finish** to continue.
    A Geocortex Essentials Post Installation Summary window appears.

17. Click **OK** in the summary window.
    A Configuration Change window appears.

18. Click **OK** in the Configuration Changed window to complete the configuration of your new instance.

2. Include and Add Data

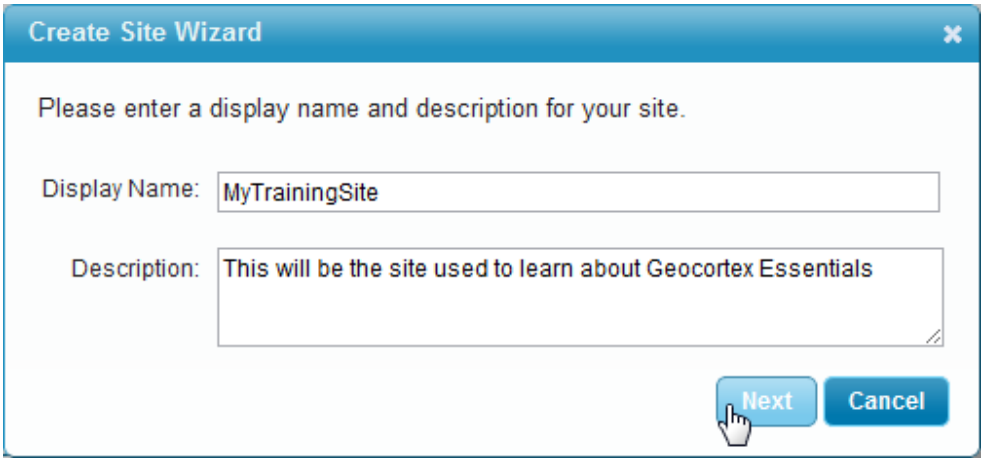
Learn how to create new sites, configure how the map initially draws in the Viewer and how to create layer themes.

2.1 Add a Dynamic ArcGIS Server Data Map Service to a New Site

1. Open Geocortex Essentials Manager.

2. As the Charlotte site is preconfigured, create a new site that you will configure on your own through the rest of training by clicking **Add New Site** in the Sites Directory.
   The Create Site Wizard window appears.

3. In the Create Site Wizard window, enter a name for your site that is unique from any other site on your instance, a description, and then click **Next**.



4. Select **Add a new map service** and click **Next**.
   The map service produces the map images and is generated by a map server that uses data from a GIS database. Adding a new map service allows you to add a service from ArcGIS Server.

5. For the Map Service Type, select **ArcGIS Server** from the drop down menu, and then click **Next**.

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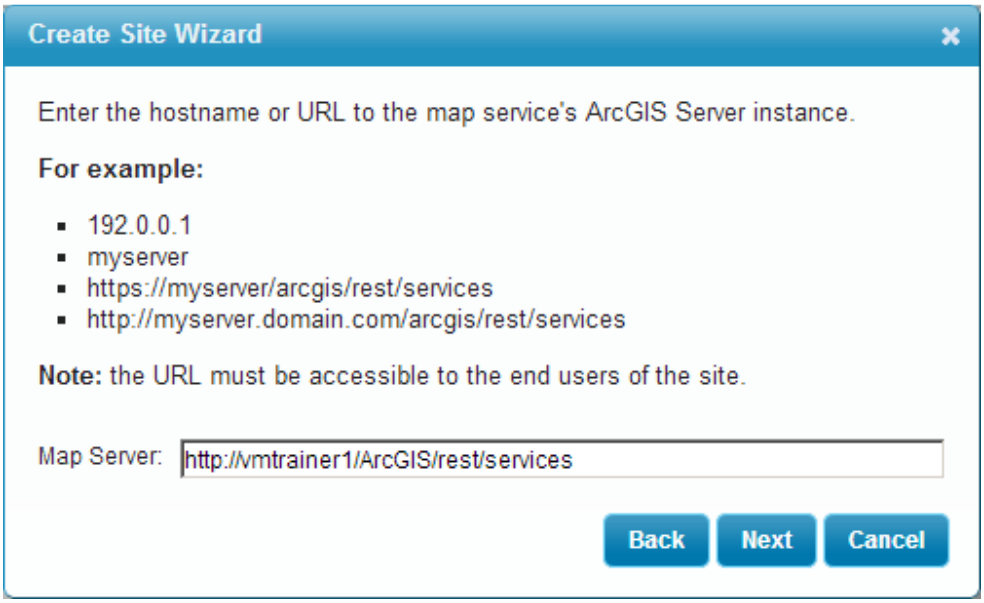
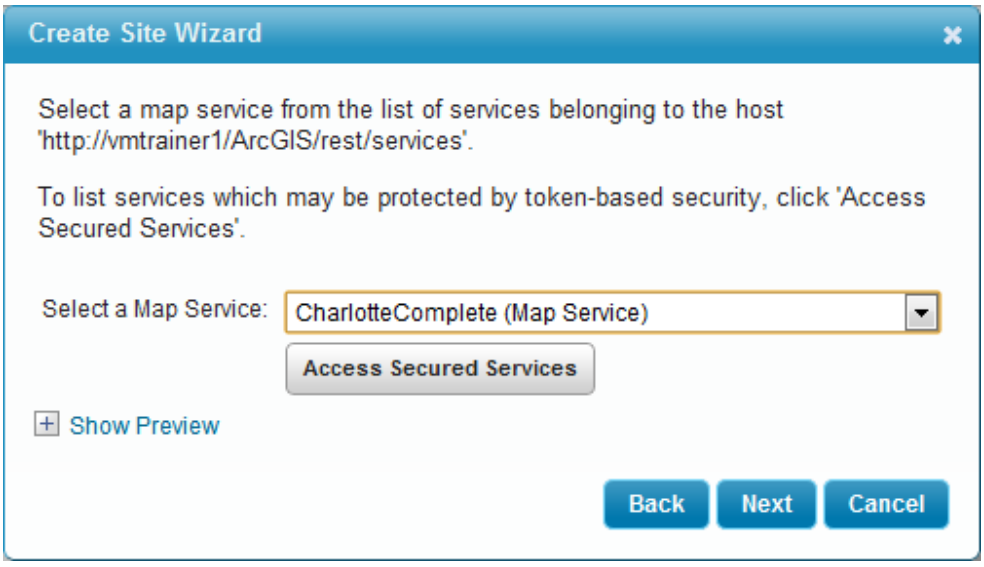
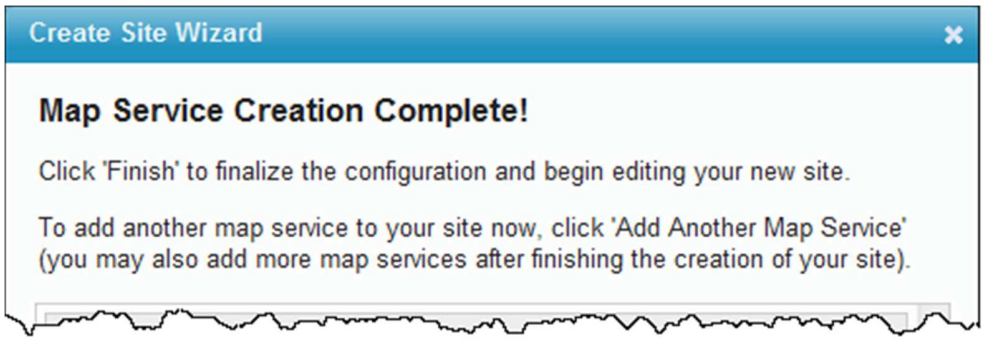
6. As each environment is different, use the url that your instructor provides as your map service. Then, click Next.



7. Select **CharlotteComplete**, unless otherwise specified, from the drop down menu as the Map Service for your site and then click **Next**.



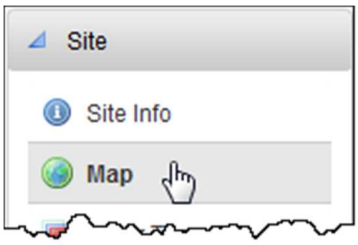
8. Click **Finish** to finalize adding a map service to your new site.



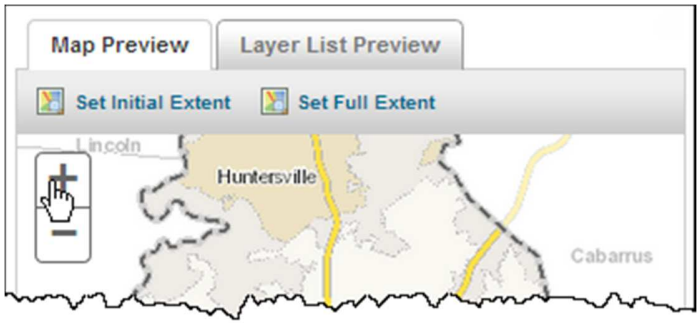
2.2 Setting the Map's Initial Extent

The initial extent of the map is first set by the map service's view extent. You may optionally change this and show a different area when the users first open the Viewer.

1. In Geocortex Essentials Manager, select **Map** from the sidebar.



2. In the Map Preview window, on the right side of the screen, use the zoom in/out tools to explore the map. These are located in the top left corner of the Map Preview window.
   The default initial extent is the same as what was displayed in ArcMap when the MXD was saved before serving.



The map preview window is for only viewing how the map will look. Changes to this window do not affect the configuration in any way.

On any map in Geocortex Essentials, you can zoom into a specific area by pressing and holding the **Shift** key while clicking and dragging your mouse to create a box. This box defines the extent to zoom in to. You can also use the scroll wheel on an equipped mouse, or by clicking the zoom in/out buttons at the top-left corner of most map windows.

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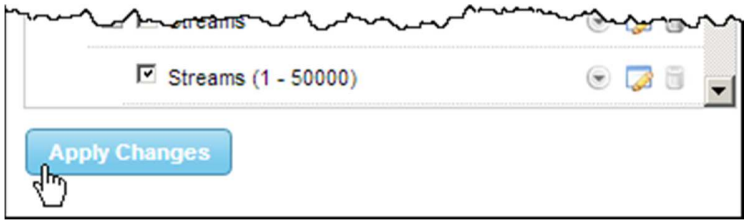
3. To change the initial extent, click the **Set Initial Extent** button in the Map Preview window. The Edit Initial Extent window appears.

4. In the Initial Extent window, use the zoom in/out tools or use the Shift key and your mouse to define your initial extent. Once you are satisfied, click **OK**.

5. **Apply Changes** to commit the changes to memory and then **Save Site** (over the Map Preview window) to write the XML to the site configuration file.



Navigating away from a page before clicking **Apply Changes** will result in the loss of any changes you have made.

6. Go to **Viewers** and add a Viewer for Silverlight and Viewer for HTML5.

7. Launch either Viewer to see your new initial extent.

2.3 Turning Layers On/Off

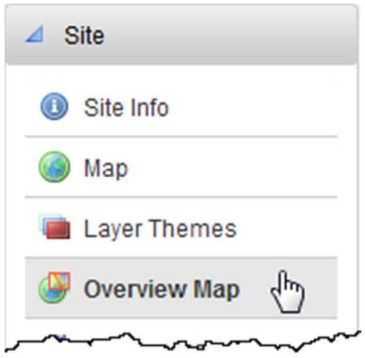
Change what layers are drawn when the viewer is opened, and what layers will be available to users in the Viewer.

1. Open Geocortex Essentials Manager and select **Map** from the sidebar.
   The map page is where you configure the map services added to a site.

2. Find the Zip Code layer in the list of map services. To make this layer on by default, check the box to the left of the layer name.
   By turning a layer on in Essentials Manager, it will then appear on by default when the Viewer is first opened. This change overrides the visibility set in the map service for this site only.

3. To commit the changes you've made, click **Apply Changes**.

4. Click **Overview Map** in the sidebar.



5. The Overview Map can share the same map service as the main map with different layers visible. Alternatively, a completely different map service can be used, but must be in the same projection and coordinate system as the main map services.
   Find the Parcels layer in the list of map services and turn it off.

6. Click **Apply Changes** to commit the changes on this page to memory, then **Save Site** to write the XML configuration file.

7. Open either Viewer to explore your changes.

If you have not closed your Viewer, you must refresh the page in order to view your changes.

2.4 Create and Manage Layer Themes

Learn how to create and manage themed group of layers. Here, we will be creating a Layer Theme that focuses on Hydrology and only uses layers that are concerned with that theme. When this theme is selected only layers concerned with hydrology will be drawn on the map.

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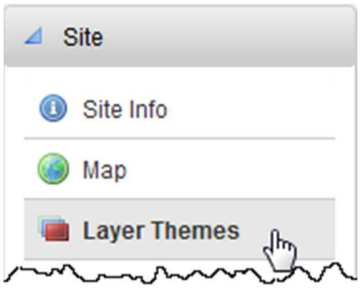
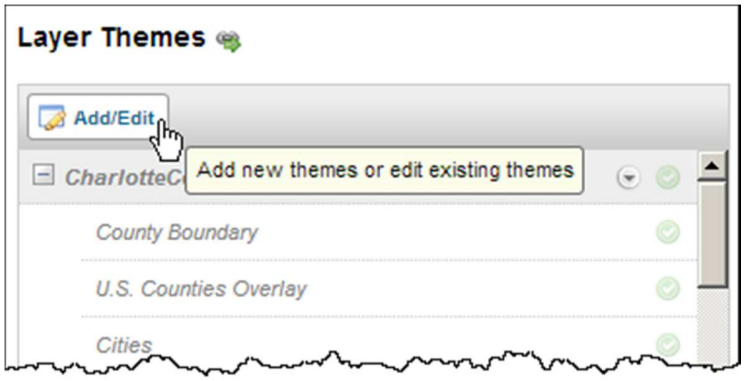
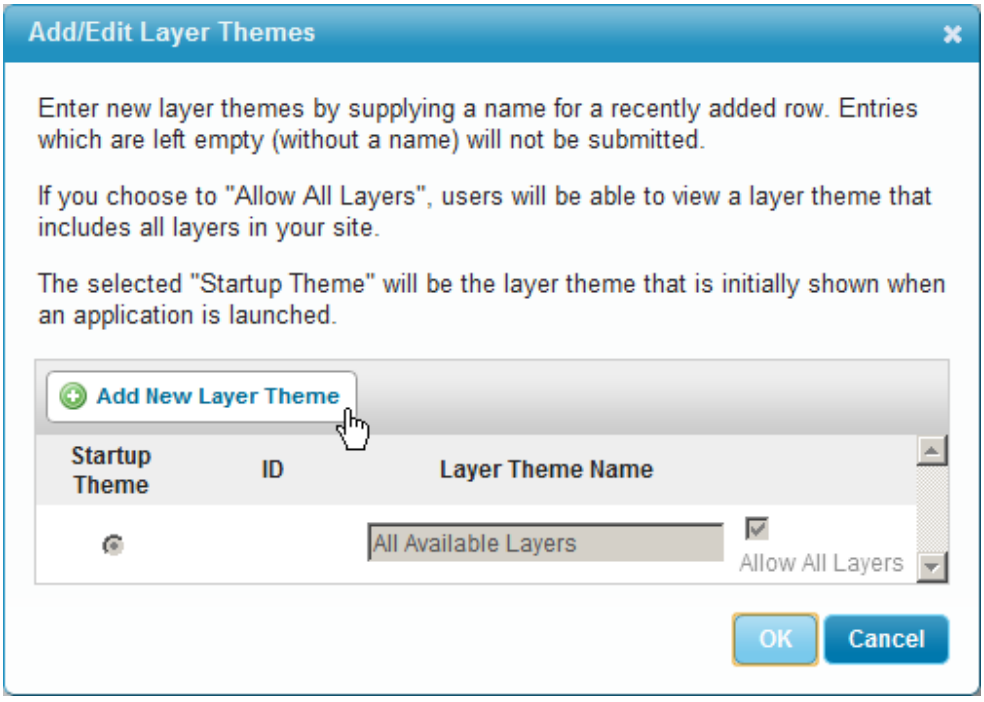
1. Open Geocortex Essentials Manager and select **Layer Themes** from the sidebar.



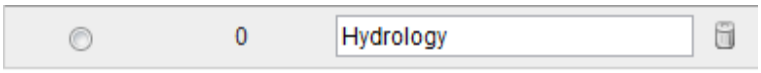
2. To start creating a new Layer Theme click the **Add/Edit** button.
   The Add/Edit Layer Themes window appears.



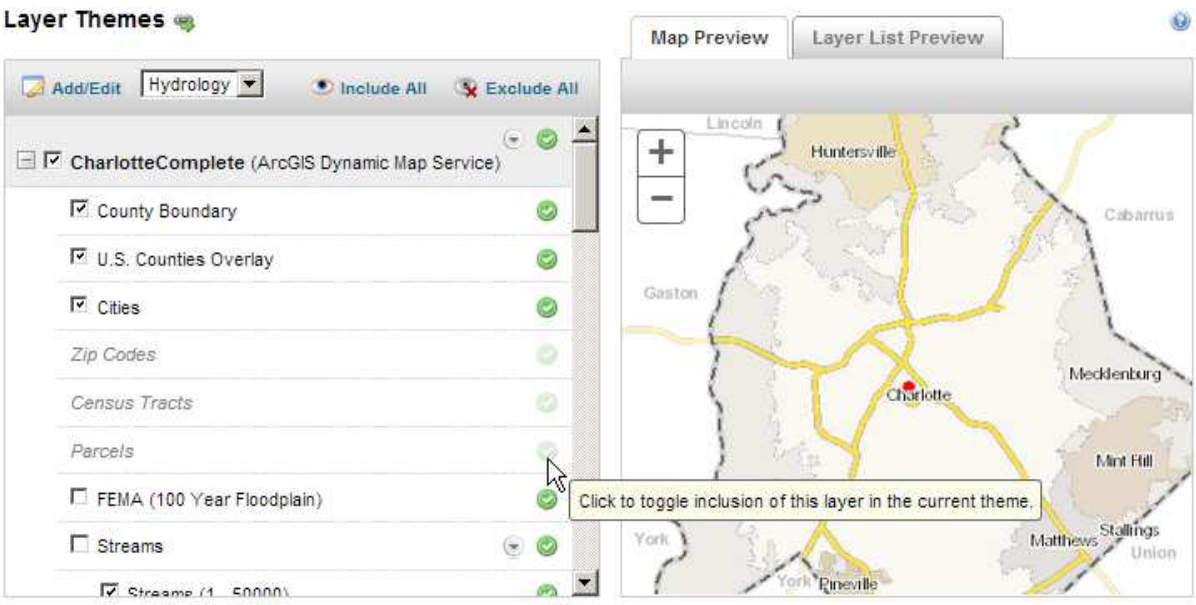
3. In the Add/Edit Layer Themes window, click **Add New Layer Theme**.



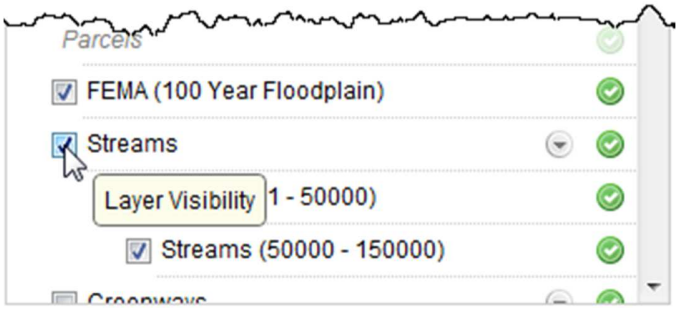
4. Create a name for the new Layer Theme then click **OK**.



5. To choose the layers included in the layer list when the hydrology theme is selected, click the green check icons to the right of the layer names.
   In this case, exclude the Layers **Zip Codes**, **Census Tracts**, **Zoning**, and **Jurisdictions** so they are not part of the Layer Theme.



6. Each included layer can also be set to draw or not draw when the layer theme is selected. Set the layers **FEMA**, **Streams**, **Greenways**, **Water Bodies**, **Watersheds** and **Hillshade** to be visible. Leave the settings for the other layers.



Deselecting the topmost item in a layer group will cause those below it not to draw, even though they may be also selected.

7. Set the layer visibility to not draw for the group **Streets** by clearing the check box, then click **Apply Changes**.

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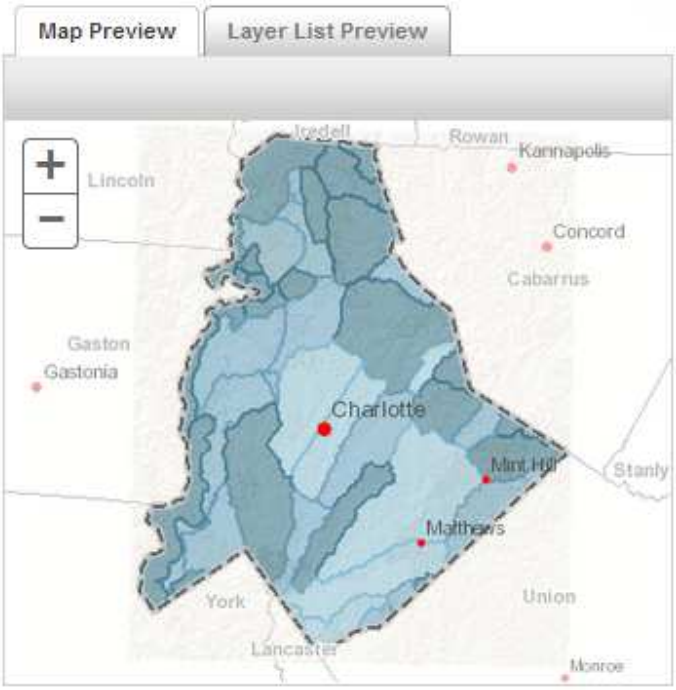
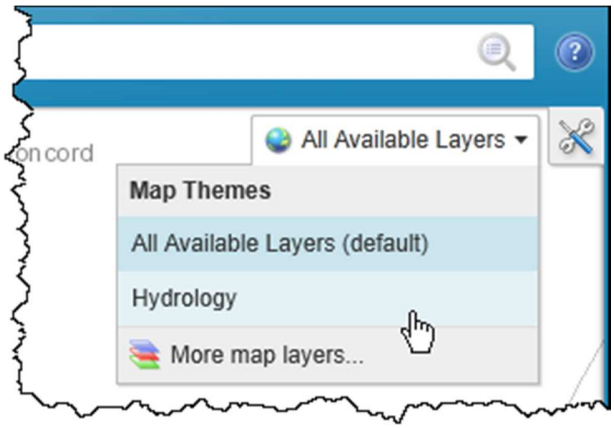
Once complete, your preview map should look like the following:



8. **Save Site** and then open the Viewer for Silverlight.

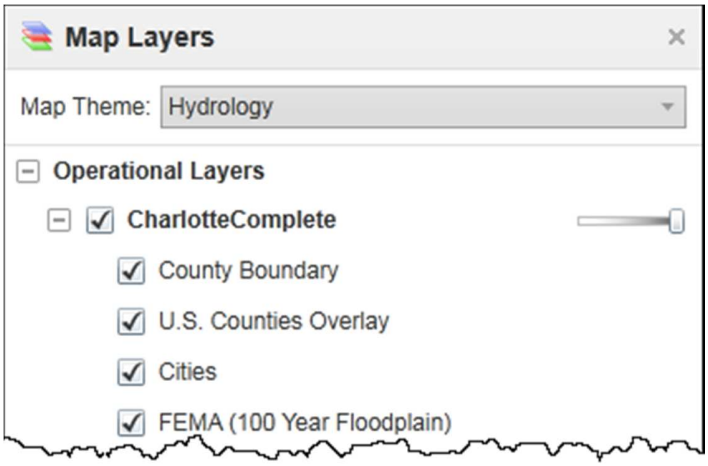
You do not need to close a viewer and relaunch it each time to view changes. Simply refresh the browser window (F5 in most, or by pressing the Refresh button). Any changes to the viewer or site will then appear.

9. Click **All Available Layers** drop down at the top-right corner of the map and select your Layer Theme from the list to have it draw on the map.



10. Layer Themes can also be changed through the Map Layers list.
    Open the Map Layers list by clicking on the arrow button to the left of the I want to… menu.

11. In the Map Theme, toggle between **All Available Layers**, and your Layer Theme.
    Notice when the Layer Theme is the one you created only those layers included in the layer theme are available in the layer list. For example, Zip Codes is not available in the Hydrology map layer theme.



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3. Use and Manage Data Fields

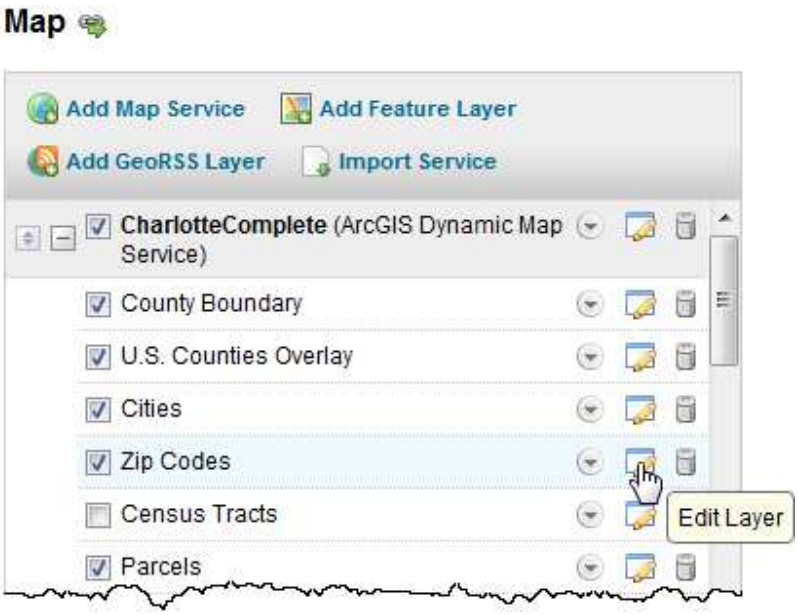
Configure Layer Fields and Data Links to appear in the Global Search.

3.1 Configure Layer Fields and Global Search

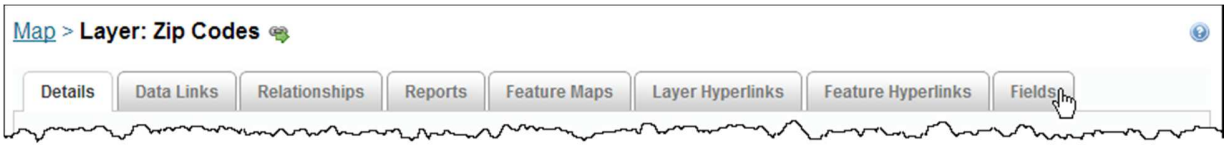
Learn how to make fields searchable in the Global Search by following these steps.

1. Open Geocortex Essentials Manager and click **Map** in the sidebar.

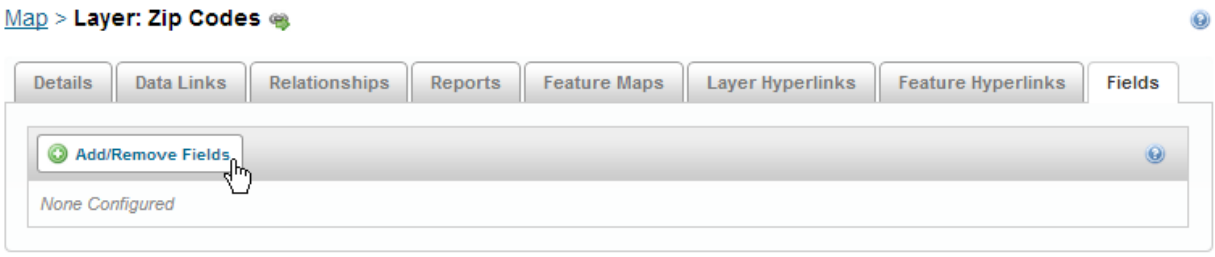
2. Start configuring the Zip Codes layer by clicking on the Edit Layer icon to the right of the layer name.



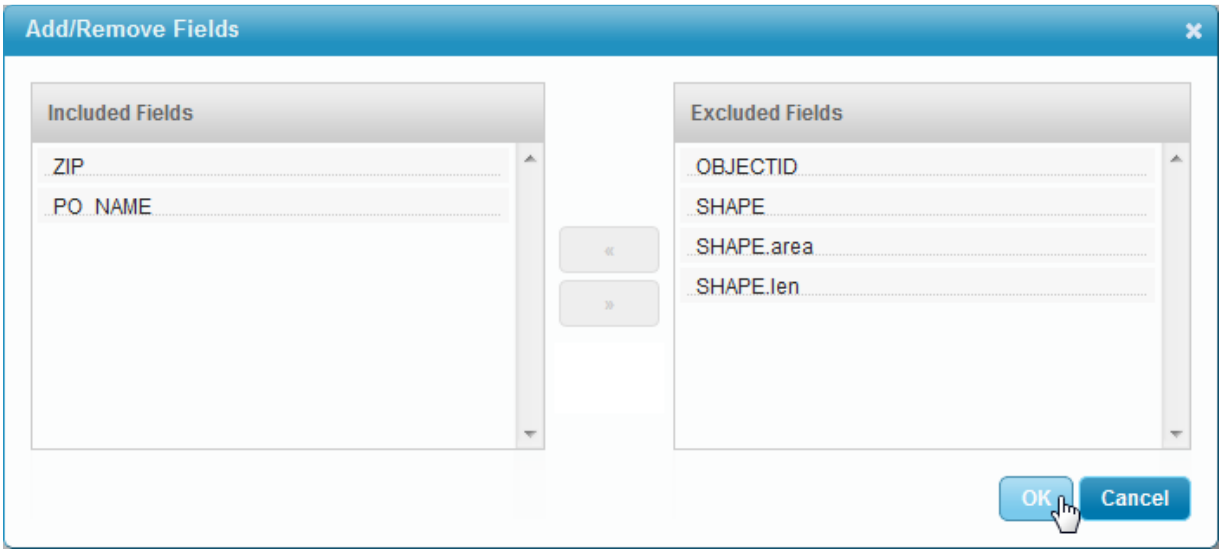
3. To modify the Zip Code layer field, select the **Fields** tab.



4. The default configuration for a layer's fields (when no items are added to the list) is to show every field available. A globally searchable layer with no explicitly configured fields will default to searchable fields.
   Under the Fields tab, click the **Add/Remove Fields** button to add a new field to the layer.
   The Add/Remove Fields window appears.



5. In the Add/Remove Fields window, add fields by selecting them from the Excluded Fields column and clicking on the left pointing arrow button.
   Move **ZIP** and **PO_Name** to the Included Fields column, and click **OK**.



6. Under the Fields tab, turn off Global Search for <all other fields> by clicking on the corresponding binocular icon, making an X appear through it. Leave the Global Search on for ZIP and PO_NAME. Fields removed from Global Search will not be queried when a search is performed in the Viewer.

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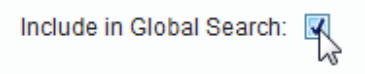
7. Turn off Visible for <all other fields> by clicking on the corresponding eye icon, making an X appear through it.
   Turning off Visible for a field will remove it from the details provided when a feature is selected in the Viewer.

8. Click **Submit Field Changes** to save your changes.

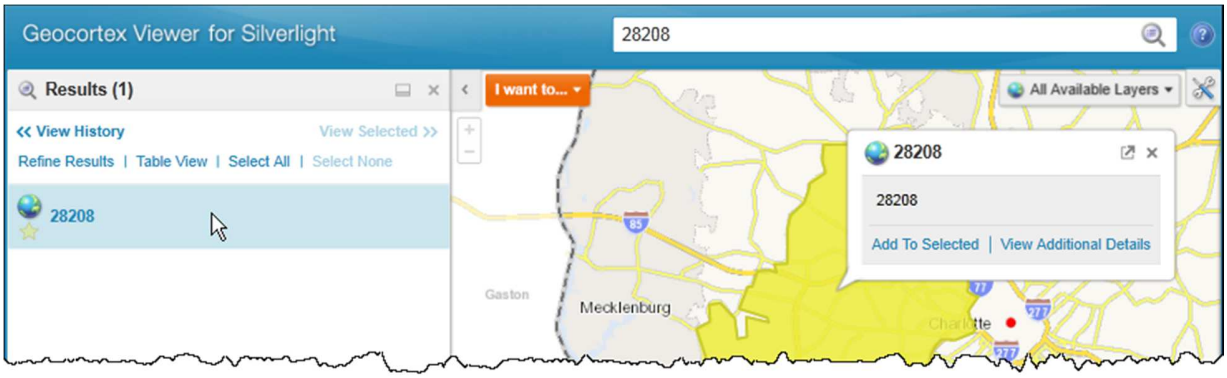
9. Click on the **Details** tab.

10. To include the Zip Code layer in Global Search, scroll to the bottom of the screen and check **Include in Global Search**.



11. **Apply Changes** to commit the changes to memory and then **Save Site** to write the XML to the site configuration file.

12. The field ZIP was included in the global search.
    Launch or refresh either of the viewers, and then perform a Global Search for the Zip Code 28208.



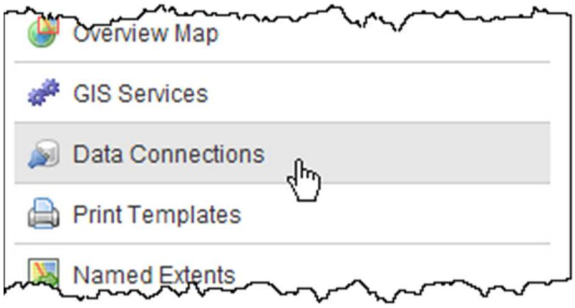
13. Click on the result and view the fields you added under Attributes.

14. Search for Charlotte to see all Zip Codes in Charlotte.
    Global Search queries all fields simultaneously, or in this case each item entered into the search bar are searched against the PO_NAME and the ZIP fields. When you search for 28208, the result is found in the ZIP field but not in the PO_NAME. When you search for "Charlotte", multiple records are found using the PO_NAME field and none are found in the ZIP field.

3.2 Create Database Connection to SQL Server

Before configuring data links, a connection to the associated data source must be established in the site configuration. This one data connection can be reused, as long as the information for the other items remains consistent.

1. Open Geocortex Essentials Manager and click **Data Connections** in the sidebar.



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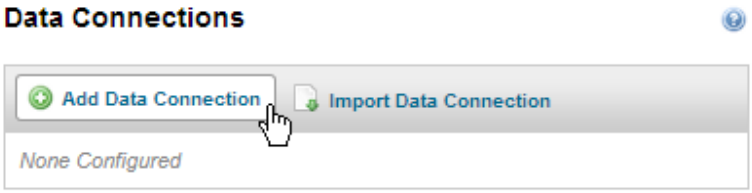
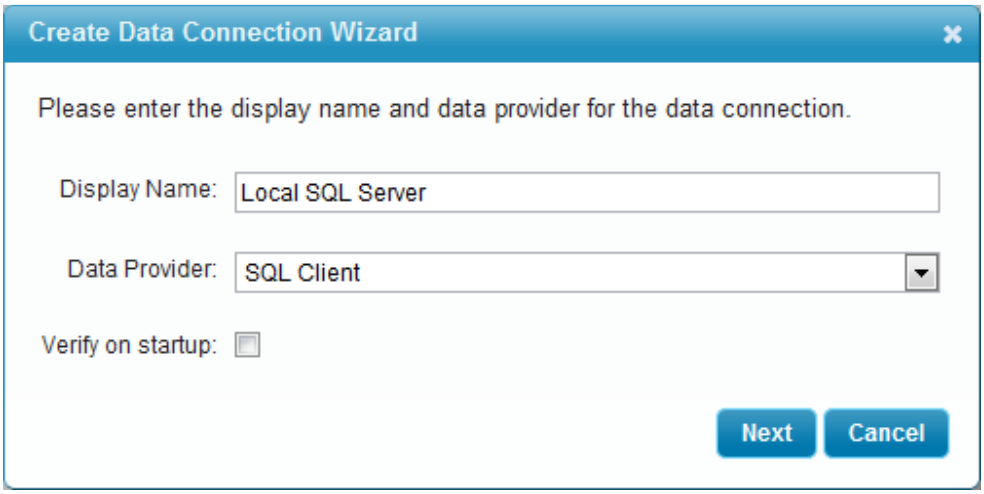
2. To begin creating a Data Connection, click the **Add Data Connection** button.
   The Create Data Connection Wizard window appears.

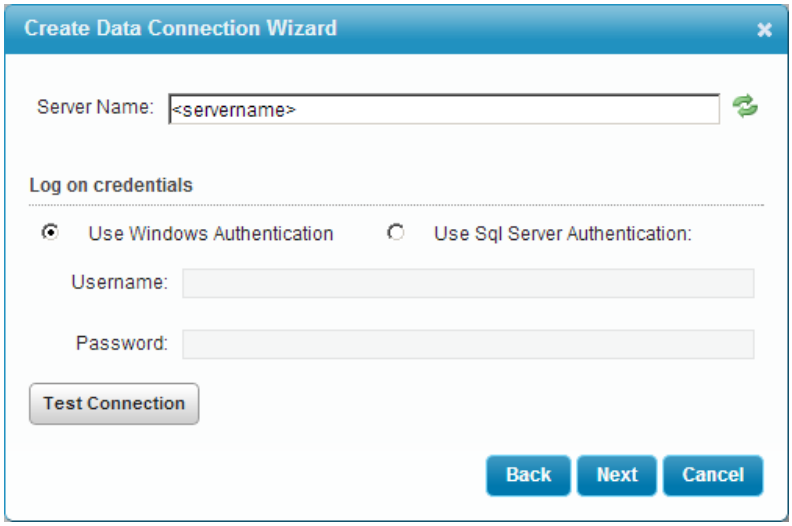


3. Create a Display Name for your data connection and select **SQL Client** as the Data Provider from the drop down menu. To move to the next step, click **Next**.
   If Verify on startup is checked, Essentials attempts to connect to the database specified in the data connection when the site loads. If the data connection is not available, an error appears immediately. If Verify on startup is not checked, then the database connection is made on-demand when a data link is attempted and errors will only occur at this point.
   The settings for a data connection will change given the environment. Therefore, the settings you commit here may not be appropriate for the data connections you create at work.



4. As each environment is different, use the Server Name provided by your instructor.

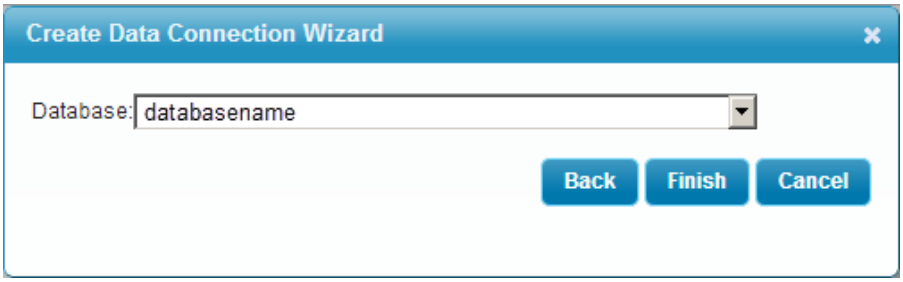
5. Select **Use Windows Authentication** to use in-process integrated authentication.
   When you select Use SQL Server Authentication, the username and password will be shown in clear text as part of the connection string.



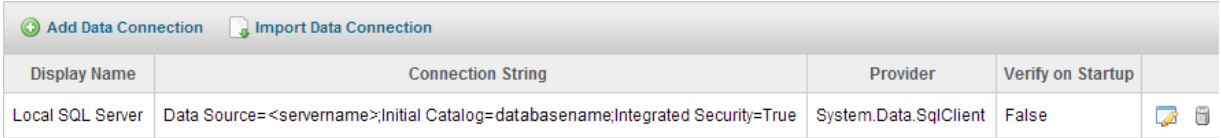
Using Windows Authentication will attempt to authenticate against the SQL database as the current application identity, as set in IIS.

6. Click **Test Connection** to make sure the connection works, then click **Next**.

7. Use the database supplied by your instructor. Then, click **Finish** to complete the creation of your Data Connection.



Once completed, your Data Connection should look similar to the following:



19. Click **Save Site** to write your changes to the configuration file.

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3.3 Create a Data Link using Connections

With the Data Connection configured and functioning, you can now create a Data Link that allows you to see the projects for a given Zip Code in the Additional Details window in the Viewer.

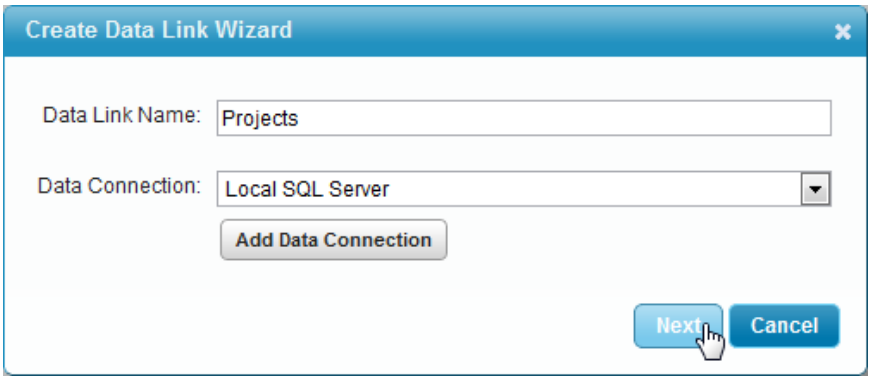
1. Data links are configured for a specific layer.
   Open Geocortex Essentials Manager and select **Map** from the sidebar.

2. Find Zip Codes in the list of layers and click the Edit Layer icon.

3. Select the **Data Links** tab, then click the **Add Data Link** button.
   The Create Data Link Wizard window appears.

4. In the Create Data Link Wizard window, enter a Data Link Name.

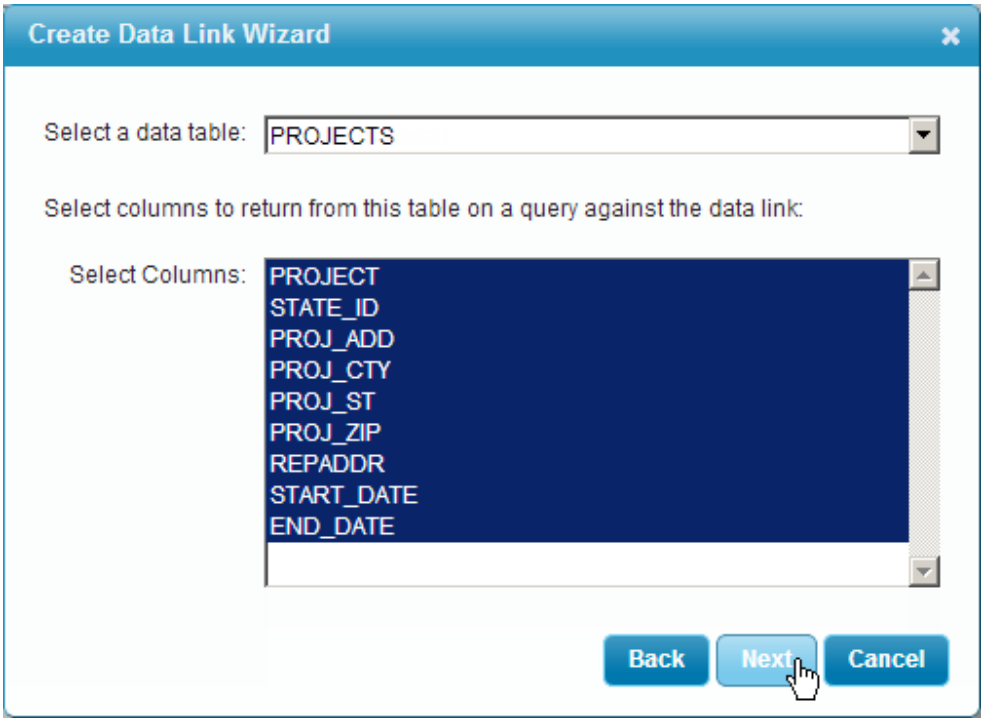
5. Select the data connection you created in the previous exercise as the Data Connection, then click **Next**.



As a space acts as a delimiter, do not include a space in the Data Link Name.

6. Select the **PROJECTS** table, as the data table.
   This table contains attribute data that we will link to the geographic data.

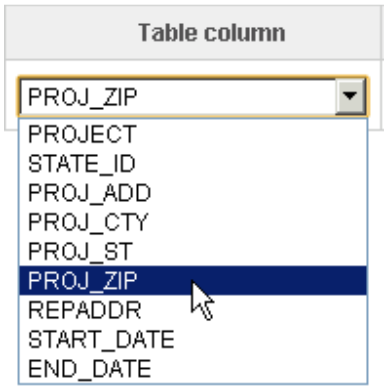
7. Select all of the columns to have them included in the results and click **Next**.



To select multiple columns, select the first column in the list, press and hold the Shift key, then select the final column in the list. To select multiple columns, press and hold CTRL key and click on items to toggle them as included or excluded.

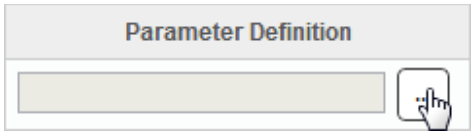
8. Click **Add Condition** to link the gis and attribute data to return results from the PROJECTS table.

9. Select the attribute table column **PROJ_ZIP**.
   This field will be used as a foreign key to relate data to the foreign attribute table.



10. Select **=** as the Operator.
    This will return results that are equal to the data value specified.

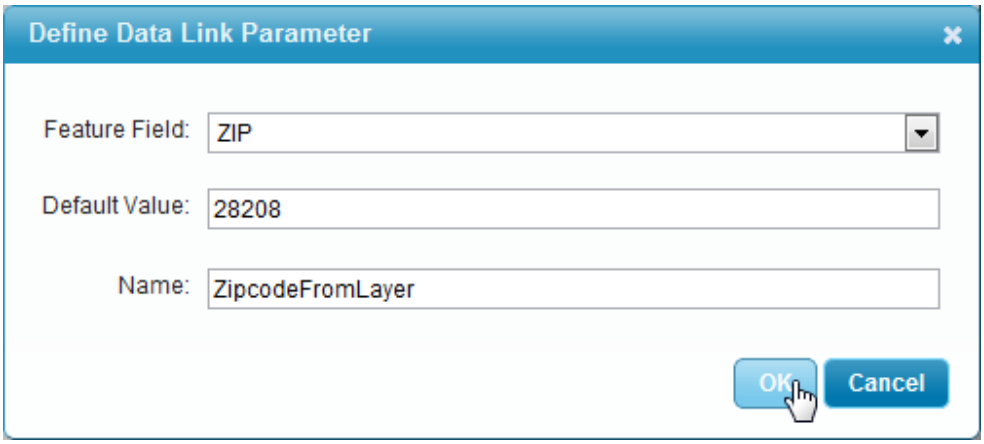
11. Click the ellipsis button to define the Parameter Definition.
    The Define Data Link Parameter window appears allowing us to set how the data from the layer joins with the data from the related attribute table.



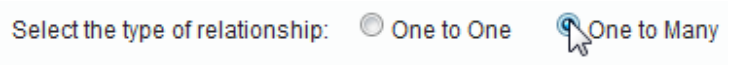
12. In the Define Data Link Parameter window, use **ZIP** as the Feature Field.
    When the user interacts with this data link in the viewer, the layer's attribute value from the chosen feature field will be taken and placed into the specified data link variable. This links PROJ_ZIP with the ZIP field so that data returned from the PROJECTS table is equal to the data value specified for ZIP.

13. Enter **28208** as the Default Value. This optional value will be used in the SQL statement during testing only.

14. Provide a variable name for the Data Link Parameter then click **OK**.

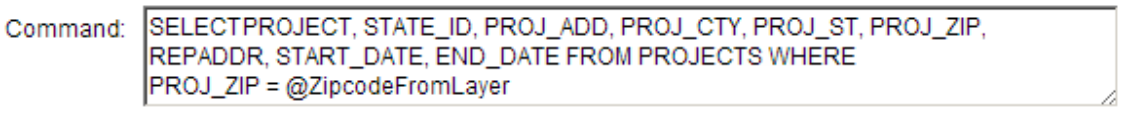


15. In the Create Data Link Wizard window, select the relationship type to be **One to Many**, then click **Finish**.
    In this instance, the One to Many relationship refers to one zip code geographic feature linking to many attribute table projects within it.



16. Once completed you can see the SQL Server SQL statement that was built using the Data Link Wizard by clicking the Advanced icon.
    This SQL statement is executed against the target database table after connecting using the configured data connection.

When a user makes a request to view a record from this data link, the system takes the zip code value from the layer zip code and replaces any occurrence of @ZipcodeFromLayer in the SQL statement with that value. Or, when testing the rest endpoint, it takes the default value and replaces @ZipcodeFromLayer with it instead.



The table name in the select statement image may be different than what you see in your own environment.

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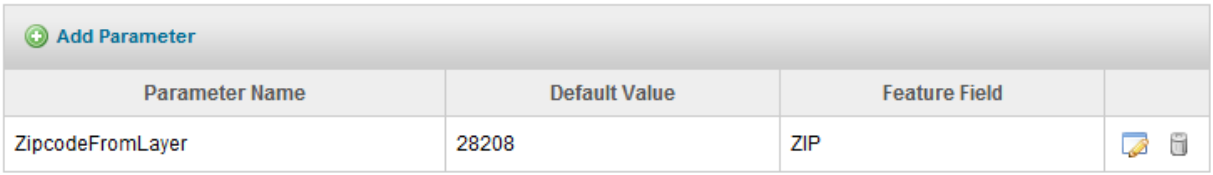
The variable @ZipcodeFromLayer from the command statement is replaced with a value from the ZIP field in the layer. This exercise example has a simple key, where PROJ_ZIP = ZIP. It is possible to include multiple parameters for complex key relationships (where the condition must evaluate multiple fields).

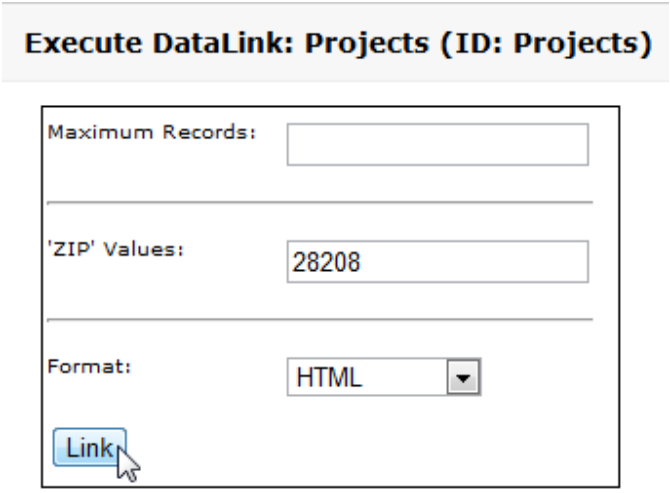


17. **Apply Changes** and **Save Site**.

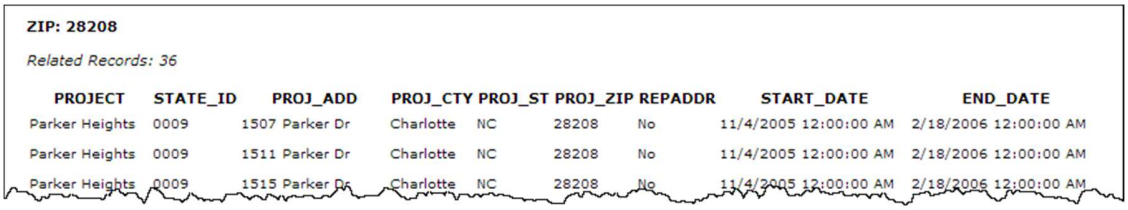
18. To test the data link using the rest endpoint, click the View REST endpoint icon at the end of the page title.
    The REST endpoint window appears.

19. In the REST endpoint, click the Supported Operations **Link**.

20. Under Execute DataLink, select **HTML** as the Format and click **Link** to see the results of running the DataLink for where the ZIP values equals 28208.



21. View the results of running the Data Link.
    These are the same as what would appear if you ran the Data Link in the Viewer.



ZIP: 28208

Related Records: 36

PROJECT	STATE_ID	PROJ_ADD	PROJ_CTY	PROJ_ST	PROJ_ZIP	REPADDR	START_DATE	END_DATE
Parker Heights	0009	1507 Parker Dr	Charlotte	NC	28208	No	11/4/2005 12:00:00 AM	2/18/2006 12:00:00 AM
Parker Heights	0009	1511 Parker Dr	Charlotte	NC	28208	No	11/4/2005 12:00:00 AM	2/18/2006 12:00:00 AM
Parker Heights	0009	1515 Parker Dr	Charlotte	NC	28208	No	11/4/2005 12:00:00 AM	2/18/2006 12:00:00 AM

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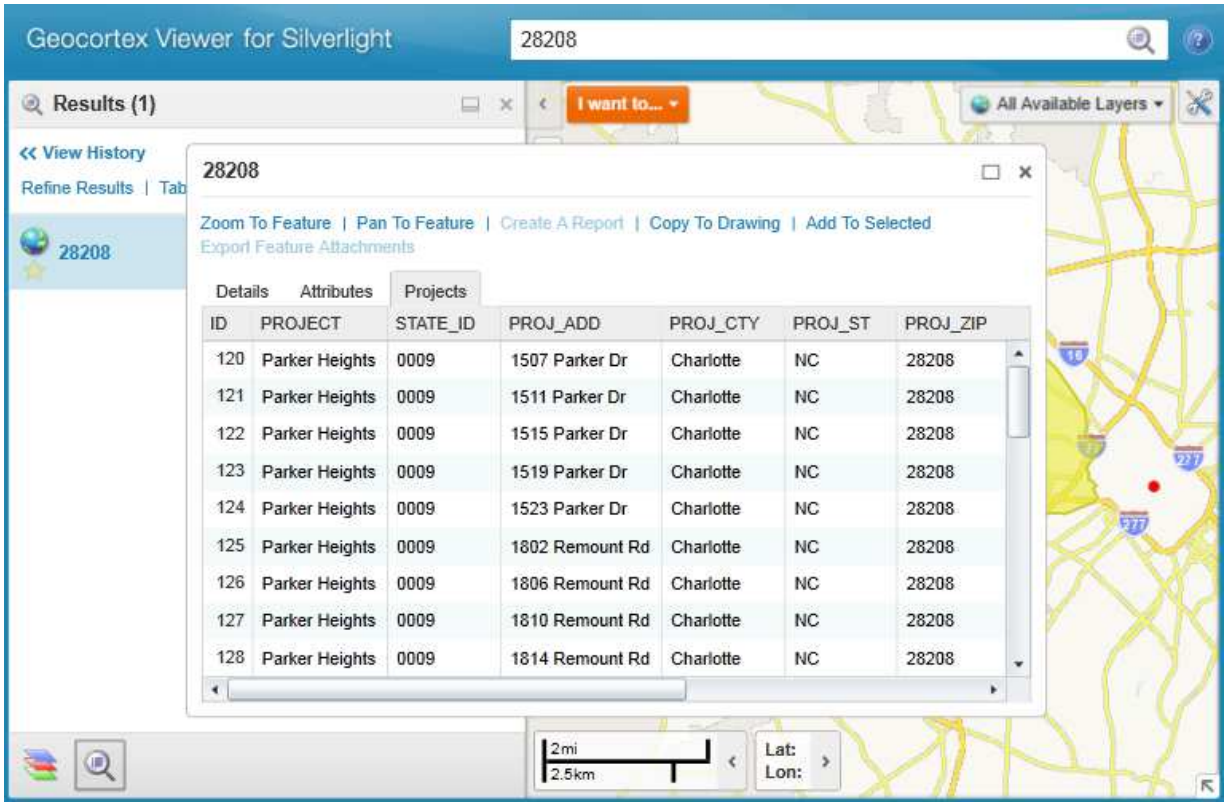
22. You can execute the same query in the Viewer by using the Global Search to find the same zip code geographic feature and viewing the layer details.
    Open either viewer and search 28208 in the Global Search bar to return the results of the Data Link.



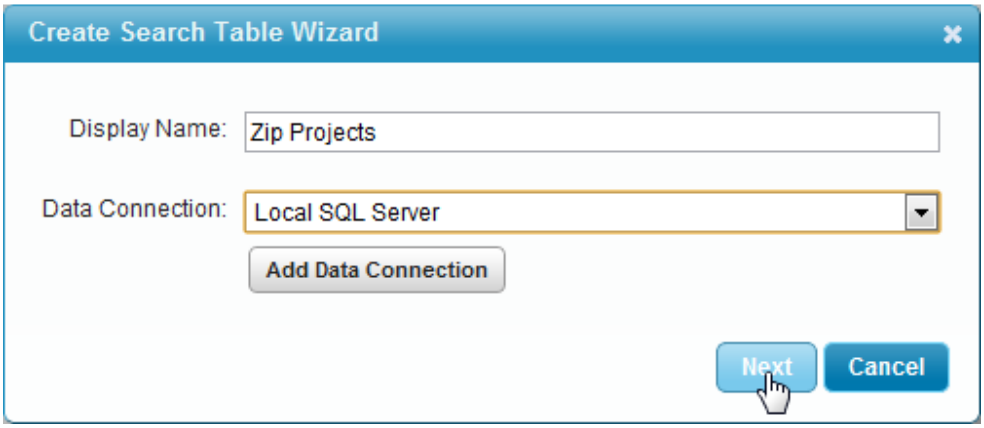
3.4 Global Search against Data Link

In addition to finding layer data, global searches can also find information in data linked tables. The related layer record and not the data link itself will be shown on the results window.

1. Open the Geocortex Manager and click **Tables** in the sidebar.

2. To begin adding a Search Table, select the **Add Search Table** button.
   The Create Search Table Wizard Window appears.

3. In the Create Search Table Wizard window, create a Display Name for your Search Table and select the Data Connection you created in the previous exercise. Once completed, click **Next**. All configured data connections in the current site are listed in the data connection menu.



4. Use the **PROJECTS** table for the Search Table.

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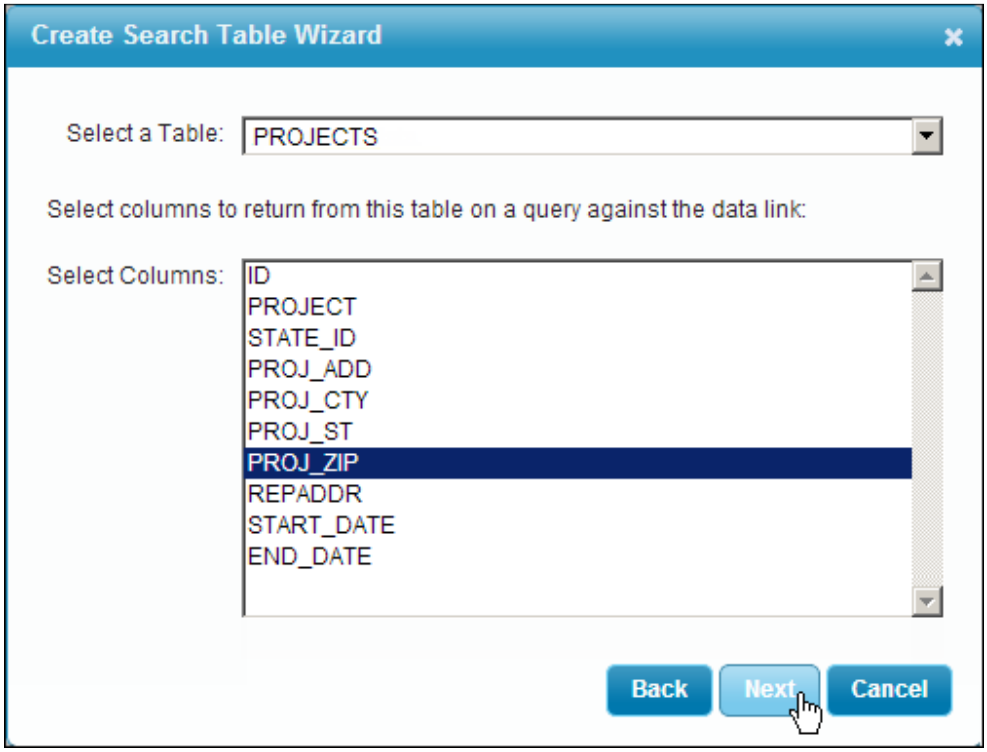
5. Select **PROJ_ZIP** as the column to return from the table on a query against the data link. Then, click **Next**.
   The PROJ_ZIP column will be returned from the query and used to show the corresponding zip code boundary.



6. Click the **Add Condition** button.
   The global search will look for project names in the data linked attribute table, then show the corresponding zip feature. The condition defined looks for projects with a similar name to what the user entered into the global search bar on the viewer.

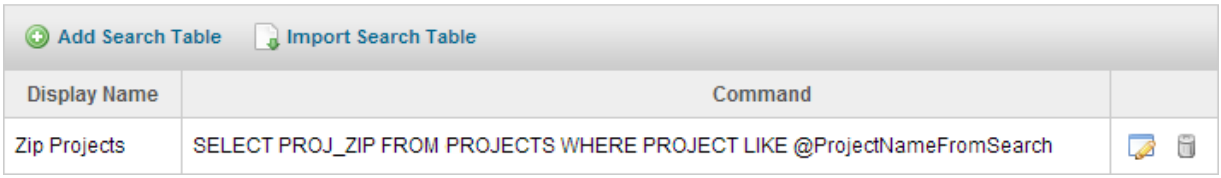
7. Set the Table Column to **PROJECT**, and the Operator to **LIKE**.
   The LIKE operator allows for approximate string matching with percent (%) as a wildcard.

8. To specify a default value (for testing) and a variable name for the text to search for, click the ellipsis button to create the Parameter Definition.
   The Define Search Table Parameter window appears.

9. In the Define Search Table Parameter window, provide a Name (eg. ProjectNameFromSearch) and the default value of Parker Heights. Click **OK**.

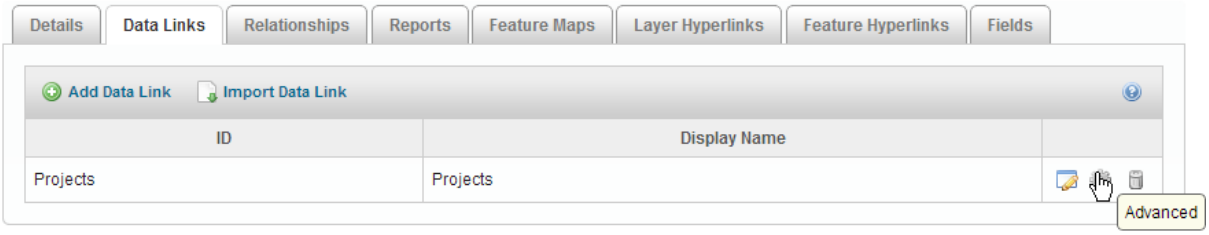
10. Click **Finish**.

Once completed, the SQL statement for the global search is created. The @ProjectNameFromSearch value is replaced with what the user enters in the global search bar, and only the PROJ_ZIP field is returned.
In the next steps, we tell the global search how to find a zip code boundary from the returned PROJ_ZIP value.

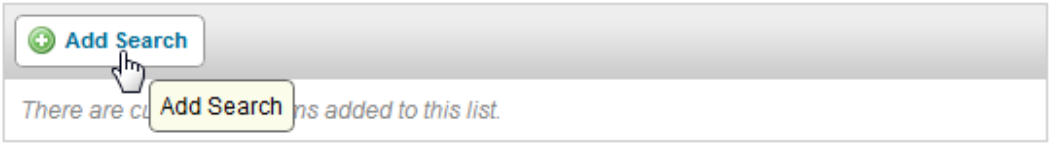


11. Once data are returned from the global search, it must know how to find the related geographic feature. To do so you must add the configured Search Table to the data link in the layer itself. In the sidebar, select **Map**, then edit the Zip Codes layer.

12. Open the **Data Links** tab and select the Advanced icon for your data link.



13. Begin adding a search by selecting the **Add Search** button, located at the bottom of the page. A Define Data Link Search window appears.



14. In the Define DataLink Search window, enter a Display Name for your Data Link Search (eg. Zip Projects).

15. Select the Search Table you created earlier as the table for your Data Link Search.

16. Enter PROJ_ZIP as the Table Field.
This field is the returned data attribute from the SQL statement that is used to find the corresponding zip code geographic feature.

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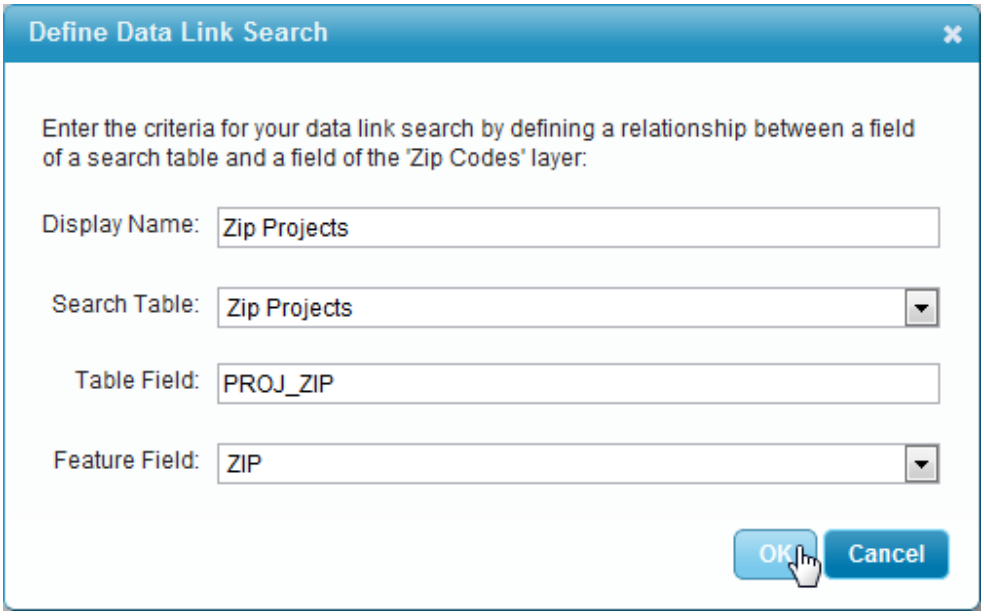
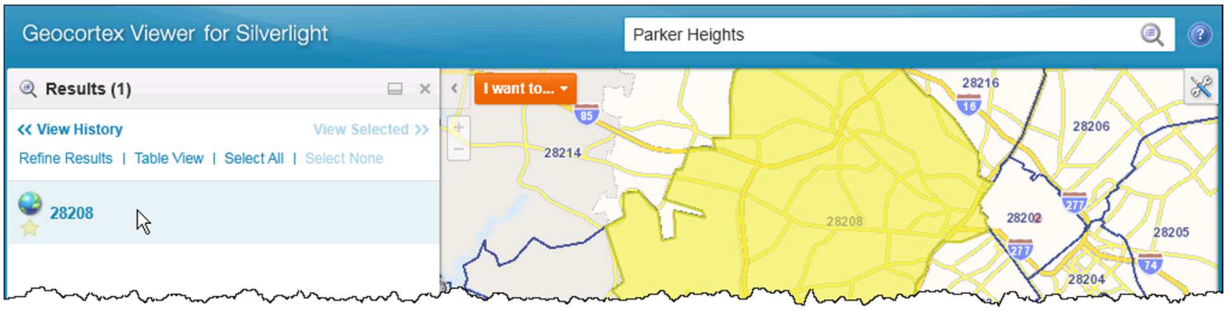
17. Select **ZIP** as the Feature Field, and then click **OK**.
    The PROJ_ZIP value is the key field and is used to find the geographic features that have the same entry in the layer's ZIP field.



18. Test your Data Link Search by opening a Viewer for Silverlight and performing a Global Search for Parker Heights.
    Notice that the ZIP code of the feature appears in the results, and not the value you searched. This is because two searches occurred, first against the data link for Parker Heights. When a match was found, the ZIP for Parker Heights was the only field returned by the SQL Query. The ZIP field was then used to search the Zip Codes layer, which returned the feature to show in the Results list.



4. Icons and Feature Descriptions

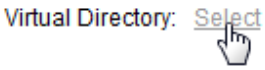
Configure the icons associated with feature layers and how text appears in feature descriptions to the end user.

4.1 Set a Layer Icon

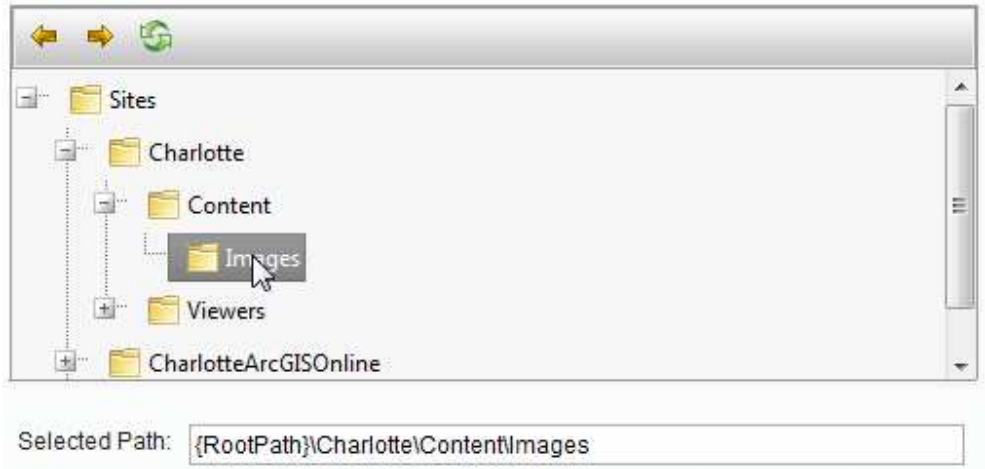
Icons help users more quickly navigate and associate layers than text. It also allows you to give the site a style unique to your organization. All Icons are stored in a Geocortex virtual directory, which must first be defined. Follow this exercise to learn how to set a layer's icon.

1. Open the Geocortex Essentials Manager and select **Site Info** from the sidebar.

2. To set a virtual directory for your Layer Icon images, click **Select** next to Virtual Directory.



3. For the Virtual Directory, navigate to **Sites\Charlotte\Content\Images** and then click **OK**. In this example we are using the icons from the Charlotte demo site, but you can use any directory in your Sites' root folder for setting your icon directory.



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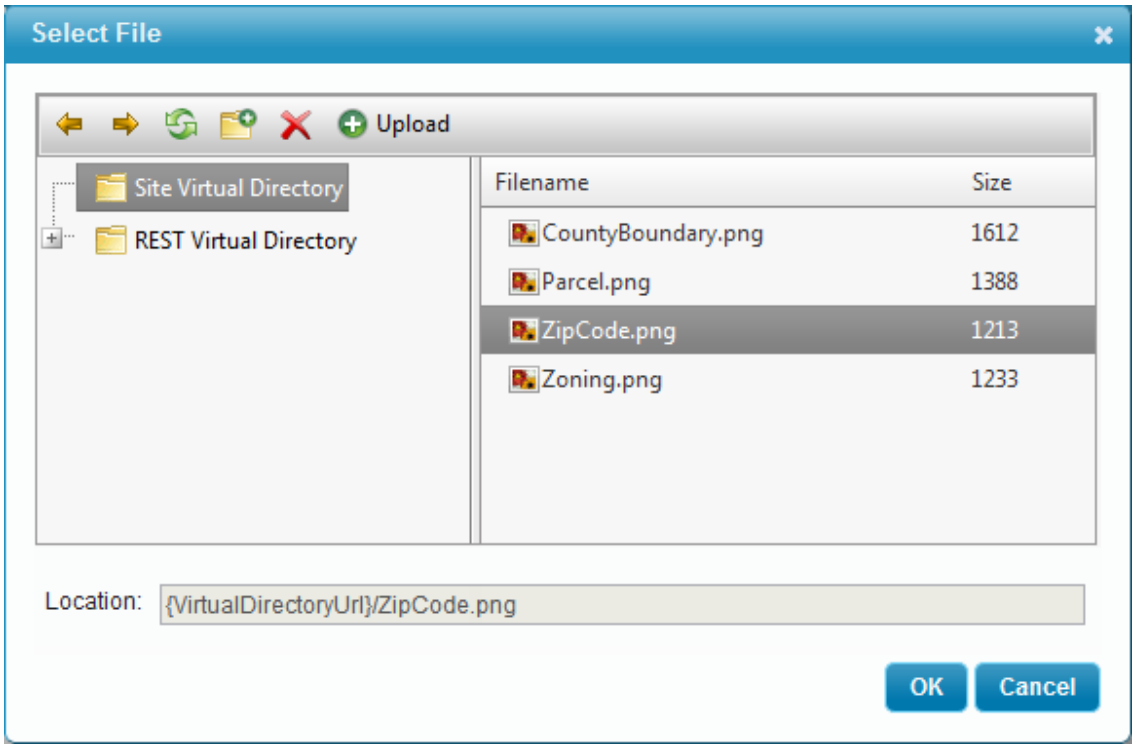
4. Begin applying an image to the Zip Codes layer by selecting **Map** from the sidebar then clicking the layer's Edit Layer icon.

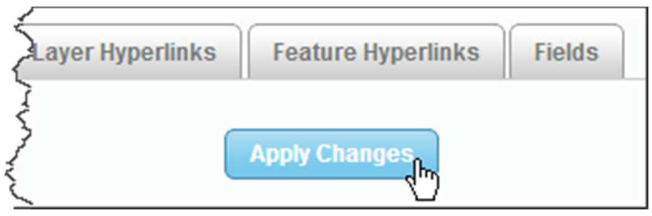
5. To select an icon for the layer, click the **Browse...** button to the right of the Layer Icon URI field. The Select File window appears.

6. In the Select File window, under **Site Virtual Directory**, select the image **ZipCode.png** as your layer icon.

7. To finish, click **OK**.



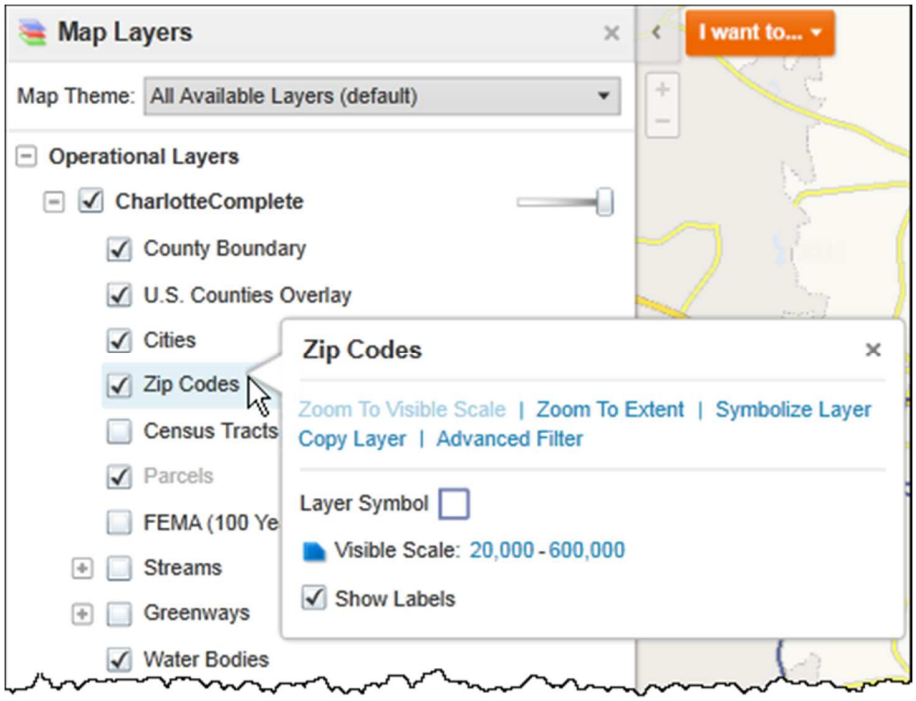
8. Click **Apply Changes** to save the changes you've made.



Notice that the Layer Icon now appears next to the Layer Icon URI.

9. To see your changes, click **Save Site** and open or refresh the Viewer for Silverlight.

10. In the Viewer, open the layer list and right-click on **Zip Codes**.
    The new icon appears in the map tip.



11. The icon can also be viewed in your search results.
    Perform a search for David, and view the icon next to the items from zip code.

4.2 Layer Feature Descriptions

When features are selected, the feature description displays information you want to show in the selections list. The feature long description shows up on the pop-up window when getting more details on the selected record.

1. In Geocortex Essentials Manager, click **Map** in the sidebar then edit the Zip Code layer.

2. Click the Edit… button to modify the Feature Description.

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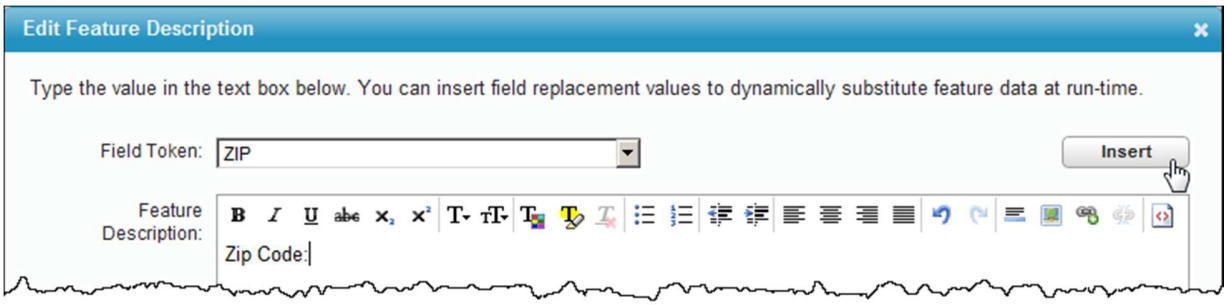
3. The feature description editor is a full what-you-see-is-what-you-get editor. You can add field replacement tokens, text and formatting as you want it to appear in the Viewer.
   Start by typing the text "Zip Code:" into the Feature Description window. Next, select the ZIP field in the Field Token list, and then click **Insert** to place it next to the typed Zip Code text.
   This creates a replacement token in the Feature Description, making it a dynamic element of the description.

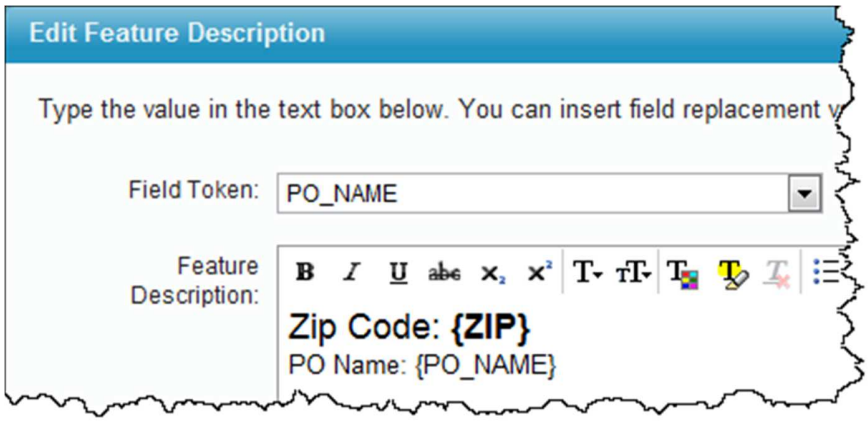


Field replacement tokens can be inserted using the field drop down and then clicking the Insert button or typed in directly, if the field names are known.

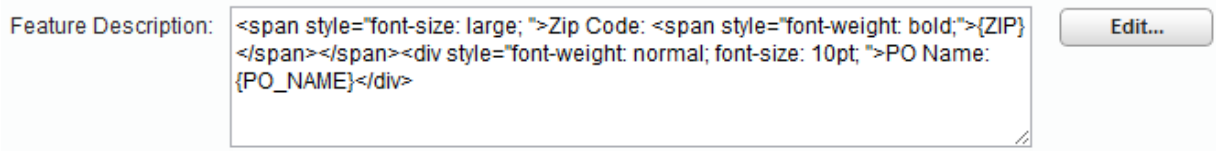
12. Create a new line in the feature description and type "PO Name:"

13. In Field Token, select **PO_NAME** and click **Insert** to place it into the Field Description.

14. Use the text formatting options to modify the appearance of your text.

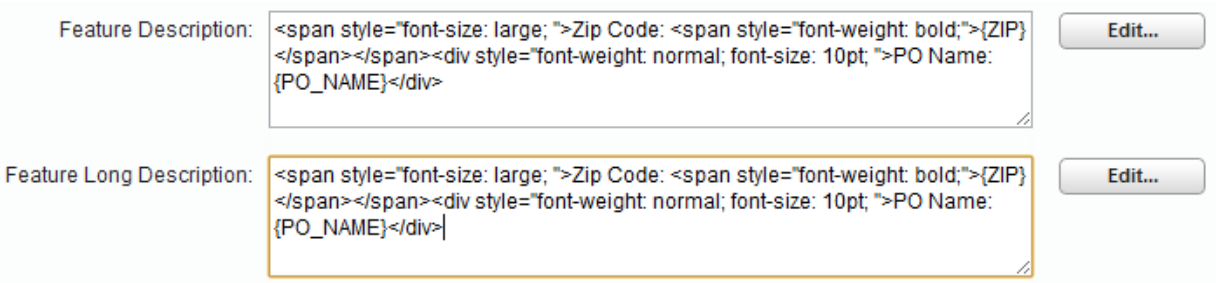


15. When you are satisfied with your formatting, click **OK**.
    The Feature Description field is populated with HTML representing what was edited in the description.

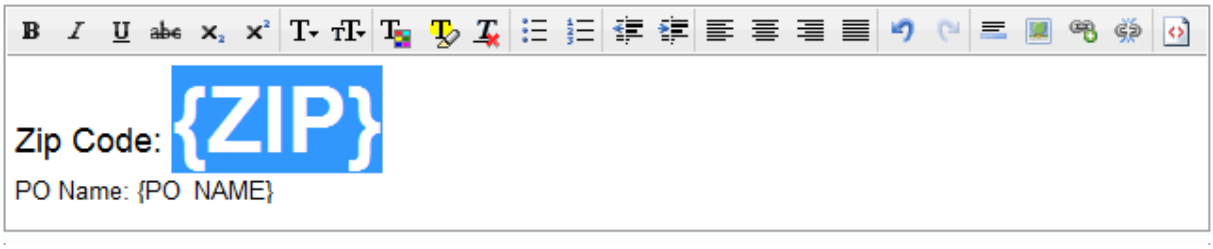


16. Copy the contents of the Feature Description box and paste it into the Feature Long Description box.

The Long Description is what appears in the pop-up feature in the Viewer when you click on a feature.



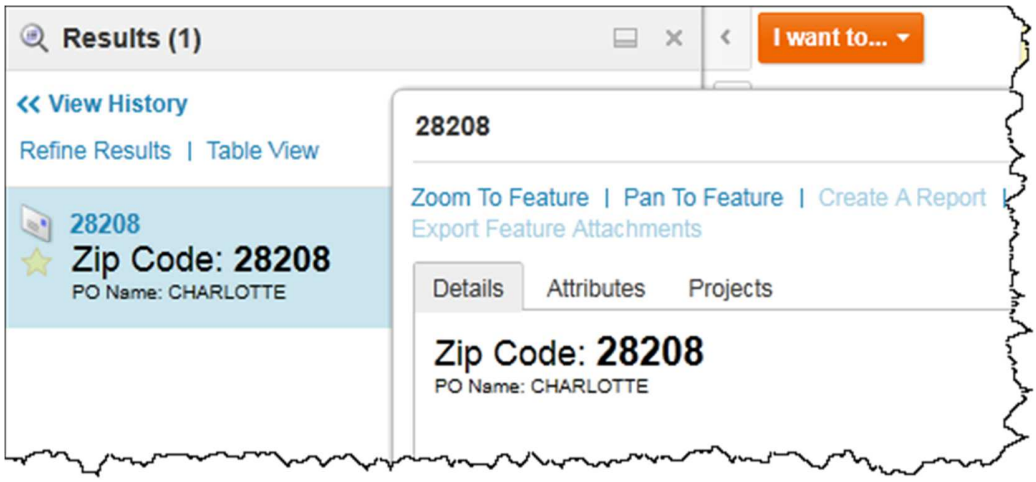
17. Modify the appearance of the Feature Long Description text by clicking on the **Edit...** button and making the {ZIP} replacement token a larger font.



18. When you are satisfied with your modifications, click **OK**.

19. Save your changes by clicking **Apply Changes** then **Save Site**.

20. View your changes by opening either viewer, searching for zip code 28208 and selecting the results.



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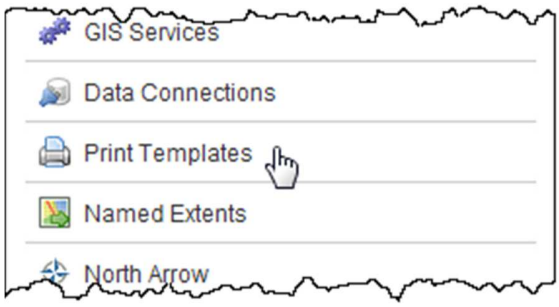
5. Print Templates and Reports

Add and modify a pre-created print template and learn to create and add a report to a layer.

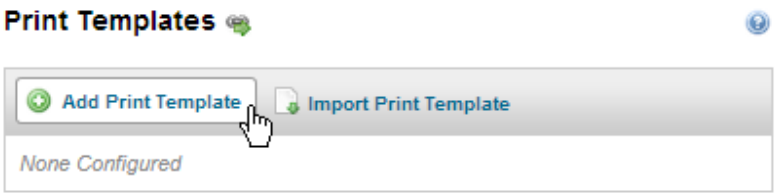
5.1 Add a Pre-created Print Template

Print Templates can be created and applied to multiple sites. In this lesson, learn how to add a pre-created print template to your site. View example templates used in the demo sites in **C:\Program Files (x86)\Latitude Geographics\Geocortex Essentials\Default\REST Elements\Sites\Resources\PrintTemplates**.

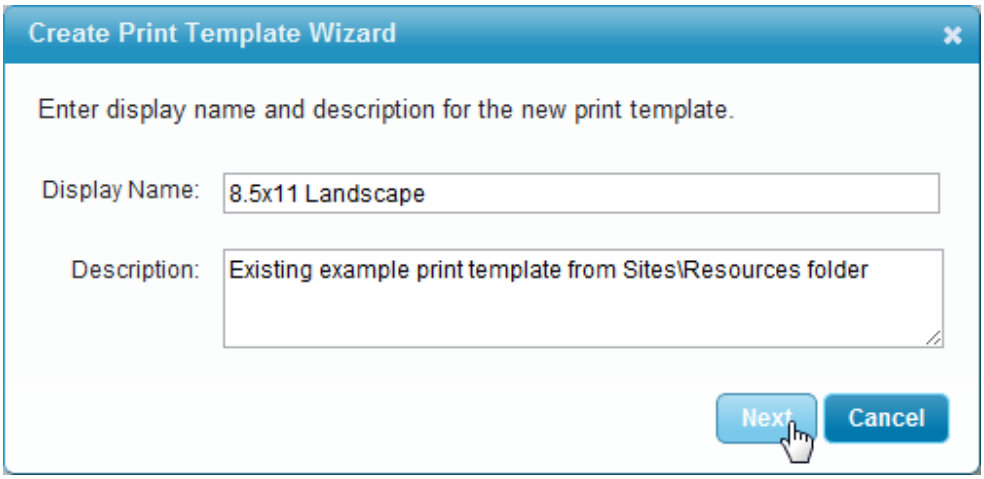
1. Open Geocortex Essentials Manager and select **Print Templates** from the sidebar.



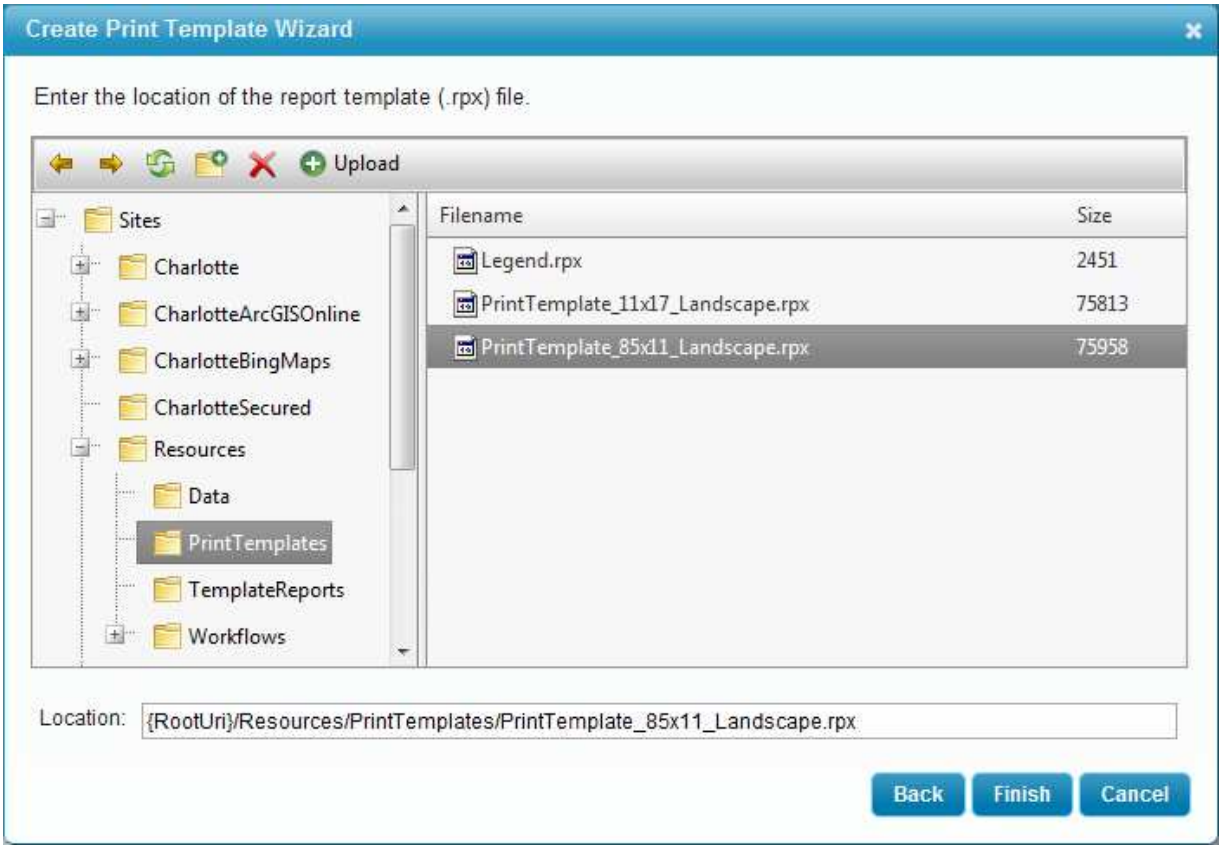
2. On the Print Templates page, click **Add Print Template**.
   The Create Print Template Wizard window appears.



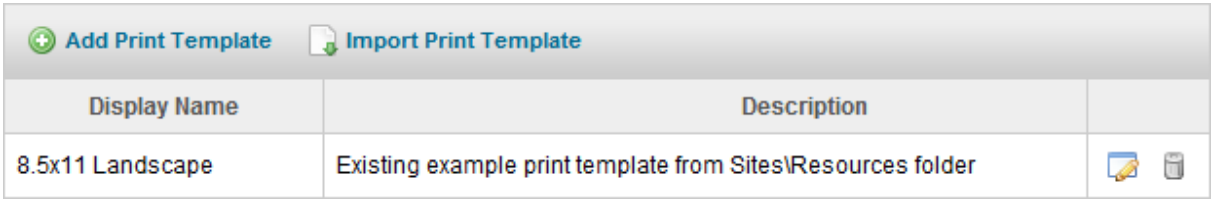
3. In the Create Print Template Wizard window, provide a Display Name and a Description for your new Print Template, then click **Next**.
   The Display Name below is the name of the print template file that you will be adding in the next step.



4. Navigate to **Sites\Resources\Print Templates** and select **PrintTemplate_85x11_Landscape.rpx** for your report template. Then, click **Finish**.

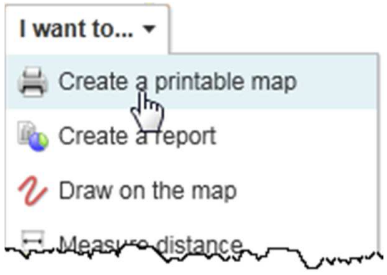


Once completed, your print template should look similar to the following:



5. Click **Save Site** and then open the Viewer for Silverlight.

6. In the Viewer for Silverlight, to open the Print Template, click the **I want to...** button and select **Create a printable map**.
   The Create a Printable Map window appears.



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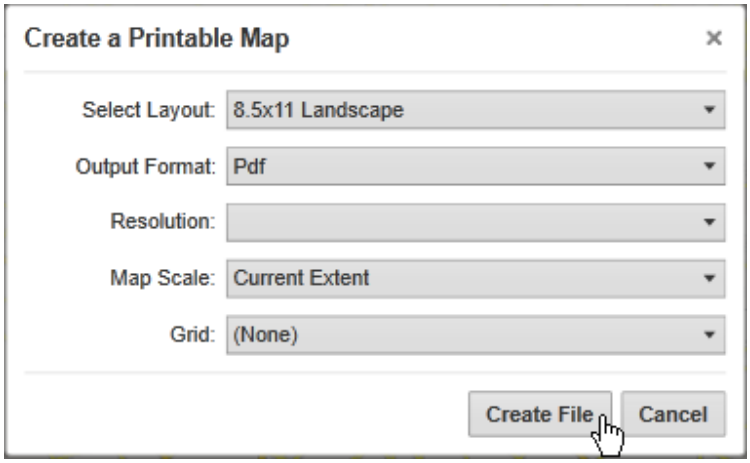
7. As you have only added one Print Template, there is nothing to modify in this window. In the Create a Printable Map window, click **Create File** to create a Pdf of your map.

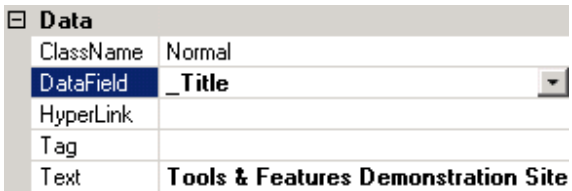


8. Once the printable map has been created, click **Open File**. A Pdf of your map appears.

Popup blockers often prevent the PDF from opening. Make sure your browser hasn't blocked this request (usually an error message indicates this at the top or top-right of the web browser window). If your request was blocked, disable the pop-up blocker then click open file again.

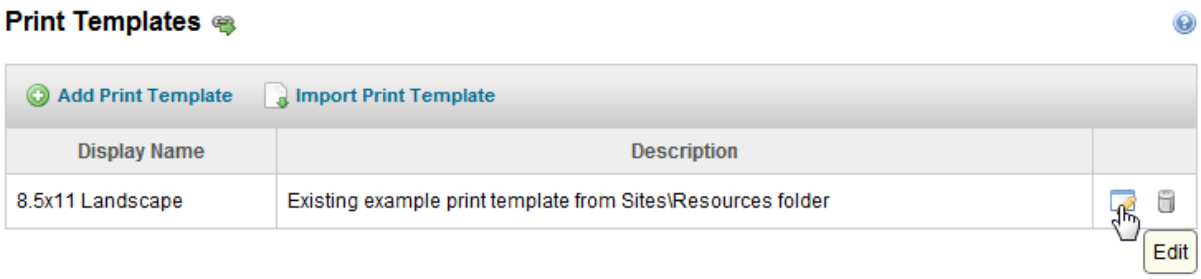
5.2 Enhance the Map Print Template

The map print template example has a value entered into the DataField property (shown below). This allows the text to be dynamically replaced by the users creating maps using this template. Before they can do this the administrator must make the field editable. Follow this exercise to learn how to expose this field for editing, and to make some other minor configuration changes which will improve the users' experience using this template. In this case, we will be configuring the map print template window that appears in the Viewer so that users can enter their own title for their printed map.



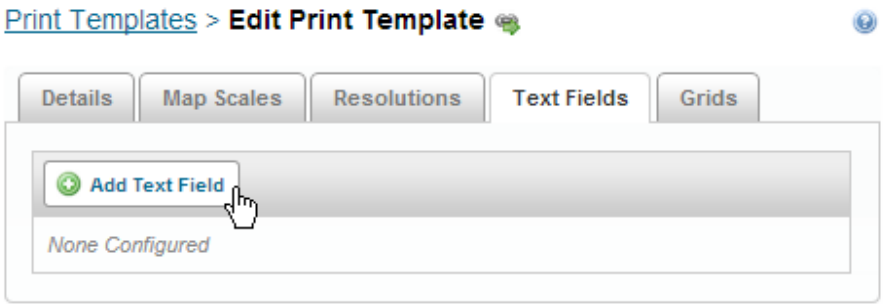
1. Open Geocortex Essentials Manager and select **Print Templates** from the sidebar.

2. Select the Edit icon for the print template you created in the last lesson.



3. Select the **Text Fields** tab to add a field to your Print Template where users can enter their own information.

4. To add a Text Field to your Print Template, select the **Add Text Field** button.
The Add/Edit Text Field window appears.



5. In the Add/Edit Text Field window, select **_Title**.
This is entered into the DataField property from the Report Designer desktop tool on this report. _Title allows users to enter their own title for their printable map.

6. For the Display Name, enter "Title".
This is the field heading under which the user will enter the text for the title of their printable map.

7. Provide a Default Value.
If the text field was not editable, this would be the value supplied and the user would have no option to change it.

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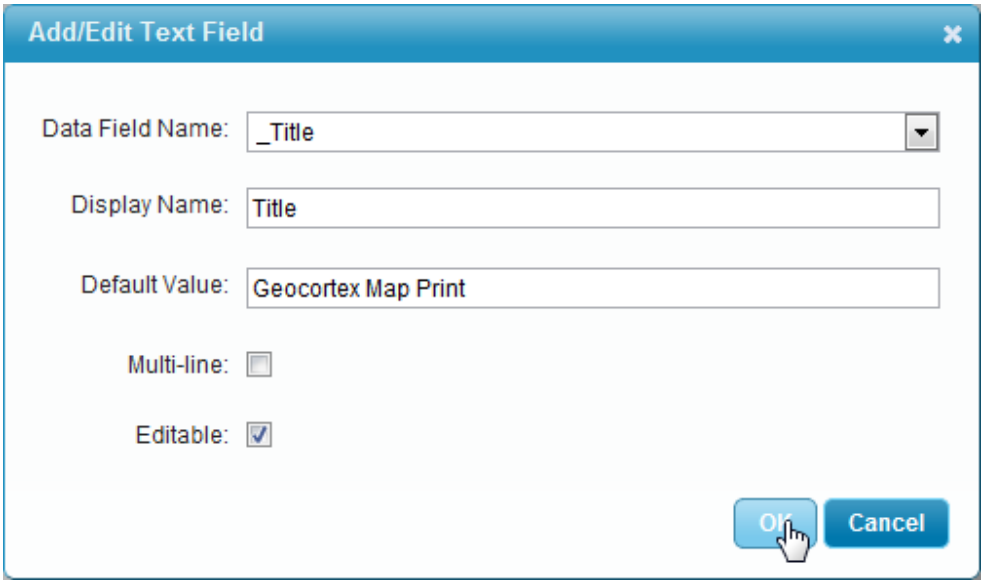
8. Clear the Multi-line check-box and then click **OK**.
   Multi-line allows a text field to take up multiple lines. As this report does not have space for a multiple lined title, we are removing that capability. Editable allows users to enter their own text into the field.



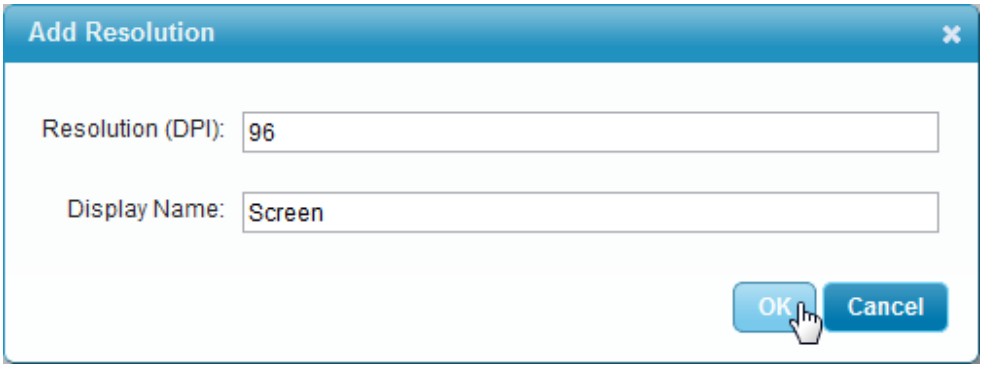
9. In the Edit Print Template page, select the **Resolutions** tab.

10. Select **Add Resolution**.
    The Add Resolution window appears.

11. In the Add Resolution window, enter "96" for Resolution.

Higher resolutions (300 or beyond) will increase the time to create the map significantly. Higher dpi will only positively affect dynamic services while cached services may look worse as they are typically configured at 96 dpi and cannot be up-scaled. Geocortex Essentials has large-scale printing capabilities not covered here to overcome any challenges with higher-resolution and/or large size printing.

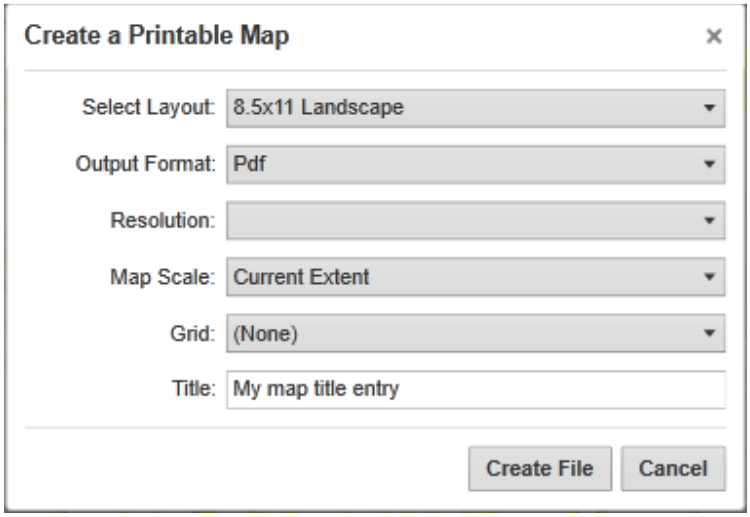
12. For Display Name, enter **Screen** then click **OK**.



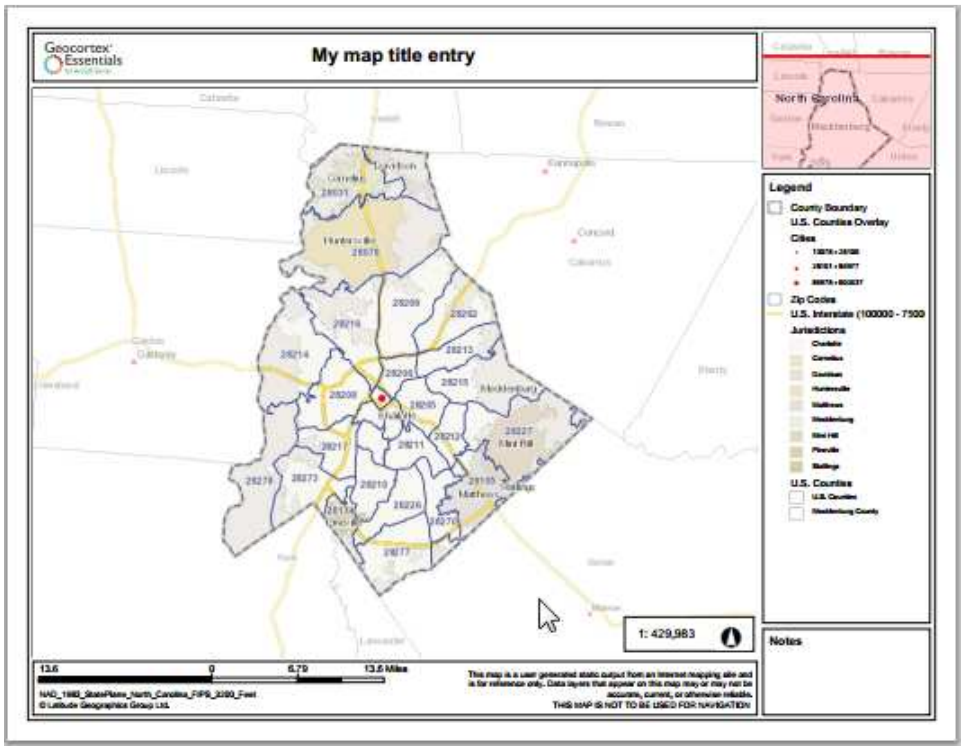
13. To save the changes you've made, click **Save Site**. Then, open the Viewer for Silverlight.

14. Open the **I want to...** menu and select **Create printable map**.
    The Create a Printable Map window appears with your new text field at the bottom.

15. In the Title field, enter text which will appear in the title part of the printable map.



16. Once you have entered your map title, select **Create File**. When the file is ready, select **Open File**.
    The map Pdf appears with your entry as the title.

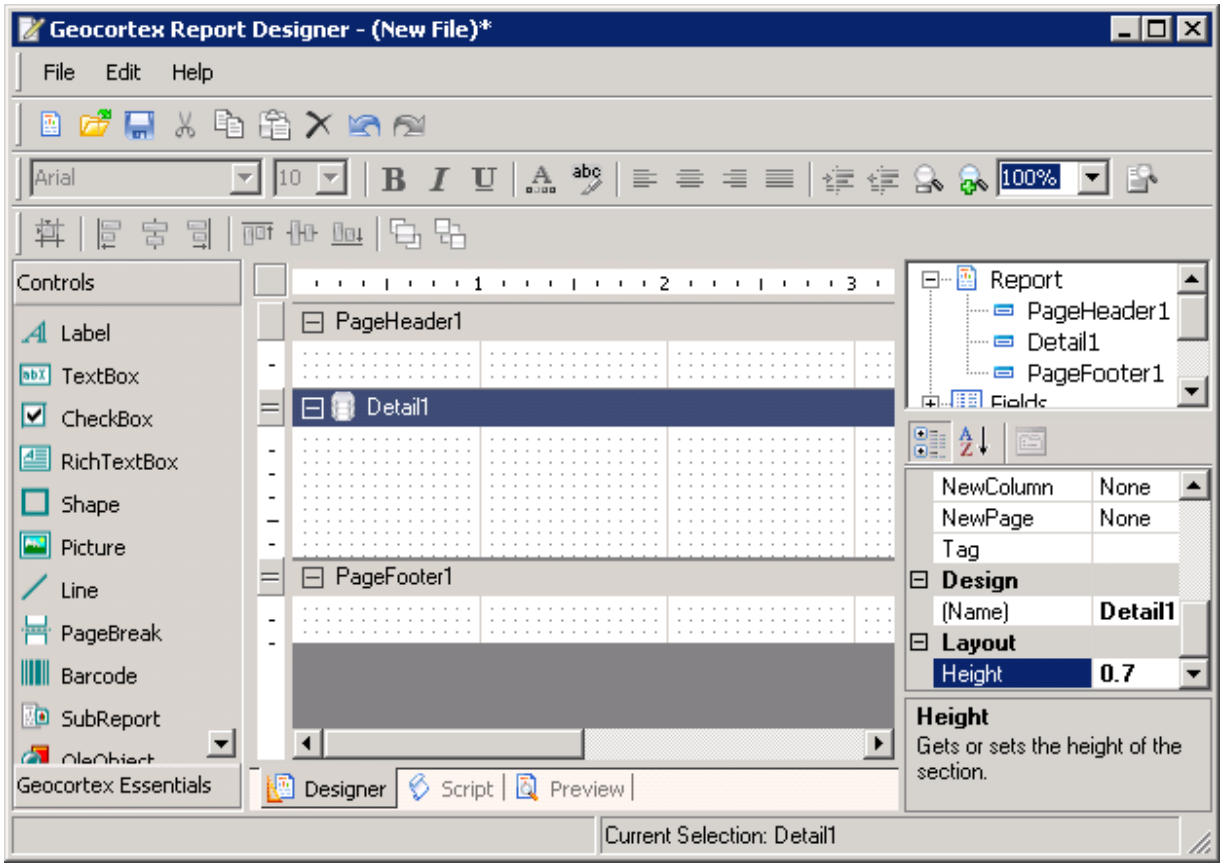


5.3 Create a Simple Zip Code Layer Report

Explore the Report Designer by creating a basic report using the Zip Codes and Post Office Names of any selected records.

1. In Windows, open the Geocortex Report Designer by clicking **Start | Latitude Geographics | Geocortex Essentials | Geocortex Report Designer**.

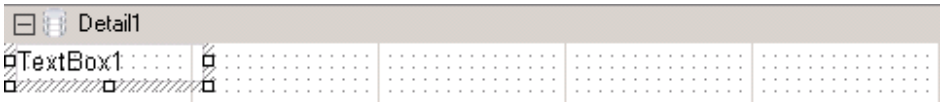
2. Resize the Detail1 height to no more than 1 inch.



The height of a section can be modified by either clicking and dragging the border, or entering the numeric height (in inches) in the Height field under Layout on the bottom right side of the window.

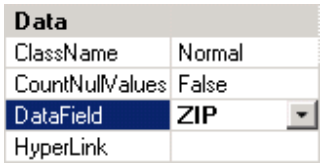
The Detail1 section is printed for each result in the document. Adjusting the size of Detail1 will affect how many results appear on a page and the white space between them.

3. In the left sidebar, under Controls, click and drag a **TextBox** Control into the Detail1 area.



4. Select **TextBox1** in the Detail1 area. Type "ZIP" into the **DataField** property, located in the bottom right corner of the window, under the heading Data.

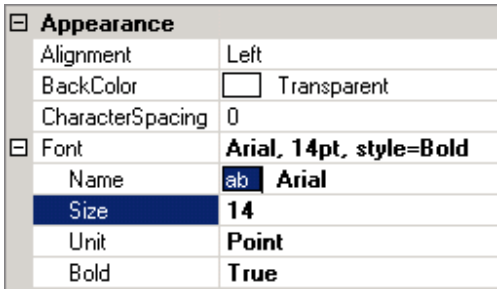
When the report is run, a single field value will be shown in this dialog. Typing ZIP into the property will show the value from the zip code layer's ZIP field when the report is generated.



The connection between the database and the report happens when the report is requested. Therefore no fields will appear in the DataField property drop down. Enter the field name manually, verifying its exact name in the REST endpoint or in the database.

5. Change the appearance of the text that appears in TextBox1 by changing the values of the properties under Appearance. You may need to alter the size of TextBox1 to accommodate your changes. This can be done by clicking and dragging the border or clicking the plus icon next to Size under Layout and entering the numeric Height and Width.
   Change **Font Size** to 14, and **Bold** to True.

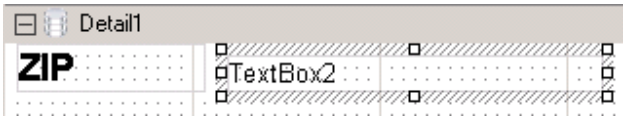
6. Type "ZIP" in the **Text** property under the heading Data.



The text ZIP won't show when the report is run because the field value will be replaced with the actual record's ZIP value. Setting this property helps to document and remember what the textbox will be replaced with when it does run.

7. Drag a second **TextBox** into the Details1 area to the right of TextBox1.

8. Make the new TextBox about 2 inches (5 cm) in width.
   This size is to accommodate the full length of the data which will be placed inside the Textbox



9. Set the TextBox2 **DataField** property to "PO_NAME".
   When this report is run, the PO_NAME attribute field from the selected record on the zip code layer will be set to the Text field and displayed on the report.

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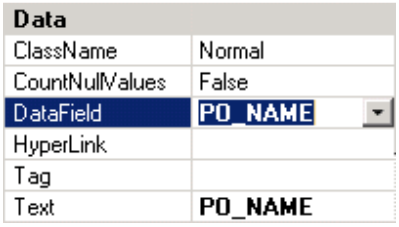
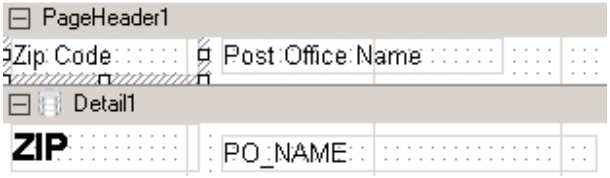
10. Set the **Text** property to also read "PO_NAME" so you remember what is going to be placed in this field.



11. In **PageHeader1**, add two labels, each located over the fields in Detail1.
    These will be the column headings on the report.

12. Change the **Text** property of the left label to "Zip Code", and the **Text** property of the right label to "Post Office Name".



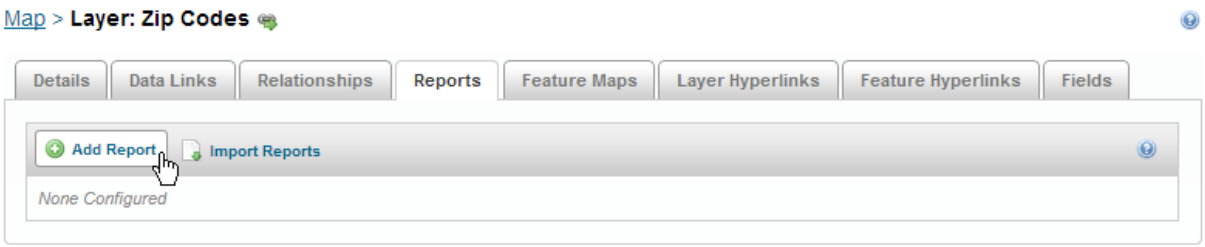
13. Create a new folder named Reports inside your Sites folder. Save your report as ZipCode in this new folder.

5.4 Add the Zip Report to the Zip Codes Layer

Reports are independent files, separate from the site configuration. In your site you only make reference to the report file. Learn how to add your Zip Code Report to the Zip Codes Layer and execute it in the Viewer.

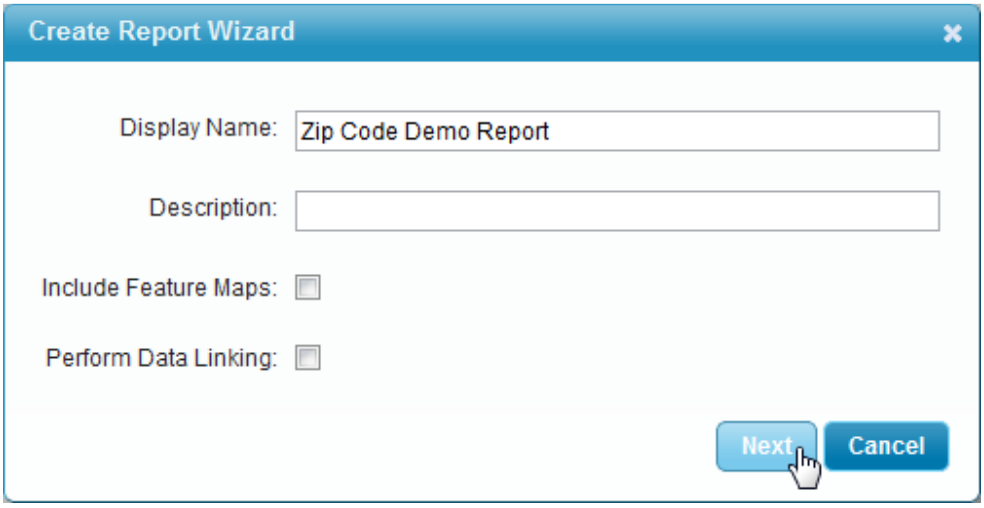
1. Open the Geocortex Essentials Manager. Select **Map** from the sidebar and then edit the Zip Codes Layer.

2. Select the **Reports** tab and then click **Add Report**.
   The Create Report Wizard appears.

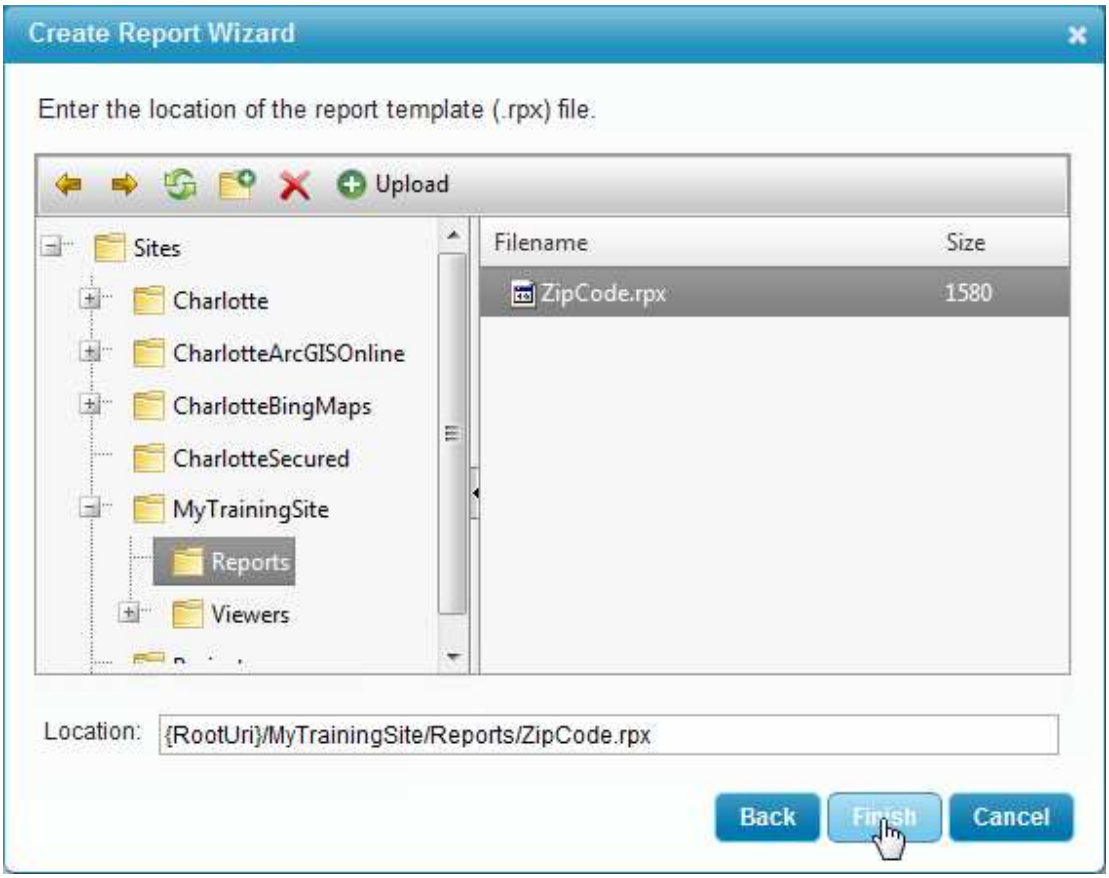


3. In the Create Report Wizard window create a Display Name for your Report.

4. Clear the **Perform Data Linking** checkbox and click **Next**.
   If external data is included in the report, Perform Data Linking must be checked and will retrieve the linked data before submitting all of the layer attribute and data linked data to the report. If the linked data is not being used, the report will display faster as it will not retrieve linked data.



5. Navigate to the Reports folder you created in the last lesson. Select the **ZipCode.rpx** file and click **Finish**.



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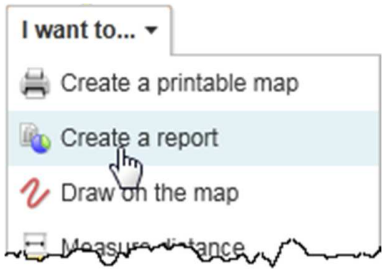
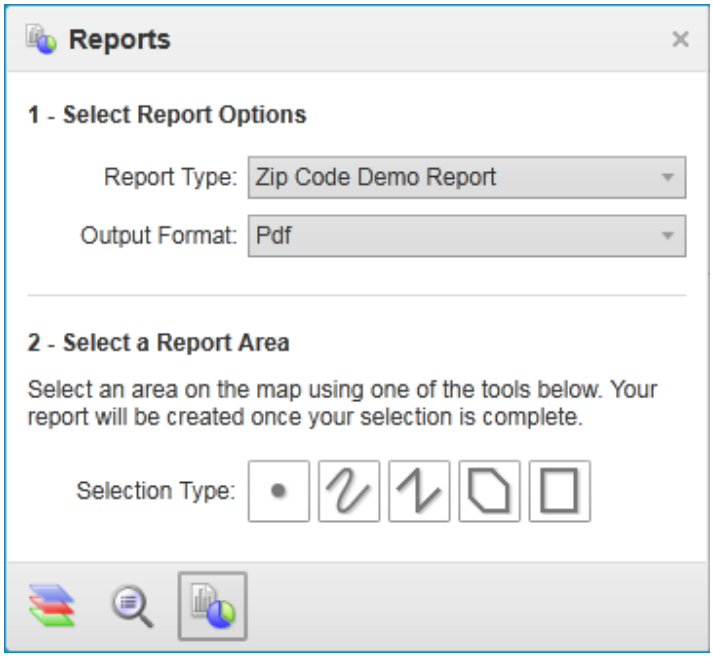
Once completed, your Report should look like the following:

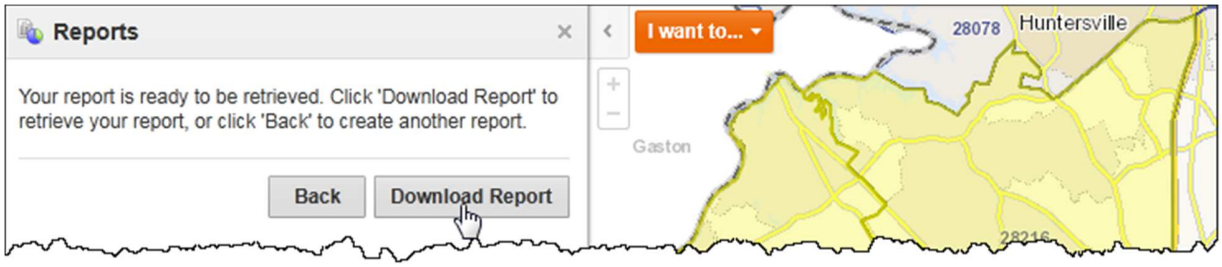
6. Click **Save Site** to save your changes, and then open the Viewer for Silverlight.
7. Zoom in so the Zip Code Layer is visible.
8. Open the **I want to...** menu and select **Create a report**.



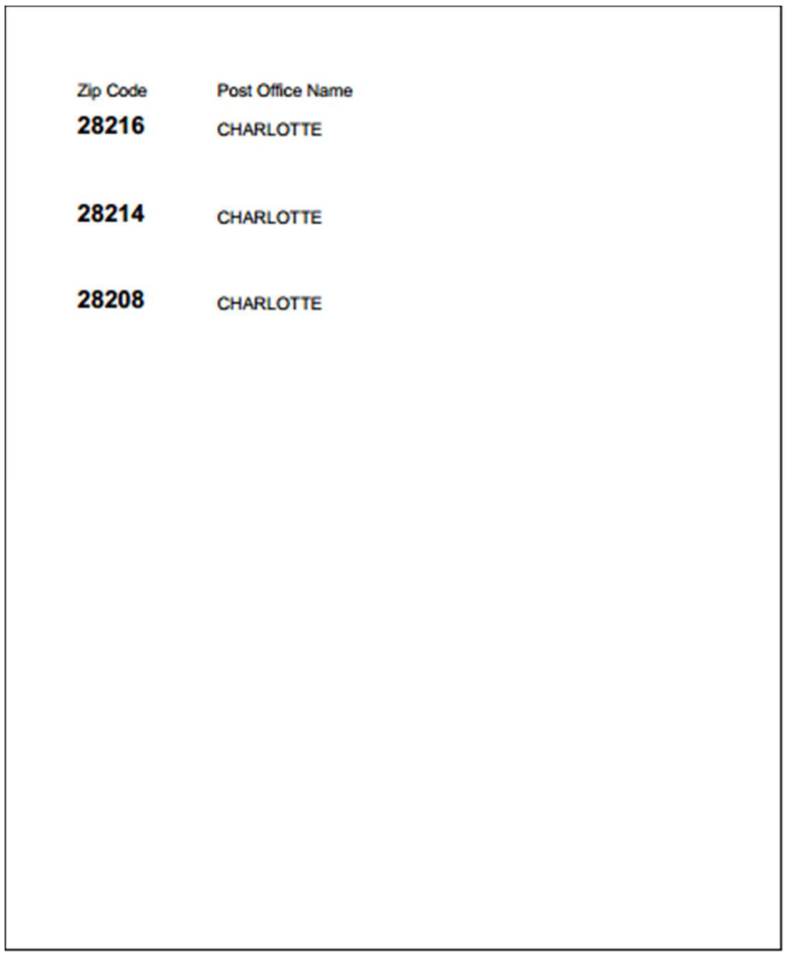
9. Use one of the Selection Types to indicate what zip code areas should be included in this report. Select 2-3 different zip codes.



10. When the report is ready, click **Download Report**.
    A report concerning the zip codes you selected appears.



Your report should look similar to the following:



Zip Code	Post Office Name
28216	CHARLOTTE
28214	CHARLOTTE
28208	CHARLOTTE

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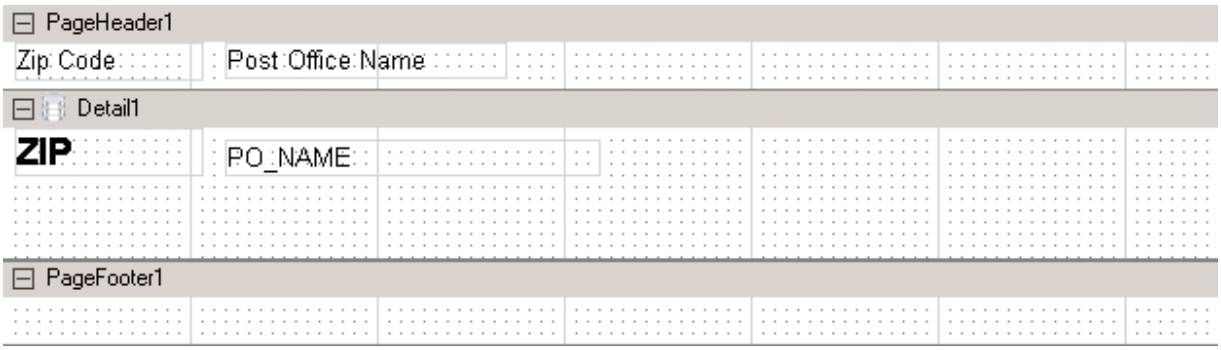
6. Improving Reports

Add a sub report to your existing report template and configure it to appear in the report generated in the Viewer.

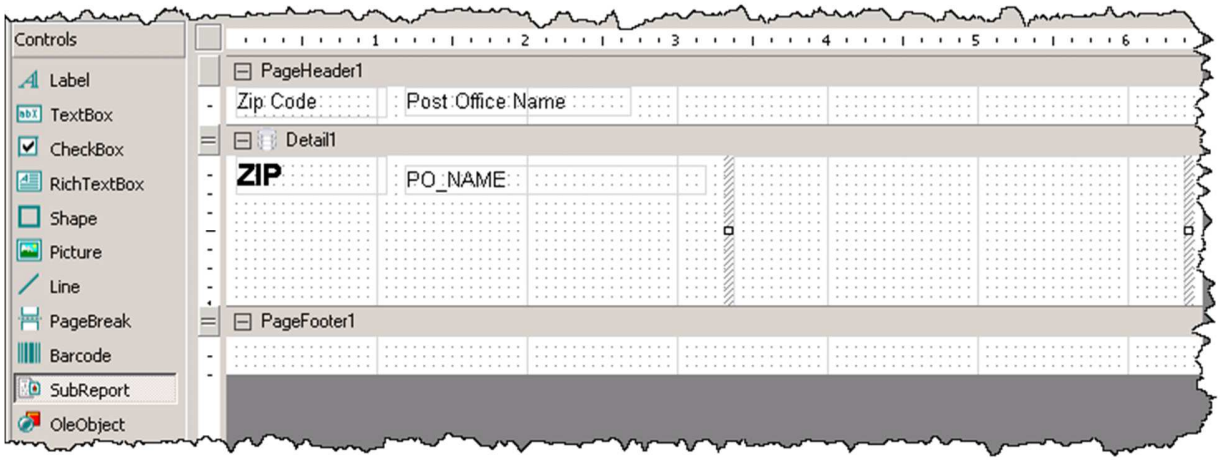
6.1 Use Data Links in Reports

We will be creating a sub report file and link it into the ZipCode.rpx file that we created earlier.

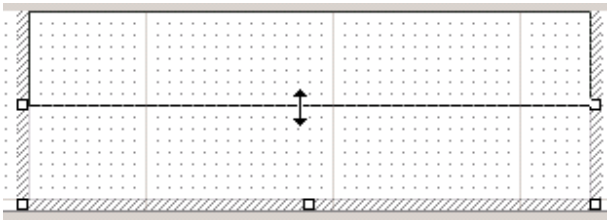
1. Open Geocortex Report Designer then open the ZipCode.rpx report.
   The report is for the Zip Code layer in the Charlotte Complete map service. We will be adding a sub-report in the space to the right of the ZIP and PO-NAME.



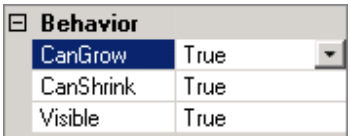
2. Click and drag the **SubReport** control into the Detail1 section, to the right of ZIP and PO_NAME.



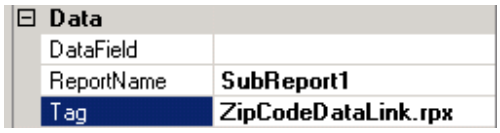
3. Resize the subreport area to accommodate a title and at least one line of text. Then, resize the Detail1 height to accommodate the size of the subreport.



4. With the subreport control still selected, in the properties section in the bottom right of the window under Behavior, make sure CanGrow is **True**.
   This allows for the subreport area to become larger if it needs more room to display data.

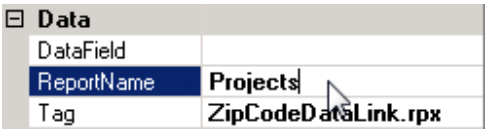


5. In the properties area, under Data, **Tag** must be set to the filename of the subreport that will be opened.
   We haven't created this subreport yet so you can enter any file name (eg. ZipCodeDataLink.rpx), as long as you use it when you create the subreport in the next step.

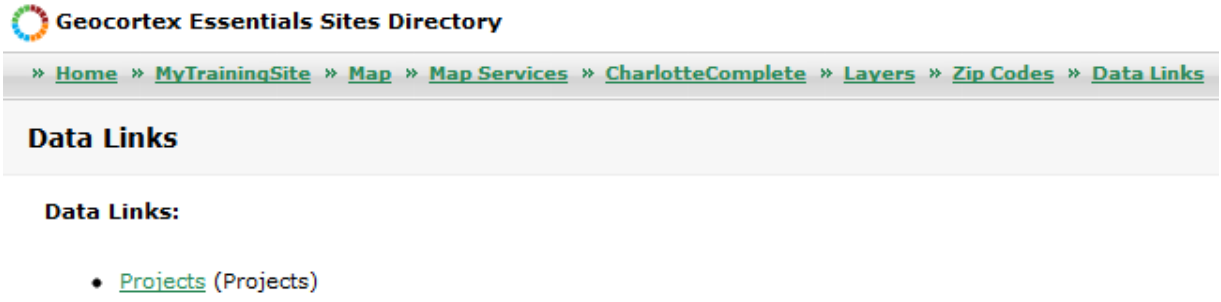


You must enter the whole filename, including the file extension.

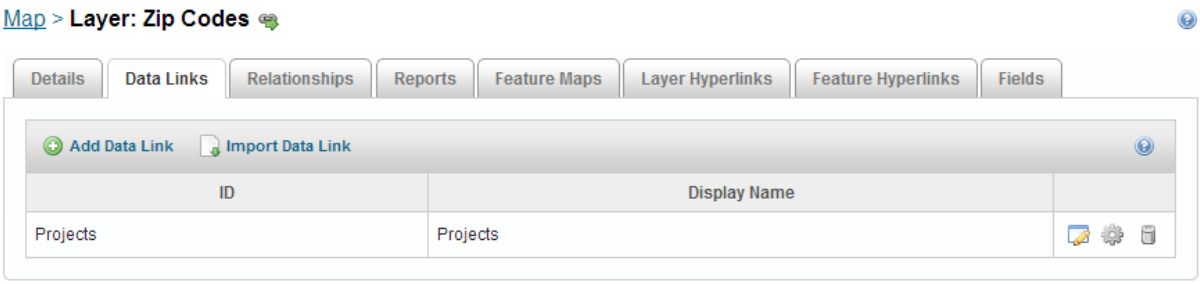
6. Next, set the **ReportName** property under Data as the ID of the Zip Code Data Link you created earlier.



To find your data link name, open the REST endpoint or the Manager for the site you are using in training.
The Data Link name on the REST endpoint is shown in brackets.

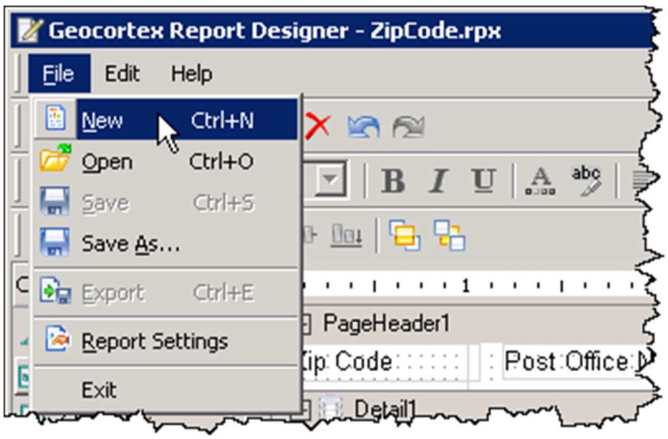


The same information can be found inside the Manager by looking at the Data Link in the Layer.



7. Save the updated ZipCode.rpx report.

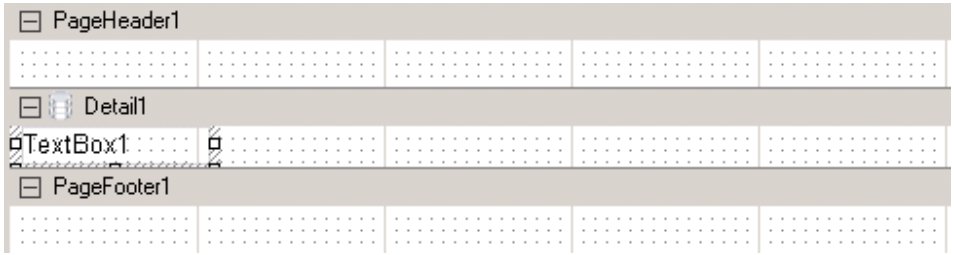
8. Create a new report by going to **File** | **New**.
   The Report Designer only allows for one file to be open at a time.



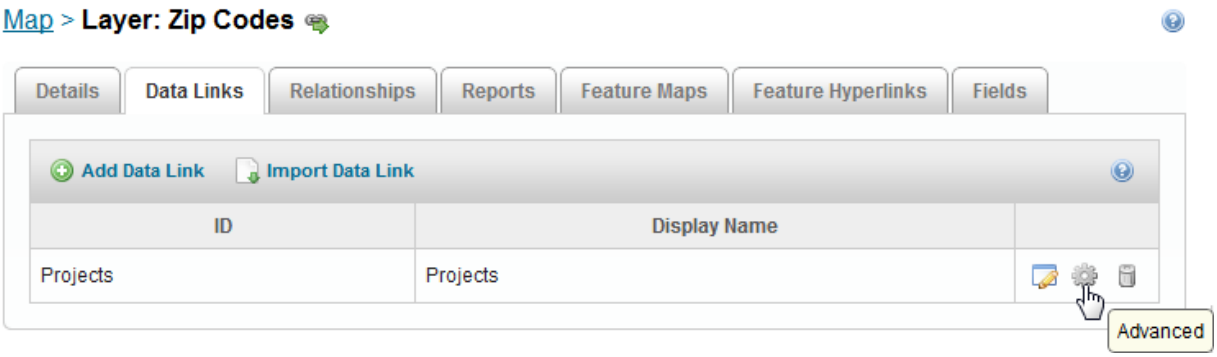
9. **Save** the empty report as the same filename you used for the SubReport's Tag property. Be sure to save it inside the same directory as the main report.

10. Drag a **Textbox** control into the Detail1 area.

11. Make the Detail1 height line up with the bottom of the TextBox control.



12. With the TextBox control selected, set the DataField property to match one of the field names from the Projects datalink. In this case, use **PROJECT**.
    If not sure of the field names, open Manager and edit the Data Link. The SQL command will expose what fields are being returned and are available for this report field.



13. Change the **Text** property so it reads "Project" so you know what will be displayed.

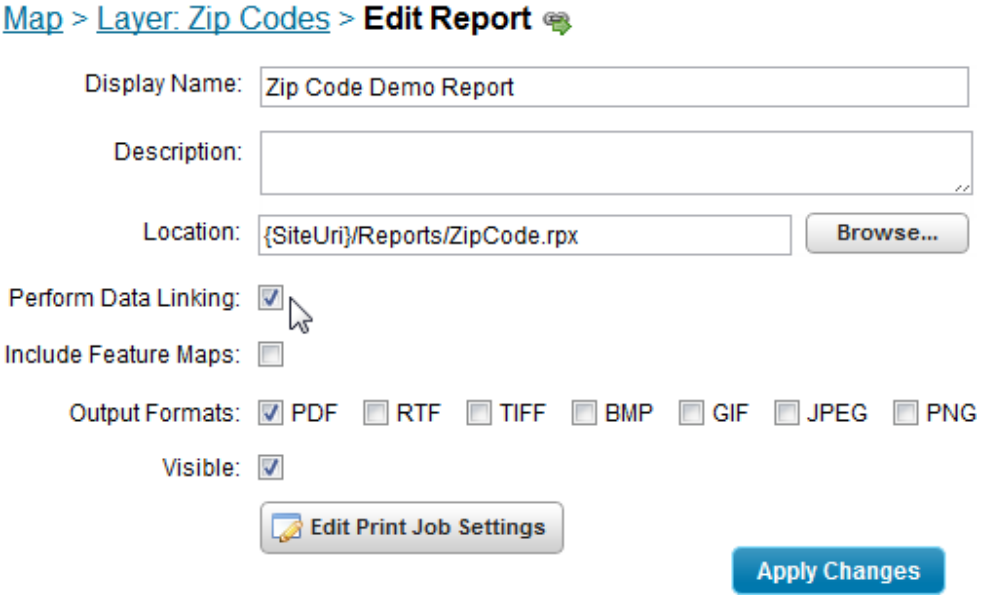
14. Drag another **Textbox** control to the right of the existing one.

15. Set the **DataField** property to a field of your choice from the available Data Link fields.

16. **Save** your updated sub report.

17. Open Essentials Manager, and open the configuration of your Zip Code report.

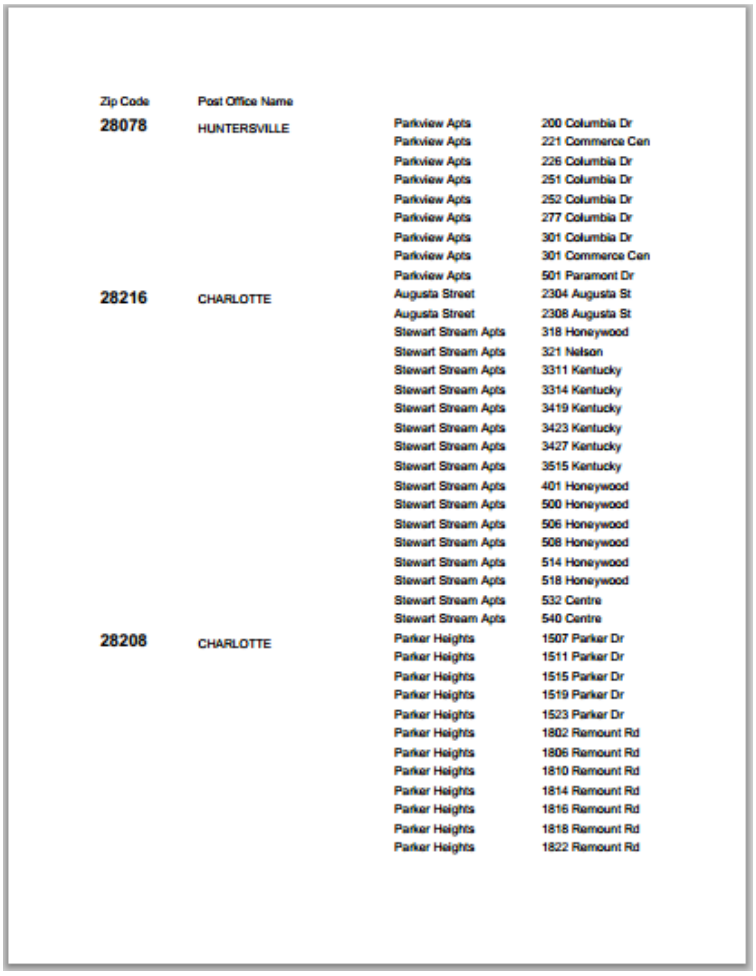
18. Enable **Perform Data Linking**.
    This allows the sub report to retrieve data from all data linked attribute tables in this layer.



19. **Apply changes**, and **Save Site**.

If no site configuration changes (using Manager) were necessary, the new report could have just been run from any open or new Viewer. Because the Perform Data Linking option was not set, a configuration change had to be done before the report would properly function.

20. Open the Viewer for Silverlight, open the **I Want to ...** menu and **Create Report**. Once the report is ready, click **Download Report**.



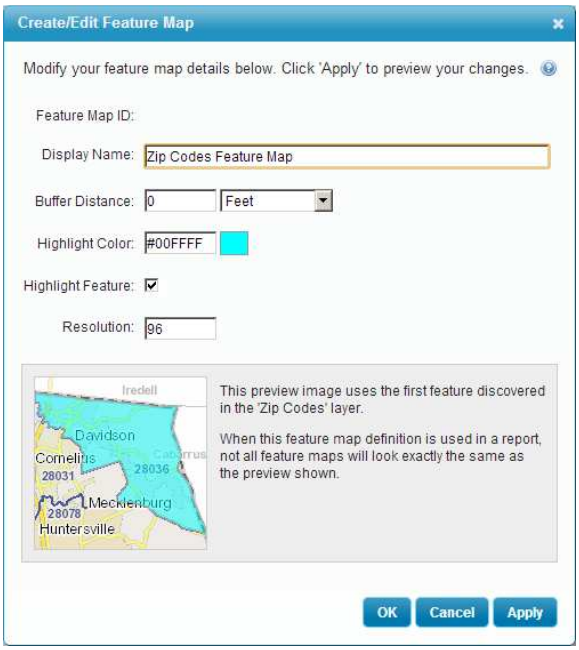
Zip Code	Post Office Name		
28078	HUNTERSVILLE	Parkview Apts	200 Columbia Dr
		Parkview Apts	221 Commerce Cen
		Parkview Apts	226 Columbia Dr
		Parkview Apts	251 Columbia Dr
		Parkview Apts	252 Columbia Dr
		Parkview Apts	277 Columbia Dr
		Parkview Apts	301 Columbia Dr
		Parkview Apts	301 Commerce Cen
		Parkview Apts	501 Paramont Dr
28216	CHARLOTTE	Augusta Street	2304 Augusta St
		Augusta Street	2308 Augusta St
		Stewart Stream Apts	318 Honeywood
		Stewart Stream Apts	321 Nelson
		Stewart Stream Apts	3311 Kentucky
		Stewart Stream Apts	3314 Kentucky
		Stewart Stream Apts	3419 Kentucky
		Stewart Stream Apts	3423 Kentucky
		Stewart Stream Apts	3427 Kentucky
		Stewart Stream Apts	3515 Kentucky
		Stewart Stream Apts	401 Honeywood
		Stewart Stream Apts	500 Honeywood
		Stewart Stream Apts	506 Honeywood
		Stewart Stream Apts	508 Honeywood
		Stewart Stream Apts	514 Honeywood
		Stewart Stream Apts	518 Honeywood
		Stewart Stream Apts	532 Centre
		Stewart Stream Apts	540 Centre
28208	CHARLOTTE	Parker Heights	1507 Parker Dr
		Parker Heights	1511 Parker Dr
		Parker Heights	1515 Parker Dr
		Parker Heights	1519 Parker Dr
		Parker Heights	1523 Parker Dr
		Parker Heights	1802 Remount Rd
		Parker Heights	1806 Remount Rd
		Parker Heights	1810 Remount Rd
		Parker Heights	1814 Remount Rd
		Parker Heights	1816 Remount Rd
		Parker Heights	1818 Remount Rd
		Parker Heights	1822 Remount Rd

6.2 (Optional) Add a Feature Map to a Layer

1. In Manager, click **Map** in the sidebar, edit the zip codes layer, and then click the **Feature Maps** tab.

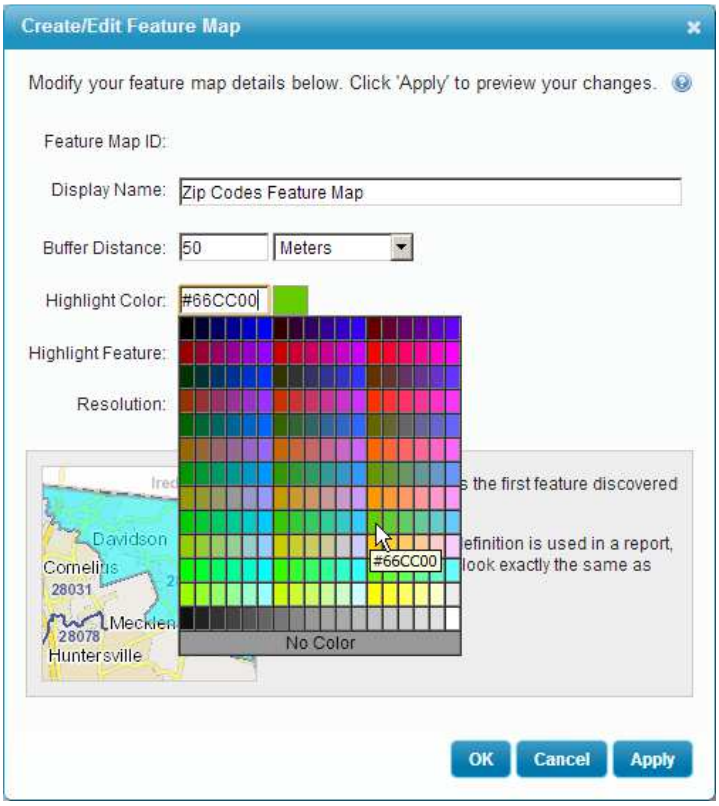
2. Click **Add Feature Map**.
   The Create/Edit Feature Map dialog box opens.

3. Type a display name for the feature map.



4. Enter a buffer distance and select the units.

5. By default, the feature is highlighted in the feature map.
Change the color by clicking the color sample and selecting a new color.



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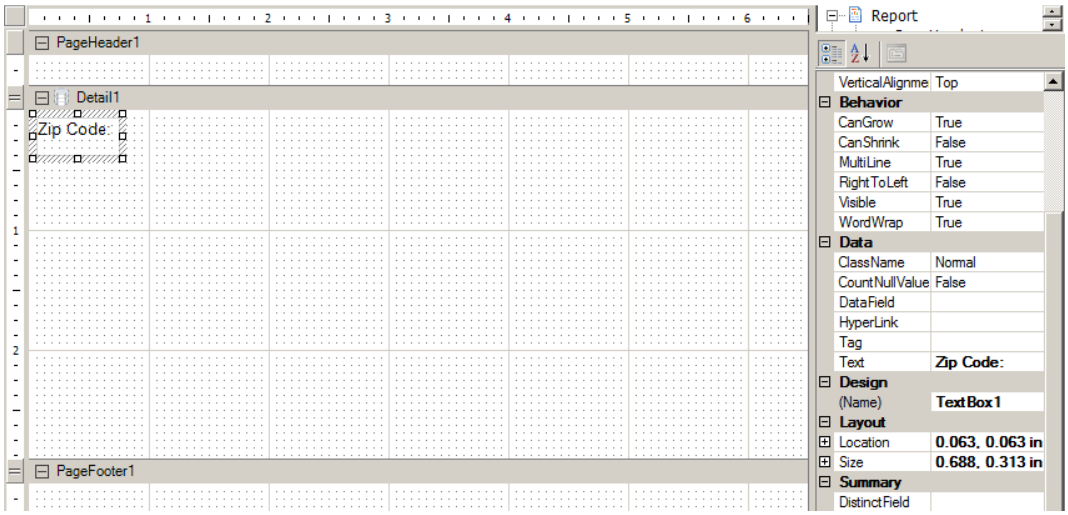
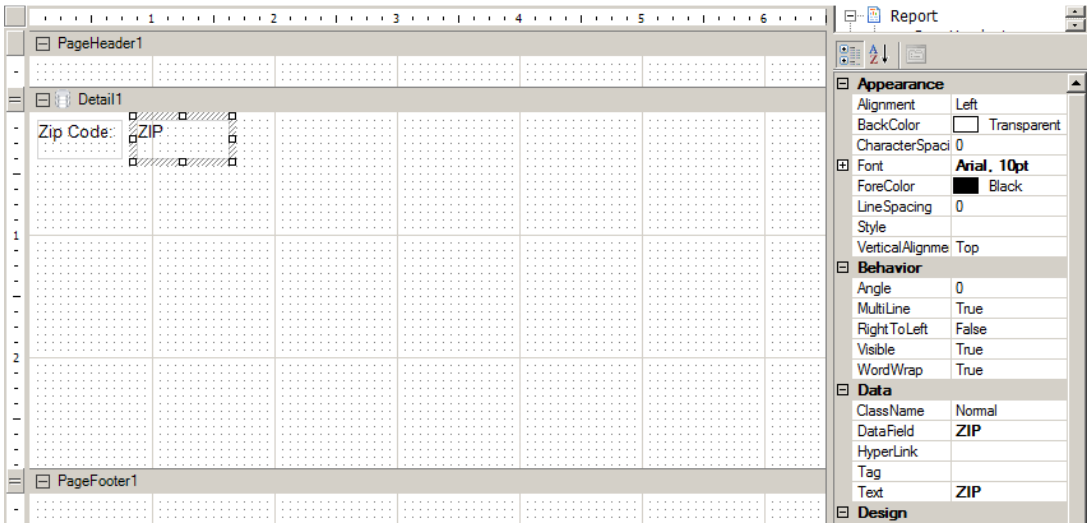
6. Click **Apply** to see your changes. Once you are satisfied, click **OK**, and then **Save Site**.

7. Open a new report in the Report Designer and enlarge the Detail 1 area so it is about 3 inches high.

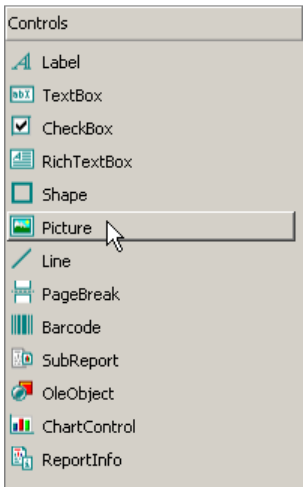
8. Select the **Text Box** control and draw a text box in the top left of the Detail 1 area. Then, in the **Text** parameter, enter Zip Code:



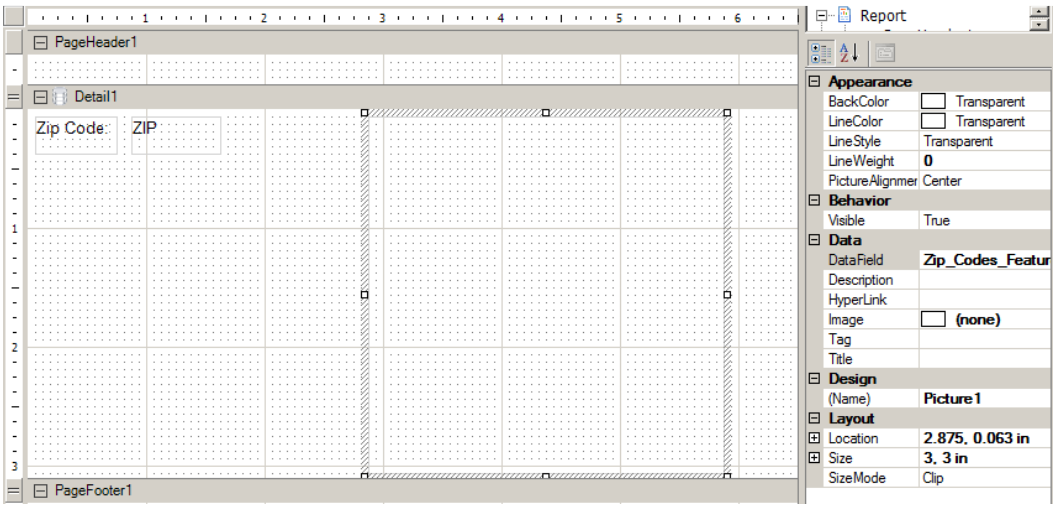
9. Select a **Label** control and draw a label to the right of the text box. Type ZIP into the **DataField** parameter, and then enter ZIP into the **Text** parameter so it is easily identifiable in the Report Designer.



10. Select the **Picture** Control.

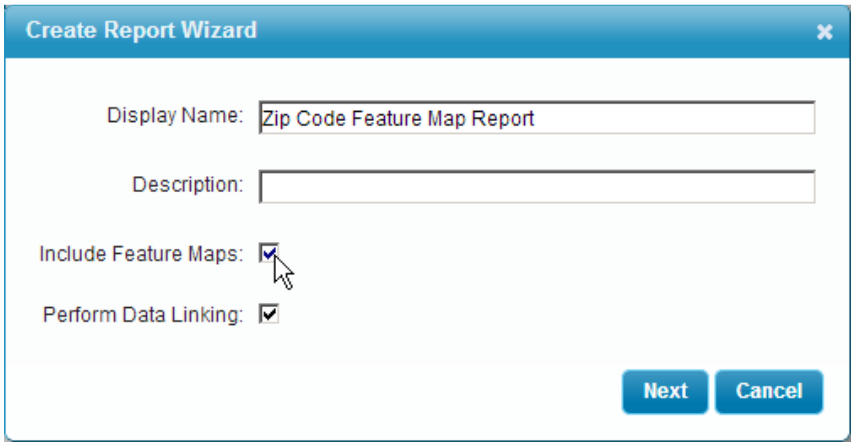


11. Draw a picture box to the right of the ZIP Label. In the **DataField** parameter, enter the ID of the feature map you created in Manager. Then, in the **Size** parameter, enter 3, 3 in.



12. Save the report. In Manager, edit the Zip Codes Layer and click the **Reports** tab, and then **Add Report**.
    The Create Report Wizard appears.

13. In the Create Report Wizard, enter a Display Name and then check **Include Feature Maps**. Click **Next** and select your report file.



14. **Save Site** then run your report in the Viewer for Silverlight. Your report should look similar to the following:

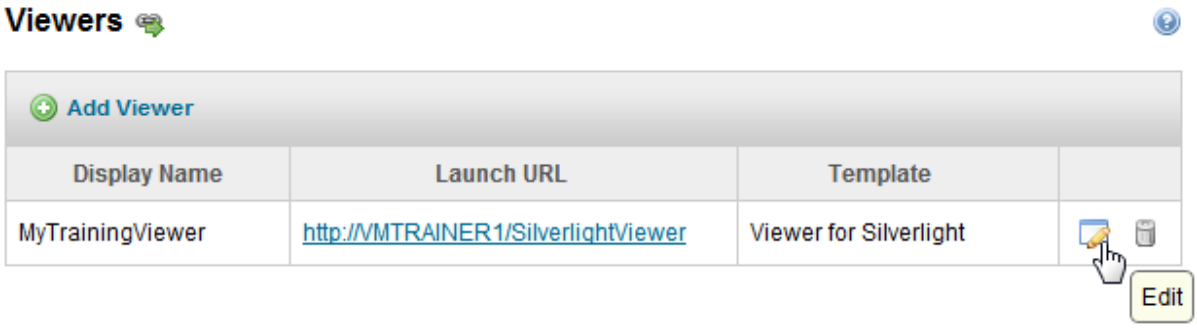
7. Configuring the Viewer for Silverlight

The Viewer for Silverlight uses a site's REST endpoint to know how to present information to its users. Silverlight Viewers themselves have their own configuration settings, which can control how this information is presented. One or more viewers can even be added to the same site, and configured differently depending on needs.

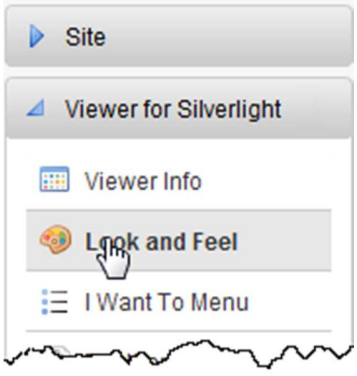
7.1 Set Banner Text on a Site

Learn how to configure the text-based banner for the Viewer for Silverlight.

1. Open the Geocortex Essentials Manager then edit your Viewer for Silverlight.



2. To begin editing the appearance of your Viewer, click **Look and Feel** in the sidebar.



3. Set Left Image Url to be empty.
   This removes the Geocortex Viewer for Silverlight text from the Banner.

4. Enter a title for the Application Title.
   This changes the text that appears in the banner of the Viewer.

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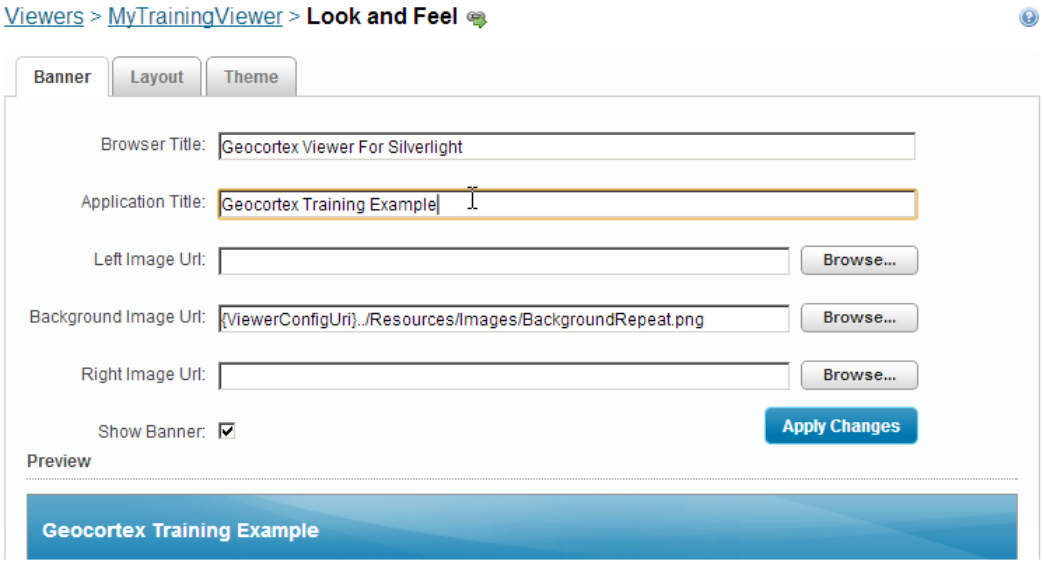
5. **Apply Changes** and the Preview reflects your viewer configuration changes.



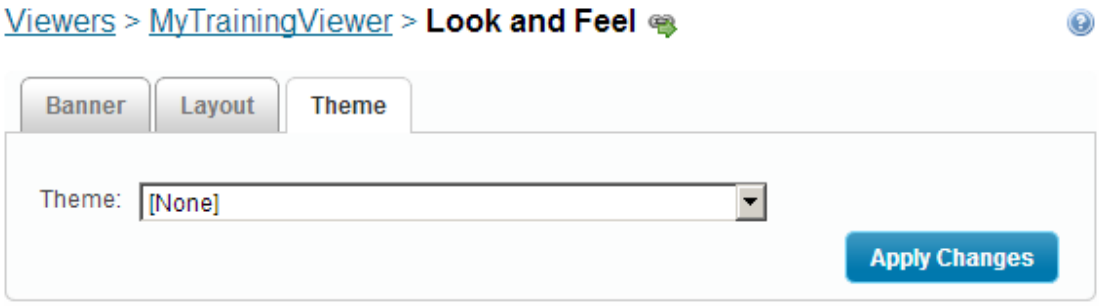
6. Click **Apply Changes** and **Save Site** to save your changes to the viewer configuration and site. The viewer.xml file for this viewer template is updated with your changes.

7. Open the viewer and see the new text-based application title.

7.2 Add Additional Viewers and Change the Silverlight Theme

1. Open Essentials Manager, edit your Viewer for Silverlight, and then select **Look and Feel**.

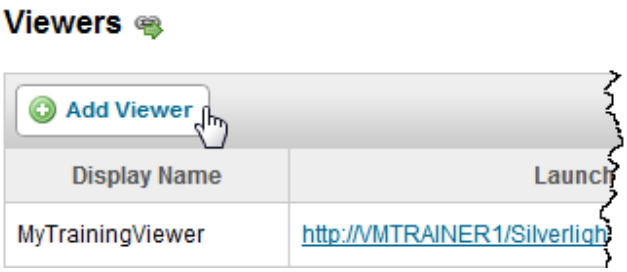
2. Then, click the **Theme** tab.



3. Select **DarkGray** from the Theme drop down list.

4. **Apply Changes** and **Save Site**.

5. Return to main Viewers page and click **Add Viewer**.
   The new viewer keeps the default settings. You can have multiple viewers that are configured differently for the same site.



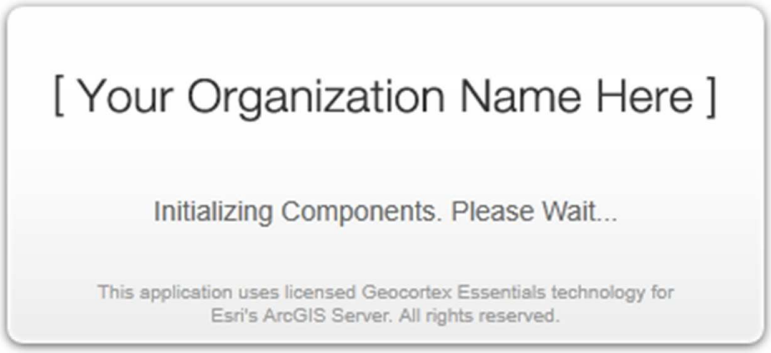
6. Enter a name for the new viewer then click **OK**.

7. Launch the new Viewer for Silverlight.
   See how its appearance is the same as the default.

8. Launch the original Viewer for Silverlight.
   Note the changes to the viewer's configuration that you made earlier.

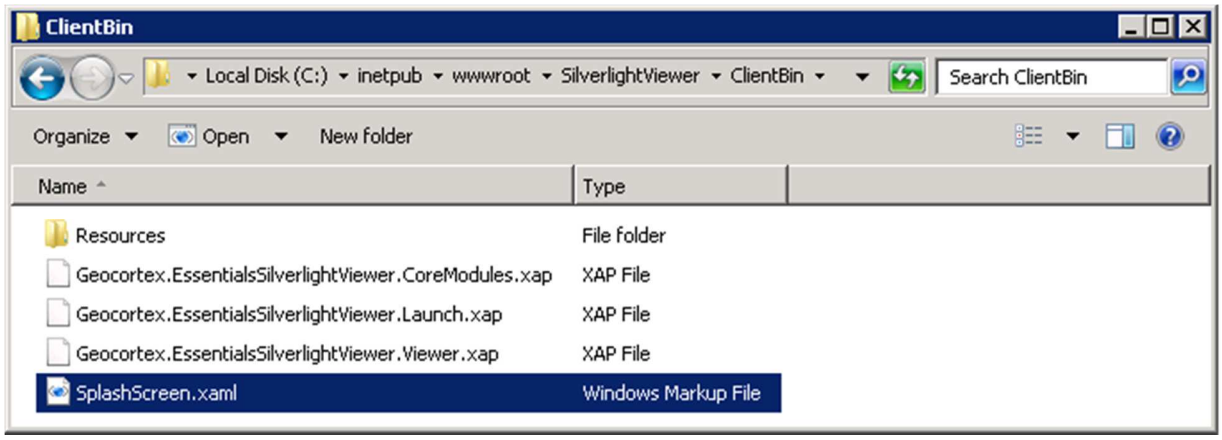
7.3 Change Viewer for Silverlight Splash Screen for All Sites

The splash screen is what you see when the Viewer initializes, with the text [Your Organization Name Here]. This can be modified, but there can only be one splash screen per deployment of the Geocortex Viewer for Silverlight.

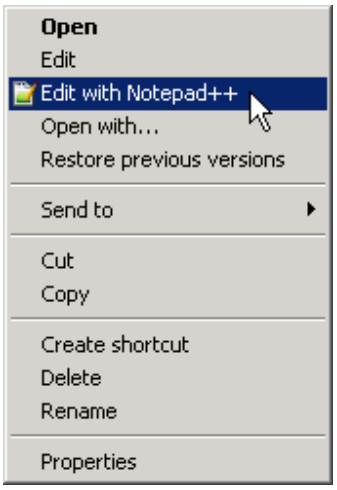


The splash screen is not a site or Viewer configured setting, and these changes will be lost if upgrading the Viewer.

1. In Windows, use the file explorer to navigate to **C:\inetpub\wwwroot\SilverlightViewer\ClientBin** unless otherwise stated.



2. Open the **SplashScreen.xaml** file using Notepad (or Notepad++ if installed).
   You can do this by right-clicking on the highlighted file, then selecting **Edit** or **Edit with Notepad++**



3. Find the line that starts with the Image tag, about 1/3rd of the way into the document.

4. Remove the Source tag "Resources/Images/SplashTitle.png" and change it to "/welcome.png" (or another image of your choice).

```
    <RowDefinition Height="*"/>
</Grid.RowDefinitions>

<Image x:Name="SplashTitleImage" MinWidth="340" MinHeight="50" Source="/welcome.png" Stretch="No
    <Image.Triggers>
        <EventTrigger RoutedEvent="Image.Loaded">
```

5. Save the text document.

6. Open the Viewer for Silverlight.

The old [Your Organization Name Here] image likely appears when first opening after this change. This is because the web browser cache must be cleared or you must use a special key combination to open the website and ignore what is in the cache.

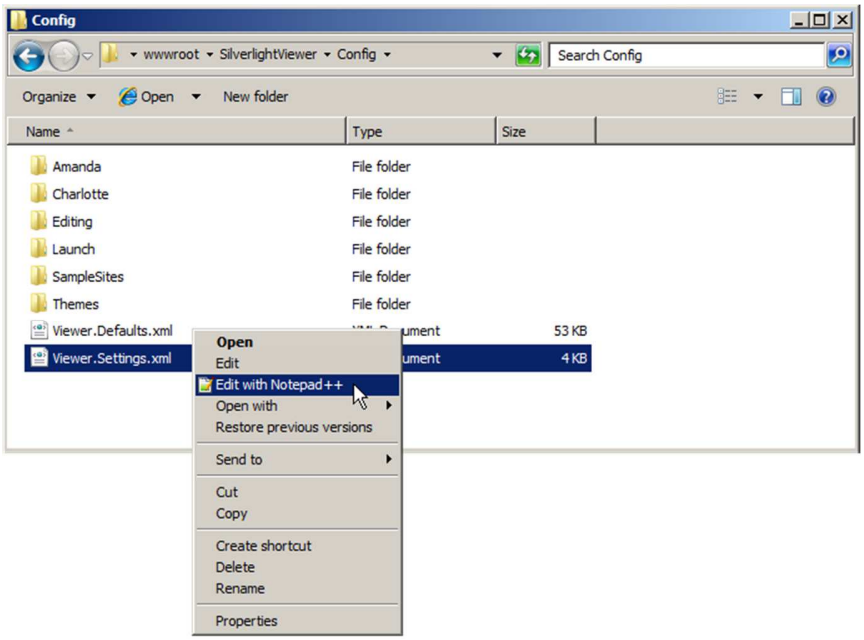
For Chrome browser, on your keyboard press and hold the CTRL key, then press F5 to force a reload and ignore the cache.

7. Return to the Viewer page in Essentials Manager and open both Silverlight Viewers.
   Notice the change is for all added viewers, as this is a setting change on the viewer deployment itself and is not configured individually.

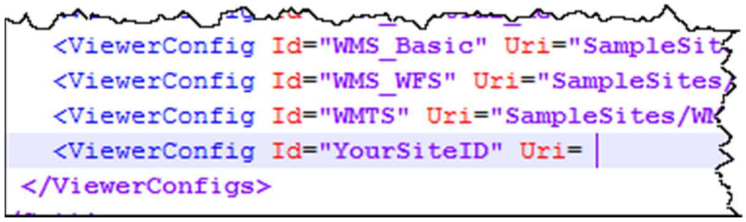
7.4 Modify the Launch URL of the Viewer for Silverlight

The viewer URL can be long and difficult to access by memory. Shorten your Viewer for Silverlight URL to make it easier for end users to access the viewer.

1. Open a Windows Explorer window and navigate to **C:\inetpub\wwwroot\SilverlightViewer\Config**. Then, edit the Viewer.Settings.xml.

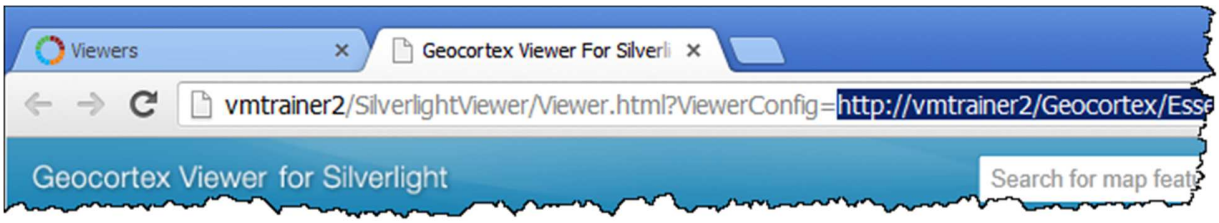


2. To create a shortened path to access your Viewer, create a new entry at the end of the ViewerConfig list and type <ViewerConfig Id="<insert your viewer ID>" Uri=.



If you are unsure of your viewer ID, return to Essentials Manager and select **Viewers** from the navigation bar. Edit your Viewer for Silverlight and on the Viewer Info page, the ID is listed as the last element of the viewer's path.

3. Rather than manually type the URI, return to Essentials Manager, open your Silverlight Viewer from the Management Pack. Copy the part of the that points to the ViewerConfig.



4. In the Viewer.Settings.xml, paste the URI you just copied into your ViewerConfig entry. Be sure to surround the URI with quotation marks. Then, close the entry with />. When complete, your entry should look similar to the following: <ViewerConfig Id="<your viewer ID>" Uri="<your ViewerConfig Uri>"/>

Your Viewer.Settings.xml should look similar to the following:

When Modifying the <ViewerConfigs> list in the Viewer.Settings.xml, be sure to leave the <ViewerConfig> entry for Launch as this is used to open the Launch page.

5. Save the Viewer.Settings.xml and then open a new browser window.

6. Clear your browser cache to see the changes you've made. To access the viewer directly, use the following sample launch URL as a guide to input into the browser: http://<your server>/<your Silverlight Viewer folder in IIS>/Viewer.html?Viewer=<viewer ID>

7. (Optional) Use the following example to set a display name for your viewer.
This will show on the launch page and overrides the viewer ID.

7.5 (Optional) Access the Launch Page

Allow end users to easily access and move between viewers by configuring which Viewers for Silverlight are listed in the dropdown menu of the launch page.

1. To open the launch page and access a dropdown list of those sample viewer configurations, as well as your own addition from the previous exercise, located in the Viewer.Settings.xml, open the browser and use the following as a guide to enter into the URL: http://<your server>/<your Silverlight Viewer folder in IIS>/Viewer.html

2. To include all viewers which are added to Essentials in the launch page dropdown menu, return to the Viewer.Settings.xml and remove the comment tags <!-- and --> surrounding the <Remote Settings> entry.

```
<RemoteSettings>
  <RemoteUri Uri="http://localhost/Geocortex/Esse
</RemoteSettings>
```

3. Save the changes you have made to the Viewer.Settings.xml, clear your browser cache, and reload the launch page. Note that all other viewers that you have added to all sites are now listed in the dropdown menu.

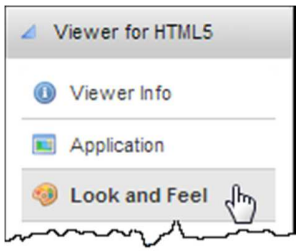
8. Configuring the Viewer for HTML5

The Viewer for HTML5 uses a site's REST endpoint to know how to present information to its users. The Viewer for HTML5 offers configuration options that are ideal for working in a mobile environment

8.1 Set Look and Feel in Viewer for HTML5 Shells

The small size of a mobile workspace means that you must make it easy for your end users to navigate and access the information they need. Configure the Viewer for HTML5 shells individually to customize each workspace to suit the mobile device it is used on.

1. Edit the Viewer for HTML5 and select **Look and Feel** from the Viewer navigation bar.



2. All management pack items can be configured simultaneously across shells or individually. To configure the look and feel of the shells individually, select **Configure Individually** at the top of the Look and Feel page.
   Three tabs appear with configuration options for each of the shells.

3. Start modifying the shells individually by selecting the **Desktop** tab.

4. You can modify the title of the application as it appears in a browser tab or window. To do so, under the Browser section, select the Title parameter and enter a title of your choice.

5. **Apply Changes** and **Save Site** and open a HTML5 browser window to see your changes.

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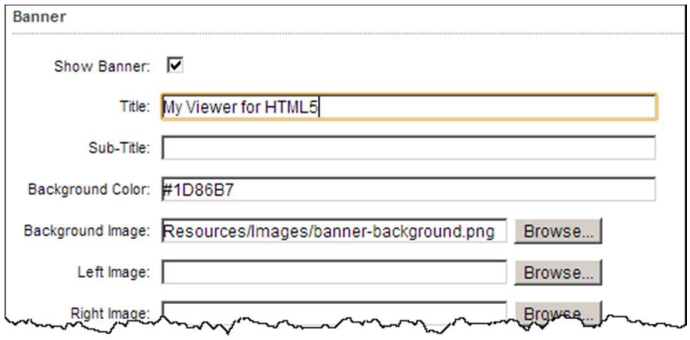
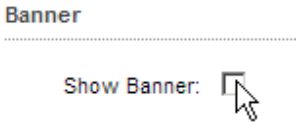
6. To further personalize the Viewer experience, you can change the banner appearance. One way is to add your own title to the banner.
   Enter your own banner Title, and then set the left image to be empty. Then, **Apply Changes** and select the **Desktop** preview to view your changes.



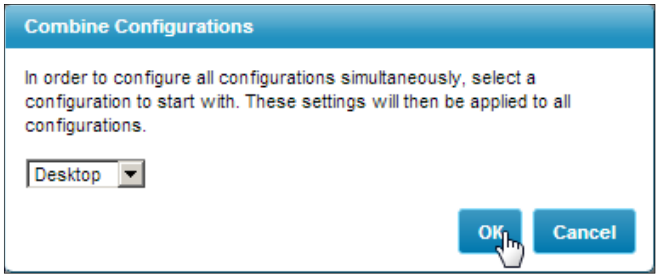
7. **Close** the Desktop preview and begin making changes to another shell by selecting the **Tablet** tab. As tablets have a smaller viewing screen, a user's space can be maximized by removing the banner. To do so, uncheck the box for Show Banner under the Banner heading, and then click **Apply Changes**.



8. Open the **Tablet** preview shell to see the change.
   Note that the Global Search bar has also been removed.

9. To return to configuring your shells simultaneously, **Close** the preview window and in Manager, select **Configure Simultaneously**.
   The Combine Configurations pop-up dialog appears.

10. In the Combine Configurations pop-up window, select the **Desktop** shell and then click **OK**.
    This applies the configuration settings from the desktop shell across all shell configurations.



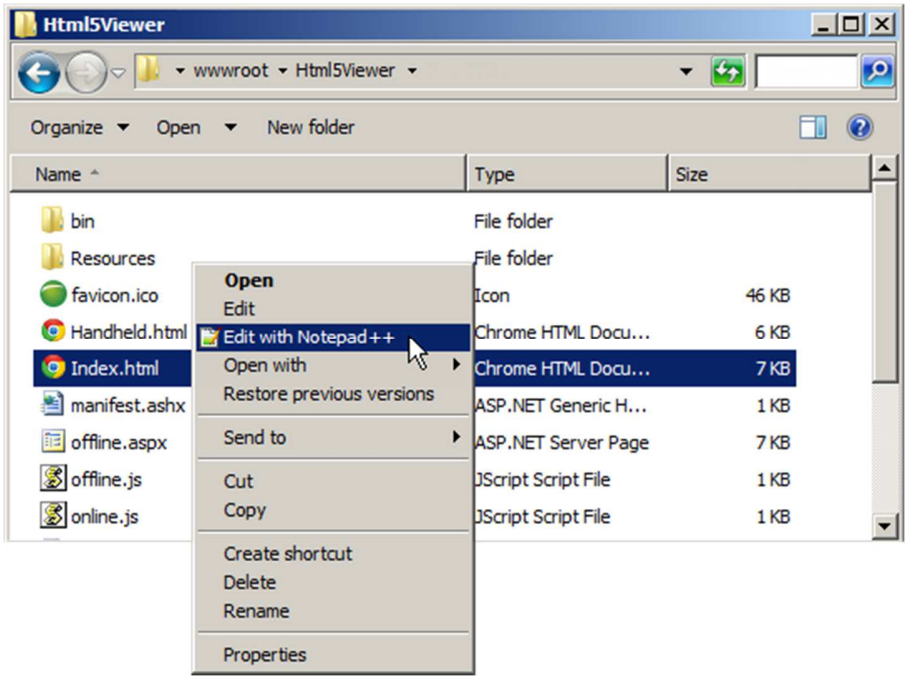
11. Then, open the **Tablet** preview to note that the changes you made previously have been overwritten.

8.2 Shorten the URL for the Viewer for HTML5

The viewer URL can be long and difficult to access by memory. Shorten your Viewer for Silverlight URL to make it easier for end users to access the viewer.

1. Open a Windows Explorer dialog and navigate to C:/inetpub/wwwroot/Html5Viewer

2. Edit the Index.html file.



3. In the index.html file, locate the following section

```
var viewerConfig = {
     "configurations": {
       "default": "Resources/Config/Default/" + shellName + ".json.js"
     },
     "viewerConfigUri": null
};
```

4. To indicate a new entry, enter a comma after ".json.js".

Each entry must be separated by a comma.

5. Start a new line of html and enter the name of your Viewer for HTML5 in quotations, followed by a colon.

You must enter the name of your viewer in all lower case.

Your entry should look similar to the following:

```
var viewerConfig = {
      "configurations": {
        "default": "Resources/Config/Default/" + shellName + ".json.js",
      "yourviewername":
      },
      "viewerConfigUri": null
 };
```

6. Open your Viewer for HTML5 from Geocortex Essentials Manager and copy the URL.

7. In the Index.html file, enter the URL of your Viewer for HTML5 in quotations.

8. Following the URL, enter + shellName +"json.js"
   Adding +shellName+ instead of the name of the json shell file allows the correct viewer shell to be launched, depending on which device is being used to launch the viewer.

Your entry should look similar to the following:

```
"yourviewername":
"http://server/Geocortex/Essentials/REST/sites/YourSiteName/viewers/Your
ViewerName/virtualdirectory/Resources/Config/Default/"
+shellName+"json.js"
```

9. Save the file but leave the text editor open.

10. Open a new browser window or tab and use the following URL as a guide: http://<your server>/<your Html5Viewer ID as deployed to IIS>?viewer=<yourviewername>

9. If the viewer fails to launch, or comes up with a blank screen, there may be an error in your entry in the Index.html. Return to the text editor to correct the mistake.

9. Advanced Viewer Features

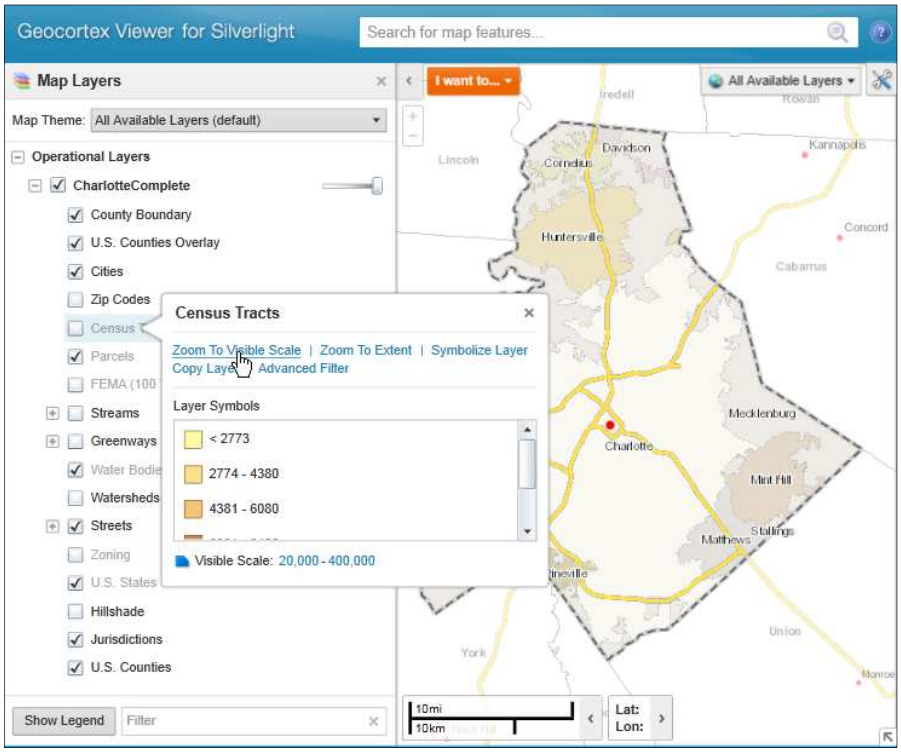
The Viewer for Silverlight also has the functionality to allow end users to make changes to how information is displayed on the map so that it better meets their needs. You can change the order in which layers draw, re-symbolize a layer to display information more clearly or in a different manner, and create custom queries to reveal more detailed information about a layer. Changes can also be saved to the local machine so they can be worked on at a later time.

9.1 Query a Layer in the Viewer for Silverlight

Like in ArcMap, users can form their own custom queries against any layer. Use these query tools on the Census Tracts PERC_CHG column to return communities that have grown by over 300%.

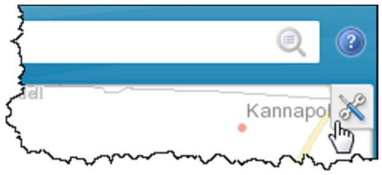
1. Open the Viewer for Silverlight which you have been configuring in these exercises.

2. In the layer list the Census Tracts may appear greyed out if that layer is not within the visible scale. First, zoom so the layer is at a visible scale. Zoom into the appropriate scale by clicking on the Map Layers entry for the Census Tracts layer, then click **Zoom to Visible Scale** link.



3. The map service has the Census Tract layer not visible by default. Check the Census Tract layer box to have it visible on the map.

4. Click the Show the Toolbar icon to open the Toolbar.



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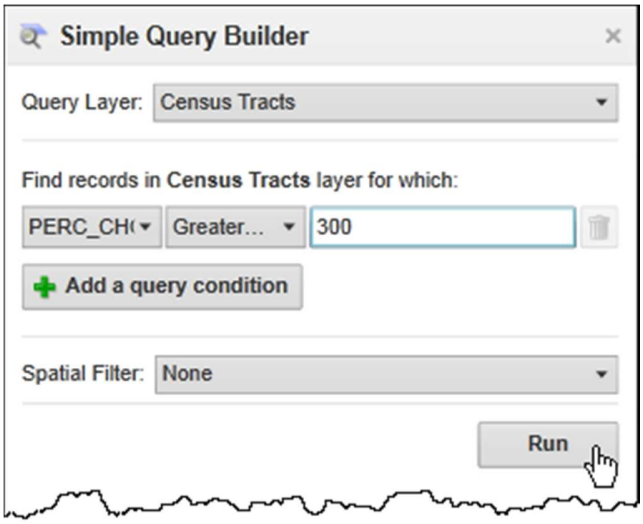
5. To open the Query tools, select the **Maps & Data Sources** tab. Then, select the **Simple Query** tool.
   The Simple Query Builder appears in the left panel. This allows you to build a simple Where clause to query the Census Tracts layer.

Simple query allows users to form compound queries with an AND operator between each query search term. The Advanced query function allows users to form free-form queries where the operator between each term can be specified. The advanced query tool requires more advanced knowledge about designing where-clause queries.

6. Select **Census Tracts** for the Query Layer. Then, to determine which tracts grew by more than 300% between 1990 and 2000, select **PERC_CHG** as the column and **Greater than** as the operator and enter 300 as the value.

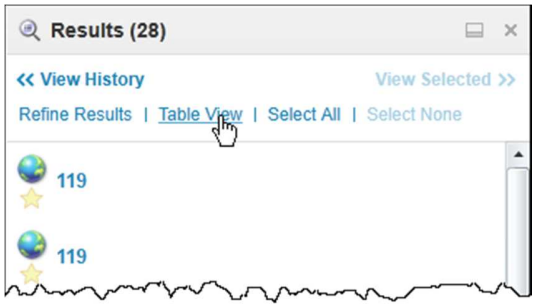
As you begin to enter a value, a dropdown list of the values from the source attribute table appears. To see the list of available values without having to enter any data, press the down button on your keyboard.



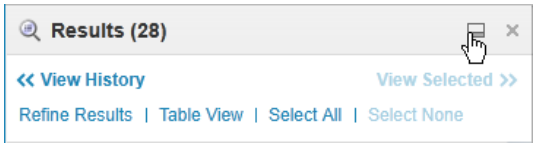
7. Once you are satisfied with your Query definition, click **Run** to find values matching it.
   A list of results is returned. The feature description 119 denotes the county in which the census tract resides.

8. To map those tracts from the Results, click **Select All**.

9. To see the values which match your query, select **Table View**.



10. Click on the wide view icon next to the x which widens the results pane so you can see all columns at once.



11. (Optional) Select the Advanced Query tool from the Toolbar and construct the where clause from the previous steps. Add an additional condition to return those results where the population in 2000 (POP00) is greater than 6000.

9.2 Symbolize a Layer

Resymbolize the Census Tracts layer in the Viewer for Silverlight to display the change in population between the year 1990 and 2000.

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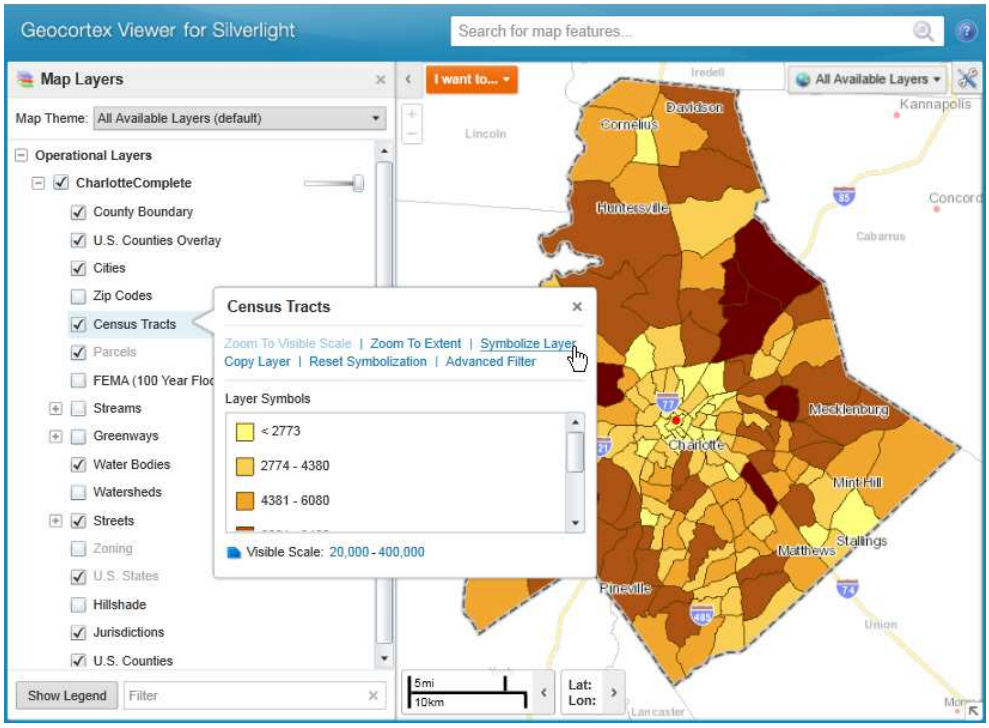
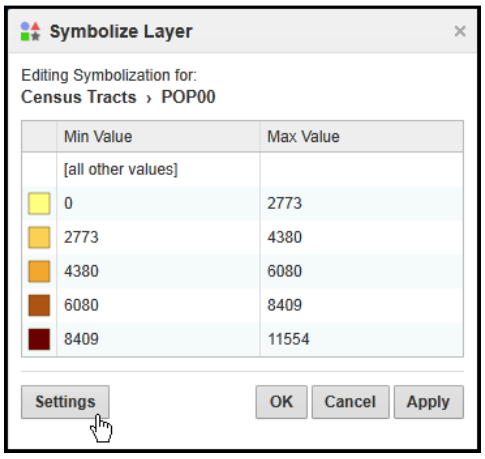
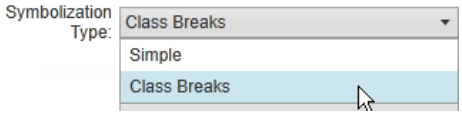
1. The Census Tracts layer currently shows the population of each census tract in the year 2000. Select the layer to open the layer dialog and see the layer symbols currently used. Resymbolize the layer to show the percent by which the population of each tract has changed between 1990 and 2000 by clicking **Symbolize Layer** in the layer dialog.



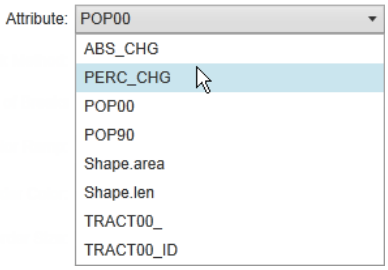
2. In the Symbolize Layer dialog, select **Settings**.



3. For Symbolization Type, select **Class Breaks**.
This divides the data into groups.



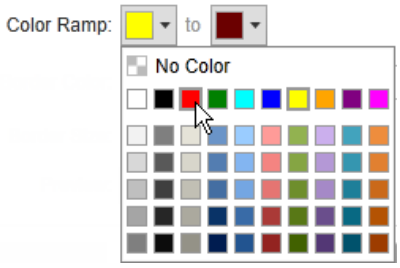
4. Currently the symbolization represents the population of the census tracts in 2000. The Attribute list contains all of the fields from this layer that are numerical. Select the **PERC_CHG** field, which shows the percent change in population between 1990 and 2000.



5. For Break Method, select **Natural Breaks**.

ArcGIS Server provides the logic to categorize the data. To learn more about Break Methods refer to the ArcGIS documentation.

6. For Color Ramp, select Red as the first color swatch.
This displays the first class as Red.



7. Then, select Green for the second color swatch.
This displays the last class as Green. Classes between the first and last will appear as mixtures of the two extremes.

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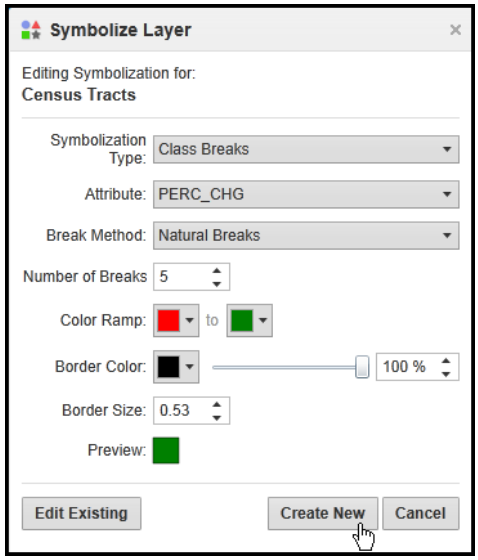
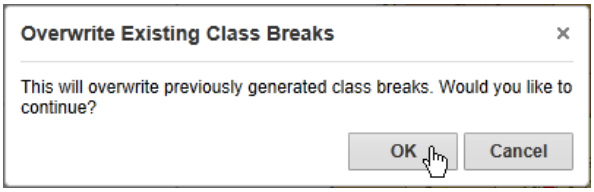
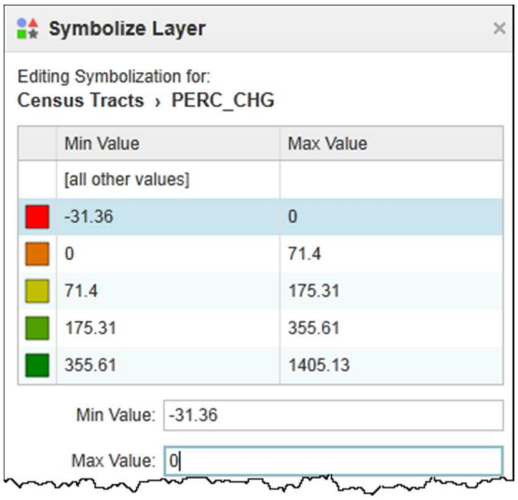
8. Select Border Color to be Black, and then click **Create New** to overwrite the current settings. An Overwrite Existing Class Breaks dialog appears.



9. Click **OK** in the Overwrite Existing Class Breaks dialog.
This temporarily overwrites the current settings for the user session. Refreshing the page returns the Viewer to the map service (default) settings.

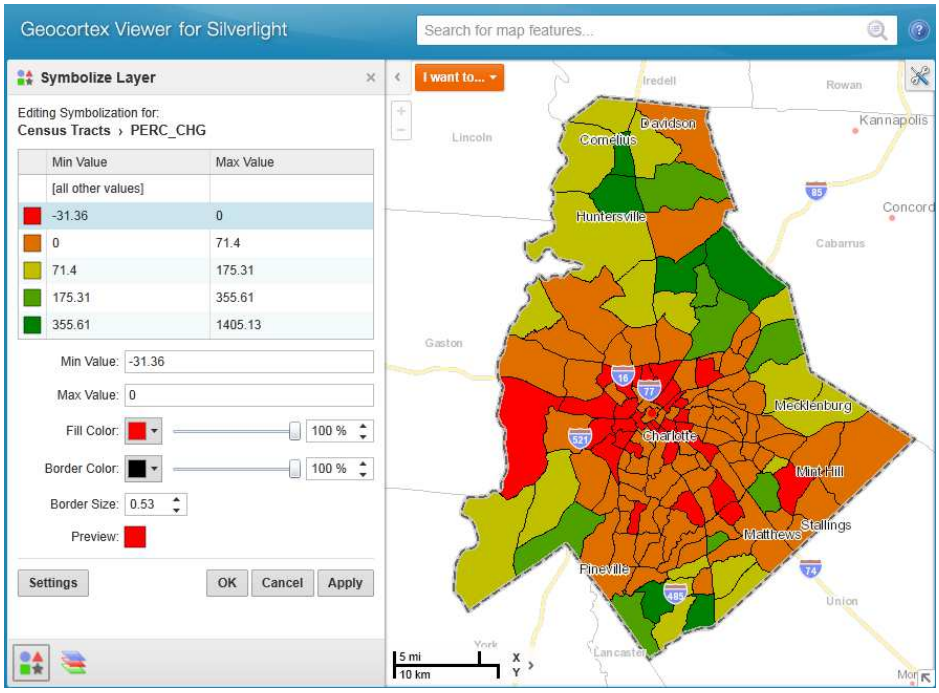


10. Currently, the tracts that appear as red also include those that have some positive growth in population. To make only those census tracts that have had a negative percent change in population appear red, select the first class and change the Max Value to 0.



11. Click **Apply** to see your changes in the map, and then click **OK**.
    The map now shows those census tracts that have decreased in population between 1990 and 2000 in red and those that have grown in green.

To return to the map service (default) symbolization, in the layer list click the layer and click on the Reset Symbolization link.



9.3 Disable Symbolization for Fields

Dynamic Symbolization of fields is enabled by default, unless otherwise configured. Specify which fields appear when dynamically symbolizing a layer in the viewer by configuring Field properties in Essentials Manager.

1. In Essentials Manager, select **Map** from the sidebar and then Edit the Census Tracts layer.

2. Select the **Fields** tab and then click **Add/Remove Fields**.
   An Add/Remove Fields prompt appears.

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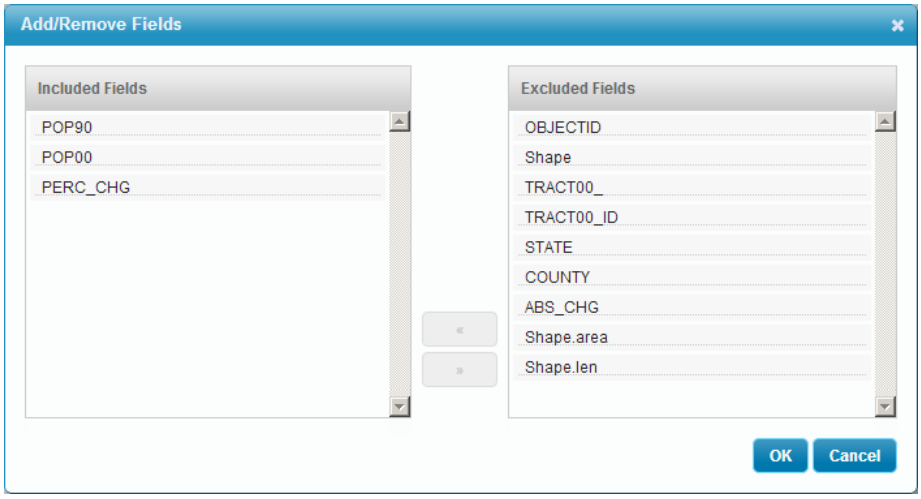
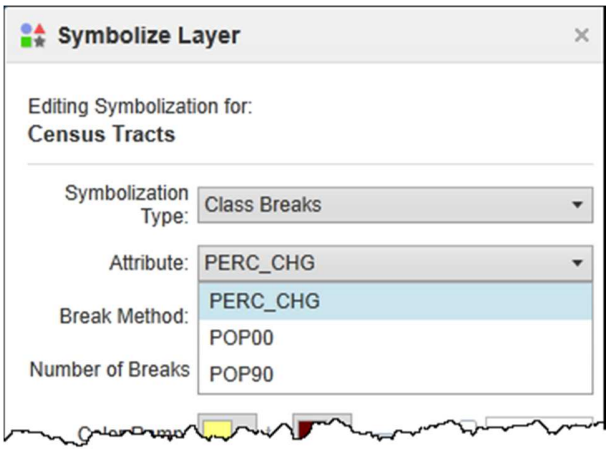
3. In the Add/Remove Fields prompt, include those fields for which you would like to have dynamic symbolization enabled in the viewer. In this case, select **POP90**, **POP00** and **PERC_CHG**. Then, click **OK**.



4. With the current settings, all fields for Census Tracts can still be dynamically symbolized in the viewer.
   To disable this ability for all other fields in the layer, click the Can Symbolize Class Breaks and Can Symbolize Unique Value icons for <all other fields>. This greys out the icon, indicating the property is disabled. **Submit Field Changes** and **Save Site**.

5. In the Viewer for Silverlight, re-symbolize the Census Tracts layer and note how only the fields you included appear in the Attribute property.

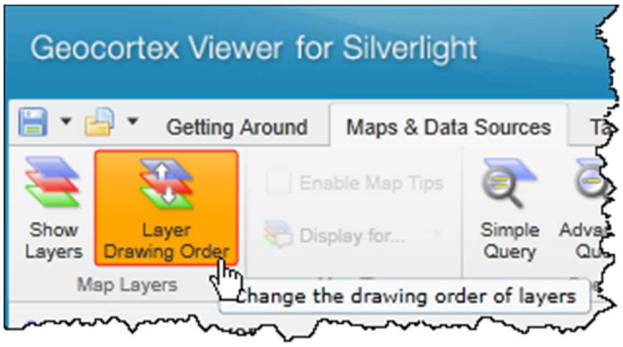


9.4 Change Layer Drawing Order in the Viewer for Silverlight

The Census Tracts layer has full polygon fill making it difficult to see layers beneath it. In this activity, we change the layer drawing order so the Census Tracts layer displays underneath the Water Bodies layer.

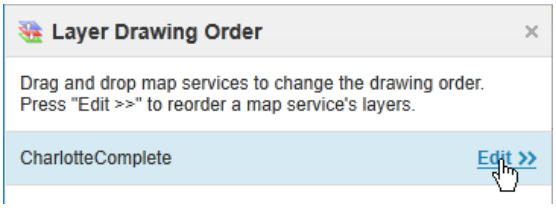
1. In the Viewer for Silverlight, open the toolbar.

2. Select the **Maps & Data Sources** tab, and then click **Layer Drawing Order**.
   The Layer Drawing Order dialog opens.



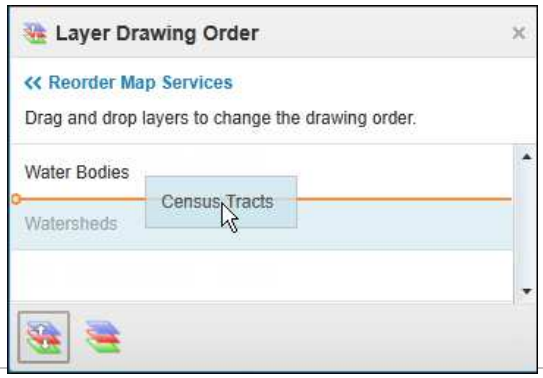
3. The Layer Drawing Order dialog lists each map service used in the current site. The layer order can only be modified in map services with dynamic workspaces enabled. Those layers that are not selected to draw appear as greyed out. Any group layer, such as Streams, is represented by the sub layers that it contains.
   Select **Edit** for the CharlotteComplete map service to open the layer list.

In the Layer Drawing Order dialog, you can also reorder the compatible map services that may have been added to your site.



4. Click and drag the Census Tracts layer to draw after the Water Bodies layer.
   Notice that the Water Bodies layer now appears as drawing over the Census Tracts layer.

The Map Layers list always shows the drawing order that is configured in the map service regardless of changes made in the Viewer.



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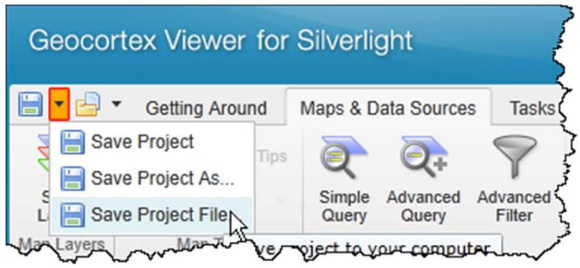
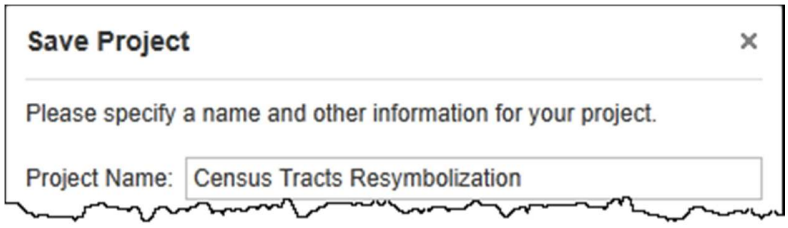
5. To save the changes that you have made in the Viewer, click the arrow next to the Save icon, then select **Save Project File...**
   This saves your project to your desktop. Save Project saves your project to the server for other users to access.

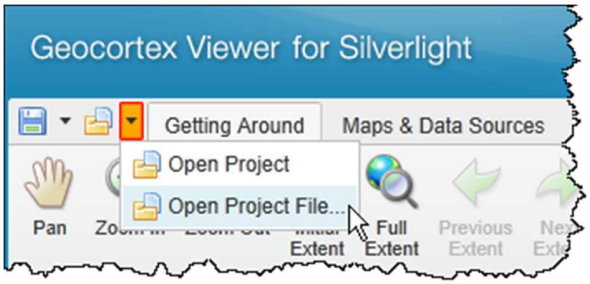


6. In the Save dialog that appears, create a folder for your project in your site folder and save your project there.
   Once complete, a Save Project dialog appears in the Viewer.

7. In the Save Project dialog, enter some text and then click **OK**.



8. Reload the Viewer for Silverlight then open the Toolbar and click the arrow next to the Open Project icon. Then, select **Open Project File...**
   An Open dialog appears.



9. In the Open dialog, select the project that you saved.
   Your settings are applied in the Viewer.

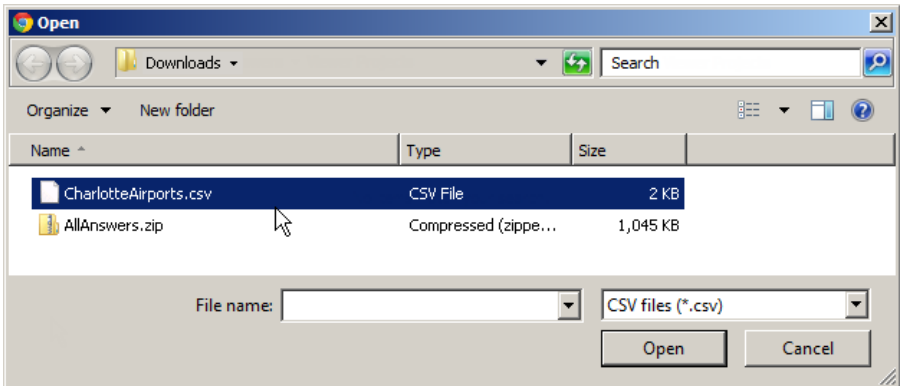
9.5 Add and Search a CSV file

The Viewer for Silverlight can take any CSV files that contain an X and Y coordinate and map it on the current screen. Learn how this function works by using a provided CSV file listing airports in the Charlotte area.

1. In the Viewer for Silverlight, refresh the viewer to remove any of your changes and then open the Toolbar and select the **Maps & Data Sources** tab. Then, select **Add CSV File**.
   An Open dialog appears so you may point to a CSV file.

2. In the Open dialog, navigate to the Downloads folder (unless your instructor states otherwise) and select the CharlotteAirports.csv file. Then, click **Open**.
   This adds the features to the map for the current viewer session. Should the Viewer be reloaded, the information will be lost. However, should you save your project, the features will remain. The features can now be seen as drawn in the map window.

CSV files can also be dragged and dropped into the map window.



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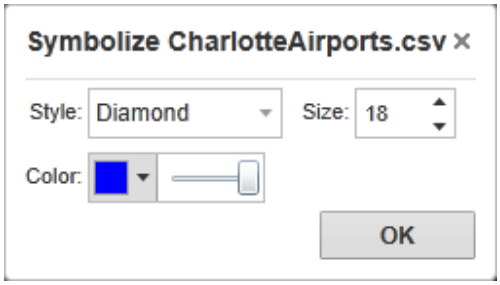
3. Scroll down the Map Layers list to see the CharlotteAirports.csv listed under Graphics Layers. Currently the layer symbology is similar to that of Cities. Make the layer more apparent by changing its symbology. Select the layer to open the layer dialog and then click **Symbolize Layer.** A Symbolize CharlotteAirports.csv dialog appears with options to modify the layer symbology.

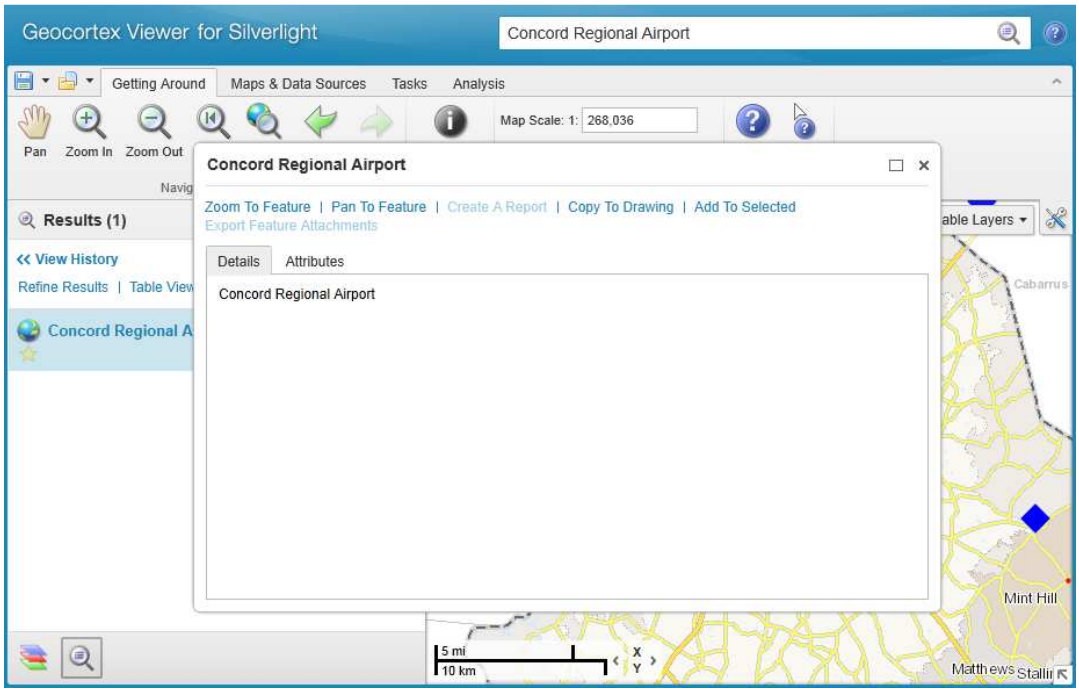
4. In the Symbolize CharlotteAirports.csv dialog, for Style select **Diamond**. Enlarge the size of the feature to **18** and select Blue for the color. Once you're satisfied with the symbology, click **OK**. Note that as you make your changes, the features change correspondingly in the map window.



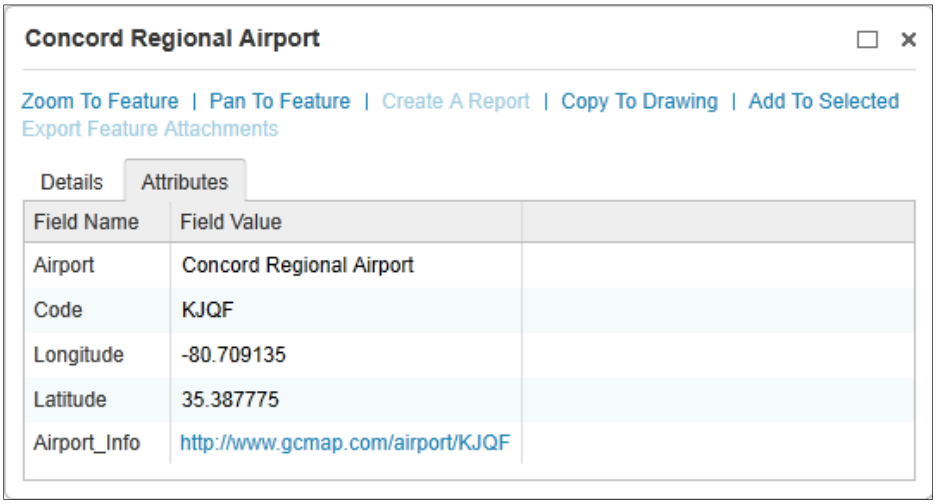
Rendering of CSV files (and Shape files) is done within the Viewer for Silverlight, on the viewer client only. As the symbology for CSV is created client-side, the settings are different than that of resymbolizing ArcGIS Server layers.

5. You can use any of the Identify tools or the Global Search to see the features listed in the .csv layer. The Concord Regional Airport is a feature listed in the CharlotteAirports.csv. Type the name of the airport in the Global Search bar and search for it.
The Concord Regional Airport record (or that which you searched for) appears in the Results pane.

6. To see all the attributes from the single record related to the selected airport, click on the feature name in the Results list to open the Map Tip.



7. In the Map Tip, select the **Attributes** tab to show all attributes related to that feature. There is a URL listed in the Airport_Info and is displayed by the Viewer as a link. Click the URL link to open a diagram of the airport.



9.6 (Optional) Geocoding from Global Search

1. In Geocortex Manager, select **GIS Services** from the sidebar. Then, click **Add Geocoding Service.**
   The Geocoding Service Wizard appears.

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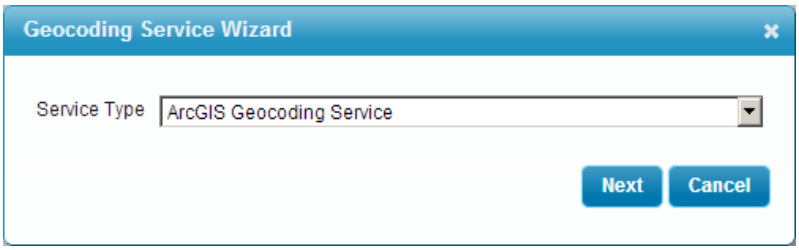
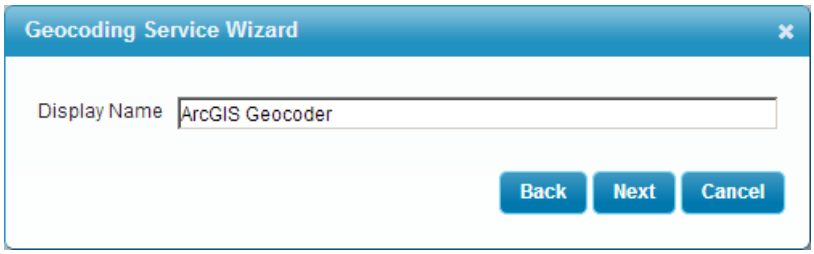
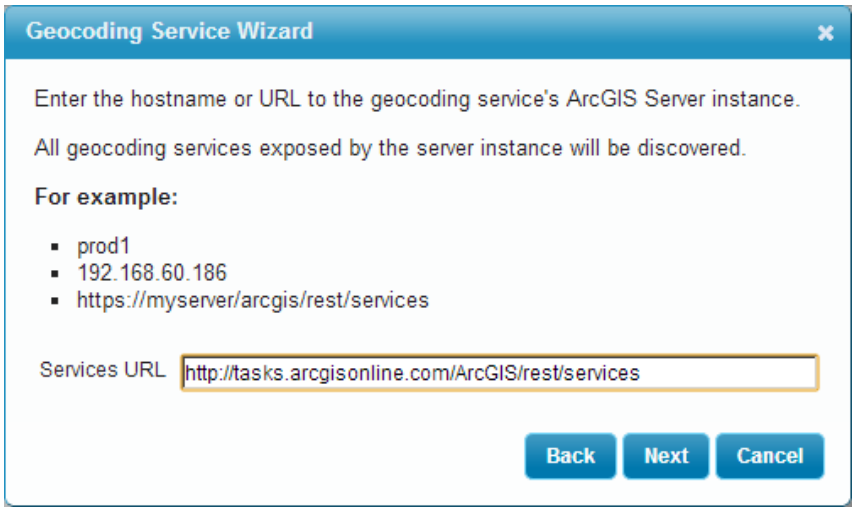
2. For Service Type, select **ArcGIS Geocoding Service**, and then click **Next**.



3. Enter a Display Name for the Geocoding Service, and then click **Next**.

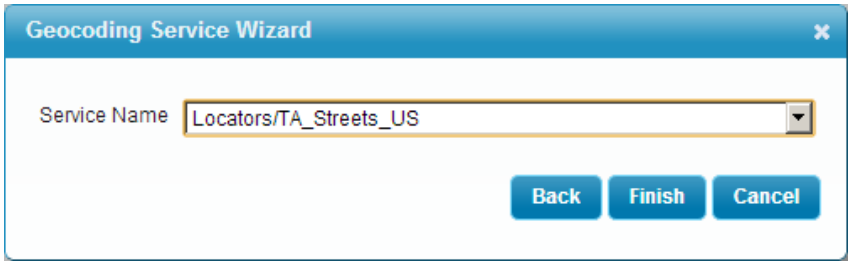


4. For a Services URL, enter http://tasks.arcgisonline.com/ArcGIS/rest/services and then click **Next**.



You can create your own geocoders with ArcGIS Server.

5. For a Service Name, select **Locators/TA_Streets_US**, and then click **Finish**.



6. To connect the geocoder to the global search box in the Silverlight Viewer, you must add the Geocoding Module to the Viewer for Silverlight Viewer.xml. The file is located under your Viewer's Config folder.
   Close your site, and then edit the Viewer.xml.

Be sure to close your site before editing the Viewer.xml file as any changes you make in Manager will be overwritten by those that you make in the Viewer.xml.

7. Find the Modules tags in the Viewer.xml and paste the following geocoding endpoint parameters between the Modules tags:

```
<Geocoding>
      <Views>
       <View Region="DataRegion" Id="ForwardGeocodingView"
Visible="false" />
      </Views>
      <Configuration Title="Advanced Search (Geocoding)"
TitleWithResult="Advanced Search - {0} Result"
TitleWithResults="Advanced Search - {0} Results"
GeometryServiceUri="{GeometryServiceUri}">
        <GeocodingEndpoints>
          <GeocodingEndpoint ID="0" DisplayName="ArcGIS Geocoder"
ServiceType="ArcGisGeocoder" IncludeInGlobalSearch="true"
ConnectionString="url=http://tasks.arcgisonline.com/ArcGIS/rest/services
/Locators/TA_Streets_US/GeocodeServer">
            <Parameters>
              <Parameter Name="City" Value="Charlotte" />
              <Parameter Name="State" Value="NC" />
              <Parameter Name="globalSearchKey" Value="Street" />
            </Parameters>
          </GeocodingEndpoint>
        </GeocodingEndpoints>
      </Configuration>
    </Geocoding>
```

8. Save the Viewer.xml and close the editing program. Open the Viewer for your site and try searching for 200 Dalton.

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10. Editing Using Feature Layers

Geocortex Essentials makes data editing and management easy. The simplest form of editing is possible using configured tools.

Using Workflows, data editing is possible with data verification, ensuring required fields are supplied and other rules can be applied through using activities in workflows. Data editing is explored in the workflows course.

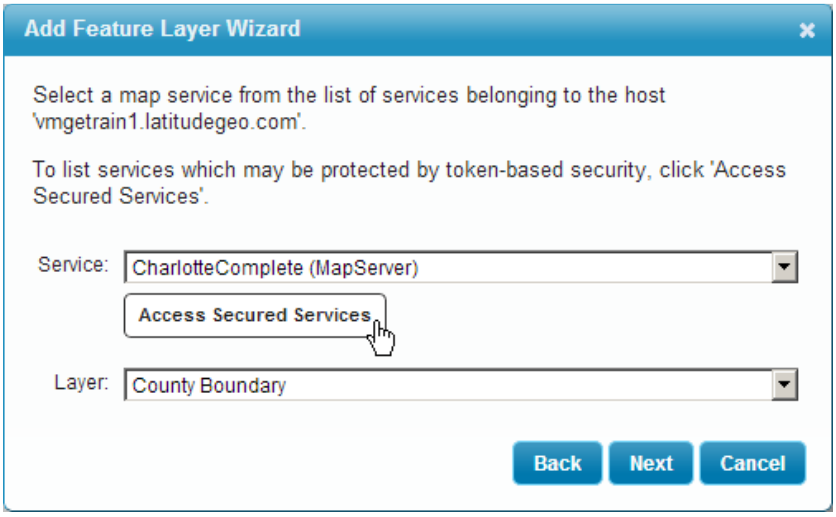
10.1 Add a Feature Layer to the Site

1. Open Essentials Manager, select **Map** from the sidebar.

2. Select **Add Feature Layer**.
   The Add Feature Layer Wizard window appears.

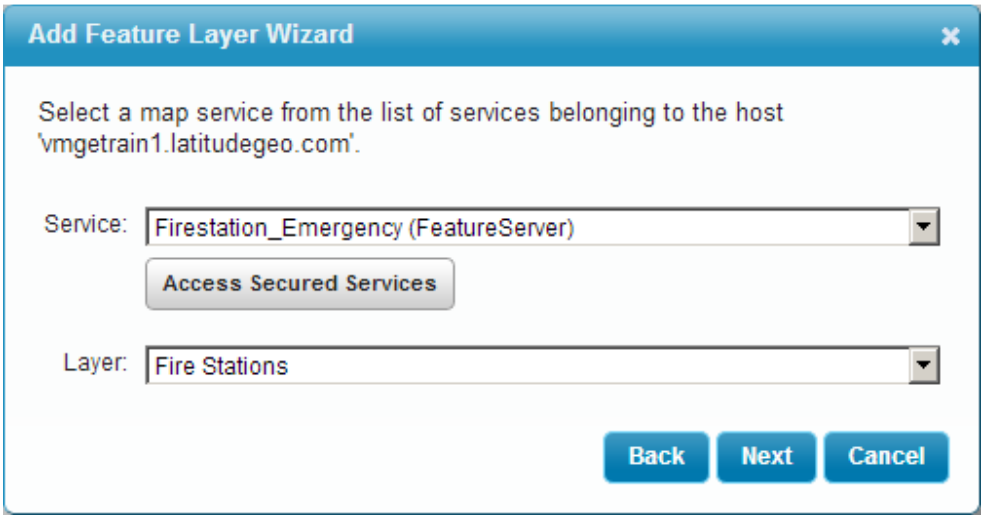
3. In the Add Feature Layer Wizard window, enter the Server host provided by the instructor, and then click **Next**.

4. The feature layer is password protected and therefore does not appear in the Service list. To access it, click **Access Secured Services**.
   An Access Secured Services prompt appears, allowing you to enter a username and password to access the feature layer.



5. In the Access Secured Services prompt, enter the username and password provided by your instructor and then click **OK**.

6. The secured FeatureServer and MapServer now appear in the list of Services. Select **FireStation_Emergency (FeatureServer)** as the Service, and **Fire Stations** as the Layer and then click **Next**.
   Feature Servers have editing capabilities that Map Servers do not.



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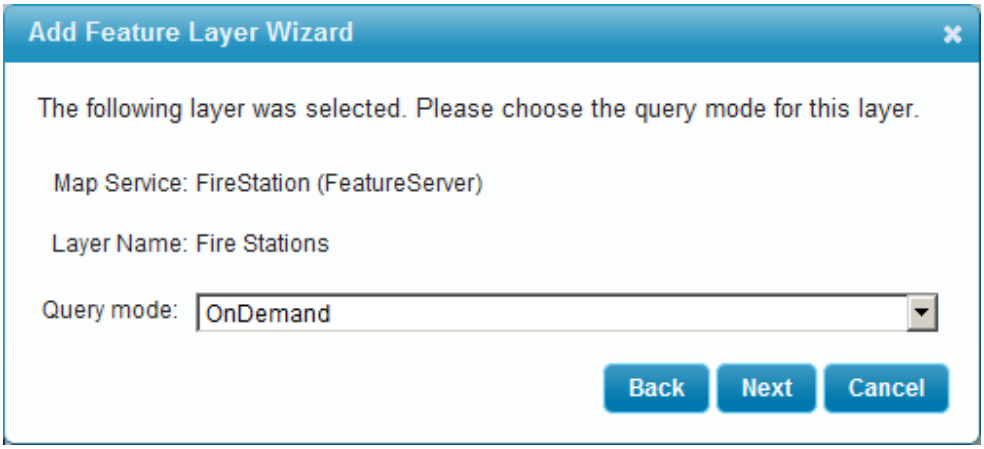
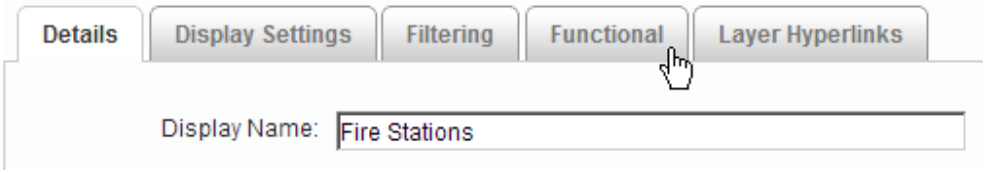
7. Select **OnDemand** as the Query Mode and then click **Next**.
   OnDemand is an ArcGIS Server setting when using feature layers. When in On Demand query mode, features are fetched from the server as needed. Refer to the ArcGIS REST API for more information on feature layers or the query mode settings.



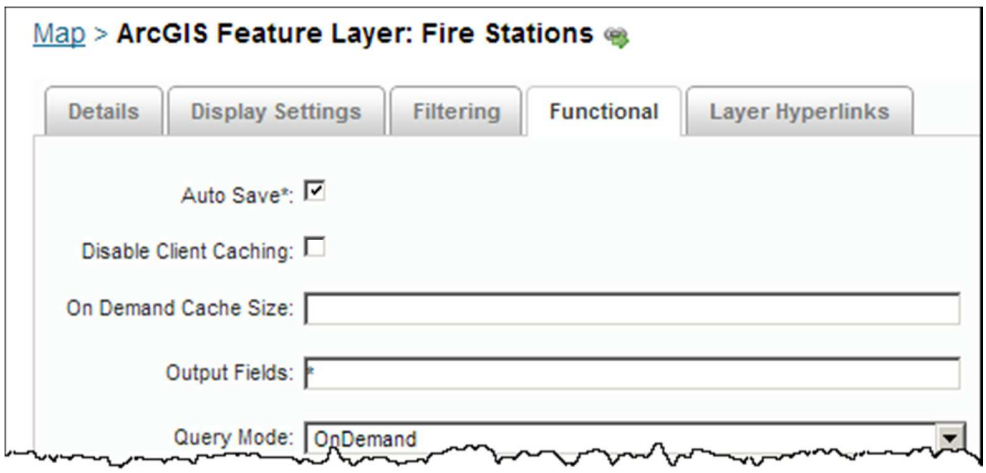
8. Click **Finish** to finalize the creation of your new Feature Layer.

9. Click the Edit Map Service icon for the Fire Stations feature layer.

10. Select the **Functional** tab.



11. Notice that for feature layers, a * is automatically inserted into Output Fields.
    Output Fields is an ArcGIS Server property that refers to a comma delimited list of fields capable of being edited. A * indicates that all fields are available for editing.



10.2 Add Editing Tools to the Toolbar

The Viewer for Silverlight does not have the editing capabilities exposed in the default configuration. Learn how to modify the default Toolbar in the Viewer for Silverlight to add editing tools.

1. Open Essentials Manager, click on **Viewers** in the sidebar and then edit a Viewer for Silverlight.

2. Select **Toolbar** from the sidebar.

3. The Toolbar for the Viewer is inherited from the default configuration.
   To make changes to the Toolbar configuration, click **Copy Defaults**.

4. A new tool can be added to an existing Tab or Group, or you can create your own Tab or Group for it to be located in.
   To create a new Group for your Tool, click on the Add Group icon to the right of the Tasks tab.
   The Add Group window appears.

5. In the Add Group window, enter a Display Name for the new Group (eg. Editing).

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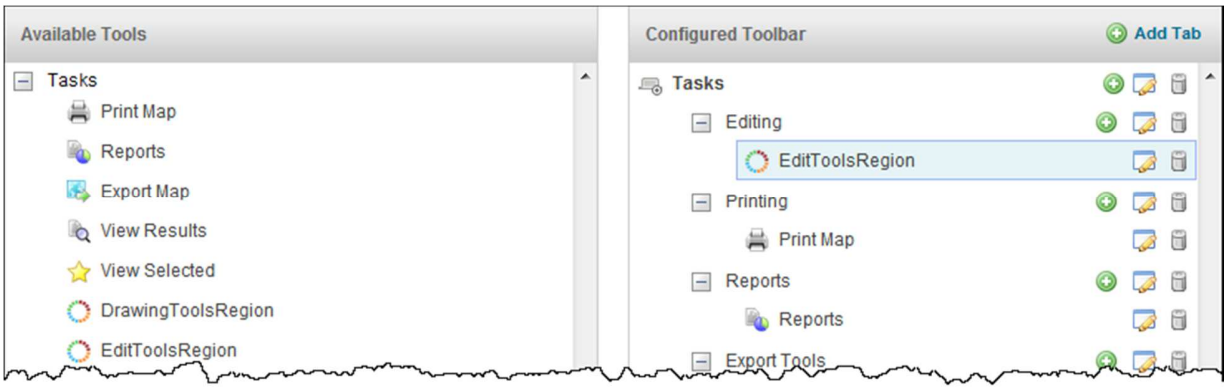
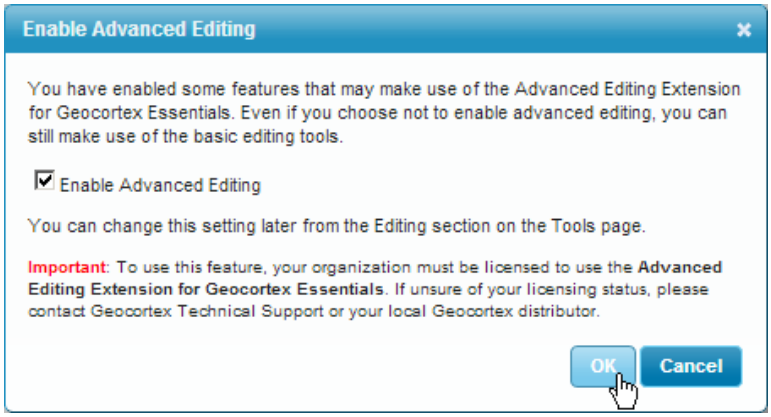
6. Drag **EditingToolsRegion** from the Available Tools column into your new Group.

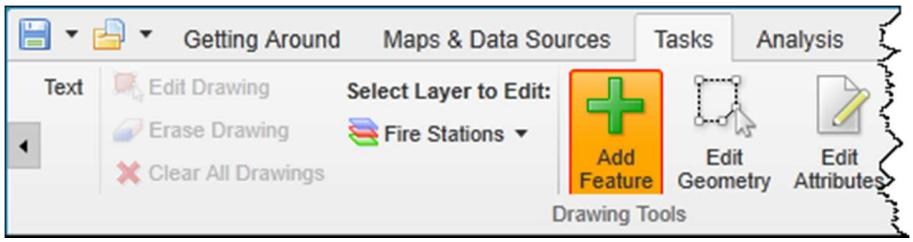


7. Click **Apply Changes.**
   The Enable Advanced Editing pop-up appears.

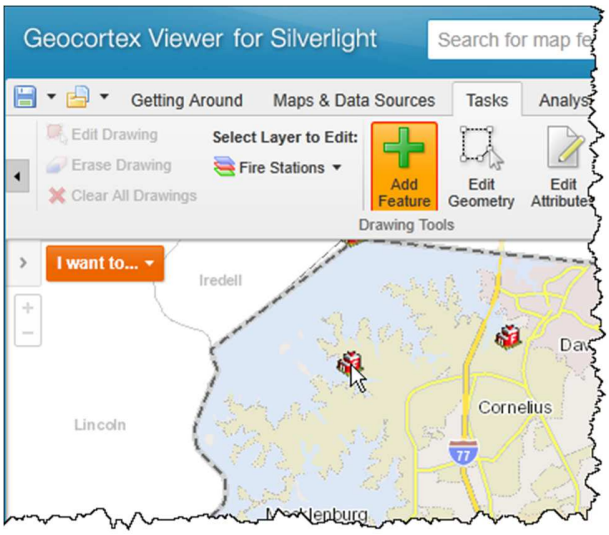
8. In the Enable Advanced Editing pop-up, check the Enable Advanced Editing checkbox and then click **OK**. Then, click **Save Site**.



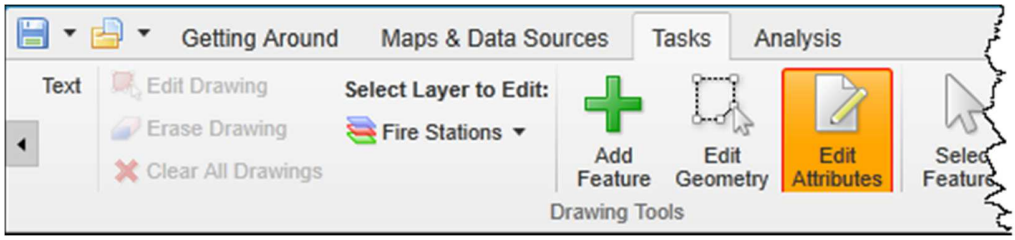
9. In the Viewer for Silverlight, open the toolbar and select the **Tasks** tab. Then, select the **Add Feature** tool.



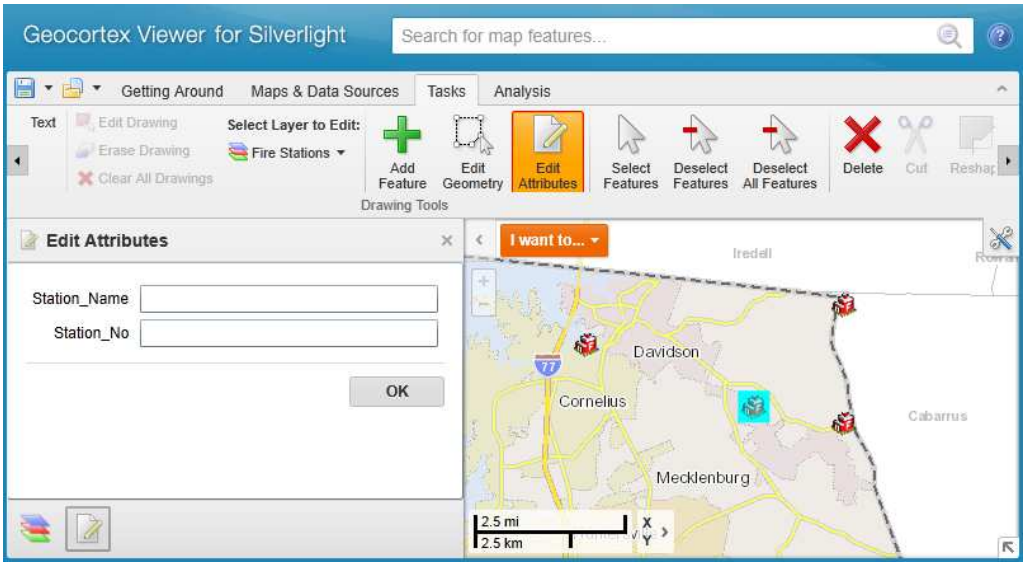
10. Click in the map window to add a new Fire Station feature to the map.



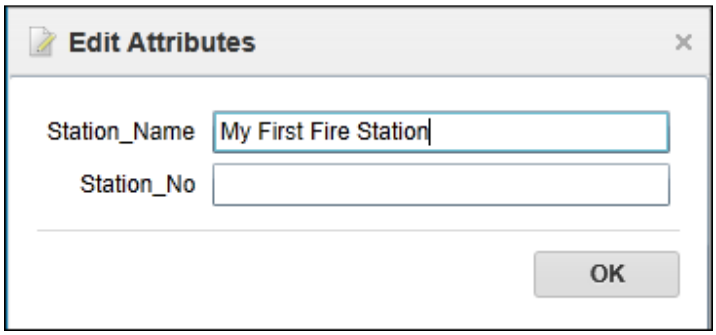
11. To edit the attributes of the feature you just added, select the **Edit Attributes** tool from the Tasks tab.



12. Using the Edit Attributes tool, select the fire station feature that you added.
The feature's attributes appear in the sidebar.



13. In the sidebar, click a text box adjacent to an attribute name and enter a value.

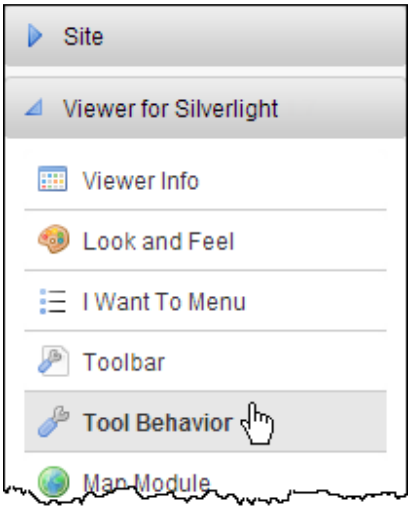


14. (Optional) Add the Emergency Areas layer from the Firestation_Emergency Feature Server and add and remove polygons using the editing tools.

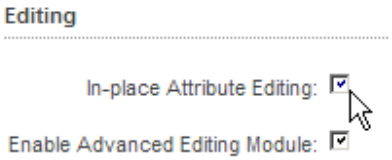
10.3 (Optional) In-Place Attribute Editing

The attributes of a feature can also be edited in place. This allows the user to make changes in the feature details dialog or in table view itself. Learn how to enable this feature using this activity.

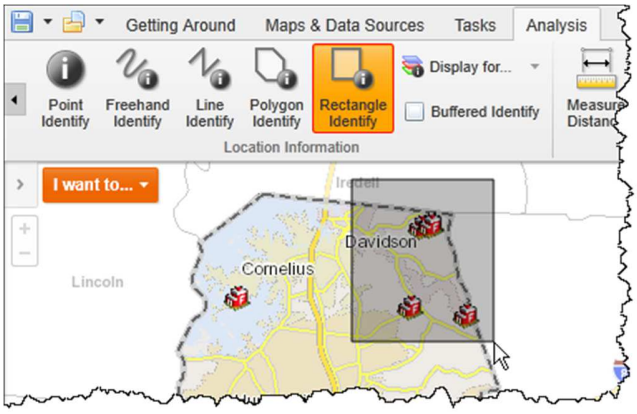
1. In the Manager, select **Viewers** and edit the Viewer for Silverlight. Then, select **Tool Behavior** from the sidebar.



2. Scroll down the page to the Editing header and enable **In-place Attribute Editing**. **Apply Changes** and **Save Site**.



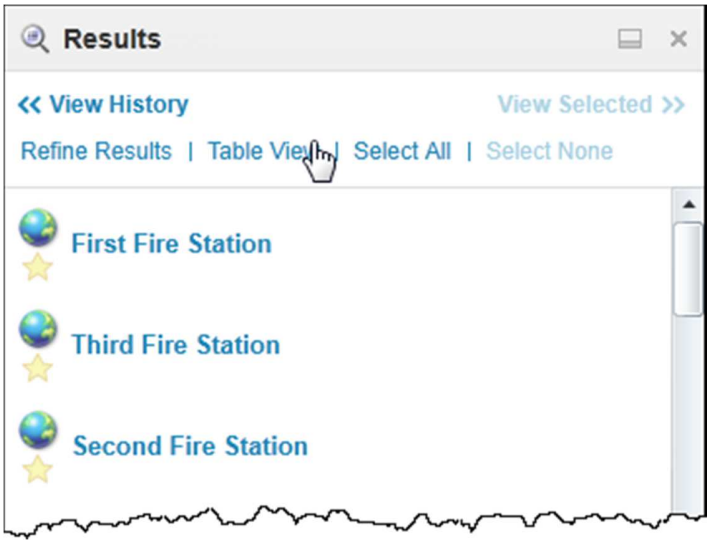
3. Open the Viewer for Silverlight. Under the Analysis tools, select **Rectangle Identify** and select the fire stations you added earlier.
   Your selections appear in the Results list.



4. To edit feature attributes in the feature details dialog, click a fire station title in the Results sidebar.
   The feature details dialog appears.

5. In the feature details dialog, the editable attributes can be identified by the open text boxes. Enter a value for both the Station_Name and Station_No.

6. To edit attributes through the Table View, select **Table View** in the Results sidebar. Then, select the Fire Stations tab.



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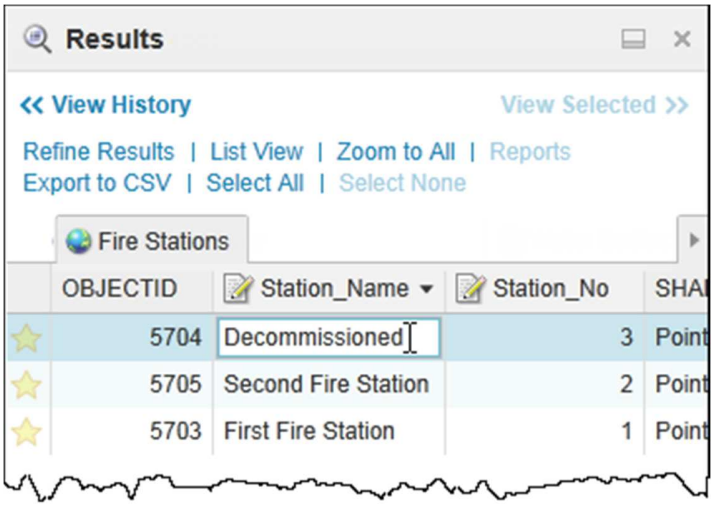
7. Note that for the selected Fire Stations, there is an editing icon next to the Station_Name and Station_No columns. This means that the fields for these attributes are editable.
   Double click a field to edit the value, enter a new value, and then press the Enter key.



11. Security

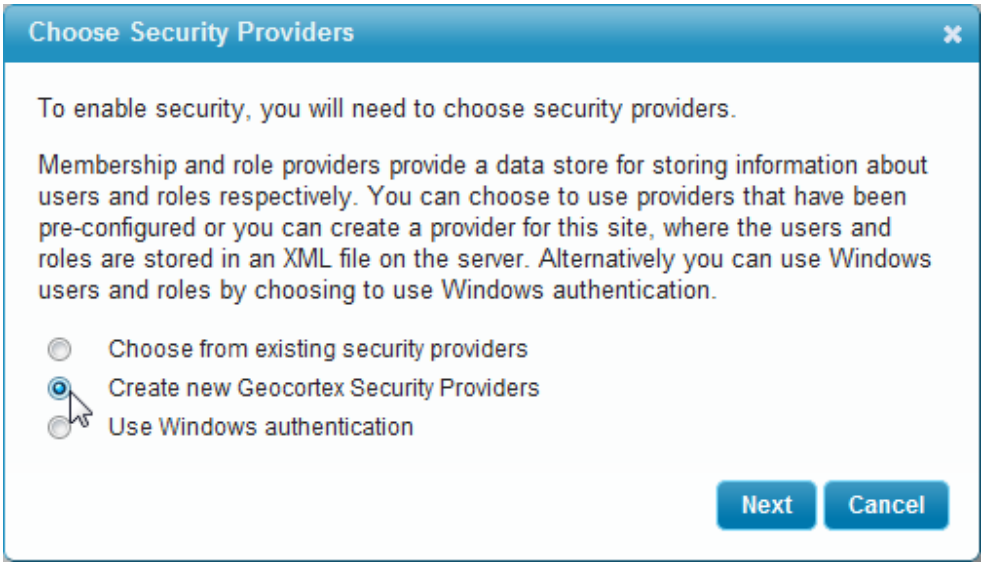
Security is an important element to protect sensitive information. Geocortex has a variety of security authenticators possible. This exercise introduces the basics about security through configuring the Geocortex provider.

11.1 Enable Geocortex Site Security

1. Open Geocortex Essentials and select **Security** from the sidebar.

2. To add security to your site, click the **Enable Security** button.
   The Choose Security Providers window appears.

3. In the Choose Security Providers window, select **Create new Geocortex Security Providers**, then click **Next**.
   Selecting Create new Geocortex Security Providers means that you are able to create users and roles in Essentials Manager and store them in a file.



The Geocortex Security Provider stores usernames and passwords in a file named SecurityProvider.xml inside the secured sites' directory. When using the Geocortex Security Provider, anyone with direct access to this file will be able to read the usernames and passwords as they are not hashed. For more secure options, see the Administrator guide to use one of the many enterprise authentication provider options (Active Directory, SQL Server or Windows authentication, for example).

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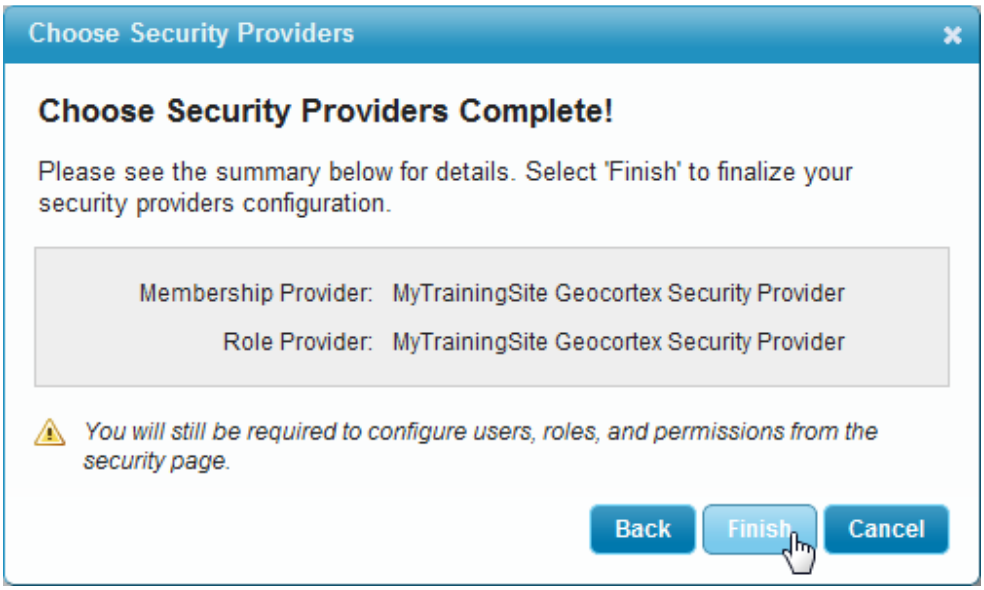
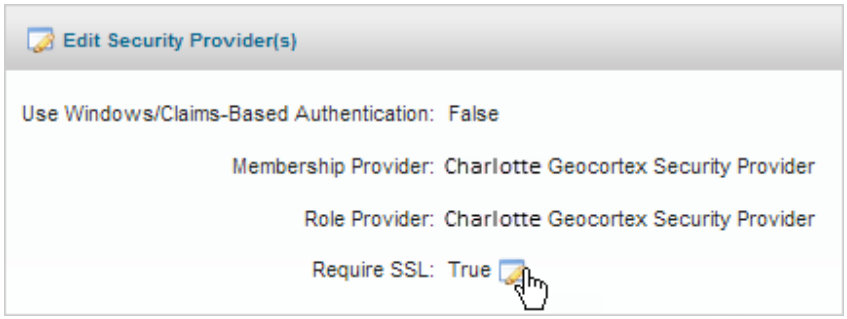
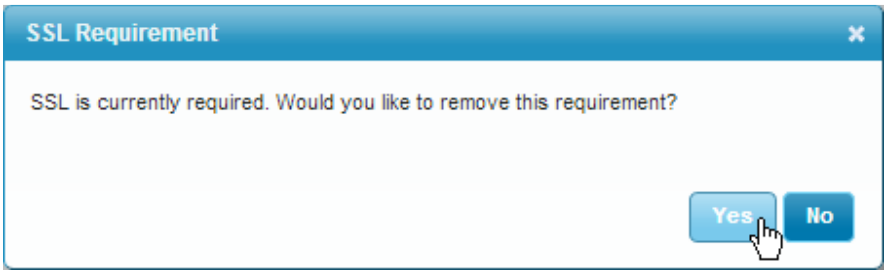
4. Click **Finish** to complete adding a Security Provider.



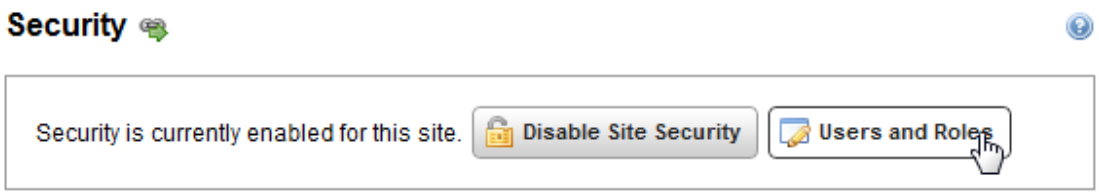
5. Click the Edit button for the Require SSL parameter. Currently the setting is True, meaning that SSL is required. When a site is configured to require SSL (Secure Socket Layer), users must use the HTTPS protocol to access the site. It is automatically enabled when you add Security to your site.
   The SSL Requirement pop-up appears.



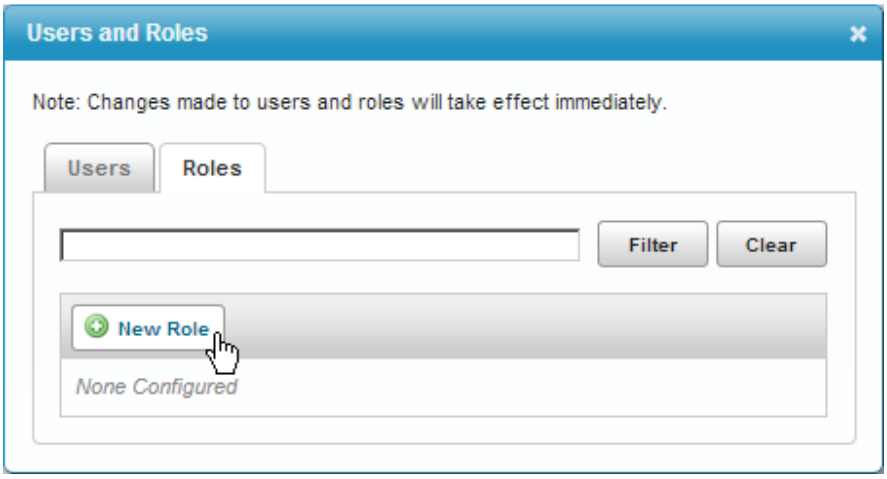
6. In the SSL Requirement pop-up, click **Yes**, to remove the SSL requirement.



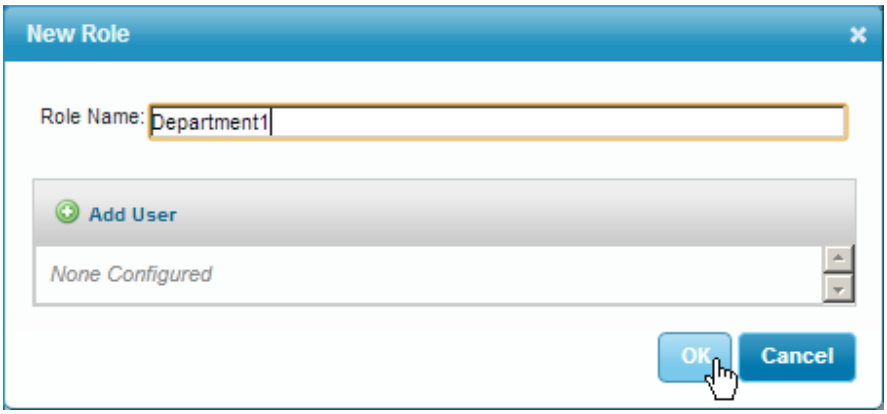
7. To add new Users and Roles to the site, click **Users and Roles**.
   The Users and Roles window appears.



8. In the Users and Roles window, select the **Roles** tab and click the **New Role** button.



9. Provide a Role Name (eg. Department1), and then click **OK**.



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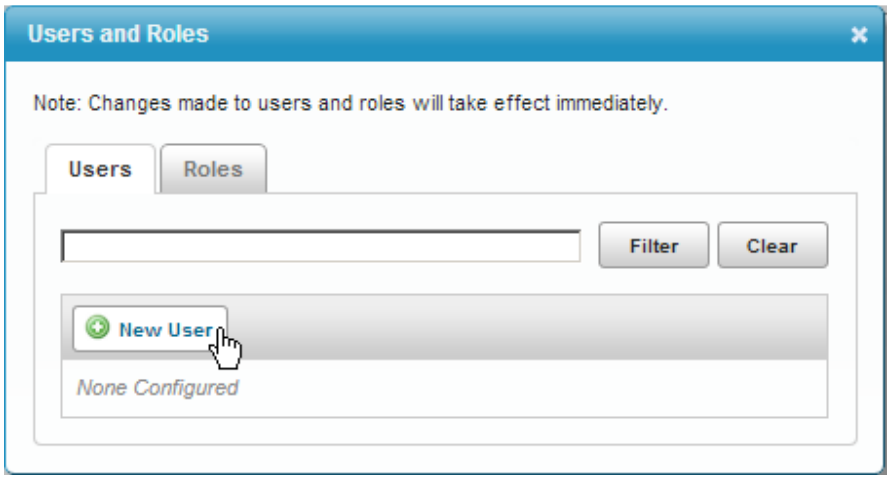
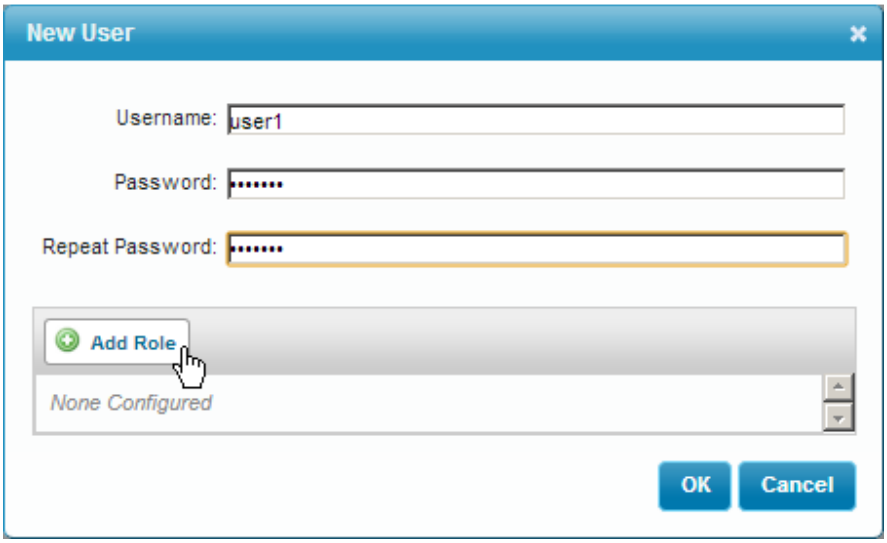
10. Click on the **Users** tab, and then click the **New User** button.

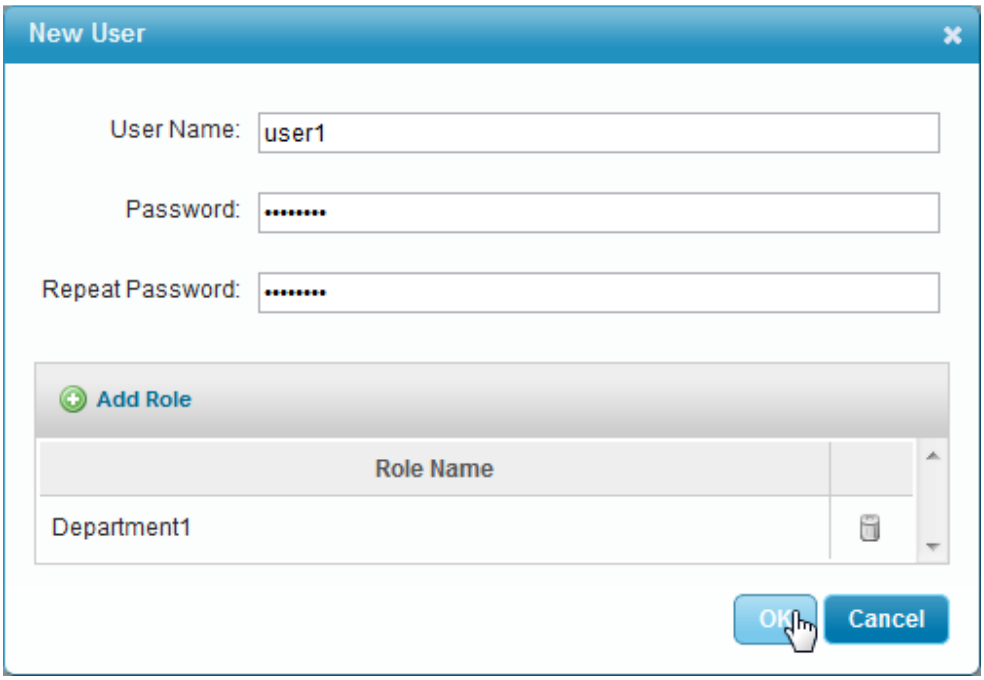


11. Provide a User Name and Password and then click **Add Role**.
    When a user is granted access to the site, they are given access to everything. You cannot restrict their access to part of the site.
    The Add Role to User window appears.

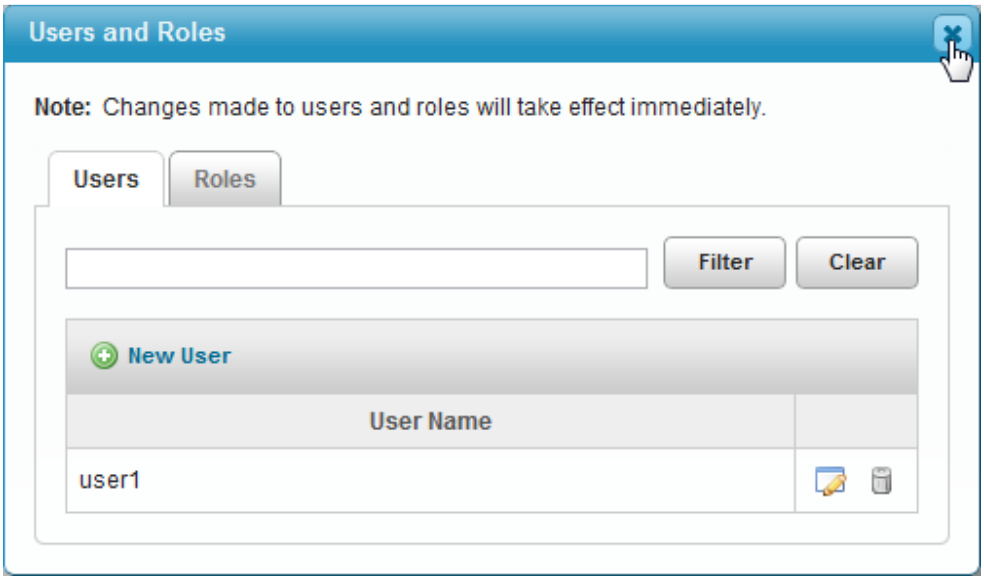


12. In the Add Role to User window, select the Role you created earlier from the drop-down list, then click **OK**.

13. In the New User window click **OK**.



14. In the Users and Roles window, finish adding Users and Roles by clicking on the x at the top right of the window to close it.



15. **Save Site** which commits the site configuration settings and writes an additional file inside the Site folder named SecurityProvider.xml.

16. Select the View REST endpoint icon.

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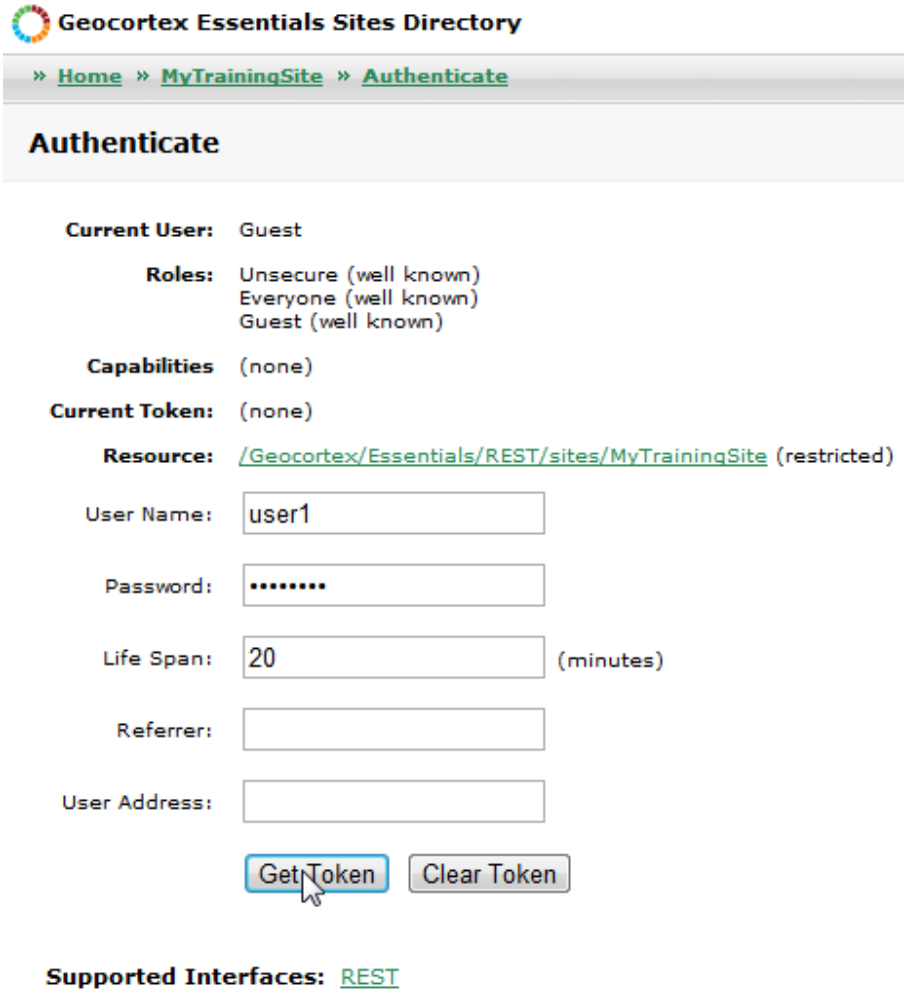
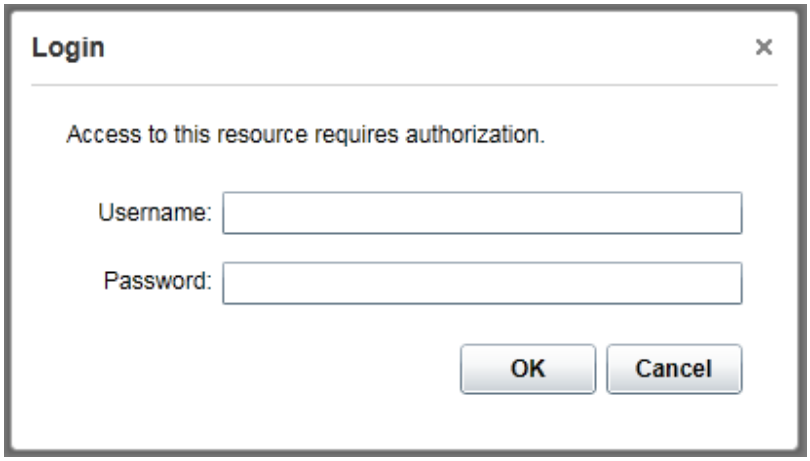
17. To provide your browser with access to the entire REST site, enter the User Name and Password you just created, and then click **Get Token**.



8. Select **Clear Token** to remove permissions for your browser, and then try opening your Viewer.

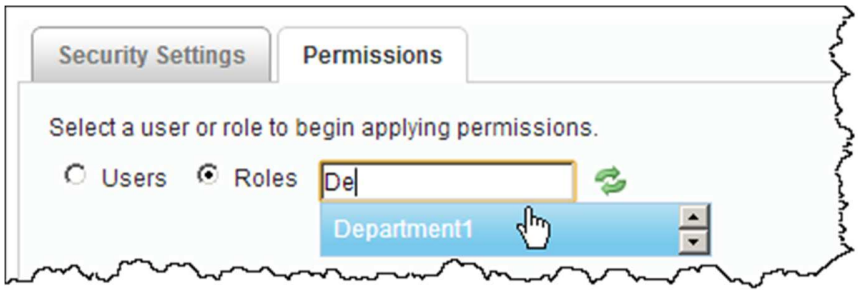
9. In your Viewer, the login prompt that appears occurs once the REST interface is queried as no token currently exists.
   Enter the username and password you created earlier and the site works.



11.2 Configuring Layer Level Security

Permissions can be configured for both users and roles. Apply permissions to layers, as well as their configured elements, or to workflows, reports and print templates. Permissions can be applied in three different ways: Allow, Deny or Inherit.

1. To begin applying permissions to a role, select **Security** from the navigation bar. Then, open the **Permissions** tab and then select **Roles**. Type the name of the role you created in the text box and then select it from the dropdown menu that appears.



2. To start configuring permissions for the role, you must give the role access to the site. This is provided by the allow permission. The allow permission is signified by the green checkmark. Click through the icon next to the Site level to create a green checkmark indicating the role has an allow permission to the site.

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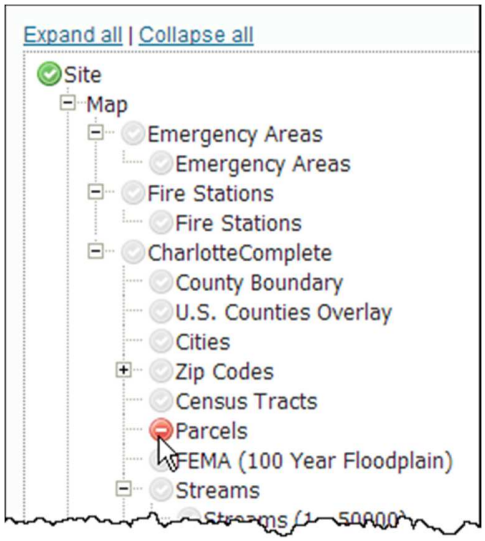
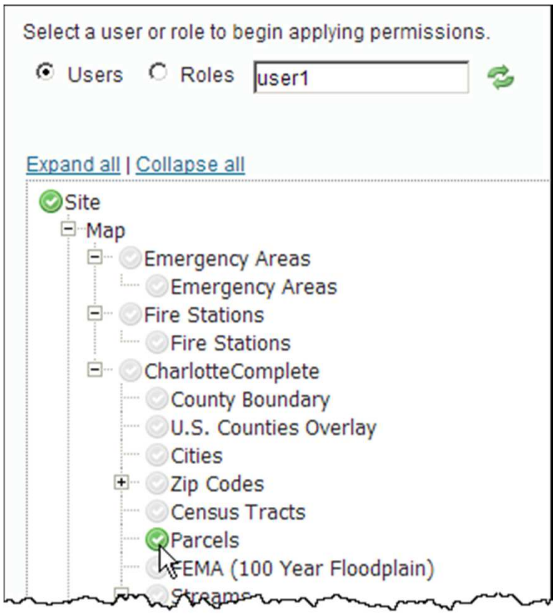
3. Deny the role access to the Parcels layer by adding a deny icon next to the Parcels layer. The deny permission is signified by the red circle.



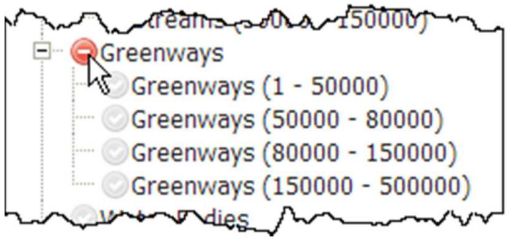
If a user or role has conflicting permissions, a deny permission will override an allow. For example, if the role is set to deny access to the parcels layer, but the user has an allow access to the parcels layer, when the user logs into the Viewer, they will not have access to the parcels layer.

4. To see what happens when a role and user have conflicting permissions, select **Users** then enter the name for the user you created and select it from the dropdown menu. Then, allow the user access to the site as well as the Parcels layer.



5. **Apply Changes** and **Save Site**, and sign into the viewer with the username and password you created. Open the layer list and notice how the Parcels layer does not appear. Even though the user was allowed access to the layer, the deny permission from the role overrode the allow.

6. Not all layers have to be configured to allow or deny permission; child layers can also inherit permissions from their parent. The inherit permission is signified by the grey checkmark. Layers inherit permissions by default.
   Return to Essentials Manager and configure permissions for the role you created. Deny permission for the parent Greenways layer. The grey checkmark for the child Greenways layers indicates that they will inherit the deny permission from the parent layer.

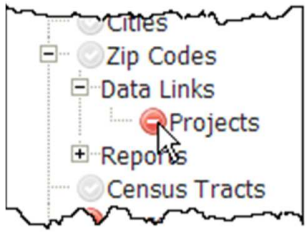


The grey checkmark indicates that the layer will inherit the permissions from its parent layer. In this case, Greenways 1-50000 will inherit the deny permission from the parent Greenways layer.

7. Open the Viewer to see the effect of your changes.

8. Permissions can be configured for more than just layers. In the role permissions, expand the Zip Codes layer list, and then expand Data Links. Notice how you can configure permissions to the Data Link you created earlier.

9. Deny the role permission to the Data Link, and then open the viewer, search for a zip code and open the map tip for the result to see that the Projects tab no longer appears.



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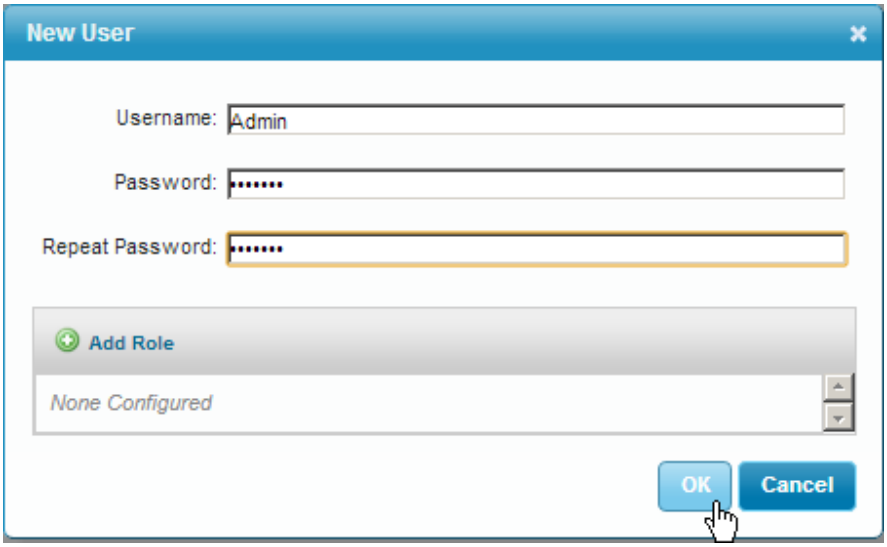
10. To create an administrator role that has access to all aspects of the site, select **Users and Roles** and create a new user called Admin. Then, click **OK** and close the Users and Roles pop-up.
    By not adding a role to the user you can ensure that there are no conflicting permissions.



11. Select the Admin user you just created to begin configuring its permissions. Simply allow permission for the Site layer.
    As the other layers are set to inherit by default, the administrator will have access to all layers and their configured elements.

12. Return to the viewer and sign in as the admin to see how by simply allowing permission to the site, the user has access to all elements of the site.